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METALS AND CERAMICS INFORMATION CENTER.(U)
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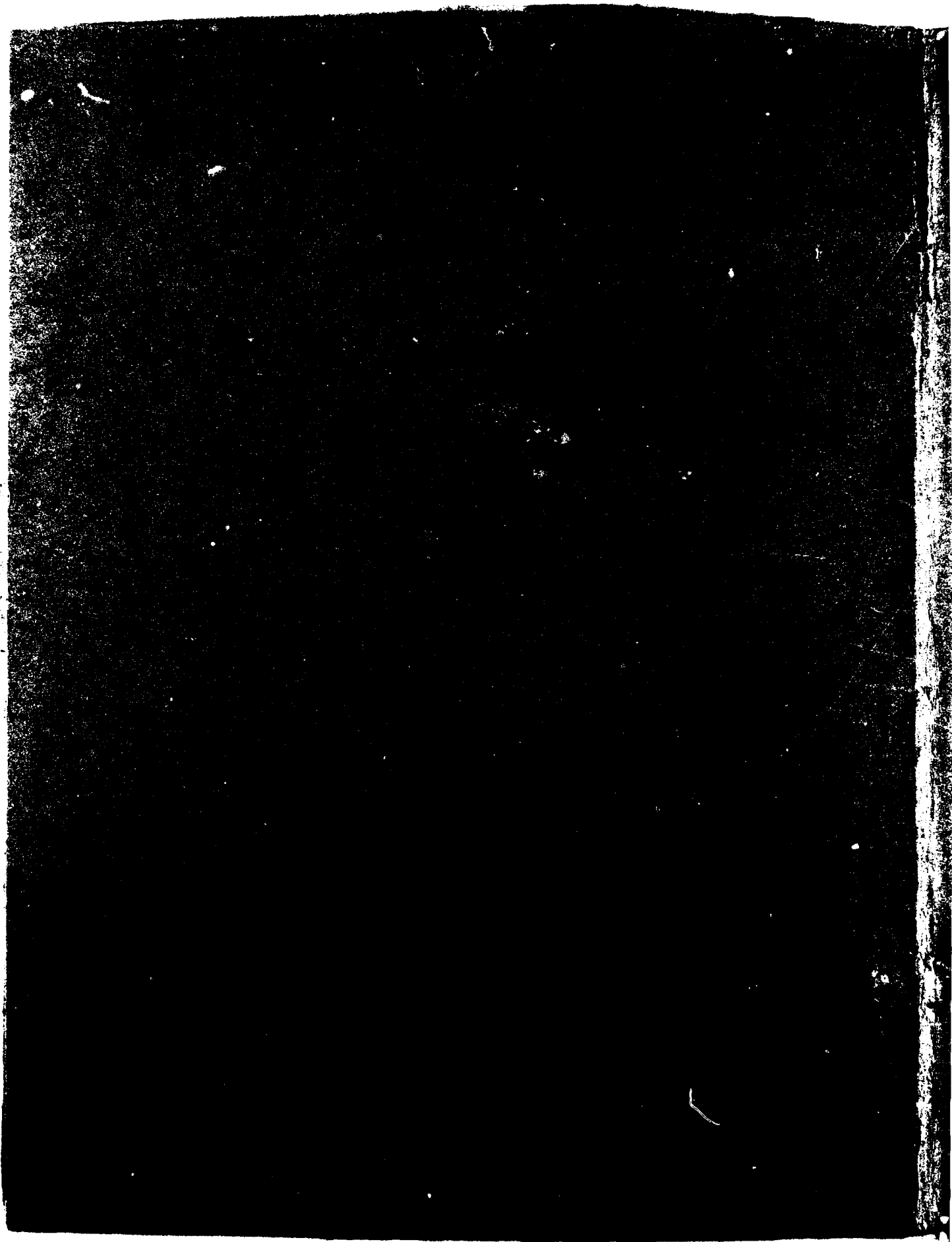
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Battelle

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505 King Avenue
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Telephone (614) 424-5000

August 9, 1982

AMMRC
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Watertown, MA 02172

Dear Mr. Seitz:

Contract No. DLA900-78-C-1715

Two copies of our Fourth Annual Progress Report (May 1981 through April 1982) are enclosed. Data for the Sixteenth Quarter are included in that report.

With the close of the Mechanical Properties Data Center, MCIC assumed responsibility for the "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". As a result, no new Handbooks will be developed by MCIC.

The problems of rising costs and no new funding were exacerbated by the FY82 budget cut. With some changes in our rate of effort in certain areas, we have managed to maintain the basic MCIC functions.

We appreciate your continued help and support. Copies of this Annual Report are being sent to the distribution shown on the attached page.

Very truly yours,

Harold Mindlin
Program Manager

HM:psb

Enc.

Attachment

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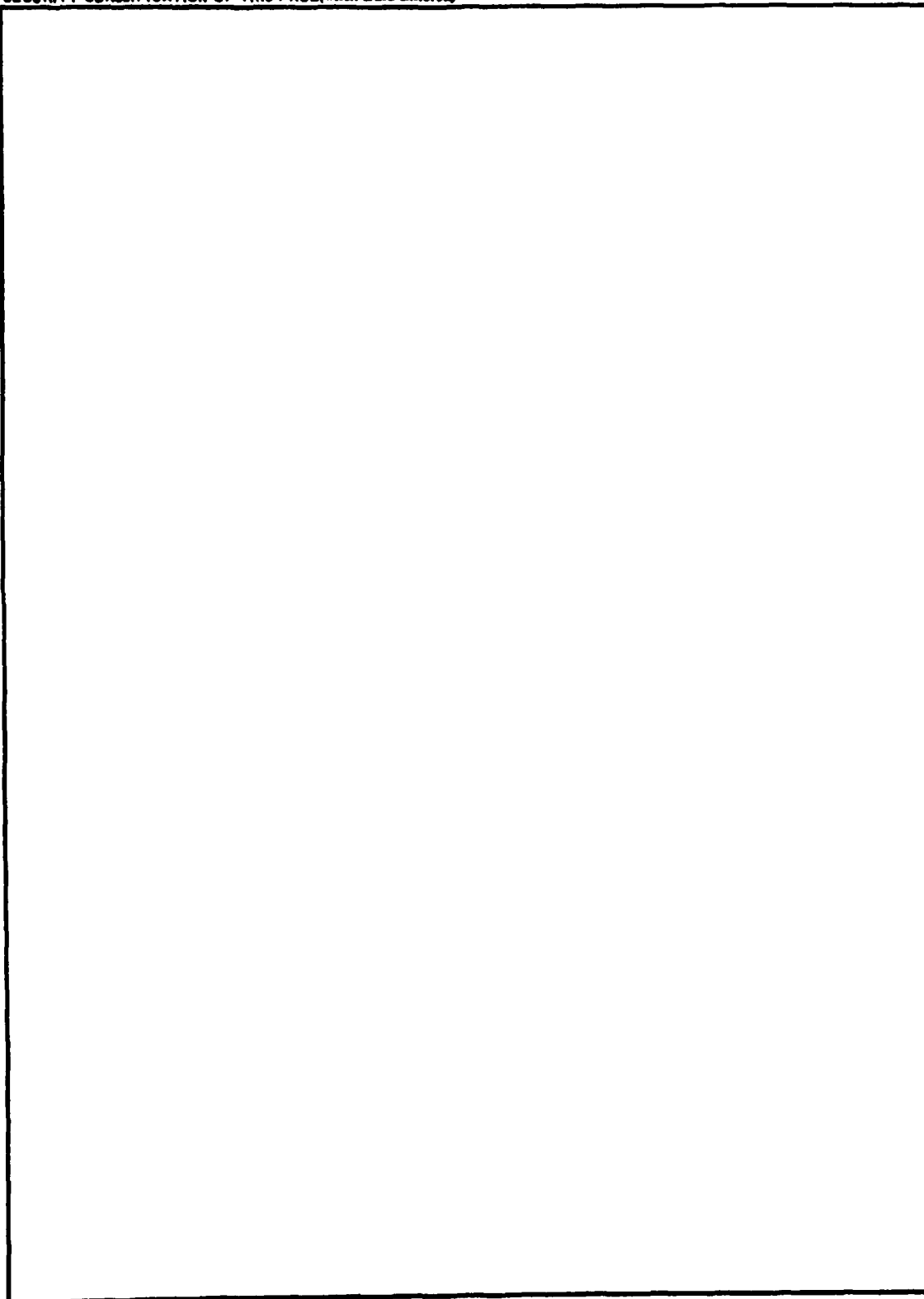
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981 through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.		

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SUMMARY

The Metals and Ceramics Information Center (MCIC) is one of the technical Information Analysis Centers (IAC's) chartered and sponsored by the Department of Defense (DoD). The objective of the Center is to increase the productivity of scientists, engineers, and technicians engaged in scientific and engineering programs for the DoD. The Center is responsible for the collection, review, analysis, appraisal and summary of the available scientific and technical information and data on selected metals and ceramics. The resources and capabilities of MCIC, a full-service IAC, are also available to the technical community at large through an extensive program of products and services.

This fourth Annual Report on Contract No. DLA900-78-C-1715 covers the program activities for the period 1 May 1981 through 30 April 1982. Operating statistics and contract status reports are provided for the Sixteenth Quarter and the complete reporting period. During this 12-month contract period, the Center met its contractual goal for recovery of products and service costs. Actual annual income from the sale of products and services was \$146,475; income from special tasks and related activities was \$469,134. This total income of \$615,609 resulted in a cost recovery of 84.6 percent relative to the annual funding rate of \$700,833. (Funding for FY 82 has been reduced.) A substantial portion of MCIC's income continues to come from the special studies and tasks undertaken for Federal agencies; 11 studies/tasks were conducted in this report period. The operations of the Center have been affected by rising costs, but basic services are being maintained.

In addition to the information acquisition and processing efforts, technical publications and inquiry services remain the major activities in MCIC's basic program. As of 1 April 1982, MCIC was given responsibility for the publication and maintenance of the "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". The publications completed, reprinted or in process consist of:

- 12 Current Awareness Bulletins (CAB)
- 5 technical reports
- 2 new handbooks.

The Center continued to give high priority to responses for technical assistance (of these incoming requests, 305 were processed and 94 were cancelled). Of the assigned requests, 63 were subject to user charge and 242 were answered free of charge.

Utilizing the RDT&E On-Line System at the Defense Technical Information Center, the information base added 3,343 technical documents to the MCIC information system. Included in the annual total are 755 documents accessed in the Sixteenth Quarter. Our inventory of technical documents now lists over 130,000 items.

Future plans are for the cost-effective continuation of the primary and established products and services of the Center necessary to attain MCIC's goals and objectives.

PREFACE

This report was prepared by the Metals and Ceramics Information Center (MCIC) which is operated by Battelle's Columbus Laboratories, 505 King Avenue, Columbus, Ohio 43201, under Contract DLA900-78-C-1715. The MCIC program has been administered under the direction of the Defense Logistics Agency with technical supervision by the Army Materials and Mechanics Research Center, Watertown, Massachusetts. Mr. Raymond Farrow was the acting Contracting Officer's Technical Representative until Mr. David W. Seitz was named to the position in October 1981.

This annual report covers the period of work May 1, 1981, through April 30, 1982. The Sixteenth Quarter statistics (February 1982 through April 1982) are also included. The report was released by the author July 1982.

The MCIC and Battelle management express their appreciation to those many sponsor representatives whose advice, guidance and support have been essential to the continuing success of the MCIC program. Particular mention should be made of the significant contributions of

Mr. James Pendergast, DTIC
Mr. Raymond Farrow, AMMRC
Mr. David W. Seitz, AMMRC

Ms. Sara Williams, DESC
Mr. Jerome Persh, OUSDRE

**ANNUAL REPORT
(May, 1981 through April, 1982)**

and

**Sixteenth Quarterly Progress Report
(February through April, 1982)**

on the

**OPERATION OF THE METALS AND CERAMICS
INFORMATION CENTER**

to

**ARMY MATERIALS AND MECHANICS
RESEARCH CENTER**

INTRODUCTION

In 1971, the Metals and Ceramics Information Center (MCIC) was formed through the merger of the Defense Metals Information Center (DMIC) and the Defense Ceramic Information Center (DCIC). The former had been operated by Battelle since the mid-1950s, and the latter since 1967. Thus, MCIC is continuing more than 2 decades of service to the defense materials community.

As one of the family of technical information analysis centers sponsored by the Department of Defense, MCIC's purpose is to provide an authoritative source of current engineering and scientific information and data on metal and ceramic materials and composites containing those materials which may be applicable to defense systems. Although intended primarily for service to agencies of DoD and their contractors, MCIC's resources are available to the technical community at large, thus contributing to the transfer and adaptation of defense-developed technology for commercial and consumer use.

With the close of the Mechanical Properties Data Center (MPDC) in April 1982, MCIC assumed the responsibility for the continued publication of two technically accepted MPDC Handbooks — "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook".

This report, summarizing MCIC activities for the period May 1, 1981, through April 30, 1982, the fourth 12 months under Contract DLA900-78-C-1715, provides a summary of the scope, objectives and organization of MCIC, its information processing and services, and a discussion of future plans for the maintenance of the Center's resource of technical knowledge in metals and ceramics. Statistical summaries of expenditures for the various activities conducted in the Sixteenth Quarter and the four-year contract period are given in Appendix A (DSAH Form 1261).

One additional year of Battelle's operation of MCIC is covered under the current contract.

Scope and Purposes of MCIC

MCIC is recognized as a formal full-service Department of Defense Information Analysis Center (IAC). As such, under the contract reported on herein, its objectives have been to provide scientific and technical information analysis services to the Department of Defense components, contractors and grantees, U.S. Government agencies and their contractors, and to the private sector. The scope includes metals and ceramics in various forms (i.e., bulk, coating, etc.) that are utilized in defense systems and hardware with emphasis on critical structural applications and/or stringent environments.

The Center collects and provides its users with information on the design characteristics, applications, processing, fabrication, quality control, environmental effects, test methods, sources, suppliers, and specifications for materials within its scope.

To accomplish these objectives, the MCIC program consists of five principal functions:

- (1) Maintenance of a comprehensive, up-to-date, authoritative technical information base
- (2) Responses to requests for technical advice and assistance from Government agencies, contractors, suppliers, and the public sector
- (3) Issuance of a monthly Current Awareness Bulletin covering metals and ceramic technology on a variety of subjects
- (4) Publication of technical reports, handbooks, databooks, critical reviews and technology assessments appraising the state of the art of metals, ceramics, and related processes
- (5) Conduct a variety of special studies for DoD agencies and other departments of the Federal government.

Organization of the MCIC Program

The Metals and Ceramics Information Center is assigned to the Materials Information Program Office of Battelle's Columbus Laboratories. The Manager of that office also serves as Director of MCIC. Members of the permanent MCIC staff are drawn from Battelle's Materials Department and Computer, Information Systems, and Education Department. That full-time staff averages 11 engineers, information specialists and secretarial assistants, who are supported by engineers and scientists from throughout the Columbus Laboratories, contributing on a part-time basis as needed. The fundamental strength of the MCIC program lies in this team of qualified authorities, whose experience and daily participation in advanced materials research provides the Center's users with expert technical advice and authoritative state-of-the-art publications (see Figure 1).

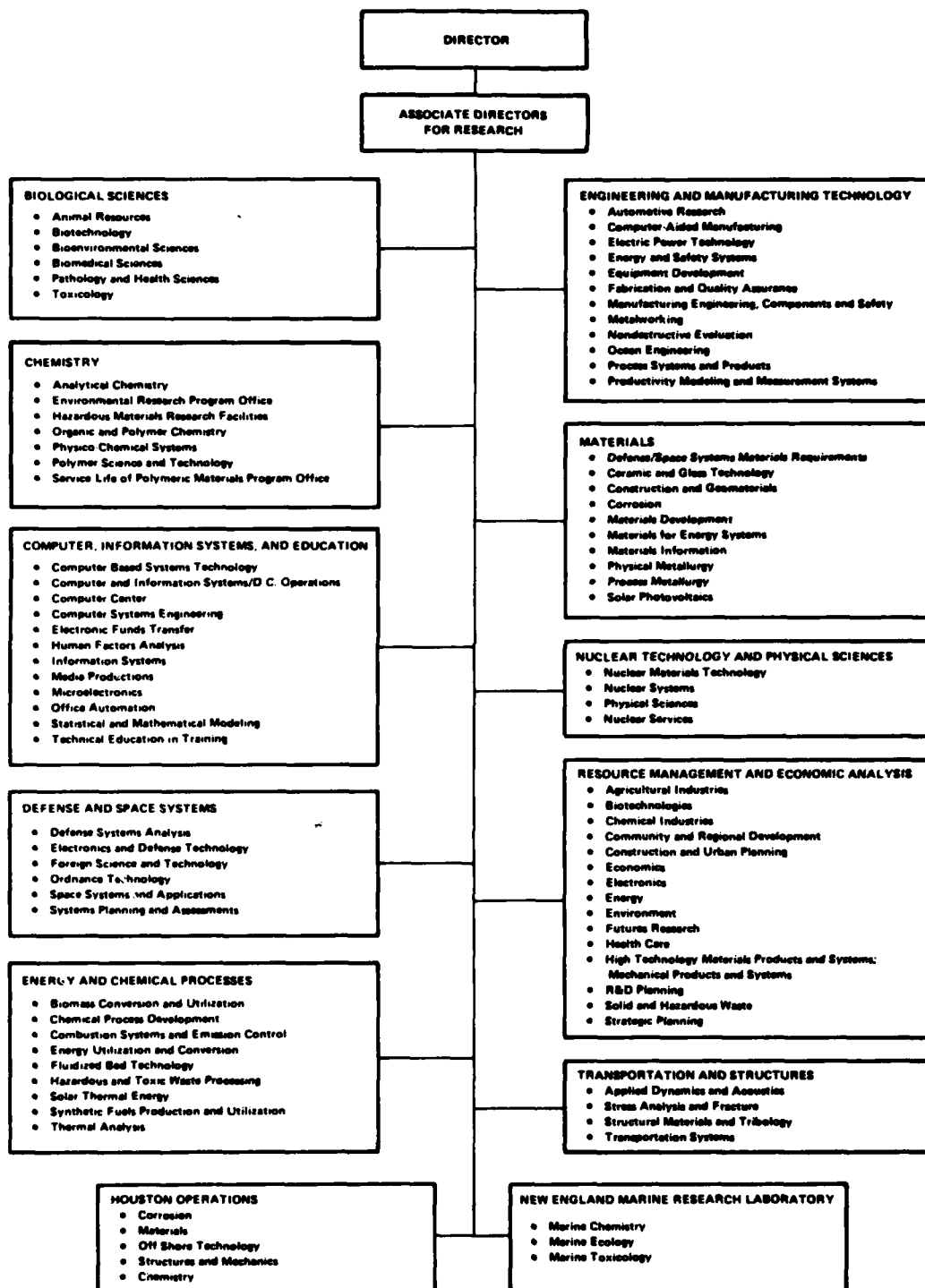


FIGURE 1. BATTELLE-COLUMBUS RESEARCH DEPARTMENTS

Key MCIC staff assigned to manage the basic functions of the Center are:

Program Manager and Coordinator of Special Studies	Harold Mindlin
Associate Manager	James F. Lynch (Retired 31 December 1981)
Technical Inquiries and Current Awareness Bulletin	Roy W. Endebrock (Retired 30 April 1982) Frank J. Jelinek
Coordination of Marketing, Promotion, and Publication	Harold J. Hucek
Information Operations	Helen Pestel

INFORMATION OPERATIONS

An information base is maintained by MCIC to provide technical documentation needed by staff scientists and engineers who compile the various products of the Center and to provide a rapid, inexpensive retrieval mechanism to support the Center's technical inquiry service and special studies. The information base contains over 130,000 documents collected and reviewed since 1955 under MCIC and its two predecessors, DMIC (Defense Metals Information Center) and DCIC (Defense Ceramic Information Center).

The MCIC information base is maintained in two separate retrieval systems. The items collected prior to 1971 are maintained in a manual system utilizing extracts of documents which are filed in multiple locations by key words (index terms). The MCIC computerized file was initiated in 1971 utilizing the Battelle BASIS Database Management System. In March 1975, the computerized database was moved to the Defense Technical Information Center's Defense RDT&E On-Line System (DROLS). As of April 28, 1982 (Tab cycle 82-11), the computerized file contains 43,569 references of which 29,219 are unique to the MCIC program, and 14,350 are DTIC holdings that were modified by enriched indexing.

Acquisition of Information

During the fourth year of the current MCIC contract, 4055 documents were acquired and reviewed for input into the MCIC database. Of these, 597 documents were rejected because they were not considered relevant to the MCIC scope or because they duplicated information presently in the information base. During the Sixteenth Quarter, 971 documents were reviewed and 755 documents were accessioned. The reduced rate of accessioning in the Sixteenth Quarter is a result of the funding reduction for the MCIC Program in FY82. The reduced accessioning rate has been accomplished by removing all composite materials except carbon/carbon composites from the scope and by increasing the size of the backlog of documents waiting for review for inclusion to the database.

The type and number of documents accessioned by MCIC for the database in the Sixteenth Quarter and for the year are shown in Table 1. Included are journal articles, government reports, conference papers and miscellaneous sources such as books, trade literature and internal papers. (The table also breaks down the documents accessioned during the Thirteenth through the Sixteenth Quarter of the present contract.)

Documents related to metals and metallurgy represent 84.7 percent of the annual input (91.7 percent for the Sixteenth Quarter), ceramics represent 5.9 percent of the annual input (5.0 percent for the Sixteenth Quarter), and composites represent 9.4 percent of the annual input. 137 of the composites documents were acquired to support the Carbon/Carbon Data Bank, a special project for MCIC. During the Sixteenth Quarter only documents on carbon/carbon composites were accepted for the composites portion of the input.

Identification and acquisition of pertinent technical literature are aggressively pursued by the MCIC staff. The primary source of reports generated by DoD and other Government agencies is the contractors or agencies producing the reports. Receiving reports on direct distribution avoids time delays in receipt of this information from secondary sources and allows the Center to have access to interim progress reports not distributed to secondary sources.

Pertinent reports not received on direct distribution are identified and ordered from Government abstracting services including DTIC's Technical Abstracts Bulletin (TAB), NTIS's Government Report Abstracts (GRA), NASA's Scientific and Technical Aerospace Reports (STAR), and DoE's Energy Research Abstracts (ERA).

Journal articles and technical papers are selected by screening materials entering the Battelle Library on a daily basis. This source is supplemented by subscribing to key journals and ordering of individual technical papers by MCIC.

One to two percent of the Center's acquisitions are from sources such as books, trade literature, and trip reports and memoranda on MCIC staff activities which contain technical data.

RDT&E Input

A total of 2655 of the 3343 documents accessioned this contract year were processed into MCIC's dedicated database at DTIC (DROLS). The remaining 688 documents were already in the DTIC collection. The DTIC records for these reports were supplemented with the MCIC accession number and enriched indexing. Sixteenth Quarter statistics for DROLS input are: 604 items added to the MCIC series, 151 DTIC records augmented with MCIC numbers and enriched indexing.

On-Line Usage of the MCIC Database

On January 16, 1980, the MCIC database became available to all sites having dedicated on-line terminals to the DROLS. In mid-October, 1980, the database became available to dial-up subscribers of DROLS. Surprisingly few problems regarding the use of our database have been brought to the attention of the MCIC staff since the addition of both user groups. MCIC database input staff have attended both the Regional and Annual DROLS Users meetings to be available to assist users of the MCIC and other IAC databases.

TABLE 1. MCIC ACQUISITIONS, MAY 1981-APRIL 1982

Document Type	Quarterly Period				Annual Total	Percent 16th Quarter	Percent Annual
	May-Jun 81	Jul-Oct 81	Nov 81-Jan 82	Feb-Apr 82*			
Journal Articles	362	472	425	344	1,603	45.5	48.0
Technical Reports	(348)	(351)	(205)	(250)	(1,154)	(33.1)	(34.4)
Air Force	92	79	57	56	284	7.4	8.5
Army	41	62	34	28	165	3.7	4.9
Navy	74	80	52	75	281	9.9	8.4
Other DoD	13	24	10	11	58	1.5	1.7
NASA	49	50	23	22	144	2.9	4.3
DOE/ERDA	53	34	19	36	142	4.8	4.2
Other	26	22	10	22	80	2.9	2.4
Technical Papers	251	88	61	150	550	19.9	16.5
Miscellaneous	7	7	11	11	36	1.5	1.1
Total	988	918	702	755	3,343	100.0	100.0

*Sixteenth Quarter

Table 2 summarizes the use of the database by type of organization for all records displayed or ordered from the dedicated or dial-up sites for the Thirteenth through Sixteenth Quarters. The number of users and records retrieved from the MCIC database continue to grow due to the addition of new dial-up users to the DROLS system.

TECHNICAL REPORTS AND HANDBOOKS

Information transfer on advances in materials technology within MCIC's scope and related to applications in defense systems and hardware is an important activity of this program. In response to needs of Government, particularly DoD, as well as industrial and academic communities, a variety of publications is prepared by the Center. The archival documents include handbooks/databooks and technical reports which are represented in state-of-the-art reports, proceedings of conferences, critical reviews or technology assessments, as well as comprehensive listings of available literature as related to identifiable areas of interest.

No technical reports or handbooks/databooks were published in the Sixteenth Quarterly period. However, one state-of-the-art report was initiated and processing was continued on four publications.

A status summary of the Center's publications activity during the past year (May 1981-April 1982) is given in Table 3. In this annual period two handbooks were published and two databook compilations were discontinued because of funding restrictions. Also, three state-of-the-art reports were published, and two were initiated.

As of April 1, 1982, with the demise of the Mechanical Properties Data Center (MPDC), MCIC assumed the responsibility for maintaining two valuable handbooks formerly published by MPDC. These two handbooks, the "Aerospace Structural Metals Handbook (ASMH)" and the "Structural Alloys Handbook (SAH)" along with their annual supplement service will represent the major MCIC handbook/databook effort in the future and will be covered in subsequent MCIC reports. The ASMH is updated quarterly; the SAH semiannually.

A listing of Battelle personnel who contributed to these publications is given in Appendix B.

User Feedback

A continuing effort to determine user satisfaction with MCIC's publications has been in effect since September, 1977, in accordance with contract requirements. The MCIC user evaluation form, shown in previous annual reports, is a modified and approved version of the DLA suggested form. It is included in technical reports and handbooks purchased from MCIC and includes a business return address to MCIC. All original forms received by MCIC are copied and forwarded to DLA. Although this is a reversal of procedure suggested by DLA, it provides MCIC with a more rapid insight of user responses.

During this annual period 25 evaluation forms for 12 handbooks, 13 reports and the CAB were received. The returns represent about 1.3 percent of the number of documents sold directly by MCIC. All returns indicated satisfaction with MCIC publications.

TABLE 2. QUARTERLY STATISTICS ON THE USE OF THE MCIC DATABASE VIA DROLS
FOR THE FOURTH CONTRACT YEAR(a)

Class of Users	Thirteenth Quarter			Fourteenth Quarter			Fifteenth Quarter			Sixteenth Quarter			16th Quarterly Totals		
	Records Retrieved			Records Retrieved			Records Retrieved			Records Retrieved			Records Retrieved		
	Avg. No. of Sites	No. of Sites	Avg. No. of Sites	Avg. No. of Sites	No. of Sites	Avg. No. of Sites	Avg. No. of Sites	No. of Sites	Avg. No. of Sites	Avg. No. of Sites	No. of Sites	Avg. No. of Sites	Avg. No. of Sites	No. of Sites	Avg. No. of Sites
Air Force	7.7	221	8.3	314	410	10.3	116	13	94	9	53	10.7	263		
Army	21.3	903	22.3	535	455	19.7	155	28	306	25	345	25.3	806		
Navy	13.7	418	14.3	437	352	11.0	137	13	334	16	196	14.3	667		
Other Government	7.3	271	8.3	420	167	8.0	35	4	9	6	57	4.7	101		
Industrial	34.0	1,822	40.0	2,804	1,726	32.0	460	50	833	48	653	43.7	1,946		
DTIC	4.7	1,220	5.0	1,139	1,290	4.0	287	6	512	8	672	6.0	1,471		
Other IACS	3.3	480	3.7	886	452	3.7	48	4	100	3	70	3.3	218		
Total Other	92.0	5,335	99.9	6,335	4,852	88.7	1,238	118	2,188	115	2,046	108.0	5,472		
MCIC	1.0	3,814	1.0	2,820	1,862	1.0	667	1	1,430	1	1,035	1.0	3,132		
Total	93.0	9,149	100.9	9,155	6,714	89.7	1,905	119	3,618	116	3,081	109.0	8,604		

(a) As measured by the records displayed by users with both on-line displays and orders.

TABLE 3. STATUS OF MCIC TECHNICAL PUBLICATIONS (APRIL 30, 1982)

Publications	Activity Status(1)	Estimated Cost to Complete, \$	Publication Date		Remarks
			Previous	Revised	
<u>Handbooks/Databooks</u>					
<u>Published</u>					
Engineering Property Data on Selected Ceramics, Volume III, Single Oxides, HB-07V3	-	-	-	-	Published August, 1981
International Alloy Compositions, Volume III, Aluminum, HB-09V3	-	-	-	-	Published May, 1981
<u>In Process</u>					
International Alloy Compositions, and Designations, Volume IV, Copper, HB-09V4	-	-	-	-	Discontinued
Engineering Property Data on Selected Ceramics, Volume IV, Mixed Oxides, HB-07V4	-	-	-	-	Discontinued
Aerospace Structural Metals Handbook (ASMH)	TP	-	-	-	Annual supplement services are continuing on both publications
Structural Alloys Handbook (SAH)	TP	-	-	-	Annual supplement services are continuing on both publications
<u>Technical Reports</u>					
<u>Published</u>					
Corrosion Fatigue in Marine Environments	-	-	-	-	Published September, 1981
Rapid Solidification of Metals	-	-	-	-	Published October, 1981
Technological Advances in Joining	-	-	-	-	Published December, 1981
<u>In Process</u>					
Revision and Update of Hot Isostatic Processing	TP	40,000	-	8/82	In Completion
Laser Processing of Materials	TP	50,000	-	3/83	In Completion
<u>Proposed</u>					
Isothermal, Precision Forging	-	30,000	-	-	-
Surface Analysis of Thin Protective Films on High-Performance Alloys	-	45,000	-	-	-

(1) Legend: TP - technical preparation, TR - technical review, E - editing, P - publication.

Analysis of the forms showed that the use rate for individual items varied from two times per year to five times per week with the average about 50 times per year. The savings realized from use of the publications ranged from \$100 per year to over \$10,000 with the average savings calculated to be about \$4,000 per year. The number of projects using MCIC publications varied from two to greater than ten (the average was 4.5 projects). Many users requested more detail, but this appeared to be related to a particular individual's need and not amenable in the overall compilation of the document.

In general, this limited evaluation of MCIC reports, handbooks, and databooks indicates that a publication is useful to four projects/tasks about 50 times per year (once per week) and saves the user about \$3,000 per year. Conservatively, the evaluation means that the 1918 MCIC publications sold in the U.S. during the past year were used about 60,000 times and saved the Government about \$6 million on projects/tasks. Thus, the Department of Defense has realized a return on investment of about 10 to 1 for MCIC on publications alone.

Sales

Although sales of publications have increased slightly during this contract year, the publication of several new titles within the past year and the sale of the two former MPDC databooks (ASMH and SAH) should provide an even greater increase in sales activities during the next year.

CURRENT AWARENESS BULLETIN

The MCIC "Current Awareness Bulletin" (CAB) is designed to fulfill the MCIC contract requirement to alert periodically its users to important technical developments within the Center's materials, properties, and processes scope. Presently, the CAB is published monthly. Those scientists and engineers at Battelle's Columbus Laboratories with special expertise in a materials field present special articles covering technical meetings or state of the art of technical subjects of particular interest to the DoD materials community. They also present highlights of selected current MCIC acquisitions. In addition, a special news section features items of interest to users. The CAB format may include the following material:

LEAD ARTICLE(S)

METALS

- Light Metals
- Rapidly Solidified Alloys
- Steels
- Stainless Steels
- Superalloys
- Refractory Metals
- Metals Fabrication
- (Metalworking, Joining)
- Testing-Method Evaluation

CORROSION/COMPATIBILITY

CERAMICS

- Structural
- Refractory
- Special Glasses
- Electronic
- Carbon-Graphite

MCIC NEWS

- Meetings/Symposia
- Call for Papers
- Recent Reports and Books
- R&D Contracts

The CAB is provided upon written request without charge primarily to U.S.-based users of the Center. Updating of the distribution list during the year has been based on the supposition that recipients will either cancel subscriptions or that undelivered CAB's will be returned. Presently (April 30, 1982), the distribution list has about 3,400 subscribers.

Publication statistics of CAB for this annual reporting period (including the Sixteenth Quarter) are given in Table 4. A total of 12 issues (Numbers 99-110) were published. These represent a total of 141 pages (which include NEWS sections), 179 digests of technical accessions, and 17 lead articles or meeting reports.

In addition to CAB, a semi-annual periodical co-sponsored by the Metals and Ceramics Information Center and the Metal Properties Council (MPC) has been published and distributed free of charge to MCIC users for many years. Entitled "MCIC/MPC Review of the Low-Temperature Properties of Metals", it has been authored by Mr. J. E. Campbell, an MCIC consultant and former Battelle staff member. The title is descriptive of the scope of materials accessions covered in this semiannual publication. During this reporting period, two publications were issued and distributed (July 22 and December 21, 1981); 22 references on the subject were reviewed.

The Battelle personnel who contributed to the CAB publications in the Sixteenth Quarter are listed in Appendix B. The contributors to previous issues are listed in previous quarterly reports of the contract period.

INQUIRY SERVICES

Technical Inquiries

A technical-inquiry service, designed primarily for the use of the Department of Defense, its agencies, and its contractors, has been provided by the Metals and Ceramics Information Center (MCIC) for many years. MCIC has been distinguished as an Information Analysis Center by its rapid-response service made possible by the availability of a select group of skilled scientists and specialists of the Battelle Columbus Laboratories. By placing the inquirer in direct contact with an appropriate technical authority, his answers can be provided to the degree of depth required. Answers may be executed through the use of telephone discussions, on-line computer printouts, letter reports, on-site visits, and MCIC-published reports and handbooks.

Table 5 presents a summary of the statistics for the technical inquiries processed during the 12-month period, May 1981 through April 1982. Classification of these technical inquiries is provided in Table 6. Sixteenth Quarter statistics are included in both tables.

During this annual-report period, MCIC received 399 requests for technical assistance of which 305 were processed and 94 were cancelled. The effective rate was essentially 76.4 percent. In the three preceding annual report periods (AMMRC TR 81-33/July 1981, AMMRC TR 80-33/July 1980, and AMMRC TR 79-43/July 1979), the effective rates were 69.2, 76.7, and 84.8 percent, respectively. Despite the improved showing over last year, the effective rate continues to illustrate the problem for potential MCIC users in expediting charges for technical information from information analysis centers.

**TABLE 4. PUBLICATION STATISTICS OF THE CURRENT AWARENESS
BULLETIN FOR THE PERIOD, MAY 1981-APRIL 1982**

Quarter	Issue No.	Date	No. of Pages	Number of References Cited			Total
				Metals	Ceramics	Corrosion	
1	99	5-22-81	16	13	—	3	16
	100	6-26-81	12	15	—	3	18
	101	7-24-81	12	13	—	6	19
	Total		40	41	—	12	53
2	102	8-31-81	12	11	5	2	18
	103	9-25-81	12	9	—	3	12
	104	10-23-81	11	10	1	2	13
	Total		35	30	6	7	43
3	105	11-27-81	12	10	2	6	18
	106	12-24-81	15	13	—	4	17
	107	1-29-82	11	10	—	5	15
	Total		38	33	2	15	50
4	108	2-26-82	12	8	—	3	11
	109	3-26-82	8	10	—	1	11
	110	4-30-82	8	10	—	1	11
	Total		28	28	—	5	33
Grand Total			141	132	8	39	179
(Percent)				(73.7)	(4.4)	(21.8)	

TABLE 5. TECHNICAL INQUIRY STATISTICS FOR THE PERIOD, MAY 1981-APRIL 1982

Category	Number of Inquiries Per Quarter												Annual Total No. (Percent)
	Thirteenth			Fourteenth			Fifteenth			Sixteenth			
	SC	NC	Total	SC	NC	Total	SC	NC	Total	SC	NC	Total	
Industrial	22	40	62	12	59	71	10	47	57	17	40	57	247 (81.0)
Government	-	13	13	-	5	5	-	6	6	-	17	17	41 (13.4)
Academic	1	2	3	-	2	2	-	2	2	-	2	2	9 (3.0)
Foreign	1	1	2	-	1	1	-	3	3	-	2	2	8 (2.6)
Totals, No.	24	56	80	12	67	79	10	58	68	17	61	78	305
Quarterly, %	30.0	70.0	26.2	15.2	84.8	25.9	14.7	85.3	22.3	21.8	20.0	25.6	(100.0)
On Annual Basis, %	7.9	18.3	26.2	3.9	22.0	25.9	3.3	19.0	22.3	5.6	20.0	25.6	
SC(e) Income, \$7,861	2,280			986		986			3,630				
NC(b) Credit, \$12,100		2,800		3,350		3,350		2,900		3,050			
Cancelled(c) Inquiries Credit, \$4,700		1,500 [30]		1,300 [26]		1,300 [26]		800 [16]		1,100 [22]			[94]
Quarter Subtotals, \$24,701			6,590			5,636			4,686			7,780	
Type of Response													
Technical (non-biblio.)	11	52	63	4	58	62	1	44	45	-	44	44	214 (70.16)
Technical (bibliographic)	13	4	17	8	9	17	9	14	23	17	17	34	91 (29.84)
Quarter Totals	24	56	80	12	67	79	10	58	68	17	61	78	305
SC Bibliographic Inq.													47
NC Bibliographic Inq.													44

(a) SC - Service Charge (b) NC - No Charge (c) Numbers of cancelled inquiries are given in brackets.

**TABLE 6. CLASSIFICATION OF TECHNICAL INQUIRIES PROCESSED BY MCIC
DURING THE PERIOD MAY 1981-APRIL 1982**

Classification	Number of Inquiries Per Quarter								Annual Total	
	Thirteenth		Fourteenth		Fifteenth		Sixteenth		No.	Percent
	No.	Percent	No.	Percent	No.	Percent	No.	Percent		
Materials										
Metals	69	86.3	71	89.9	65	95.6	66	84.6	271	88.9
Ceramics	8	10.0	8	10.1	3	4.4	12	15.4	31	10.1
Composites(a)	3	3.7	—	—	—	—	—	—	3	1.0
Totals	80		79		68		78		305	
Technical Scope										
Properties	37	46.3	28	35.4	33	48.5	26	33.3	124	40.7
Processing	18	22.5	21	26.6	12	17.6	19	24.3	70	23.0
Corrosion	2	2.6	10	12.7	5	7.4	13	16.7	30	9.8
Applications	8	10.0	2	2.5	5	7.4	5	6.4	20	6.6
Markets	4	5.0	6	7.6	4	5.9	1	1.3	15	4.9
Fundamental Behavior	1	1.2	3	3.8	5	7.4	5	6.4	14	4.6
Test Methods	1	1.2	4	5.1	3	4.4	5	6.4	13	4.2
Specifications	8	10.0	1	1.3	1	1.4	2	2.6	12	3.9
Foreign Equivalents	1	1.2	2	2.5	—	—	1	1.3	4	1.3
Friction & Wear	—	—	2	2.5	—	—	—	—	2	0.7
Contracts	—	—	—	—	—	—	1	1.3	1	0.3

(a) Discontinued as a scope material after Thirteenth Quarter.

Of the completed inquiries, 63 were subject to a user charge, and 242 were answered without charge. *Many of the 305 technical inquiries were complex and multifaceted, although counted statistically as single inquiries.* Ordinarily each of the no-charge inquiries represented a minimal effort by an MCIC staff member or a Battelle engineer, requiring an hour or less of effort to provide a satisfactory answer. On the other hand, cancelled inquiries often require more MCIC effort in addition to the technical effort required to provide a cost estimate. Note that a cancelled inquiry is defined as one that has been priced (sometimes even processed during the cursory evaluation) but not completed because final authorization to proceed was never received by MCIC.

The charges for the 63 service-charge (SC) inquiries ranged from \$10 to \$1650 for a single inquiry and represent a total invoiced amount of \$7,861. (Actual income for this annual period was \$9,807.) The 242 no-charge (NC) inquiries credited at \$50 per inquiry, represent a cost of \$12,100; the 94 cancelled inquiries, also credited at \$50 per inquiry, represent a cost of \$4,700.

Listings of the specific requestors for whom assistance was provided and the Battelle-Columbus personnel who were directly involved in technical-inquiry services during the Sixteenth Quarter are given in Appendices C and B, respectively, in this report. Inquiry listings and personnel involved in inquiry services for the other quarterly periods are given only in appendix sections for previous quarterly reports.

Nontechnical Inquiries

Significant effort also is expended in answering a variety of queries unrelated to MCIC's technical scope. A statistical summary of the number of inquiry responses to the sectors of the user audience is given in Table 7.

TABLE 7. NONTECHNICAL INQUIRY RESPONSES

User Audience	Approximate Nontechnical Inquiries Per Quarter				Total	
	13	14	15	16	No.	(Percent)
Government	18	10	9	10	47	(8.4)
Industrial	103	127	60	97	387	(69.4)
Academic	12	16	13	13	54	(9.7)
Foreign	22	16	18	14	70	(12.5)
				Total	558	

In the annual report period approximately 558 nontechnical inquiries were answered by MCIC management and supporting staff. Because of the nature of these inquiries, this is a conservative estimate of the actual nontechnical responses. Of these inquiries, 387 were industrial, 47 Government, 54 academic, and 70 foreign. Typical inquiries represent questions related to:

- Products and services of the Center
- Quotations on MCIC products/services
- Orders for MCIC reports/handbooks
- Information on CAB and its availability
- Request for TML, DMIC, and DCIC reports
- Identification and source of Government reports
- Requests for reference cited in publications
- Source for acquisition of journal articles
- Source(s) of technical information not in MCIC scope.

SPECIAL STUDIES/TASKS

This category covers tasks which can be described as "super" inquiries. The tasks, under separate funding by agencies of DoD through supplements to the basic MCIC contract, generally require a substantial amount of technical effort extending over a period of time. Each inquiry can involve one or more phases of study which are assigned to various research staff within Battelle. These tasks are monitored by MCIC whose combination of information and data resources and professional skills in pertinent fields often make it possible to save both time and costs in completing each effort. Through such assignments, the Government is able to capitalize further on the substantial investment it has made in the creation of the technical information services.

Table 8 presents a summary of the Special Studies which were active during this contract period. Task progress for the Sixteenth Quarter can be summarized as follows: new (6), completed (5), continuing (5), additional funding (3).

It is important to note that two Special Studies, continuous since the inception of the current MCIC contract, have been continued through this reporting period:

- Establishment and Operation of a Carbon/Carbon Composites Materials Data Base (U.S. Air Force and Navy Sponsorship)
- Preparation of Journal for Army Manufacturing Technology Data Base (U.S. Army/AMMRC)

Both of the programs continued to be well received by the technical community.

TABLE 8. SUMMARY OF SPECIAL STUDIES

Title or Description	Contract Modification	Funding Level	Sponsoring Agency	Period of Performance
Carbon/Carbon Composites Materials				
Evaluate Data	P00002	\$ 35,000	Air Force/RPL	1 May 1978 - 31 Oct 1978
Establishment and Operation of Data Base	P00011	50,000	Air Force/AFML	5 Jan 1979 - (Continuing)
	P00012	80,000	Navy/NAVSEA	
	P00022	50,000	Air Force/RPL	
	P00022	55,000	Air Force/AFML	
	P00025	65,000	Navy/NAVSEA	
	P00030	110,000	Air Force/AFFTC/PKA: Navy/NAVSEA	
	P00046	52,000 ⁽¹⁾	Air Force/AFWAL/ACFB; AFFTC/PKX	
		1,009 ⁽²⁾		
Manufacturing Technology Plan	P00003/4	85,000	Navy/NAEC	Completed Sep 1979
	P00006	85,000	Navy/NASC	
Silicon Nitride Properties	P00001	6,000	AMMRC	Completed Dec 1978
Technical Assistance in Establishment of Army Battlefield Systems Integration, Base Terminology Data Base	P00001	74,976	AMMRC	Completed Apr 1980
	P00013	3,024		
	P00017	28,750		
	P00021	50,000		
Preparation of Journal for Army Manufacturing Technology	P00005	34,370	AMMRC	4 Aug 1978 - (Continuing)
	P00009	95,346		
	P00015	11,246		
	P00018	127,000		
	P00021	22,500		
	P00030	153,385		
	P00036	153,748		
	P00050	164,857 ⁽¹⁾		
		28,940 ⁽²⁾		
		405 ⁽³⁾		
MTAG Support	P00028	28,773	AMMRC	Completed Jan 1981
	P00030	14,529		
		4,000 ⁽⁴⁾		
Publication of Proceedings of Tri-Service Corrosion Conference	P00008	7,855	AMMRC	Completed Jun 1979
		7,000	ARRADCOM	
Technical Advisory Services for AMMRC and OUSDRE	P00005	8,500	AMMRC	Completed Apr 1979
Ship Structural Research and Development Requirements	P00007	20,000	Navy/NSRDC	Completed Jun 1979
Fourth Conference on Fibrous Composite in Structural Design	P00010	6,975	AMMRC	Completed Mar 1981
	-	16,602 ⁽⁵⁾		
Third Army Materials Technology Conference on Ceramics for High-Performance Applications	P00013	24,985	AMMRC	2 Mar 1979 - 31 Jul 1982
		16,646 ⁽⁵⁾		
Crack Arrest Development Plan	P00019	20,000	Navy/NSRDC	Completed Oct 1980

TABLE 8. (Continued)

Title or Description	Contract Modification	Funding Level	Sponsoring Agency	Period of Performance
CAD/CAM Technology Transfer (Phase I)	P00021	8,900	AMMRC	Completed Apr 1980
DoD Materials/Structural Technology Conference	P00027	20,000	AFWAL	Completed Apr 1981
	P00028	20,000	Navy/NAVSEA	
	P00030	20,000	AMMRC	
Welding Procedures for Marine Propellers	P00031	40,000	Navy/NAVSEA	1 Feb 1981 - 31 Aug 1982
Technical Support for TACOM Manufacturing Technology Conference	P00037	8,196 12,905 ⁽⁶⁾	AMMRC	Completed Aug 1981
Use of Ceramics in Gun Barrels	P00038	17,000 1,700 ⁽¹⁾	AMMRC	Completed Jan 1982
Technical Review on Welding Fluxes for Titanium Alloys	P00039	20,000	Navy/NSRDC	Completed Mar 1982
MTAG 81 Technical Support	P00050	10,688 ⁽¹⁾	AMMRC	Completed Oct 1981
MTAG 83 Technical Support	P00050	5,420 ⁽¹⁾	AMMRC	29 Apr 1982 - 31 Dec 1983
Automated Advanced Batch Metal Removal System	P00050	12,069 ⁽¹⁾	AMMRC	Completed 30 Apr 1982

(1) Special task funding received in Sixteenth Quarter.

(2) Income previous quarters.

(3) Income for Sixteenth Quarter. Journal income includes subscriptions through 1981.

(4) Net from registration fees (after payment of MTAG Conference Expenses).

(5) Conference Registration Fees - required to cover conference expenses, publication of proceedings for authors and all attendees.

(6) Conference Registration Fees - required to cover conference expenses.

MARKETING AND PROMOTION

In accordance with DoD policy, a service charge program was initiated in 1972. Since that time 73 technical documents (not including CAB) have been generated and 67 are still being sold through MCIC's marketing program. At the present time marketing is being conducted by six outlets in addition to MCIC. Those agencies having a formal marketing agreement with MCIC include:

NTIS (worldwide)

American Ceramic Society

Metal Powder Industries Federation (U.S. only)

Neutrino/MRI (Japan)

Allied Publishers Private, Ltd. (India)

Aluminium Verlag GmbH (West Germany).

In this annual period (May 1981-April 1982), 2921 documents were sold for a projected income to MCIC of \$144,007. The documents included 1192 technical reports (\$54,000), 1630 handbooks/databooks (\$85,262), and 93 special documents (\$4,745).

During the Sixteenth Quarterly period, 580 documents were sold for a projected income to MCIC of \$28,313; included were 104 technical reports (\$3,049), 450 handbooks/databooks (\$24,034), and 26 special documents (\$1,230). The numbers of documents sold for the fourth year and 16th quarter are presented in Appendix D.

The rental or sale of the MCIC films entitled, "Scanning Fractures with the Electron Microscope", and "Ceramics and Metals in Medical Prosthetics" provided a gross income for the past year of only \$135 of which \$10 was received in the Sixteenth Quarterly period. No new MCIC films are planned for the future.

Experience has shown that the sale of MCIC's products and services requires an aggressive promotion effort. Consequently, MCIC has maintained a modest program within the limitations of resources available. The promotional efforts conducted during the Sixteenth Quarter are summarized in Table 9. A major revision of the MCIC "User's Guide and Publication List", made during this period, is now being used to respond to inquiries.

The promotional program will continue with special mailings, inserts in technical journals as book reviews, and special announcements in pertinent trade literature.

Promotional activities of the previous report periods are given in the prior quarterly reports in this annual period.

TABLE 9. PROMOTION EFFORTS OF MCIC PUBLICATIONS (SIXTEENTH QUARTER)

Report No.	Short Title	Type of Promotion	Publication/Audience
MCIC-HB-03V3	Handbook of International Alloys, Volume 3 - Aluminum	Book Review	Metal Construction Magazine February, 1982
MCIC-81-42	Corrosion Fatigue of Metals in Marine Environments	Full Page Ad	NTIS Abstract Newsletter; "Ocean Technology & Engineering", April 6, 1982
AMTC-5	Ceramics in High Performance Application-2, Army Materials Technology Conference	Book Review by the Engineering Societies Library	This review will appear in three technical journals: Chemical Engineering Progress, IEEE Spectrum, and Mechanical Engineering
MCIC-81-42	Corrosion Fatigue of Metals in Marine Environments	Book Review	ASM Metal Abstracts and the New Technical Books Section of the February, 1982 ASM News (Circ. 46,000)
MCIC-74-23	Corrosion of Metals in the Atmosphere	Booth Display	Display in booth at Conference of National Association of Corrosion Engineers, March 22-24, 1982 (5900 attendees)
MCIC-78-37	Corrosion of Metals in Marine Environments		
MCIC-81-42	Corrosion Fatigue of Metals in Marine Environments		
MCIC-81-43	Technological Advances in Joining	Book Review	Welding Design and Fabrication Magazine February, 1982 (Circ. 13,000)
MCIC Report List and Users Guide (Major Revision)	Included with a Battelle Mailing to a purchased mailing list	Special Mailing	Welding Design and Fabrication subscribers list, March 19, 1982 (Circ. 13,000)
Aerospace Structural Metals Handbook and Structural Alloys Handbook	Handbooks formerly available from MPDC; now maintained by MCIC	CAB Insert	Mailed with MCIC Current Awareness Bulletin (CAB) No. 108, February, 1982 (Circ. 4,000)
MCIC-HB-06 MCIC-HB-08	SEM/TEM Fractography and Electron Fractography Handbooks	Special Mailing	To 156 names compiled from the ASM Testing and Inspection Buyers Guide for 1982. Mailed March, 1982.

Meetings Attended

In support of MCIC's program management, operation, and technical activities, personnel of both the Center and Battelle's Columbus Laboratories attended two meetings during this quarterly report period. The following meetings were attended in the Sixteenth Quarter; meetings attended during the Thirteenth through Fifteenth Quarters were given in the respective quarterly reports.

<u>Personnel</u>	<u>Meeting</u>	<u>Location</u>	<u>Date</u>
H. Mindlin	Discuss MCIC Activities	AMMRC	February 1982
H. Pestel D. Johnson C. Green	Mid-Eastern Regional DTIC Users Training	Wright-Patterson AFB	April 1982

Fifteen meetings were attended during this annual period.

Visitors

The following government, industry, and foreign representatives visited MCIC during the annual period covered by this report. Several of the visits were related to special tasks; others were related to specific MCIC operations or for overviews of this program.

<u>Name/Area of Interest</u>	<u>Company/Organization</u>
Dr. E. Pedersen/MCIC Operations	Alborg University/Denmark
Cpt. D. A. Joslyn, Jr./Information-Handbooks	Foreign Tech. Div./WPAFB, Ohio
Industrial Group	MCIC/MPDC Operations
F. Shober/MCIC	Westinghouse Hanford
Dr. A. Friedberg/MCIC Ceramics-Handbooks	American Ceramic Society
J. Palmer, L. Hampton/MCIC/MPDC Information Databases	Anaconda Aluminum
H. Koenigsberg/MCIC Operations	Foreign Tech. Div./WPAFB, Ohio
Seven Visitors/Information Center Activities	Japan/Industrial
J. Graham, E. Ripling/Database Activities	NMAB Task Committee
D. Seitz/ManTech Journal	AMMRC
J. J. Noeth/MCIC	Defense Audit Service
Patzen Wu/Information Center Activities	STAG/Taiwan

<u>Name/Area of Interest</u>	<u>Company/Organization</u>
M. Ogawa, M. Hirai/Information Center Activities	Fujitsu/Japan
R. McNamara, M. Imos/Information Center Activities	General Dynamics-Convair
K. Tamura, H. Kaneko/Information Center Activities	Japan Information Center for Science & Technology
R. Bernier, D. Mowrer/Information Center Activities	Joint Technical Coordinating Group on Aircraft Survivability & Munitions Effectiveness
J. Young/MCIC Operations	Chemical Systems Laboratory
Dr. W. Nash/Laser Machining	University of Massachusetts
Dr. Ing Dathe/Database Activities	Betriebsforschungsinstitut, Data Bank Systems/Germany

INCOME AND COST RECOVERY

In accordance with DoD policy, in January 1972 MCIC instituted a service charge program to recover part, or all, of the costs associated with the products and services of the Center. This income is intended to offset many costs and to provide for the maintenance and/or expansion of services to the DoD and the related technical community.

The financial performance of MCIC based on income is summarized in Table 10. The basic funding for this annual reporting period is given with the income recovery (detailed in Table 11). For the FY82 period (October 81 through April 82) covered by this report, the available basic funding has been reduced approximately 7.2 percent. (For FY82, the funding cut was 12.3 percent.)

The two prime sources of income to MCIC are the sale of publications and services for the completion of special projects/tasks. For the fourth year of the current contract, the direct income from the sale of MCIC reports and handbooks increased to \$108,307 as the result of a more aggressive sales effort and the introduction of several new reports. The income from the special studies/tasks remained relatively level over the past two years.

Effective 1 April 1982, MCIC assumed responsibility for the publication and maintenance of the Mechanical Properties Data Center's (MPDC) "Aerospace Structural Metals Handbook" and the "Structural Alloys Handbook". Annual income from sales associated with these Handbooks for 1981 was \$122,835 (from the last annual MPDC report, AMMRC TR 82-9, dated February 1982); hence, this income is now being credited to MCIC. \$22,581 was credited in the Sixteenth Quarter.

Effective 1 May 1982, the cost of some of the publications will be increased to cover increased mailing and handling costs.

TABLE 10. SUMMARY OF BASIC FUNDING AND COST RECOVERY FOR MAY 1981 THROUGH APRIL 1982

Contract Modification	Purpose	Period Covered	No. of Months	Amount, \$	Annual Rate, \$	Portion Applied to Current Year, \$	Direct Income, \$ (Ref Table 11)	Percent Recovery
32	MCIC	May 81-Sep 81	5	314,457	755,000	314,457		
39	MCIC	FY 82	12	56,858				
40/41	MCIC	FY 82	12	80,000	662,358	386,376		
44	MCIC	FY 82	12	225,000				
49	MCIC	FY 82	12	320,500				
			Total — Basic MCIC Operations			700,833	593,028	84.6
48	ASMH/SAH	Apr-Sep 82	6	56,286		9,381	22,581	
			Total — Including ASMH/SAH			710,213	615,609	86.7

TABLE 11. INCOME SUMMARY FOR ANNUAL PERIOD (MAY 1981-APRIL 1982)

Product/Service	Income, \$				Annual Total
	13th Quarter	14th Quarter	15th Quarter	16th Quarter	
<u>Direct Income(a)</u>					
Publications					
Reports	2,954	7,848	18,977	12,637	42,416
Handbooks	9,212	18,788	13,172	23,655	64,827
Films	—	—	125	10	135
NTIS	1,836	4,633	—	—	6,469
ASMH/SAH(c)	—	—	—	22,581(c)	22,581
Inquiry Services	7,396	585	545	375	8,901
Special Studies/Tasks	170,344	49,759	2,112	246,919	469,134
Miscellaneous(d)	63	220	405	458	1,146
Total	191,805	81,833	35,336	306,635	615,609
<u>Indirect Income(b)</u>					
Technical Assistant	—	—	—	—	—
Other Contracted Activities	—	—	5,800	—	5,800
In-House Inquiry Services(e)	565	475	700	2,872	4,612
Total	565	475	6,500	2,872	10,412
Grand Total					\$626,021

(a) Actual income credited directly to contract from sale of products and services as shown.

(b) Constitutes (1) separately contracted studies for either government or industrial sponsors and (2) costs of services provided to in-house programs; see Appendix B for identification.

(c) ASMH and SAH acquired 1 April, 1982 after close of MPDC.

(d) Special publications or products, listed in Appendix D.

(e) Services provided to Battelle personnel with charges directly to a project other than MCIC. Amounts are estimates based on time.

Mailings

Payment of postage costs for MCIC mailings was effective May 1978 per instructions from the Defense Logistics Agency. During the Sixteenth Quarter, 13,345 pieces of mail were processed through the mail facility of Battelle's Columbus Laboratories at a cost of \$2,110.88; the mailings included 1,255 at First Class rate, 10,179 at Bulk rate, and 1,911 at Air Printed Matter or Fourth Class Book rate. The bulk rate mailing was for the Current Awareness Bulletin.

A detailed accounting of the postal activity and costs for the annual period (May 1981-April 1982) is given in Table 12. A total of 54,716 pieces of mail was processed at a mailing cost of \$8,718.92.

TABLE 12. ANNUAL POSTAGE STATISTICS (MAY 1981-APRIL 1982)

MCIC Operation	Number of Pieces			Cost, \$
	1st Class	Book Rate	Bulk Mail	
Info Input	359	12	—	\$ 84.79
Technical Inquiries	147	2	—	103.63
CAB	—	—	40,631	1,234.19
ManTech Journal	345	2,211	—	2,657.56
Marketing & Promotion	1,652	1,816	6,748	4,243.05
Administration	524	6	—	213.96
C/C Composites	263	—	—	181.74
	3,290	4,047	47,379	\$8,718.92

Future Planning

The basic operational procedures that have been developed by Battelle through its operation of the Metals and Ceramics Information Center have permitted the effective continuation of the key functions of this Center. Pertinent and timely services to the Department of Defense and its technical community have been and will be continued within the time and resources available for MCIC's operation.

The recent, continuing problems of rising costs and a constant level of funding have been exacerbated by a budget reduction for FY82. The increase in sales income has not been sufficient to offset the rising costs, resulting in a further tightening of MCIC operations. Figure 2 (an update from last year's annual report) graphically puts the overall problem in perspective.

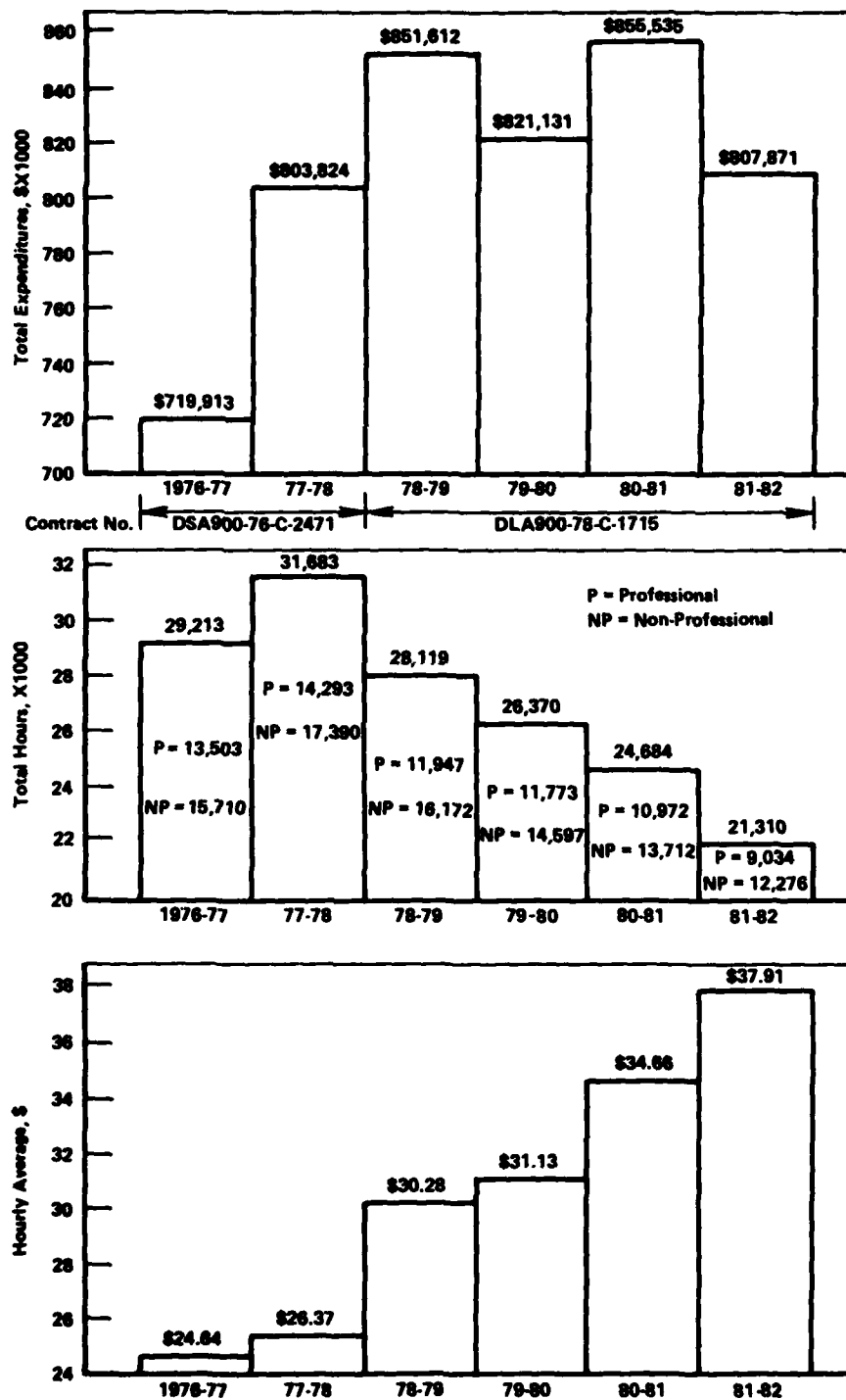


FIGURE 2. SIX-YEAR FINANCIAL SUMMARY OF MCIC BASIC OPERATIONS

Several specific actions have been taken to reduce overall project costs:

1. Reduced rate of accessioning of new data — resulting in a growing backlog of data to be revised and entered into the database.
2. Elimination of MCIC handbook efforts. With the relatively high cost to produce a handbook, the publication and printing of MCIC-authored handbooks has been suspended pending review of the FY83 budgets. Only the ASHM and SAH will be handled by MCIC.
3. Limitation of technical input to "Current Awareness Bulletin" (CAB), restricting input primarily to DoD-related efforts has enabled the CAB staff to maintain quality input with constant funding.
4. Delay of maintenance items. Ongoing tasks related to both the library and database maintenance have been suspended pending availability of resources.

In addition to the maintenance of the technical quality of MCIC's products and services, future activities will assure cost-effective utilization of contract funds to attain MCIC's goals. The scope of MCIC's operation is being reassessed on a regular basis to maintain efforts within the available financial resources.

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APPENDIX A

CONTRACT STATUS REPORTS

TABLE A-1. FINANCIAL STATISTICS (SIXTEENTH QUARTER)

INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT		NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center			QUARTER ENDING April 30, 1982		CUMULATIVE THRU	
AREA TITLE	OUTPUT UNITS PRODUCED	MANHOURS EXPENDED			COSTS INCURRED			INCOME (d)
		PRO. (a) FESSIONAL	NON PRO. (a) FESSIONAL	TOTAL	DIRECT (b)	INDIRECT (c)	TOTAL	
1 ACQUISITION AND INPUT OF SOURCE INFORMATION		650	1,194	1,844	22,757	33,004	55,761	
a. DOCUMENTS ACQUIRED	971							
b. DOCUMENTS REVIEWED	971							
c. DOCUMENTS CATALOGED	755							
2 TECHNICAL INQUIRY RESPONSES PROVIDED	44	342	134	476	8,971	12,214	21,185	75
3 BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED	34	—	—	—	—	—	—	300
4 HANDBOOKS DATA BOOKS COMPLETED		163	111	274	3,805	7,539	11,344	46,246
a. NEW CHAPTERS PAGES COMPLETED	—							
b. REVISED CHAPTERS/PAGES COMPLETED	—							
c. DATA SETS COMPILED	—							
5 STATE-OF-THE-ART STUDIES COMPLETED	0	218	6	224	5,717	8,309	14,026	13,095
6 CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED	—	—	—	—	—	—	—	—
7 CURRENT AWARENESS AND PROMOTION EFFORTS		548	1,248	1,796	21,808	47,843	69,651	—
a. NUMBER NEWSLETTERS AND OR ANNOUNCEMENTS PUBLISHED (f)	3/9							
b. NUMBER MEETINGS CONFERENCES ETC SUPPORTED	2							
8 OTHER Special Tasks (g)	2	1,077	511	1,588	26,644	68,826	95,470	246,919
9 MANAGEMENT AND SUPPORT		265	290	555	11,067	15,689	26,756	
10 UNASSIGNABLE INDIRECT COSTS Contractual Fee		—	—	—	—	11,387	11,387	
11 TOTAL		3,263	3,494	6,757	100,769	204,811	305,580	306,635

FOOTNOTES FOR TABLE A-1

- (a) According to Battelle definition of personnel*
- (b) Cost of staff time directly related to MCIC operations and special studies/tasks*
- (c) Costs other than staff time*
- (d) Actual income received in quarterly period. See Table 11 for complete breakdown. Items on lines 2, 4, 5 include prorated distribution of NTIS income; line 8 includes subscriptions, registration fees, and MIPR'd funds for special tasks*
- (e) Three "Current Awareness Bulletins"*
- (f) One NTIS advertisement, four book reviews, one booth display, two special mailings, and one CAB insert (see Table 9)*
- (g) Reference Table 8 for breakdown and listing of tasks*

TABLE A-2. FOURTH ANNUAL

INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT		NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center			QUARTER ENDING		CUMULATIVE THRU May 1981-April 1982	
AREA TITLE	OUTPUT UNITS PRODUCED	MANHOURS EXPENDED			COSTS INCURRED			INCOME
		PRO- FESSIONAL	NON-PRO- FESSIONAL	TOTAL	DIRECT	INDIRECT	TOTAL	
1. ACQUISITION AND INPUT OF SOURCE INFORMATION		2,955	4,871	7,826	90,525	134,932	225,457	
a. DOCUMENTS ACQUIRED	3,990							
b. DOCUMENTS REVIEWED	3,990							
c. DOCUMENTS CATALOGED	3,343							
2. TECHNICAL INQUIRY RESPONSES PROVIDED	232	1,186	506	1,692	30,000	40,977	70,977	9,232
3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED	73	-	-	-	-	-	-	575
4. HANDBOOKS/DATA BOOKS COMPLETED		547	149	696	11,400	42,886	54,286	91,275
a. NEW CHAPTERS/PAGES COMPLETED	26/1116							
b. REVISED CHAPTERS/PAGES COMPLETED	-							
c. DATA SETS COMPILED	-							
5. STATE-OF-THE-ART STUDIES COMPLETED	3	1,011	613	1,624	19,812	54,142	73,954	45,173
6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED	-	-	-	-	-	-	-	-
7. CURRENT AWARENESS AND PROMOTION EFFORTS		2,150	4,094	6,244	76,860	147,756	224,616	220
a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED	14/21							
b. NUMBER MEETINGS, CONFERENCES ETC SUPPORTED	15							
8. OTHER Special Tasks	3	4,798	1,862	6,660	107,291	291,351	398,642	469,134
9. MANAGEMENT AND SUPPORT		1,185	2,043	3,228	50,403	74,585	124,988	
10. UNASSIGNABLE INDIRECT COSTS Contractual Fee		-	-	-	-	50,889	50,889	
11. TOTAL		13,832	14,128	27,960	386,291	837,518	1,223,809	615,609

TABLE A-3. FOUR-YEAR TOTAL

INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT		NAME OF INFORMATION ANALYSIS CENTER Metals & Ceramics Information Center			QUARTER ENDING		CUMULATIVE THRU April 30, 1982	
AREA TITLE	OUTPUT UNITS PRODUCED	MANHOURS EXPENDED			COSTS INCURRED			INCOME
		PRO- FESSIONAL	NON-PRO- FESSIONAL	TOTAL	DIRECT	INDIRECT	TOTAL	
1. ACQUISITION AND INPUT OF SOURCE INFORMATION		13,885	22,805	36,690	365,909	527,963	893,872	
a. DOCUMENTS ACQUIRED	16,167							
b. DOCUMENTS REVIEWED	16,167							
c. DOCUMENTS CATALOGED	14,225							
2. TECHNICAL INQUIRY RESPONSES PROVIDED	887	4,894	2,190	7,084	110,418	146,184	256,602	51,444
3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED	229	-	-	-	-	-	-(a)	575
4. HANDBOOKS/DATA BOOKS COMPLETED		4,428	2,715	7,143	77,114	199,104	276,218	216,930
a. NEW CHAPTERS/PAGES COMPLETED	43/2557							
b. REVISED CHAPTERS/PAGES COMPLETED	4/360							
c. DATA SETS COMPILED	-							
5. STATE-OF-THE-ART STUDIES COMPLETED	8	4,379	3,517	7,896	85,506	198,512	284,018	177,459
6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED	-	-	-	-	-	-	-	-
7. CURRENT AWARENESS AND PROMOTION EFFORTS		9,216	16,201	25,417	282,377	597,968	880,345	220
a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED	93/97							
b. NUMBER MEETINGS, CONFERENCES, ETC. SUPPORTED	97							
8. OTHER Special Tasks	22	24,314	9,370	33,684	425,793	1,253,004	1,678,797	1,997,079
9. MANAGEMENT AND SUPPORT		6,923	9,331	16,254	237,087	334,068	571,145	
10. UNASSIGNABLE INDIRECT COSTS Contractual Fee		-	-	-	-	218,732	218,732	
11. TOTAL		68,039	66,129	134,168	1,584,204	3,475,525	5,059,729	2,444,707

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(a) Included with Technical Inquiries in prior periods. Total not accurate for 4-year period.

APPENDIX B

**TECHNICAL PERSONNEL ASSOCIATED WITH
MCIC PRODUCTS AND SERVICES (SIXTEENTH QUARTER)**

B-1

FEBRUARY, MARCH, APRIL, 1982

APPENDIX B

TECHNICAL PERSONNEL ASSOCIATED WITH MCIC PRODUCTS AND SERVICES

<u>Personnel</u>	<u>Titles</u>	<u>Area of Specialization</u>
<u>INQUIRIES</u>		
Bartlett, E. S.	Senior Researcher	Superalloys Technology
Bennett, R. B.	Section Manager	Ceramics
Berry, W. E.	Section Manager	Corrosion
Browning, M. F.	Senior Researcher	Vapor Deposition Processes
Crosby, G. M.	Information Specialist	Information Handling
Endebrock, R. W.	Inquiries, Manager	Information Handling
Fletcher, E. E.	Senior Researcher	Magnetic Materials
Green, C. A.	Information Specialist	Information Handling
Groeneveld, T. P.	Senior Researcher	Steel Technology
Gurklis, J. A.	Staff Scientist	Coatings Technology
Hauser, D.	Staff Scientist	Metals Joining
Hucek, H. J.	Reports Manager	Information Handling
Jaske, C. E.	Senior Researcher	Fatigue Processes
Jelinek, F. J.	Associate Section Manager	Information Handling
Johnson, D. M.	Information Specialist	Information Handling
Kistler, C. W.	Senior Researcher	Cast Ceramics
Marschall, C. W.	Staff Scientist	Fundamental Metallurgy
Meiners, K. E.	Senior Researcher	Hot Isostatic Pressing
Mindlin, H.	MCIC Director	Information Handling
Morral, F. R.	Staff Consultant	Cobalt Technology
Pattee, H. E.	Senior Researcher	Metals Joining
Pestel, H. C.	Accessions Manager	Information Handling
Roach, D. B.	Senior Researcher	Stainless Steel Technology
Spinosa, E. D.	Senior Researcher	Glass Ceramics
Wood, R. A.	Senior Researcher	Titanium Technology
Wright, I. G.	Staff Scientist	Corrosion/Erosion

<u>Personnel</u>	<u>Titles</u>	<u>Area of Specialization</u>
<u>CURRENT AWARENESS BULLETIN</u>		
Bartlett, E. S.	Senior Researcher	Superalloys, Refractory Metals
Berry, W. E.	Section Manager	Corrosion
Cialone, H. J.	Staff Scientist	Steels
Crosby, G. M.	CAB Associate Editor	Typing, Layout, Editing
Deel, O. L.	Staff Researcher	Fastening Technology/Lead
Endebrock, R. W.	Staff Engineer	CAB Manager/Editor
Gonser, B. W.	Staff Scientist	Tantalum Utilization
Gurklis, J. A.	Staff Scientist	Surface Finishing
Jelinek, F. J.	Associate Section Manager	CAB Editor
Patel, A. N.	Staff Scientist	Chromium Utilization
Pattee, H. E.	Senior Researcher	Metals Joining
Raman, R. V.	Staff Scientist	Lead-Rapid Solidification Conference
Williams, D. N.	Staff Scientist	Aluminum Technology
Noton, B. R.	Program Manager	Report on Conference
Tucker, T. R.	Staff Metallurgist	Metals Processing Article
Wills, R. R.	Section Manager	Report on Conference

<u>TECHNICAL REPORTS</u>		
Carbonara, R. S.	Staff Engineer	Materials Analysis
Jaske, C. E.	Staff Engineer	Fatigue of Metals
Payer, J. H.	Staff Engineer	Corrosion
Balint, V. S.	Staff Metallurgist	Corrosion
Hauser, D.	Staff Engineer	Welding
Duckworth, W. H.	Staff Engineer	Ceramics
Pattee, H.	Staff Engineer	Welding
Tucker, T. R.	Staff Metallurgist	Process Metallurgy
Clauer, A. H.	Staff Engineer	Process Metallurgy
Meiners, K. E.	Staff Engineer	Process Metallurgy
Boyer, C. B.	Staff Engineer	Process Metallurgy

<u>HANDBOOKS/DATABOOKS</u>		
Hucek, H. J.	Staff Metallurgist	Mechanical Properties and Physical Metallurgy of Ferrous Metals
Morral, F. R.	Consultant	Mechanical and Properties
Wood, R. A.	Staff Scientist	Titanium

<u>MANTECH JOURNAL</u>		
Spalsbury, W. A.	Researcher	Information Analysis

APPENDIX C

ORGANIZATIONS SERVED BY MCIC (SIXTEENTH QUARTER)

C-1

APPENDIX C

TABLE C-1. ORGANIZATIONS SERVICED BY MCIC

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
<i>Industrial</i>				
2267	Mr. L. Gibson Buffalo Forge Co. Buffalo, NY			X
2268	Mr. R. Meckler Bowen, McLaughlin-York York, PA	X		X
2269	Mr. J. Lindgren General Atomics San Diego, CA	X		X
2270	Mr. J. Vagi Babcock & Wilcox Lynchburg, VA	X		X
2271	Mr. A. Cox Flo Bend Steel Forge Tulsa, OK			X
2273	Mr. E. Hwang Hughes Aircraft Missile Group Canoga Park, CA			X
2278	Mr. W. Davenport Aerospace Corp. Los Angeles, CA			X
2279	Mr. W. Chard Battelle-Columbus	X	X	
2280	Mr. P. Frausto Battelle-Columbus	X	X	
2281	Mr. T. Gaspar Battelle-Columbus	X	X	
2282	Mr. R. Urban Western Co. Fort Worth, TX			X
2283	Mr. F. Beuhring Xaloy Pulaski, VA			X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Industrial (Continued)				
2286	Mr. P. Frausto Battelle-Columbus	X		X
2287	Mr. F. Sykes Battelle-Columbus	X	X	
2288	Mr. J. Kissel Battelle-Columbus	X		X
2290	Mr. F. Ames Brunswick Delant, FL			X
2291	Ms. D. Dieterle Grumman Aerospace Bethpage, NY			X
2292	Mr. J. Vargas Smith Tool Irvine, CA			X
2295	Mr. S. Goddard Consultant Columbus, OH			X
2296	Mr. D. Czimmek Newport News Ship Building Co. Newport News, VA			X
2299	Mr. P. Krishnaswamy Battelle-Columbus	X	X	
2300	Mr. M. Basehore Battelle-Columbus	X	X	
2301	Mr. K. Bodily E-Systems Salt Lake City, UT	X	X	
2302	Mr. B. Ryder Hewlett Packard Avondale, PA			X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Industrial (Continued)				
2303	Mr. H. Bragger Westinghouse/Hanford Richland, WA			X
2304	Mr. O. Deel Battelle-Columbus			X
2305	Dr. D. Smith Hughes Aircraft Los Angeles, CA			X
2306	Mr. R. Mullins ASTECH Santa Ana, CA			X
2307	Mr. L. Yeardley Yeardley Engineering Charleston, WV			X
2308	Mr. P. Lukacovic Western Silversmiths Hawthorne, CA			X
2309	Mr. J. Gasque Ramenco Manufacturing Ramona, CA	X	X	
2311	Mr. S. MacKenzie Emerson Electric/Electronics & Space St. Louis, MO	X		X
2312	Mr. D. Jones Battelle-Columbus	X	X	
2313	Mr. H. Smallen Aerospace Corp. Los Angeles, CA			X
2314	Mr. V. Malhotra Bechtel Corp. San Francisco, CA			X
2318	Mr. R. Orban Superior Plating Columbus, OH			X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Industrial (Continued)				
2319	Mr. D. Meyers Piasecki Aircraft Corp. Philadelphia, PA	X	X	
2320	Mr. J. D'Andrea General Electric/Valley Forge Philadelphia, PA			X
2321	Mr. R. Fawley Solar Turbine San Diego, CA	X	X	
2322	Mr. D. McIntire Battelle-Houston	X	X	
2323	Mr. D. Grace ARCO Dublin, CA			X
2324	Mr. G. Hinshelwood Space Services International Washington, DC			X
2325	Mr. E. Provenzano AVCO/Everett Research Lab Everett, MA			X
2326	Mr. R. Burns Seaway Carrier Corp. Laguna Beach, CA			X
2327	Mr. B. Leis Battelle-Columbus	X	X	
2328	Mr. H. Domian Babcock & Wilcox Alliance, OH	X		X
2329	Mr. T. Collings Battelle-Columbus	X	X	
2330	Mr. K. McCoy Battelle-Columbus	X		X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Industrial (Continued)				
2331	Mr. G. Notario Beech Aircraft Wichita, KS	X		X
2332	Mr. T. Groeneveld Battelle-Columbus	X	X	
2333	Ms. S. Goodkin Battelle-Columbus	X	X	
2334	Mr. J. Hoegfeldt Honeywell Edina, MN	X		X
2335	Mr. R. Cutler Terra Tech Corp. Salt Lake City, UT	X		X
2336	Mr. M. Mandle Technomic Consultants Chicago, IL	X		X
2337	Mr. F. Hoenisch Rohm & Haas Philadelphia, PA			X
2340	Mr. J. Beavers Battelle-Columbus	X	X	
2342	Mr. G. Bean Martin/Orlando Orlando, FL	X		X
Government				
2264	Mr. V. Truglio U.S. Naval Air Propulsion Trenton, NJ			X
2265	Mr. S. Sysum U.S. Navy Weapons Concord, CA			X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Government (Continued)				
2272	Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD			X
2274	Mr. J. Jennings U.S. Naval Ocean Systems Center San Diego, CA			X
2776	Mr. J. Fedewitz U.S. Army Material Command Dover, NJ			X
2277	Mr. P. Smoot AMMRC Watertown, MA			X
2285	Mr. D. Chwirut Food & Drug Administration Silver Springs, MD			X
2289	Mr. G. Davis AFPRO DET 28 Caller #1615 (Air Force Plant Representative Office) Cincinnati, OH			X
2293	Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD			X
2294	Mr. B. Fegley Smithsonian Astrophysical Observatory Cambridge, MA	X		X
2297	Mr. P. Munafò NASA/Marshall Marshall Space Flight Center, AL	X		X
2298	Mr. D. Anderson David Taylor Naval Ship R&D Center Annapolis, MD			X
2315	Mr. R. Rowe NASA/Marshall Marshall Space Flight Center, AL			X

TABLE C-1. (Continued)

Inquiry Number	Organization and Person	Bibliographic	Service Charge	No Charge
Government (Continued)				
2316	Mr. J. McDaniel AF Rocket Propulsion Lab Edwards AFB, CA			X
2317	Mr. M. Nevitt Argonne National Lab Argonne, IL			X
2339	Mr. Ray Holanda NASA/Lewis Research Center Cleveland, OH			X
2341	Mr. M. Levinsohn NASA/Goddard Space Flight Center Greenbelt, MD			X
Academic				
2266	Ms. M. Arnold Ohio State University Library Columbus, OH			X
2275	Dr. W. Nash University of Massachusetts Amherst, MA	X		X
Foreign				
2284	Ms. C. Vion ABBC Montreal, Canada	X		X
2310	Mr. K. Narasimhan International Nickel Toronto, Canada			X

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APPENDIX D

SALES OF MCIC REPORTS, HANDBOOKS, AND SPECIAL REPORTS

Fourth Year Annual Sales — Tables D-1, D-2, D-3

Sixteenth Quarter Sales — Tables D-4, D-5, D-6

TABLE D-1. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

PUBLICATION NUMBER	DATE	DOCUMENT T I T L E	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUMUL)
7101	AUG71	EFF OF SURF COND ON MECH PROP TI+ALLOYS	0	14	14	1,010
7102	DEC71	EFF SHOT PEEN ON IMP, FAT+STK CORR PROP	6	22	28	1,193
7203	JAN72	NONTRADITIONAL MACHINING OF BERYLLIUM	0	1	1	252
7204	JAN72	CRACK BEHAVIOR IN 06AC STEEL	1	7	8	411
7205	JAN72	SYMP ON PROP OF ELECT DEP METALS	2	9	11	919
7206	MAR72	IMPURITY EFFECTS IN BERYLLIUM	1	2	3	151
7207	JUN72	OXIDATION OF FE-NI + COBALT BASE ALLOYS	1	11	12	614
7208	JUN72	HOT CORROSION IN GAS TURBINES	1	14	15	673
7209	JUL72	BIBLIO ON FIBERS + COMP MATLS 1969-72	2	10	12	682
7210	SEP72	SUPERALLOYS-PROCESSING (CONF PROC.)	2	13	15	636
7211	SEP72	BETA TITANIUM ALLOYS	1	13	14	360
7212	DEC72	FRAC ANAL BY SCANNING ELEC MICRO(OBS)	3	0	3	1,526
7313	JAN73	ADV IN JOINING TECH - 60'S + BEYOND(OBS)	2	0	2	791
7314	JUN73	MATLS FOR USE IN AIRCRAFT GAS TURB ENG	3	14	17	701
7315	AUG73	METALLURGY OF FUSION-WELD REPAIR	2	9	11	677
7316	DEC73	TITANIUM CASTING TODAY	3	17	20	317
7319	DEC73	PROC 72 TRI-SERV CONF ON CORROSION	0	5	5	371
7417	APR74	PROC 73 SYMP ELEC-DEP METAL SEL APPLI	0	9	9	416
7418	FEB74	METAL IMPLANT FOR ORTHO+DENT SURG(CBS)	0	0	0	477
7420	JUN74	PROPERTIES OF TEXTURED TITANIUM ALLOYS	2	10	12	256
7421	JUL74	CERA PROSTH APPL-ORTHO DENT+CARDIO(OBS)	0	4	4	245
7422	JUL74	NONDESTRUCTIVE TESTING OF BERYLLIUM	0	4	4	103
7423	AUG74	CORROSION OF METALS IN THE ATMOSPHERE	4	16	20	607
7424	OCT74	AUTOMATION IN WELDING (OBSOLETE)	1	1	2	285
7525	MAR75	CRACKS AT STRUCTURAL HOLES	2	8	10	268
7526	JUN75	TITANIUM INDUSTRY IN THE MID 70'S	0	9	9	359
7527	JUL75	PROC 74 GAS TURB MATLS N MAR ENVIR CONF	1	5	6	301
7628	SEP76	PROC + APPLI OF DEPL UNAN ALLOY PROD	8	5	13	120
7729	MAR77	ANNOT BIBLI BIL NIT FOR STRUC APPLI(OBS)	0	0	0	191
7730	APR77	DISPERSION STRENGTHENING OF METALS	0	9	9	292
7731	MAY77	LOW TEMP PROP SEL MATLS-BIBLIO W/DESCR	0	7	7	184
7732	JUN77	EFF RAP HEAT PKUP MATLS-BIBLIO W/DESCR	1	3	4	274
7733	DEC77	PROC 76 TRI-SERV CONF ON CORROSION	0	10	10	202
7734	NOV77	HOT ISOSTATIC PROCESSING	35	122	157	1,163
7835	JAN78	RHEOCASTING	0	12	12	250
7836	MAR78	PROC DARPA/NAVSEA CER GASTURB DEM	2	13	15	498
7837	MAR78	CORROSION OF METALS IN MARINE ENVIRO	14	26	40	780
7838	NOV78	BIBLIO ON FIBERS + COMPOSITE MATLS	0	28	28	302
7939	APR79	REVIEW METALL MI-STREN LOW-ALLOY STEEL	0	37	37	393
7940	JUL79	TRI-SERV CORROSION CONF-78	1	14	15	203
7941	JUL79	SILICON NITRIDE BIB	2	19	21	213
8142	JUL81	CORR FATIGUE OF METALS IN MAR ENV	17	131	148	154
8143	OCT81	TECHNOLO, ADVAN, IN MATLS JOINING	0	224	224	224
8145	OCT81	RAPID SOLIDIFICATION TECHNOLOGY	0	177	177	177
T O T A L			120	1,064	1,184	20,221

TABLE D-2. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

PUBLICATION NUMBER	DATE	DOCUMENT	TITLE	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUMUL)
HB01	DEC72	DAMAGE TOLERANT DESIGN HANDBOOK		0	37	37	1,376
HB01S1	DEC73	1ST SUPP TO D-I-D HANDBOOK		0	34	34	902
HB01S2	JAN75	2ND SUPP TO D-I-D HANDBOOK		0	44	44	801
HB02	DEC72	TITANIUM ALLOYS HANDBOOK		11	38	59	1,201
HB03	OCT73	FORGING--EQUIP, MATLS, + PRACTICES		15	146	151	1,797
HB04	NOV74	HDBK ON MATLS FOR SUPERCONDUCTING MACH.		5	13	18	428
HB04S1	NOV75	1ST SUPP TO HDBK ON M-S-P		3	4	7	309
HB04S2	JAN77	2ND SUPP TO HDBK ON M-S-P		3	11	14	265
HB05	OCT80	SOVIET ALLOY HANDBOOK -- 1980 ED		106	27	133	841
HB05S1	APR76	1ST SUPP TO SOVIET ALLOY HDBK(OBS)		0	0	0	306
HB06	DEC75	SEM/TEM FRACTOGRAPHY HANDBOOK		1	22	23	985
HB07V1	MAR76	ENGRC PROP DATA ON CERAMICS-V1 NITRIDES		8	148	156	702
HB07V2	AUG79	ENGRC PROP DATA ON CERAMICS-V2 CARBIDES		15	164	179	409
HB07V3	JUL81	ENGRC PROP DATA ON CERAMICS-V3 SiC/SiC		18	271	289	289
HB08	JUN76	ELECTRON FRACTOGRAPHY HANDBOOK		2	5	7	462
HB09V1	NOV76	HDBK OF INTNL ALLOY COMP+DESIG.-V1 TI		3	21	24	478
HB09V2	DEC78	HDBK INTNL AL. COMP+DES- V2 SUPERMALLOY		2	25	27	440
HB09V3	OCT80	HDBK INTNL AL. COMP+DES- V3 ALUMINUM		4	423	427	427
T O T A L				196	1,434	1,630	12,417

TABLE D-3. MCIC ANNUAL PUBLICATIONS LISTING

For Period 05/01/81 Through 04/30/82

PUBLICATION NUMBER	DATE	DOCUMENT	TITLE	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUMUL)
AMTC 1	OCT72	AMMRC BKS - SOLID TECH		0	8	8	112
AMTC 2	NOV73	AMMRC BKS - CERAMICS FOR HI PERF APPL I		0	22	22	94
AMTC 3	FEB74	AMMRC BKS - PHY MET URAN ALLOYS		0	8	8	45
AMTC 4	SEP75	AMMRC BOOKS - AMTC NO 4 - JOINING		0	22	22	340
AMTC 5	MAR77	AMMRC BKS - CERAMICS FOR HI PERF APPL II		0	32	32	203
CBD		COMMENCE BUSINESS DAILY		0	1	1	1
FILM 3		SCANNING ELECTRON MICROSCOPY		0	2	2	1
HELRG2	JUL76	SURVY ON MECH PROP ON RAPID HEATING		0	0	0	17
HELRG3	FEB78	SURV ON MECH PROP ON RAPID HEAT HDBK		0	0	0	12
NTC 78	FEB78	1978 MATERIALS TECHNOLOGY REPORT		0	0	0	251
SPEC	JUL79	MISC REPORTS		0	0	0	117
SR7501	FEB75	MATERIALS SHORTAGE WORKSHOP PROCEEDINGS		0	0	0	153
SR7502	JUL75	BERYLLIUM-UTILIZATION/AVAILABILITY		0	0	0	1
SR7606	MAR76	WORKSHOP ON GOVT POLICIES + PROGRAMS		0	0	0	288
STC 76	NOV76	1976 STRUCTURED TECHNOLOGY REPORT		0	0	0	352
T O T A L				0	95	95	1,987

(N O T E) : NTIS DOES NOT SELL THESE DOCUMENTS.

TABLE D-4. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

PUBLICATION NUMBER	DATE	DOCUMENT		T I T L E	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUML)
7101	AUG71	EFF OF SURF COND ON MECH PROP II+ALLOYS			0	3	3	1,010
7102	DEC71	EFF SHOT PEEN UN IMP, FAT+STR CORR PROP			0	3	3	1,193
7203	JAN72	NONTRADITIONAL MACHINING OF BERYLLIUM			0	1	1	252
7204	JAN72	CRACK BEHAVIOR IN D6AC STEEL			0	1	1	411
7205	JAN72	SYMP ON PROP OF ELECT DEP METALS			1	4	5	919
7206	MAR72	IMPURITY EFFECTS IN BERYLLIUM			1	0	1	151
7207	JUN72	OXIDATION OF FE-NI + COBALT BASE ALLOYS			1	2	3	614
7208	JUN72	HOT CORROSION IN GAS TURBINES			0	2	2	673
7209	JUL72	BIBLIO ON FIBERS + COMP MATLS 1969-72			0	3	3	602
7210	SEP72	SUPERALLOYS-PROCESSING (CONF PROC.)			0	3	3	637
7211	SEP72	BETA TITANIUM ALLOYS			0	5	5	360
7212	DEC72	FRAC ANAL BY SCANNING ELEC MICRO(OBS)			0	0	0	1,526
7313	JAN73	ADV IN JOINING TECH - 60'S + BEYOND(OBS)			0	0	0	791
7314	JUN73	MATLS FOR USE IN AIRCRAFT GAS TURB ENG			2	3	5	701
7315	AUG73	METALLURGY OF FUSION-WELD REPAIR			0	4	4	677
7316	DEC73	TITANIUM CASTING TODAY			0	5	5	315
7319	DEC73	PROC 72 TRI-SERV CONF ON CORROSION			0	0	0	371
7417	APR74	PROC 73 SYMP ELEC-DEP METAL SEL APPLI			0	4	4	405
7418	FEB74	METAL IMPLANT FOR ORTHO+DENT SURG(OBS)			0	0	0	477
7420	JUN74	PROPERTIES OF TEXTURED TITANIUM ALLOYS			2	3	5	256
7421	JUL74	CERA PROSTH APPL-ORTH DENT+CARDIO(OBS)			0	0	0	245
7422	JUL74	NONDESTRUCTIVE TESTING OF BERYLLIUM			0	1	1	103
7423	AUG74	CORROSION OF METALS IN THE ATMOSPHERE			0	5	5	607
7424	OCT74	AUTOMATION IN WELDING (OBSOLETE)			0	0	0	285
7525	MAR75	CRACKS AT STRUCTURAL HOLES			1	2	3	270
7526	JUN75	TITANIUM INDUSTRY IN THE MID 70'S			0	3	3	359
7527	JUL75	PROC 74 GAS TURB MATLS N MAR ENVIR CONF			1	1	2	300
7628	SEP76	PROC + APPLI OF DEPL UKAN ALLOY PROD			4	1	5	118
7729	MAR77	ANNOT BIBLI SIL NIT FOR STRUC APPLI(OBS)			0	0	0	191
7730	APR77	DISPERSION STRENGTHENING OF METALS			0	2	2	292
7731	MAY77	LOW TEMP PROP SEL MATLS-BIBLIO W/DESCR			0	1	1	185
7732	JUN77	EFF RAP HEAT PROP MATLS-BIBLIO W/DESCR			0	0	0	274
7733	DEC77	PROC 76 TRI-SERV CONF ON CORROSION			0	2	2	202
7734	NOV77	HOT ISOSTATIC PROCESSING			3	13	16	1,145
7835	JAN78	RHEOCASTING			0	5	5	250
7836	MAR78	PROC DARPA/NAVSEA CER CASTURB DEM			0	5	5	496
7837	MAR78	CORROSION OF METALS IN MARINE ENVIR			9	5	14	779
7838	NOV78	BIBLIO ON FIBERS + COMPOSITE MATLS			0	9	9	300
7939	APR79	REVIEW METALL MI-STREN LOW-ALLOY STEEL			0	12	12	392
7940	JUL79	TRI-SERV CORROSION CONF-78			1	5	6	203
7941	JUL79	SILICON NITRIDE BIB			0	4	4	210
8142	JUL81	CORR FATIGUE OF METALS IN MAR ENV			15	29	44	154
8143	OCT81	TECHNOLO, ADVAN, IN MATLS JOINING			0	57	57	104
8145	OCT81	RAPID SOLIDIFICATION TECHNOLOGY			0	29	29	177
T O T A L					41	237	278	20,062

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TABLE D-5. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

PUBLICATION NUMBER	DATE	D O C U M E N T	T I T L E	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUMUL)
HB01	DEC72	DAMAGE TOLERANT DESIGN HANDBOOK		0	13	13	1,375
HB01S1	DEC73	1ST SUPP TO D-T-D HANDBOOK		0	7	7	902
HB01S2	JAN75	2ND SUPP TO D-T-D HANDBOOK		0	7	7	801
HB02	DEC72	TITANIUM ALLOYS HANDBOOK		6	8	14	1,201
HB03	OCT73	FUNGING--EQUIP, MATLS, + PRACTICES		0	55	55	1,797
HB04	NOV74	HDBK ON MATLS FOR SUPERCONDUCTING MACH.		0	9	9	428
HB04S1	NOV75	1ST SUPP TO HDBK ON M-S-M		0	2	2	304
HB04S2	JAN77	2ND SUPP TO HDBK ON M-S-M		0	3	3	265
HB05	OCT80	SOVIET ALLOY HANDBOOK -- 1980 ED		4	3	7	841
HB05S1	APR76	1ST SUPP TO SOVIET ALLOY HDBK (DB8)		0	0	0	306
HB06	DEC75	SEM/TEM FRACTOGRAPHY HANDBOOK		0	13	13	965
HB07V1	4AR76	ENGRG PROP DATA ON CERAMICS-V1 NITRIDES		1	75	76	702
HB07V2	AUG79	ENGRG PROP DATA ON CERAMICS-V2 CARBIDES		2	78	80	409
HB07V3	JUL81	ENGRG PROP DATA ON CERAMICS-V3 SGLOXID		15	91	106	287
HB08	JUN76	ELECTRON FRACTOGRAPHY HANDBOOK		1	1	2	462
HB09V1	NOV76	HDBK OF INTNL ALLY COMP+DESIG.-V1 TI		2	8	10	478
HB09V2	DEC78	HDBK INTNL AL, COMP+DES- V2 SUPERALLOY		2	6	8	440
HB09V3	OCT80	HDBK INTNL AL, COMP+DES- V3 ALUMINUM		1	37	38	400
T O T A L				34	416	450	12,383

TABLE D-6. MCIC QUARTERLY PUBLICATIONS LISTING

For Period 02/01/82 Through 04/30/82

PUBLICATION NUMBER	DATE	D O C U M E N T	T I T L E	NUMBER SOLD (NTIS)	NUMBER SOLD (MCIC)	NUMBER SOLD (TOTAL)	NUMBER SOLD (CUMUL)
AMTC 1	UCT72	AMMRC BKS - SOLID TECH		0	2	2	112
AMTC 2	NOV73	AMMRC BKS - CERAMICS FOR HI PERF APPL I		0	5	5	94
AMTC 3	FEB74	AMMRC BKS - PHY MET URAN ALLOYS		0	3	3	45
AMTC 4	SEP75	AMMRC BOOKS - AMTC NO 4 - JOINING		0	7	7	340
AMTC 5	MAR77	AMMRC BKS - CERAMICS FOR HI PERF APPL II		0	9	9	203
CND		COMMENCE BUSINESS DAILY		0	0	0	1
FILM 3		SCANNING ELECTRON MICROSCOPY		0	1	1	1
MLRG2	JUL76	SURVEY ON MECH PROP ON RAPID HEATING		0	0	0	17
MLRG3	FEB78	SURV ON MECH PROP ON RAPID HEAT HDBK		0	0	0	12
NTC 78	FEB78	1978 MATERIALS TECHNOLOGY REPORT		0	0	0	251
SPEC	JUL79	MISC REPORTS		0	0	0	117
SR7501	FEB75	MATERIALS SHORTAGE WORKSHOP PROCEEDINGS		0	0	0	153
SR7502	JUL75	BERYLLIUM-UTILIZATION/AVAILABILITY		0	0	0	1
SR7606	MAR76	WORKSHOP ON GOVT POLICIES + PROGRAMS		0	0	0	288
STC 76	NOV76	1976 STRUCTURES TECHNOLOGY REPORT		0	0	0	352
T O T A L				0	27	27	1,987

(N O T E) : NTIS DOES NOT SELL THESE DOCUMENTS.

Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172
**ANNUAL REPORT OF THE METALS
& CERAMICS INFORMATION CENTER**
H. Mindlin, Metals & Ceramics
Information Center, Battelle-Columbus,
Columbus, Ohio

Technical Report AMMRC TR 82-45
July 1982
Contract DLA900-78-C-1715
May 1, 1981, to April 30, 1982

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Key Words
Technical Information Center
DoD Information Analysis
Center
Metals
Ceramics
Information retrieval

This report reviews the continuing operations of the Metals and Ceramics Information Center for the Sixteenth Quarter and the annual period of May 1, 1981, through April 30, 1982. Activities and coverage of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included.

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