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KASC
INFORMATION SERVICES

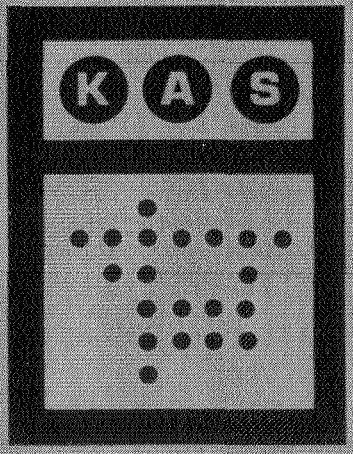
QUARTERLY REPORT

June . July . August

THE SPACE AND TECHNOLOGY TRANSFER PROGRAM

at the
University of Pittsburgh
Knowledge Availability Systems Center

Contract No. NSR 39-011-106



KNOWLEDGE AVAILABILITY SYSTEMS CENTER
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QUARTERLY REPORT

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June . July . August
1970

Submitted to:

The National Aeronautics and Space Administration

(Contract No. NSR 39-011-106)

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I. INTRODUCTION

This report is submitted in fulfillment of the requirements of the National Aeronautics and Space Administration Contract No. NSR 39-011-106 extended to cover the period March 1, 1970 through August 31, 1970. It covers the activities of the University of Pittsburgh RDC during the months of June, July, and August and is divided into three sections:

- Marketing Operations
- Technical Operations
- Analysis Operations

The Marketing Operations Section reports on all marketing activities, including income breakdowns, client breakdowns, tools of marketing, administration support, and new projects.

The Technical Operations Section provides statistical data, charts, and supporting narrative concerned with processing activities related to search services based on five different files, associated document services, and a special abstract packet service.

The Analysis Operations Section of the report describes activities related to the file content and includes strategy preparation, manual searching, review of search output, and technology utilization with emphasis on new efforts to identify technology transfer, and aids to the Marketing group.

II. MARKETING OPERATIONS

Fred Clemm
John Matenkosky

- Results
- Activities

Marketing Results

Three strategic goals have been established for the NASA/KASC Regional Dissemination Center at the University of Pittsburgh. These goals have been translated into major projects identified as Project New, Project Renew and Project Expand.

Project New is aimed at increasing the volume of new client participation in the RDC operation. A two-pronged approach is being undertaken to achieve this objective. The first approach places considerable emphasis on the promotion of specific services. The second approach emphasizes institutional selling of KASC as an organizational entity within the University complex.

Project Renew is designed to increase the contract renewal rate from its current level of 75 percent to approximately 90 percent.

Project Expand is designed to increase the dollar volume of participation by existing clients.

Due to the limited and probationary nature of the current funding level, these projects could not be implemented as planned. Although strategic objectives remained unchanged, tactical plans were modified to meet the time constraints of the present situation.

We are pleased to report some modest results toward each of the strategic objectives.

NET INDUSTRIAL INCOME

Total industrial income for the KASC RDC activity during the reporting period was $28,295. This sum broken down by project is as follows:

- Project New $15,887
- Project Renew $ 7,130
- Project Expand $ 5,278

TOTAL $28,295

The distribution of this income among the types of services offered by KASC is as follows:

- Search Services

  Annual Basis $23,031
  Ad Hoc Basis $ 3,050

- Document Services $ 1,394
- Abstract Packet Service $ 820

TOTAL $28,295

Income derived from search services provided on an annual basis is allotted equally to each month included within the contract service year regardless of when the funds may have been paid. Income from ad hoc search services, (e.g., retrospective searches) and the other services of the KASC is considered as income for the month in which the service was provided. On a monthly basis, then, the total industrial income was as follows:

- June $ 8,447
- July $10,640
- August $ 9,208

TOTAL $28,295

KASC CLIENTELE

Total New

During the service period covered by this report KASC provided services to 15 new clients. On the basis of local and non-local criteria, this

total is divided as follows:

• Pittsburgh area	4
• Other Pennsylvania	4
• Non-Pennsylvania	7
TOTAL	15

Total Served

In addition to these 15 clients, KASC served 61 other companies during the reporting period. The total of 76 clients served is broken down as follows:

• New clients	5
• Special (One Time) Clients	10
• Renewed Clients	5
• In Process	47
• Delinquent	4
• Dropouts	5
TOTAL	76

Clientele Composition

The geographic distribution of the organizations served during this period is shown in Table 2-1. The group composition of these same companies based on size, type, and two-digit standard industrial classification is shown in Tables 2-2, 2-3, and 2-4.

Dropout Rate

Project Renew reflects encouraging results. During the entire year 1969, a total of 24 clients decided not to renew their contracts valued at $14,480.

During the first eight months of 1970, only nine clients have declined to renew their contracts for a total of $2,539.

Table 2-1. Clientele Composition--Geographic

STATE	NO. OF COMPANIES
California	1
Colorado	1
Connecticut	1
District of Columbia	1
Delaware	1
Illinois	1
Maryland	2
Michigan	2
New Jersey	3
New Mexico	1
New York	7
North Carolina	1
Ohio	6
Pennsylvania	46
Texas	1
West Virginia	1
TOTAL	76

Table 2-2. Clientele Composition--Size

SIZE	NO. OF COMPANIES
Large	47
Small*	29
TOTAL	76

*Under 500 employees

Table 2-3. Clientele Composition--Type

TYPE	NO. OF COMPANIES
Manufacturing	61
R & D	6
Non-Industrial	4
Services	5
TOTAL	76

Table 2-4. Clientele Composition--SIC Code (Two Digit)

CODE NO.	CATEGORY	NO. OF COMPANIES
27	Printing, Publishing	1
28	Chemical Products	11
30	Rubber and Miscellaneous Plastics	1
32	Stone, Clay, Glass Products	3
33	Primary Metal Industries	10
34	Fabricated Metal Products	6
35	Machinery (Non-electric)	11
36	Machinery (Electric)	11
37	Transportation Equipment	3
38	Instruments (Photo, Optical)	3
39	Miscellaneous Manufacturing	1
73	Research (Commercial)	6
82	Educational Services	5
86	Non-profit Organizations	1
89	Miscellaneous Services	1
91	Federal Government	2
	TOTAL	76

Marketing Activities

TOOLS OF MARKETING

One of the problems of any marketing organization is the identification of prospective clients. This task generally falls into the hands of the salesman who is responsible for a particular industry or geographic area, and his overall selling effectiveness is hampered by this prospecting activity.

The KASC direct mail and advertising programs are designed for the self-identification of good prospects which permit the marketing professionals to concentrate on those for whom the RDC services have the greatest appeal.

The programs themselves are being planned by those same marketing professionals, since their constant contact with clients and prospects enable them to tailor the programs to perceived needs. Because their primary responsibility is selling, they cannot pursue the programs to completion themselves. Therefore, an essential element of KASC programs is that they can be implemented by the clerical staff with a minimum of attention from the professionals, once the planning and scheduling have been completed. The marketing people are then free to bring in new contracts and are assured of a continuous flow of new leads from the programs which are in effect.

Direct Mail Programs

Direct Mail continued to be a primary source of prospective clients during the quarter. Six programs are summarized in Table 2-5 where the markets, mailing lists, literature, and other pertinent data is presented.

MARKET	MAILINT LIST	PROMOTIONAL PIECE	TOTAL MAILED	TOTAL MAILING COST	COST PER MAILING	TOTAL RESPONSES	COST/ RESPONSE
POWDER METALLURGICAL ENGINEERS	MEMBERS OF POWDER METALLURGY ENGINEERS	Letter & Sample Powder Metallurgy search	33	$ 20	60¢	0	* * *
GENERAL INDUSTRIAL FIRMS	DUN & BRADSTREET	Wall St. Journal Article & Memo	1,000	$120	12¢	5	$ 24
GENERAL INDUSTRIAL FIRMS	DUN & BRADSTREET	Kascability	1,405	$ 44	3¢	1	$ 44
TECHNICAL MANAGERS	REQUESTORS OF KASC REPRINTS THROUGH M. E. MAGAZINE	KASC Catalogue	187	$ 43	23¢	3	$ 14
RESEARCH ENGINEERS	PITT ENGINEERING ALUMNI	Kascability	10,292	# $ 41	0.4¢	32	$ 1
ACADEMIC AND INDUSTRIAL RESEARCHERS	PATSD	Wall St. Journal Article	307	$ 43	14¢	5	$ 8
TOTAL			13,224	$311	* 2.4¢	46	* $ 15

* Average Costs
# Cost of Mailing Pieces

Table 2-5. Direct Mail Programs

Four mailing pieces were used during the quarter. These pieces are described below with a graphic breakdown in Table 2-5. Most of the mailings were generated towards the end of the quarter and results are as yet incomplete. Heavy vacation schedules during this quarter account in part for less than anticipated returns.

Direct Mail Programs are constantly being examined and are in various stages of development. Figure 2-1, "Mailing Programs and Their Targets," presents the overall direct mail program on an annual basis. Program One is scheduled for implementation in mid-October and is further detailed under the New Projects section of this report. Program Two is currently in the conceptual stage. One piece for Program Three has been designed and is to be released for production and mailing soon.

Mailing Pieces

- Powder Metallurgy Sample Search - A sample search which had been prepared for an interested prospect was reproduced, bound, and directed at 33 corporate members of the Metal Powder Producers Association. A standard cover letter, previously designed, was sent as well as a reply card. No response has been generated to date but a follow-up letter is planned.

- Kascability - This mailing piece outlining our services and capabilities and with detachable return card was used for two mailings. The Kascability piece was directed to industrial firms in Ohio and Pennsylvania using prepared Dun & Bradstreet Labels. Of the 1,405 sent, we received a positive response from one.

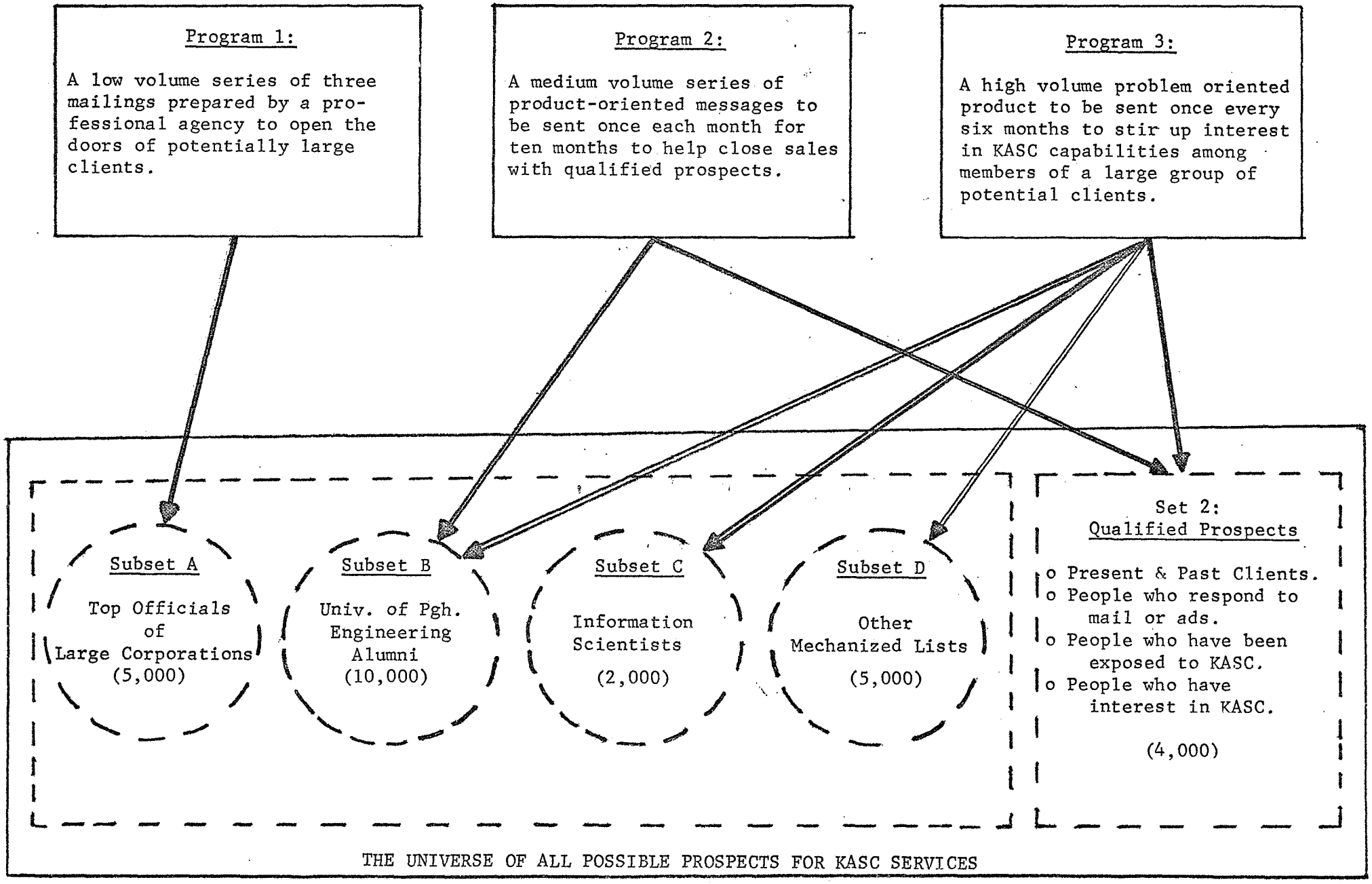


Figure 2-1. Mailing Programs and Their Targets

Kascability pieces were also sent to Pitt Engineering Alumni by special permission and cooperation of the Pitt Alumni Association who included them in an alumni newsletter. Of the 10,292 sent, we received a positive response from 34 representing .33%.

- KASC Brochure - Materials Engineering magazine provides KASC with the names of individuals who request reprints of articles published. These individuals were deemed good prospects, and a KASC catalogue and a reply card was sent. Of the 187 mailed, we received a positive response from three which represents a return of 1.6%.

- Wall Street Journal Memo - On Page One of the March 27, 1970 issue of the Wall Street Journal, a feature article appeared which described the benefits to be derived from using the data banks at the Regional Dissemination Centers (Appendix A). Several company representatives were quoted with reference to the help they received and the resulting new product sales or cost savings. The interest created as a result of this article led us to reprint it as a direct mail piece, and to enclose a memo (Appendix B) outlining our other services. A total of 1,000 were sent to prospective clients this quarter. As a result of this mailing, we received a positive response from five, representing a .05% return. A cost analysis is included in Table 2-5.

Mailing Lists

Any direct mail program can only be effective if the recipients are carefully screened and selected. KASC is currently developing that ability by building mailing lists which will be placed on computer tape. A code system is being designed which will enable us to generate mailings to

any group we wish to select from the list. These specialized lists will contain such characteristics as SIC code, geographic division, sales volume, total employees, and other information as deemed necessary.

Ten sources of names have been identified as having potential value to our marketing efforts. These sources are listed here in the order in which we plan to use them. Mailings were made on some of these lists and results are presented in Table 2-5, Direct Mail Programs.

- KASC. A list of 5,000 names compiled by KASC personnel during the past six years and containing names of people whose interests include Information Science.

- Alumni. A list of 8,000 names of graduates from the University of Pittsburgh School of Engineering. All of these people are viewed as being receptive to a message from Pitt. Some are potential users, and some are expected to influence the use of KASC services.

- Existing, Prospect, and Past Customers. A list of almost 1,000 names which are presently in KASC files.

- Pennsylvania Technical Services Directory. A list of 370 names of officers of companies able to provide technical services to others.

- World Space Directory. A list of 5,000 Space/Oceanology companies with names of company officials.

- Special Poor's Register List. Names of top management personnel of some of the largest corporations in our geographic area. Our "high class" mailing, described under New Projects, will be directed to this type of prospect.

- Special Librarians. A list of 3,500 persons identified as special or technical librarians who are potential users of mechanized information retrieval services.

- Poor's Register. Names of executives and directors of 34,000 corporations.

- Industrial Research Laboratories. A list of almost 5,000 names of persons employed by the 'top 300 companies' in terms of Government research and development awards.

- Research Centers Directory. A list of about 1,000 names of key persons in non-industrial research centers.

Media Advertising

As a supplement to the direct mail programs and to help create an awareness of KASC, an advertisement has been prepared for the September 1970 issue of the Journal of Library Automation (Appendix C). The University of Pittsburgh News and Publications Department contributed substantially to this project by acting as a liaison between the Advertising Department of the magazine and the KASC marketing staff, and preparing the graphic design, the copy, and the printing plate. This magazine was chosen because its circulation reaches a special audience which represents a great potential for KASC marketing. In keeping with current trends in advertising, a highly visual medium, copy for this ad was deliberately kept to a minimum.

Future ads in technical journals will include coupons which will serve a two-fold purpose; continuing with our general policy of creating an awareness of KASC services, and providing a vehicle for prospect response. The coupon will also provide KASC with a means of evaluating the effectiveness of the advertisement, the choice of medium, and allow for adjustments or changes as deemed appropriate based on this analysis. This advertisement and others being planned, should help to create a favorable impression of KASC in the minds of the Information Specialists, an influential group of people important to our success.

Diptych

Recognizing the need for more frequent communication between the KASC and its clientele, work was performed during the reporting period for the

development of a newsletter, called Diptych, to be published at regular intervals. This publication is intended to provide the following:

- Widespread knowledge of the services offered by the Center.
- Familiarity with the personnel, organization, and purposes of the Center.
- Notification of recent significant developments in aerospace technology of possible import to the nonaerospace sector of industry.
- Identification of examples of applications of aerospace technology to nonaerospace industrial purposes.
- Assistance in the utilization of KASC services through notice of useful methodologies for managing and utilizing information services.

The first issue of Diptych was published and distributed during this quarter and a copy is presented in Appendix D.

MARKETING ACTION

With direct mail and advertising projects planned and under way, the process of converting inquiries into contracts receives the attention of KASC marketing. This process can be described as follows:

- Handle inquiries promptly and efficiently
- Contact prospects to determine interest
- Set up a presentation where warranted
- Present KASC services
- Sign the contract

Inquiries Received

A total of 84 inquiries were received during the reporting period. Forty-six of these are direct results of the KASC mailing programs, and the rest are primarily due to the Wall Street Journal article described

previously. We are, however, continuing to receive inquiries from other sources. We attribute much of this interest to feedback from our direct mail programs, which are helping to create an ever-increasing awareness of KASC and the Technology Utilization Program.

Our present method of handling direct mail inquiries is presented in Figure 2-2. As inquiries are received, as a result of direct mail programs, each prospect is immediately phoned to determine such pertinent information as the title of inquirer, area of research interest, product manufactured, particular problem areas, size of company and other necessary data. On the basis of the information procured, the prospect's potential to buy is assessed. If his potential to buy is good and the phone conversation reveals sincere interest in our services, the prospect is referred to more professional marketing representatives who phone and later visit the prospect. The contract form is placed in a geographic file which is screened prior to a trip to any geographic area.

If the prospect does not prove to be good, based on our evaluative criteria, he is considered "dead" and no further action is taken.

Group Presentations and Prospective Client Contacts

During the reporting period, 313 prospect contacts were made by the Marketing Department. Contacts on prospects include the following:

• Telephone Contacts	148
• Visits	63
• Correspondence	102
TOTAL	313

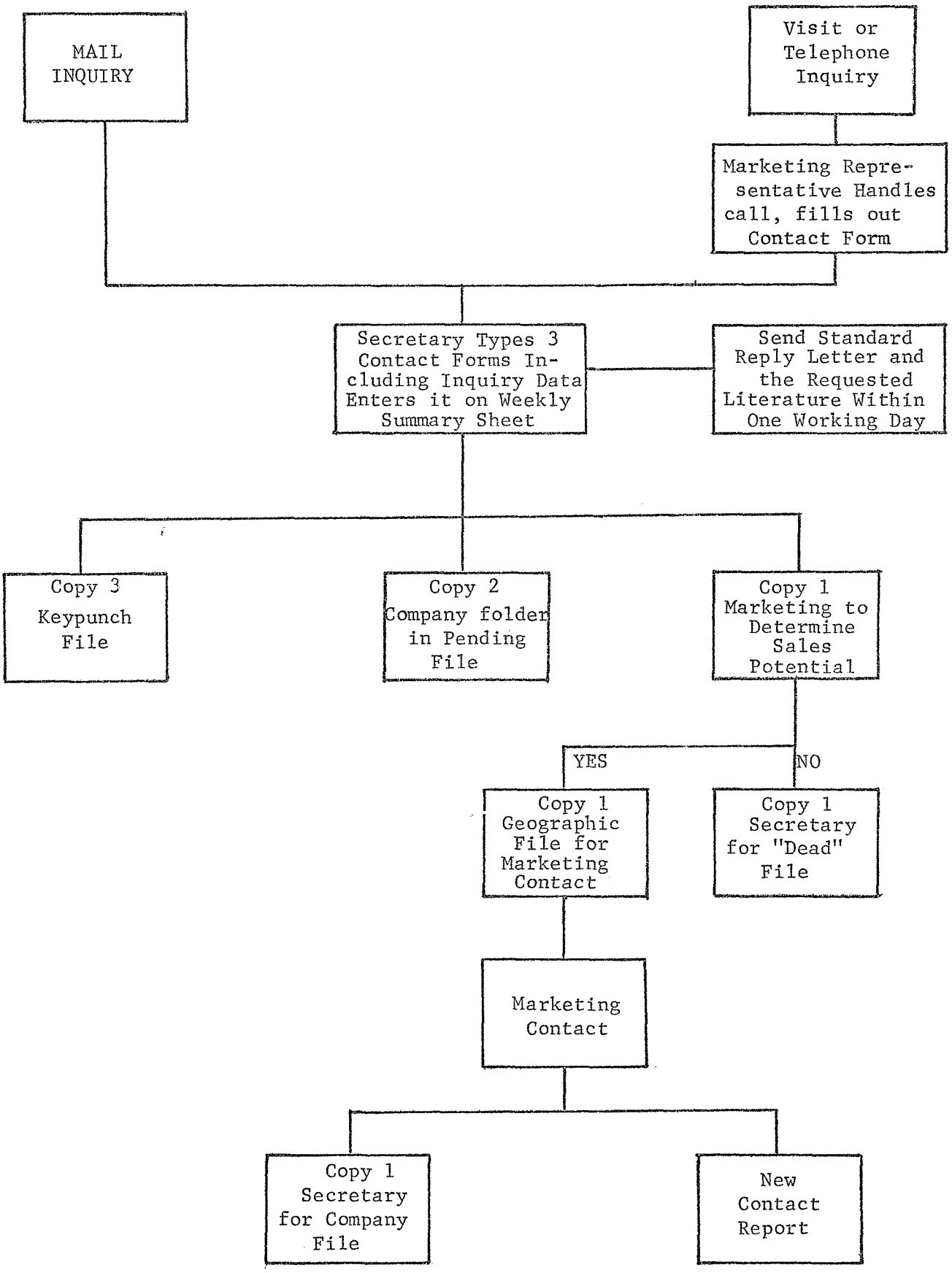


Figure 2-2. Inquiry Handling System

Periodic Clientele Contacts--Current

Periodic contact with KASC clients is made by both the Marketing and the Analysis groups. The contacts initiated by Marketing are primarily for contract renewal purposes. However, other contacts are also made concerning new or changed questions, problems with existing questions, and the extension of services within a company.

ADMINISTRATION SUPPORT

This quarter has shown increased support from the University of Pittsburgh. The News and Publications Department and the Alumni Association have been particularly helpful in the accomplishment of our mission. Their contributions are dealt with more specifically under their respective areas.

Alumni Association Mailing

The Alumni Association makes periodic mailings to various members. The Association was approached concerning the possibility of including Kascability pieces in a scheduled mailing to 10,292 Engineering Alumni and they were very receptive to the proposal. Kascability pieces were included in the annual newsletter and 32 recipients responded favorably. A moderate savings was realized in that KASC did not have to identify recipients, purchase and address envelopes and assume postage and handling fees.

Engineering-Marketing Meetings

In order to provide a greater liaison between clients, consultants and marketing staff members, several meetings between marketing staff members and engineering consultants were held during this reporting period. Engineering consultants were advised of changes in services and marketing

plans. Marketing staff members were provided with pertinent information such as the names of possible prospects, what dissatisfactions clients have expressed in service and what services clients need and want and how our services might be improved.

News and Publications

This quarter has shown increased support by the University News and Publications Department which has maintained a close liaison with KASC. They were particularly helpful in gathering information such as rate sheets for various technical publications in which advertising is being considered. They also provided close support in the development and implementation of advertising in various media as presented in Table 2-6.

New Direct Phone Line

Since all of our calls are "filtered" through the University switchboard, clients and prospects have often expressed difficulty in reaching our marketing staff. Likewise marketing staff members have often experienced difficulty in placing calls outside the University to both clients and prospects. In order to establish a better level of communication and thus greater liaison between KASC marketing and client/prospects, a new direct phone was installed. Our new number is now used in all advertising mediums and has proven to be a great improvement of our marketing effort.

Library Dedication

The tentative date for the dedication of the Bevier Engineering Library is December 4, 1970. Dr. Wesley W. Posvar, Chancellor of the University of Pittsburgh, and appropriate School of Engineering officials will preside

at the dedication ceremony. The Bevier family, whose founder, George M. Bevier, is an alumnus of the University's School of Engineering, donated a substantial portion of the funds necessary for the Library.

The dedication of Benedum Hall, the University's new School of Engineering Headquarters Building, is scheduled to coincide with Engineer's Week in mid-March 1971.

NEW PROJECTS

Direct mail has been the source of a great number of prospective clients and continues to offer the best promise of leads for marketing purposes. On this basis, it was decided to launch a direct mail campaign of a high caliber and to this end KASC requested proposals from five local advertising firms. Our desire was to subtly maintain our image as a University and at the same time market our products and capabilities. Of the five proposals submitted, one had a concept which was consistent with our goal. Tentative plans call for the campaign to be launched in mid-October with the mailing of the first of a series of three mailing pieces.

In addition to the mailers, the agency has contracted to prepare a slide presentation for use with a carousel projector and a desk top flip-chart type of presentation to be prepared from the art work in the slides for use by our marketing staff when calling on prospective clients. They have also been requested to gather cost information on other types of promotional materials which might be distributed to prospects.

An additional advertisement is scheduled to appear in the Journal of

Library Automation and is scheduled for September. An advertisement in the Journal of Library Automation (JOLA) Technical Communications is scheduled for November.

An advertisement is scheduled for October and December in the Special Libraries Association publication, Special Libraries, while September has been chosen for publication of an advertisement in the Special Libraries Association Pittsburgh Chapter Bulletin. The referenced magazine and tentative publication dates are listed in Table 2-6.

Table 2-6. Schedule of Media Advertising

	SEP	OCT	NOV	DEC
JOURNAL OF LIBRARY AUTOMATION	X			
JOLA TECHNICAL COMMUNICATIONS			X	
SPECIAL LIBRARIES		X		X
SLA PITTSBURGH BULLETIN	X			

These magazines were chosen because they reach the Information Specialists, people who can both understand our capabilities and appreciate our potential value to their organizations. The schedule has been selected to provide multiple exposures in each publication, a technique which effectively multiplies the impact of an ad.

With the new direct mail campaigns, advertisements in publications, and

increasing support from the University, we are looking forward to the continuing success of our marketing efforts and the achievement of our goals.

III. TECHNICAL OPERATIONS

Guy McGee

Description of Services

Search Service Statistics

Document Service Statistics

Abstract Packet Service Statistics

Description of Services

Three general services are provided by the KAS Center to the non-aerospace section of the Nation's Industry:

- Search Services
- Document Services
- Abstract Packet Services

SEARCH SERVICES

During the reporting period, the search services of the KAS Center were based on five files; (1) the NASA document collection as announced in Scientific and Technical Aerospace Reports (STAR) and International Aerospace Abstracts (IAA), (2) Chemical Abstracts Condensates, (3) Chemical Titles, (4) Department of Defense Documentation Center, and (5) the Engineering Index Compendex. The service consists of the identification, either mechanically or manually, of documents containing information related to a client's problem and delivery to the client of bibliographic citations and/or abstracts of the identified documents.

The search services offered by the KASC may be in response to the following:

- A custom profile of a client.
- A KASC designed profile in response to a group of clients (commonly known as a Standard Interest Profile - SIP).

Searches for custom profiles may be performed on the basis of one of the following:

Current Awareness - A search of the periodic computer tape received, containing the acquisitions covered by the time interval between tape issues. Twelve monthly searches comprise a search of all accessions for a period of one year from the time of submission of the profile for the NASA, DDC, and E.I. files, Fifty-two weekly searches on the CA Condensates and twenty-six bi-monthly searches on the Chemical Titles file cover an equivalent quantity of accessions.

Retrospective - A search of all computer tapes previously received, including the most recently received monthly tape, comprising a search of all accessions made for the system up to the time of submission of the profile. It should be noted, however, that there are time limits to the file. We possess retrospective searching capabilities for the files from the present backwards in time to the following: (1) NASA 1962, (2) DDC 1964, and (3) E.I. 1968-1969 Cite; 1970 Compendex; 1965 Subject Index. No retrospective searches were performed during this quarter for the Chemical Titles files.

Current Awareness and Retrospective - A combination of the two previous search services, comprising a search of all accessions made for the system up to the time of submission of the profile and of all future accessions for a period of a year. Service may be initiated by a partial retrospective search (a select portion of the past accessions) or by an initial current awareness search before performing a complete retrospective and continuing on the future monthly basis.

Searches for standard interest profiles are performed only on a current awareness basis and are available only on NASA and E.I. data bases. For clarification, the SIP of the KASC search services is distinguished from the search results of profiles of general interest distributed as abstract packet services in the following way: Inasmuch as searches are performed on a current awareness basis for standard interest profiles, a

total of 12 monthly searches are available to clients who subscribe to such a profile. On the other hand, an individual who purchases the search results for a profile of general interest through the periodical announcing its availability receives the results of a single search which has covered a select portion of the most recent documents accessioned by NASA and E.I., i.e., a partial retrospective search.

Additional flexibility is available to the client who desires search services for a custom profile of the NASA, DDC, and E.I. data bases. Not only may he receive current awareness, retrospective or the combination of current awareness and retrospective searches, the output which he receives may vary in one of three ways. The three variations have been designated as service types and are as follows:

Type I. Subscribers to this service receive only a computer printout which lists the accession numbers of documents cited by the search. No abstracts or bibliographic entries for the documents are provided and no review of the search results is performed by subject specialists. Subscribers must provide their own copies of the appropriate journals for identification of the documents whose accession numbers appear on the printout.

Type II. Subscribers to this service receive abstracts with complete bibliographic entries of all documents cited by the computer search. No review of the search results is performed by subject specialists.

Type III. Subscribers to this service receive abstracts with complete bibliographic entries of those documents cited by the computer search which are relevant to the profile as determined by a specialist in the subject area of the profile. Subscribers to this service who are searching Chemical Condensates and Chemical Titles receive bibliographic citations only.

These three <u>service</u> variations for each of the three <u>search</u> types, combined with the SIP, present ten options in search service. Each of these options is priced separately.

DOCUMENT SERVICES

As a result of search services of the NASA and DDC files, or through avenues of announcement apart from the KASC, clients receiving search services make use of the Center's document services to obtain the full document copy of an item which they desire. Document service associated with the Engineering Index file is obtained through the Engineering Societies Library. No document services were provided during the reporting period on Chemical Condensates or Chemical Titles.

ABSTRACT SERVICES

The abstract packet services of the Center involve the joint efforts of the KASC and a nationally distributed technical periodical. Using the KASC search services, the periodical identifies "packets" of document abstracts from the NASA file related to a single topic which it knows to be of interest to its readers. These packets are described by the periodical in one or more of its issues and readers may request copies of the packets through the reader services of the periodical's publisher. The request is forwarded to the KASC which responds directly to the client.

Search Service Statistics

PROFILES SERVED

During the reporting period, a total of 387 unique profiles were served on either a current awareness basis (C/A), a retrospective basis (Retro), or a combination of both (C/A + Retro). Of the total, 72 were newly introduced to the system during the three months period of work performance. The totals by search types are as follows:

	Continuing from Previous Quarter	New during Current Quarter	Totals
Current Awareness	307	29	336
Retrospective	0	26	26
Combination	6	17	23
Totals	313	72	385

By Data Base, the distribution of the profiles served is presented in Table 3-1.

Table 3-1. Profiles Served by Data Base

SEARCH TYPE	DATA BASE					TOTALS
	NASA	CA COND.	CHEM TITLES	E. I.	DDC	
C/A	267	50	1	23	1	342
Retro	17	2	0	3	4	26
Retro + C/A	13	1	0	2	1	17
Totals	297	53	1	28	6	385

The distribution of the profiles among the various KASC service types is presented in Table 3-2.

Table 3-2. Profiles Served by Service and Search Types

SEARCH TYPE	SERVICE TYPE						TOTALS
	Type II		Type III		Type IV		
	Contin-uing	New	Contin-uing	New	Contin-uing	New	
C/A	84	6	200	11	23	14	338
Retro	0	21	0	4	0*	0*	25
Retro + C/A	2	10	4	8	0*	0*	24
TOTALS	86	37	204	23	23	14	387

*Not applicable.

SEARCHES PERFORMED

A total of 1,391 searches were performed for the 387 unique profiles identified above. The quantities of searches by data base is presented in Table 3-3.

Table 3-3. Searches Performed by Data Base

SEARCH TYPE	DATA BASE					TOTALS
	NASA	CA. COND.	CHEM TITLES	E. I.	DDC	
C/A	784	455	7	61	2	1,309
Retro	60	12	0	5	5	82
TOTALS	844	467	7	66	7	1,391

The quantities of these searches by service type is present in Table 3-4.

Table 3-4. Searches Performed by Service Types

	SERVICE TYPE			TOTALS
	Type II	Type III	Type IV	
C/A	264	954	91	1,309
Retro	55	27	0*	82
TOTALS	319	981	91	1,391

*Not applicable.

A comparison of Table 3-1 with Table 3-3 shows that for each data base the number of searches performed exceeds the number of unique profiles served. This is explained as follows: a profile receiving current awareness service receives a search with each tape issue of a data base* and, therefore, for any one profile receiving C/A service during all three months of the reporting period a total of three searches will have been performed for the NASA , EI, and DDC data bases. For CA Condensates the total searches will equal fourteen or seven and for CHEM TITLES the total becomes seven.

Apparently not all the profiles served on a C/A basis during this quarter received all C/A searches for their respective data bases. Service for a profile may have been terminated before the last search was performed or service for a newly introduced profile may not have begun until after the first search was performed. The rate of termination and introduction of profiles for C/A service during the current reporting period resulted in the total C/A searches being less than three times the number of possible searches of unique profiles receiving C/A service.

A similar phenomenon occurs with Retro Searches. During any one quarter a profile requiring retrospective service may receive one search of the retrospective file or one or more searches of select portions of the

*The subject coverage of CA Cond tapes differs for odd and even numbered tapes. Profiles receiving C/A service on this data base may be searched on only odd or only even numbered tapes or may be searched on both odd and even numbered tapes.

retrospective file. Regardless of the range of the search, on the tabulation it has been counted as one search, and, therefore, the total Retro searches exceeds the total unique profiles receiving retrospective service. Obviously, these two phenomenon present a combined effect for the searches of profiles receiving retrospective plus C/A service.

SEARCHES PROCESSED

For the current quarter, 1,256 searches were processed which are broken down by data base in Table 3-5 and by service type in Table 3-6.

Table 3-5. Searches Processed by Data Base

SEARCH TYPE	DATA BASE					TOTALS
	NASA	CA COND.	CHEM TITLES	E. I.	DDC	
C/A	834	322	14	32	0	1,203
Retro	40	0	0	4	9	53
TOTALS	874	323	14	36	9	1,256

Table 3-6. Searches Processed by Service Type

	SERVICE TYPE			TOTALS
	Type II	Type III	Type IV	
C/A	265	833	105	1,203
Retro	36	17	0	53
TOTALS	301	850	105	1,256

Following the performance of a search, varying processing steps are required before the results of the search are mailed to the recipient. Thus, a search performed in one period of work may not be completely processed until the following reporting period. For this reason, the numbers of searches processed and mailed as depicted in Table 3-5 does not agree with the numbers of searches performed which are presented in Table 3-3.

The statistics which are presented in the next section of this report pertain only to searches for which processing was completed during the reporting period.

CITATIONS RETRIEVED AND SUBMITTED

The 1,256 searches processed during the reporting period for all data bases resulted in the identification of 62,007 citations: 61,714 (99.5%) were identified by computer and 293 (0.5%) were identified

manually. Of the total retrieved, 46,387 (74.8%) were submitted to clients.

Table 3-7 presents for all processed searches a tabulation by source of citations retrieved compared to citations submitted.

Table 3-7. Citations Retrieved vs. Citations Submitted

	Citations Retrieved	% of Total Retrieved	Citations Submitted	% Source Cited	% Total Submitted
STAR	24,039	38.7	17,025	70.8	36.7
IAA	21,829	35.2	14,507	66.4	31.3
AM	748	1.2	676	90.4	1.5
TECH BRIEFS	348	.6	284	81.6	.6
OTHER	283	.5	279	98.6	.6
CA COND.	10,677	17.2	10,677	100.0	23.0
CHEM TITLES	74	.1	74	100.0	.2
E. I.	2,016	3.3	1,198	59.4	2.6
DDC	1,993	3.2	1,667	83.6	3.5
TOTALS	62,007	100.0	46,387	74.8	100.0

Those citations which were retrieved and submitted for current awareness searches are presented by source and mode of citations in Tables 3-8 and 3-9.

Table 3-8. Current Awareness Citations Retrieved

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE							TOTALS
	IAA	STAR	TB	OTHER	CA COND.	CHEM TITLES	E. I.	
Mechanical	12,855	11,084	1	252	10,677	14	818	35,761
Manual	124	90	36	31	0	0	0	281
TOTALS	12,979	11,174	37	283	10,677	74	818	36,042

Table 3-9. Current Awareness Citations Submitted

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE							TOTALS
	IAA	STAR	TB	OTHER	CA COND.	CHEM TITLES	E. I.	
Mechanical	6,954	5,949	1	252	10,677	74	806	24,713
Manual	111	77	36	27	0	0	0	251
TOTALS	7,065	6,026	37	279	10,677	74	806	24,964

The same type of information for retrospective searches is presented in Tables 3-10 and 3-11.

Table 3-10. Retrospective Citations Retrieved

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE							TOTALS
	IAA	AM	STAR	TB	Other	DDC*	E. I.	
Mechanical	8,849	747	12,855	310	0	1,993	1,198	25,952
Manual	1	0	10	1	0	0	0	12
TOTALS	8,850	747	12,865	311	0	1,993	1,993	25,964

Table 3-11. Retrospective Citations Submitted

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE							TOTALS
	IAA	AM	STAR	TB	OTHER	DDC*	E. I.	
Mechanical	7,442	676	10,999	247	0	1,667	392	21,423
Manual	1	0	6	0	0	0	0	7
TOTALS	7,443	676	11,005	247	0	1,667	392	21,430

*DDC (unclassified) as announced in the U. S. Government Research and Development Reports.

A summary of all citations retrieved and forwarded for both current awareness and retrospective searches is presented in Tables 3-12 and 3-13 by service type and source of citation.

Table 3-12. Total Citations Retrieved Per Service Type

SOURCE	SERVICE TYPE			TOTALS
	Type II	Type III	Type IV	
STAR	12,938	9,738	1,363	24,059
IAA	9,771	10,478	1,580	21,827
AM	655	93	0	748
Tech Briefs	231	115	2	348
Other	0	31	252	283
CA COND.	0*	10,677	0*	10,677
CHEM TITLES	0*	74	0*	74
E. I.	126	1,198	692	2,016
DDC	1,529	464	0*	1,993
TOTALS	25,250	32,868	3,889	62,007

*Not applicable.

Table 3-13. Total Citations Submitted Per Service Type

SOURCE	SERVICE TYPE			TOTALS
	TYPE II	TYPE III	TYPE IV	
STAR	12,438	3,253	834	17,025
IAA	9,771	3,772	964	14,507
AM	655	21	0	676
TECH BRIEFS	231	51	2	284
OTHER	0	27	252	279
CA COND.	0*	10,677	0*	10,677
CHEM TITLES	0*	74	0*	74
E. I.	126	380	692	1,198
DDC	1,529	138	0*	1,667
TOTALS	25,250	18,393	2,744	46,387

*Not applicable

NO CITATIONS SEARCHES

The percent of "no citations" reports submitted during this quarter was 7.5.

A notice of "no citations" is forwarded to clients for a portion of the searches performed each month despite supplementation by manual searches.

of mechanical searches failing to identify a single relevant citation. The manual searches are limited to the literature covered by the mechanical search. Supplementary manual searches are performed only for Profiles receiving Type III service.

A comparison of the "no citations" searches by service type and reporting period are made in Table 3-14.

Table 3-14. No Citation Searches by Service Type

	First Quarter			Current Quarter		
	SEARCHES PROCESSED	"NO CITES"	%	SEARCHES PROCESSED	"NO CITED"	%
Type II	377	14	3.7	301	14	4.6
Type III	1,068	101	9.4	850	79	9.3
Type IV	60	0	0.0	105	1	9.5
TOTALS	1,505	115	7.6	1,256	94	7.5

CLIENTELE EVALUATION

During the reporting period, clients returned evaluations of 18,821 citations associated with 819 searches (800 current awareness; 19 retrospective). A comparison of the clientele ratings for all data bases by reporting period is permitted by Table 3-15.

Table 3-15. Citations Evaluated

	First Quarter		Current Quarter	
	No. of Citations	%	No. of Citations	%
Relevant	6,999	58.6	10,823	57.5
Relevant to Other Interests	984	8.2	1,447	7.7
Not Relevant	3,960	33.2	6,551	34.8
TOTALS	11,943	100.0	18,821	100.0

The citations evaluated during the current and preceeding quarters are broken down by source in Table 3-16.

Table 3-16. Clientele Evaluations

SOURCE	First Quarter		Current Quarter	
	CITATIONS EVALUATED	%	CITATIONS EVALUATED	%
STAR	4,817	40.3	5,771	30.6
IAA	4,245	35.6	6,009	31.9
AM	5	0.0	0	0.0
TECH BRIEFS	0	0.0	9	0.1
OTHER	39	0.3	7,032	37.4
TOTALS	9,106	76.2	18,821	100.0

Tables 3-17 and 3-18 present customer evaluations per current awareness and retrospective searches respectively. Table 3-19 presents the evaluations per type of service provided.

Table 3-17. Customer Evaluation--Current Awareness Searches

Item Source	Related	%	Not Related	%	Related to Other Interest	%
IAA	3,923	38.7	898	15.2	649	48.4
AM	0	0	0	0	0	0
STAR	3,430	33.7	891	15.1	671	50.0
TECH BRIEFS	7	.1	0	0	0	0
OTHER	2,804	27.5	4,113	69.7	22	1.6
TOTALS	10,164	100.0	5,902	100.0	1,342	100.0

Table 3-18. Customer Evaluation--Retrospective Searches

Item Source	Related	%	Not Related	%	Related to Other Interest	%
IAA	281	42.6	212	32.7	46	43.8
AM	0	0	0	0	0	0
STAR	356	54.1	372	57.3	51	48.6
TECH BRIEFS	0	0	2	.3	0	0
Other	22	3.3	63	9.7	8	7.6
TOTALS	659	100.0	649	100.0	105	100.0

Table 3-19. Client Evaluation vs. Service Type

Type of Service	Relevant Citations	%	Non-Relevant Citations	%	Related to Other Interests	%	TOTALS
Type II	3,206	40.0	1,584	41.5	764	52.7	5,634
Type III	7,325	56.9	4,891	56.4	619	43.0	12,835
Type IV	212	3.1	76	2.1	64	4.3	352
TOTALS	10,823	100.0	6,551	100.0	1,447	100.0	18,821

In its current mode of operation, the KASC regional dissemination center requires a minimum of 211 reels of computer tape. These reels are assigned for use in the following ways:

- Eight reels are required for the file of items accessioned by NASA beginning in 1962 and running through the eighth month of 1970. It is this file of tapes which is used for retrospective searches.
- An additional eight reels are required for duplicates of the above tapes for safeguarding the integrity of the retrospective file.
- One reel is required for the latest current monthly items accessioned by NASA to be used in C/A searches.
- One reel is required for storing the latest strategy used for each profile searched on a C/A basis as a safeguard for the punched card strategy data deck.
- Five reels are required for rotation between the KASC and NASA's Scientific and Technical Information Facility in the monthly updating process. A minimum of three reels are maintained on deposit at the Facility while two are interchanged between the two organizations each month.
- One hundred thirty-nine reels of CA Condensates have been accumulated from January 1968 through August 1970 for the weekly C/A searches. These reels are being utilized in construction of the retrospective search service on the CA Condensates file to become effective during the coming quarter.

- Seventy reels of Chemical Titles have been accumulated from January 1968 through August 1970 for the semi-monthly C/A searches. These reels will also be utilized in construction of the retrospective search service on the CA Condensates file.

During the current quarter the KAS Center relied upon the Computer Center of the University of Pittsburgh to perform a total of 116 runs required in the minimal operation of the RDC.

- 27 runs consisted of searches of part of the retrospective file of eight reels. A complete retrospective search is never performed in one run by the KASC. The 27 runs during this quarter represent an decrease of 2 retrospective searches from the 29 runs of the preceeding quarter.

- 3 runs consisted of the reformatting of the data on the monthly tape received from NASA onto another computer tape to meet the requirements of the KASC search program.

- 3 runs consisted of searches of the latest reformatted current monthly tape, i.e. C/A searches.

- 3 runs consisted of the execution of a program, using a separate data deck of cards but run concurrently with the C/A search, which generated various summary data pertaining to the profiles receiving the C/A search and which also generates an audit record for the processing of the C/A search.

- 3 runs consisted of the storage of the profile strategies used in C/A and retrospective searches on a separate reel.

- 3 runs consisted of the appending of the reformatted monthly data to that which has already been stored on the seven reels constituting the retrospective file.

- 11 runs consisted of the verification of descriptive statistical data collected in the provision of service to clients, such as items retrieved and forwarded.

- 14 runs consisted of the summarization of descriptive statistical data for the purpose of preparing management reports.

- 14 runs consisted of the diagnosis of strategies and updating of the CA Condensates strategy file.

- 14 runs consisted of the conversion of the weekly CA Condensates tape to a format searchable by Text-Pac.

- 14 runs consisted of searches of the latest converted CA Condensates tape.
- 7 runs consisted of searches of the latest semi-monthly Chemical Titles tape.

FUNCTIONAL AND COST ANALYSIS EFFORT

Work was begun during the quarter on a minimal management information system for the generation of general management report data. A general philosphy for the system was established and a format for the input of data was designed. A program is now under development for the initial construction of a file and data associated with clients and clientele services are being recorded in the required format.

Document Service Statistics

The number of documents supplied to KASC clients decreased during this quarter. For the last four quarters the change in documents supplied by source of document announcement is as follows:

	STAR	IAA
September 69 - November 69	-15.2%	-31.7%
December 69 - February 70	-1.8%	-6.2%
March 70 - May 70	+17.9%	+31.8%
June 70 - August 70	-18.5%	-37.0%

During the current quarter requests were submitted to the AIAA for the loan of 130 journals, conference proceedings, etc. which accounted for 40% of the quarter's requests for hard copy documents announced in the IAA, leaving approximately 60% which were obtained locally and from ARAC through the RDC network.

Table 3-20 presents the distribution of the documents supplied during the current reporting period of the basis of STAR subject categories, and Table 3-21 provides, on a monthly basis, statistics about the source and form of the documents submitted. Table 3-22 presents the document submitted by service type.

Table 3-20. Document Service (STAR Category)

STAR CATEGORY NUMBER	STAR CATEGORY TITLE	STAR		IAA		TOTALS
		HC	MF	HC	MF	
01	Aerodynamics	3	1	3	2	9
02	Aircraft	2	0	0	0	2
03	Auxiliary Systems	20	4	9	0	33
04	Biosciences	17	4	8	1	30
05	Biotechnology	6	1	18	1	26
06	Chemistry	22	16	4	1	43
07	Communications	4	2	1	0	7
08	Computers	21	6	3	0	30
09	Electronic Equipment	16	0	5	1	22
10	Electronics	1	0	1	0	2
11	Facilities, Research & Support	3	2	2	2	9
12	Fluid Mechanics	2	3	3	9	17
13	Geophysics	4	3	0	0	7
14	Instrumentation & Photography	19	11	36	12	78
15	Machine Elements & Processes	59	16	94	13	182
16	Masers	4	2	12	1	19
17	Materials, Metallic	67	14	69	3	153
18	Materials, Non-metallic	53	31	55	3	142
19	Mathematics	16	1	4	0	21
20	Meteorology	3	0	0	0	3
21	Navigation	3	0	0	0	3
22	Nuclear Engineering	7	3	0	0	10
23	Physics, General	6	0	5	0	11
24	Physics, Atomic, Mol., Nuclear	1	8	2	0	11
25	Physics, Plasma	2	0	0	1	3
26	Physics, Solid-State	10	3	10	1	24
27	Propellants	2	2	3	1	8
28	Propulsion Systems	3	1	2	3	9
29	Space Radiation	0	0	1	1	2
30	Space Sciences	2	1	3	0	6
31	Space Vehicles	2	0	2	0	4
32	Structural Mechanics	25	5	68	5	103
33	Thermodynamics & Combustion	8	2	4	1	15
34	General	35	22	12	3	72
	TOTALS	448	164	439	65	1116

Table 3-21. Documents Submitted

MONTH	SOURCE				TOTALS
	STAR		IAA		
	HC	MF	HC	MF	
June	132	71	117	15	335
July	158	36	217	26	437
August	158	57	111	18	344
TOTALS	448	164	445	59	1,116

Table 3-22. Documents Submitted by Service Type

SERVICE TYPE	SOURCE				TOTALS
	STAR		IAA		
	HC	MF	HC	MF	
Type II	125	51	116	18	310
Type III	249	88	277	37	651
Type IV	42	21	10	4	77
Unknown	32	4	42	0	78
TOTALS	448	164	445	59	1,116

Abstract Packet Service Statistics

The Abstract packet services of the KASC are made available to the general public through Materials Engineering, a Chapman-Reinhold publication. The monthly publication selects groups or packets of abstracts covering a topic of interest to its readers from the results of partial retrospective searches performed for the magazine by the KASC. A description of the packet appears from time to time in the pages of the periodical and readers may obtain the packet through the reader services of the magazine's publisher at a cost of $3.00. The request is forwarded to the KASC which then duplicates the packet and mails it directly to the requester. The KASC shares in the fee paid for the packet as reimbursement for the search which it performed and for duplication of the packet.

During the current quarter no searches were required by Materials Engineering for its announcements. Packets which were distributed during the time period are presented below by month.

June	272
July	198
August	264
TOTAL	734

IV. ANALYSIS

Elizabeth Hartner

- Scope of Activites
- Impact Reporting

Scope of Activities

The following services are provided by the technical analysis staff:

- The formation and revision of search strategies for NASA, DDC, Chemical Condensates profiles.
- Manual searches of STAR and IAA journals, supplementary journals, and bibliographies.
- Review of results of NASA, DDC, and Engineering Index Type III (reviewed) searches and NASA Type IV (Standard Interest Profiles) searches, as well as the first three search products of new Chemical Condensates profiles.
- Phrasing of natural language search statements.
- Sample searches, file recommendations, explanations of searching techniques, and estimates of possible search results for Marketing.
- Planning and coordination of strategy preparation workshops.
- Studies of the impact of results upon industry.

STRATEGY PREPARATION

During the second quarter a total of ninety-four new strategies were written as shown in Table 4-1.

Since both NASA and DDC each use two index bases, a profile requiring a full retrospective search must have two separate strategies. If a profile requires both Retrospective and Current Awareness Service, a different strategy may be used for the C.A. search than was developed for the latest portion of the retrospective file, even though the same indexing base is used. As a result, the number of new strategies exceeds the number of new profiles.

Table 4-1. New Search Strategies Prepared

Data Base	June	July	August	Totals
NASA - SAL	18	8	6	32
NASA - Thesaurus	19	13	10	42
DDC - Old	2	3	0	4
DDC - New	2	3	3	9
Chem. Condensates	1	5	1	7
TOTALS	42	32	20	94

New profiles submitted during this quarter were distributed among the listed subject areas which follow:

		No. of Profiles
1.	Polymers, Elastomers, Plastics	16
2.	Chemical Processing, Catalysis, Chemical Engineering	10
3.	Mechanical Engineering and Design	10
4.	Joining, Brazing, Welding, Coupling, Fastening	9
5.	Chemical Analysis and Spectroscopy	4
6.	Inspection, NDT, Metal Props, and Testing	4
7.	Management and Psychology	4
8.	Fluid Flow, Fluid mechanics and Heat Transfer	4
9.	Electronics, Magnetics, Heat Transfer	3
10.	Optics, Lasers, Masers, Infrared and Ultra-violet Radiation	2
11.	Biology and Medicine	2
12.	Hydraulic, Pneumatic Engineering	2
13.	Inorganic Chemistry	1
14.	Metal Forming, Deformation and Wear	1
15.	Lubrication, Lubricants, Petroleum Chemistry	1
16.	Coatings, Corrosion, Surface Finishes	1
17.	Ceramics, Refractories, Glass	1
18.	Composites	1
19.	Photography	1
	TOTAL	77

The rank in the above listing indicates the growing expansion of subject areas due to network coverage of supplementary files. An increase of entries in the area of Polymers and Plastics, and Chemical Processing, reflects the increased use of the Chemical Condensates files. An increase in the area of Mechanical Engineering and Design reflects the growing use of the Engineering Index file. Studies of the subject area trend are necessary for the planning of Technical Analysis staff and work load.

Because of projected retrospective searching by section of Chemical Condensate files, the apportionment of new profiles among Chemical Abstracts sections is useful to predict staff needs and work loads. For this quarter new profiles for Chemical Condensate searching fell into these sections:

	No. of Profiles
1. Applied Chemistry and Chemical Engineering	7
2. Macromolecular (polymer) Chemistry	6
3. Physical and Analytical Chemistry	3
TOTAL	16

Approximately thirty strategy revisions were performed during the quarter as a result of requests from clients or subject specialists and as a result of the examination of profiles for which no citation has been forwarded to the client or for which the client reported a high number of non-pertinent citations.

MANUAL SEARCHES

When monthly current awareness searches of the NASA file result in no items listed by the mechanical search, manual searches of the current journals (IAA and STAR) are performed to make sure that the strategy is sufficient. If citations pertinent to the profile are identified by the manual search, the index terms are studied in the KASC index term print-out, additional applicable index terms selected, and the strategies changed so that the manually identified items would have been listed by the mechanical search. The manually identified abstracts are sent to the

client. Eight of these manual searches were performed in June, seven in July, and eleven in August. This represents a total of 26 for the quarter.

REVIEW OF SEARCH OUTPUT

Twelve subject specialists reviewed search results of Type III and Type IV profiles during the second quarter, 1970. Five of these are full or part-time members of the staff of the KAS Center, while seven are members of the faculty of the School of Engineering of the University of Pittsburgh.

During this quarter the results of 595 searches were reviewed by the subject specialists. Five hundred and fifty-five were current awareness searches consisting of 530 for NASA data base, 7 for the first three searches for each Chemical Condensate Current Awareness search, and 18 for Engineering Index. The remaining 40 searches were Retrospective Custom Profile searches, 34 on the NASA file, and four on the Engineering Index file. Table 4-2 shows the distribution of the reviewing on a monthly basis.

Table 4-2. Reviewed Searches

	Current Awareness			Retrospective		
	NASA	EI	Cond.	NASA	EI	Total
June	174	4	1	19	3	201
July	174	6	5	7	2	192
August	182	8	1	8	1	193
TOTAL	530	18	7	34	6	586

AIDS TO MARKETING

The major efforts to aid marketing by technical advice during the quarter were:

- Interest areas were discussed with approximately 20 potential customers over the telephone or at meetings. The meetings were either at the company installation itself, or at the the KAS Center, involving one or more Engineering specialists as well as a marketing representative.
- The NASA, Chemical Condensates, DDC, and EI files, were evaluated with regard to the interest of approximately 20 potential clients.
- Sample searches were made manually for potential customers. Some mechanical searching of Chemical Condensate retrospective files was made during preparation of the files in order to indicate potential value for clients. A sample search on the subject of Industrial Furnaces was made of the Engineering Index file, and twenty copies prepared for general use. Three sample profiles to be searched on all available files were formulated, and strategies written.

Impact Reporting

TECHNOLOGY UTILIZATION

The effort to identify potential technology transfer was expanded by enclosing a questionnaire with every document supplied by the KASC. The questionnaire was modified for more concise responses and is shown in Figure 4-1 which includes the formula used for weighting the responses. Response to the questionnaire is at the client's discretion and in no way compulsory.

The responses received were coded for mechanized manipulation and computer programs were written to rate and rank returned document questionnaire cards. Examples of the computer product of the programs are shown in Figure 4-2 for document rating and in Figure 4-3 for document ranking. As a result of the ranking of document questionnaires returned, 32 high ranking documents were identified. After a preliminary telephone interview, 22 seemed to be sufficiently indicative of a potential transfer to warrant a visit to the company by a KASC technical representative to document technology transfer. Information about the profile history, preliminary interview results, copies of the returned document questionnaire, and abstracts of the documents were prepared to brief the interviewer prior to his visit. Three technical representatives are ready to contact three companies in September, in regard to thirteen promising documents.

The quarterly contact with KASC clients for the purposes of studying impact and to monitor technical quality has been continued. At the end of the quarter a telephone group consultation was initiated for the quarly contact by the KASC engineering representatives to the profile users.

Although an occasional contribution to improvement of the technical quality of the searches was made by this method, no impact identification was made. During the next quarter, a new approach to the quarterly technical contact will be initiated by providing the client with a mechanism for requesting changes or consultation. The mechanism will involve the enclosure of a questionnaire with search output.

Document No. _____
Company Code _____
Question No. _____

DOCUMENT QUESTIONNAIRE

Please grade your answers from 0 (lowest value) to 9 (highest value).

		0	1	2	3	4	5	6	7	8	9
1.	To what extent do you consider this document of use to you?										
2.	To what extent did the information AID IN RESEARCH? .										
3.	To what extent did it REDUCE COSTS?										
4.	To what extent did it INCREASE PRODUCTIVITY? . . .										
5.	To what extent did it IMPROVE PRODUCT QUALITY? . .										
6.	To what extent did it INCREASE PROFITS?										

Your signature _____ Date _____

Figure 4-1. Document Questionnaire

Weighting Formula For Questionnaire Cards

Question No.	Weighting Factor		Questionnaire Rating		Weighted Value
1	1	X		=	
2	1	X		=	
3	4	X		=	
4	3	X		=	
5	2	X		=	
6	4	X		=	

Total Document Value _____

16 JUL 1970
COMPANY CODE 250
TOTAL SENT
TOTAL RETURNED 19
PERCENTAGE RETURNED
AVG OF DOCUMENT VALUES 25.8
STD OF DOCUMENT VALUES 72.9

PROFILE	DOCS	AVG.DOC.VAL.	STD.DOC.VAL.	DOCUMENT	DATE RELEASE	VALUE
10343	2	52.5	26.2	A69-31220	01/19/70	1 34
				A69-33491	12/22/69	1 71
10342	1	15.0	-.0	A69-34925	12/30/69	1 15
10714	1	46.0	-.0	A69-34378	12/22/69	1 46
10855	1	10.0	-.0	A69-35184	12/19/69	1 10
11046	7	22.9	31.7	A69-31905	01/02/70	1 14
				A69-32025	01/02/70	1 12
				A69-32158	01/02/70	1 32
				A69-33042	01/02/70	1 16
				A69-33064	01/02/70	1 12
				A69-34211	01/02/70	1 28
				A69-34399	01/02/70	1 46
12020	5	27.0	25.5	A69-33716	01/23/70	1 23
				A69-34211	01/23/70	1 42
				A69-35358	01/23/70	1 39
				N69-31132	12/17/69	1 16
				N69-32291	12/17/69	1 15
12204	1	.0	-.0	A69-33233	01/19/70	2 0
12700	1	20.0	-.0	A69-35481	12/22/69	1 20

Figure 4-2. Computer Print-out of Document Rating

16 JUL 1970

DOCUMENT	PROFILE	COMPANY	VALUE
A69-31511	91016	231	75
N69-27176	11046	251	75
A69-33491	10343	250	71
A69-35901	21493	151	53
A69-35960	21493	151	53
A69-35965	21493	151	53
A69-34489	12488	2111	52
N69-35499	21493	151	51
A69-34378	10714	250	46
A69-34399	11046	250	46
A69-34496	12488	2111	45
A69-34211	12020	250	42
N69-36349	12204	251	41
A69-35358	12020	250	39
A69-32988	20198	151	36
A69-31220	10343	250	34
A69-32158	11046	250	32
A69-35174	11046	251	32
N66-13338	-0	231	31
A69-34087	12050	2111	30
A69-38007	22600	1221	28
A69-34211	11046	250	28
A69-37062	11046	251	27
A69-33716	12020	250	23
A66-24421	12699	981	22
A69-35990	12204	251	21
-	11046	251	20
A69-35481	12700	250	20
A66-24422	12699	981	19
N69-31804	10340	251	19
A66-26958	12699	981	19
A69-34342	11046	251	18

Figure 4-3. Computer Print-out of Document Rank

APPENDICES

Appendix A

VOL. CLXXV NO. 60

Space Fallout

Data Banks Containing NASA Research Fruits Help Many Companies

Results of $35 Billion Effort Available at a Low Cost; Lockheed, Litton Use Files

Building a Better Oscilloscope

By A. Richard Immel
Staff Reporter of The Wall Street Journal

William Ferwalt runs a seven-man company that makes oscilloscopes on the Nez Perce Indian Reservation in Idaho. He wants to know everything he can about oscilloscopes, so last fall he paid $190 for a computer search of the National Aeronautics and Space Administration's technical data bank.

For his money, he got the fruits of five years of oscilloscope research done by Bendix Corp. under Government contract. The data included hitherto overlooked techniques for building a special type of instrument.

Mr. Ferwalt expects to parlay his $190 into $100,000 in sales, thereby doubling his company's business over the next several years.

Ferwalt Inc. is one of an increasing number of businesses taking advantage of the $35 billion spent on research for the nation's space program. The companies get their information at any of six data dissemination centers designed to open NASA's extensive technical data resources to private industry.

600,000 Documents

The first center was established seven years ago at Indiana University. Since then, centers have opened at the universities of Connecticut, New Mexico, Pittsburgh and Southern California and at North Carolina Science and Technology Research Center. The centers are financed by NASA and the money coming in from clients.

By NASA estimate, the data centers bulge with nearly 600,000 research documents; 6,000 documents are being added every month. Much of the data is generated by a clause in NASA contracts that requires companies to report to NASA any inventions and technology developed in the course of their Government work. But the data bank taps other sources, too, including the Department of Defense research files and professional journals and technical papers from around the world, including Communist countries.

Although the benefits are most striking for small companies with little research capability of their own, such large firms as Litton Industries and Alcan Aluminum are paying $1,000 to $5,000 a year to use the data banks. Even giant Lockheed Aircraft, a major aerospace contractor, is finding it can get some technical information faster through a dissemination center's computers than from its own voluminous research library. For several years, Lockheed has been going to the center at the University of Southern California to keep up with new techniques in metal welding and nondestructive testing.

A Major Misconception

In all, some 400 companies used the centers last year. That's up considerably from a few years earlier, but it is still far too small a number, NASA officials say. The nonprofit centers could easily handle work for thousands of clients, the officials say.

NASA officials caution that the data banks aren't the answer to every struggling businessman' dreams. "A big misconception we have to fight is that we're a grab bag of treasures," says an official. "We can only tell if an idea is feasible, if it can be done within the realm of costs. The idea has to be in the client's head before he comes to us."

A. Kendall Oulie, director of the center at Southern California, agrees. "What we're selling here is access—the use of computer and search capabilities," he says.

The centers employ a small full-time staff of engineers and clerical help and hire engineers and scientists on a part-time basis to sit down with clients and develop a computer search strategy. It is this personal attention that is at the heart of the centers' effectiveness, clients say.

Personal Contact

"We have access to the same NASA tapes through Washington," says Horace Jacobs, a Lockheed official. But, he says, the data centers' advantage is that they assign a person or two to discuss and work with a scientist. "There's more personal contact."

Although it is possible to get a one-shot computer search similar to the one the oscilloscope maker got, the centers encourage clients to sign up for a full year's services, drawing against the retainer of $1,000 to $5,000.

The most popular service for clients is a retrospective computer search of the entire data bank, tailored to answer a client's specific question. For $190 the computer will spew out condensations of technical reports describing all the work that has ever been recorded in the data bank on that particular subject. Then, for another $300, the client can get a "current awareness" search each month, which keeps him up to date on new material being added to the bank.

For $80, a company with less specific needs can, order a "standard interest profile," a list of condensations printed up periodically by the centers on a wide range of topics of fairly general interest.

Clients say the service is often fruitful. Dart Industries, a manufacturer of housewares, plastics and drugs, says it is developing high-temperature coatings for its consumer cookware as a result of a retrospective computer search.

Company officials say they also consult the computer before making decisions about new ventures. "When we're probing new business areas for Dart we need a quick reading to find out if a particular technology" has consumer applications, says Joseph Ciarimboli, Dart's manager of technical planning. "So we go and get a quick computer readout."

The Dart executive admits, however, that he was skeptical at first. "It took us about a year to be convinced," he says, adding, "People in the field tend to think they're up on everything."

Appendix B

from the desk of

EDMOND HOWIE

In case you didn't see the Wall Street Journal last Friday, March 27th, I thought you would be interested in the attached front page article about the NASA information service that KASC provides.

We also meet the needs of our clients with information from:

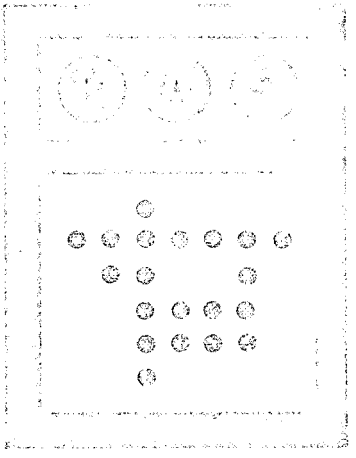
- The Chemical Condensates file published by the Chemical Abstracts Service;
- The Chemical Titles file, also published by the Chemical Abstracts Service;
- The Engineering Index file published by Engineering Index, Inc.; and
- The Defense Documentation Center file published by the Department of Defense Documentation Center.

Put KASC to work for you. Fill out and mail the enclosed card today!

Appendix C

Appendix D

KASC INFORMATION SERVICES



Diptych

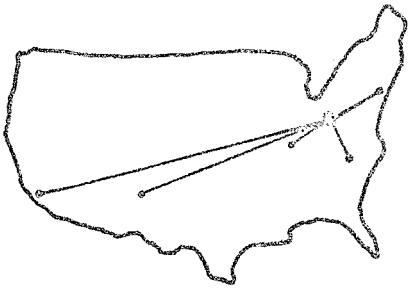
MAY 1970, VOL. 1, NO. 1

KNOWLEDGE AVAILABILITY SYSTEMS CENTER

UNIVERSITY OF PITTSBURGH
PITTSBURGH, PENNSYLVANIA 15213

KASC SERVICES EXPANDED

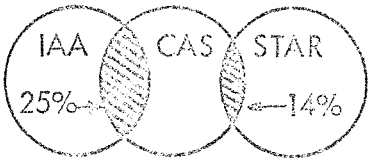
The KASC data base now includes over a million items and is growing at a rate of more than 30,000 items each month. This is not attributable to a sudden expansion of the NASA file but rather the recent implementation of a network of the NASA Regional Dissemination Centers distributed across the country. Through the network, KASC now has access to five mechanized files. Three are searched by the KASC and two are searched for it by sister RDCs. The five files are: (1) NASA/IAA, (2) Chemical Abstracts Service CONDENSATES, (3) CAS CHEMICAL TITLES, (4) Engineering Index (EI) COMPENDEX, and (5) the unclassified Defense Documentation Center (DDC) file. Retrospective and current awareness service is currently available on the NASA, EI and DDC files. Current awareness service is now available for the CAS tapes with retrospective service on CONDENSATES to become available during the coming quarter. More information about these data bases can be obtained from John Matenkosky of the KAS Center.



HOW MUCH OVERLAP?

A 1969 publication of the National Academy of Science, Scientific and Technical Communication, presents an indication of the overlapping coverage between some

of the KASC's new data bases and other well known services. In comparing Chemical Abstracts with the NASA file, it states that only 25% of 30,000 items appearing in IAA also appeared in CA and only 14% of 36,300 items which appeared in STAR were found in CA. Further com-



parisons between CA and other publications indicated the following percentages of overlap:

Biological Abstracts - 20% of 110,000 items.

Geoscience Abstracts - 20% of 6,000 items.

Review of Metal Literature - 55% of 18,000 items.

Technical Translations - 73% of 24,000 items.

Nuclear Science Abstracts - 51% of 17,600 reports, 58% of 27,900 journal articles, 73% of 2,630 patents.

NEW FORMAT FOR CONDENSATES

Recipients of search services on the Chemical Abstracts Service CONDENSATES file will soon notice a change in the output format. The KASC policy of continuous sensitivity to clientele needs suggested that CONDENSATES users would be better served if the various elements of an output citation could be more easily distinguished. The job of reformatting the citation cards is now underway and will probably be accomplished as a phased process. Users are now being surveyed to determine preferred formats, including the option of cards versus standard 8½ x 11 paper.

KASCHARACTERS

The gate to KASC service is through the Center's Marketing Section headed by John Matenkosky. John joined the KASC staff in August of last year bringing with him his sales experience with IBM and his electrical and mechanical design experience with West Penn Power. This background enables John to be unusually sensitive to the needs of KASC clients. Requests for new and additional service or changes in current service may be funneled through him for prompt and satisfactory action. He may be reached by telephone at (412) 621-3500, extension 6352.

HOW TO TRANSFER TECHNOLOGY

Recognizing new technology in the mass of information available today is about as simple as knowing how to transfer it to problems at hand. Some assistance might be gleaned from the March 1968 Seminar on the Management of Technology Transfer, held at the University of California. Several of the papers presented at that meeting have been accessioned by NASA and are now available thru the KASC or can be found in the IEEE Transactions on Engineering Management, Vol. EM-16, Aug. 1969. Titles with the NASA accession numbers are: Techniques for Technology Transfer Within the Business Firm (A70-12635), The Technology Transfer Process Between a Large Science Oriented and a Large Market Oriented Company--The North American Rockwell Challenge (A70-12636), The Optimum Balance Between Program Organizations and Functional Organizations to Promote Technology Transfer (A70-12637), Technological Transfer Programs at Lockheed (A70-12638), and Management of Technology Transfer in an Advanced Project--The Case of Surveyor (A70-12639).

RELAY SWITCHING MATRIX

NASA Tech Brief 68-10301 describes an XY relay switching matrix designed to provide complete random access and random release of 400 points. Associated with each point of the 400 point XY relay switching matrix is a mercury-wetted bistable relay with independent set and reset coils. The relays, commercially available components, are mounted in units of four on a printed circuit board. One hundred board assemblies, housed in a drawer, provide the 400 switching points. No patent action is contemplated by NASA. Complete details may be obtained through the KASC.

METALLIC ALLOYS

Added to the list of metallic alloy processing techniques is that of "Zero Gravity." The process was described in two papers presented at the October 1969 Processing and Manufacturing meeting held at the Marshall Space Flight Center. One paper (N70-14652) defines a method of dispersing immiscible aluminum oxide in aluminum. The second (N70-14660) tells how unique alloys can be prepared by forming a homogenized melt from metals which at earth gravity separate into two immiscible layers. Both documents are available through the KASC.

NEW TOUGH PLASTIC

Irving Muskat, leading innovator in polyester resins two decades ago, is reported by the April 11, 1970, issue of Business Week to have developed a new kind of plastic involving polyvinyl chloride blended with an unspecified ingredient. In molding, crosslinks form between long PVC chains resulting in a material which will melt at high heat but which can be removed from a mold at 340 F without distorting. The material is inflammable, requires no hand finishing, and does not shrink as it cures. Also, it is said to mix well with glass fibers ¼ inches or longer and still avoid resin rich areas in the moldings. It is to be marketed by the newly formed C-J Corporation, Erie, Pa., as a reinforced premix suitable for compression molding and as unreinforced sheets suitable for vacuum-molding processes. Patents are still pending.

LIQUID LEVEL SENSOR

A liquid level probe has been conceived which is essentially a potentiometer-type pressure transducer. The design improves liquid level sensing by using the pressure-induced motion of a diaphragm to alter the resistance of the sensor. The development is in the conceptual stage only, and neither a model nor prototype has been constructed. NASA Tech Brief 70-10219 provides a sketch of the concept and a description of its operation. No patent action is contemplated by NASA.

RECENT BIBLIOGRAPHIES

N70-16042
CHEMISTRY IN NONAQUEOUS SOLVENT SYSTEMS: A TEN-YEAR ANNOTATED BIBLIOGRAPHY
William R. Strickland, Dow Chemical Co., Golden, Colo., 1969, 17 pp.
The open literature for the past decade was surveyed for accounts of explorations in nonaqueous (organic) solvent systems. Those references pertinent to programs under consideration were tabulated and annotated. Subject and author indexes are included for the 138 references.

N70-16045
SELECTED BIBLIOGRAPHY OF FUSES
L. Vermij, Technische Hogeschool, Eindhoven (Neitherlands). 1969, 23 pp.
A bibliography was compiled to offer the possibility of a more directed choice in studying the literature dealing with fuses. The papers mentioned in this selected bibliography give more or less an overall picture of current knowledge, possibilities and requirements regarding uses. The papers were arranged according to subject. The A-papers are the most important publications, whereas B-papers are recommended for further study. C-papers are of interest mainly from a historical point of view.

N70-17008
A SELECTED ANNOTATED BIBLIOGRAPHY ON LIGHTNING (1964-1969)
Alvin L. Smith, Jr., & D. L. Boyer, Environmental Technical Applications Center (Air Force), Washington, D. C. 1969, 49 pp.
The bibliography contains 126 annotated references concerning lightning, generally as it occurs in the atmosphere. A subject index is included showing the numbered items pertaining to each subject breakdown. A number of pertinent textbooks are given in a separate listing.

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RETROSPECTIVE SERVICE
FOR
CONDENSATES
SOON TO BE ANNOUNCED!

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FILING & STORING EQUIPMENT

T. S. Eliot once asked "Where is the knowledge lost in information?" Information and Records Management attempts to help find an answer with their second annual guidebook, Vol. 4, No. 2, devoted to equipment for the filing and storage of information records. The result is a useful, comprehensive directory, as well as a guidebook, for the selection of filing systems and equipment. Although not complete, the book can give the novice quite an edge on his purchasing agent. IRM's address is 41 E. 28th St., New York, N. Y. 10016.

TEMPERATURE-SENSITIVE COATINGS FOR SUBAMBIENT TEMPERATURES

The use of chemical marking pencils (Tempil° sticks) to record temperatures reached during heating operations of all kinds is well known. A new listing of such temperature recording chemicals has been recently published by NASA for the temperature range -37°F to -162°F. The list is contained in a contract report, N70-20626, entitled Phase Change Indicators for Subambient Temperatures. The document is 14 pages long and is available in hard copy or microfiche through the KASC.

REMOTELY ACTUATED RELEASE MECHANISM

A mechanism has been developed that permits the actuation of an automatic device, either remotely or after a predetermined time increment, without undesirable shock, contamination, or both, such as may result from the use of squibs, explosive bolts, acid acting on discrete barriers, etc. In the new mechanism a restrained energy force (springs, stored pneumatic pressure, etc.) is automatically released by an electrical charge which may be applied by a manual switch or, in a remote application, by an rf impulse received by simple, conventional electronic circuitry. NASA Tech Brief 70-10286 describes the mechanism for which no patent action is contemplated by NASA.

NASA SPECIAL PUBLICATION ON CONVERSION FACTORS

A recent publication of the National Aeronautics and Space Administration, N70-16402, is entitled The International System of Units, Physical and Conversion Factors, Revised. With the projected conversion of weights and measures by United States industry, this reference publication of conversion factors for acceleration, area, density, energy, mass, force, length, power, pressure, speed, temperature, time, viscosity, and volume is most timely. The document is twenty-two pages in length and is available either in hard copy or microfiche from the KASC.

DIAZO DUPLICATION

Diazo duplication of microforms and an up-to-date roundup of diazo equipment is the accent of the February/March 1970 issue of Information and Records Management. (See article on Filing and Storing for address.) Where? What? and Why? are provided for the use of diazo and a directory is supplied of currently available duplicating equipment and films and film cards used with the equipment. The efficiency and ecomony of diazo for mass microfilm duplication are well known and, as the magazine states, "when an organization is a multi-plant, multi-branch, multi-dealer, or multi-anything company, economy becomes a vital factor in sustaining any active distribution system."

DEVICE TESTS FOR COLOR BLINDNESS

A plug-and-jack testing device has been constructed for determining the ability of a technician to identify color-coded electric wires. The device detects certain types of partial color blindness often missed by standard tests, allows more rapid testing, and may even be administered by a color blind person. The invention is owned by NASA but royalty-free, nonexclusive licenses for its commercial use will be granted by NASA. The device is described in NASA Tech Brief 70-10264.