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SwRI Report 15-3903(3)

NONDESTRUCTIVE TESTING INFORMATION ANALYSIS CENTER, 1976

Southwest Research Institute
8500 Culebra Road
San Antonio, Texas 78284

Contract Number DSA900-74-C-5268
Annual Technical Report for Period
15 February 1976 - 15 February 1977

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JUL 6 1977
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Prepared for
DEFENSE LOGISTICS AGENCY
Headquarters
Cameron Station
Alexandria, Virginia 22314

ARMY MATERIALS AND MECHANICS RESEARCH CENTER
Watertown, Massachusetts 02172

June, 1977

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO CORPUS CHRISTI HOUSTON

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Approved:

John R. Barton

John R. Barton, Vice President
Instrumentation Research Division

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)* During the contract year, a total of approximately 12,000 entries has been reached in NTIAC's computerized data file records. The NTIAC Newsletter has a distribution of approximately 3,000 recipients. A State-of-the-Art Survey on Advanced Ultrasonic Testing Systems was published. NTIAC responded to over 100 technical inquiries.		

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I. INTRODUCTION

On January 6, 1976, by amendment of contract DSA900-74-C-5268, the Department of Defense transferred to Southwest Research Institute full responsibility for operation of the Nondestructive Testing Information Analysis Center (NTIAC), and discontinued the Nondestructive Testing Data Support Center (NTDSC) as a separate function.

From its establishment in 1961, through 1975, NTIAC was operated by the U. S. Army Materials and Mechanics Research Center, Watertown, Massachusetts. In February, 1974, the Department of Defense supplemented the capabilities of NTIAC through a contractor operated support function designated as the Nondestructive Testing Data Support Center (NTDSC). AMMRC continued, however, to bear responsibility as the officially designated DoD information analysis center in the field of nondestructive testing. Accordingly, AMMRC was charged to provide the interface with the NDT community for services of both NTIAC and NTDSC. During the period from February, 1974 to January, 1976, AMMRC worked closely with NTDSC to develop the latter's capability to function independently as a full service information analysis center of technical excellence. A strong relationship between AMMRC and the now fully contractor operated NTIAC continues with AMMRC being designated as the contracting officer's technical representative responsible for technically monitoring NTIAC activities.

Other major provisions of the contract remain substantially unchanged. Southwest Research Institute is charged to operate NTIAC as a full service information analysis center of technical excellence, which includes principally: establishing and continuously maintaining an information support system that is comprehensive and current with respect to the field of nondestructive testing; responding to inquiries for technical or bibliographic information; publication of a current awareness periodical (the NTIAC Newsletter); and, in response to needs of the user community, preparation, publication, and marketing of timely, authoritative critical reviews, technology assessments, state-of-the-art surveys, data books, and handbooks.

In common with other DoD IAC's, NTIAC is required to establish and maintain a service charge system for its products and services with the goal of achieving an annual rate of reimbursement equal to at least 50 per cent of yearly direct funding.

The technical scope of NTIAC is that of the entire field of nondestructive testing, inspection, and evaluation--the full range of methods and techniques whereby a material, component, or entire system can be so characterized as to reliably predict its performance under a prescribed service regime. Table 1 indicates major current methods of nondestructive testing.

Table 1

Major Current Methods of Nondestructive Testing

- RADIOGRAPHIC AND RADIOMETRIC TESTING
  - X-rays
  - Gamma rays
  - Neutrons
  - Filmless techniques
- ELECTROMAGNETIC TESTING
  - Eddy Currents
  - RF fields
  - Microwaves
  - Magnetic flux analysis
  - Magnetic particles
- ULTRASONIC AND ACOUSTIC TESTING
  - Ultrasonic transmission and reflectometry
  - Ultrasonic imaging
  - Spectrum analysis
  - Acoustic emission
- LIQUID PENETRANT TESTING
  - Dye penetrants
  - Fluorescent penetrants
- OPTICAL TESTING
  - Visual testing
  - Optical reflectometry and transmission
  - Holography
- THERMAL TESTING
  - Infrared radiometry
  - Thermography

The present organization and personnel of NTIAC are shown in Figure 1. By design, NTIAC is supported as needed by the full resources of its host organization Southwest Research Institute, the organizational chart of which is shown in Figure 2.

In an important respect NTIAC is unique among DoD IAC's. It is the first IAC which was planned from the beginning to rely upon the Defense Documentation Center for automatic data processing (computer) services, as well as certain other essential support services. These are indicated in Figure 3.

In Chapter II the state of development of NTIAC's basic performance areas are summarized. In Chapter III plans and projections for the fourth year of operation are presented. The Appendix includes statistical summaries, DSAH Form 1261, for the fourth quarter of the third contract year and for the entire contract year.

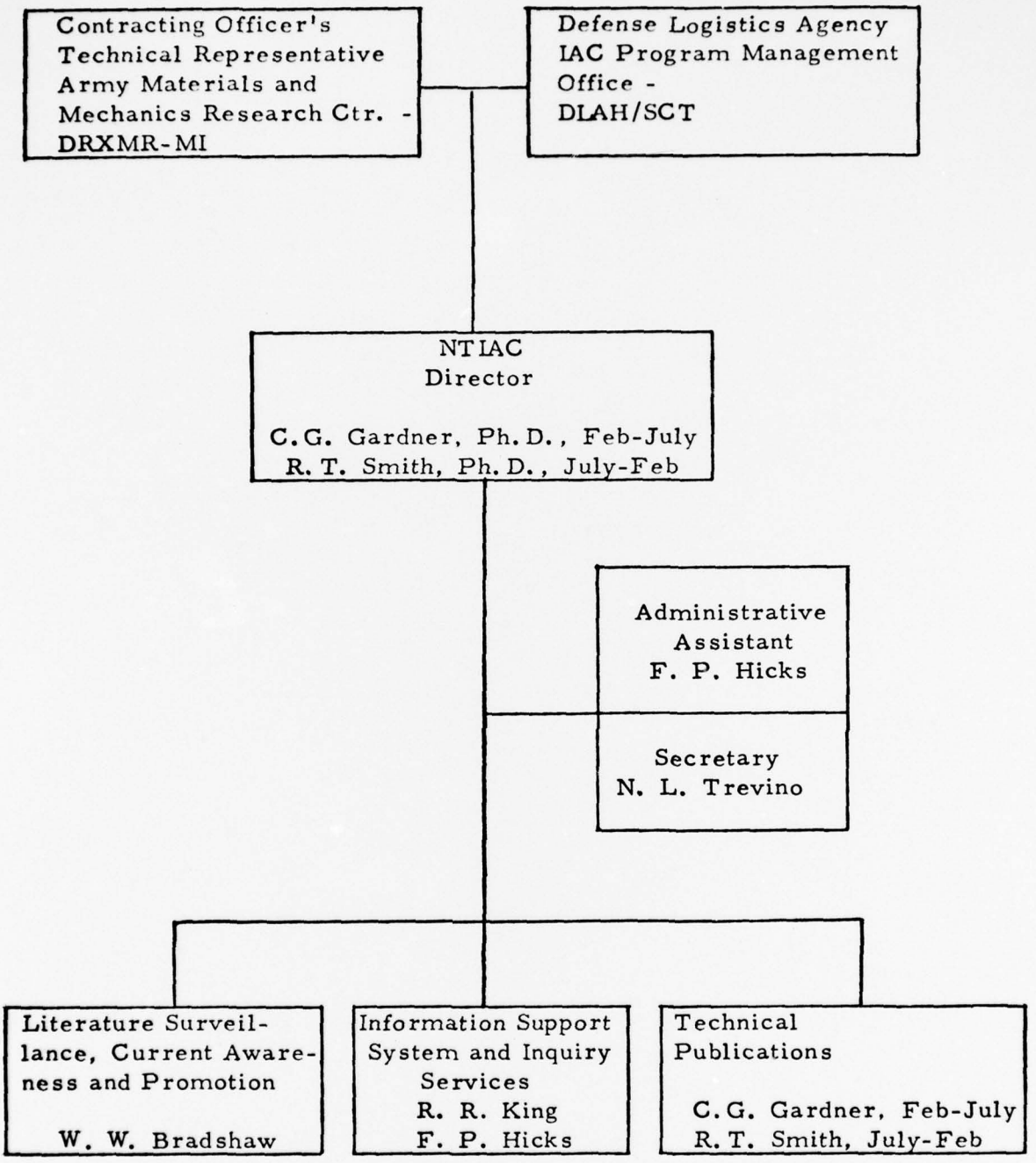

Figure 1

NTIAC Organization and Staffing

SOUTHWEST RESEARCH INSTITUTE
ORGANIZATIONAL CHART

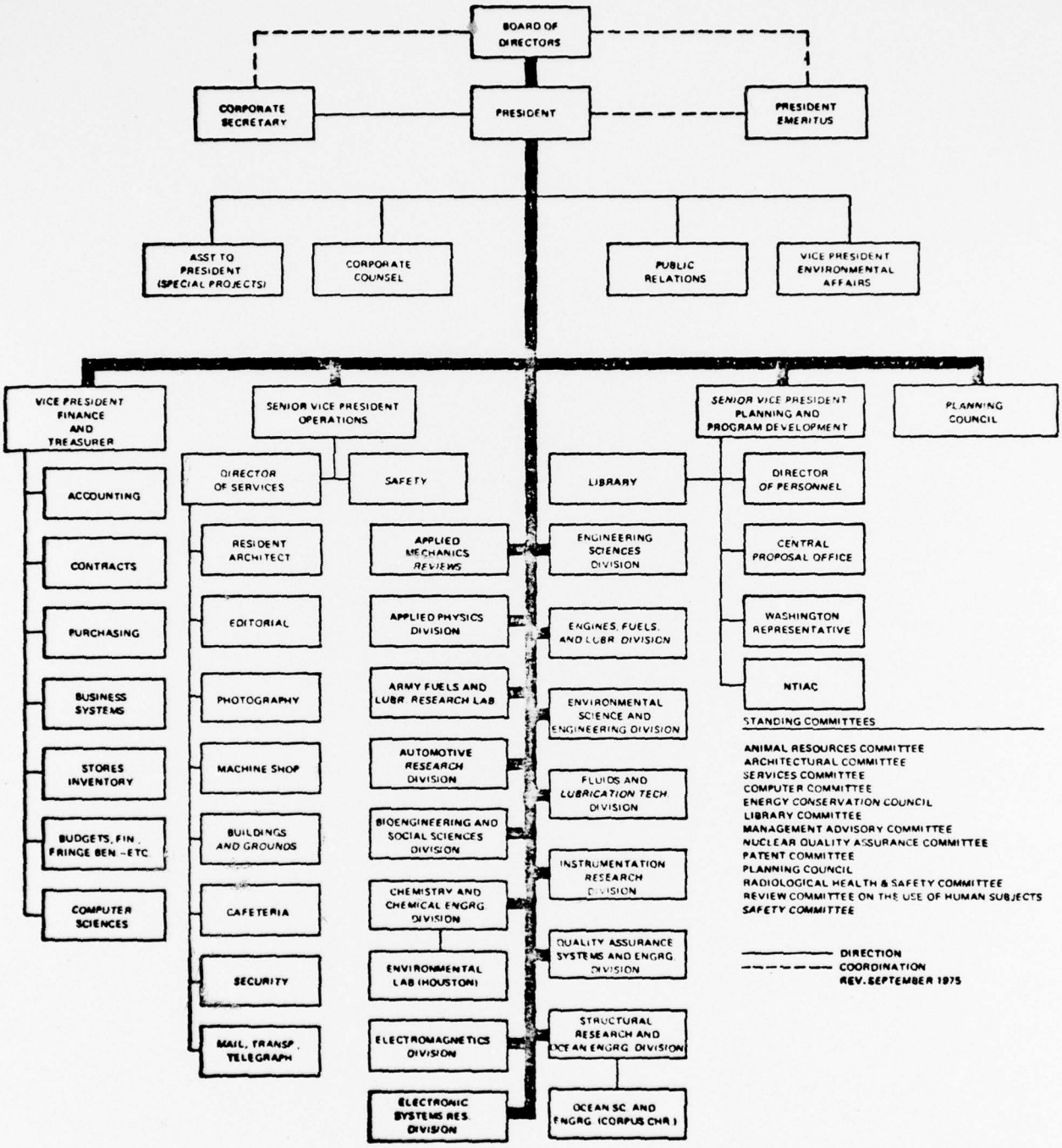

Figure 2

DDC SUPPORT OF NTIAC

- RDT&E On-Line System Terminal
- TR-File; WU-File
- Unique NTIAC File & Inverted (Index) File
- Batch Input Service
- Off-Line Print-Out Service
- Special Output Format
- Hard Copy Print-Out and Indices of NTIAC File
- Selective Dissemination of Information Program

Figure 3

II. OPERATIONAL REPORT

A. Introduction

The major areas of NTIAC's activity are: the information support system; current awareness and promotional activities; technical and bibliographic inquiries; technical publications; and special services. The status of each of these areas is reviewed in this chapter.

B. Information Support System (ISS)

NTIAC's ISS comprises a document collection and computerized bibliographic data files. These are kept current through systematic surveillance of the world-wide literature in nondestructive testing and closely allied technical areas.

Surveillance of open literature is accomplished in two basic modes. The most important serial literature, books, conference proceedings, etc., is directly scanned. The "core" literature comprises those serials of which a significant fraction of the contents is ordinarily accessioned. The secondary literature comprises those serials which are also directly reviewed cover to cover, but from which only selected pertinent articles are accessioned. Table 2 lists the current core and secondary serials. New books, conference proceedings, etc., are surveiled through informal channels, publishers' advertisements and catalogues, and reviews published elsewhere. It is noteworthy that all serial publications, books, proceedings, etc., are furnished to NTIAC by its host institution, Southwest Research Institute, through the Institute's library, without direct charge. (Exceptions are specific purchases made especially for NTIAC; such items become the property of NTIAC, i.e., of the U. S. Government.)

Surveillance of Department of Defense technical reports is accomplished by direct receipt of reports (where NTIAC has been placed on the primary distribution list) and the current awareness service provided by the Defense Documentation Center. A copy (in either ink print or microfiche) of each accessioned report is added to the NTIAC document collection.

Other U. S. Government reports and unpublished private sector reports are surveiled mainly by requesting copies through informal contacts with agencies and individuals engaged in nondestructive testing programs. Additionally, commercially available "dial up" bibliographic data files (mainly the NTIS file) are periodically searched for NTIAC related citations. This gives good coverage of publicly released U. S. Government reports, especially those of NASA, which are comparatively rich in the area of NDT.

Table 2

NTIAC CORE JOURNALS

1. British Journal of Non-Destructive Testing (GB)
2. Institute of Electronics and Electrical Engineers, Transactions Acoustics, Speech, and Signal Processing (USA)
3. Institute of Electronics and Electrical Engineers, Transactions Instrumentation and Measurement (USA)
4. Institute of Electronics and Electrical Engineers, Transactions Sonics and Ultrasonics (USA)
5. Journal of the Acoustical Society of America (USA)
6. Journal of Testing and Evaluation (USA)
7. Materialprufung (Ger.)
8. Non-destructive Testing International (GB)
9. Soviet Journal of Nondestructive Testing (USSR)
10. Ultrasonics (GB)
11. Materials Evaluation

SECONDARY SERIAL PUBLICATIONS SURVEILED AND REVIEWED BY NTIAC

1. ASEA Journal (Sweden)
2. ASTM Standardization News (USA)
3. Acustica (Ger.)
4. Aircraft Engineering (GB)
5. American Ceramic Society Bulletin (USA)
6. American Laboratory (USA)
7. Journal of Engineering for Power, Transactions of ASME (USA)
8. Journal of Applied Mechanics, Transactions of ASME (USA)
9. Journal of Pressure Vessel Technology of ASME (USA)
10. Applied Optics (USA)
11. Applied Physics (USA)
12. Automated Control & Computer Sciences (USSR)
13. The Bell System Technical Journal (USA)
14. Canadian Aeronautics and Space Institute Transactions (Canada)
15. Composites (GB)
16. Control Engineering (USA)
17. Defense Management Journal (USA)
18. Electro-Optical Systems Design (USA)
19. Electro-Mechanical Design (USA)
20. Electronic Engineering (GB)
21. Engineering Fracture Mechanics (USA)
22. European Scientific Notes (GB, ONR)
23. Industrial Laboratory (USSR)
24. Industrial Research (USA)
25. Industrial Electronics and Control Instrumentation IEEE (USA)
26. Materials Science and Engineering (Switzerland)

For each of the items accessioned by NTIAC, a computerized bibliographic record is created. Each such record comprises the pertinent fields, illustrated in Figure 4. Index terms (descriptors) are taken from a controlled word list prepared by NTIAC; this list is updated at least semi-annually. In those cases where a bibliographic record already exists in the Technical Report file at DDC, NTIAC augments the DDC record by adding the NTIAC accession number and descriptors, thus effectively bringing such records into the NTIAC file.

The current status of NTIAC's bibliographic data file is presented in Table 3.

In addition to its own unique bibliographic data file, NTIAC also has access, through its RDT&E on-line terminal, to DDC's Technical Report File (based on DD Form 1473), and the Work Unit File (based on DD Form 1498).

The Document Announcement Bulletin (DAB) print out became available from DDC during November 1976. We are now routinely receiving hard copy print-out of all NTIAC files. This along with the generation of corporate author, personal author, and subject term indexes is of great value to NTIAC.

The capability of ordering NTIAC bibliographies via the RDT&E terminal had not been satisfactorily completed at the end of the contract year, but this is expected to be operational within the next few weeks.

The RDT&E on-line terminal located at NTIAC was operated in a secure communications mode until 3 December 1977. At that time the terminal was downgraded to an unclassified operation and relocated for more convenient access by the NTIAC staff. At approximately the same time the COP printer was replaced with a Univac 800 printer which has a much greater print speed, facilitating more timely responses to inquirors. We believe that the downgrading and relocating of the terminal together with the new, faster printer will significantly increase the efficiency of the technical and bibliographic operations. The downgrading and relocating of the terminal will probably also reduce the time required for input to NTIAC's special file via the RDT&E on-line terminal.

The disestablishment of the COMSEC account which was required during the secure operation of the terminal has not been completed at the close of this contract year. However, we anticipate closure of the account by the end of March 1977. For the record it should be stated that it is estimated that the maintenance of the COMSEC account and equipment required approximately 15% of one NTIAC staff member. We believe this expenditure is not justifiable, based upon the very limited need for classified references experienced by NTIAC during the more than one year that the terminal was in a secure mode of operation.

NTIAC LITERATURE REVIEW WORKSHEET

(42) NT - 10959
(1) AD-D301672

(6) Title
Nuclear Resonances in Metals

(10) Authors:
I. D. Weisman, L. J. Swartzendruber, L. H. Bennett

(22) Availability:
Published in Techniques of Metals Research; Vol. 1, Pt. 2; 1973; Chapter 9; 165-504

(33) Code: 1, 21
(43) Copy: 1

(21) Sup. Note:
See also NT-8281

(11) Date: 1973
(12) No.pp: 340

(35) Source Code: (14) Source Series:

(15) Contract: (18) Mon. Acronym: (19) Mon. Series:

(9) Descr. Note: (34) Serial Descr.:

(30) Annotation:
Authoritative. Advanced discussion.

(27) Abstract:
A general review of theory, experimental apparatus and technique, and representative results of nuclear resonances in metals. Covers continuous-wave and pulsed NMR, nuclear quadrupole resonance (NQR), NMR in ferromagnetic materials (FNR), the Mossbauer effect, and combined resonances (the Overhauser effect), acoustic modulation of Mossbauer spectra, nuclear magnetic acoustic resonance, helicon waves, and electron-nucleus double resonance. Also discussed are thermal effects, sample size and shape effects, diffusion, spurious resonances, calorimetric detection of NMR, and NMR in superconductors. (NTDSC)

(44) Descriptors:
*Nuclear magnetic resonance, *Nuclear quadrupole resonance,
*Mossbauer effect, text book, reviews, acoustic nuclear resonance

Other key words: Date Input:
Indexer:

Figure 4

Table 3

Status of the NTIAC Bibliographic Data File
15 February 1976 - 15 February 1977

Documents in file		11,773
Total NTIAC (SwRI) input		4957
Complete records	4252	
Partial records	705	
Total AMMRC input		6816
Complete records	5592	
Partial records	1224	

C. Current Awareness and Promotional Activities

Our current awareness and promotional publication is the NTIAC Newsletter, issued monthly, which features digests of noteworthy current technical reports, abstracts of other important current reports, notices of recently awarded contracts for new programs in NDT; and a users forum featuring contributions submitted by readers. There has been thus far very limited response to the users forum. However, the acceptance of the Newsletter has increased dramatically during the past year, from approximately 900 recipients in 1975 to 3000 recipients in 1976. In Table 4 the current status of the Newsletter distribution is presented.

During this contract year digests of thirteen technical reports were published in the NTIAC Newsletter. These digests continue to be well received; at least two have been cited in the bibliography section of NDT International, a bimonthly technical journal published in England. Also, we published a short article authored by Australian DoD personnel. The technical articles included studies utilizing such test methods as the "big five", -- liquid penetrants, magnetic particles, ultrasonic testing, radiography, and eddy currents; as well as statistical analysis, finite element analysis, optical holographic and speckle interferometry, thermal methods, acoustic emission, acoustical holography, microwaves, and a survey of contemporary NDT methods. The materials studied included aluminum, steel, and titanium components, rigid fiber reinforced composites, ceramic high temperature turbine materials, concrete, flexible composites, solid propellant rocket motors and dielectric and metallic surfaces.

In addition to the technical articles, there were three symposium reports, and eleven book reviews plus news of interest to NDT and quality control people.

Table 4

Current Status of Newsletter

Newsletter Recipients

U. S. Government	559
Private Industry	2185
Universities	277
Other U. S.	135
Foreign	127
Total	3283

Yearly total mailings,
Newsletters and announcements 46,824

In the October Newsletter, the article on the 8th World Conference on NDT generated considerable interest. Thus far, at least five readers have requested copies of certain papers or information on the availability of reprints. One paper in particular, "The Human Eye, an Instrument for Nondestructive Testing," stimulated the greatest interest. Virtually all readers who contacted us have expressed approval of the monthly publication.

We have honored requests from several readers to publicize certain activities; these include the GIDEP (Government Industry Data Exchange Program) operation; the Holography Committee, Methods Division of the American Society for Nondestructive Testing; the Automated Inspection and Product Control Conference; and the Acoustic Emission Working Group.

During the contract year 83 recent contract award notices and 82 abstracts of interest were published. In the meetings area there were 83 notices printed in the Calendar column as well as 16 calls for papers. In addition, more extended write-ups were devoted to the Second Conference on Automated Inspection and Product Control (in three issues), the NBS Symposium on Nondestructive Testing Standards, the ARPA/AFML Review of Progress in Quantitative Nondestructive Evaluation (in two issues), the 1976 Annual GIDEP Workshop, the 1976 ASNT Fall Conference, the 1977 ASNT Spring Conference, and the Eleventh Symposium on Nondestructive Evaluation, South Texas Section of ASNT.

As we mentioned, during 1976 the Newsletter distribution list has grown from approximately 900 in February to 3000 registered readers in December. Of course, this growth is due primarily to the free distribution of the Newsletter; however, the list has grown steadily since the initial jump in May by more than 500 names.

The increase in the Newsletter distribution list has yielded other benefits. Together with the change from a three-column, right-justified format to a two-column, ragged right format and having one of the NTIAC personnel type part of the camera ready copy, the larger mailing list has reduced the production cost (Editorial Unit direct labor, printship charges, computer charges) from 72 cents per copy during the first three months of this contract year (February, March, April) to 28 cents per copy for November and December. These costs compare very favorably with that for the preceding contract year--$1.00 or more per copy.

Other Promotional Activities. Table 5 summarizes promotional briefings and displays presented by NTIAC during the past year.

As has already been reported, the Offshore Technology Conference Exhibit was not as successful as had been hoped for. This was primarily because the conference drew a very large number of attendees and with the

Table 5

Promotional Meetings for Period 15 Feb. 1976 through 15 Feb. 1977

Offshore Technology Conference	3-6 May, 1976, Houston, Texas
NBS Symposium on NDT Standards	19-20 May, 1976, Washington, DC
ASM/ASNT Materials Design Forum	14-16 June, 1976, Tarpon Springs, Fla.
ASTM Annual Meeting	28 June - 2 July, 1976, Chicago, Illinois
ARPA/AFML NDE Review	1-3 Sept., 1976, Asilomar Conference Grounds, California
8th International Conference on NDT	4-12 Sept., 1976, Cannes, France
ASNT Annual Meeting	27-30 Sept., 1976, Houston, Texas
Automated Inspection and Product Control Conference	18-21 Oct., 1976, Chicago, Illinois
Insulated Conductors Committee of IEEE	8-11 November, 1976, Houston, Texas

many exhibits, some of which rather elaborately done, there simply was not enough relative exposure of our exhibit to gain the kind of attention which we desired. In addition, we had a moving-picture display which required about 5 minutes to view, and this proved to be too long--again because of the nature of the conference, the number of people, and the number of exhibitors.

The director, Dr. Gardner, also attended the NBS Symposium on NDT Standards held at the National Bureau of Standards at Gaithersburg, Maryland. Dr. Gardner attended all the technical sessions which included nondestructive testing standards, radiography standards, ultrasonic and acoustic emission testing, liquid penetrant and magnetic particle testing, visual optical electromagnetics and leak testing, and a session on future directions. It appears that this conference was well worthwhile in giving the center an examination of materials, a discussion of these NDT methods based upon the latest research and development, as well as proposals to examine standards to point out where they were unsatisfactory or lacking and to suggest directions for improvement.

Dr. Smith attended the 8th International Conference on NDT held at Cannes, France, and based upon his attendance at the various technical sessions, prepared a resume of the conference, which was published in the Newsletter. He also attended the ASNT Annual Meeting in Houston at which he manned a booth for NTIAC. This display was most successful in our opinion and received the attention of most of the participants at the conference. There was a great deal of interest in the Newsletter and the User's Guide and in the display itself.

NTIAC was a cosponsor along with Illinois Tech. Research Institute of the Automated Inspection and Product Control Conference held at Chicago, Illinois, during October 18-21, 1976. Dr. Smith served as a chairman of one of the sessions at this conference.

During a Houston, Texas, meeting of the Insulated Conductors Committee of the IEEE, Dr. Smith was a featured luncheon speaker and gave a talk about NTIAC and its products and services. There was considerable interest on the part of Committee members in this operation.

Finally, during the year we had the following visitors to NTIAC: Mr. David C. Stanley, Bearing Project Engineer, Naval Air Rework Facility (2 February); Mr. Don L. Conn, Senior Staff Electronics Engineer, Armco Steel Corporation; Mr. Tom Kent, Field Engineer/Supervisor, Southwest Territory, Magnaflux Corporation (12 February); Mr. Richard Buckingham, Naval Surface Weapons Center; The Technical Cooperation Program, Sub-Group P: Mr. N. L. Parr (UK), Dr. F. P. Bullen (Australia), Dr. W. H.

Erickson (Canada), Mr. J. Persh (US), Dr. R. J. E. Glenny (UK), Dr. R. N. Katz (US), Dr. J. I. Bryant (US), Dr. T. P. Hobin (UK), Dr. G. A. Morgan (US), Dr. J. J. Greenblatt (Canada), Dr. B. Askaw (US), Dr. A. D. Thomas, Jr., Dr. Ronald E. Pyle, Radian Corporation, Austin, Texas.

D. Inquiries, Special Services

NTIAC responded to 103 inquiries during the 15 February 1976 to 15 February 1977 period, and approximately 38% of these resulted in funded orders for technical assistance or bibliographic services. The total number of inquiries also represents a 37% growth in the number of inquiries received over the previous contract year. Table 6 summarizes inquiry activities for the year.

Two inquiries resulted in Technology Assessments of significant scope. A review of precision machining and gaging methods was conducted for the Defense Industrial Plant Equipment Center which involved a broad literature search and a site visit to the Lawrence Livermore Laboratories where much state-of-the-art work is being done in the field. The effort covered a period of several months and cost $7500. Near the close of this contract year the David Taylor Navy Ships Research and Development Center funded a $5710 effort to review, on an accelerated schedule, the State-of-the-Art of the Nondestructive Testing of Titanium and Titanium Alloys. The review was accomplished in approximately one month. A preliminary summary of NTIAC's findings was given to a representative of DTNSRDC who visited NTIAC during preparation of the final report.

It seems reasonable to expect that as NTIAC becomes progressively better known to the NDT community, the number, scope, and (correspondingly) income derived from technical and bibliographic inquiries will continue to increase. It is nevertheless of continuing concern that utilization of NTIAC by DoD agencies is not as high as could reasonably be expected. Procurement difficulties posed by the cost recoupment policy, as experienced by DoD bench level scientists and engineers, is thought to be a major factor here.

Table 6

Technical and Bibliographic Inquiries
15 February 1976 - 15 February 1977

No.	Source	Type	Amt.	Date
0111	SwRI (Dept. 10)	Std. Bib.	$404	20 Feb 76
0112	SwRI (Dept. 14)	Tech. Inq.	25	27 Feb 76
0114	SwRI (Dept. 15)	Std. Bib	393	10 Mar 76
0115	Edgewood Arsenal	Std. Bib	150	16 Mar 76
0119	SwRI (Dept. 02)	Std. Bib	124	1 Apr 76
0120	SwRI (Dept. 02)	Std. Bib	89	1 Apr 76
0121	SwRI (Dept. 67)	Std. Bib	123	1 Apr 76
0122	Burns & Roe Inc.	Tech. Inq.	-0-	17 Mar 76
0124	Vikram Sarabhai Space Centre, India	Tech. Inq.	-0-	29 Mar 76
0126	Wright-Patterson AFB	Tech. Inq.	-0-	8 Apr 76
0130	Phillips Laboratories	Tech. Inq.	-0-	14 Apr 76
0131	Martin Marietta Corp.	Tech. Inq.	-0-	19 Apr 76
0132	SwRI (Dept. 15)	Std. Bib	193	20 Apr 76
0135	Kaiser Aluminum & Chemical Corp.	Tech. Inq.	-0-	26 Apr 76
0136	Rockwell International	Tech. Inq.	-0-	3 May 76
0117	Major Rex Easley (Air Force)	Tech. Inq.	-0-	31 May 76
0138	Drexel Univ. (Mech. Engr.)	Anntd. Bib	200	7 May 76
0145	Drexel Univ. (Mech. Engr.)	Anntd. Bib	200	7 May 76
0146	Drexel Univ. (Physics)	Std. Bib	110	13 May 76
0147	Columbia Gas	Tech. Inq.	-0-	27 May 76
0148	Drexel University	Std. Bib	123	4 Jun 76
0149	TRW Systems	Info.	-0-	14 Jun 76
0150	NASA Ames	Info.	-0-	14 Jun 76
0151	U.S. Army Missile Command	Info.	-0-	25 Jun 76
0152	NBS	Info.	-0-	30 Jun 76
0153	Naval R&D	Tech. Inq.	-0-	7 Jul 76
0154	Navy Ship R&D	Std. Bib	75	9 Jul 76
0155	Rohr	Info.	-0-	15 Jul 76
0156	Tektronics	Tech. Inq.	-0-	14 Jul 76
0157	SwRI	Std. Bib	161	12 Jul 76
0158	SwRI	Std. Bib	260	16 Jul 76
0159	Physical Dynamics	Tech. Inq.	300	19 Jul 76
0160	Naval Air	Tech. Inq.	-0-	15 Jul 76
0161	SHM Nuclear Corp.	Quotation		27 Jul 76
0162	Picatinny	Info.	-0-	3 Aug 76
0163	Owens Corning Fiberglass	Std. Bib	75	3 Aug 76
0164	Convair	Std. Bib	75	27 Jul 76
0165	Indiana University	Info	-0-	10 Aug 76

No.	Source	Type	Amt.	Date
0166	Fisher Controls	Info.	$-0-	12 Aug 76
0167	Kelly AFB	Tech. Inq.	-0-	12 Aug 76
0168	Babcock & Wilcox	Tech. Inq.	-0-	11 Aug 76
0169	SwRI	Std. Bib.	729	18 Aug 76
0170	Victor Wilburn & Assoc.	Std. Bib.	75	16 Aug 76
0171	Kelly AFB	Info.	-0-	26 Aug 76
0172	Arthur D. Little Co.	Info.	-0-	30 Aug 76
0173	NBS	Anntd. Bib.	230	26 Aug 76
0174	NSRDC	Std. Bib	75	30 Aug 76
0175	GE	Info.	-0-	1 Sep 76
0176	Westinghouse Research	Std. Bib	90	1 Sep 76
0177	SwRI	Info.	-0-	3 Sep 76
0178	Lockheed	Info.	-0-	30 Aug 76
0179	General Dynamics	Info	-0-	8 Sep 76
0180	Battelle Pacific Northwest	Std. Bib	122	27 Sep 76
0181	SwRI	Std. Bib	50	30 Sep 76
0182	SwRI	Std. Bib	210	21 Sep 76
0183	NSRDC	Std. Bib	75	11 Oct 76
0184	SwRI	Info.	-0-	1 Oct 76
0185	AMMRC	Info.	-0-	6 Oct 76
0186	SwRI	Std. Bib	75	12 Oct 76
0187	SwRI	Std. Bib	480	11 Oct 76
0188	M. Dedini S.A., Brazil	Info.	-0-	11 Oct 76
0189	Naval Air Sts. Command	Info.	-0-	22 Oct 76
0190	Perkins, Coie, Stone, Olsen & Williams	Std. Bib	75	21 Oct 76
0191	Lockheed Missiles & Space	Tech. Inq.	-0-	18 Oct 76
0192	SwRI	Tech. Inq.	-0-	4 Oct 76
0193	GTE Sylvania	Tech. Inq.	-0-	28 Oct 76
0194	LSU	Tech. Inq.	-0-	29 Oct 76
0195	Artech, Inc.	Std. Bib	75	2 Nov 76
0196	Inspection Instruments NDT, Ltd., London	Info.	-0-	10 Nov 76
0197	Argonne Nat'l. Lab.	Quotation	-0-	15 Nov 76
0198	SwRI (Dept. 17)	Std. Bib.	75	16 Nov 76
0199	Machlett Lab.	Info.	-0-	16 Nov 76
0200	Vikram Sarabhai Space Centre, India	Proposal	-0-	17 Nov 76
0201	Stanford Research Inst.	Info.	-0-	19 Nov 76
0202	Edgewood Arsenal	Std. Bib	90	17 Dec 76
0203	NSRDC	SOAS	5710	17 Dec 76
0204	Aerospace Research Applications Center	Proposal	-0-	28 Dec 76
0205	Oak Ridge National Laboratory	Proposal	-0-	3 Jan 77

No.	Source	Type	Amt.	Date
0206	Westinghouse	Std. Bib	$ 75	7 Jan 77
0207	SwRI	Tech. Inq.	-0-	11 Jan 77
0208	SwRI	Std. Bib		1 Feb 77
0209	SwRI	Std. Bib		1 Feb 77
0211	SwRI	Tech. Inq.	-0-	15 Feb 77
0202	SwRI	Std. Bib		10 Feb 77
0213	Westinghouse	Info.	-0-	15 Feb 77

E. Technical Publications

Our publication, Electromagnetic-Acoustic Transducers - A State of the Art Survey, by R. E. Beissner (NTIAC-76-1) has enjoyed a good reception by those who have reviewed it, and it is having a fair number of sales. Our other publication, NTIAC-76-2, Proceedings of a Workshop on Nondestructive Evaluation of Residual Stress, is also receiving excellent acceptance by the technical community, and it too is having a fair number of sales.

Towards the end of the present program year, we have been preparing two State-of-the-Art Surveys which will be published in the near future. These are a State-of-the-Art Survey on Automated Radiography, and a State-of-the-Art Survey on Advanced Ultrasonic Systems. We have also received approval of a basic mock-up of a handbook on NDT. This handbook is now under preparation and will probably be available for distribution before the end of the next year.

III. FUTURE PLANS

A. Current Awareness and Promotional Activities

We plan to present a talk to the Society of Manufacturing Engineers Southwestern Conference, Houston, March 2, and chair the session on NDT.

On March 28-31 we will man a booth at the Spring ASNT meeting at Phoenix.

During September, we will attend the Oslo, Norway AGARD Conference on NDI relationships to aircraft design and materials, and will present a paper on bearing inspection systems. We also plan to visit the NDT Center at Harwell, England on this trip to discuss possible exchange of information and marketing of products and services.

We are discussing arrangements with the ASNT for marketing our products, and will negotiate with NTIS as another outlet for our marketing and promotional effort.

During the year we plan to expand the Newsletter subscription list by means of a mailing to ASNT membership, which is approximately three times the current NTIAC Newsletter listing.

We will cooperate with other IAC's with related interests in joint projects for promotion of our products and services.

B. Products and Services

During the coming year we shall be publishing two critical reviews. It is planned as of now to publish one of these in the field of eddy-current testing. The other candidate areas for the remaining review includes optical and visual methods, acoustical methods, and possibly ultrasonics.

Two state-of-the-art surveys are underway and will be published during the coming year. They are a SOAS on Advanced Ultrasonic Test Methods and one on Automated Radiography.

We have received approval for an NTIAC Yearbook mock-up, and we expect that by the end of the coming year this publication should be ready for distribution, although exact timing of publication will be somewhat dependent upon the response of various commercial establishments.

C. Other Services

We shall strive to be of service in the area of "super" inquiries, workshops, seminars, and innovative techniques for the dissemination of NDT information.

D. Information Support System

Southwest Research Institute has purchased a General Electric "Terminet 30" data communications terminal with remote batch print-out capability. This terminal will be shared by the SwRI Library and NTIAC and will be located in the NTIAC offices, making its operation convenient and time saving. The use of this additional equipment for broader periodic searches of commercially available computerized data bases will further insure the adequacy of NTIAC's surveillance of the literature.

APPENDIX

INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT	NAME OF INFORMATION ANALYSIS CENTER				QUARTER ENDING 2/15/77		CUMULATIVE THRU	
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		86	360	446	3701	3999	7700	
a. DOCUMENTS ACQUIRED	617							
b. DOCUMENTS REVIEWED	417							
c. DOCUMENTS CATALOGED	417							
2. TECHNICAL INQUIRY RESPONSES PROVIDED	8	21	19	40	(978)	409	(569)	1342
3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED	6	44	16	60	823	783	1606	545
4. HANDBOOKS/DATA BOOKS COMPLETED		15	18	33	249	301	550	--
a. NEW CHAPTERS/PAGES COMPLETED	-0-							
b. REVISED CHAPTERS/PAGES COMPLETED	-0-							
c. DATA SETS COMPILED	-0-							
5. STATE-OF-THE-ART STUDIES COMPLETED	1	210	200.5	410.5	3369	4120	7489	--
6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED	-0-	3	--	3	(41)	40	(1)	78
7. CURRENT AWARENESS AND PROMOTION EFFORTS		280	265	545	5062	5838	10,900	995
a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED	8782							
b. NUMBER MEETINGS, CONFERENCES, ETC SUPPORTED	-0-							
8. OTHER	--	--	--	--	--	--	--	--
9. MANAGEMENT AND SUPPORT		509	216	725	10,479	11,535	22,014	
10. UNASSIGNABLE INDIRECT COSTS		--	--	--	--	--	--	
11. TOTAL		1168	1094.5	2262.5	22,664	27,025	49,689	2960

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INFORMATION ANALYSIS CENTER CONTRACT STATUS REPORT	NAME OF INFORMATION ANALYSIS CENTER				QUARTER ENDING		CUMULATIVE THRU 2/15/77
AREA TITLE	OUTPUT UNITS PRODUCED	MANHOURS EXPENDED			COSTS INCURRED			INCOME
		PROFESSIONAL	NON-PROFESSIONAL	TOTAL	DIRECT	INDIRECT	TOTAL	
1. ACQUISITION AND INPUT OF SOURCE INFORMATION		964	1666	2630	22,289	25,660	47,949	
a. DOCUMENTS ACQUIRED	2370							
b. DOCUMENTS REVIEWED	1688							
c. DOCUMENTS CATALOGED	2120							
2. TECHNICAL INQUIRY RESPONSES PROVIDED	68	1272	286	1558	2301	7217	9518	5832
3. BIBLIOGRAPHIC INQUIRY RESPONSES PROVIDED	33	592	251.5	843.5	1774	5995	7769	6734
4. HANDBOOKS/DATA BOOKS COMPLETED		467	101	568	5550	1746	7296	--
a. NEW CHAPTERS/PAGES COMPLETED	-0-							
b. REVISED CHAPTERS/PAGES COMPLETED	-0-							
c. DATA SETS COMPILED	-0-							
5. STATE-OF-THE-ART STUDIES COMPLETED	1	1073	250.5	1323.5	8719	10,512	19,231	--
6. CRITICAL REVIEWS AND/OR TECHNOLOGY ASSESSMENTS COMPLETED	1	3	--	3	(742)	20	(722)	1360
7. CURRENT AWARENESS AND PROMOTION EFFORTS		1598	1827	3425	39,107	35,833	74,940	1020
a. NUMBER NEWSLETTERS AND/OR ANNOUNCEMENTS PUBLISHED	46,824							
b. NUMBER MEETINGS, CONFERENCES, ETC. SUPPORTED	10							
8. OTHER	--	--	--	--	--	--	--	--
9. MANAGEMENT AND SUPPORT		2632	1124.5	3756.5	42,017	46,777	88,794	
10. UNASSIGNABLE INDIRECT COSTS		--	--	--	--	--	--	
11. TOTAL		8601	5506.5	14,107.5	121,015	133,760	254,775	14,946

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