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AUTOMATIC SELECTIVE DOCUMENTATION SERVICES

Ray L. George
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March 1971

DEFENSE DOCUMENTATION CENTER
Defense Supply Agency
Cameron Station
Alexandria, Virginia 22314

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13. ABSTRACT

User-needs studies often present figures indicating that documentation services systems which rely on the mails are inherently incapable of effectively supporting more than half of all research and development tasks. In addition to investigating faster ways of transmitting information, DDC has also been developing and testing systems based on another approach: one of determining users' specific documentation requirements and automatically disseminating the needed documentation to the users' local libraries as soon as it becomes available.

This general concept was applied to the selective dissemination of both report announcements and full-text reports. Three different types of selective announcements, all produced on a regular semimonthly basis, were developed and tested: (1) automatic bibliographies, (2) group announcement bulletins (each of which contained announcements in just one of the 188 specific DoD-modified COSATI subject categories), and (3) selected announcements on magnetic tapes which could then be used as a basis for local SDI services. Selected reports were disseminated on the same semimonthly basis as the announcements, but in only one form—microfiche.

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PREFACE

The concept of automatically providing the Defense Documentation Center (DDC) users with selective documentation services has been the primary focus of development efforts within DDC since July 1967. At the beginning of calendar year 1968 DDC embarked on a test program to determine the feasibility of this concept.

Although portions of the program are still in a test status at this writing, much has already been learned. This report presents the need for such a program, the concept behind it, the testing of that concept, the presently determinable results of that test, and the probable future of the program.

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SUMMARY

During the past decade or so many technical libraries and information centers around the country have initiated internal programs for the Selective Dissemination of Information (SDI) to their users. A few years ago the Defense Documentation Center (DDC) decided to apply this same concept of selective dissemination to the documentation services which it provides to technical libraries and information centers.

After several years of experimentation and testing, DDC has concluded that the principle of selective dissemination can be effectively applied to several of its regular semimonthly documentation services.

1. Users with electronic data processing capabilities can be regularly provided with magnetic tapes containing bibliographic citations to all of DDC's most recent technical report accessions. These tapes, provided as much as a month in advance of the corresponding issue of the Technical Abstract Bulletin (TAB), can be employed (either alone or in conjunction with other tapes) as the basis for the user's internal SDI and bibliography programs.

2. Libraries which had been requesting large numbers of technical reports can now be provided with as much as 86 percent of their DDC document requirements at the same time they are provided with the corresponding TAB announcements of those documents. Thus, they can now respond immediately to a majority of the requests they receive from their local users. The actual portion of requests which can be filled at the local level will progressively increase with the accumulation of documents (on microfiche) received through this service.

3. The coordinated application of the magnetic tape announcement service and the automatic document distribution service can enable local libraries to provide their users with very responsive and highly effective documentation services.

4. Two varieties of DDC-produced SDI-type hard copy announcement services were also tested. One of them was based on a concept of fragmenting the TAB into individual subject categories which could be sorted and assembled by local libraries into SDI pamphlets for their users. The other was based on a direct application of the prevalent SDI concept, but with each SDI bulletin custom-prepared by DDC rather than the local user. Each type proved to have some good points, but neither seemed to be as cost effective as locally produced SDI bulletins and DDC cost considerations forced discontinuance of both.

DDC is now offering the automatic magnetic tape service to all users on a subscription basis. The automatic document distribution service is being provided to all users for whom its cost effectiveness has been determined. Experimentation with profiling techniques is continuing in an attempt to make automatic document distribution cost effective for more of DDC's users.

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I. INTRODUCTION

The basic concept of selective documentation services is certainly not new; forms of SDI (selective dissemination of information) have been tried by many organizations during the past decade, with varied degrees of success.

Most of the SDI programs, however, have been some variation of a type which are generically called current-awareness programs; i.e., instead of actually conveying any technical information to their users they merely alert them as to what information is currently available and how it can be obtained. Furthermore, practically all known SDI programs are operating at what DDC terms the "retail level"; the outputs of the system (announcements, current-awareness bibliographies, or whatever else they may be called) are routed directly to individual users or very small groups of users.

DDC has taken this SDI concept and modified it so that it might be applied to both current-awareness-type report announcements and full-text report copies on a "wholesale level" (with dissemination being made to technical libraries and information centers rather than to individual users).

II. NEED FOR IMPROVED DOCUMENTATION SERVICES

For many years DDC has been improving its existing products and developing new ones. But even the new products have generally been natural extensions of the traditional documentation services (announcement journals, document copies, and retrospective bibliographies).

Services have also been gradually but continually improved, particularly response times. These improvements have been made, however, by utilizing new equipment and optimizing internal work flow to speed in-house processing.

Although such improvements have helped, of course, it eventually became evident that really significant improvements in documentation services would require a new approach; namely, determining actual user requirements and developing new products and services aimed at fulfilling them.

A. User Information Requirements

User-needs studies within the Department of Defense (DoD) indicated that some major redesign of DDC's documentation services systems was required to more effectively respond to diverse user requirements.

Some of the more salient findings of the studies were summarized by W. C. Christensen, Director of Technical Information, Office of the Director of Defense Research and Engineering, during a North Atlantic Treaty Organization/Advisory Group for Aerospace Research and Development (NATO/AGARD) Conference in June of 1968: [1]

1. Most technical information users are either engineers or are working in areas related to engineering, and their information problems are exceedingly complex.

2. While information, to be effective, is needed in less than a day by over 20 percent of the users, most users would really like to have their information needs met instantaneously.

3. When seeking information, most users turn first to their own personal files or a colleague, supporting Mr. Christensen's contention that "users operate on a minimum effort principal as far as requisition of technical information is concerned" and emphasizing the importance of local sources of information.

1/ H.F.Vessey, et al. "Storage and Retrieval of Information; a User Supplier Dialogue," Proceedings of a symposium sponsored by the Avionics and Technical Information Panels of the North Atlantic Treaty Organization Advisory Group for Aerospace Research and Development at Munich (June 1968) 126-7. AD 697 621

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4. Because the amount of information being generated is tremendous and because it tends to have a short half-life, engineering information is most difficult to handle in a technical information system.

B. DDC Services and Performance

The user information requirements set forth in the previous section contrast sharply with the following aspects of DDC service in FY 1967, the last Fiscal Year prior to initiation of the test program:

Service Volumes

* 6,000 different user organizations were provided with documentation services.

* 50,000 different reports were announced in the Technical Abstract Bulletin (TAB).

* 264,000 TABs were distributed to users and were supplemented by a total of nearly 78,000 volumes of Quarterly and Annual TAB Indexes.

* 20,300 bibliographies (containing a total of approximately 3,000,000 references) were supplied to users.

* 1,850,000 copies of documents were requested.

  - 51 percent of all these requests were from 139 user organizations (only three percent of the active users).

  - 75 percent of all these requests were from 528 user organizations (only 12 percent of the active users).

Service Times

* The total service time (including mail distribution) required for providing document announcements (via TAB) averaged out to 44 days.

* The average total service time (including mail transit both ways) required for responding to bibliography requests was 12 days.

* The service time (including two-way mail transit) on document requests averaged 12.5 days.

C. Performance Implications

Comparison of the user information requirements as found in the user-needs studies with the services provided by DDC clearly implicated DDC's services and performance.

1. While the RDT&E (research, development, test, and evaluation) community is composed of diverse substantive interests, professional disciplines, quantitative and qualitative information needs, and differing local capabilities for processing information, DDC services have heretofore been providing only standard types of information products.

2. Although scientists and engineers invariably seek information at local sources first, there have been no active programs for improving and strengthening local information processing activities as part of a coordinated systematic plan to develop a DoD-wide integrated technical information system.

3. The documentation services which DDC has been providing may be generally characterized as outputs of a demand/response or "reactive" system: users request information or documents, the request is processed by DDC, and finally the information is forwarded to the requester. With over 22 percent of the users needing their information in less than a day, and, cumulatively, more than 47 percent needing theirs in less than a week, centralized sources such as DDC clearly cannot meet more than a small percentage of users' information needs through traditional demand/response distribution methods.[2]

a. An average of more than 25 days is required to request, receive, and review a DDC bibliography, then request and receive copies of the desired reports. But, since 47 percent of all users' information needs must be fulfilled within a week, DDC's bibliography program has been effectively supporting much less than 53 percent of all RDT&E tasks.

b. While many RDT&E tasks require completion in two weeks or less, documents cannot be requested and received from DDC in less than 12.5 days, on the average. Hence, DDC's document service probably supports only a small percentage of RDT&E tasks effectively.

2/ Arnold F. Goodman, et al. "DoD User Needs Study, Phase II, Volumes I and II," North American Aviation, Inc., Autonetics Division, Arlington, Virginia (November 1966) AD 647 111 and AD 647 112

4. Although nearly 75 percent of all document services are utilized by only 12 percent of the active users, there have been few exceptions to the demand/response syndrome and its built-in delay of approximately 55 days from a document's availability at DDC to its earliest possible receipt by a user; i.e., no provision has ever been made for any form of "wholesale" document distribution by DDC.

5. DDC's inability to match response times to a variety of information usage rates (as related to RDT&E task duration) accounts at least in part for:

a. the highly concentrated use of the majority of DDC's services by a small minority of large aggressive user organizations;

b. the lack of use of DDC services by nearly 2,000 registered user organizations;

c. the predominant importance of the local work environment as the primary, and all too frequently, the only source of information; and

d. the fact that, according to the DoD user needs studies, over 43 percent of the RDT&E community is unaware of the existence of TAB and over 31 percent are unaware of the existence of DDC.

D. New Objectives and Goals

The preceding observations indicated a need for restructuring and realigning DDC's products and services in order to achieve the following objectives:

1. To provide for the diverse interests, requirements, and capabilities of user organizations and activities by offering a range of flexible documentation services.

2. To provide users' local technical libraries and information centers with more support through the provision of documentation services in "wholesale" quantities.

3. To provide more responsive, "active," document service predicated upon the document usage patterns of user organizations in addition to the existing "reactive" document service program. Such a program would selectively anticipate users' varying needs and be flexible enough to permit rapid, economical satisfaction of specific document needs.

In summary, then, these were DDC's parameters for defining a new approach to document announcement and dissemination systems—a new spectrum of documentation services in response to RDT&E users' information requirements.

III. PROGRAM CONCEPT

A. Descriptions of Planned User-Oriented Services

Recognizing the need for documentation services more capable of meeting the diverse user information requirements, DDC developed a concept for a program of user-oriented services. The program concept may be most readily explained by defining the different categories of users as classified by DDC and describing the types of services which were felt to best suit their needs.

Even though no two user organizations are likely to have exactly the same information requirements, most attempts at classifying or grouping users result in three categories:

1. Low-Volume Users

These users are generally organizations working on small, specialized DoD projects. The libraries of most are somewhat limited in their information services capabilities and, as a result, request only a few documents per year from DDC.

2. Medium-Volume Users

These are usually larger, more active organizations working on more complex DoD projects. Most have adequate technical libraries and many either plan or already have some automation. They annually request hundreds of DDC documents.

3. High-Volume Users

These are the large, active, aggressive organizations working on comprehensive DoD projects. Nearly all have several small technical libraries and a large automated central library which uses DDC services heavily, requesting several thousand documents per year.

To better meet the information requirements of these different categories of users, DDC planned to develop the following selective documentation services:

Selective Announcement Services

User interest profiles would be constructed, and as each of DDC's semimonthly input processing cycles was completed, copies of all report announcements falling within the parameters of the profile would be produced and sent to the user. These announcements would be produced and disseminated in several different formats:

a. Automatic Bibliography Service—to provide users with bound computer-printed listings of report citations in subject areas of interest.

b. Group Announcement Bulletin (GAB) Service—to provide users with loose-leaf pages containing report citations falling within given Committee on Scientific and Technical Information (COSATI) Subject Categories of interest.

c. Automatic Magnetic Tape Dissemination (AMTD) Service—to provide users with magnetic tapes containing report citations of interest.

Automatic Document Distribution (ADD)

Users' document-need profiles would be constructed and, upon completion of each DDC semimonthly input processing cycle, microfiche copies of all reports falling within the scope of the profile would be produced and sent to the user.

These automatic services, offered in conjunction with the demand services already available, would enable users to select and employ whatever combination of services they found to be most beneficial.

A large organization, for example, might receive an AMTD magnetic tape and an ADD shipment of reports on microfiche shortly before receiving its TAB. The microfiche (and the TAB, when received) would be filed in the technical library while interest profiles from the organization's scientists and engineers would be processed against the magnetic tape to produce individual announcement bulletins which could be disseminated directly to the end users. If, upon reviewing his announcement bulletin, the end user found a reference to a document he wanted to see, he could go to the library and read it on a microfiche viewer, making copies of any pages needed for further study. If a hard copy of the complete document were still desired, it might be requested, of course. The organization could then either reproduce it from the microfiche or forward the request to the National Technical Information Service (NTIS). In any event, the end user would be made aware of the report somewhat sooner than before and the information contained in the document would be available much sooner.

B. Expected Impacts

ADP Equipment Impact

At the time the Selective Documentation Services (SDS) Program was planned (1967), DDC was employing a UNIVAC 1107 computer to process

requests for documentation services. While this system would be capable of handling the SDS work loads during the initial test, it was clear that additional data processing capabilities would be required to effectively support subsequent phases.

Microfiche Equipment Impact

During the design stage of the program DDC recognized that it did not have the capacity for producing the large numbers of microfiche which would be required, even in the initial test phase. The increased capability necessary for the early phases, however, could be readily provided either by contracting for microfiche reproduction support or by leasing or purchasing additional reproduction equipment that was available even then. But obtaining the reproduction flexibility, speed, and economy so necessary to the successful development of an operating system would require substantial improvements, and possibly even totally new developments, in mechanized microfiche equipment for duplicating, sorting, and packaging.

Printing Requirements Impact

Even the initial phase of the program was expected to cause significant but manageable increases in DDC's printing work load, largely because of the large number of copies of each of the 188 separate GAB issues required (one for each of the 188 COSATI Subject Categories) which would have to be printed and sorted. Subsequent expansion of the GAB service in later phases would probably require acquisition of additional printing equipment and/or development of specialized sorting equipment for use in assembling users' GAB shipments.

Personnel Impact

It was expected that the shift from "normal" processing operations to those of the SDS test program would necessitate some realignment of manpower resources within DDC, particularly in the microfiche and printing areas.

The extent of work load displacement which would occur in the microfiche area would, of course, depend upon the microfiche volumes required and the degree to which the "normal" demand request processing work load would be reduced by the ADD service. For the first few months of the test, however, no reduction in the demand request work load would be realized; instead, because of the time lag involved, the ADD work loads would be totally additional to the normal ones. For these reasons, therefore, contractual assistance might be necessary during the first phase of the ADD test.

The GAB service would create a sizable additional work load in the printing area, due in part to the increased printing necessary but mostly to the difficult GAB sorting process. While a reduction in the bibliography processing work load was anticipated, it was not expected to be a large enough reduction to offset the increased work loads in the printing area. And, even if the reduction should be large enough, the time lag prior to its effect would be even longer than in the case of ADD service.

C. Potential Benefits

The SDS program concept was developed in recognition of the broad spectrum of information requirements represented by the diverse elements of the RDT&E community. Accordingly, the program was keyed to providing a range of flexible documentation services which would be more responsive to the needs of individual users.

Through this program users could be rapidly and efficiently provided with most of the information they would require from DDC. With a flexible range of services from which to select, a user organization could obtain documents and information that would not only be within its scope of interest, but also in a form that would permit their efficient use in responding to local information needs.

This development of expanded and diversified products and services should substantially increase DDC's capability to effectively support DoD RDT&E programs for several reasons:

a. Providing local technical libraries and information centers with much more responsive and comprehensive support should increase their interest in, and effective use of, DDC's documentation services.

b. Improving and strengthening users' local information centers should greatly increase both their usefulness and their usage rate, helping to close the most important link in the information transfer chain by getting the information to the scientists and engineers who need it.

c. Providing scientists and engineers with ready and immediate access to most DoD documents and information should make it possible for DDC to effectively support an additional 50-75 percent of the RDT&E tasks which it was not previously capable of supporting.

In summary, decentralizing information services in those instances where "wholesale" packaging and distribution by DDC and subsequent "retail" processing by local libraries are feasible, would result in both more effective and more efficient transfer of DoD RDT&E information.

IV. TEST PLAN FOR SELECTIVE DOCUMENTATION SERVICES

A. Design and Scope of Test

In August 1967 DDC began planning to test the validity of the Selective Documentation Services concept. The result was a plan for a feasibility test originally known to the user organizations which participated in it as the Automatic Services and Products (ASP) test.

The following three types of Selective Announcement Services, mentioned in the preceding section, were designed and developed for use in testing the concept of automatic announcement dissemination:

Automatic Bibliographies

These would be bound, computer-printed listings of all report citations (in AD number sequence) falling within the parameters of the user's interest profile. Single copies of one or more of these custom bibliographies would be supplied semimonthly (on a TAB-cycle basis). If needed, copies could be reproduced by the user library, in compliance with applicable security regulations, and distributed within the organization. (It should be pointed out here that, unlike other DDC announcement products, since these bibliographies were to be custom-prepared and bound they could be sufficiently controlled to permit inclusion of classified citations.)

Being the most selective of the automatic announcement services the Automatic Bibliographies were considered capable of becoming acceptable substitutes for TAB, particularly for small user organizations, users concerned with relatively few fields of RDT&E, and users working almost exclusively on classified contracts. Conversely, they would be of little use to either large organizations or those with broad interests, with the notable exception of their potential value to work on continuing, highly specialized or classified projects.

Figure 1 is a sample unclassified citation from an Automatic Bibliography.

Group Announcement Bulletins

DDC's TAB has always been organized according to the DoD-modified COSATI Subject Categories—with the 22 COSATI categories (Fields) providing the major subject breakdown and the 188 COSATI subject headings (Groups and Subgroups) providing the minor subject breakdown. The Group Announcement Bulletins would be nothing more than unbound publications (most would be either a single loose-leaf page or a couple of loose-leaf pages fastened together), each containing all of the citations appearing

Figure 1

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AD-822 880 1/3
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN
[redacted]. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
NOV 67 27P MYERS,A. W. ;
REPT. NO. AEDC-TR-67-224
CONTRACT: AF 40(600)-1200
PROJ: AF-6065, ARO-VT0626
TASK: 606507

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DESCRIPTORS: ([redacted]), [redacted]
[redacted] (U)

THE DRAG AND STABILITY CHARACTERISTICS [redacted]. (AUTHOR) (U)

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under a single Group (hence the name) or Subgroup heading in the corresponding TAB issue. DDC would print, sort, and ship the GABs in accordance with previously established user interest profiles specifying which GABs, and how many copies of each, were desired by each user. The user could then distribute the GAB copies within the organization according to individual users' needs.

While the GAB service would not be nearly as selective as the Automatic Bibliography service, it should be far more versatile. With 188 different subject categories, selectivity should be sufficient for most user organizations, yet profile structuring and production and handling problems would be far less than for custom-prepared announcements.

A sample GAB is reproduced in figure 2.

Automatic Magnetic Tapes

One of the biggest problems facing organizational users of scientific and technical information is the proliferation of information sources and services. With over 550 different information services presently operating in the United States, the same report is usually indexed and announced by at least two and often as many as five of them. This frequently provides users with as much confusion as help, since they must find some way to make sure that their scientists and engineers are made aware of all potentially useful reports yet they cannot afford to have them read each announcement twice or to request the same report from several different sources.

The only feasible way for high-volume users of documentation services to cope with this problem of redundancy at the present time is to operate their own internal SDI service. But this is also a very expensive proposition as automatic data processing capabilities are essential and a considerable manual effort is still required just to get the desired contents of the various announcement publications into a machinable form. Because it would provide announcements of new DDC accessions, in user-selected subject categories and in machinable form, the AMTD service should be ideally suited to those high-volume users operating their own internal SDI system.

The AMTD service would provide computer-produced magnetic tapes containing all of the report citations from one TAB which fall within the parameters of the user's interest profile. While the profiles to be used in selecting the report citations would be the same type as the ones used in the GAB selection (COSATI Fields/Groups/Subgroups profiles), the format of the resulting magnetic tape would be the same as that of the Automatic Bibliographies, with citations in AD Number sequence.

Through the AMTD service each participating user organization would receive a new tape each TAB cycle. This tape could then be employed, either alone or in conjunction with similar tapes from other organizations,

DDC

Group Announcement Bulletin

FIELD 8/GROUP 3 - DYNAMIC OCEANOGRAPHY

Issue No. 69-1

AD-842 534 8/3 4/2
PACIFIC MISSILE RANGE POINT MUGU CALIF
[redacted].
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
MAY 62 52P L. BANKSTONIN, FAST)
REPT. NO. PMR-TA-62-6

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DESCRIPTORS: (*[redacted],
[redacted]

ON CERTAIN DAYS IN [redacted]. (AUTHOR)

AD-842 806 11/10 8/3
NAVAL OCEANOGRAPHIC OFFICE WASHINGTON D C
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DESCRIPTIVE NOTE: INFORMAL REPT. 9 MAR-1 APR 67,
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Figure 2

as the basis of the organization's own internal SDI system. Interest profiles could then be developed for individual users or small groups of users and used to extract citations from the tape for inclusion in computer-prepared, current-awareness bibliographies or special announcement bulletins.

Once the preparation of announcements was completed, the current tape could be merged into a master file built up from previous tapes. This master file could then be used, much the same as at DDC, in preparing retrospective bibliography searches.

All three of the automatic announcement services would include only announcements of classified and unclassified, limited reports. Announcements of unclassified, unlimited reports would be excluded to eliminate redundancy with the Clearinghouse for Federal Scientific and Technical Information (now part of the National Technical Information Services) which processes and announces all unclassified, unlimited DDC accessions. The unclassified, unlimited reports themselves were to be excluded from the ADD service for much the same reason.

In addition to the unclassified, unlimited reports several other categories of reports would be excluded from the ADD service: reports bearing security-attached release limitations such as Restricted Data or Formerly Restricted Data would not be sent automatically; reports bearing distribution limitation statement Number 5, "Controlled: all requests to (controlling DoD office)," could not be mailed automatically; reports bearing other distribution limitation statements limiting their release (without prior approval) to only certain categories of users could not be sent automatically to any user outside the particular category designated; and, of course, classified reports could not be sent to users lacking the applicable facility clearance and "need-to-know."

Automatic Documents

Users' document-needs profiles would be constructed, and upon completion of each DDC semimonthly input processing cycle, microfiche copies of all reports falling within the parameters of the profile would be produced and sent to the user. To facilitate profile construction, processing, and interfacing of the automatic services by the users, most of the profiles would be the same type as the ones used in the GAB and AMTD services (COSATI Fields/Groups/Subgroups profiles). A very limited number of search term profiles would also be tested, however, to determine whether that much higher degree of specificity could possibly be applied to automatic document distribution.

The users participating in the test would be permitted to select any combination of automatic services that they felt their organization could effectively and efficiently use. During the test DDC would evaluate

the following factors for each of the automatic services and compare them with those for each of the equivalent demand services:

1. Effectiveness and general user acceptability of service

2. Timeliness of service

3. Usage volumes

4. User's handling work loads and costs

5. DDC's production work loads and costs

B. Selection and Orientation of Test Participants

At the time the test was planned there were approximately 6,000 organizations registered with DDC as users, but only about 4,000 of them requested any reports in a given year. A one percent sample of this active user community (considered to be all DDC could cope with in a test of this magnitude) would provide sufficient reliability, so DDC set out to select 40 users who agreed to participate in the test. Although selection criteria such as organization size and availability of microfiche equipment were considered, the participants were selected largely on the basis of organization type and report request rate. With respect to these two factors, the final selection produced a rather well-balanced test community comprised of 21 DoD organizations (seven from each of the three military services) and 19 DoD contractors. Ten of those selected were high-volume users, 18 were medium-volume users, and 12 were low-volume users. The distribution by organization type was fairly close to that of the total DDC user population, but the distribution by report request rate was heavily biased toward the medium-volume and high-volume users as these were the types of users for which the services were designed. (See figures 3 and 4.)

During October 1967, the test program was presented to the selected users in a series of workshops held at DDC. These workshops provided an opportunity for discussing the test plans and refining them. The profiles required for the various mixes of test services desired by the users were also developed during these workshops (see appendix A).

The test participants were asked to orient their local personnel as to the objectives of the program and the procedures to be followed during the test, with some emphasis being placed on orientation toward the use of microfiche and microfiche equipment.

DDC USER POPULATION MATRIX

	DoD ORGANIZATIONS			DoD CONTRACTORS		LINE TOTALS
	AIR FORCE	ARMY	NAVY	INDUSTRIAL	EDUCATIONAL	
(1) Numbers of "large" or very frequent users, responsible for one-third of all document requests.	4	6	2	45	8	65
(2) Numbers of "medium-sized" or frequent users, responsible for another one-third of all document requests.	32	31	36	195	54	348
(3) Numbers of "small" or infrequent users, responsible for the remaining one-third of all document requests.	762	539	453	1,563	697	4,014
Subcolumn Totals	798	576	491	1,803	759	4,427
Column Totals	1,865			2,562		4,427

Figure 3

DDC TEST POPULATION MATRIX

	DoD ORGANIZATIONS			DoD CONTRACTORS		LINE TOTALS
	AIR FORCE	ARMY	NAVY	INDUSTRIAL	EDUCATIONAL	
(1) Numbers of "large" or very frequent users, responsible for one-third of all document requests.	1	0	1	7	1	10
(2) Numbers of "medium-sized" or frequent users, responsible for another one-third of all document requests.	2	3	5	88	0	18
(3) Numbers of "small" or infrequent users, responsible for the remaining one-third of all document requests.	4	4	1	1	2	12
Subcolumn Totals	7	7	7	16	3	40
Column Totals	21			19		40

Figure 4

V. TEST OPERATIONS

Following the orientation workshops DDC had to complete the many systems improvisations (see appendixes B through G) required for the test and to acquire the additional production capabilities required for the test. Wherever possible, existing computer programs and established work flow patterns were used, modifying them only to the extent necessary to make the test possible.

A. Selective Announcement Services

Since two of the three types of selective announcements being tested would be completely new DDC products and all three types would be produced in-house, most of the development effort necessary was in this area.

Automatic Bibliographies

The system used for the production of the Automatic Bibliographies was the same one used to produce DDC demand bibliographies, with four minor changes (see appendix C).

1. The custom-prepared search patterns used to select items for demand bibliographies were replaced by user interest profiles, which were run each TAB cycle.

2. Instead of searching the entire DDC collection, as is done for demand bibliographies, only the latest TAB cycle's accessions were searched, with the process being repeated every TAB cycle.

3. Each Automatic Bibliography produced was bound in a special cover with a continuing title and search control number for ease in identification by the user.

4. In the event a user's interest profile produced no "matches" in accessions for a given TAB cycle, a copy of the profile bearing the notation, "NONE OF THE REPORTS ANNOUNCED IN TAB ISSUE _____ MEET THE REQUIREMENTS OF THIS PROFILE," was sent.

Being computer-printed, the Automatic Bibliographies required only bursting and binding to prepare them for shipment. As a result, they were usually ready for shipment 2-3 weeks in advance of the corresponding issue of TAB.

Because the name or symbol of the recipient was printed directly on each Automatic Bibliography, they could be routed directly to the end users, thus reducing the need for local library handling.

Group Announcement Bulletins

The production and dissemination of GAB's were more of a problem. Since DDC had never offered a comparable product, a completely new system for producing them had to be developed and implemented within a few months. The resulting system was therefore rather unsophisticated. (See appendix D.)

In the normal process of producing each issue of TAB, a magnetic tape of unclassified report citations for all of the AD Numbers to appear in it (sorted into field/group sequence) was prepared. This tape was chosen as the stepping-off point for a system to produce the GAB's. Using this tape, the production of GAB's then proceeded as follows:

1. The tape was copied, eliminating the citations to unclassified/unlimited reports.

2. The computer was then used to check the tape (containing unclassified citations to all of the unclassified/limited and classified reports) and list: (a) all of the subject groups to which no accessions had been assigned, and (b) all of the subject fields in which there had been accessions not assigned to any particular subject group. (These are document citations assigned to a subject field but no particular subject within it—a procedure employed when designation of the specific subject category, added to the other descriptive data on the citation, would place the entry in a sensitive category and preclude its inclusion in the GAB.)

3. Using these listings and the column totals from the master GAB production and distribution chart (a tabular compilation of all of the GAB users' field/group profiles) depicted in figure 5, a GAB production listing like that in figure 6 was prepared.

4. While the GAB production listing was being prepared, the computer would be printing out a listing of all of the AD Numbers included on the tape and all of the subject categories to which each had been assigned, hence, all of the GAB's in which a given AD Number would appear. This printout was then used to prepare the AD: Field/Group Index, a sample page of which appears in figure 7.

5. Shortly after the AD: Field/Group Index listing was printed out, all of the citations on the tape from the second step were printed out two-up (two citations per page) in a master GAB printout.

6. Using acetate overlays to provide headers and distribution statements on the first page of each GAB, each page of the printout was then photographically reduced and offset plates prepared. For those Groups to which no accessions had been assigned, offset plates containing the GAB header and the statement, "NO REPORTS ANNOUNCED THIS ISSUE," were prepared (see figure 8).

Figure 5

GAB PRODUCTION AND DISTRIBUTION CHART

USER NUMBER	GAB COPIES										LINE TOTALS
	FIELD 01					FIELD 22					
	GENERAL	GROUP Ø1	GROUP Ø2	GROUP Ø3	GROUP Ø4	GENERAL	GROUP Ø1	GROUP Ø2	GROUP Ø3	GROUP Ø4	
1	2			2		2	2	2			134
2											135
3	1	1		1			1	1	1	1	644
4	2		2			3	3	2			138
5	3	3	3	3	3			3	3		255
6		1	1	1	1	5			5		110
7						2	2	3	2	2	60
8		5	5	5	5	1	1			1	201
31	1	1	1							2	92
32	2			2							105
33	2					5					158
34	10	10	10	10	10	6	6	6	6	6	322
35						3	3	3	3	3	280
36	2		2								110
37	8	7	8	7	5			4			100
38	6	6	5					2			148
39	1	1					1				601
40	20	20	6	20	6	6	6	20	20	20	950
FIELD/GROUP TOTALS	181	158	174	181	145	162	151	162	105	98	32,482

The number in each cell is the number of copies of each issue of the particular GAB indicated by the column that the user on that line requires.

GROUP ANNOUNCEMENT BULLETIN COPIES

Figure 6

ISSUE NO. 68-6

01-01	203
02	195
03	210
04	181
05	116
02-01 *	9
02	8
03 *	2
04 *	1
05 *	5
06 *	29
03-01	89
02	95
03	86
04-01	171
02	151
05-01	222
02	196
03	130
04	121
05	205
06 *	91
07 *	113
08	191
09	195
10	182
11	98
06-01	69
02	128
03	59
04 *	95
05	56
06	104
07 *	106
08	40
09 *	46
10 *	75
11 *	97
12	48
13	49
14 *	46
15	53
16	118
17	118
18	107
19	96
20	75
21	189

07-01 *	180
02	183
03	189
04	201
05 *	169
08-01	48
02	108
03	110
04 *	87
05	126
06	116
07	118
08	49
09 *	46
10	47
11	92
12	80
13	81
14	114
09-01	285
02	308
03	309
04	280
05	269
06	268
10-01	187
02	216
03	203
11-01	324
02	264
03	285
04	275
05	219
06	292
07	229
08	226
09	342
10	257
11 *	215
12 *	192
12-01	292
02	273
13-01	161
02	108
03	101
04	187
05 *	148

13-06	142
07	131
08	178
09	154
10	128
10.1	120
11	131
12	178
13	151
14-01	255
02	274
03	209
04	242
05	166
15-01	198
02	242
03	259
03.1	253
04	221
05	209
06	198
07	236
16-01	220
02	236
03	291
04	272
04.1	267
04.2	266
04.3 *	222
17-01	244
02	206
02.1	214
03	202
04	287
05	277
06	236
07	226
08	278
09	273
10	180
18-01 *	93
02 *	119
03	144
04	135
05 *	75
06	155
07 *	109
08	121

18-09 *	49
10 *	58
11 *	46
12 *	43
13	45
14 *	60
19-01	320
02	243
03	215
04	290
05	227
06	229
07	288
08	150
20-01	203
02	154
03	206
04	245
05	259
06	228
07	126
08	150
09	164
10	163
11	197
12	194
13	217
14	209
21-01 *	141
02	157
03 *	98
04 *	155
05	138
06 *	106
07	120
08	186
08.1	200
08.2	213
09	212
09.1	207
09.2	194
22-01	141
02	159
03	140
04 *	124
	31,220

FIELD GAB'S	
13	256
15	305
16	316
17	323
21	253
	1,453
	31,220
	32,673

* = No Issue

Figure 7

AD - FIELD/GROUP INDEX

385 033L	17/4
385 034L	17/4
385 035L	15/7
385 036L	17
385 037L	15/7
385 038L	15/7
385 039L	17/6
385 040	19/8
385 041L	19/8
385 042L	17
385 043L	6/20
385 044L	17/2.1
385 045L	7/3, 6/5
385 046	17/1
385 047L	21/9
385 048	21/9.2, 21/8.2, 7/3
385 049L	21/9.1
385 050L	16/4.2
385 051	17/4
385 052L	17/7, 17/9
385 053L	19/4
385 054L	20/1
385 055	21
385 056	22/2, 13/12
385 057	22/2, 13/12
385 058	22/2, 13/12
385 059	22/2, 13/12
385 060L	19/1
385 061L	22/2
385 062	15/7
385 063	15/7
385 064	9/2, 18/6
385 065	15/2
385 066	16/4
385 067L	22/2, 13/12
385 068L	17
385 069	17/8
385 070L	17/9
385 071L	17/9
385 072	17/4
385 073	9/5
385 074	16/4.1, 1/3
385 075	21/4
385 076	15/2, 15/3
385 077	15
385 078L	1/3, 20/4
385 079	21
385 080L	18/3, 20/4
385 081L	7/4
385 082L	22/4, 21/2
385 083L	1/3
385 084	21/8.2, 11/1
385 085	21/8.1, 21/2
385 086	5/9
385 087L	1/3

AD - FIELD/GROUP INDEX

385 088L	15/6
385 089L	16/4.2
385 090L	16/4.2, 17/7
385 091	1/3, 20/11
385 092	17
385 093L	1/3, 15/4
385 094	15/7
385 095	15/7
385 096	15/7
385 097	15/7
385 098	15/7
385 099	15/7
385 100	15
385 101	15
385 102	15
385 103	15/7
385 104	15/7
385 105	15/7
385 106	15/7
385 107	15/7
385 108	15/7
385 109	15/7
385 110	15/7
385 111	15/7
385 112	15/7
385 113	15/7
385 114	15/7
385 115	15/7
385 116	15/7
385 117	15/7
385 118	15/7
385 119	15/7
385 120	15/7
385 121	15/7
385 122	15/7
385 123	15/7
385 124	15/7
385 125	15/7
385 126	15/7
385 127	19/2, 19/4
385 128	19/2, 19/4
385 129L	14/5
385 130L	1/3, 20/4
385 131	5/10
385 132L	13/10
385 133L	19/6
385 134L	1/3, 15/4
385 135L	15/7, 12/2
385 136L	9/6
385 137L	18/3
385 138L	17/7
385 139L	17/4, 1/3
385 140	15/1
385 141L	21/5
385 142L	18/3, 18/8

DDC

Group Announcement Bulletin

FIELD 10 - ENERGY CONVERSION (Non-propulsive)

Issue No. 69-1

NO REPORTS ANNOUNCED THIS ISSUE.

Figure 8

7. The required number of copies of each GAB, as indicated on the GAB production listing prepared in the third step, was then printed.

8. After printing, all of the pages were drilled to fit three-hole binders and those GABs of more than a single page were stapled.

9. The completed GABs were then sorted, according to the GAB distribution chart (figure 5), into individual user shipments.

10. Copies of (a) a pamphlet containing general information for users of GABs, (b) a bulletin of changes in document classification distribution, and availability, (c) an AD: Field/Group Index, and (d) the TAB Indexes were added to each user's GAB shipment and the entire shipment was wrapped and mailed.

Because of the shortcuts taken in the production of GABs and the small number of users in the test program, DDC could distribute the GABs to participating user libraries 1-2 weeks in advance of the corresponding issue of TAB. When the libraries received their GAB shipments, they had to sort them according to individual or branch profiles and route them to the specific users concerned.

Automatic Magnetic Tapes

Excepting the medium used, the Automatic Magnetic Tapes were nearly identical to the GABs. The approach to their production was also quite similar; but because of the machine production possible with tapes, fewer production steps were required.

While the Automatic Magnetic Tape Dissemination (AMTD) experiment was initiated in January of 1968, progress was much slower than with the other experimental services in the ASP test program. There were many reasons for this, but among the most prominent were:

a. The AMTD test community was much smaller because the potential user community (DDC users with large active technical libraries and substantial EDP capabilities) was quite limited and participation was rather expensive.

b. The test users had to develop the capability (in terms of computer programs and an in-house SDI program) to use the service.

c. DDC's magnetic tape production capacity was severely limited at the time.

Early in 1968 the eight users participating in the experiment at that time were each sent a test tape for use in developing their own processing programs and internal SDI systems. These test tapes were all identical in content, each containing all of the unclassified citations to unclassified/limited and classified reports announced in TAB Issue 68-01. In other words, they were copies of the magnetic tape used to produce the master GAB printout.

As users acquired the capability to use the AMTD service, they submitted a blank reel of magnetic tape and began receiving AMTD service regularly. Since the users developed this capability at their own rate, they began receiving the service at different times.

The production of the Automatic Magnetic Tapes (charted in appendix E) then proceeded as follows each TAB cycle:

1. The user profile tape was validated against the Master Users Address and Contract File to insure that the user codes, contract numbers and facility clearances were current and that the selected COSATI subject categories (Fields/Groups) were compatible with the recorded Field of Interest Registers (FOIRs). (User interest profiles were identified by a unique search control number assigned by DDC.)

2. A search was performed against the searchable items from the latest TAB cycle's accessions for each validated interest profile. The accession number was output for those items with a "matching" COSATI subject category.

3. The selected new accession numbers were sequenced in descending order and matched against the citations within the TAB cycle.

4. The selected citations were then sequenced by search control number to collect all "matches" by user code.

5. The sequenced citations were formatted and sensitive fields suppressed to create an unclassified file. The data was then recorded on the user's supplied tape.

6. The citations selected for each user (in AD sequence) were then recorded on a tape supplied by that user.

7. The recorded tape was then labeled and shipped directly to the user library.

Upon receipt of the Automatic Magnetic Tape the user library ran the interest profiles of their personnel against the tape and compiled SDI bulletins. In this way, their scientists and engineers received selected announcements and did not have to circulate and scan the TAB.

B. Automatic Document Distribution

Like the GAB and AMTD service the ADD service was something completely new to DDC and a complete system for providing it had to be developed. To facilitate the development of the system and the coordinated use of these services, the ADD system was designed, insofar as possible, along the lines of DDC's other selective documentation service systems.

Once the test participants' ADD-service profiles (listings of all of the COSATI subject categories from which the users wanted the majority of documents announced) had been established, the following processes (charted in appendix G) were repeated each TAB cycle:

1. AD numbers of potential interest to the users were selected by running their interest profiles against a random-access file containing all of the searchable items (including the COSATI subject category assignments) from the new accessions.

2. The AD numbers selected for each user were then validated against that user's facility clearance and registered contracts. Those selections failing to meet this "need-to-know" validation were then dropped, while those passing it were written on a tape which listed, for each new accession, the user codes of all users for whom it had been selected and validated. This step is actually the same process used in DDC's request processing system.

3. This tape of validated selections was then used to prepare the microfiche production list (a listing of the AD numbers and the number of microfiche copies of each required) and report shipment notices.

4. The contents of this tape were then sorted into user sequence and used to prepare the microfiche distribution list, a listing of the user codes and all of the validated AD numbers selected for each of them.

5. The numbers of microfiche copies specified by the production list were then reproduced and sorted into individual user shipments according to the distribution listing.

6. The control forms necessary for each shipment were then prepared and the microfiche shipped to the participating users.

7. As soon as the microfiche had been shipped, the report shipment notices were completed, dated, and used to update the master file of reports usage history (the file from which most of the data necessary for a statistical analysis of the program would be taken).

Using the system just described, the test participants were provided with full-text copies of most of the reports they needed withi 1-2 weeks after the publication of the TAB. Most user libraries, on receipt of their microfiche shipments, filed them by AD number and filled

their users' requests from them when possible. Several different methods were employed by user libraries in filling these requests: some asked personnel to come to the library and read the file copy, making prints of the pages needed; some lent the file copy; some made a duplicate microfiche; some blew back a hard copy; some let the requester use the file copy and ordered another one from DDC; and many used several of these approaches.

C. Evaluation Mechanisms

Several different media were provided to the users for use in relaying feedback to DDC and evaluating the ASP test. After the users had established their initial profiles, each of them was sent a confirmation sheet for verification of their service parameters and profile(s). These sheets were checked, corrected, or adjusted by the users and returned to DDC.

A user feedback sheet was developed and a copy was sent along with each shipment of ASP products. These sheets, to be completed by the user and returned to DDC, provided a ready means for making profile adjustments or noting any problems connected with the use of the ASP products. The information from these sheets--date of receipt, conditions of shipments, changes in profiles, and suggestions for improvements facilitated early evaluation of the services.

This feedback capability was even more important to the conduct of the test than to its evaluation as it permitted DDC to initiate corrective actions where necessary. Since the participants' inexperience in these new programs made it difficult for them to predetermine their requirements, changes in profiles and services were permitted throughout the test. This resulted in an ever-changing operational environment at DDC--2,048 profile changes had been made by the time the first six TAB cycles of the test had been completed--but it helped to improve the effectiveness of the test program and make possible a more realistic evaluation.

Statistics on production, volumes, response times, and service costs were compiled by DDC throughout the test, while test participants were asked to compile statistics on usage rates, internal distribution times, and service costs.

A test evaluation form was drafted early in the test and distributed to each of the participants for comments and suggestions for revision. The final evaluation form, incorporating some of the users suggestions, was then distributed so that the users could complete it by the end of the test.

In addition to these written evaluations a summary workshop to be held after completion of the test was planned. The open discussions possible at such a workshop would provide additional subjective information which would be incorporated in the analysis of the experimental program.

VI. PRELIMINARY TEST EVALUATION

A. User Feedback

The first bits of information upon which any evaluation of the test services could be based came from the user feedback during the test.

Many of the feedback sheets, of course, requested profile changes, but some of them commented on the services. In order of frequency, the following were the most frequent types of comments:

1. Concerning the Automatic Bibliographies:

a. "Several of the faculty members who received Group Bibliographies (GABs) rather than bibliographies based on descriptors would prefer the narrower-based descriptor listings (Automatic Bibliographies)."

b. In Automatic Bibliography Number ____ "subject is of secondary interest in too many reports."

2. Regarding the GABs:

a. Printing quality was poor.

b. "(GABs) ___ and ____ were omitted from our shipment."

c. Issue ____ GABs were received late.

3. The only comments received on AMTD were those concerned with shipment delays.

4. Pertaining to ADD service:

a. Received Issue ___ microfiche two weeks late.

b. Too many microfiche for our library to handle.

c. Classified document receipt improperly filled out or missing.

d. Comments on quality ranged from "poor" through "adequate" to "excellent."

e. "Missing AD Numbers ___, ___, ____, and _____."

Although most of these comments, as mentioned before, were important to the conduct of the test and helped to identify specific problem areas and potential product improvements, they provided very little upon which to base even a preliminary evaluation of the feasibility of the overall concepts or services being tested. In this regard the statistics compiled by DDC, and in a few cases the test participants, were much more valuable.

B. User Evaluation

Of the 40 users participating in the test, 35 returned completed test evaluation forms to DDC. These completed forms were used as the primary basis for determining the users' analyses (see appendix H). The major results of the users' analyses are summarized briefly below:

General

a. Automatic services were preferable to demand service.

b. The length of time allotted prior to test implementation was inadequate for local user orientation or acquisition of microfiche equipment.

c. The three-month test was too short for users to make a comprehensive evaluation. (Several users, for example, were able to implement the program with only a small segment of their organization and were therefore unable to project the impact of such a program on their organization.)

d. The vast majority of users requested continuation of the test services.

Automatic Bibliographies

a. Three users (with a total of 16 Automatic Bibliography profiles) received this service during the test, and each used them as an adjunct to the GAB service.

b. Only one of the 16 Automatic Bibliography profiles required a major change during the test period.

Group Announcement Bulletins

a. Use of the COSATI subject categories for profiling proved adequate for two thirds of the users.

b. GABs were generally available to individual users two days after receipt by their library.

c. The user's handling costs were generally higher for GABs than for TABs.

d. GABs were, on the whole, acceptable as an announcement medium, but not as a reference tool.

e. TABs were preferred to GABs, overall.

Automatic Magnetic Tapes

Because of the aforementioned delay in implementation of this test service none of the users receiving it had had sufficient experience with it to evaluate it.

Automatic Documents

a. Use of COSATI subject category profiles for document selection was deemed adequate by about two thirds of the test participants.

b. For the large number of test users receiving both GAB and ADD service, the time span between the receipt of their GABs and the corresponding full-text documents (on microfiche) varied from 1-29 calendar days (see figure 9). (This factor unfavorably influenced the overall user reaction.)

c. The average time required to satisfy local users' requests for full-text copies averaged two calendar days under the automatic services program as opposed to ten calendar days under the conventional demand request processing.

d. The reaction to microfiche in lieu of hard copy was marginally favorable, although hard copy was still preferred by the scientists and engineers.

The test participants' responses via the user feedback sheets and evaluation forms, and their comments during a summary workshop held at DDC upon the completion of the ASP test, clearly indicated a general acceptance of the concept of automatic services.

C. Summary Evaluation

The evaluation of the test was based on two major considerations: (a) validating the feasibility of the concept, and (b) determining the economic and operational considerations involved.

Feasibility Validation

1. Selective Announcement Services

Based on the test results, the COSATI Subject Categories appeared from a user's point of view to provide a sound basis for profile structuring. Since all DDC users are accustomed to this categorization scheme, they could translate their requirements into those terms with little assistance from DDC. In use, profiles of COSATI Subject Categories seemed to offer a more definitive mechanism than TAB for local distribution, without the loss of peripheral vision which might be experienced with descriptor based profiles.

a. Automatic Bibliographies

During the test only three users received these products, and each of them also received GABs. Those three participants used the bibliographies primarily to accommodate specific needs of small groups of users within their organizations.

GAB vs. ADD SHIPMENT DATES

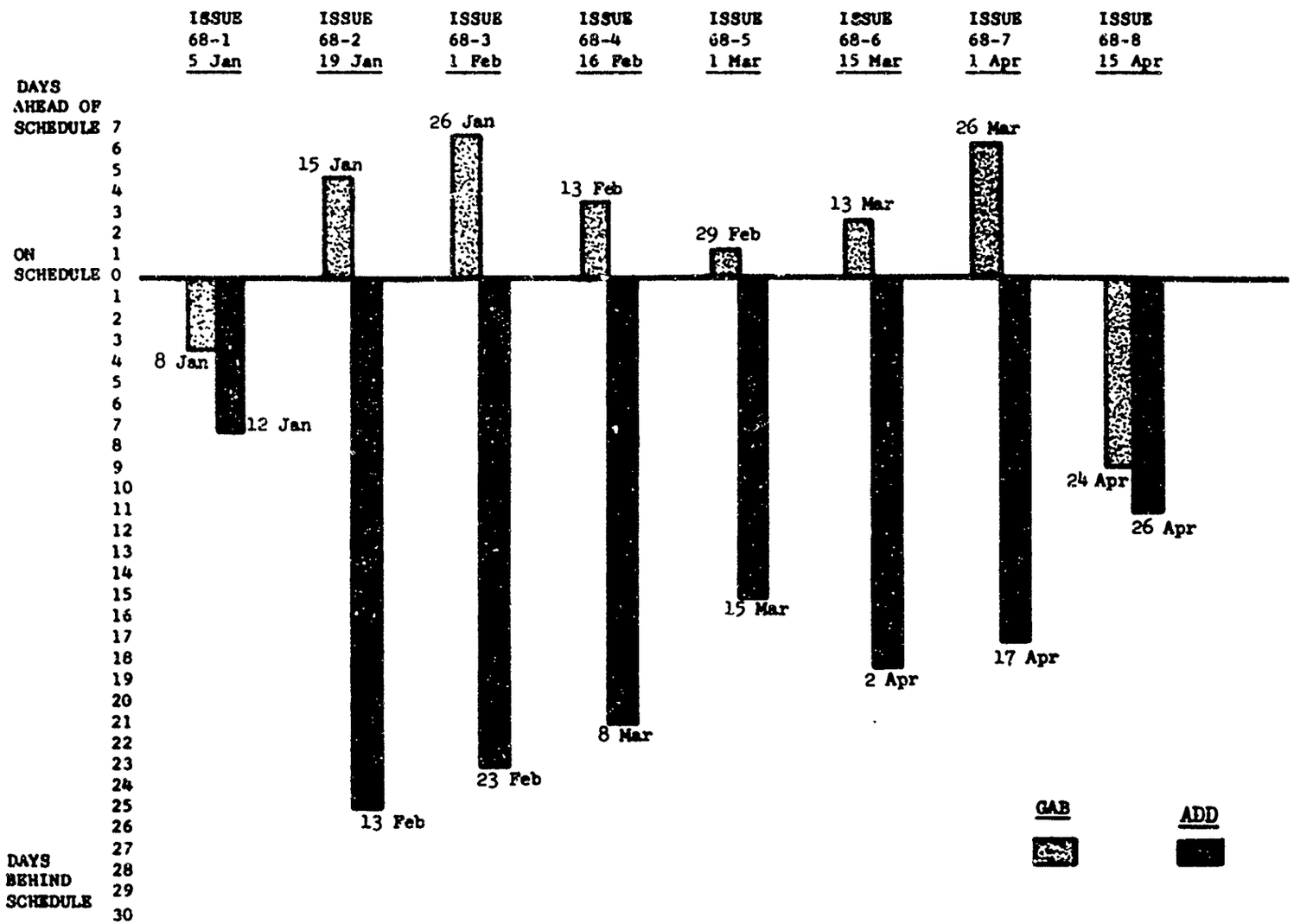


Figure 9

All three users found the Automatic Bibliographies highly acceptable largely for two reasons:

1. They provided users with more personalized and more specific products than the TAB or the GAB possibly could.

2. They required very little effort on the part of the user's local library, as the profiles required no modification subsequent to their initial minor adjustment and they could be routed directly to the end users.

But, these same two factors, which made the bibliographies so highly acceptable to the users, made them infeasible to DDC. The cost of producing and distributing such highly customized announcement bulletins, in the numbers which would be required for operational service, would be prohibitive. Furthermore, since most of the production cost was in computer time, it was a critical cost with little prospect for reduction.

b. Group Announcement Bulletins

The analyses of the feasibility of this product as a replacement for TAB revealed that DDC's TAB serves in two important capacities: (1) as an announcement medium, and (2) as a central reference tool. Therefore, for GAB service to replace the TAB it must perform effectively in both capacities.

Test findings indicated that while GAB service was more timely and effective than TAB for local announcement to scientists and engineers, it did not perform as well as TAB as a central reference tool.

c. Automatic Magnetic Tapes

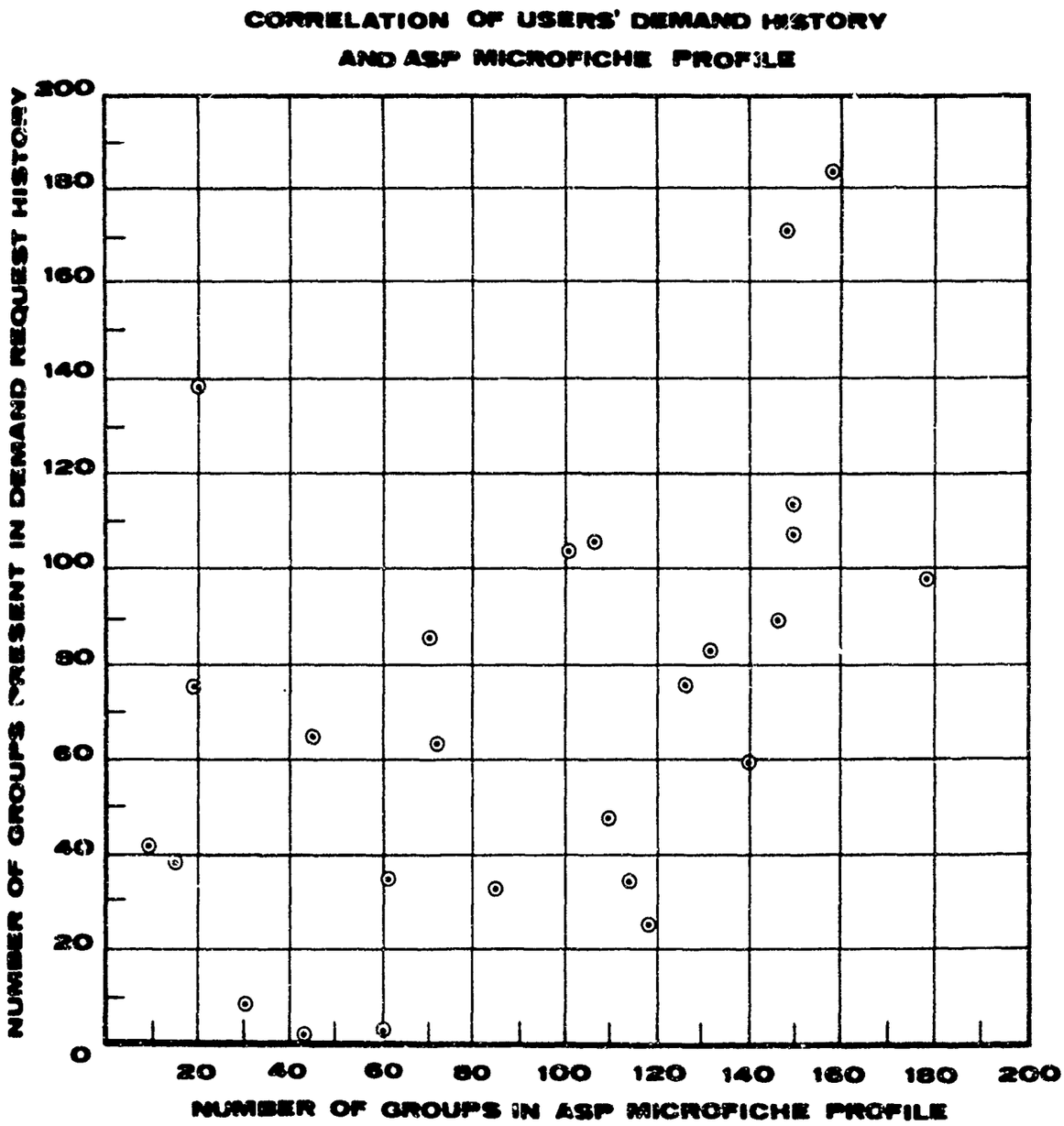
This test service was initiated by providing interested users with experimental tapes. Differences in ADP equipment and lack of standards for tape distribution required experimentation by each organization's ADP specialists with the data provided by DDC to make it compatible with their ADP equipment and their own applications programs. As a result, by the time the test participants began receiving selective announcements via magnetic tape on a recurring basis, the test was drawing to a close.

This service concept is apparently feasible, but still requires testing and evaluation.

2. Automatic Document Distribution

A comparison of the demand request history with the ASP microfiche profile (figure 10) revealed that of the 34 test participants who received

FIGURE 10


CORRELATION OF USERS' DEMAND HISTORY
AND ASP MICROFICHE PROFILE
NUMBER OF GROUPS PRESENT IN DEMAND REQUEST HISTORY
0
20
40
60
80
100
120
140
160
180
200
NUMBER OF GROUPS IN ASP MICROFICHE PROFILE

microfiche during the study the profiles for 16 were more extensive under ADD than regular service provided under the Field-of-Interest Register. If this trend were valid for the total DDC user population, considerations of both relevancy and economics would require that a more definitive profile base be established. This subject is discussed further in the next section on Economic and Operational Considerations.

A major consideration in evaluating the feasibility of automatic dissemination of microfiche was user acceptance. Although there was not an overwhelming acceptance of microfiche in lieu of hard copy, half of the users who preferred hard copy gave as their reason the lack of sufficient microfiche viewing equipment. (Six of the 12 users who were not in favor of microfiche had an average of one reader for every 400-600 users; the 15 users favoring microfiche had an average of one reader for every 106 users.)

One of the influencing factors on the availability of equipment was the fact that many users were not familiar with the microfiche reader/reader-printer equipment available on the commercial market. DDC made an attempt to supply such information before and during the test. Even so, users experienced difficulty in obtaining equipment in time to use it during the test.

User acceptance was also affected by the late delivery of microfiche in comparison with delivery of GABs, so they were unable to test the expected advantage of having full text locally available to the scientists and engineers at the same time that they were notified of a document's existence. Once the microfiche were received, however, they were distributed locally within approximately two calendar days.

Other factors bearing significantly on the feasibility of automatic distribution of microfiche are: (a) the difficulties in handling classified microfiche, (b) the form of microfiche (positive or negative) provided, and (c) the impact of charges for hard copy documents. These factors had not been tested to determine their overall effect on this program.

Economic and Operational Considerations

1. Selective Announcement Services

DDC operational considerations included the necessity for revisions to the computer programs used in processing input data for the selection of citations to appear in each subject group. Printing, distribution, and handling costs were the other factors to be determined after refinements were made to the GABs. Successful completion of the processes tested would be required before true costs could be determined.

Unless the printing, distribution, and handling costs could be reduced significantly from what they were during the test, the GAB service would have to be rated as economically impractical.

2. Automatic Document Distribution

During the test period, 170,000 microfiche (for distribution to 34 test participants) were produced on contract at a cost of $.09 per sheet. These production costs could not be extrapolated to the total DDC user population, however, until the number of DDC users desiring the service was determined.

Another factor in the determination of costs for microfiche production was the user profile. As indicated in the User Feedback portion of this report, there were significant changes to the user profiles. Test experience indicated that the scope of subject profiles upon which microfiche distribution was based lay between: (1) the scope of the user's authorized need-to-know, and (2) the scope of report demand experience (compare figures 10 and 11). Additional information would be needed to establish a firm planning factor.

In addition, implementation of the user charge program could spur more user organizations to acquire microfiche reader/reader-printer equipment.

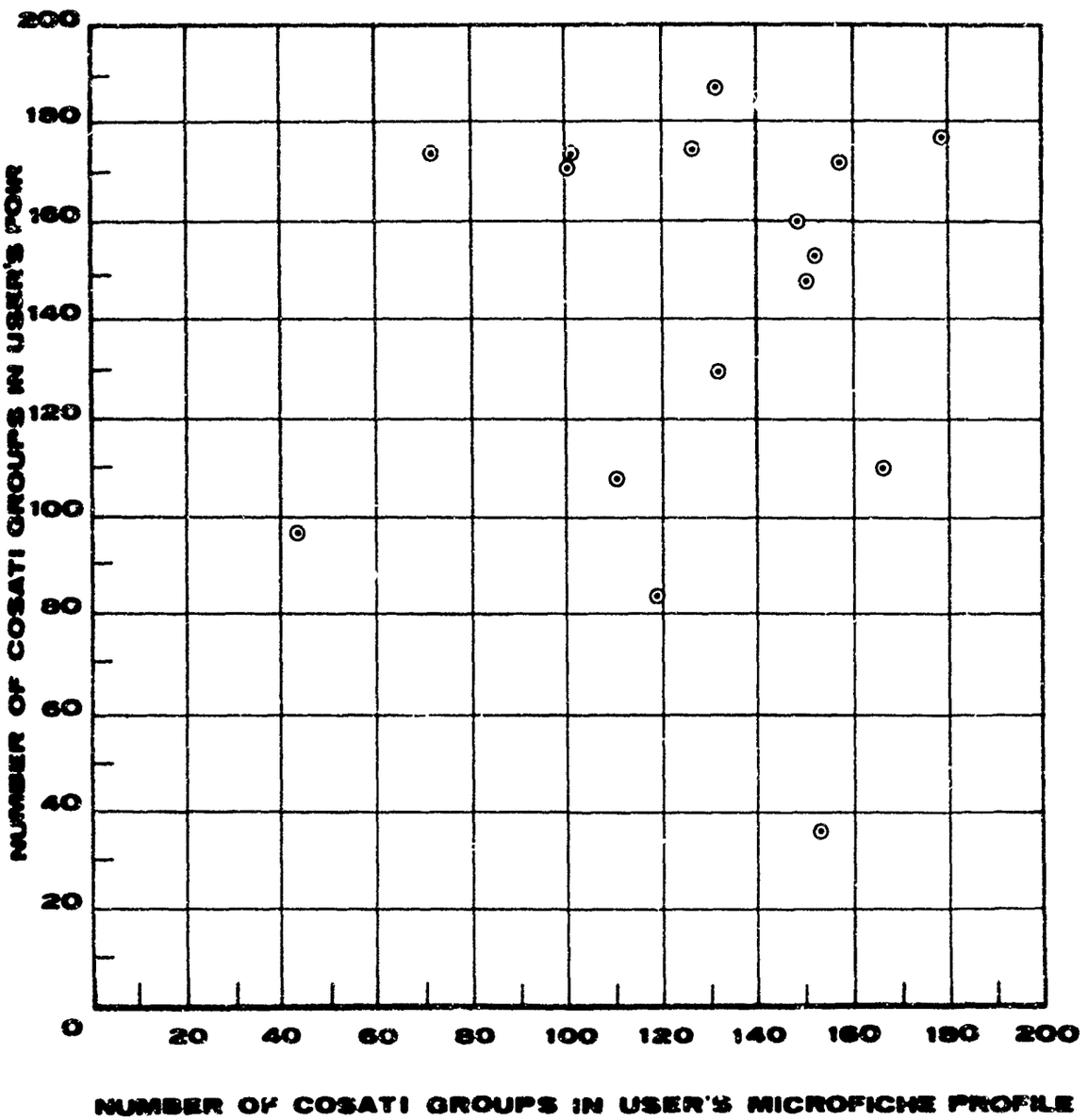
All of the above variables needed to be established for the test participants as a basis for planning and proceeding with an operational expansion of automatic microfiche service to other users.

In an attempt to determine if a significant decrease in DDC demand services would result from ADD service, the test participants' demand requests for the three-month period prior to the test were compared to their demand requests during the three-month test. The results of the comparison were inconclusive, however, for some of the same reasons indicated above. In addition, many users indicated that they would need to develop a microfiche collection covering a larger and longer span of newly issued reports before a significant reduction in demand services could be achieved. While an analysis of demand requests indicates that better than 75 percent of the technical reports requested from DDC are less than three years old, it would still have been highly speculative to estimate the cost impacts of automatic distribution in the then-prevailing environment of free DDC distribution, and even more uncertain with regard to the situation which would prevail after user charges were initiated.

To summarize, while no hard conclusions could be reached regarding the economic and operational aspects of automatic services, the feasibility and user acceptance of the concept were sufficiently proven to justify the design and conduct of an operational test.

FIGURE 11

CORRELATION OF USER'S FOIR AND ASP MICROFICHE PROFILE



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VII. REDESIGN

After the ASP test had been concluded, DDC began modifying the automatic services, where test experience or economics dictated, and began designing a new operational test to determine the economic feasibility of each of the automatic services. (During this redesign phase the ASP test participants continued to receive the automatic services.)

A. Product Modifications

Selective Announcement Services

Since the cost of providing the Automatic Bibliographies had already been determined to be prohibitive, and since they were no longer needed as a control factor for profiling techniques, they were discontinued. (Those test participants who wished to continue receiving service of this type were added to DDC's limited Current Awareness Bibliography program.)

The GAB service was continued in essentially the same form, although slight changes in the processing flow and the appearance of the GABs were made.

The AMTD service was changed significantly, however. Instead of selecting and recording on a user's magnetic tape only those announcements assigned to COSATI Subject Categories within that user's preestablished profile, DDC prepared a single master tape containing all of the announcements to appear in the corresponding TAB Issue (in AD Number sequence). A copy of this entire tape was then made for each user receiving the service. This single change eliminated most of the technical and economic problems which had previously caused concern over this service. At the same time it enabled DDC to provide a slightly more effective service with much more efficiency.

Automatic Document Distribution

Several changes were made in the ADD service, the most important one being the switch from COSATI Subject Category profiles to search-term profiles as the basis for selecting documents of potential interest to each user. This switch was prompted by several factors uncovered during the preliminary test, but all of them related to the need for a more precise mechanism of document need prediction and the concomitant production economy which it would make possible.

The other major change to the ADD service was the switch from contractor production to in-house production of the required microfiche. Such factors as production control, reproduction work loads and costs, and

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quality control entered into this decision, but the decisive factor was the need to increase the timeliness of the service and along with that the effectiveness of the GAB service as well as the ADD service for the large number of test participants receiving both.

There were other changes to the processing procedures connected with the ADD service such as changes in work flow and "need-to-know" validation, but they were relatively minor and, from the user's viewpoint, had no effect on the service.

B. Test Redesign

With the exception of the few changes in work flow and processing already mentioned in connection with product modifications, the production processing and test conduct were little changed from the preliminary test.

The designation, Automatic Services and Products, was dropped and the program renamed Selective Documentation Services, but most of the other changes were in the scope and control of the test and the methods of evaluation. Because the test services to the original test community were continued without interruption following the preliminary test, and because the changes required in preparation for the extended test were put into effect as they were ready, most test participants were unaware of the extended test.

Unlike the preliminary test, the Selective Documentation Services test spanned a full year. Some of the original test participants withdrew from the test, but a relatively balanced test community was maintained by the addition of other users. The resulting test community is presented in appendix I.

DDC established control curves for the various documentation service costs against which the test services costs could be compared throughout the test. An evaluation form keyed to the revalidation of user acceptability of test services and the comparative user costs and benefits of automatic vs. demand services was prepared and sent to the users late in the test.

VII. TEST, ANALYSES, AND CONCLUSIONS

The Selective Documentation Services test and the ensuing analyses were directed toward determining the feasibility of each of the automatic services by: (a) validating their acceptability to users, (b) ascertaining their production and dissemination costs, and (c) determining, when appropriate, the requirements for economically providing these services to DDC's users.

A. Selective Announcement Services

Group Announcement Bulletins

The validation of user acceptability of the GAB service was based primarily on the test participants' responses to questionnaires. A copy of the questionnaire, on which the responses of the 31 participants submitting them have been summarized, is reproduced in appendix J. The responses to individual questions on the form were inconclusive at best. The following selected items demonstrate the divergence of opinions:

1. Of the 31 participants responding, ten experienced problems with packaging, shipment, or receipt of GABs.

2. While 58 percent of the participants maintained a central file of GABs, they generally found it far less satisfactory than TAB for central reference use.

3. When asked to rank GAB, CAST (see figure 12), TAB, and USGRDR (a journal of U.S. Government Research and Development Reports) as to which best fulfilled their current awareness requirements, ten participants ranked TAB first, eight ranked GAB first, five ranked CAST first, and three ranked USGRDR first. The average of all the rankings resulted in nearly the same sequence (1. TAB 2. GAB 3. USGRDR 4. CAST) indicating that, even for current awareness purposes, TAB served their needs better than GAB.

4. The most definite response came to the question: "Is TAB still needed?" All 31 respondents indicated it was.

5. If GAB were put on a subscription basis similar to CAST, 16 organizations said they would subscribe (although some qualified their response with comments to the effect that they would subscribe only if TAB were discontinued), but 11 organizations would not subscribe under any circumstances.

6. Sixteen respondents preferred the present GAB format, while 11 preferred the CAST format.

Figure 12

CLEARINGHOUSE
FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION

ANNOUNCEMENTS IN SCIENCE AND TECHNOLOGY

ELECTRO-TECHNOLOGY

A REVIEW OF CERAMIC THIN FILM TECHNOLOGY.
Final rept. May 66-May 67,
General Precision Inc Glendale Calif Librascope Group
Milo Macha. Oct 67. 167p
AFML-TR-67-226
Contract AF 33(615)-5188

Descriptors: (*Films, *Ceramic materials), State-of-the-art reviews, Dielectric films, Semiconducting films, Magnetic materials, Semiconductor devices, Dielectrics, Resistors, Capacitors, Photoconductivity, Deposition, Photoelectric materials, Optical coatings, Garnet, Ferrites, Microminiaturization (Electronics).

The report comprises a detailed description of the materials, techniques and problems in each of the three major areas of thin film applications--dielectrics, magnetics and semiconductors. Included in the report are also basic theories necessary for a complete understanding of the physical and chemical processes related to the areas of interest. Theoretical analysis leads to a description of the critical physical, chemical and structural requirements of films for device applications. The state of the art of all aspects of ceramic thin film technology is critically reviewed, and recommendations are suggested to overcome existing limitations. (Author)
AD-660 590 HC$3.00 MF$0.65

RESEARCH IN MICROMINIATURIZATION USING ELECTRON-ACTIVATED MACHINING TECHNIQUES.
Final rept.,
Stanford Research Inst Menlo Park Calif
John Kelly. Dec 67. 48p
Contract Nonr-2887(00)

Descriptors: (*Microminiaturization (Electronics), *Manufacturing methods), Films, Vacuum apparatus, Electron beams, Masking, Etching, Field emission, Triodes, Electron multipliers, Thin film storage devices, Circuit interconnections, Photons, Deposition, Mass spectrometers, Spectrum analyzers, Storage tubes.

The underlying theme was the development of a thin-film deposition and high-resolution micromachining technology that would ultimately permit the fabrication of data-processing systems having large numbers of suitably intercoupled active devices entirely under contaminant-free ultra-high-vacuum conditions. Only refractory metals and dielectrics would be utilized in the final structures to achieve the required degree of stability, uniformity, and operational life. Progress on the basic ultra-high-vacuum technology and ancillary instrumentation is described, including: vacuum stations designed for bakeout at 900C and capable of rapidly attaining pressures of the order of 10 to the minus 12th power torr; precision electron optical columns having resolutions of several hundred angstrom units after 900C bakeout; and compatible quadrupole mass spectrometers, continuous-dynode electron multipliers, thin film deposition sources, manipulators, and other accessories. The development of suitable electron-sensitive resists, the use of which forms the basis for achieving high resolution in thin-film micromachining, is covered and the various techniques for etching unprotected film areas are described. Applications of this thin-film technology to the formation of micron-size electron devices, now sup, arted primarily under separate contracts, are covered briefly. This work includes the development of refractory microminiaturized electron tubes operating on field-emission principles and novel high-speed, high-capacity storage tubes. (Author)
AD-663 293 HC$3.00 MF$0.65

MICROELECTRIC ENGINEERING. VOLUME II. SOME CONSIDERATIONS IN USING MICROELECTRONIC CIRCUITS.
Johns Hopkins Univ Silver Spring Md Applied Physics Lab
W. Libau, T. O. Poehler, V. Uzunoglu, G. J. Veth, and G. D. Wagner. Dec 67. 598p
NAVWEPS-16-1-533-Vol-2
Contract NOw-62-0604
See also Volume 1, AD-624 315.

Descriptors: (*Microminiaturization (Electronics), *Circuits), Handbooks, Semiconductor devices, Films, Reliability (Electronics), Electronic equipment, Dielectrics (Materials), Printed circuits, Transistors, Field effect transistors, Diodes (Semiconductor), Analog-to-digital converters, Feedback, Oscillators, Test methods, Nuclear radiation, Radiation damage.

Contents: Models for large signal analysis of junction transistors; Field effect transistors; Preliminaries to circuit design; Digital circuits; Analog circuit design; Special-purpose semiconductor circuits; Reliability considerations; Circuit defects and their detection; Packaging and interconnection; and Damage to microelectronic circuits by nuclear radiation.
AD-664 481 HC$3.00 MF$0.65

THE DESIGN OF EQUIPMENT FOR MICRO-PHOTOGRAPHY.
Mcmullin (R B) Associates Niagara Falls N Y
K. Head. Jun 67. 17p Rept no. SRDE-67001

Descriptors: (*Microphotography, Photographic equipment), (*Photographic equipment, Design), Microminiaturization (Electronics), Integrated circuits, Photographic techniques, Optical images, Photographic materials, Resolution, Lenses, Diffraction, Cameras, Brightness.
Identifiers: Microphotography.

The report describes the design of a complete equipment for micro-photography. Some theoretical considerations are discussed and the camera construction and lighting unit are described in detail. (Author)
AD-664 845 HC$3.00 MF$0.65

INVESTIGATION OF RADIATION HARDENED CIRCUIT ELEMENTS.
TRW Systems Redondo Beach Calif
D. A. McWilliams, and L. C. Davis. 15 Nov 67. 43p Rept no. Scientific-2
AFCRL-67-0684
Contract F19628-67-C-0262

Descriptors: (*Field effect transistors, Hardening), Gamma rays, Silicon, Semiconductors, Integrated circuits, Theory, Substrates, Films, Voltage, Band theory of solids, Nuclear radiation, Guided missiles, Spacecraft, Manufacturing methods, Deposition.
Identifiers: Metal oxide semiconductors, Metal oxide transistors, Radiation hardened elements.

An investigation was made of hardened insulated-gate field effect devices. Included are a review of MOS transistor theory, a derivation of MOS characteristics as a function of substrate bias, and the early results in the fabrication of complementary enhancement pairs. These devices, made on Czochralski silicon 3 microns thick, are fabricated by processes compatible with normal MOS integrated circuit procedures. The early pairs have poorly matched thresholds and low transconductance on the N-enhancement devices. Breakdown voltages were in excess of 40 volts for both P and N devices. The P device has characteristics like discrete P-enhancement devices. A blocking diffusion is used to provide a barrier to surface inversion in the N device without increasing device junction areas. Dielectrically isolated MOS integrated circuits can offer significant advantages in certain circuit applications. The major advantage accrues due to individually biased substrate regions for each active device. This allows certain simplifications in MOS circuit design expanding the range of operation and optimizing gain characteristics. For this reason, a theory of MOS operation as a function of substrate bias was derived and is presented in this report. (Author)
AD-664 922 HC$3.00 MF$0.65

VULNERABILITY EFFECTS IN BULK-SOLIDS. VOLUME I.
Final rept. (Vol. 1), 1 Nov 66-30 Sep 67,
Cornell Univ Ithaca N Y School of Electrical Engineering
L. F. Eastman, L. A. MacKenzie, J. Beukins, J. Bielatsyne, and R. E. Hayes. Jan 68. 92p
RADC-TR-67-646-Vol-1
Contract F30602-67-C-0075
See also Volume 2, AD-666 035, Volume no. 3, AD-666 036.

Descriptors: (*Semiconductor devices, *Electromagnetic compatibility), Microwave frequency, Indium antimonides, Gallium arsenides, Avalanche diodes, Harmonic generators, Carriers (Semiconductors), Cyclotron resonance phenomena, Signal-to-noise ratio, Thermal conductivity, Electrical properties, Noise (Radio), Doping, Mobility.
Identifiers: Helicons, Gunn effect.

Intrinsic characteristics of Gunn diodes, avalanche diodes, and bulk effects in magnetized InSb were studied for methods and techniques of enhancing electromagnetic compatibility in applications of these devices. Gunn domain mode oscillators were studied for their harmonic outputs and spectral content. 15 GHz oscillators were found to have high harmonic content even to the tenth harmonic, and heat sinking of the diodes was undertaken to allow measurements over a range of duty cycles up to continuous operation. Negative conductivity GaAs devices with low Nd/L (electron density-sample length) product in appropriate circuits were studied and linear amplification was obtained up to an efficiency of a few percent; thus, low harmonic content is indicated. Helicon resonances in InSb at 77 degrees K were studied to evaluate the capabilities of electronically tunable filters and non-reciprocal devices. (Author)
AD-666 034 HC$3.00 MF$0.65

A more general and somewhat more conclusive evaluation of the GAB service can be ascertained from a gross analysis of user participation. Of the 48 users who participated in either the ASP test or the SDS test or both: 11 withdrew because for one reason or another the additional benefits they derived from the service did not offset their handling costs; six did not appreciate the service enough to complete and submit evaluation forms; and 11 of the 31 who completed and submitted evaluation forms responded negatively to all the key questions on them. Thus, the service seemed to have proven unsatisfactory for 58 percent of the users who received it.

DDC's costs of producing and disseminating the GABs leveled off at about $.10 per TAB copy during the test. But since the number of GAB copies required by the test group leveled off at approximately 25,000 per TAB cycle, the cost of providing GAB service to the test group has averaged $2,500 a TAB cycle.

As can be seen from the curves in figure 13, there has been no decrease in either the TAB service or the demand bibliography service provided to the test group. In fact, their TAB service volume remained about the same throughout the test while that of the rest of DDC's user community declined, and their demand bibliography request rate increased faster than that of other DDC users.

The very fact that the user evaluations showed a widely divided response to the GAB service led to the general conclusion that in selective announcement services, as well as other information services, no single product can completely satisfy the requirements of all users. More specifically, the analyses of the test results led directly to the following conclusions:

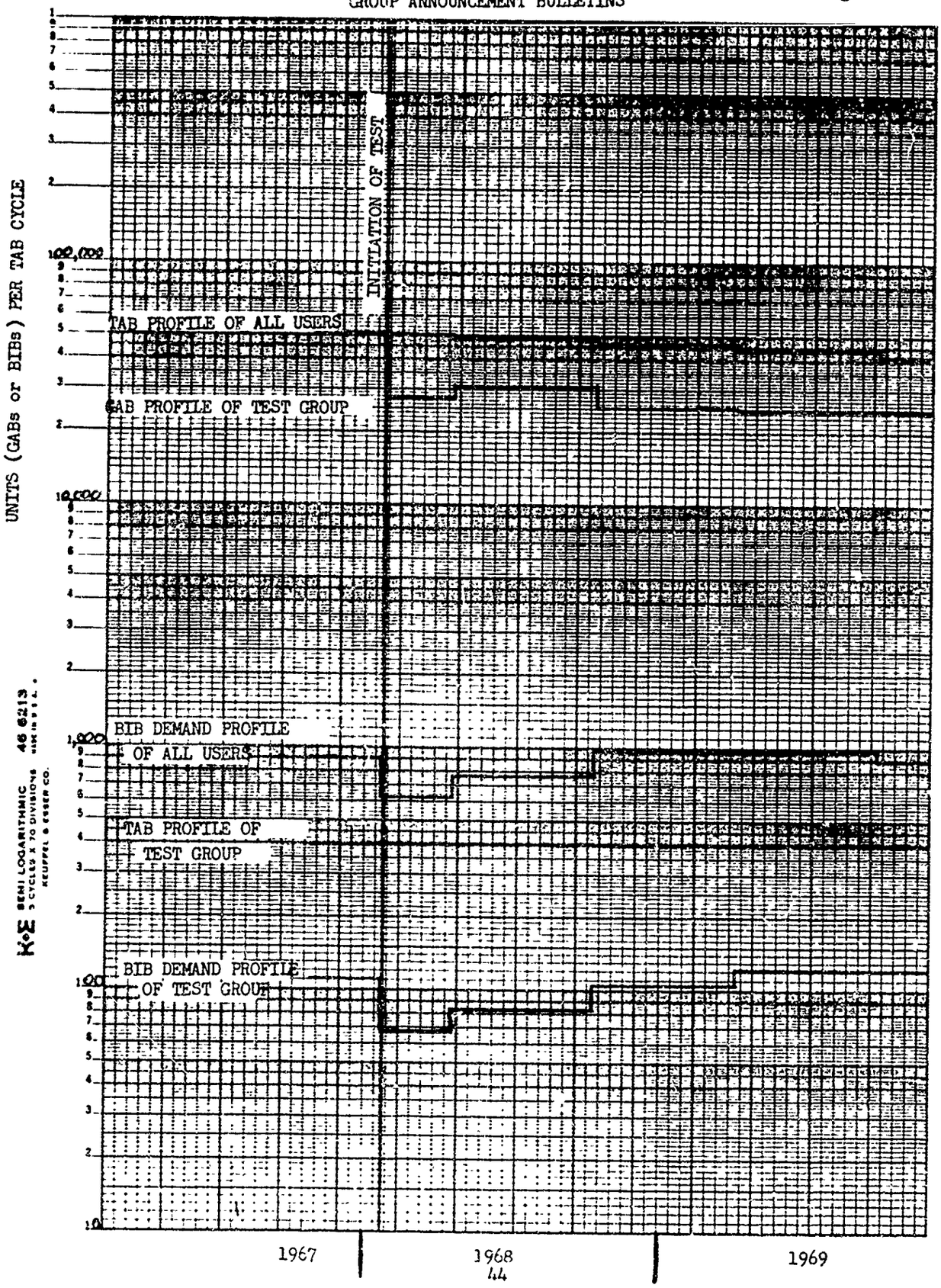
1. The continued insistence of the overwhelming majority of test participants that TAB is still necessary indicates that GAB is not an adequate replacement for TAB. Instead, it provided a supplementary current-awareness service of value to a significant, but limited, portion of DDC's user community.

2. The test participants, in general, could not readily integrate the GAB service into their information services programs. Because of the prolific number of similar current-awareness services available from various sources, their integration into a viable local information services program is one of the biggest problems currently facing user organizations.

3. DDC's costs of providing GAB service, plus the added handling and distribution costs incurred by the user organizations, are not balanced, in most cases, by the additional benefits derived from their use.

Figure 13

GROUP ANNOUNCEMENT BULLETINS



Automatic Magnetic Tapes

The validation of user acceptability of the AMTD service was based, once again, upon the test participants' responses to questionnaires. Of 22 participants queried, only 15 responded, thereby limiting the analysis of the service's use. A copy of the questionnaire, on which the responses of the 15 participants submitting them have been summarized, is reproduced in appendix K. The following selected items demonstrate acceptability of the AMTD service:

1. Eight organizations used the DDC service as a production interface to their local information programs. An average of 1,100 users were provided further information by each of these local automated information systems, representing a total of approximately 9,000 individual users who had access to the announcement media provided through the AMTD service. (Thirteen respondents agreed, however, that the AMTD service would not eliminate the need for DDC's published TAB.)

2. If the AMTD service were put on a subscription basis, six organizations indicated they would subscribe; however, four additional organizations indicated they would subscribe if the service was customized.

3. Eight organizations indicated that having TAB citations in a machinable form was the most significant factor in their decision to use DDC tapes.

4. Some organizations reported that the cost of processing AMTD tapes was outweighed by the increased service to the scientists and engineers and by the man-hours saved as a result of local selective document announcement publications such as TAB and USGRDR.

5. Generally, actual cost figures were not provided, but one organization did report a cost savings ($1,000 per TAB cycle) through elimination of a biweekly input keypunch and conversion effort.

A general evaluation resulted in the conclusion that the DDC AMTD service would be valuable to those organizations operating information systems on large-scale computers. An immediate cost saving will be realized where DDC-supplied magnetic tapes are used to replace present input keystroking of TAB data. The service would be of little value to an organization with a limited programming staff or one that services a small number of researchers, however, since the costs of programming and processing would be prohibitive.

DDC's costs for production and dissemination of AMTD will vary in relation to the number of service users. Figure 14 is representative of actual cost figures developed to support the establishment of an annual subscription fee. Figure 15 graphically depicts AMTD costs trends. The cost of providing both recurring service and test tapes averaged approximately $40 per user.

The curves in figure 16 reflect the decrease in bibliographic service of the test participants. It is assumed that the time delay to decrease was because of the time required for programming and experimentation on the part of the users prior to operational implementation.

The analysis of the test results led to the following conclusions.

1. The two years' experience promoted effective technical communications, particularly with large DDC users.

2. Recurring tape service to qualified organizations in support of local technical and management information systems is economically feasible.

B. Automatic Document Distribution

A general appraisal of the user acceptability of ADD service was easy to come by. Judging from the number of requests DDC received for this unpublicized test service, test participants must have found it to be worth passing the word about.

A more reliable and more detailed evaluation of the acceptability of ADD service to users was obtained from evaluation forms completed by all test participants. A sample of the evaluation form, with the responses summarized on it, is presented in appendix L. Some of the most significant findings were:

1. Forty percent of the participants reported that they still order unclassified/limited and classified reports because their demand is not being completely satisfied by the ADD service.

2. In fifty percent of the responses, the demand-request rate for microfiche is the same as it was prior to the establishment of automatic services.

3. Fifty-seven percent of the requests that are processed by the participants' libraries for local Scientific and Technical Information (STINFO) users are filled in-house as a result of the ADD program. Forty-three percent of the requests from these users are forwarded to DDC. (This latter figure is so high because all unclassified/unlimited reports must be requested as they are not included in the ADD program.)

4. Participants reported an average of 15[illegible] individual STINFO users to each microfiche viewing unit, a considerably better ratio than that found during the preliminary test (and 9 users have additional equipment on order).

5. Unfavorable reactions to the use of microfiche included lack of reader portability, eyestrain, inability to refer simultaneously to various sections of a report, and poor quality microfiche copies.

AMTD PRODUCTION COSTS

USERS

	10	20	30	40	50	60	70	80	90	100
UNIVAC 1108 Computer Cost (For Master)	14.11	7.05	4.70	3.52	2.82	2.35	2.01	1.76	1.56	1.41
UNIVAC 418 Computer Cost (Per Copy)	15.86	15.86	15.86	15.86	15.86	15.86	15.86	15.86	15.86	15.86
Quality Control Cost (Per User)	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
Computer Magnetic Tape Cost (Per User)	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75
CFSTI Subscription Processing Cost (Per User)	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23
Mailing Cost (Per User)	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
TAB FEE	$40.35	$33.29	$30.94	$29.76	$29.06	$28.59	$28.25	$28.00	$27.80	$27.65
ANNUAL SUBSCRIPTION	968.40	798.96	742.56	714.24	697.44	686.16	678.00	672.00	667.20	663.60

Figure 14

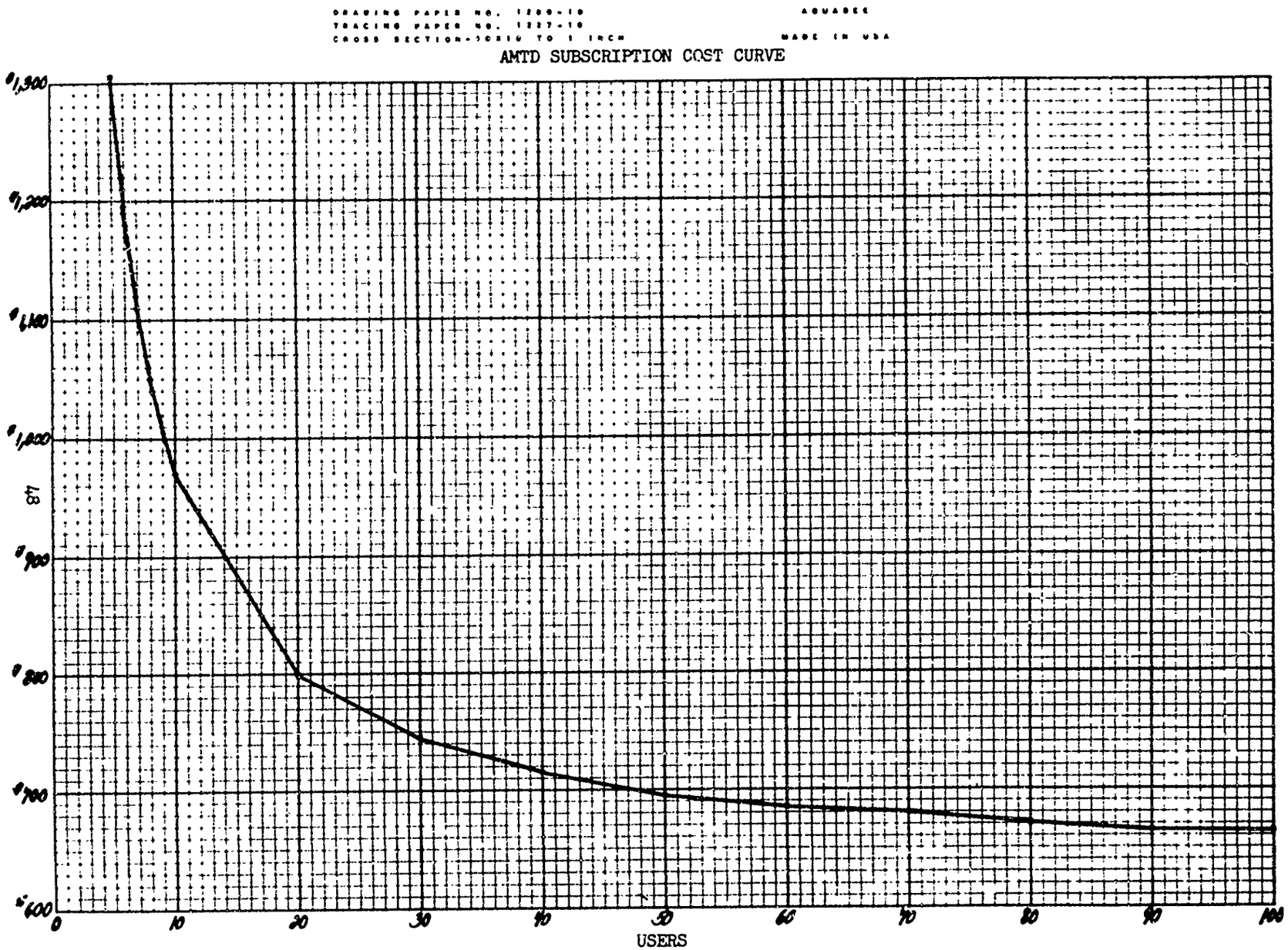
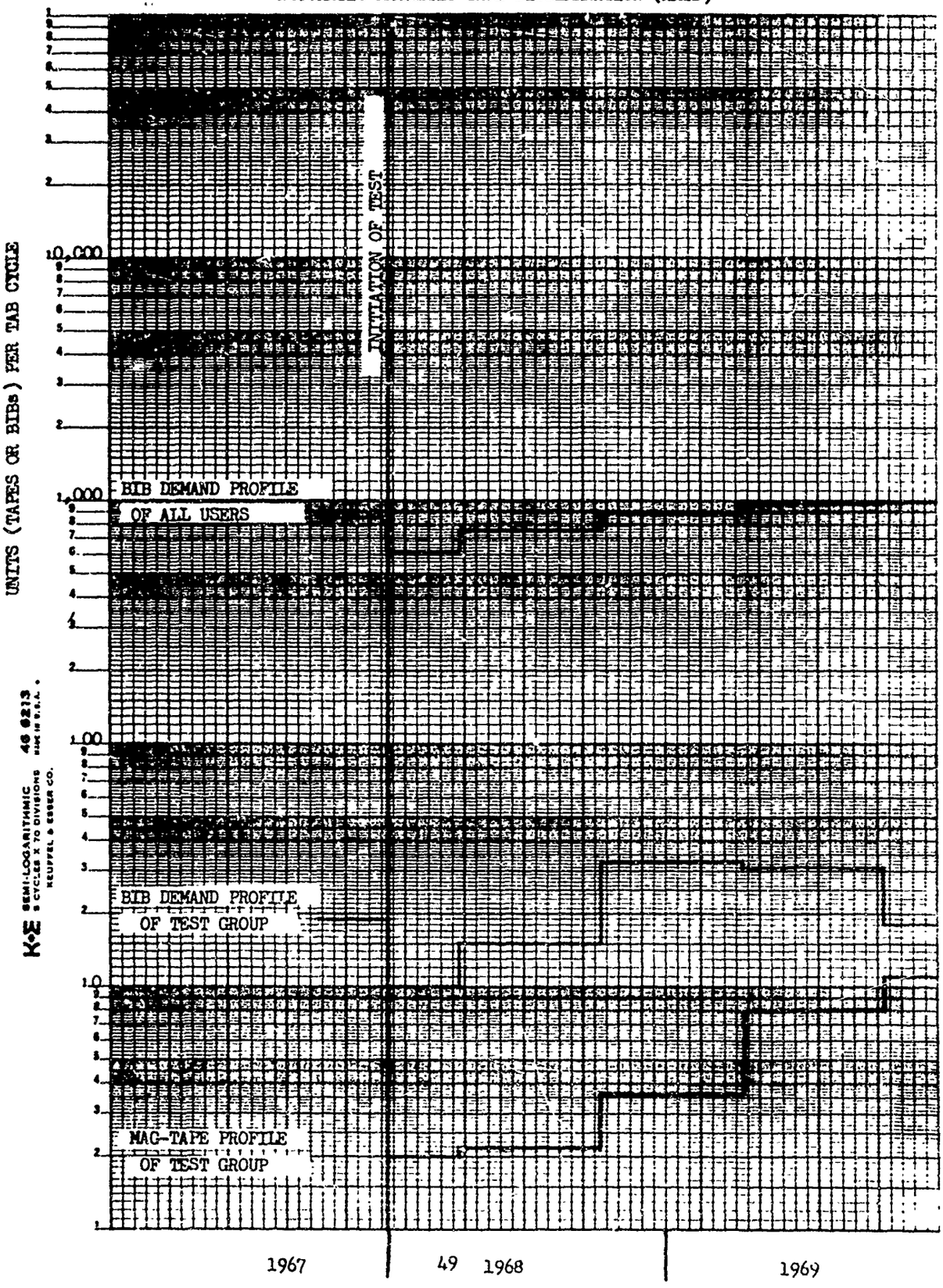

DRAWING PAPER NO. 1200-10
TRACING PAPER NO. 1227-10
CROSS SECTION-10X10 TO 1 INCH
AMTD SUBSCRIPTION COST CURVE
$1,300
$1,200
$1,100
$1,000
$900
$800
$700
$600
0
10
20
30
40
50
60
70
80
90
100
USERS

Figure 15

Figure 16

AUTOMATIC MAGNETIC TAPE DISSEMINATION (AMTD)



A detailed analysis of DDC's costs of providing ADD service was undertaken for the purposes of: (a) comparing the costs of providing ADD service (supplemented with demand service) with the costs of providing demand service alone, and (b) determining the portion of DDC's user population to which ADD service could be economically extended.

The basic approach to this analysis was quite simple: the costs of supplying the ADD test group with documents through demand service alone (during calendar year 1967) were determined and compared with the costs of supplying them with documents through ADD service, supplemented with demand service as needed (during calendar years 1968 and 1969).

Procedures necessary to apply the proper controls for this approach were a bit more involved.

a. Unit cost figures, which had to be calculated from a work function cost basis, were found to be $1.31 per report copy for demand service and $0.36 per report copy for ADD service. This difference in unit cost figures results largely from two factors: (1) the wholesale processing possible with ADD as opposed to the individual item processing necessary with demand service, and (2) the exclusion of expensive hard copy reproduction processing from ADD service, while it constitutes 20-30 percent of demand service.

b. The sizable volume of documents not presently included in the ADD service (unclassified/unlimited reports, and reports containing restricted data) had to also be excluded from the demand-service-volume profile of the total DDC user population (the control group). The resulting curve appears in the upper portion of figure 17.

c. The demand volume and corresponding total document service cost profiles of the total test group and three subsets of it (figures 17, 18, 19, and 20) were adjusted to reflect the changes in the demand-volume profile of the control group over the same time period.

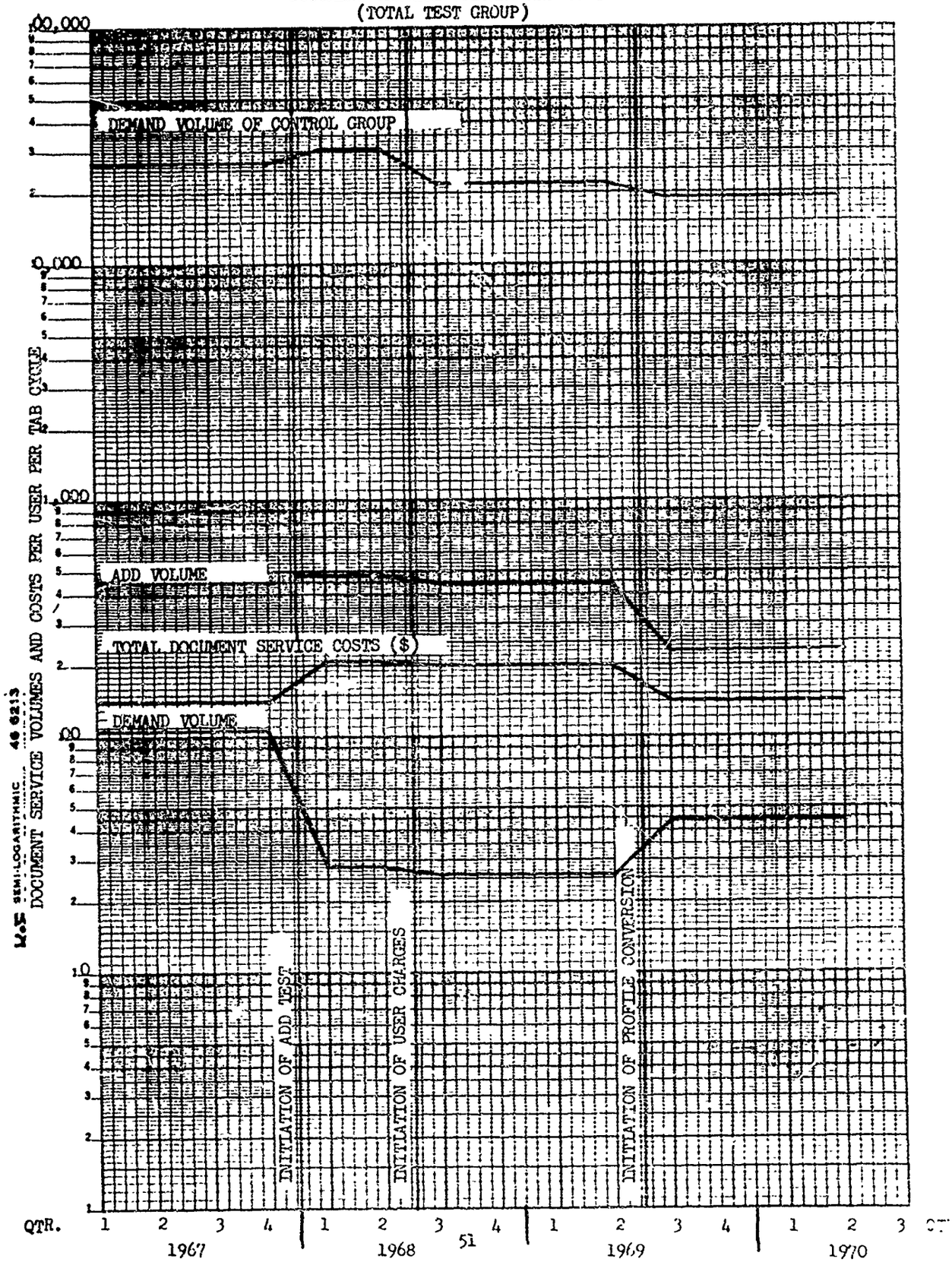
d. All of the volume and cost profiles were smoothed in order to: (a) eliminate the highly erratic profile shifts caused by the wide variance in the numbers of document announcements per TAB cycle, and (b) facilitate visual comparison.

A glance at the volume profiles shows that, for the total test group and all three of its major subsets, conversion to term profiles reduced the ADD service volumes significantly, much more than enough to offset the concomitant increase in demand-service volumes.

Study of the cost profiles in the same figures presents an even more revealing picture. The cost profile in figure 17 indicates that conversion to term profiles reduced the total document service cost for the average user of the test group to the pretest level. The same cost

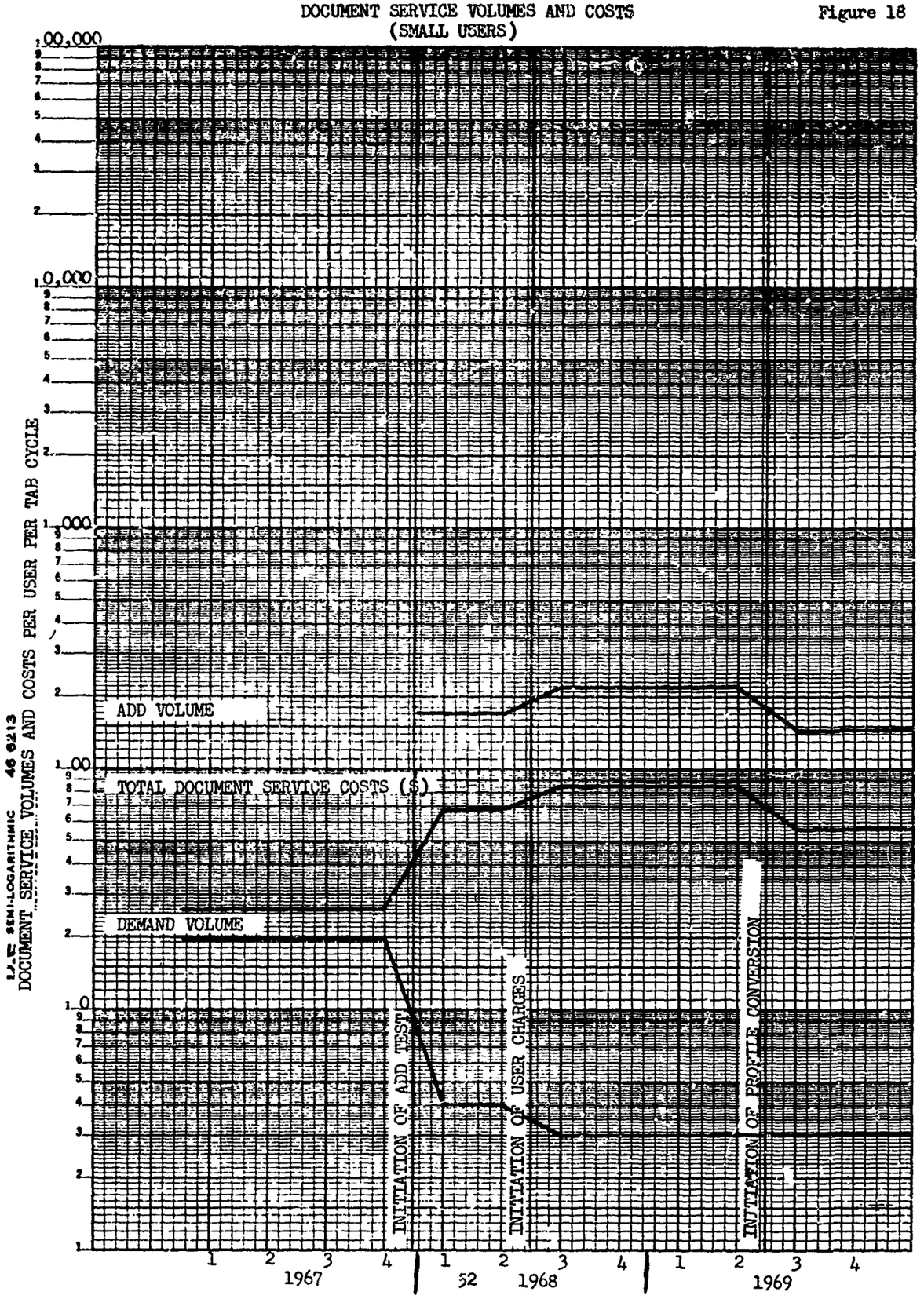
Figure

DOCUMENT SERVICE VOLUMES AND COSTS
(TOTAL TEST GROUP)



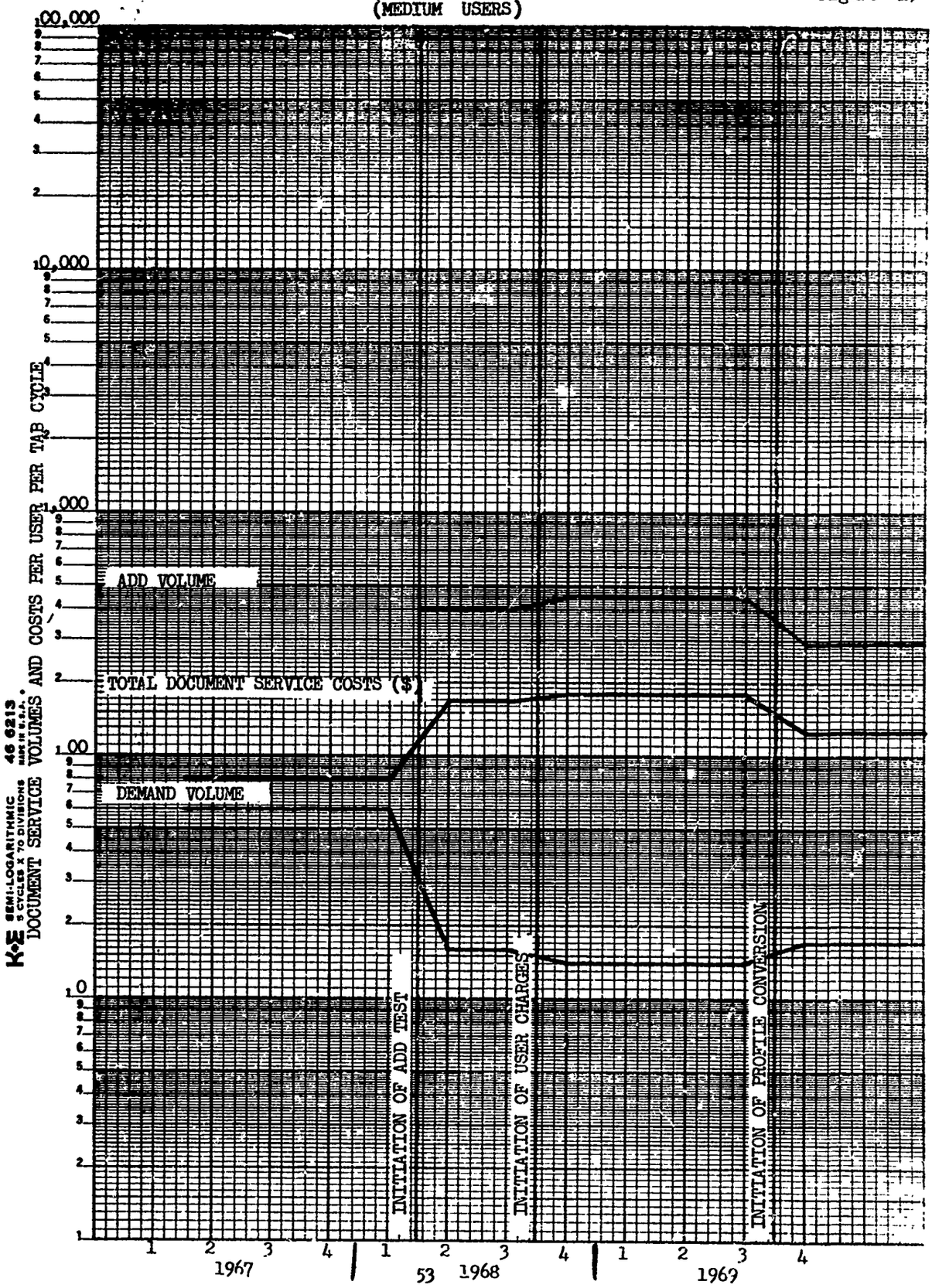
DOCUMENT SERVICE VOLUMES AND COSTS
(SMALL USERS)

Figure 18



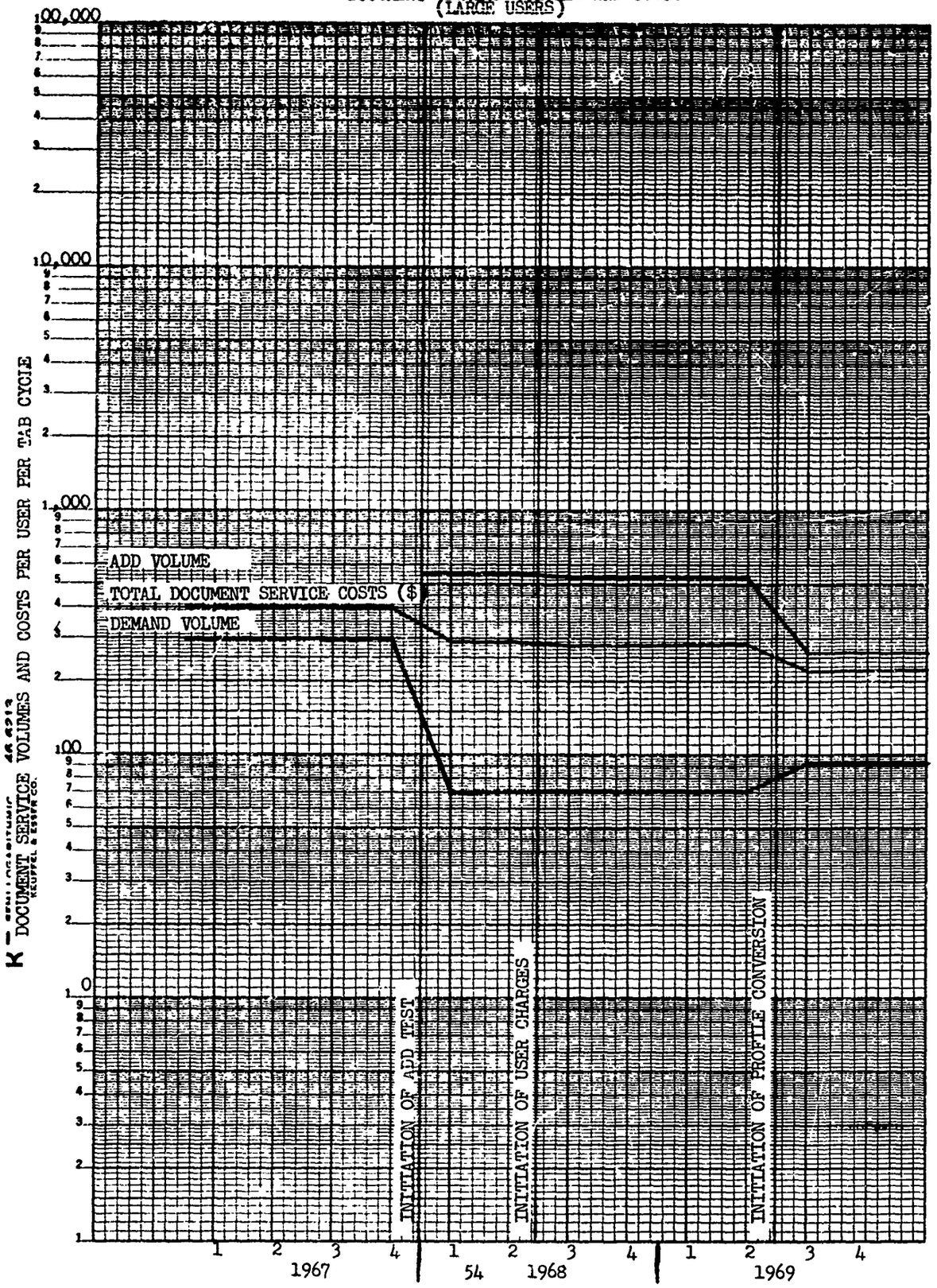
DOCUMENT SERVICE VOLUMES AND COSTS
(MEDIUM USERS)

Figure 16



DOCUMENT SERVICE VOLUMES AND COSTS
(LARGE USERS)

Figure 20



curves for the three major subsets of the test group (figures 18, 19, and 20), however, clearly show that the favorable cost profile for the total test group (figure 17) is attributable solely to the reduction in the large users' total document service costs, as the costs of providing document services to both the medium and small user subsets, while down from the preconversion cost levels, remained much higher than the pretest levels.

The chart in figure 21 summarizes the information contained in figures 18, 19, and 20. From this chart the annual cost increase or decrease for each of the three major subsets of users can be read out by comparing the pair of vertical cost lines for each user subset.

By plotting the annual document request rates versus the annual document service cost savings (and losses) for the total test group, the three major subsets of it, and eight minor subsets of it, a curve of the cost savings through ADD (figure 22) was constructed. Although this curve summarizes the results of the cost analysis quite well, the annual document request rates used in its construction include only documents eligible for ADD (only classified reports and unclassified reports bearing limitations 1 and 2), and hence it cannot be used for projecting the results to an expanded test group.

To enable projection of the test results to an expanded test group the curve in figure 23 was constructed in a similar manner, but this time the total annual document request rates (for all AD documents) for each of the eight minor test group subsets were used while the cost savings or losses remained the same as on the previous chart (since ADD will have no effect on the cost of supplying the additional documents). From this curve it can be seen that DDC can probably save money by offering ADD service to any user requesting 5,400 or more documents per year.

In summary, ADD service would enable DDC user libraries to be more responsive to their local user communities, increasing numbers of which are finding microfiche acceptable. The lower unit cost of ADD service, combined with the resulting reduction in demand service, would seem to make it economically feasible, at least for large, high-volume users.

DRAWING PAPER NO. 1280-10
TRACING PAPER NO. 1227-10
CROSS SECTION-10X10 TO 1 INCH
AQUASEE
MADE IN USA

COMPARISON OF COSTS WITH AND WITHOUT ADD

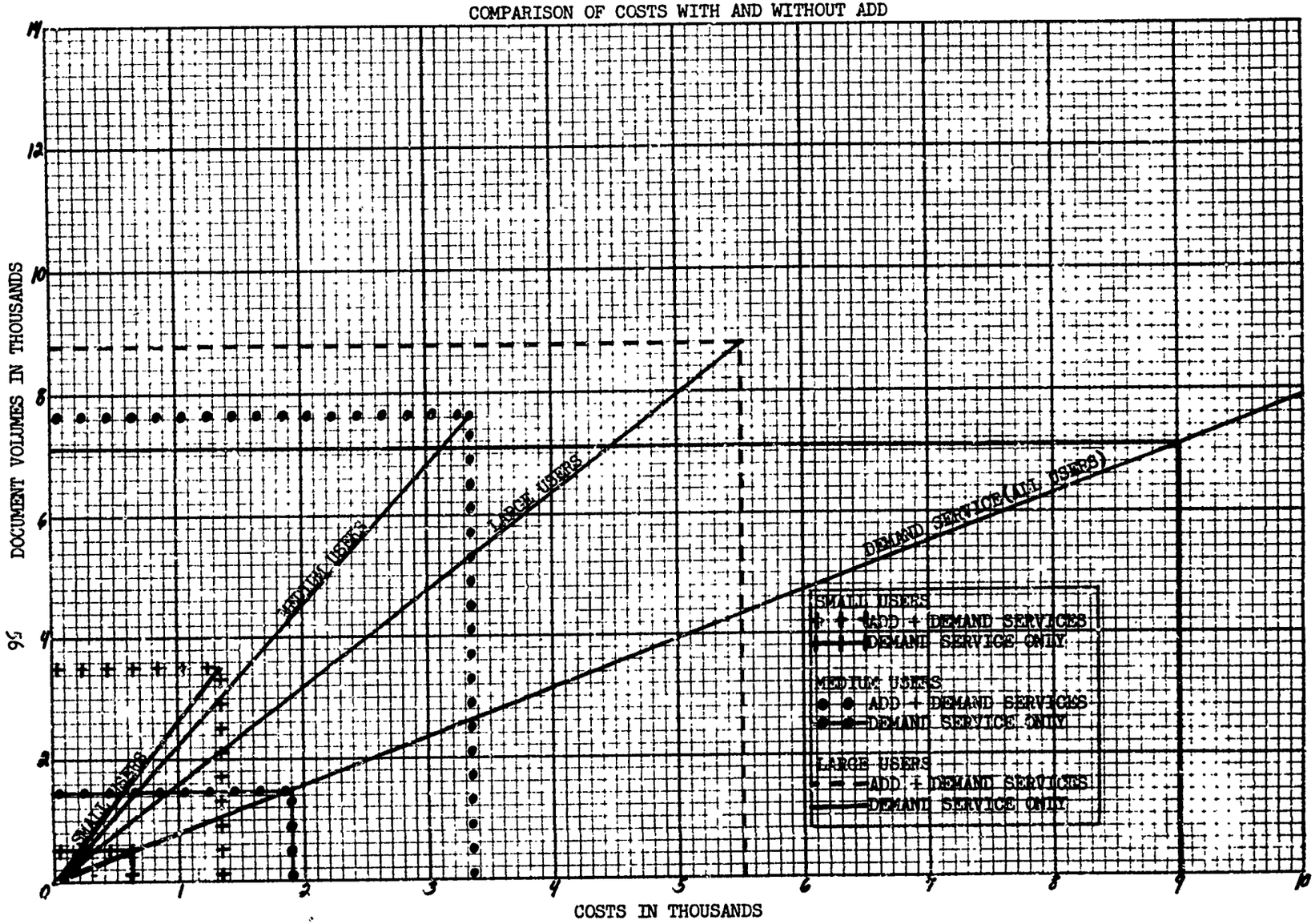
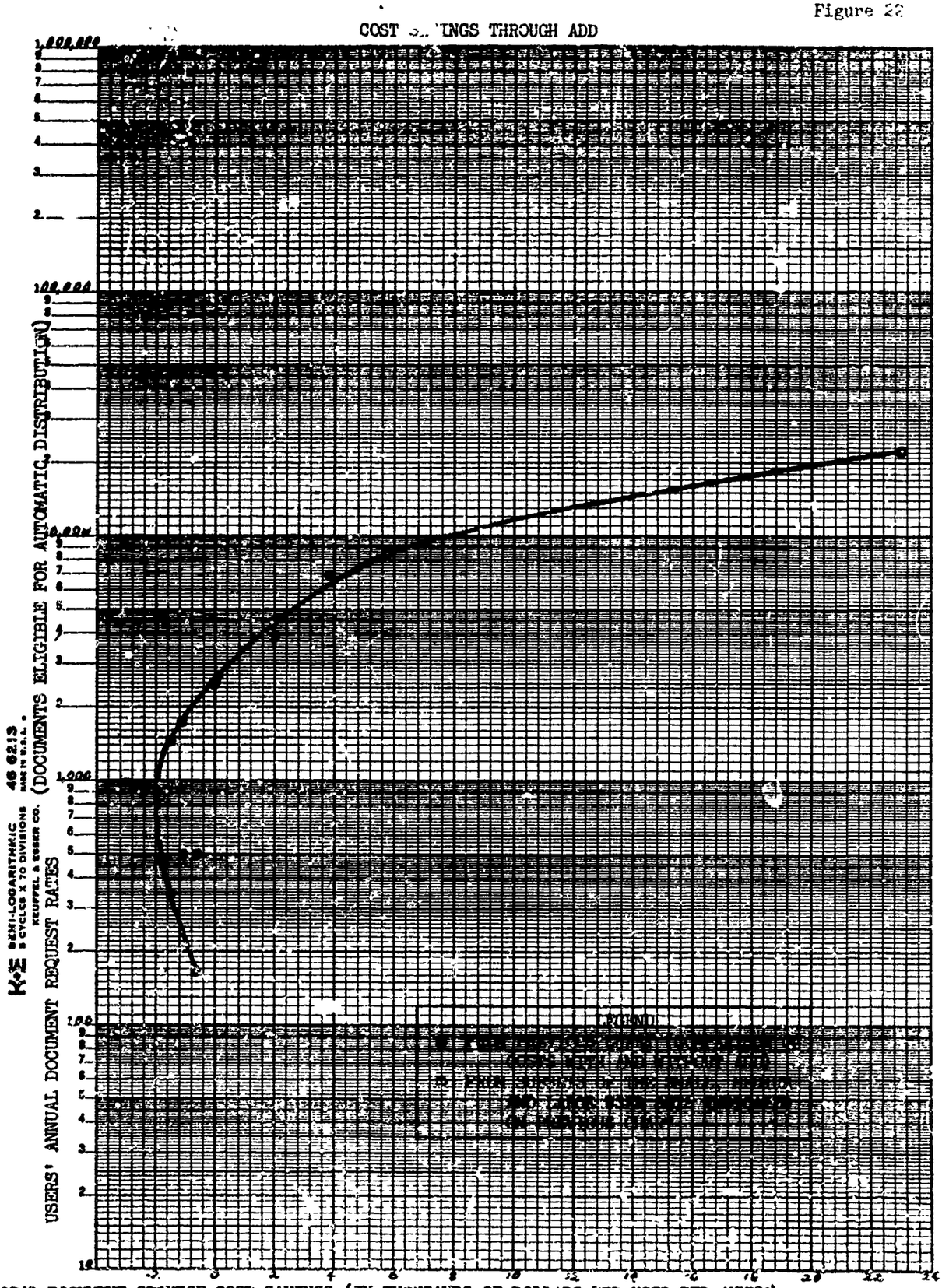


Figure 21

Figure 22

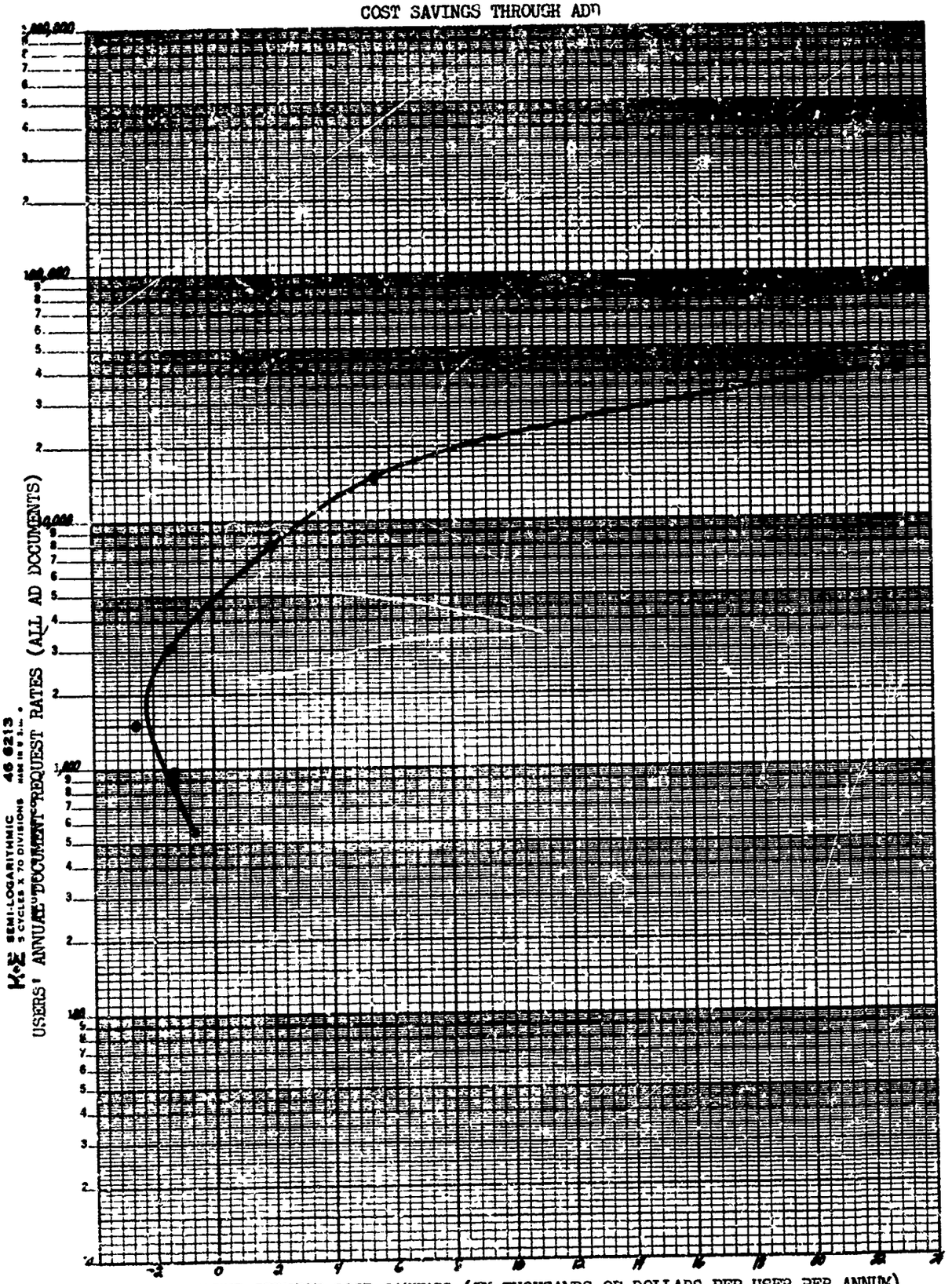
COST SAVINGS THROUGH ADD



TOTAL DOCUMENT SERVICE COST SAVINGS (IN THOUSANDS OF DOLLARS PER USER PER ANNUM)

Figure 23

COST SAVINGS THROUGH ADD



IX. SUMMARY AND FUTURE PLANS

For clarity's sake each of the test services in the SDS program has been reported on separately throughout this report. Unfortunately, this treatment may have created the impression that each of the services was tested and evaluated independently. Although this would have been possible, it was not the case. Even though each service could stand or fall on its merits without severely affecting any of the others, they were conceived, planned, tested, and evaluated as complementary parts of an overall program.

While the Selective Documentation Services are once again treated separately in this final section, their interrelationships have been taken into account in the formulation of the following plans.

A. Selective Announcement Services

Generally speaking the Selective Announcement Services were found to be less desirable, less effective, and less economical than Automatic Document Distribution, but there was a wide variance among the three different announcement services.

Automatic Bibliography Service

While this service was highly effective for those few users who received it, the results of the preliminary test convinced DDC that, within the present state of the art, such highly customized announcement services cannot be economically provided on a "wholesale" basis. For the present at least such services must remain within the domains of local libraries and information centers.

The Automatic Bibliography Service proved so costly to DDC and the potential demand for it was so limited that it was discontinued after the preliminary test. One of the aspects of the service that contributed heavily to its effectiveness (the use of search term profiles for item selection) was retained and further tested, however, in the redesigned Automatic Document Distribution Service.

Group Announcement Bulletin Service

The experience with the GABs was the most disheartening aspect of the entire SDS test. The dissatisfaction of many test participants was not as disconcerting as the fact that, on the whole, they reported little in the way of additional benefits from this rather costly service. Faced with these results and the increasing emphasis on economy within DoD, DDC had no choice other than to discontinue the service. Thus, the GAB service was discontinued in mid-1970, amidst concerned criticism from those few test participants who had enthusiastically and effectively employed the service.

Automatic Magnetic Tape Dissemination Service

Of the three Selective Announcement Services tested, the AMTD service, even with an extremely limited community of prospective users, demonstrated the greatest potential as an operational service. The service could be economically provided by DDC, yet could be a very effective and very valuable service for those organizations operating large-scale internal information systems.

Based on the results of the test and analyses of production costs, DDC is now offering the AMTD service on a subscription basis. The subscription fee is currently set at $1,000 per year, but will be subject to annual revision as more users subscribe enabling reductions in unit costs.

Each TAB cycle, shortly before the publication of the TAB, subscribers to the AMTD service are provided with a Confidential magnetic tape containing citations to all of the latest DDC accessions. This includes not only the AD reports announced in the corresponding TAB, but also those announced in the associated USGRDR. As all of the AMTD tapes are--like TAB--Confidential, subscribers are responsible for maintaining their security in accordance with existing regulations. Thus, they must update accumulated data stores as indicated in issues of "Notice to Holders of TAB" and TAB sections entitled, "Notification of Changes in Classification, Distribution, and Availability."

The United States of America Standards Institute (USASI) Standard (Z39.2-1968) entitled, "A Format for Bibliographic Information Interchange on Magnetic Tape" has been adopted for the AMTD service to ensure compatibility with existing information systems. The AMTD tapes are thus provided in an IBM-compatible format on 9-track tape (odd-parity) recorded at a density of 800 characters per inch (cpi), with a nonreturn-to-zero indicator. They are also available, however, on 7-track tape with a density of either 556 or 800 cpi. Regardless of which tape configuration a subscriber chooses, the data blocks will be 2,046 characters in length.

At the present time subscribers are supplying their own blank tapes, which are recycled. Beginning in January 1971, however, the AMTD tapes will be nonreturnable "mini-reels" in 400-foot or 600-foot lengths.

Any registered DDC user organization which regularly receives TAB and has a computer facility clearance of Confidential or higher may subscribe to the AMTD service. DDC recommends, though, that before subscribing to the regular service, the user request an initial test tape package from DDC. This package, assembled for the express purpose of facilitating the user's development of an information system using the AMTD tapes, is available to potential subscribers at cost ($45).

To provide further assistance to potential AMTD subscribers, DDC plans to make available, early in calendar year 1971, a computer program (in COBOL) for an SDI system based on the AMTD service.

With the implementation of the AMTD service DDC has acquired the capability of offering selective announcement services to large user organizations, but the failure of the GAB service still leaves us without the capability of providing a comparable service to our many medium-sized users. We have not yet given up, though. Through our Selective Announcement Services project we are still hoping to develop an announcement service capable of filling this gap.

B. Automatic Document Distribution

Like AMTD service ADD service has proven effective. But, unlike AMTD service it seems to be effective for medium-sized users as well as large ones. This creates an economic problem in that, at least for the present, only high-volume users can be provided with ADD service without increasing the cost of servicing them.

Recalling the upper portions of the curves in figures 22 and 23, the larger the user (i.e. the greater his document requirements), the more economical the ADD service was. This result could have been postulated strictly on the basis of probability for the larger the number of reports one attempts to select from a finite set the higher his selection accuracy should become. Thus, by the very nature of the situation the document requirements of larger users will always be more predictable and hence more economical to fulfill.

DDC could, even now, offer ADD service to all users on a subscription basis, as is being done with AMTD service. Or DDC could economically provide ADD service to any user, so long as that user's ADD and residual demand volumes did not exceed the volumes which would satisy the following equation:

PRE-ADD DEMAND VOLUME	X	UNIT COST OF DEMAND SERVICE	=	ADD VOLUME	X	UNIT COST OF ADD SERVICE	+	RESIDUAL DEMAND VOLUME	X	UNIT COST OF DEMAND SERVICE

Either of these two approaches could be pursued at the present time using present report selection methods, but regardless of whether users were paying for the reports received or were limited in the numbers of reports they could receive, they (particularly the medium-sized users) would undoubtedly press for more accurate prediction techniques. DDC decided, therefore, to extend the service, in mid 1970 to only that group of users whose past document demand rate has been high enough to make ADD service economically feasible with present selection techniques. At the same time multidirectional efforts to reduce the cost of the service, and thus permit further extension of it later, are being pursued.

One of these cost reduction attempts is directed toward the basic need to improve the predictive accuracy of the search-term profiles. The users to whom the service is currently being extended present a ready test group for more definitive profiles. Prior to offering these users ADD service, DDC extracted from its request history files the AD numbers of all of the reports each of these users had recently requested from DDC. All of the descriptors assigned to the reports requested by each user were then extracted and tabulated by frequency. After adjusting the frequencies of descriptor occurrence for differences in user request volume, a significant occurrence figure was determined for each user. All of those descriptors with an occurrence equal to or greater than the significant occurrence figure for that particular user were then compiled into a search-term profile. These profiles were then sent along with the letters offering the service to each of those users.

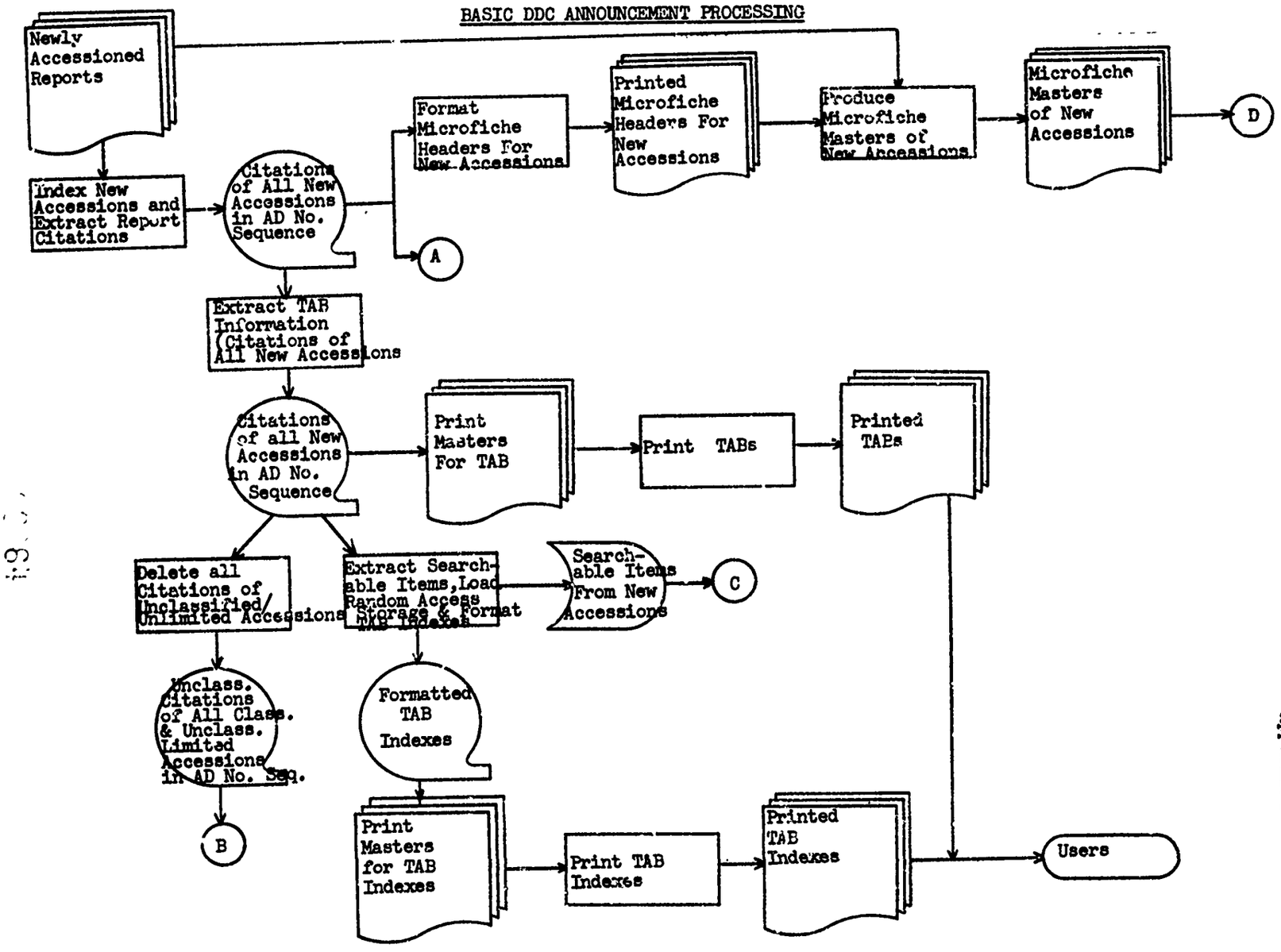
The numbers and types of changes which the users make in these computer-compiled profiles, and even more important, comparison of their ADD and demand service rates over the next several months with their prior service rates should prove very interesting.

Another attempt at cost reduction will focus upon a simulated test of expanding the document base of ADD service to include unclassified, unlimited reports. This simulation should indicate that such an expansion would produce additional cost savings, at least in the cases of those users falling in the upper portions of the curves in figures 22 and 23. What the increased microfiche work loads would be and whether DDC could handle them are more difficult to predict, however, and are the real reasons why the simulation is required.

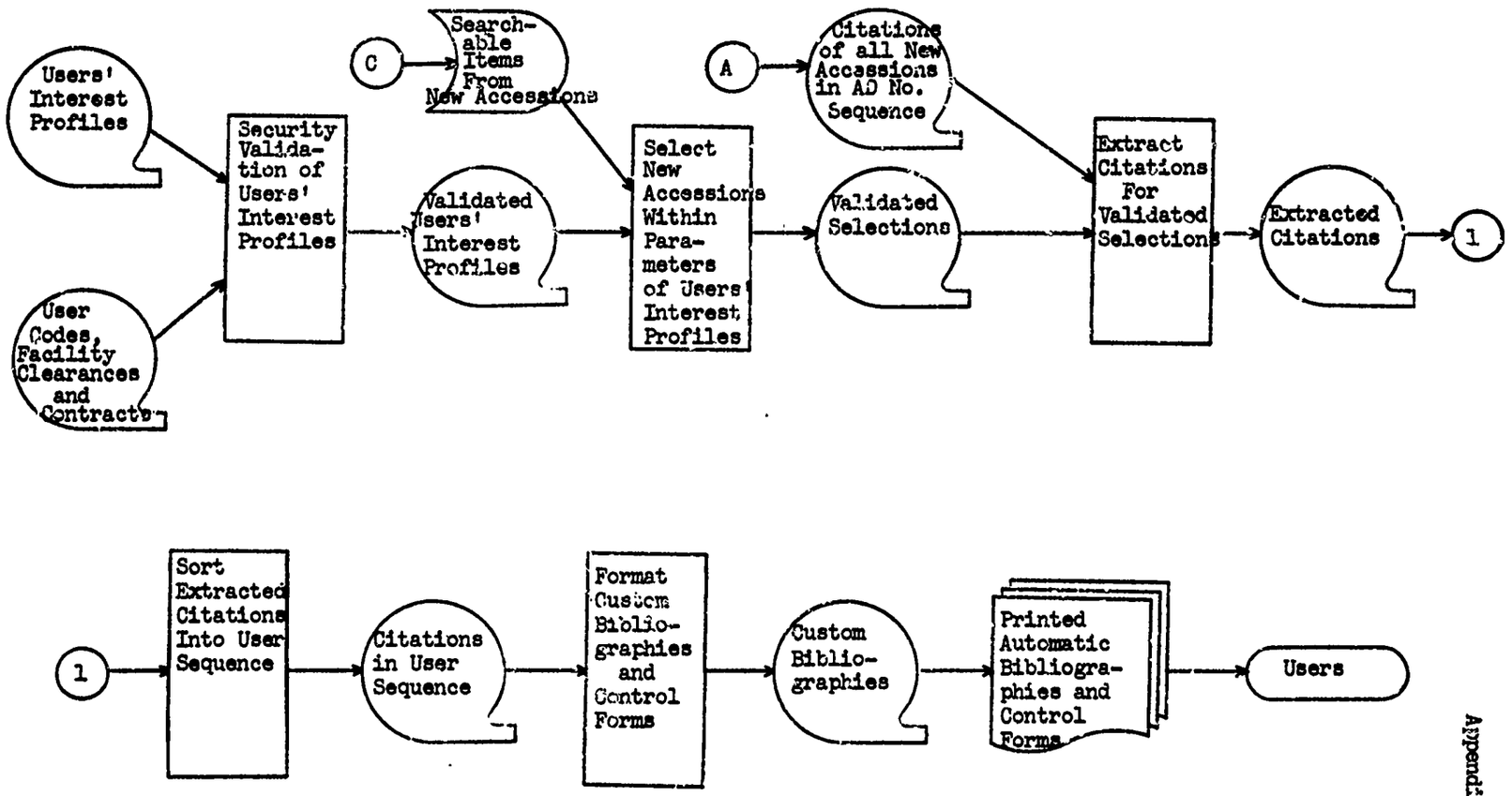
Appendix A

PARTICIPATING ORGANIZATION		SERVICES AND PRODUCTS						
		EIBS	GAB			AMTD	ADD	
ASP SERVICE CODE	NAME OF ORGANIZATION	NO./ CYCLE	NO. OF GROUPS/ CYCLE	AVGE. NO. OF COPIES/ GROUP/ CYCLE	TOTAL NO./ CYCLE	NO./ CYCLE	NO. OF GROUPS/ CYCLE	AVGE. TOTAL NO./ CYCLE
35600	U.S. Naval Missile Ct.	1	60	2	134	0	60	724
35601	U.S. Army Cold Reg. Res.	0	15	9	135	0	0	0
35602	U.S. Naval Weapons Lab.	0	74	8	644	1	19	357
35603	U.S. AF Weapons Lab.	0	127	1	138	0	70	787
35604	U.S. Naval Post-Grad Sch.	0	85	3	255	0	85	687
35605	U.S. AF Materials Lab.	0	24	2	48	0	24	140
35606	U.S. AF Off. of Res. Ana.	0	11	1	11	0	9	239
35607	U.S. AF Cambridge Res.Lab	0	20	3	59	0	20	234
35608	U.S. Army Picatinny Ars.	0	182	38	6960	0	182	1036
35609	U.S. Army Off.Chief of Eng	0	35	1	35	0	0	0
35610	U.S. Naval Res. Lab.	0	147	3	492	0	147	940
35611	Columbia Univ.	0	38	2	76	0	0	0
35612	U.S. AF Rome Air Dev. Ctr	0	41	1	41	1	41	454
35613	U.S. Naval Air Dev. Ctr.	0	140	2	241	0	140	989
35614	U.S. Naval Ship Res.&Dev.	0	77	6	446	0	77	744
35615	U.S. Naval Elec. Lab.	0	0	0	0	0	15	156
35616	U.S. AF Sch. of Aero. Md.	0	77	2	176	0	61	474
35617	U.S. Army Edgewood Ars.	0	114	4	473	0	114	894
35618	U.S. Army Natick Lab.	0	5	2	10	0	0	0
35619	U.S. AF Spec. Air War Sch	0	30	5	150	0	30	115
35620	U.S. Army Elec. Comm.	0	107	10	1070	1	107	644
35621	U.S. Army Aberdeen Prov.	0	113	2	266	0	45	547
35622	McDonnell Douglas	0	188	9	1719	0	166	573
35623	Abbott Lab.	0	13	3	39	0	43	136
35624	Johns Hopkins	7	134	4	553	1	132	557
35625	HRB Singer, Inc.	0	152	20	3040	0	152	575
35626	Gen. Dynamics Corp.	0	101	4	383	1	101	530
35627	Sylvania Elec.Pro. Inc.	0	150	4	600	1	150	571
35628	IBM Corp.	0	131	20	2620	0	131	329
35629	Lockheed Missiles	0	154	1	221	0	71	223
35630	North Amer. Rockwell	0	127	24	3045	0	127	562
35631	Douglas Aircraft	0	181	3	508	1	179	585
35632	3M Company	0	185	15	2835	0	34	304
35633	U. of Rochester	8	36	2	54	0	0	18
35634	Battelle Memor. Inst.	0	58	1	86	0	0	0
35635	Melpar Inc.	0	110	2	220	0	110	501
35636	Lockheed Miss.&Sp. Co.	0	0	0	0	0	100	505
35637	Grumman Aircraft Eng.	0	148	1	148	0	148	579
35638	Dow Corning Corp.	0	153	4	601	1	153	421
35639	Hughes Aircraft Co.	0	158	25	3950	0	158	579
		16	3701	249	32482	8	3201	17709

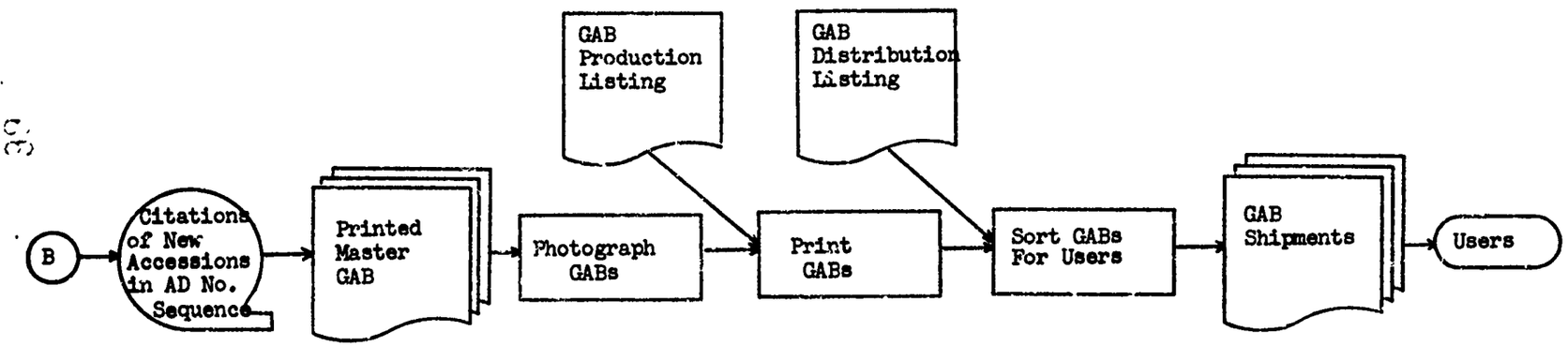
BASIC DDC ANNOUNCEMENT PROCESSING



AUTOMATIC BIBLIOGRAPHY PROCESSING

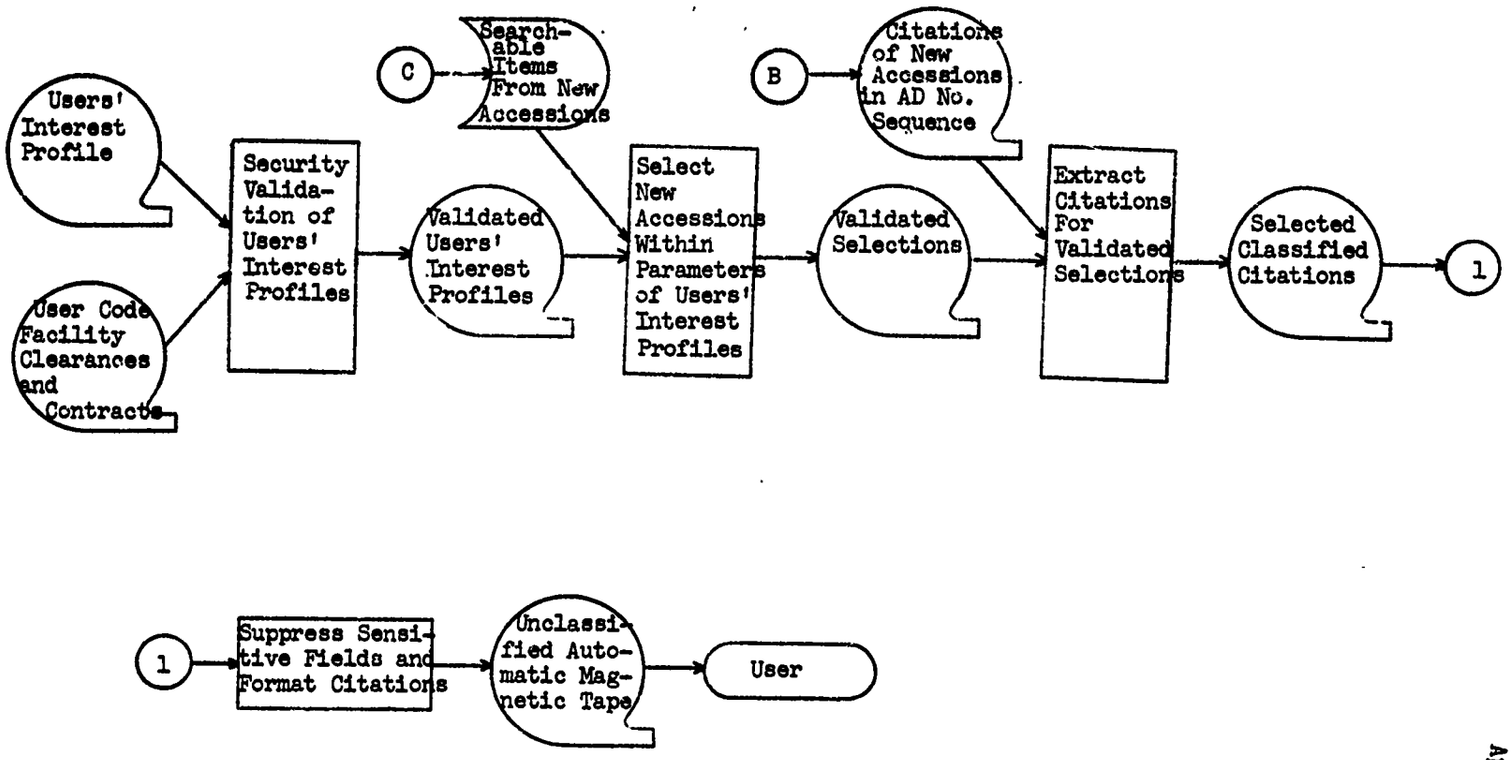


GROUP ANNOUNCEMENT BULLETIN PROCESSING

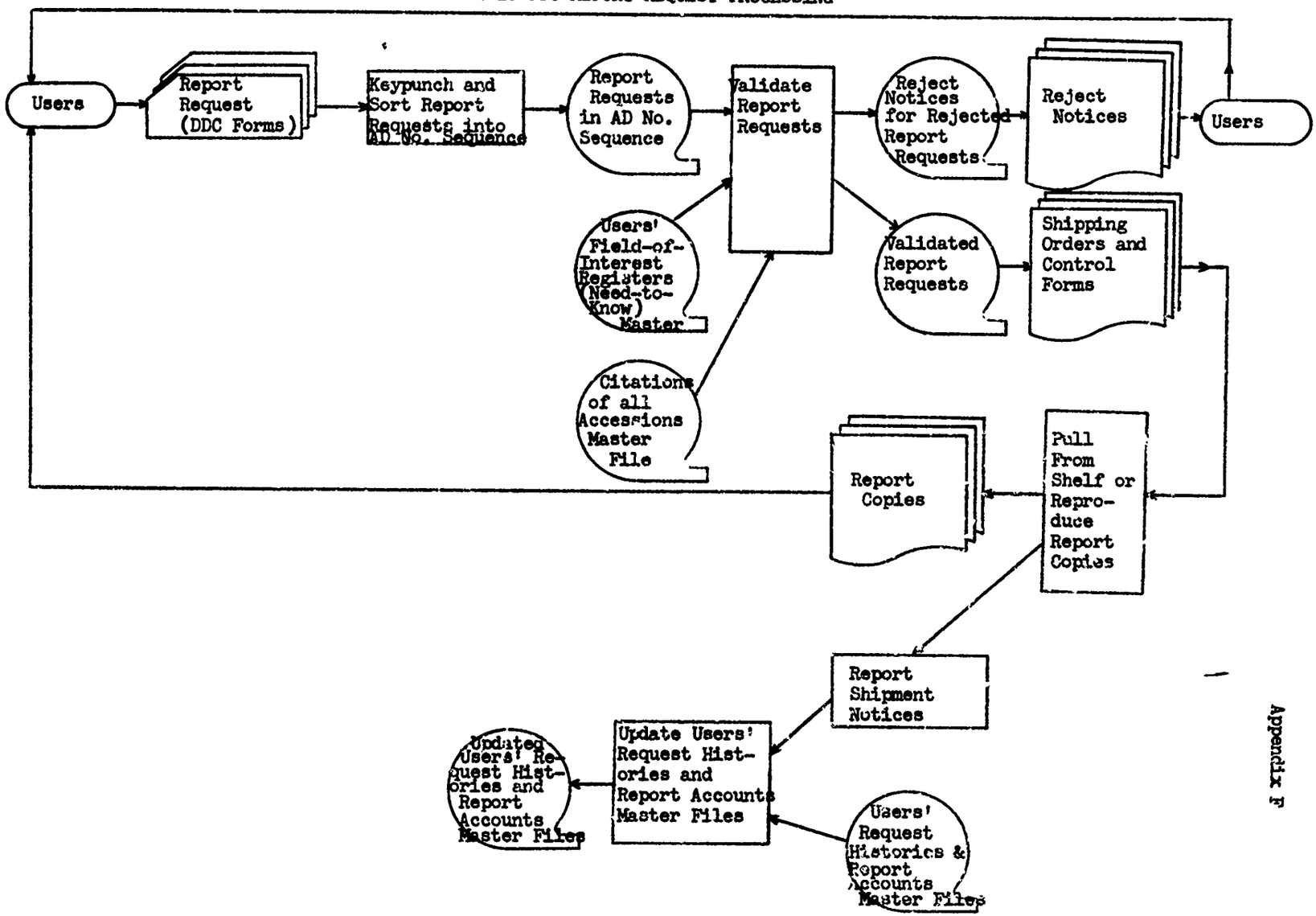


Appendix D

AUTOMATIC MAGNETIC TAPE PROCESSING

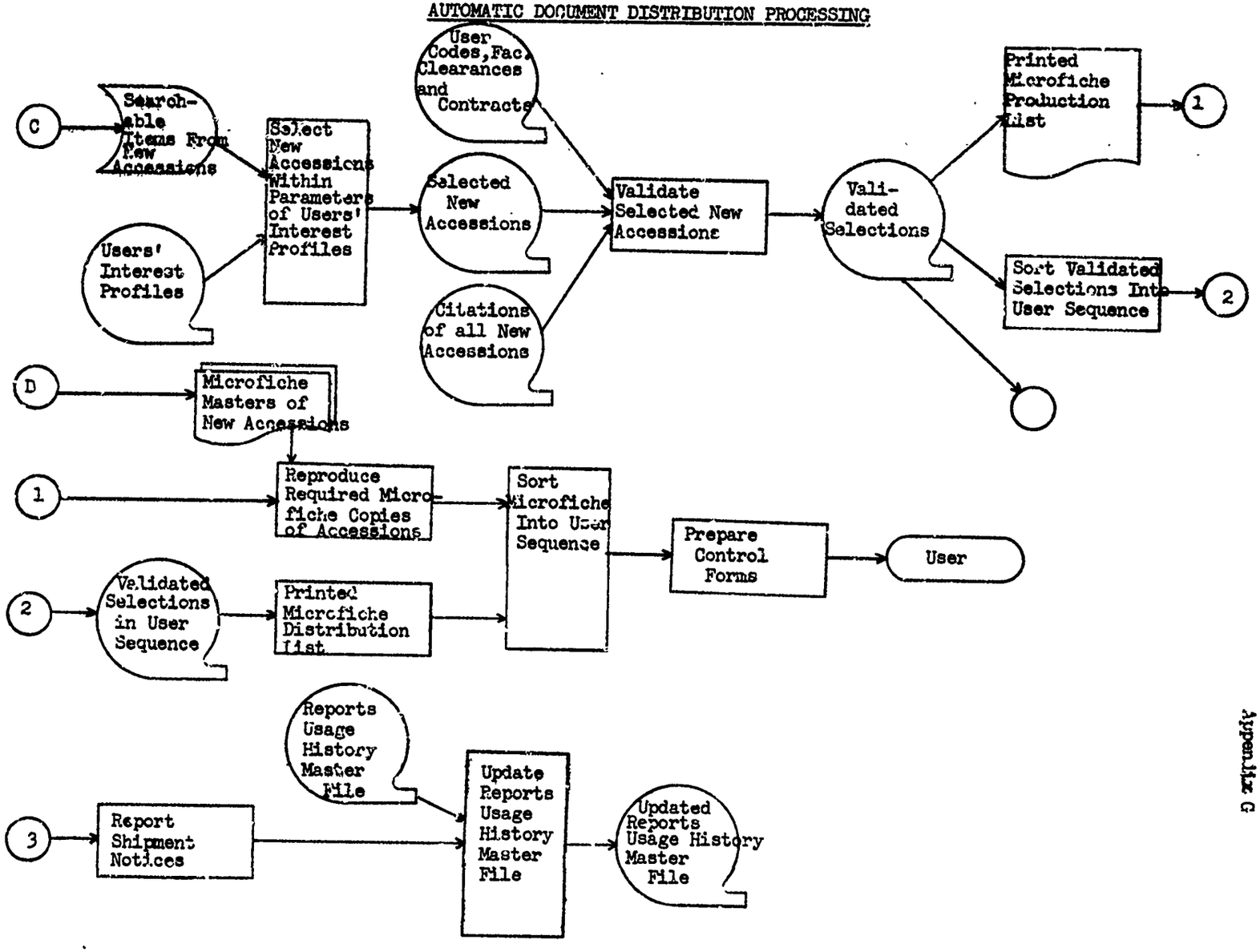


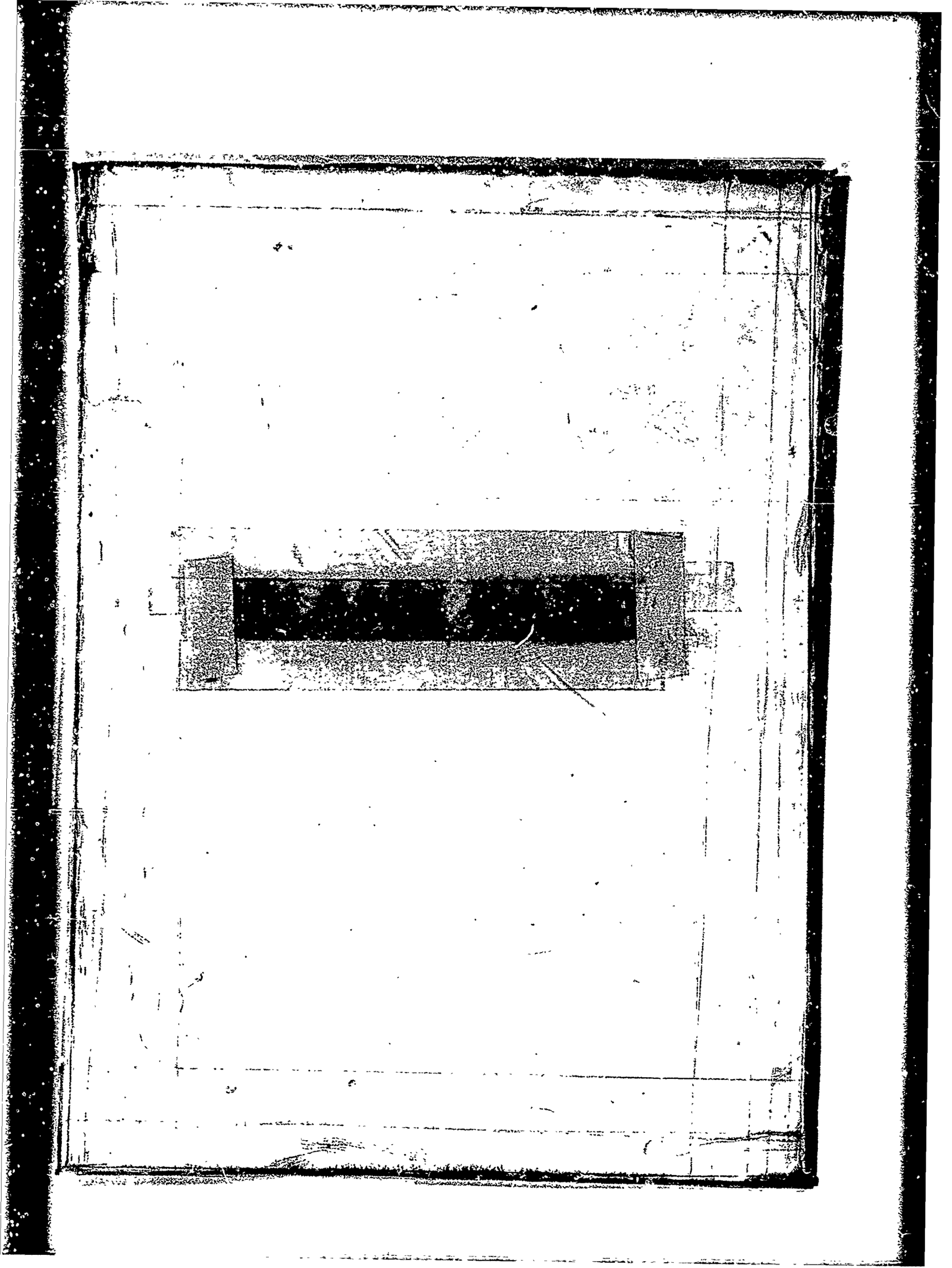
BASIC DDC REPORT REQUEST PROCESSING



Appendix F

AUTOMATIC DOCUMENT DISTRIBUTION PROCESSING





TOTAL RESPONSES - 35

Appendix H

Part I - 35 Part II - 30 Part III - 33 Part IV - 34

DDC AUTOMATIC SERVICES AND PRODUCTS

TEST EVALUATION ANALYSIS

PART I - PARTICIPANT INFORMATION

Each participant is requested to complete Part I and either or both Parts II and III depending on those products received during the test. The form should be covered with a cover sheet selected on the basis of the test cycles each participant has covered in the evaluation.

1. Organization Data

NAME OF ORGANIZATION: _____

ADDRESS: _____

ORGANIZATION UNIT AND SYMBOL: _____

DATE PREPARED: _____ BY: _____
Name and Title

TELEPHONE NO. _____ ASP SERVICE CODE: _____

2. Participant's Equipment Analysis

a. During the test period how many of the following were utilized?

Number of Equipment

0-40 Readers 0-7 Reader/Reproducer 0-1 Fiche-to-Fiche Duplicator 0-1 Fiche-to-Hard Copy Reproduction

b. Does your test experience indicate need for change in number or types of equipment for full operational implementation of ASP Program?

24 Yes 11 No

35 Replies (Check applicable block for each type of equipment)

Increase	Decrease	No Change	
22			Readers
11	1		Reader/Reproducer
13			Fiche to Fiche Duplicator
13			Fiche to Hard Copy Reproduction

35 Replies 3. Information and Library Services

a. Do you maintain a single location for information service?

18 Yes 17 No

b. If no, how many subsidiary information service outlets do you maintain? Varied from 1-46

c. How many of these outlets did you use in the ASP Test Program? Varied from 1-19

d. How many scientists, engineers, etc., comprise your user community? Varied from 12-11,467

e. How many of this user community were included in the Test? Varied from 10-5000

4. Please check the applicable kinds of major activities in which your organization is engaged.

27	Basic Research	Advanced Development	26	Management & Support	17
27	Applied Research	Engineering Development	24	Other _____	2
23	Exploratory Development	Operational Systems Development	17		

DDC AUTOMATIC SERVICES AND PRODUCTS

TEST EVALUATION ANALYSIS

PART II -- MICROFICHE

33 Replies 1. How is the original microfiche filed:

27 AD Number	1 Source	Other	Subject File
1 Report Number	2 Internal Accession No.		1

2. Utilization and Reproduction Statistics (related only to reports received on microfiche under ASP)

	No. of Actions
a. Reading:	
(1) Number of reports viewed (Count each time the same report is requested)	Unavailable
(2) Number of users viewing these reports (Count each visit as an invididual action)	Unavailable
b. Read/Print:	
(1) Number of reports from which selected pages were printed	Unavailable
(2) Number of selected pages reproduced	Unavailable
c. Fiche-to-Fiche:	
(1) Number of reports duplicated	Unavailable
(2) Number of copies of each duplicate microfiche prepared	Unavailable
d. Hard Copy Enlargement:	
(1) Number of reports enlarged	Unavailable
(2) Number of copies of reports reproduced	Unavailable

e. Estimate the average time span* (in calendar days) to satisfy local user needs by:

(1) Conventional request process — Hard Copy 10.4 days/avg 29 Replies
Microfiche 10.3 days/avg 22 Replies

(2) Automatic Distribution — 2.1 days/avg 24 Replies

*(The time span should begin with the initiation of the request by the user and end when he receives the document)

f. Manhours utilized for local information processing and maintenance to service a request for report copy (base calculations on two months volume and experience):

(1) In present conventional request service from DDC _____ (include manhours for preparing and transmitting Form 1, maintaining suspense records of orders, receiving and re-routing report copy from DDC, follow-up action when required, etc.).

(2) In proposed automatic microfiche distribution service from DDC _____ (include manhours for receiving, checking, shelving microfiche, pulling request items for viewing or other action, refiling, etc.)

g. How many requests were made to DDC for unclassified-limited and classified reports announced during the test period for documents not covered by your ASP Field/Group profile?

Microfiche	Avg 64.0	7 Replies
Hard Copy	Avg 278.6	19 Replies
Total	_____	

3. Were microfiche duplicates made for additional files? 4 Yes 24 No 1 Blank
29 Replies

If yes, specify number and kind of additional files._____

_____

29 Replies! 4. EVALUATION

a. What was the reaction of your user community to microfiche in lieu of hard copy?

15 Favorable 12 Unfavorable 2-Blank
If unfavorable, please explain.

30 Replies! b. Did you experience any problems relative to the packaging, shipment, or receipt of the microfiche?

21 Yes 8 No 1-Blank
If yes, please explain:

30 Replies! c. Have you had any difficulties in filing the microfiche or in maintaining the files?

5 Yes 25 No
If yes, please explain:

31 Replies! d. Do you feel that the equipment commercially available is adequate for storing, handling, reading and reproducing microfiche?

14 Yes 15 No 2-Blank
If no, please outline what other equipment is considered needed.

30 Replies! e. Is your Field/Group profile structure for microfiche adequate for your needs?

19 Yes 10 No
If no, please indicate what changes you would like made.

DDC AUTOMATIC SERVICES AND PRODUCTS

TEST EVALUATION ANALYSIS

PART III - GABs AND INDEXES

			YES	NO
33 Replies!	1.	DISTRIBUTION AND FILING (Please check "Yes" or "NO" or note as applicable)		
33 Replies!	a.	Do you reproduce copies of the GABs?	7	26
7 Replies!	b.	If so, how many copies per issue of GABs? ~~Avg-11~~		
33 Replies!	c.	Do you distribute the individual GABs to the users according to their Field/Group interests?	27	6
32 Replies!	d.	Have you found it necessary to fragment a GAB for distribution to your users?	8	24
33 Replies!	e.	Do you keep one set of GABs filed centrally for general use? 1 Blank	25	7
32 Replies!	f.	Did you wait to distribute GABs until you received the fiche? 3 Blank	8	21
29 Replies!	g.	On the average, how many days after you receive it, is the announcement media available to your users? AVG 2.0 days		
		(FOR ADDITIONAL COMMENTS PLEASE USE THE SPACE PROVIDED AT THE END OF THIS SECTION)		

			YES	NO
	2.	UTILIZATION (Please check "Yes" or "No" or note as applicable		
32 Replies!	a.	Do you compile your own reference files of the entries in your fields of interest? 6-BLANK	10	16
32 Replies!	b.	Is your Field/Group profile structure for GABs adequate for your needs? 2-BLANK	21	9
33 Replies!	c.	Does your subject profile change more often than every 3 months? 1-VARIES	3	29
33 Replies!	d.	Do you find all indexes useful? 1-BLANK	25	7

		Yes	No
	e. List the indexes in their order of usefulness to you:		
	Rept.No. 6 Subj. 5 Cor.Auth.3 Contract 3		
	Auth 1 RptSres 1 _____ _____		
33 Replies!	f. Would you change the format of the indexes? 2-BLANK	7.	23
	g. List the ones you would change:		
	1._____ 2._____ 3._____ 4._____		
	5._____ 6._____ 7._____ 8._____		
33 Replies!	h. Is the present frequency of issuing indexes sufficiently useful for you? (Same as present TAB)	33	
33 Replies!	i. Are the indexes cumulated frequently enough for you?	24	9
	If no, please suggest what changes you would like to see made.		
	j. What other announcement tools would you find useful? (Please list)		

3. FORMAT OF GAB
(Please mark the appropriate block to indicate your preference in format. If you have no preference, please mark "NO PREFERENCE")

32 Replies! a. Is the present format acceptable 22 Yes 8 No 2 No Preference

(IF NOT, AND PREFERENCE IS NOT CITED IN ONE OF THE ITEMS BELOW, PLEASE COMMENT IN THE SPACE PROVIDED AT THE END OF THIS SECTION) 6-BLANK

31 Replies! b. Bound 4 Loose-leaf 14 No Preference 7

32 Replies! c. Text arrangement:
Vertical 10 Horizontal (as is) 9

No Preference 8 5 Blank

32 Replies! d. Items spaced as at present 15 More Compact 7 No Preference 5

32 Replies e. Which of the following bibliographic items would you like to see in the display first:

22 AD # All 1 Source 1

7 Title Blank 1

F/G assignments

32 Replies! f. Is the print size acceptable? 25 Yes 6 No 1 Blank

4. COSTS FOR HANDLING GAB
32 Replies! (Please supply the best estimates available in appropriate blocks)

a. Generally, would the costs to your organization increase or decrease with the use of GAB (instead of TAB) to obtain R&D information.

7-Avg	13 avg	Blank
Decrease 2	Increase 4	Est.(%) 6

b. Please compare your average manhours expended for using GAB and TAB, on the basis of one issue (shipment) of GAB and one issue of TAB (with the average normal number of copies you receive).

	TAB	GAB
1. Receipt of mail and preparation for routing:		
Professional personnel (hrs)	—	—
Clerical personnel (hrs)	—	—

	TAB	GAB
2. Re-routing because of too few copies		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
3. Reproduction because of too few copies		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
Supplies (in dollars)	___	___
4. Maintaining up-to-date routing lists		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
5. Maintaining user request file (for documents)		
Professional personnel (hrs)	___	___
Clerical personnel (hrs	___	___
6. Maintaining central file of announcement medium		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
7. Disposition of excess copies		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
8. Maintaining security records and controls		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
9. Other (Please define)		
Professional personnel (hrs)	___	___
Clerical personnel (hrs)	___	___
TOTALS	___	___

DDC AUTOMATIC SERVICES AND PRODUCTS

TEST EVALUATION ANALYSIS

PART IV - SERVICES

General

34 Replies! a. Which concept of service do you prefer?

22 Automatic 7 Demand 5 No Preference

34 Replies! b. Which announcement media do you prefer?

8 GAB 17 TAB 9 No Preference

34 Replies! c. Will you continue using ASP service after the test period?

29 Yes 5 No

34 Replies! d. Please give your assessment of the impact on information service resulting from ASP as compared to the present acquisition process.

34 Replies! e. Would you prefer your interest profile to be more definitive than the field and group structure?

10 Yes 22 No Blank 2

If yes, explain:

_____

_____

_____

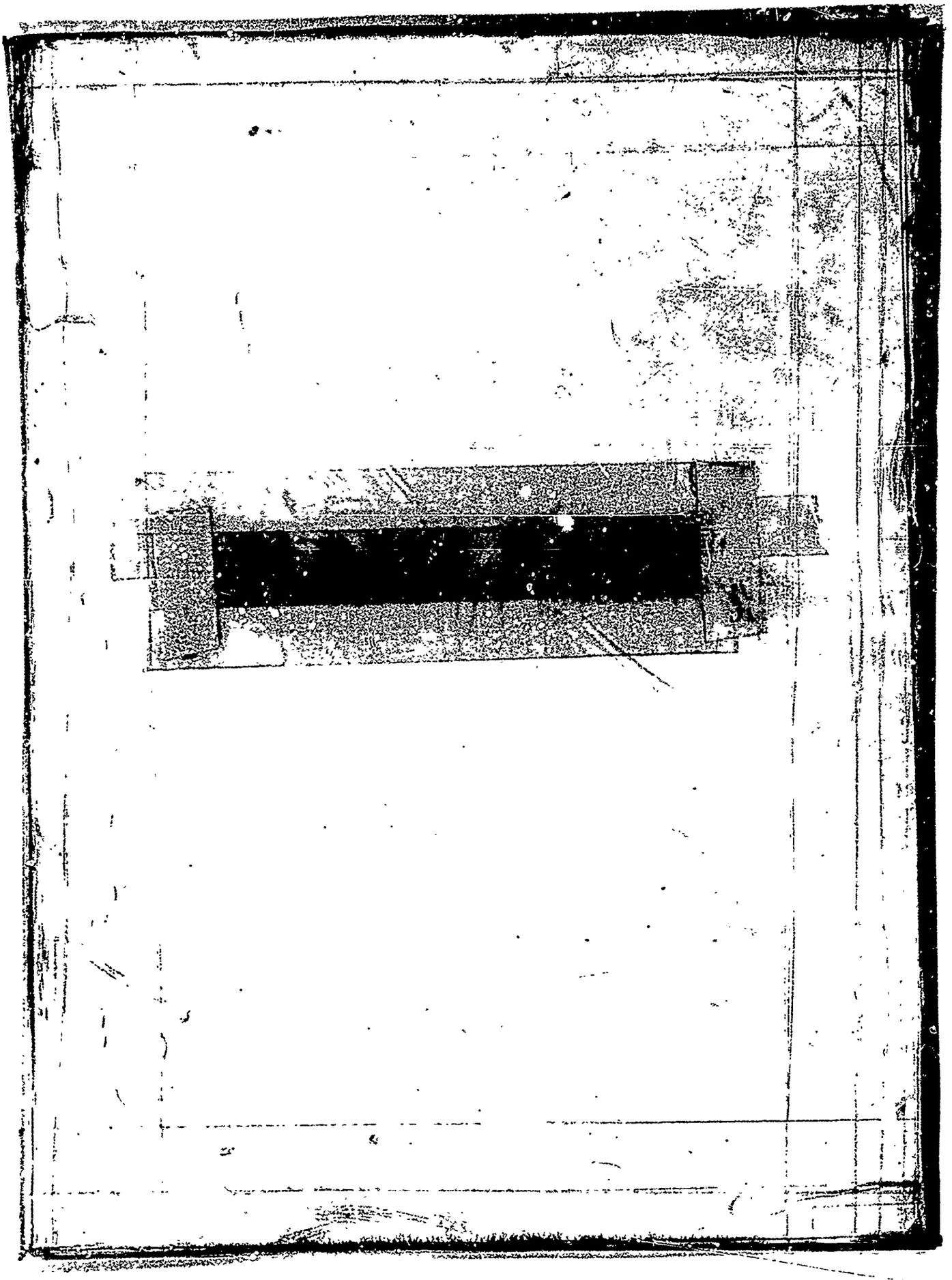
_____

Please return to:

Defense Documentation Center
ATTN: DDC-D
Cameron Station
Alexandria, Virginia 22314

USER POPULATION MATRICES

		ARMY	NAVY	AIR FORCE	JNT DOD	EDUC CONT	INDUS CONTR	FED	GOVT WITH CONT	LINE TOTALS
HIGH-VOLUME USERS (RESPONSIBLE FOR ONE-THIRD OF ALL DOCUMENT REQUESTS)	ADD	1	2	1	0	1	7	0	0	12
	GAB	0	2	1	0	1	7	0	0	11
	AMTD	1	0	0	0	1	2	1	0	5
TOTAL	DDC	6	2	4	1	8	45	4	0	70
MEDIUM-VOLUME USERS (RESPONSIBLE FOR ANOTHER ONE-THIRD OF ALL DOCUMENT REQUESTS)	ADD	5	3	2	1	1	6	0	0	18
	GAB	6	3	2	0	2	4	0	0	17
	AMTD	1	0	0	0	0	0	0	0	1
TOTAL	DDC	31	36	32	5	54	195	16	1	370
LOW-VOLUME USERS (RESPONSIBLE FOR THE REMAINING ONE-THIRD OF ALL DOCUMENT REQUESTS)	ADD	0	2	1	1	1	6	0	0	11
	GAB	1	1	1	0	1	5	0	0	9
	AMTD	1	0	1	0	0	0	0	0	2
TOTAL	DDC	539	453	762	142	697	1,563	374	39	4,560
TOTAL USERS (COLUMN TOTALS)	ADD	6	7	4	2	3	19	0	0	41
	GAB	7	6	4	0	4	16	0	0	37
	AMTD	3	0	1	0	1	2	1	0	8
TOTAL	DDC	576	491	798	148	759	1,803	394	31	5,000



Appendix J

GROUP ANNOUNCEMENT BULLETINS EVALUATION ANALYSIS

PART I - Organizational Data

Name of Organization: _____

Address: _____

Date Prepared: _____ By: _____
(Name and Title)

Telephone: _____ Automatic Services Code: _____

PART II - General Information

1. What is the total number of STINFO users in your organization?
   1,851 average 8 - 6,696 range

2. Do you maintain a single location for information services?
   17 Yes 14 No

   If no, how many subsidiary information outlets do you maintain?
   4 average 1-17 range

3. Do you produce an in-house current awareness bulletin of any type?
   29 Yes 2 No

   If yes, what report collections are included? Generally all they receive (9); frequently mentioned specifically were: primary distribution (9); in-house (11); DDC (12); NASA (11); AEC (6); CFSTI (2).

4. How are GAB's and other selective announcement services (CAST, FAST, SCAN) integrated and incorporated into your current awareness program? Disseminated according to user interest profiles (22); circulated through organization (5); kept in library (5); incorporated into in-house announcement bulletin (4); added to in-house announcement bulletin as supplement (2); integrated into computer-based SDI (1).

PART III - Reproduction and Distribution

1. Are you experiencing any problems relative to the packaging, shipment, or receipt of GAB's? 10 Yes 21 No

If yes, explain: Incorrect quantities (7); poor quality (2); shipment not all received at same time (2); missing shipment (1); GABs all out of sequence (1); sent to incomplete address (1).

2. Are you maintaining a central file for GAB's? 18 Yes 13 No

If yes, in what sequence are they filed?

13 Major classification--Field/Group; minor classification--GAB Issue Number

6 Major classification--GAB Issue Number; minor classification--Field/Group

__ Other (Explain)_____

3. Are you reproducing copies of the GAB's for automatic distribution? 8 Yes 23 No

If yes, by what process? Xerox copier (6); offset printing (2).

How many copies per issue do you reproduce? 68 average of those reproducing
2-400 range of those reproducing

4. Are you distributing GAB copies by:

8 routing via buckslip to organizational entities?
5 routing via buckslip to interested personnel?
13 direct routing to each user?
5 other? (Explain) Disseminated according to profiles (2); incorporated into in-house announcement bulletin (2); circulation from user to user (1).

5. Complete the following table pertaining to the circulation of announcement media:

	GAB	CAST	TAB	USGRDR	
Number Received.....	1-765 117	1-46 10	1-50 11	1-40 5	Average
Number Circulated.....	0-943 168	0-350 16	0-60 12	0-24 4	Average
Number of Distinct Organizational Entities Served.....	3-350 40	0-125 23	0-125 18	0-125 20	Average
Average Circulation Time Per Organizational Entity.....	2-14 da. 8 days	0-7 da. 2 days	0-21 da 8 days	0-14 da 4 days	Average
Number of Persons Served.....	8-3000 383	0-750 119	30-1500 306	0-1600 338	Average
Average Circulation Time Per Person....	0-7 days 1 day	0-7 days 1.4 days	0-7 days 1 day	0-7 days 1 day	Average
Number of Document Requests Initiated by Circulation....	1-300 83	2-300 21	0 1340 140	0-170 36	Average
Rank (1,2,3 or 4) the services as to which best fulfill your current awareness requirements.....	8 Firsts 2.2	5 Firsts 2.9	10 Firsts 2.1	3 Firsts 2.5	Average

(Give reasons for your rankings) 1. TAB is more convenient, but routing is hindered by classification. 2. GAB is effective when properly distributed, but rapidly shifting information requirements of end users make it hard to distribute effectively. 3. USGRDR is comparable to TAB. 4. CAST is comparable to GAB.

6. While the original intent of GAB production was to replace TAB, DDC's initial evaluation indicated that TAB is still required as a central reference tool. Is TAB still needed? 31 Yes 0 No

If yes, how is it used?

14 Central reference only
0 Circulation for current awareness only
17 Both circulation and central reference
4 Other (Explain) Additional uses mentioned were: verification of procurement information (2); basis for cataloging (1); decentralized reference service (1).

How many copies are required by your organization? 10.7 average
1 - 50 range

Would TAB in microfiche form be acceptable? 6 Yes 24 No

If no, why not? Circulation would be impossible and use for reference would be too difficult (22); not enough equipment available (7); might create security problems (2).

PART IV - Evaluation

1. Do you have subscriptions for CAST (Clearinghouse Announcements in Science and Technology)? 24 Yes 7 No

If yes, do you plan to renew your subscriptions? 13 Yes 10 No

2. Does CAST serve adequately as a counterpart to GAB?

14 Yes 9 No

Why, or why not? Yes, because it covers reports not in GAB (6); can be circulated to non-GAB users (1); but isn't used as much as GAB (6). No, because USGRDR is adequate (3); the service charge limits its use (2); and it makes too many different places to look for reports (5).

3. If GAB were put on a subscription basis similar to CAST, would your organization subscribe? 16 Yes 11 No

4. Would you prefer a CAST-type format, similar to the enclosed, instead of the present GAB format? 16 Yes 11 No

Whichever format you prefer, do you have any modifications to suggest? Better typography and larger print (4); bigger, bolder type for AD Nos. (3), Field/Group assignments (1), titles (1), and distribution statements (1); more citations per sheet (1); no citations to limited reports (1); individual report citations printed on catalog card stock.

5. Do you subscribe to FAST (Fast Announcements in Science and Technology) published by CFSTI? 14 Yes 16 No

If yes, do you find this type of announcement flyer useful?

13 Yes 1 No

6. What benefits, if any, does your organization derive from TAB which could not be satisfied by GAB? TAB is more flexible, more compact, and easier to use (16); serves effectively as a central reference tool (15); needed for its broader coverage (13); necessary for in-house searches (8); easier to use indexes with (8); contains necessary ordering information and classification changes (4); serves as an acquisitions and cataloging tool (2); unaffected by changing user needs (1); few, if any, benefits.

7. If GAB were limited to only citations for unclassified reports, what effect would this have on your organization? Effectiveness and usefulness of service would be greatly reduced (16); little or no effect, as long as TAB publication continues as at present (10); would have to use TAB service more (5); would further fragment information services (2); would have to begin using magnetic tape service (1); would be better, as we only use unclassified services (2).

8. Please give your assessment of the impact on your organization of the GAB program. GABs have increased the libraries' abilities to provide current awareness services to their users, whose interests have been increased (10); GABs have been appreciated by the recipients (4); GABs have worked fine in conjunction with the ADD service (if users see an announcement of interest they can immediately look at the full text report) and have helped make microfiche more acceptable (5); GABs have made users more selective in their document requests (2); GABs would be better if only the unclassified, unlimited were included (1); GABs were not nearly as effective as they would be with more correlation with CAST, FAST, SCAN, etc. (6); GABs are of little use, the TAB is preferred (4); GABs would not be needed at all if TAB were unclassified (4); GABs aren't needed, as the ADD microfiche are circulated for current awareness (1); GABs never fulfilled their promise (1); GABs merely flood us with irrelevant paper (1); DDC should supply TABs and let the libraries do the library work.

DDC

Group Announcement Bulletin

Issue No. 69-10

FIELD 6/GROUP 1

BIOCHEMISTRY

Indicate the documents you want by checking the column alongside the desired citations, hardcopy (HC) and/or microfiche (MF). Then write your name and internal code in the spaces below, and forward the entire sheet to your in-house library.

NAME

MAIL CODE

HC MF

AD-849 509L 6/16 6/1
GEORGETOWN UNIV WASHINGTON D C DEPT OF BIOLOGY
[redacted]
DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 67-30 SEP 68.
SEP 68 12P IRVING GRAY:
CONTRACT: DADA17-67-C-7139

UNCLASSIFIED REPORT
DISTRIBUTION: USGO: OTHERS TO COMMANDING GENERAL, ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, ATTN: MEDDH-SI, WASHINGTON, D. C. 20315.

DESCRIPTORS: [redacted]

AD-849 710L 6/1 6/3
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D C
[redacted]
MAR 69 32P R. KLEIN:M. TEODORESCU:
REPT. NO. FSTC-HT-23-1035-68
PROJ: FSTC-92236282301, FSTC-0517014

UNCLASSIFIED REPORT
DISTRIBUTION: USGO: OTHERS TO COMMANDER, ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER, WASHINGTON, D. C. 20315.
SUPPLEMENTARY NOTE: TRANS. OF ACADEMIA REPUBLICII POPULARE ROMINE, INSTITUTUL DE INFRAMICROBIOLOGIE. STUDII SI CERCETARI DE INFRAMICROBIOLOGIE, V19 N5 P375-392 1968.

DESCRIPTORS: [redacted]

HC MF

AD-849 529L 6/1 6/13
COLLABORATIVE RESEARCH INC WALTHAM MASS
[redacted]
DESCRIPTIVE NOTE: ANNUAL PROGRESS REPT. (FINAL) 1 JAN-30 DEC 68.
FEB 69 56P ORRIE M. FRIEDMAN:HARVEY GEORGE:PAUL KELLEY:NICOLAS A. STARKOVSKY:PAUL C. ZAMECHIK:
CONTRACT: DA-49-193-MD-2679
PROJ: DA-1-B-622401-A-096
TASK: 1-B-622401-A-09602

UNCLASSIFIED REPORT
DISTRIBUTION: USGO: OTHERS TO COMMANDING GENERAL, ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, ATTN: MEDDH-SI, WASHINGTON, D. C. 20315.
SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH MASSACHUSETTS GENERAL HOSPITAL, BOSTON, THE JOHN COLLINS WARREN LABS.

DESCRIPTORS: [redacted]

AD-849 938L 6/15 6/1
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D C
[redacted]
MAR 69 17P R. BENDA:
REPT. NO. FSTC-HT-23-705-68
PROJ: FSTC-92236282301

UNCLASSIFIED REPORT
DISTRIBUTION: USGO: OTHERS TO COMMANDER, ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER, WASHINGTON, D. C. 20315.
SUPPLEMENTARY NOTE: TRANS. OF CESKOSLOVENSKA EPIDEMIOLOGIE, MIKROBIOLOGIE, IMMUNOLOGIE, V16 N5 P268-278 1967.

DESCRIPTORS: [redacted]

NOTICE

THE TITLES AND DESCRIPTORS CONTAINED IN THIS SAMPLE HAVE BEEN BLACKED OUT TO ENABLE PUBLIC RELEASE OF THIS DOCUMENT. THE RELEASE LIMITATION MARKINGS LEFT ON TO INDICATE FORMAT ARE NOT APPLICABLE TO THIS UNCLASSIFIED/UNLIMITED SAMPLE.

ENCLOSURE

AUTOMATIC MAGNETIC TAPE DISSEMINATION

EVALUATION ANALYSIS

PART I. Organization and Contact Individual

Name and Address of Organization: _____

_____

DDC User Code: _____ Telephone: _____

Contact Individual and Title: _____

_____

PART II. ADP EQUIPMENT

Computer Capability? 14 Yes 0 No Current or Future 1 (No reply)
If yes, complete the following:

Make and Model: _____

Memory Size: _____

Tape Drives (No. & Type): _____

Estimated Date of Installation: _____

PART III. YOUR SYSTEM SPECIFICATIONS:

Do you have document data in machine-readible format now? 9 Yes 4 No 2 (No reply)
If yes, complete the following:

File Content:

____Accession ____Source ____Descriptors
____Title ____Author ____Abstracts
____Other (Describe)

Storage Medium:

____Punched Tape ____Drum
____Punched Card ____Disc
____Magnetic Tape ____Other

PART III. continued:

Approximate Number of Documents on File: 1100 - 500,000

Frequency of File Use: 1 - 4 times weekly

PART IV. USE MADE OF DDC MAGNETIC TAPE:

What use (was/is) being made of DDC Magnetic Tape? (Please circle applicable entries)

Selective dissemination 9

Bibliographic Searches: 3

Subject Source
Contract Report Number
Author 4 (No reply)

Indexes or Announcements 4

Document Control 1

Management Information 4

Other 1

PART V.

What factors resulted in your decision to use/not use the tapes provided:

Format 2 2 (No reply)
Data Representation 8
Other 5

PART VI.

What improvements would you desire?

Blocked records 2 Short reels 1 Other 4
Header/trailers 3 Format Change 1 4 (No reply)

PART VII.

As a result of tape data, have your bibliographic requests decreased?
2 Yes 6 No If yes, give approximate percentage ____%.
7 (No reply)

PART VII. continued:

Would the inclusion of Classified abstracts on the tape further reduce your bibliographic requests? 4 Yes 5 No 6 (No reply)

Have your document requests increased 5, decreased 2, or remained 2 unchanged? 6 (No reply)

PART VIII.

How many personnel are provided service by your program? 1100 (Avg)

PART IX.

Does the use of DDC's magnetic tape eliminate your need for DDC's published TAB? Ø Yes 13 No 2 (No reply)
If no, please explain:

PART X.

Would you be willing to pay for this service? 6 Yes 3 No 6 (No reply)

Customized Tape Service? 10 Yes 1 No 4 (No reply)

Please explain:

PART XI.

Do you combine DDC tape entries with other announcement services? 7 Yes 5 No 3 (No reply)
If yes, please list other inputs:

PART XII.

What is your estimate of saving realized by use of DDC's tape as input. Please consider the cost of abstracting, indexing, keystroking, etc., when estimating this cost.

(The majority were unable to provide meaningful cost figures at this time.)

Appendix L

AUTOMATIC DOCUMENT DISTRIBUTION
EVALUATION ANALYSIS

PART I - Organization Data

Name of Organization: _____

Address: _____

Date Prepared: _____ By: _____
(Name and Title)

Telephone Number: _____ Automatic Services Code: _____

PART II - Equipment Analysis

1. How many of each of the following are available for use in this program?

Average	25 Readers	4 Reader/ Reproducer	1.3 Fiche-to-fiche duplicator	1.9 Fiche-to-hard copy reproduction

2. Does your experience indicate a need for changes in the numbers or types of equipment for full operational implementation of automatic services program?

Totals 32 Yes 8 No No reply 1

Average 3. What is the ratio of STINFO users to microfiche viewing equipment in your organization? 151-1 (High 1000-1 Low 2-1) No reply 5

4. What plans, if any, do you have for acquiring additional equipment? 14 users have no plans for acquiring additional equipment. 18 users have future plans for expanding equipment. 9 users have equipment on order.

5. Is microfiche equipment readily accessible to your STINFO users?

Totals 34 Yes 5 No No reply 2

Please elaborate. 25 users report enough equipment available in library and most labs with portable equipment available. 11 users report a need for equipment. 5 no answers.

PART III - Usage Volume

Average. 1. How many microfiche reports are received through automatic services per bimonthly TAB cycle? 449 No reply 2

2. How many unclassified/limited and classified reports are requested from DDC per bimonthly TAB cycle?

Average 66 Microfiche No reply 7
36 Hard Copy No reply 7

3. Of those reports requested from DDC, how many (as nearly as you can tell) are requested because:

Average 42 they fall outside the scope of your automatic services profile? No reply 9

29 they are desired in hard copy form instead of microfiche form? No reply 9

31 in-house reproduction or distribution of the centrally-filed microfiche is not feasible or desirable? No reply 9

4. Is your present demand request rate less than it was prior to automatic services?

Totals	Microfiche:	19 Yes	19 No	No reply 3
	Hard Copy:	23 Yes	15 No	No reply 3

PART IV - Reproduction and Utilization

Totals 1. Are your microfiche reports centrally filed? 36 Yes 5 No
If yes, how are they filed? (Note: "Yes" answers file in more than one place.)

Totals 38 AD Number 3 Report Number
2 Source 3 Internal Accession Number
1 Other (explain) _____

_____

If no, how are they distributed? _____

_____

Totals 2. Are microfiche duplicates made for additional files? 16 Yes 25 No
If yes, specify the numbers and kinds of additional files: _____

_____

Of these requests filled in-house, what percentages are:

%	
60	filled satisfactorily by viewing the file copy?
24	filled by making a microfiche copy?
16	filled by making a hard copy? No reply 11

PART V - Evaluation

1. What is the present reaction of your user community to microfiche in lieu of hard copy?

24 Favorable 17 Unfavorable

If unfavorable, please explain: Lack of portability, eyestrain, cannot refer back and forth; security problems.

2. How does the present view regarding the use of microfiche in lieu of hard copy compare with previous feelings? 30 report a gain in acceptance; 7 no change; 2 still report a negative attitude. 2 no answers.

To what do you attribute any change?

3. Are you experiencing any problems relative to the packaging, shipment, or receipt of the microfiche? 12 Yes 29 No

If yes, please explain:

4. Are you having any difficulties in filing the microfiche or in maintaining the files? 7 Yes 34 No

If yes, please explain:

Total 3. Do you use positive microfiche: 8 Yes 33 No
If yes, do you reproduce from the negative microfiche you receive from DDC? 7 Yes 1 No

4. What is your user reaction to positive microfiche as compared to negative? 13 do not receive positive microfiche; therefore no preference.

12 definitely do not like positive microfiche; 2 like positive microfiche.

14 no answers.

Total 5. Are microfiche duplicates requested from DDC for additional files?
13 Yes 26 No No reply 2

If yes, specify the numbers and kinds of additional files: _____

Average 6. How many AD report requests per month are received (from your STINFO users) in your library? 513 No reply 10

To the best of your knowledge, what percentages of these requests are prompted by:

%	
6	person-to-person communication (word-of-mouth advertising)?
17	GAB announcement?
4	CAST announcement?
18	TAB announcement?
7	USGRDR announcement?
5	FAST announcement?
12	TAB Indexes search?
10	DDC bibliography search?
21	Others (Please list)? _____

Of these requests, what percentages are: No reply 9

43	forwarded to DDC?
57	filled in-house?

5. Has the accumulation of microfiche for the past year had any impact on your operations? 31 Yes 9 No No reply 1

If yes, please explain: (In one instance, for example, a company increased their use of the DDC TELEX Bibliography Service.)

Information is immediately accessible; storage capability has increased, increased workload, increased the utilization of government R&D reports.

RECENT DDC-D TECHNICAL REPORTS

Bennertz, R. K., "Development of the Defense Documentation Center Remote On-Line Retrieval System Past, Present and Future," Report DDC-TR-71-2, AD 720 900, March 1971.

Blumberg, S. E., "An Interim Progress Report of Computer-Output-Microfilm Activities and Experiences at the Defense Documentation Center," Report DDC-TR-70-2, AD 708 600, July 1970.

Gordon, R. F., "Microfiche Viewing Equipment," Report DDC-TR-70-1, AD 701 600, March 1970.

Gordon, R. F., "16mm Microfilm Viewing Equipment Guide," Report DDC-TR-71-1, AD 718 000, January 1971.

Klingbiel, P. H., "Machine-Aided Indexing," Report DDC-TR-69-1, AD 696 200, June 1969.

Klingbiel, P. H., "The Future of Indexing and Retrieval Vocabularies," Report DDC-TR-70-4, AD 716 200, November 1970.

Klingbiel, P. H., "Machine Aided Indexing," Report DDC-TR-71-3, AD 721 875, March 1971.

Miles, H. W., "Technical Information - Availability vs Selectivity vs Cost," Report DDC-TR-69-2, AD 713 200, September 1969.

Skwarski, L. G., "Documentation Concerning the Installation of Terminal Equipment Associated with the Defense Documentation Center Remote-on-line Retrieval System," Report DDC-TR-70-3, AD 878 000L, October 1970.

Wicker, F. F., Neperud, R. M., Teplitz, A., "Microfiche Storage and Retrieval System Study: Final Report," SDC TM-WD-(L)-335/000/01, AD 710 000, August 1970. Prepared under Contract DAHC15-70-C-0188 by the System Development Corporation, Falls Church, Virginia.

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)

1. ORIGINATING ACTIVITY (Corporate author) Defense Documentation Center Cameron Station, Alexandria, Virginia 22314	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP None

3. REPORT TITLE

Automatic Selective Documentation Services

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Technical Report, July 1967-June 1970

5. AUTHOR(S) (First name, middle initial, last name)

Ray L. George

6. REPORT DATE March 1971	7a. TOTAL NO. OF PAGES 105	7b. NO. OF REFS None
8a. CONTRACT OR GRANT NO. b. PROJECT NO. c. d.	9a. ORIGINATOR'S REPORT NUMBER(S) Report DDC-TR-71-4 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) AD 722 425	

10. DISTRIBUTION STATEMENT

Distribution of this document is unlimited

11. SUPPLEMENTARY NOTES None	12. SPONSORING MILITARY ACTIVITY

13. ABSTRACT

User-needs studies often present figures indicating that documentation services systems which rely on the mails are inherently incapable of effectively supporting more than half of all research and development tasks. In addition to investigating faster ways of transmitting information, DDC has also been developing and testing systems based on another approach: one of determining users' specific documentation requirements and automatically disseminating the needed documentation to the users' local libraries as soon as it becomes available.

This general concept was applied to the selective dissemination of both report announcements and full-text reports. Three different types of selective announcements, all produced on a regular semimonthly basis, were developed and tested: (1) automatic bibliographies, (2) group announcement bulletins (each of which contained announcements in just one of the 188 specific DoD-modified COSATI subject categories), and (3) selected announcements on magnetic tapes which could then be used as a basis for local SDI services. Selected reports were disseminated on the same semimonthly basis as the announcements, but in only one form--microfiche.

DD FORM 1 NOV 65 1473

00096

Unclassified
Security Classification

Unclassified
Security Classification

14. KEY WORDS	LINK A ROLE	LINK A WT	LINK B ROLE	LINK B WT	LINK C ROLE	LINK C WT
Documentation						
Selective Dissemination of Information						
Current Awareness Services						
Automatic Document Distribution						
Interest Profiles						
Bibliographies						
Magnetic Tape						
Microfiche						

Unclassified
Security Classification