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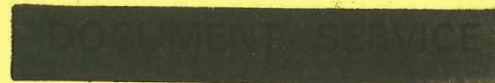
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FINAL REPORT

Project III

NASA Contract NASW-1942

PILOT PROJECT FOR EXPANSION OF RDC RESOURCES
VIA ADDITION OF ENGINEERING INDEX, INC. FILES

CASE FILE COPY



Joseph DiSalvo
Richard W. Counts
Daniel J. Goodwin

August, 1970

ARAC

AEROSPACE RESEARCH APPLICATIONS CENTER

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Aerospace Research Applications Center
Indiana University Foundation
Bloomington, Indiana 47401

Introduction

An important aspect in the operation of ARAC as a computerized technology/information dissemination center to private business has been the evaluation of and the incorporation of (when indicated) new technical information files. A preliminary investigation showed that the CITE file of Engineering Index, Inc. (EI) would certainly prove to be a valuable addition to the information resources available from ARAC, as well as the other Regional Dissemination Centers (RDC) in the NASA system. With the assistance of a NASA contract, ARAC began using the Engineering Index CITE files, both the electrical/electronics section and the plastics section on a routine basis in April, 1969. The back CITE file was obtained through January, 1969, when it first originated. ARAC developed both current awareness and retrospective search capabilities for its own clients, as well as making these capabilities available to the other RDCs in the network. Additionally, ARAC developed Standard Interest Profiles based on this resource.

In order to achieve the economies needed for ARAC's particular operations, the input tapes from EI have been reformatted, retaining only the EI accession number and deep indexing terms. All other information in the input records is omitted from ARAC's master file. Searching, both current and retrospective, is done using the weighted-term approach, and is done with a CDC 3600/3400 computer. In the case of the plastics section,

this has been supplemented frequently by manual searching of the Plastics Monthly.

In January of 1970, Engineering Index, Inc. discontinued the CITE file and replaced it with COMPENDEX. Basically, COMPENDEX contains all the information which was previously in the CITE file except that it covers all the disciplines of engineering instead of just plastics and electronics. Appendix A of this report shows a list of journals covered by the COMPENDEX file and may serve to give the reader a better idea of the extensive coverage of the world's engineering literature.

In working with the EI files, ARAC continued its method of operation similar to that used on government files in previous years. Vital to ARAC's method of operation, since full abstracts are not on the master EI file, is the availability of printed abstracts bearing the EI accession number. While these were readily available, some difficulty was experienced in actually receiving the set of electrical/electronics abstract cards which was loaned to ARAC for each issue. While this introduced delays of a few days in the production of several issues of the current awareness mailings, the change in the way abstracts are provided which has been adopted in connection with the changeover to COMPENDEX alleviated this problem.

As stated above, the printout consists only of accession numbers and weights. These accession numbers are used to retrieve abstract cards from a file which is arranged in numerical sequence. The package of relevant abstracts for either a profile or a retrospective search is reproduced from this set of abstract cards which are listed by the computer. The advantages of this method of operation as opposed to generation of full abstract by computer printout are:

1. A very large reduction in computer time required.
2. A more compact and easily handled package for distribution to users.
3. Copy which is more readable.

Two types of current awareness service are offered. "Custom Interest Profiles" are the "tailored-to-order" profiles used widely in SDI work. "Standard Interest Profiles" are subscription services using subject descriptions and strategies defined by ARAC. They are designed to offer the user SDI service at a cost much lower than is possible using the individualized approach taken for Custom Interest Profiles.

The only really significant criticisms ARAC staff members have of the EI files after working with them for more than a year is the inadequate thesaurus control and the unavailability of keyword posting statistics for the 1968-1969 period which are both complete and exclusive. As examples of the first of these, thesaurus control, we find the terms "epoxy compounds" and "epoxy resins" both used for indexing virtually identical concepts. Likewise, both "heat transfer" and "heat transmission" are used. For all four of these terms, posting statistics include postings for as far back as 1964, and refer to totals for the combined electrical/electronics and plastics sections. This makes writing of strategies for retrospective searching unnecessarily "blind," and illustrates the second criticism mentioned above.

The opinions of the ARAC staff on several other aspects of the CITE file are summarized as follows:

Indexing Accuracy - Good

Subject Categories - Good

Literature Coverage (Subjects)

Foreign - Good

U.S.A. - Fair to Good

Literature Coverage (Titles)

Foreign - Good

U.S.A. - Fair to Good

Abstracts Quality

Completeness - Good

Accuracy - Good

Professionality - Good

Abstract Format

Style - Good

Since ARAC did not use the Engineering Index retrieval software, very little can be said about that subject. It can be said that no major difficulties were encountered in reading the EI tapes.

In summary, the CITE file proved to be an addition to ARAC's machine-searching capability which is valuable and needed by industrial users. It is assumed that the COMPENDEX file achieves the same degree of usefulness.

Reporting on the work in this project of contract NASW 1942 basically involves five different aspects. These are: (1) development of Standard Interest Profiles, custom current awareness service, and retrospective search capabilities; (2) extent of use by ARAC clients of this new resource; (3) extent of use by other RDCs of this resource; (4) evaluation of Standard Interest Profiles based on this resource by NASA field center personnel; and (5) computer operations in working with the file. Each of these is treated separately in the next five sections of this report.

Section I: Development of Services Based on Engineering Index Resources

Since ARAC decided to use computer search programs previously developed

for searching government files, current awareness services based on the Engineering Index files were available immediately. Naturally, the EI files had to be reformatted so that they were consistent with the ARAC search programs. Computer output for current awareness profiles consists of the following printouts:

1. A linear file showing each EI accession number and the index terms associated with it.
2. A frequency distribution listing showing the number of times each number was "hit" for all profiles run on the issue.
3. Hit lists in EI accession number order for each profile.
4. Hit lists in order of weights for each profile.
5. A profile run summary showing additions and deletions of profiles for the issue.

A more detailed discussion of computer operations is provided in Section V of this report.

Even though the file was relatively small, retrospective searching was initiated also in April of 1969, with just four back issues available for searching. For retrospective searching, the following computer printouts are generated:

1. An image sheet showing the search strategy.
2. A hit list in EI accession number order.
3. A hit list in order of weights.

For batch retrospective searching, the above are generated for each strategy, and in addition there is printed out:

4. A search run summary listing the searches included in the batch.

Each of these printouts provides information which may be used at some time in ARAC's operations. Again, a more detailed discussion of computer operations is contained in Section V of this report.

The decision was made that for retrospective searching and custom current awareness services based on this resource it would be combined as an embellishment to other technical information files already on hand and used routinely at ARAC. Thus, as a search question came in at ARAC, it is possible that the NASA, Department of Defense, and Engineering Index files would be searched in seeking relevant information on the search question. The same was also true for custom current awareness services. In the case of Standard Interest Profiles (SIPs), however, it was decided that any SIPs developed based on this resource would consist only of information contained in the EI files. The reason for this was that ARAC felt it was necessary to get a better feeling for the cost of providing SIPs based on this resource, and therefore, divorce them from other previously existing SIPs. In view of ARAC's previous operating experience with fee-paying clients and the nature of the EI resource, the following SIPs were developed:

- SIP-103 Diesel Engines
- SIP-105 Powder Metallurgy
- SIP-108 Material Forming and Machining
- SIP-110 Non-Destructive Testing
- SIP-111 Corrosion
- SIP-112 Liquid Fuels
- SIP-113 Bearings and Lubrication
- SIP-114 Land Surveying
- SIP-115 Paints and Coatings
- SIP-116 High Temperature Polymers
- SIP-117 Air Pollution, Smoke Abatement, and Dust Control
- SIP-118 Petroleum Exploration and Production

SIP-119	Pumps, Compressors, Pipe, Valves, and Fittings
SIP-120	Fire Resistant Polymers
SIP-123	Refrigeration
SIP-125	Water Treatment and Distribution
SIP-126	Cryogenics and Superconductors
SIP-127	Logic Circuits
SIP-130	Display Systems
SIP-132	Illumination Engineering
SIP-133	Recording Systems
SIP-134	Semiconductor Devices and Microcircuit Fabrication
SIP-135	Microwave Systems
SIP-136	Radio Antennas, Transmission, and Propagation
SIP-137	Radio Communications Equipment
SIP-138	Reliability and Quality Control
SIP-139	Operations Research
SIP-143	Biomedical Technology
SIP-144	Water Resources and Pollution Control
SIP-147	Glass and Ceramics
SIP-148	Optics
SIP-149	Control Systems Analysis
SIP-151	Solders, Soldering, and Electronic Assembly
SIP-152	Sensory Devices for Instrumentation
SIP-153	Chemical Process Engineering
SIP-154	Plating and Coating with Metals
SIP-155	Hydraulic Control and Transmission
SIP-157	Testing of Metals
SIP-158	Testing of Non-Metallic Materials

SIP-159 Industrial Safety and Fire Protection

SIP-161 Sanitary Engineering and Waste Disposal

SIP-162 Steam Turbines and Machinery

SIP-164 Thermodynamics

SIP-166 Heating, Ventilating, and Air Conditioning

SIP-167 Boilers, Pressure Vessels, and Heat Transfer Equipment

SIP-169 Dielectric Materials and Electrical Insulation

SIP-172 Natural and Synthetic Textiles

SIP-173 Geology, Geophysical Exploration, and Mineral Resources

SIP-174 Mechanical Power Transmission

SIP-176 Materials Handling and Storage

SIP-178 Polyvinyl Chloride

SIP-179 Film and Adhesives for Packaging

SIP-180 Polyolefins

SIP-181 Plastics Molding

SIP-182 Adhesives

SIP-183 Foamed Polymers

SIP-184 Reinforced Plastics and Composite Materials

SIP-185 Machining and Cold Forming of Plastics

SIP-187 Paper, Pulp, and Cellulose Products

SIP-188 Polystyrene and ABS

SIP-189 Epoxy Polymers

SIP-190 Electrical Power Generation

SIP-191 Electrical Power Transmission

SIP-192 Internal Combustion Engines

SIP-193 Electrical Machinery

SIP-194 Measurement and Measuring Instruments

- SIP-195 Fluid Flow
- SIP-196 Oceanography
- SIP-197 Surface Transportation
- SIP-198 Welding and Cutting of Metals
- SIP-199 Petroleum Transportation, Refining, and Storage

A complete brief description for the area covered by each of these SIPs may be found on subsequent pages. In order to retain consistency, it was decided that the EI SIPs would be sold at the same price as other ARAC SIPs until cost data could be obtained. This price was \$80 per year per SIP for ARAC member companies and \$96 per year for "ad hoc" users. The description of each interest area for these seventy-one SIPs follows.

SIP-103 DIESEL ENGINES (Monthly)

Design, manufacture, testing, operation, maintenance and applications of all types of diesel engines and diesel-electric power plants.

SIP-105 POWDER METALLURGY

This profile includes articles on the manufacture of metal powders and the utilization of metal powders for the production of metal products.

SIP-108 MATERIAL FORMING AND MACHINING (Monthly)

This profile reports items pertinent to all aspects of material forming (except foundry work, welding and forming of plastics), tool design, and machine shop practice. Among the topics included are:

- Grinding and abrasion
- Metal cutting
- New developments in machine tools
- Numerical control of machining operations
- Machineability of new and exotic materials
- New processes for traditional materials

The information reported in this profile should be of interest to the process engineer, the machine tool designer, and those involved in selection of engineering materials.

SIP-110 NON-DESTRUCTIVE TESTING

(Monthly)

New methods and novel applications of traditional methods of non-destructive testing are the principle contents of this profile. Among the techniques included are:

- Eddy current testing
- Electrified particle testing
- Electromagnetic testing
- Filtered particle testing
- Fluorescent particle testing
- Lamb wave testing
- Magnetic particle testing
- Sonic and ultrasonic testing
- Spark testing

Usually the reports will deal with testing of various types of bonds or welds, with measurement of stresses and detection of flaws in both metallic and non-metallic materials, and to some extent their physical properties such as hardness and brittleness.

SIP-111 CORROSION

(Monthly)

Corrosion and chemical attack, and means of dealing with it, is the subject of this profile.

- Theory and mechanisms of corrosion
- Oxidation
- Corrosion fatigue or stress corrosion
- Corrosive chemical attack
- Cathodic and anodic protection
- Pickling
- Protective coatings

This profile should be of interest to anyone dealing with corrosion problems.

SIP-112 LIQUID FUELS

(Monthly)

This profile is designed to include reports dealing with the storage, handling, and burning of all types of liquid fuels. The emphasis is on properties of fuels rather than on production of the liquid. A limited amount of material on such peripheral subjects as burner geometry and cryogenic fuels is also included. Some of the topics covered are:

- Combustion properties
- Fuel economics
- Exhaust composition
- Contamination problems
- Desulfurization
- Handling and storage requirements
- Fuels for fuel cells
- Applications of various fuels

Both hydrocarbon and non-hydrocarbon fuels are included in this profile.

SIP-113 BEARINGS AND LUBRICATION

(Monthly)

This profile cites reference to bearings of all types except for liquid metal systems. In addition, lubricants and lubrication systems for bearings, and problems associated with bearings such as fatigue, corrosion, and extreme environments are topics covered by this profile.

SIP-114 LAND SURVEYING

(Monthly)

This profile is designed to provide a review of current literature on land surveys, surveying techniques, and surveying equipment, including electronic and photographic methods. Applications of surveying techniques to site selection, resource surveys, and real estate development are included. Some of the topics covered by this profile are:

- Terrain and location surveying
- Topographic and contour mapping
- Mine and Mineral surveys
- Hydrographic surveys
- Photogrammetry
- Aerial photography for surveying and mapping
- Agricultural surveying

SIP-115 PAINTS AND COATINGS

(Monthly)

Articles cited in this profile cover all aspects of paints, varnishes, lacquers, and other polymer-containing coatings. Topics included are:

- Adhesion
- Formulation
- Environmental testing
- Application methods
- Uses in specific situations

SIP-116 HIGH TEMPERATURE POLYMERS

(Monthly)

Literature reported in this profile deals with polymers designed for service at temperatures in excess of 500° F. Some of the materials included in this class are:

- Polyimides
- Polybenzimidazoles
- Nitroso-nitrile rubbers
- Phenyl-containing polymers
- Silicon containing polymers
- Ablative materials

SIP-117 AIR POLLUTION, SMOKE ABATEMENT, AND DUST CONTROL (Monthly)

This profile is designed for persons interested in any aspect of the detection, reduction, or prevention of air pollution. Emphasis is on technological, as opposed to legal, political, or social aspects of the problem, although a limited amount of this material is included as well. The following areas are covered:

- Detection and measurement of atmospheric pollutants
- Pathological results of air pollution
- Equipment and techniques for control of industrial air pollution
- Advances in control of pollutants from motor vehicles, including such things as electric or steam-driven vehicles

SIP-118 PETROLEUM EXPLORATION AND PRODUCTION (Monthly)

This profile is designed to report literature dealing with the exploration for and recovery of crude oil. Some of the topics included are:

- Obtaining and analyzing geological data
- Drilling and recovery operations
- Off-shore exploration and drilling
- Control of off-shore leakage
- Shale oil exploration and production

Anyone involved in petroleum exploration or production technology should find this profile helpful.

SIP-119 PUMPS, COMPRESSORS, PIPE, VALVES, AND FITTINGS (Monthly)

Equipment for the handling of fluids is the subject of this profile. The emphasis is on novel types of hardware or hardware for use under severe conditions or with difficult materials. Compressors which are an integral part of a larger unit (such as an engine) are not included. This profile is of most use to designers or those who specify equipment.

SIP-120 FIRE RESISTANT POLYMERS (Monthly)

This profile announces reports dealing with fire or flame resistant organic polymers. Some of the topics included are:

- New types of flame resistant polymers
- Chemical modifications of existing polymers
- Additives which impart fire or flame resistance
- Self-extinguishing polymers
- Testing of polymers for flame resistance

SIP-123 REFRIGERATION

(Monthly)

This profile announces reports dealing with all aspects of refrigeration and refrigeration equipment. Some of the topics covered are:

- Refrigerating machinery
 - Compressors
 - Condensers
 - Evaporators
 - Pumps
- Refrigeration systems
 - Maintenance
 - Defrosting
 - Insulation
 - Refrigerants (including their thermodynamics)
- Applications
 - Food products
 - Chemical processing
 - Railroad cars
 - Trucks and trailers
 - (Refrigeration for air conditioning is included in SIP-166)

Individuals involved in design or equipment specification should find this profile useful.

SIP-125 WATER TREATMENT AND DISTRIBUTION

(Monthly)

This profile is designed for individuals involved in water treatment for industrial use or for human consumption, and in distribution of water supplies for drinking, process use, and fire protection, in the plant or in the community. Examples of topics included in this profile are:

- Process water treatment
- Potable water treatment
- Feedwater treatment
- Demineralization of water
- Desalinization of water
- Aeration, filtration, and purification
- Chemical treatment--chlorination, fluoridation
- Reverse osmosis applications
- Design of water distribution pipelines
- Water treatment plant operations
- Water utilities and services
- Water reclamation

Although some reports on waste water treatment appear in this profile, most of this material appears in SIP-144.

SIP-126 CRYOGENICS AND SUPERCONDUCTORS

(Monthly)

Reports cited in this profile deal with preparation, handling, and storage of cryogenic liquids, testing and properties of materials at cryogenic temperatures, and theory and applications of superconductors.

Equipment

- Liquefaction processes
- High vacuum equipment
- Diffusion pumps and getter pumps
- Temperature measurement

Storage of cryogenic liquids

- Design of tanks
- Insulation materials

Thermodynamics

- Thermodynamic properties of materials
- Stratification of liquids
- Boiling characteristics of liquified gases

Superconductors

- Theoretical investigations
- Applications

SIP-127 LOGIC CIRCUITS

(Monthly)

A logic device, as defined in this profile, is any device having two stable states and two input terminals, each of which corresponds with one of the two states. Numerous combinations and arrangements of such logic devices are utilized in digital computers and control devices.

Development and design of various types of logic devices

- Binary multipliers
- Gates
- Oscillators
- Adders
- Shift registers
- Memory units
- Trigger circuits
- Timers
- Switching circuits

Utilization of microelectronic components in computer hardware

- Large scale integration
- Fabrication of integrated logic circuits

Design of digital computers

- Computer organization
- Multiprocessor computer systems
- Parallel processing computer systems
- Utilization of the computer to design new computer systems
- Redundancy
- Error correction and self repair

Novel applications of logic devices

- Numerical control machines
- Analog-to-digital conversion
- Process control equipment

This profile is designed to serve primarily those persons engaged in the development and design of logic devices. In addition, people involved in the design of digital computer systems and in the application of logic devices would derive some benefit from the reports cited in this profile.

SIP-130 DISPLAY SYSTEMS

(Monthly)

New technological advances and applications of display systems are the subjects covered in this profile.

- Display applications and technology
 - Pictorial display systems
 - Symbol legibility and display effectiveness studies
- Computer-related displays
 - CRT displays
 - Input/output and interface systems
 - Computer-driven displays
 - Pattern recognition
 - Predictor display techniques
- Solid state and plasma display techniques
 - Light-emitting diodes
 - Plasma displays
 - Display diode matrices
- New technological developments
 - Fluidic display systems
 - Advanced radar display systems
 - Information remoting and display systems
 - Recording and storage systems
 - Advanced holographic displays

This profile is intended for people working in research design and development of information displays for CRT's. It should also be useful to persons interested in applications such as computer information displays or air traffic control. This profile does not include racks, stands, easels, or store displays.

SIP-132 ILLUMINATION ENGINEERING

(Monthly)

This profile will announce reports on the theory and practice of illumination and engineering of lighting systems. Some of the topics covered are:

- Interior lighting theory and systems
- Exterior lighting theory and systems
- Industrial lighting
- Domestic lighting
- Street lighting
- Floodlighting
- Photometry

SIP-133 RECORDING SYSTEMS

(Monthly)

The recording systems discussed are nearly all for the recording of experimental data, but many types are sometimes discussed--audio, video and graphic.

- Multi channel tape recording
- High density digital recording systems
- Magnetic recording systems
- Digital and analog recording systems
- High definition star spectra recording instruments
- Wind recording instruments
- Mechanical recorders
- Holographic recording techniques

This profile is designed for persons in research and development as well as for people who use recording systems, since reports covering the spectrum from design to applications are included.

SIP-134 SEMICONDUCTOR DEVICES AND MICROCIRCUIT FABRICATION (Monthly)

Information concerning fabrication techniques and reliability analysis applicable to the miniaturization and integration of active circuit elements (diodes, transistors, etc.) and passive components (resistors, capacitors, inductors) is reported in this profile.

Research and Development of Microcircuit/Semiconductor Materials

Fabrication of microelectronic devices

- Doping
- Deposition
- Encapsulation
- Interconnection
- Packaging

Reliability Testing of Microelectronic Devices

Partial list of the types of microelectronic devices included in the profiles:

- Transistors
- Diodes
- Rectifiers
- Integrated circuits
- Microcircuits
- Thin film resistors and capacitors
- Logic circuits
- Optoelectronic devices (no lasers or masers)
- Monolithic
- Hybrid circuits
- Organic semiconductors
- Large scale integration
- Field effect transistors

This profile is designed to serve primarily those persons engaged in the research, development, design, and fabrication of microelectronic devices.

SIP-135 MICROWAVE SYSTEMS

(Monthly)

Information on microwave communication equipment, components, and microwave transmission technology is reported in this profile.

Development and design of microwave equipment

Transmitters

Receivers

Transceivers

Transponders

Antennas

Wave guides

Transmission lines

Development and design of microwave circuit components

Research and development of microwave transmission technology

Noise measurement and analysis

Radio transmission

Video data transmission

Digital data transmission

Analog data transmission

Interference and shielding analysis

Microwave propagation

This profile is designed to serve primarily those persons engaged in the development and design of microwave devices, especially those devices utilized in communication and radar equipment. In addition, reports concerning important developments in microwave transmission technology are also included as are reports representing novel applications of microwave devices.

SIP-136 RADIO ANTENNAS, TRANSMISSION AND PROPAGATION

(Monthly)

Radio frequency transmission and propagation is the subject of this profile, which is of maximum benefit to persons concerned with commercial radio communications.

Antennas

Mechanical design

Configuration design

Reflectors

Dimensions and dimensional stability

Selection of materials

Properties

Signal distortion

Geometry of radiation reflection

Gain and bandwidth characteristics

Arrays and phasing

Transmission and propagation

Field strength measurements

Loss measurements

Attenuation and interference

Effects of nature--weather, solar wind, etc.

Transmission line properties and design

- Signal reception and processing
- Modulation and demodulation
- Multiplexing
- Information theory
 - Encoding and decoding
 - Error probabilities
 - Signal-to-noise-ratios

SIP-137 RADIO COMMUNICATIONS EQUIPMENT

(Monthly)

The intent of the profile is to select reports about radio equipment useful for voice transmission. Most of the reports are concerned with components rather than communication systems.

Circuits frequently mentioned:

- Mixers
- Amplifiers
- Oscillators
- Filters
- Detectors
- Pulse charts
- Frequency converters
- Frequency multipliers

Equipment frequently mentioned:

- Transmitters
- Receivers
- Transceivers
- Transponders
- Modulators, demodulators

Additional topics:

- Reliability of equipment
- Protection of equipment
- Packaging

Topics excluded:

- Microwave and radar equipment
- Aero-navigation equipment
- Antennas and propagation

The profile is intended to be of interest to the communications industry, particularly businesses involved in design and production of radio equipment.

SIP-138 RELIABILITY AND QUALITY CONTROL

(Monthly)

This profile focuses on reliability in design of products and quality control in production. Some of the topics included are:

- Reliability and quality assurance
- Accuracy
- Confidence limits
- Conformity
- Durability
- Life tests
- Precision
- Statistical quality control
- Tolerances
- Zero defects programs
- Control charts

SIP-139 OPERATIONS RESEARCH

(Monthly)

This profile deals with various quantitative and analytical techniques for formulation and solution of management problems. Emphasis will be on the following topics:

- Optimization
- Linear programming
- Non-linear and dynamic programming
- Mathematical modeling
- Logistics
- Decision theory
- Game theory
- Heuristic method
- Computer simulation
- Queuing theory
- Minimax techniques
- Markov processes
- Forecasting

The abstracts included in this profile are usually concerned with sophisticated quantitative tools and are of greatest interest to specialists in operations research.

SIP-143 BIOMEDICAL TECHNOLOGY

(Monthly)

This is a broadly interdisciplinary profile dealing with practical engineering applications to biology, physiology, and medicine. It should be of interest to persons engaged in the design, development, or use of biomedical instrumentation, hospital equipment, artificial organs, etc. The following are some of the topics covered:

- Bioinstrumentation
- Biomedical electronics
- Biotelemetry
- Transducers and sensors
- Artificial organs, pacemakers, etc.
- Prosthetic devices and materials
- Hospital equipment
- Biomedical applications of computers

SIP-144 WATER RESOURCES AND POLLUTION CONTROL

(Monthly)

This profile announces reports dealing with water as a natural resource, and the conservation and preservation of natural water supplies. Some of the topics covered are:

Fresh water supplies, both surface and underground
Flood control, reservoirs, etc.
Detection and monitoring of pollutants in lakes and streams
Methods and equipment for pollution control
Thermal pollution
Eutrophication

Reports on conversion of salt water to fresh are included in SIP-125. Sewage and biological waste treatment is included in SIP-161.

SIP-147 GLASS AND CERAMICS

(Monthly)

Reports dealing with basic studies as well as those of an applied nature are included in this profile. Products and topics covered include the following:

- Borides and carbides
- Carbon and graphite
- Clay products
- Electronic ceramics
- Fabrication and forming methods
- Glass
- Kilns and furnaces
- Oxide ceramics
- Production processes
- Raw materials

SIP-148 OPTICS

(Monthly)

The reports cited in this profile cover a broad range of the field of optics, with emphasis on topics of interest to persons engaged in research and development. They deal mainly with devices and methods for producing and processing images. Some of the areas included are:

- Methods and principals of optical design
- New material applications
- Optical measurements and measuring instruments
- Optics of sensors
- Measurement techniques using optics
- Optical filters
- Image processing by coherent optical techniques

SIP-149 CONTROL SYSTEMS ANALYSIS

(Monthly)

This profile identifies reports dealing with the theory and design of control systems. Although coverage is heavily oriented toward mathematical analysis techniques, information on control hardware is included when applicable to the design of whole systems.

Control theory

- Adaptive control
- Stochastic control analysis
- Stability analysis

Control system design

- Optimizing systems
- Reliability analysis
- Properties of control hardware

SIP-149 is related to SIP-27 and SIP-127, Logic Circuits, The difference between the two is that this profile does not emphasize the circuitry, but rather the analysis and design of a complete system.

SIP-151 SOLDERS, SOLDERING, AND MACROCIRCUIT FABRICATION (Monthly)

This profile announces reports dealing with fabrication of wire or printed circuits by soldering and connection techniques of all types. Some of the topics included are:

- Solder selection
- Joint design
- Mass production of conventional circuits
- Inspection and quality control

SIP-152 SENSORY DEVICES FOR INSTRUMENTATION

(Monthly)

Sensory devices, as defined in this profile, denotes any device designed to detect, observe or measure a physical property or quantity. Research and development of sensing devices seeks to attain higher accuracies, greater sensitivities, greater capability for measuring extreme values, applicability under more extreme conditions of use, or capability of capturing effects occurring at higher speeds than the state-of-the-art has permitted previously.

Development and Design of Measuring Devices or Techniques

Types of devices

- Transducers
- Force balance accelerometers
- Rate gyroscopes
- Thermocouples
- Manometers
- Flowmeters
- Anemometers
- A/D and D/A devices for all of the above

Types of physical properties or quantities being measured

- Noise
- Vibration
- Pressure
- Shock
- Strain
- Displacement
- Acceleration
- Velocity
- Force
- Liquid levels
- Shaft rotation rates
- Optical parameters
- Physical dimensions
- Gas concentrations
- Density

Calibration Techniques for Sensory and Measuring
Applications for these devices

This profile is designed primarily to serve persons engaged in the design and development of sensing devices and techniques. In addition, persons involved in plant instrumentation work who design their own equipment for special application may benefit from this profile.

SIP-153 CHEMICAL PROCESS ENGINEERING

(Monthly)

The reports announced in this profile deal with unit operations and processes of chemical engineering. Emphasis is on the processes themselves and hardware used in these processes, rather than the chemistry or physics of the materials involved. A partial listing of topics included follows:

- Distillation
- Evaporation
- Filtration
- Fluidized beds
- Mixing
- Absorption
- Extraction
- Sieves, screens, and classifiers
- Drying
- Centrifugal separation

This profile is best suited for the design or development engineer, or the engineer working in the area of process improvement.

SIP-154 PLATING AND COATING WITH METALS

(Monthly)

Reports on plating or coating all types of substrates with metals are announced in this profile. Some of the topics included are:

- Electrogalvanizing
- Electrotinning
- Vapor Deposition
- Metal plating of plastics
 - Electroplating processes
 - Electroless processes
- New processes for metal coating and plating
- Finishing operations

This profile should be of interest to the manufacturing or process engineer who is involved in use of metal plating or coating applications.

SIP-155 HYDRAULIC CONTROL AND TRANSMISSION

(Monthly)

The scope of this profile includes the design, manufacture, installation, testing, operation, and maintenance of all types of hydraulic control and transmission systems. Hydraulic machinery such as water wheel turbines is not included. Some of the topics covered are:

- Hydraulic brakes
- Hydraulic couplings
- Hydraulic presses and tools
- Gaskets, seals, and packing for hydraulic applications
- Fluid drives for motor and rail vehicles

SIP-157 TESTING OF METALS

(Monthly)

All types of non-destructive and destructive testing of metallic materials are reported in the articles announced by this profile. Testing of all properties except chemical properties is included.

- Tensile strength
- Fatigue
- Ductility
- Electrical properties
- Thermal properties
- New tests and testing equipment

SIP-158 TESTING OF NON-METALLIC MATERIALS

(Monthly)

Tests, both non-destructive and destructive, of all types of properties on non-metallic and composite materials are the subject of this profile. Some of the materials and properties tested are:

Types of materials

- Glass and fiberglass
- Plastics
- Elastomers
- Fiber-reinforced composites
- Ceramics
- Natural and synthetic textiles

Types of properties

- Tensile strength
- Ductility
- Abrasion
- Shear strength
- Thermal properties
- Electrical properties
- Weatherability

Electrical properties of semiconducting or dielectric materials is not included in this profile.

SIP-159 INDUSTRIAL SAFETY AND FIRE PROTECTION

(Monthly)

This profile cites reports dealing with safety and hygiene in the industrial plant as well as protection of personnel and plant from fire hazards.

Industrial safety

- Causes and prevention of accidents
- Safety practices for materials handling
- Protective clothing and equipment
- Monitoring and alarm systems for toxic gases

Industrial hygiene

- Chemical toxicity
- Industrial pharmacology
- Radiation hazards and dosimetry

Fire protection

- Alarm and extinguishing systems
- Evacuation procedures
- Plant fire brigades
- Fire and explosion prevention

SIP-161 SANITARY ENGINEERING AND WASTE DISPOSAL

(Monthly)

This profile deals with the disposal and treatment of sewage and biological wastes for both municipal and industrial purposes. Some of the topics covered are:

- Design and layout of sewers
- Sewage treatment facilities
- Lagoons
- Sewage analysis
- Collection and disposal of garbage
- Treatment and disposal of biological wastes in industrial plants
- Agricultural uses of waste and sewage

The broader problem of water pollution control is covered in SIP-144.

SIP-162 STEAM TURBINES AND MACHINERY

(Monthly)

Machinery which uses steam as the energy source is the subject of the profile. Design, manufacture, testing, installation, operation, and maintenance are covered. Examples of equipment included are:

- Steam turbines for electric generation
- Steam engines
- Steam-driven pumps

SIP-164 THERMODYNAMICS

(Monthly)

Reports dealing with mathematical analysis or empirical studies of thermodynamic properties of substances are cited in this profile. Emphasis is on reported thermodynamic data and tables of values, as well as new application of thermodynamic cycles.

This profile is intended for the chemical process engineer or mechanical engineer who uses thermodynamic data in research, development, or design.

SIP-166 HEATING, VENTILATING, AND AIR CONDITIONING

(Monthly)

Design, manufacture, installation, operation, and maintenance of all types of building environmental control systems is the subject of this profile. In addition to heating, ventilation, and air conditioning systems, humidity control, air filtration, and other air handling systems are also included.

SIP-167 BOILERS, PRESSURE VESSELS, AND HEAT TRANSFER EQUIPMENT (Monthly)

This profile is intended for the engineer dealing with heat transfer equipment, boilers, or pressure vessels at either the design or operations level. Some of the topics covered are:

Boilers and steam power plants

Design and layout

Fuel handling

Controls

Loading of units

Computer applications

Soot and ash handling

Maintenance

Pressure vessels

Materials

Design

Manufacturing

Testing and certification

Heat transfer equipment

Design

Corrosion and scaling

Insulation

Heat transfer analysis

Empirical studies

Theoretical studies

SIP-169 DIELECTRIC MATERIALS AND ELECTRICAL INSULATION (Monthly)

Materials for use as dielectrics or insulation are discussed in the reports announced in this profile. The following topics are among those included:

Insulation design and testing

Encapsulation and potting compounds

Dielectric materials for capacitors

Conduction processes in dielectric fluids

Dielectric films

SIP-172 NATURAL AND SYNTHETIC TEXTILES (Monthly)

Reports dealing with textiles, textile fibers, and textile manufacturing are cited in this profile.

Properties of textile fibers

Development of new synthetic fibers

Applications of textiles and textile fibers

Manufacture of textiles

Fiber manufacture

Weaving

Printing

SIP-173 GEOLOGY, GEOPHYSICAL EXPLORATION, AND MINERAL RESOURCES (Monthly)

This profile is designed to announce reports of interest to those involved in exploration for and extraction of mineral resources other than petroleum. Some of the topics included are:

- Mineralogy
- Geochemistry
- Prospecting
- Instrumentation
- Ore sampling
- Mining and quarrying economics

Mine engineering and safety are not included in the scope of this profile.

SIP-174 MECHANICAL POWER TRANSMISSION (Monthly)

The reports cited in this profile deal with all types of kinematic power transmission devices. Articles on design, manufacture, and applications are included. Some of the devices reported are:

- Belts and pulleys
- Chains and sprockets
- Gears
- Speed reducers
- Cams
- Keys and keyway
- Shafts and shafting

This profile should be of interest to persons working in the area of machine design.

Hydraulic power transmission devices are covered in SIP-155.

SIP-176 MATERIALS HANDLING AND STORAGE (Monthly)

This profile deals with the handling, storage, labeling, and movement of all types of materials. Packaging of materials as related to handling and storage is also included. Both equipment and procedures are reported.

Industrial engineers, plant designers, transportation engineers, and production management personnel should find this profile of interest.

SIP-178 POLYVINYL CHLORIDE

(Monthly)

All aspects of the manufacture and applications of PVC are cited in this profile.

- Polymerization, monomers and copolymers
- Additives used in PVC
- Plasticizers used in PVC
- Blends with other polymers
- Physical & chemical properties testing
- Market and applications reports

This profile should be of interest to both the manufacturer and the processor of PVC and its products.

SIP-179 FILM AND ADHESIVES FOR PACKAGING

(Monthly)

Selection of articles is done with both the packaging materials manufacturer and the packaging materials user in mind. Molded applications, such as for bottles, are not included. Likewise articles on polymer films for applications not related to packaging for example, osmosis membranes, are not included.

- Polymers for films
- Film extrusion
- Film testing
- Film application
- Hot-melt adhesives
- Cushioning materials
- Package applications
- Package testing

SIP-180 POLYOLEFINS

(Monthly)

All articles which have primary reference to polyethylene or polypropylene are cited. The only exception are articles where a polyolefin is used as a comparative resin for describing other polymers.

- Copolymers: Ethylene or propylene with other monomers
- Polymerization processes
- Rheology
- Testing and analysis
- Additives
- Properties
- Processing
- Applications

SIP-181 PLASTICS MOLDING

(Monthly)

Reports cited in this profile deal with all aspects of plastics molding processes. Some of the topics covered are:

- Blow molding
- Compression molding
- Injection molding
- Rotational molding
- Transfer molding
- Storage and handling of molding compounds
- Design and manufacture of molds
- Equipment for molding

This profile should be helpful to manufacturers of molding compounds or molding equipment, and also to custom or production molding firms.

SIP-182 ADHESIVES

(Monthly)

Both packaging and structural adhesives are discussed in the articles cited. The difference between articles cited by this profile and those cited by SIP-179 is that SIP-179 emphasizes only packaging applications of adhesives while the articles cited here deal with all aspects of polymeric adhesives.

- Theory and mechanism of adhesion
- New types of adhesives
- Properties of adhesives
- Bond testing
- Sealing compounds
- Applications

Articles on coatings are included only if coating adhesion is specifically mentioned. Articles discussing matrix materials for reinforced plastics are also omitted unless there is emphasis on the mechanism of adhesion to filler particles.

SIP-183 FOAMED POLYMERS

(Monthly)

The articles announced in this profile deal with all aspects of foamed or expanded plastics or rubbers, including testing, properties, foam production and applications. Some of the materials discussed are:

- Foamed natural latex
- Foamed SBR
- Styrene foam
- Vinyl foam
- Foamed polyethylene
- Polyurethane foam

SIP-184 REINFORCED PLASTICS AND COMPOSITE MATERIALS (Monthly)

Reports announced discuss the reinforcement of plastics by all kinds of filler materials. Extenders which are not reinforcing are not included.

- New types of reinforced materials
- Compounding
- Chemical and mechanical properties of reinforcing materials
- Properties of matrix materials, chemical and adhesive properties primarily
- Mechanisms of reinforcement
- Applications
- Composite materials

SIP-185 MACHINING AND COLD FORMING OF PLASTICS (Monthly)

All aspects of machining and cold forming of plastics are reported in this profile. Both unfilled thermoplastics and reinforced plastics are included. Some of the topics covered are:

- Machining operations
 - Cold stamping
 - Warm forging
 - Turning
 - Milling
 - Gear cutting
 - Sawing
 - Punching
 - Drilling
 - Threading
 - Surface finishing

Machinability of various plastics

Tool design

Uses and economics of machined plastics

SIP-187 PAPER, PULP, AND CELLULOSE PRODUCTS (Monthly)

The articles cited in this profile are concerned with manufacture and applications of all kinds of paper and other cellulose products (except textiles and cotton products--see SIP-172).

- Paper and pulp mills
 - Site selection
 - Logging
 - Automation and control systems
 - Equipment
 - Air and water pollution control

Processes

- Pulping
- Bleaching
- Coloring
- Finishing

Chemistry of paper and cellulose

Paper conversion

Applications and new products

SIP-188 POLYSTYRENE AND ABS

(Monthly)

This profile announces all reports dealing with styrene polymers and copolymers. Many of the reports deal with new styrene copolymers. Articles are not cited which deal with the most common styrene copolymer, butadienestyrene.

- Polymerization and graft polymerization
- Compounding and forming
- Polystyrene foam
- ABS resins and compounds
- Properties and testing
- Applications

SIP-189 EPOXY POLYMERS

(Monthly)

Reports are selected because of reference to polymers containing bisphenol. Many of the reports will discuss polymerization processes.

- Catalysts
- Chemical and physical properties and testing
- Compounding
- Application--mostly coatings or reinforced plastics

SIP-190 ELECTRICAL POWER GENERATION

(Monthly)

This profile is a survey of the open literature in the electrical power generation field. Among the topics covered are the following:

- Power plants
 - Steam
 - Hydroelectric
 - Gas turbine
 - Diesel electric
 - Nuclear

- Equipment
 - Turbogenerators
 - Hydraulic turbines
 - Generators
 - Steam turbines
 - Generator-regulator
 - Auxiliary equipment

Emphasis in this profile is on the electrical engineering aspects, rather than the mechanical engineering aspects of electrical power generation.

SIP-191 ELECTRICAL POWER TRANSMISSION

(Monthly)

This profile is a survey of the open literature in the electrical power transmission field. Some of the topics covered are:

Control

- Automatic load scheduling
- Remote control centers
- Computerized methods

Protection

- Lightning short circuits
- Sampling techniques
- Circuit breakers, relays, semiconductor devices

Stability

- Radial power links
- Oscillations-electrical & electromechanical

Transmission lines

- Physical & electrical properties

Electric switchboards

- Design, overvoltage protection
- Protection against arcing faults

SIP-192 INTERNAL COMBUSTION ENGINES

(Monthly)

The articles cited in this profile deal with all types of internal combustion engines except Diesel engines (see SIP-103). Some of the topics included are:

- Engine noise and vibration
- Fuels and combustion
- Engine stress
- Control of exhaust pollutants
- Applications of different types of engines
- Economic and cost studies

SIP-193 ELECTRICAL MACHINERY

(Monthly)

This profile is a survey of the open literature dealing with electrical machinery. It covers the design, construction, testing, analysis, etc. of all the pieces of equipment mentioned below.

Electric Motors

- Induction
- Synchronous
- Squirrel cage
- Traction
- Fractional horsepower
- Direct current
- Three-phase shunt commutator

Electric Generators

- Direct current
- Insulation problems, cooling
- Synchronous
- Mechanical losses
- Impulse voltages

- Electric motor generators
- Electrical machinery
 - Synchronized synchronous machines
 - Variable speed electric drive
 - Feedback systems

SIP-194 MEASUREMENT AND MEASURING INSTRUMENTS

(Monthly)

Reports cited in this profile deal mostly with measurement of spatial dimensions, but reports on other measurements such as weight, force, and pressure are also included. Measurement of electrical and thermal parameters is excluded. Some of the topics covered are:

- Primary and secondary standards
- Balancing
- Gauges
- Rolling mill measurements
- Screw thread standards
- Statistical methods for measurement
- Weights and measures
- Laser measurement methods
- Calibration of instruments
- Integrated measurement and control systems

SIP-195 FLUID FLOW

All types of fluid flow reports are identified by this profile except those dealing with aerodynamics, particularly in the regions of supersonic and hypersonic flow.

- Compressible flow
 - Boundary layer conditions
 - Vortex flow
 - Effects of geometry
- Incompressible flow
 - Boundary layer conditions
 - Vortex flow
 - Effects of geometry
- Thermal effects on flow
- Two-phase flow
 - Gas-liquid
 - Gas-solid
 - Liquid-solid
- Flow measurement
 - Flow velocity measurement--pitot tubes, anemometers, ect.
- Mass flow rate measurement
 - Turbulence measurement
 - Calculations and correction factors
- Flow properties of non-Newtonian fluids
- Fluid flow applications
 - In hydraulic systems
 - Fuel flow in engines and turbines

This profile is designed to be of interest to persons taking an analytical approach to problems of fluid flow.

SIP-196 OCEANOGRAPHY

(Monthly)

This profile will cover all aspects of the study of the sea and its resources except marine biology and meteorology. Some of the topics covered are:

- Depth measurement
- Sample collection devices
- Temperature measurement
- Magnetism measurement
- Gravitational measurement
- Ocean current measurement
- Sea floor exploration
- Submarine equipment

SIP-197 SURFACE TRANSPORTATION

(Monthly)

This profile is designed to announce articles on transportation technology, both for transportation engineering and for management of freight and passengers. Emphasis is on urban transportation. Some of the topics covered are:

- Highway transportation
- Rail transportation
- Marine transportation
- Pipelines
- Mass transit
- Distribution systems
- Logistics
- Regional planning
- Warehouse location
- Vehicle engineering
- Highway design and route selection
- Transportation service facilities and terminals
- Containerization of freight

SIP-198 WELDING AND CUTTING OF METALS

(Monthly)

All aspects of welding of metals, as well as new cutting methods, are reported in this profile. Some of the topics covered are:

- Weldability of metals and alloys
- Techniques and equipment for welding
- Defects and defect detection
- Weld decay
- Cutting torches and equipment

SIP-199 PETROLEUM TRANSPORTATION, REFINING, AND STORAGE (Monthly)

This profile deals with all aspects of petroleum transportation and storage, and refining processes and engineering. Some of the topics covered are:

- Pipelines and pumping stations
- Tank cars
- Sea-going tanker ships
- Tank farms
- Refinery processes and operations
- Refinery equipment
- Refinery economics
- Applications and uses for basic petrochemicals

General chemical engineering topics, not specific to petroleum refining, are covered in SIP-153.

Section II: Extent of Use by ARAC Clients of This New Resource

The impact of this additional resource on ARAC's mode of operation is difficult to pin down for retrospective searching and for custom current awareness service since it is used as an embellishment to other resources. Since this resource was added as a result of repeated requests by users, the acceptance and reaction to it has been quite favorable for both retrospective searching and custom current awareness. Its availability has played a significant role in the process of attracting many new client firms to ARAC and has been solely responsible for at least eight new memberships when the impact of the available SIPs is included.

As of April 30, 1970, the EI resources were being used for some nineteen Custom Interest Profiles by itself and for some twenty-one other Custom Interest Profiles in connection with other resources. In terms of retrospective searching, the EI file had been used by itself a total of sixty-three times as of April 30, and in connection with other resources, an additional 184 times.

The EI resource is also used to produce some seventy-one Standard

Interest Profiles which are based strictly on the EI resource. These SIPs are being distributed to some 102 mailing points as of April 30, 1970. It must be borne in mind that a good many of these SIPs have only been available for several months and, therefore, significant increase in subscriptions to them is anticipated.

Since it is impossible to delineate whether or not services sold which are based only in part on the EI resources would have materialized without it, it is probably safer to omit those from any consideration of revenues generated by the EI resource. Excluding these, it appears that the EI resource accounted for approximately \$17,500 income to ARAC during the period of this contract.

Section III: Extent of Use by Other RDCs of This Resource

A significant aspect of this project involved ARAC making available this resource to the other RDCs. This was done via three different methods based on each of the three services developed. Specifically, retrospective searching was made available, custom current awareness searching was made available, and all SIPs based on this resource were sent free to each of the RDCs during the period of the contract. Throughout the period of performance some 171 retrospective searches were performed for the other RDCs based on this resource. As of April 30 there were seven Custom Interest Profiles on line for the other RDCs. On April 1, 1970, each RDC was notified that the period for receipt of free SIPs had ended and they were required as of that date to pay ARAC (at a wholesale rate) for any SIPs they wanted to continue receiving based on this resource. A total of some seventy-three copies of SIPs were retained by the various RDCs as of April 30, 1970, and the list is growing each month due to the fruits of their marketing efforts.

Section IV: Evaluation of SIPs Based on the Resources by NASA Field
Center Personnel

Another aspect of this project was the provision of SIPs based on this resource to NASA field center personnel for evaluation purposes. When this evaluation began, only twenty SIPs had been developed. With the help of the Technology Utilization officers at several of the NASA Centers, a mailing list of some 131 SIPs was started in November of 1969, for evaluation purposes. The NASA people and the SIPs evaluated follow.

Mr. Graydon A. Phlieger, Jr.	SIP-115, 116, 134, 135, 136, 137,
J. F. K. Space Center, NASA	149, 152, 178, 179, 180, 182,
	183, 184, 188, 189, 190, 191, 193.
C. A. Whittaker	SIP-127, 134, 135, 136, 137, 149,
J. F. K. Space Center, NASA	152, 190, 191, 193.
James D. DeVault	SIP-127, 134, 135, 136, 137, 149,
J. F. K. Space Center, NASA	152, 190, 191, 193.
Thomas Copeland	SIP-127, 134, 135, 136, 137, 149,
J. F. K. Space Center, NASA	152, 190, 191, 193.
James M. Stuckey, S&E-ASTN-MNM	SIP-184, 188, 189.
George C. Marshall Space Flight Center	
Tito T. Serafini	SIP-116, 182, 184, 189.
NASA Lewis Research Center	
William J. Patterson, S&E-ASTN-MNP	SIP-116, 178, 179, 180, 182, 183.
George C. Marshall Space Flight Center	
William C. Nieberding	SIP-127, 134, 149, 152.
NASA Lewis Research Center	

Russell A. Lindberg	SIP-115, 116.
NASA Lewis Research Center	
Perry W. Kuhns	SIP-136.
NASA Lewis Research Center	
Albert C. Krupnick, S&E-ASTN-MC	SIP-115.
George C. Marshall Space Flight Center	
Dr. H. G. Kosmahl	SIP-135.
NASA Lewis Research Center	
William C. Hill, S&E-ASTN-MN	SIP-116, 178, 179, 180, 182, 183
George C. Marshall Space Flight Center	
Charles A. Hermach	SIP-115, 116, 178, 180, 188.
Mail Stop N240-1	
Ralph K. Hallett, Jr.	SIP-127, 134, 135, 136, 149, 152.
Mail Stop N-213-2	
Richard H. Fish	SIP-115, 116, 178, 179, 180, 182.
Mail Stop N223-6	183, 184, 188, 189.
Charles S. Corcoran, Jr.	SIP-190, 191, 193.
NASA Lewis Research Center	
J. B. Smith	SIP-115, 116, 178, 179, 180, 182,
J. F. K. Space Center, NASA	183, 184, 188, 189.
Coleman Bryan	SIP-115, 116, 178, 179, 180, 182,
J. F. K. Space Center, NASA	183, 184, 188, 189.
Dr. George F. Pezdirts, M/S 226	SIP-116, 182, 183.
NASA Langley Research Center	

Wayne S. Slemp, M/S 187	SIP-115.
NASA Langley Research Center	
Charles Husson, M/S 470	SIP-135, 137.
NASA Langley Research Center	
W. Linwood Jones, M/S 490	SIP-134, 152.
NASA Langley Research Center	
Nicholes D. Murray, M/S 477	SIP-127, 149.
NASA Langley Research Center	

There were twenty-four NASA people involved in the evaluation. Each person was sent a brief questionnaire in April of 1970, in an attempt to evoke their feelings toward this service and this resource. Of the twenty-four NASA people circulated, nineteen returned the questionnaire. A specimen of the questionnaire and the responses given follows. The numbers beside each choice indicate the responses received from the nineteen returned forms. There were no comments particularly worthy of note which were evoked under item eight on the questionnaire.

Section V: Computer Systems for Engineering Index Implementation

The Engineering Index CITE data base is an indexed, thesaurus controlled data base. Many of its structural components shared the foundation concepts which underlie the NASA data base and made it especially susceptible to manipulation by the software which was developed for use with the NASA data base.

The only totally new piece of program development required was the preparation of a program which extracted from the CITE data base those data base elements which are required for the ARAC standardized file format.

EVALUATION OF ARAC STANDARD INTEREST PROFILES BASED
ON ENGINEERING INDEX RESOURCE

Name: _____

Title: _____

NASA Center: _____

Address: _____

1. Standard Interest Profiles received (list number(s)):

NOTE: If more than one was received, please fill out only one form
for all profiles.

2. Brief statement of your profession or area of specialization.

- _____
3. Do you feel that the articles cited in the profile(s) that were of
interest to you might have been brought to your attention had it not
been for this service?

- 8 ☐ Would have missed most relevant items.
9 ☐ Would have missed some relevant items.
2 ☐ Would have seen all relevant items eventually.

4. Did the kind of services you received cause you to keep up with what
is new in your area of interest in a more organized manner than, for
example, by library browsing?

- 8 ☐ Significantly better.
9 ☐ Somewhat better.
1 ☐ No improvement in keeping current.

5. Suppose this service were to become available on a permanent basis.
Assuming that the cost in obtaining it had to be charged to your operation,
indicate the box below which is closest to the value you would place on
receiving it per year for twelve issues of a profile.

<input type="checkbox"/> \$100	<input type="checkbox"/> \$75	<input type="checkbox"/> \$50	<input type="checkbox"/> \$25	<input type="checkbox"/> Would not pay anything.
0	6	6	2	5

6. The service you received was of the current awareness type. Would it be of any value to be able to do exhaustive or retrospective searching, in response to a specific question, of the entire back file for this resource?

12 ☐ Very valuable.
4 ☐ Of some value.
3 ☐ Would not use it.

7. Indicate how much you feel a retrospective search would be worth based on this resource.

\$ _____ AVERAGE OF RESPONSES WAS \$ 64.00

8. Other comments or criticisms you may care to make regarding the service you received.

Please return to:

ARAC
Indiana University Foundation
Indiana Memorial Union
Bloomington, Indiana 47401

In the envelope provided.

April, 1970

Necessary modifications were made to the Profile Maintenance Subsystem, the Current Awareness Search program, the Profile Analysis Program, and the Retrospective Search File Maintenance and Creation Program. The latter program is not part of the Current Awareness System.

These modifications took explicit cognizance of differences which exist between our NASA system and the Engineering Index system. For instance, in the NASA system a very important data base element for purposes both of Current Awareness and Retrospective searching is the NASA category to which a given document has been assigned. No equivalent element is available on the CITE file.

With necessary modifications, the software which had been developed for the NASA file functioned quite effectively with the CITE file.

In normal NASA operations, experience has indicated that it is possible to structure profiles with very high recall and about 58% relevancies. Our cost accounting studies indicate that our operations are financially viable with such relevancies.

When the same software and techniques were utilized with the Engineering Index CITE file relevancies of 80% to 90% were routinely obtained which, of course, represented a reduction in cost in processing the raw output into final form.

The difference in relevancies is easily explained. The NASA data base was created for the purpose of dealing with information needs which are generated from aerospace research problems. Consequently, the indexing which is chosen to describe the conceptual contents of a given document tends to emphasize those aspects of a document which would make it more suitable for NASA's mission. This would tend to make the problem of answering questions which evolved from industrial problems somewhat more

difficult than it would be with a data base which had been designed to deal with industrially generated problems, from the outset.

The Engineering Index CITE data base is a quality product and the ease with which we were able to bring it into the ARAC operation provided an appreciable cost saving over the amount which would normally have to be allocated for such an effort.

APPENDIX A

List of Journals Covered
By Engineering Index, Inc. "Compendex" File

THE ENGINEERING INDEX

LIST OF PUBLICATIONS

ENGINEERING INDEX, INC., indexes and abstracts selectively, on the basis of engineering significance, the available current technical periodicals received by and permanently housed in the Engineering Societies Library. Included are the regular professional and trade journals, publications of engineering societies, scientific and technical associations, universities, laboratories and research institutions, government departments and agencies, and industrial organizations. Papers of conferences and symposia, separate and non-serial publications of various kinds, and selected books and patents are also covered.

Entries are arranged alphabetically in accordance with library practice, rather than strictly by title.

A revised listing by title is in preparation and will be available in the near future.

To obtain copies of abstracted articles, use the bibliographic information that accompanies each abstract to locate the article in your local library, or to order from the Engineering Societies Library.

A

AEG Mitteilungen. Berlin, West Germany
 AEG Progress. Berlin, West Germany
 AEI Engineering. London, England
 AEI Journal of Telecommunications. London, England
 AGARD. Paris, France
 AGARDograph
 Reports
 AIAA Journal. New York, N.Y.
 AIAA Student Journal. New York, N.Y.
 A.I.Ch.E. New York, N.Y.
 Chemical Engineering Progress Monograph Series
 Chemical Engineering Progress Symposium Series
 Journal
 A.I.M. See Association des Ingenieurs Electriciens Sortis de
 l'Institut Electrotechnique Montefiore--Bulletin
 ASEA Journal. Vasteras, Sweden
 ASHRAE. New York, N.Y.
 Guide and Data Book
 Journal
 Transactions
 A.S.L.E.--Transactions. New York, N.Y.
 ASM Transactions Quarterly. Cleveland, Ohio
 ATCP. Mexico, D.F.
 (Asociacion Mexicana de Tecnicos de las Industrias de
 la Celulosa y del Papel)
 ATZ. See Automobiltechnische Zeitschrift.
 AWA Technical Review. Sydney, Australia
 Abrasive Engineering. Wheaton, Ill.
 Academie des Sciences--Comptes Rendus. Paris, France
 Academie Polonaise des Sciences. See Polska Akademia
 Nauk
 Academie Royale de Belgique--Bulletin de la Classe des
 Sciences. Brussels, Belgium
 Academy of Sciences of the USSR--Bulletin--Physical Se-
 ries (Translation of Akademiya Nauk, Izvestiya, Seriya
 Fizicheskaya by Columbia Technical Translations).
 White Plains, N.Y.
 Acciaio Inossidabile. Milan, Italy
 Acter-Stahl-Steel. Brussels, Belgium
 Acoustical Society of America--Journal. New York, N.Y.
 Acta Electronica. Paris, France
 Acta Mechanica. Vienna, Austria
 Acta Mechanica Sinica. Peking, China
 Acta Metallurgica. New York, N.Y.
 Acta Polytechnica Scandinavica. Stockholm, Sweden
 Chemistry including Metallurgy Series
 Civil Engineering and Building Construction Series
 Electrical Engineering Series
 Mathematics and Computing Machinery Series
 Mechanical Engineering Series
 Physics including Nucleonics Series
 Acta Technica (Budapest). Budapest, Hungary

Acta Technica (CSAV). Prague, Czechoslovakia
 Acustica. Stuttgart, West Germany
 Adhaesion. Berlin, West Germany
 Adhesives Age. New York, N.Y.
 Advanced Energy Conversion. Changed to Energy Conver-
 sion. Aug 1968
 Advanced Management Journal. New York, N.Y.
 Advances in Applied Mechanics. New York, N.Y.
 Advances in Chemical Engineering. New York, N.Y.
 Advances in Electronics and Electron Physics. New York,
 N.Y.
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THE ENGINEERING INDEX

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- Irrigation & Drainage Division
- Pipeline Division
- Power Division
- Professional Activities
- Sanitary Engineering Division
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- Surveying & Mapping Division
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THE ENGINEERING INDEX

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THE ENGINEERING INDEX

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THE ENGINEERING INDEX

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 metering Conference
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 Audio & Electroacoustics
 Automatic Control
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 Broadcast & Television Receivers
 Broadcasting
 Circuit Theory
 Communication Technology
 Computers
 Education
 Electrical Insulation
 Electromagnetic Compatibility
 Electron Devices
 Engineering Management
 Engineering Writing & Speech
 Geoscience Electronics
 Industrial Electronics & Control Instrumentation
 Industry & General Applications
 Information Theory
 Instrumentation & Measurement
 Magnetism
 Man-Machine Systems
 Microwave Theory & Techniques
 Nuclear Science
 Parts, Materials & Packaging
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 Reliability
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THE ENGINEERING INDEX

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THE ENGINEERING INDEX

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THE ENGINEERING INDEX

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THE ENGINEERING INDEX

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