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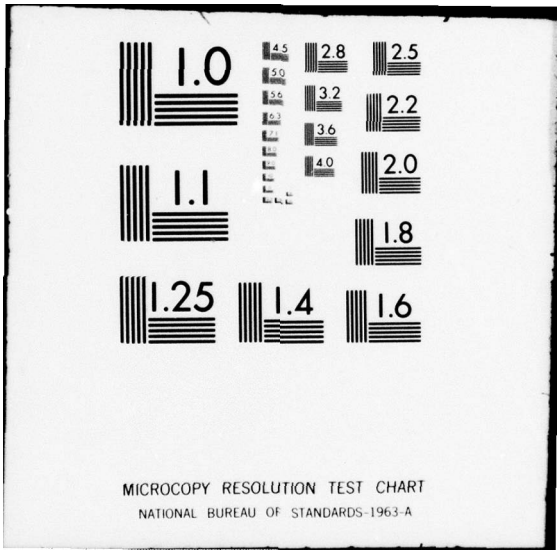
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# CONSOLIDATION OF TECHNICAL INFORMATION ACTIVITIES OF SEVERAL AIR FORCE RESEARCH LABORATORIES INTO A SINGLE TECHNICAL INFORMATION CENTER

University of Dayton Research Institute
300 College Park Ave.
Dayton, Ohio 45469

June 1978

TECHNICAL REPORT AFML-TR-78-94
Final Report for Period July 1975 - September 1977

Approved for public release; distribution unlimited.



AIR FORCE MATERIALS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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JAMES G. JOHNSON
Project Engineer

*FOR THE COMMANDER*

MAJ PHILLIP L. STROTTNER
Actg Ch, Tech Serv Div, AFAL

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

In order to improve technical information services to four research and development laboratories -- Air Force Materials Lab (AFML), Air Force Avionics Lab (AFAL), Air Force Flight Dynamics Lab (AFFDL), and Air Force Aeropropulsion Lab (AFAPL) -- the information activities of each individual laboratory are being consolidated into a centralized facility. This consolidation is being accomplished under the auspices of the Air Force

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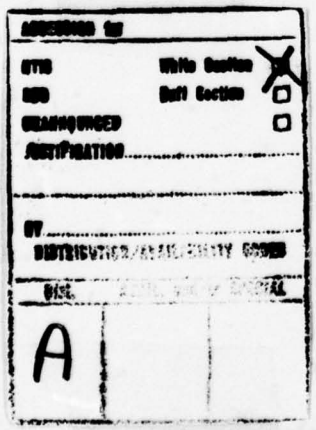
Wright Aeronautical Laboratory (AFWAL), a new organization which combines the planning and operations activities of the four laboratories. The AFWAL Technical Information Center (AFWAL-TIC) was chartered (a) to improve the flow of technical information; (b) to effect economies by large-scale operation and elimination of undesirable duplication; (c) to support the information needs of AFWAL scientists, engineers, and managers; (d) to provide efficient and economical library service; (e) to promote research of and reference to available scientific and technical information; and (f) to operate Information for Industry Offices. The University of Dayton Research Institute had operated the technical information office of the Air Force Materials Lab for some years. In conjunction with the consolidation, the UDRI activity was incorporated into the AFWAL-TIC. Along with the consolidation, our role has changed to serve all four laboratories, but with some continuing ties to the AFML. The user population represents a much more diverse range of interests. Our primary activities include on-line literature searching, reclassification of several library holdings into an integrated library using the Library of Congress (LC) system, maintaining liaison with AFML Project Engineers in the preparation of technical reports, and maintaining a computer-based system for address labels used in the distribution of technical reports. The centralization of the information activities and holdings into a single facility has the potential for improved information services to all the laboratories. However, loss of personal contact formerly maintained by the on-site offices in the laboratories and disruptions during the transition period must be overcome by active promotion within the various laboratories of the improved services available.



# FOREWORD

This report was prepared by the University of Dayton Research Institute, Dayton, Ohio under Air Force Contract F33615-75-C-5005. The effort was administered under the direction of the Air Force Avionics Laboratory with Mr. James G. Johnson (AFAL/TSR) as Project Monitor.

This is a final report and covers the work from 1 July 1975 through 30 September 1977.

This report was submitted by the authors in January 1978.

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# SECTION 1
# INTRODUCTION

## 1.1 BACKGROUND

The Information Systems Section of the University of Dayton Research Institute (UDRI) has operated an information center for the Air Force Materials Laboratory (AFML) at Wright-Patterson Air Force Base since 1960. This facility was operated independently and served the literature needs of about 300 scientists and engineers.

We provided the following information services to AFML personnel:

- On-line literature searching
- Providing Selective Dissemination of Information profiles
- Acquiring and maintaining an on-site collection of materials-related technical reports
- Maintaining a computerized retrieval system for on-site documents
- Operating a small technical library with relevant journals, handbooks, military standards, and other reference books and materials
- Acquiring literature items such as technical reports, books, journal articles, papers from symposia and conferences, etc.
- Maintaining a Scientific and Technical Information (STINFO) program for AFML to track the steps toward publication of in-house or contractor-generated reports and to advise the responsible AFML Project Engineers of the status of production of technical reports
- Coordinating the production of AFML technical reports with other activities at W-PAFB, such as the Office of Public Information, Technical Editing, and Printing
- Maintaining a computerized distribution list system to print address labels for mailing AFML technical reports
- Responding to individual requests for information

Reports providing details of our work with AFML are listed in the References.

At the same time, three other research laboratories under the Air Force Systems Command (AFSC) had information facilities within their respective organizations. These other laboratories are the Air Force Avionics Laboratory (AFAL), the Air Force Aeropropulsion Laboratory (AFAPL), and the Air Force Flight Dynamics Laboratory (AFFDL). Each Laboratory's information center operated to serve its clients in providing information services. Each of these information facilities had grown according to the needs of its particular organization. Although the services provided by each information center were similar, notable differences existed in the specific functions performed and in the procedures followed. These differences arose due to different requirements among the scientific and professional personnel of the various laboratories and, to some extent, due to different perceptions by the operating personnel as to what information services should be provided and how they should be provided. In addition to the four individual information centers, there was a central technical library which existed to serve overall information needs of the various laboratories. Coordination among these activities was minimal, but the Laboratory user populations were being reasonably well served.

## 1.2 CREATION OF THE AIR FORCE WRIGHT AERONAUTICAL LABORATORIES

Although the four AFSC research and development laboratories carry out missions in their respective areas of interest, there is a considerable overlap of interest in research and development programs concerned with aircraft and aerospace vehicles. For example, an aircraft structural problem may be solved by using advanced materials in the construction of the airframe. Similarly, the design of a power plant for an aircraft must take into account the impact of the engine operating characteristics on the structural response of the overall aircraft. Likewise, avionics systems may require shielding to protect electronic components from radiation or enemy electronic countermeasures, thus requiring special materials for this purpose.

Recognizing this frequent commonality of interests, the Air Force established an "umbrella" organization known as the Air Force Wright Aeronautical Laboratories (AFWAL). The purpose of AFWAL is to foster cooperation among the four laboratories and to coordinate the planning and operations functions, so that common problems are addressed in the research and development programs pursued by the various laboratories. By working more closely together through a formal organizational structure, certain efficiencies and economies can be effected, and research and development dollars can be spent more wisely.

AFWAL was formally established on July 1, 1975, by consolidating the functions and resources of the Air Force Avionics Laboratory, the Air Force Aeropropulsion Laboratory, the Air Force Flight Dynamics Laboratory, and the Air Force Materials Laboratory into a single technical center.

The consolidation of the four laboratories at Wright-Patterson Air Force Base was based on Department of Defense guidance and direction to improve laboratory productivity and utility. The consolidation involved combining common laboratory overhead, management, and support functions, and functional alignment of the laboratories with the major product divisions of AFSC.

The mission of the Air Force Wright Aeronautical Laboratories is to plan and execute United States Air Force exploratory development, advanced development, and selected research and engineering development programs for flight vehicles, aeropropulsion, avionics, materials, and the manufacturing methods program. It also provides support, within its areas of technical competence, for the planning, development, and operation of aerospace systems, and to other Air Force, Department of Defense, and other Government Agencies.

The Air Force Wright Aeronautical Laboratories is directly subordinate to the Air Force Systems Command and is directly responsible to the AFSC Headquarters, Director of Science and Technology for mission accomplishment.

The general organization of AFWAL is shown in Figure 1.

## 1.3 ESTABLISHMENT OF THE AFWAL SCIENTIFIC AND TECHNICAL INFORMATION ACTIVITY

When the four laboratories were consolidated into a single technical center, a charter was established to integrate the information activities of the various laboratories and the technical library into a single entity to serve the clientele of all the laboratories. As with the overall reorganization, the purpose was to bring together the information activities and to develop or establish uniform and efficient procedures for the information activities which support the laboratories. The economies of large scale operations could be realized. Communication among the various previously independent information facilities could be improved, and unique skills developed in the individual centers could be made available to the entire community of users of the four laboratories.

Because of AFAL's resources and substantial involvement in technical information activities, AFAL was designated by AFWAL as the Office of Primary Responsibility for organizing the AFWAL Technical Information Center (TIC). The purpose of the AFWAL TIC, according to the organizational charter, were indicated as follows:

# AIR FORCE WRIGHT AERONAUTICAL LABORATORIES

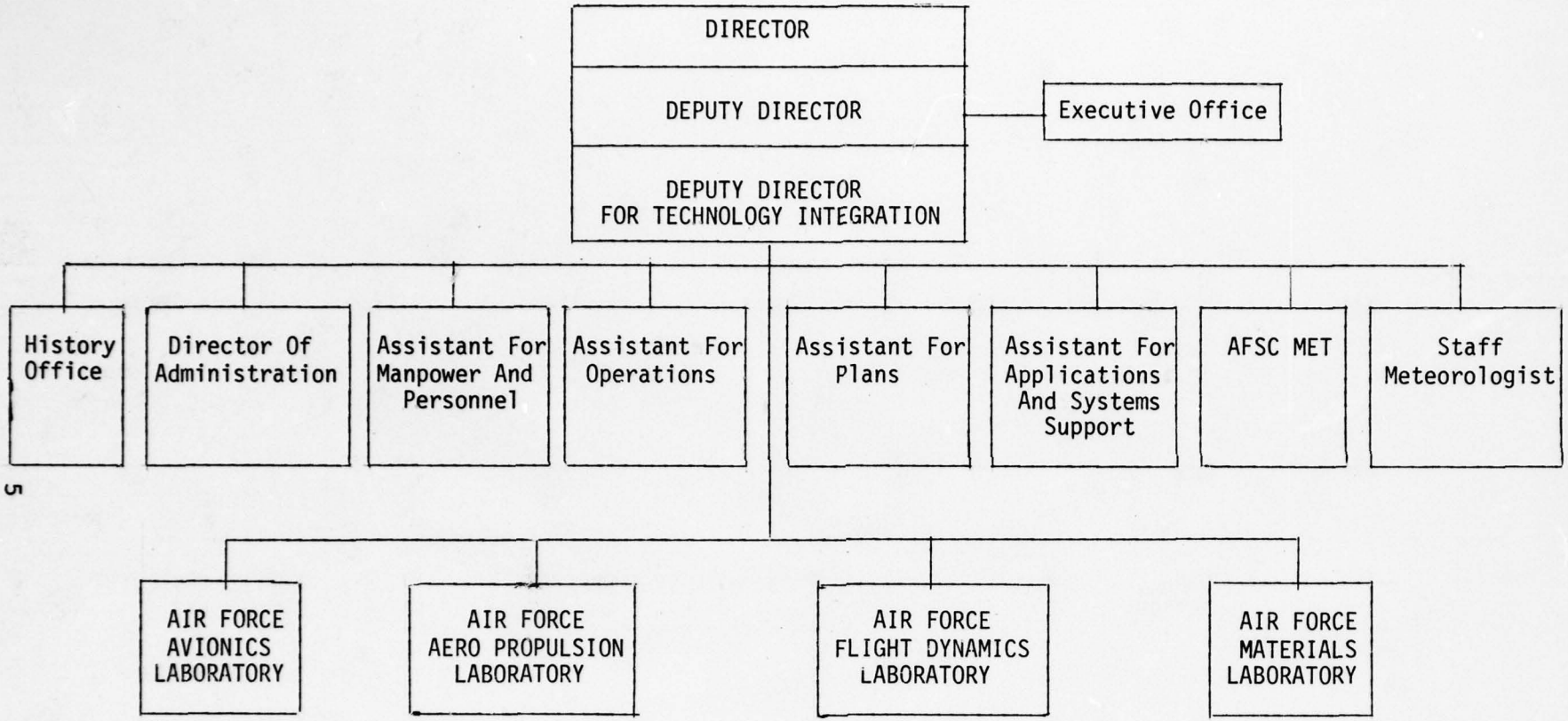


Figure 1. General Organization of the Air Force Wright Aeronautical Laboratory

- To improve the flow of technical information by ensuring that scientific and technical information generated by research and development programs is used to provide maximum contribution to the advancement of science and technology in areas related to Air Force interest
- To effect economies of operation by eliminating undesirable duplication and improving information functions
- To support the information needs of AFWAL scientists, engineers and managers
- To provide efficient and economical library service to AFWAL through use of the most modern and progressive library techniques compatible with standards and recommendations of the American Library Association and other professional organizations
- To promote research of and reference to available scientific information in support of the AFWAL mission by organizing information for specific requirements, accessioning available information stores, and assisting scientific and technical personnel to make use of information resources
- To operate Information for Industry Offices in order to acknowledge the recognized benefits to the Air Force of civilian participation in research and development relevant to Air Force requirements and to inform the scientific and technical community of the problems confronting the Air Force and Department of Defense.

As can be expected, a major reorganization of the nature envisioned could not be accomplished within a short period of time. Currently, the reorganization is underway and certain facets have been modified as indicated by experience. The key tenet of the reorganization has been to disrupt information services to the user population as little as possible. Inevitably, some changes occurred as the transition to the central TIC has taken place, but the users have not been deprived of the information services they need to do their work.

This entire concept of providing centralized overall information services to such a large but specialized user group is unique in the military services. It has not been tried on this scale before. With full recognition of the potential

problem areas and perturbations necessarily brought about by a large scale reorganization, it remains to be seen whether the objective of improved information services to all users at lower overall cost will be realized. However, initial indications are very promising.

The remainder of this report describes the experiences of the UDRI Information Systems Section contractor group as it participated in the TIC integration effort. First, the missions, objectives, facilities, and programs of the laboratories are described in general terms to provide an overview of the subject information requirements of the user population. Then the activities of the UDRI group are described to show how these fit in with the overall TIC mission. Specific gains in improved information services are described, and problem areas we have encountered in making the transition are mentioned. Finally, an assessment of the current evolving situation is made, conclusions regarding the feasibility of the large centralized TIC concept are drawn, and suggestions are presented for future operations.

# SECTION 2
# THE USER POPULATION

## 2.1 CHARACTERISTICS OF THE USER POPULATION

To describe the information requirements of the users of the centralized AFWAL Technical Information Center, it is desirable first to consider the missions, objectives, facilities, and programs of the four laboratories. The users of AFWAL information services tend to be well-educated, highly technical people. Their information needs may range from a simple request about a specific report to a highly complex subject search of the literature.

It should be recognized that it is necessary for the information specialists involved in serving the requesters' needs to communicate effectively with them. Although the information specialist need not be an expert in phosphazine polymers or in automated target seeking and fire control systems, he or she will be talking to people who are experts in these areas. Therefore, the information specialist must have a technical orientation and be able to interact effectively with the scientist or engineer so that he or she obtains clear and complete comprehension of the search topic.

Often the scientist or engineer in an advanced technical area subconsciously assumes that the information specialist is also well informed in this area. The information specialist must ask appropriate questions of the requester until the information specialist is satisfied that he or she has a full understanding of the requester's need.

Ideally the search should be accomplished by the requester and information specialist working together as a team. In this way, the requester can review retrieved document records printed on-line and guide the information specialist to eliminate unwanted documents or to narrow the search to

restrict it to the items of interest. Most requesters prefer to work together with the information specialist to assure appropriate retrievals.

## 2.2 THE AIR FORCE RESEARCH AND DEVELOPMENT LABORATORIES

### 2.2.1 The Air Force Avionics Laboratory

The Air Force Avionics Laboratory is the principal organization within AFSC for developing new avionics technology. The primary responsibility of the AFAL is to provide the USAF with the products and expertise required to support the acquisition of the best possible avionic systems. To meet this responsibility, the AFAL maintains a base of avionics technology and develops and demonstrates cost-effective avionic systems and subsystems that will improve operational capabilities in navigation, communications, electronics warfare, surveillance, reconnaissance, and weapon delivery. The Laboratory assists as required in the systems acquisition process by all elements of the Command and further supports modification of existing avionics equipment in the inventory. Inherent within the AFAL mission are the following broad technical objectives:

- Development of advanced avionics with emphasis on reduced costs of acquisition and operation. The end products are new proposed specifications and standards.
- Determination of feasibility or utility of new avionic concepts and innovative avionic systems and components.
- Integration of different avionic subsystems in various system applications.
- Dissemination of new avionic developments to potential users.
- Provision, as required, of engineering services, including test facilities and consultation, to answer avionics acquisition questions.
- Coordination of avionics development programs and projects with user agencies and other avionics development activities (both Government and industrial).

As noted earlier, the Avionics Laboratory is also the Office of Primary Responsibility for organizing the centralized Technical Information Center to serve all of the research and development laboratories.

The AFAL has programs in both exploratory development and advanced development. The Air Force Avionics Laboratory exploratory development program consists of 12 projects and is divided into five major management areas.

a. System Avionics. Development design concepts for a comprehensive set of unified avionic systems, that will economically satisfy the computational, environmental, and reliability requirements of future aeronautical, ballistic, and space systems for all types of Air Force mission.

b. Navigation and Weapon Delivery. Apply new technology and concepts to problems of strategic offensive, defensive, tactical and air-to-air weapon delivery and develop inertial reference and guidance technology.

c. Electronic Warfare. Develop techniques for electronic and electro-optic detection, jamming and deception to provide USAF aerospace vehicles with a defense against hostile threats and weapons.

d. Aerospaceborne Reconnaissance and Surveillance. Develop photographic, electro-optical, infrared, and radar reconnaissance sensor subsystems for current and projected surveillance and intercept operational requirements.

e. Electronic Technology. Conduct exploratory development in solid state electronic device and integrated circuit technology, radar and microwave technology, and lasers and electro-optic device to provide the basic electronic elements and techniques applicable to future weapon systems.

The advanced development program at the Avionics Laboratory has expanded greatly. It consists of the following projects:

a. Advanced Aircraft Navigation. Objective is to develop and experimentally demonstrate the next generation of Air Force aircraft navigation systems with emphasis on the trade-offs between reduced costs, improved performance, reliability, maintainability, and operational flexibility.

b. Advanced Devices (Solid State Electronics). Program objectives are to achieve rapid transition of solid state technology to DOD use. The program encompasses the DOD Failure-Free Electronic Program.

c. Advanced Avionics. Objective is to develop and experimentally demonstrate precision weapon delivery subsystems for future tactical and strategic aircraft, emphasizing night, low visibility, and adverse weather conditions.

d. Electronically Agile Radar. Objective is to develop an advanced prototype radar for application to advanced manned bombers.

e. Pave Gamma. The objective of this project is to develop and demonstrate techniques for air-to-air identification of non-cooperative targets.

f. Force Protection Subsystem Concepts. Objective is to provide analysis, equipment development, and experimental demonstration of electronic warfare technology that will increase the survivability of present and future aircraft operating in hostile defense environments.

g. Electro-Optical Warfare. The objective of this project is to develop countermeasures against optical infrared and electro-optical weapons.

h. Recon Sensors/Processing Technology. Objective is to solve those advanced reconnaissance and target acquisition problems which limit military capability in all weather, night and day reconnaissance.

i. Digital Avionics Information Systems. Objective is to construct and demonstrate our avionics subsystem in a new way using shared federated processors and computer driven display interconnected with multiplex busses and all using common software. This will reduce total costs by fostering inter- and intra-system standardization, ease of retro-fit and future modifications and simplified maintenance procedures.

j. UHF/VHF Voice A/J. The objective of this project is to design, develop and demonstrate the projection of aerospace vehicular voice communication against enemy electronic warfare attacks.

### 2.2.2 The Air Force Materials Laboratory

The Air Force Materials Laboratory is dedicated to advancing the state of the art of materials to provide new capabilities that are critical to significant improvements in Air Force systems. The Laboratory is unique in two respects. Due to the inherent consideration of materials in all other technologies, it is essential that the Laboratory have an interface with all other Air Force and DOD elements to ensure that baseline materials technology is utilized in the design, development, and procurement of military systems. Also, it is the only Air Force laboratory whose program encompasses the full spectrum of scientific investigation from basic research to exploratory and advanced development through manufacturing technology.

Research leading to improved materials must be initiated far in advance of the anticipated requirements of the design engineers of Air Force systems. Although some success has been achieved in reducing the time gap between initial research and eventual use of a new material, this period averages approximately ten years. The managers of materials research must thus predict the changing needs and direct the research effort along most promising avenues for optimum results.

Specified objectives of the Air Force materials program are:

- To reduce the costs of purchase, maintenance, and replacement of weapons systems by carrying on sound development programs for cheaper and more reliable materials and by working out less expensive manufacturing processes
- To accelerate the development of improved materials for the construction of all types of weapon systems, aerospace vehicles, and associated components to assure availability in advance of Air Force requirements

- To investigate environmental effects on materials and, where required, develop techniques to eliminate or control detrimental effects
- To evaluate new materials for potential applications as well as to collect, analyze and disseminate design data to promote the rapid utilization of newly developed materials technology
- To provide technical assistance to all Air Force installations to correct deficiencies in operational systems.
- To furnish technical assistance in the design, construction, and operation of aerospace systems in the acquisition stage to ensure, by selecting and using appropriate materials and processes, that these systems will meet performance objectives and have greater integrity and reduced vulnerability.
- To develop new or improved manufacturing processes and techniques to transform exploratory and advanced development feasibility into production capability.

Six major program areas are carried out in basic research and development activities.

The Thermal Protection Materials program is concerned with the protection of system and subsystem components subject to the most severe environments. Major applications are in ballistic missiles, moderate to high length-to-diameter re-entry vehicles, and very high speed aircraft and missiles. Particular emphasis is given to the development of materials for use as heat shields and nose tips (ablatives, ceramics, graphites, or porous metallic materials), nose caps and leading edge/hot surfaces (ceramics, coated refractory metals, low density ablators), and materials that are resistant to natural and induced environments such as oxidation, rain, dust, and nuclear radiation.

The Aerospace Structural Materials program involves primary load bearing materials for wide applications to aircraft and missiles, and space, satellite, and lifting

re-entry systems and vehicles. Structural integrity and reliability must be assured over the anticipated system life of several seconds to 10 years, and from service temperatures ranging from cryogenic temperatures to temperatures of 3000°F and above. Important material considerations include strength, weight, ductility, stiffness, fatigue and fracture toughness, and forming and joining processes. A major concern is to mitigate limiting properties that constrain the full utilization of aluminum, steel, titanium, and beryllium alloys, and to develop the full potential of the metallic and nonmetallic composites.

Nondestructive testing and inspection is used to ascertain structural integrity of specific structural parts and components. Improved techniques for nondestructive testing and nondestructive inspection are sought.

The Aerospace Propulsion Materials program entails research into special combinations of material characteristics for reliability, strength, density, stress rupture, creep, and compatibility with the internal propulsion environment and cryogenic or reactive fuels. Materials of primary interest include metallic and nonmetallic matrix composites, titanium, steel, superalloys, dispersion strengthened alloys, refractory metals and ceramics for improvements in burner chambers, nozzles, and pintles. Development work emphasizes improved stress rupture and creep strength properties, increased oxidation resistance in the 3000°F regime for "hot" parts, and increased strength in the 1000-1400°F regime for "cold" parts. Metal processing and joining techniques are implicit considerations in these developmental efforts.

The Fluids, Lubricants, and Seals program concerns the development of fluid, lubricant, and elastomeric materials which provide for the lubrication, pressurization and pressure actuation, and sealing of various components of Air Force vehicles. Specific interests include long lifetime

self-lubrication for Air Force devices; containment of highly reactive fluids, fuels, and propellants under a wide range of mission environments; self-sealing tank materials; nonflammable fluids; gyro and cooling fluids; and seals, sealants, valve seats, hoses, and bladders. The program reflects continued emphasis on developing formulated fluids operable up to 500°F, and new base stocks capable of up to 650°F service for advanced fluids and lubricants for manned aircraft.

Work to develop critically needed environmental seals and fluid containment materials is being carried out for thermally stable elastomers should result in more reliable potting compounds, electrical insulators, and fuel seals for service in the 350-600°F range. Self-sealing fuel cell material efforts focus on improved impact and sealing response to projectiles, in constructions with retrofit capability to present tactical aircraft, while minimizing volume and weight penalties.

The Protective Coatings and Materials program involves developing special classes of materials to protect airframe, propulsion and strategic re-entry vehicles from the natural and induced extremes of mission environments. Examples of these special application areas are the following: a special class of fibrous materials is required for fire resistant, comfortable abrasion resistant Air Force crew suits, harnesses, crew and cargo parachutes and lines; durability and optical characteristics important for aircraft marking and camouflage; durability and abrasion resistance needed for corrosion control coatings.

Long life in aerospace environments is of particular concern for thermal and radiation control of satellites, solar cells, and aircraft canopies. Durability, erosion resistance, and electrical characteristics are of primary importance for anti-static coatings, while rain repellants involve an entirely different set of characteristics.

AFML efforts include an attack on the high-speed erosion problem, which deleteriously affects the useful potential of newly developed composites for primary structures, heat shields, and antenna windows.

The Electrical and Electronic Materials program is structured to provide new and improved materials with characteristics applicable to a broad range of critical Air Force avionics system devices and components. The materials being developed underlie most semiconductor devices, infrared sensors and detectors, electroacoustic devices, transducers, lasers, nonlinear optics, integrated optics, and numerous other functional devices, components and systems. Materials for electro-magnetic transparencies for antenna windows, radomes, and lasers, for re-entry vehicles, aircraft and missiles are also being developed. Radar and infrared suppressants for vehicle surfaces, canopies, and engine inlet-exhaust areas require materials with unique optical, electrical, mechanical, and physical properties.

In addition to the basic research and development efforts, AFML is conducting advanced development work to demonstrate new materials technology through the design, fabrication, and testing of components and other experimental hardware. The demonstrated use of advanced materials in actual components and systems provides confidence and data on the improvements in subsystems and systems attainable through exploitation of this new technology.

The current major area of this effort involves the demonstration of the use of advanced composites for aerospace structural applications. This program is developing and rapidly exploiting advanced composite materials resulting from exploratory development efforts on reinforcements, surface treatments, and matrix materials. Work includes the development and optimization of new composite materials; fabrication of prototype hardware; and static and flight testing of components

to demonstrate feasibility and verify predicted performance payoffs. Primary applications being investigated include aircraft structures, re-entry vehicle structures, helicopter rotor blades, and propulsion system components.

The AFML is vitally interested in new manufacturing methods suitable for developing and exploiting the full economical capabilities of emerging material technologies, and to ensure the applications of the most economical and efficient method of manufacturing Air Force materials. It explores the feasibility of new manufacturing processes, techniques, and equipment, and demonstrates in advance of production new and improved manufacturing processes and production techniques that reduce production unit and materials costs, improve fabrication efficiency, and accelerate the use of new materials. The program includes chemical and metallurgical processing, metal and nonmetal fabrication techniques and thermionic and solid-state device processing.

### 2.2.3 The Air Force Flight Dynamics Laboratory

The Air Force Flight Dynamics Laboratory is responsible for the technology which includes the entire aerospace vehicle with the exception of the avionics, power, and propulsion subsystems. This technology includes the primary structure and components and their operating characteristics. Such areas as vehicle flight dynamics, flight mechanics, flight control, vehicle equipment, and vehicle structures are included.

The exploratory and advanced development mission for aerospace vehicles encompasses the entire speed and altitude regime, from vertical take-off and landing to super-orbital reentry velocities and from on-deck to orbital altitudes. The Laboratory addresses itself to all types of flight vehicles in these regimes; that is, airbreathing, ballistic, reentry, and space vehicles, with emphasis on the aeronautical vehicle itself.

Individual capabilities exist within the AFFDL to conduct the wide-ranging program referred to above. The AFFDL uses state-of-the-art technology and planned programs in the international technical community as a baseline for forecasting to the best extent possible the critical technical needs of the Air Force for future systems. The Laboratory conducts a unique research and development program which is responsive to these needs.

In its role as the Air Force focal point for aerospace vehicle technology, the Laboratory maintains a cadre of experienced interdisciplinary scientific and engineering personnel, which can respond quickly to requests for aid in the solution of technical problems facing the Department of the Air Force as well as other Government organizations.

The current over-all objectives of the Laboratory exploratory and advanced development programs are:

- to devise methods for improving the operational capability, effectiveness and safety of Air Force systems by efforts on such items as all-weather landing systems, air cushion landing gear systems, cryogenic coolers, and inlet/nozzle/flight vehicle integration, and flight control system simulation.
- to provide concepts, data, design criteria, and prediction and analysis techniques which will permit extension of performance capabilities of Air Force weapon systems. This is done by acquiring an improved technology base in support of such items as future vertical/short takeoff and landing aircraft remotely-piloted vehicles, and lifting reentry systems.
- to supply advanced techniques for improving, simplifying, and reducing the cost of design, development, test, and operation of future Air Force flight vehicles by developing such documents as stability and control design handbooks, computer-based design techniques, devising matrix structural analysis techniques, divising more efficient ground simulation facilities and originating new and more accurate flutter prediction techniques.

To integrate the technical program to focus on critical needs of flight vehicle concepts for the late 1970's and 1980's, the Laboratory has developed the concept of configuration research studies. This technique includes all technical domains within the Laboratory and encompasses a wide range of advanced flight vehicle concepts. Individual studies have two objectives: (1) to evolve new flight vehicle configuration concepts based on projected technical capabilities, and (2) to evaluate the sensitivity of these designs relative to technical uncertainties. The results indicate the uses and the needs for technology and provide quantitative and qualitative exploratory development planning guidance. By considering the program results, comprising the entire set of studies, indications of relative pay-off for different technical programs can be obtained. A series of studies, and the related coupled research, can aid in developing viable options for future system concept formulation. The studies are performed by ad hoc groups within the Laboratory and are coordinated with other Laboratories and the Planning Offices of the Product Divisions as required.

To provide the confidence required for low-risk transition of advanced and emerging technologies into future tactical fighter systems, the Laboratory is proposing advanced development of a near term demonstrator in order to evaluate the mission effectiveness gained through the integration and interaction of these technologies. This fighter demonstrator will be the forerunner of a family of technology demonstrators that will incorporate as many advanced technologies into one vehicle as are practical and effective and that will accomplish technology transition through flight test evaluation.

In summary, the Laboratory provides in-house technical expertise, which can be used for quick-response solutions to critical Air Force operational and system development problems, and ensures the continued creation of a timely and responsive technical base for future Air Force systems development, both for critical system and capability needs and for broad-based applications.

The Air Force Flight Dynamics Laboratory exploratory and Advanced development program is divided into the following major areas or technical domains:

a. Flight Control. Exploratory and advanced development programs in the field of flight path control and motional behavior of aerospace vehicles. Areas being investigated include: control display, aerodynamic stability, handling qualities, control equipment and instrumentations, portable Instrument Landing System equipment, and use of the pilot as a control element.

b. Vehicle Dynamics. Exploratory and advanced development to ensure prevention of adverse effects of noise, sonic fatigue and pseudo noise on aerospace vehicles; research to predict and prevent aerothermoelastic and vehicle dynamic problems such as flutter and vibration.

c. Aerospace Vehicle Mechanical Subsystems. Exploratory and advanced development in mechanical subsystems, such as landing gear and bearings; establishment of procedures, criteria, and equipment for design and testing of these systems.

d. Environmental Control. Exploratory and advanced development in the areas of atmosphere and thermal control internal to the flight vehicle, including simulation of severe environments; developing cryogenic cooling technology and devising atmospheric contaminant removal methods.

e. Recovery and Crew Station. Exploratory and advanced development to ensure proper man-machine interfaces through crew station design, generation of adequate technology to support the development of effective and reliable crew escape systems, and development of aerodynamic decelerators for the recovery of bodies moving through the atmosphere.

f. Flight Mechanics. Exploratory and advanced development (including simulation) in aerodynamics, aerothermodynamics, gas dynamics and flight performance to establish configuration and mission profiles for aerospace vehicles.

g. Structures. Exploratory development in flight loads, atmospheric turbulence, analysis methods, statistical procedures, simulation techniques, flight load sensors, structural design concepts, and materials utilization. Work in these areas encompasses the entire flight regime of aerospace vehicles.

h. Prototype. Conducts exploratory, advanced and prototype development programs involving interdivisional coordination and integration of functions. Special emphasis is placed on flight vehicle prototypes, vertical/short take-off and landing, remotely piloted vehicles, and nonnuclear survivability/ vulnerability.

### 2.2.4 The Air Force Aeropropulsion Laboratory

The Air Force Aeropropulsion Laboratory is concerned with propulsion systems for aerospace vehicles, including all aspects of the engine and the propulsion system which transmits propulsive power to the aerospace vehicle. Rocket propulsion research is conducted independently by the Air Force Rocket Propulsion Laboratory at Edwards Air Force Base in California. Significant changes have occurred as emphasis has changed from piston engine, propeller-driven aircraft to jet engine aircraft. In addition to the primary propulsive power system, the Laboratory undertakes research and development efforts in aerospace vehicle electrical power generation and distribution systems, air conditioning systems, and hydraulic and pneumatic power supply systems.

As technology has continued to expand, the AFAPL has experienced an increased scope of responsibility that encompasses not only turbojets, turboprops and turbofans, but also ramjets, air turbine accelerators, and many new and different propulsion concepts. The Laboratory is also exploring technological frontiers in many areas which are applicable across the entire spectrum of weapon systems. These include development testing of new lubricants, hazard techniques, and power generation and conditioning. While the Laboratory is

charged with responsibilities for developing technological bases for the future, it is also mindful of the needs and problems of today's Air Force. The AFAPL can be credited with the original development activity related to every propulsion device now powering Air Force aircraft. This has been accomplished through an extensive in-house program and through Laboratory-sponsored and laboratory-managed efforts with industry.

The Air Force Aeropropulsion Laboratory research and development activities encompass four technical domains.

The Turbine Engine Propulsion program involves exploratory, advanced, and prototype development efforts in technology needed to satisfy the wide spectrum of future Air Force mission requirements. Areas of emphasis include all major engine components. Potential Air Force propulsion needs require that a technological base be developed and maintained that ranges from small, low-cost engines to very high thrust turbofans for long-range, subsonic cruise aircraft, and from improved turbojets and turbofans for transonic/supersonic fighters and bombers to high-mach mixed-cvcle propulsion svstems. Included in the scope of this domain are the analysis and evaluation of turbopropulsion systems for other organizations, as applied to both current and potential missions.

The Ramjet Propulsion program generates the technology needed to permit confident development of advanced ramjet and ramjet-related propulsion concepts for application to future manned and unmanned weapon systems. The flight spectrum of interest encompasses the entire range of high and low altitudes at high and low flight speeds. Emphasis will continue to be placed on propulsion for near-term missile systems.

The Aerospace Power Generation and Distribution program is geared to provide appropriate energy conversion, power generation, transmission, and conditioning for future aircraft, ground, missile, and space systems. Specifically, the program is addressed to the following power needs: (1) reduced maintenance

time required for aircraft electrical and power distribution systems; (2) reduced vulnerability of aircraft hydraulic and electric systems and space solar power systems; (3) increased orbital system payloads and lifetimes through improved fuel cell, battery, and large solar power concepts; (4) megawatt power supplies for tactical avionics systems and future weapon concepts; (5) high power life support equipment.

The Fuels, Lubrication, and Fire Protection program is directed toward advances in the specific sub-areas of fuels, lubrication, and aerospace vehicle fire protection. This program has the sole Air Force responsibility for defining, developing, and specifying optimum fuels and lubricants to support operational systems as well as systems in the definition and acquisition phases. Further responsibility is directed toward test method development, standardization, and in-service advice and engineering. Major technical emphasis is also being given to enhancing aircraft survivability from fires and explosion under combat conditions, and in acquiring improved fuels handling methods and equipment.

# SECTION 3
# EFFECTS OF CENTRALIZATION

## 3.1 ROLE OF THE UNIVERSITY OF DAYTON RESEARCH INSTITUTE

During the early part of the contract period, the University of Dayton Research Institute operated the technical information center for the Air Force Materials Laboratory on-site at AFML. Our activities were summarized in Section 1. As progress toward centralization continued, the UDRI information office was physically transferred from the AFML and integrated into the Air Force Avionics Laboratory in May 1977. As part of the AFWAL-TIC, we now serve the technical information needs of Air Force research and development laboratories, but certain additional information activities, particularly those involving the production of technical reports, are being maintained for the AFML.

Because of our years of experience in the AFML and the relationships established among its scientists and engineers, we are continuing to work very closely with AFML personnel in responding to their information requirements. It is also very important to maintain these relationships during the transition period and beyond as the centralization takes place.

In order to ensure that centralization results in enhanced information service to the users, the users must continue to be satisfied that we meet their information needs responsively and appropriately. This philosophy is basic to the centralization.

### 3.1.1 Reclassification

The centralization of information resources into the Technical Information Center has resulted in the consolidation of the former main technical library and several smaller libraries which had been maintained among the various laboratories into an integrated collection. One of these libraries had been

classified with the Library of Congress (LC) classification system, but most holdings of the various libraries had been classified by the Dewey Decimal system. In order to integrate the various holdings, all classification is being performed using the LC classification system. Altogether there are about 40,000 volumes.

Although reclassification is a major undertaking, the University of Dayton Research Institute is making extensive use of the Ohio College Library Center (OCLC) computerized system to aid the cataloging. The OCLC system contains LC cataloging data of the holdings of a number of member libraries. In practice, when a volume has been entered into the OCLC system, the pertinent LC classification data is obtained from the on-line display of the record. The LC number is checked to ensure its appropriateness and is assigned to the volume for further processing. OCLC and LCCN numbers are recorded. Shelf list and public catalog cards are ordered while still on line. Labels for the circulation cards are printed from the corrected CRT image at the terminal. A three-letter code and appropriate volume numbers, parts or dates are added to the OCLC record to show that the AFWAL-TIC has that volume. If the volume has not been previously entered into the OCLC system, original cataloging must be performed. When the original cataloging has been completed, the cataloging data are entered through the OCLC terminal to create an OCLC record, including the three-letter code to show the possession of the volume by AFWAL-TIC.

After a volume has been entered into the OCLC system and the catalog cards have been received, the University of Dayton Research Institute is responsible for physically preparing the books for the AFWAL-TIC, as well as for filing both the public catalog cards and the shelf list.

### 3.1.2 On-Line Literature Searching

The University of Dayton Research Institute has acquired considerable expertise in on-line literature searching. We were one of the first organizations to begin on-line literature searching in early 1972. At that time only two data bases --

National Technical Information Service and Chemical Abstracts -- were available. Since that time, the number of data bases has mushroomed to well over one hundred, and more are being added continually. A list of currently available data bases used by UDRI is shown in Appendix A.

Over previous years, on-line literature searching was established in the AFML. Two previous reports -- The Impact of the Implementation of an On-Line Literature Searching Program in a Research Laboratory Environment, AFML-TR-74-212 and An Analysis of the Use of Available On-Line Technical Literature Data Bases For Materials Research, AFML-TR-75-206 -- describe our work in introducing on-line literature searching as a research support tool in the AFML. We found that despite the comprehensive search capabilities, the immediate on-line response, and the interactive capabilities permitting modification of a search offered by on-line searching, the users had to be convinced of its importance for supporting research activities. We also found that once the user became convinced of the effectiveness of on-line searching by having on-line searches performed, he depended on on-line literature searching for subsequent needs. Also, we noted interpersonal communication in the various branches in the AFML. One user would "spread the word" to co-workers who would, in turn, become active users for their literature research needs.

Within the AFWAL-TIC we are continuing to run on-line literature searches for AFML personnel. Appendices B and C describe the topics researched, and requesters served over a two-year period. In addition, we are also serving the on-line literature searching requirements of the other three laboratories. On-line searches averaged 88 for the first six months of 1978. One need that we foresee is to publicize and to promote on-line information services among the other laboratories. As was initially the case in the AFML, scientists and engineers in the other laboratories are generally not aware of on-line literature searching nor of how this tool can aid them in their research activities. We expect to become involved in actively promoting on-line literature searching among the users in the various laboratories.

### 3.1.3 AFML Technical Reports

For some time we have maintained liaison with AFML scientists and engineers in the generation of both in-house and contractor-generated AFML technical reports.

In conjunction with this activity, we have established and now have in operation a management information system for tracking the progress of technical reports.

When a contract is awarded, a technical report requirement for a draft and final copy are scheduled. Once the draft is submitted, it must go through the Office of Public Information to be cleared for public release, unless the report is classified or otherwise limited. A draft copy is submitted to technical editing. Once the edited draft is ready, it is returned to the engineer for the contractor to prepare a photoreproducible copy of the final form, taking into account editorial notations. With the submission of the final photoreproducible form, the report is given a final check and then submitted to the W-PAFB printing facility. At the conclusion of the contract, a DD Form 250 is prepared; this form documents the fact that all contractual requirements, including the submittal of the final report, have been met.

It is the University's task to inform the responsible Project Engineer about upcoming due dates, to coordinate delivery of the various draft and final copies to the appropriate offices and facilities, and to maintain an accurate record of the status of all reports in progress. The management information system we developed is an on-line computer file which allows for retrieval and editing of records. We use this system to obtain a report of technical report drafts overdue by one month or more, and a report of delinquent reports returned from editing but for which the photoreproducible copy has not been received for printing. Management reports are printed by the computer and are sent to the AFML Division managers. Notifications of delinquent contracts are sent to Project Engineers. We also use the system to respond

to individual requests from engineers concerning the status of any specific technical report.

### 3.1.4 Distribution Lists

The computer activity at the AFAL has established a computer system known as INFOCEN. This is a powerful retrieval and text-editing system. One use of the INFOCEN system is to maintain address records of recipients of technical reports. These address records can be formatted and printed on self-adhesive labels by the high-speed printer. These printed labels are then used to send the completed printed technical reports to libraries and military and civilian organizations throughout the country. Each technical report to be distributed has its own corresponding list of addresses.

Through the text-editing features, we have the capabilities to add new lists to, delete lists, and to modify existing lists. Often a given address is common to more than one distribution list. An important feature of the INFOCEN distribution list system is the ability to store a given unique address only once; a keying code as a part of the address record is used to associate the record with the appropriate list number(s).

Address labels for the AFML had been maintained on the University of Dayton computer facility. Having consolidated the individual information centers, one of the objectives is to follow uniform procedures for the same function. The AFAL has been using the INFOCEN distribution list system for some time. A conversion of the distribution list function from the University of Dayton computer to the INFOCEN system is one example of establishing uniform procedures as a result of centralization. An additional capability includes hand receipts for classified reports (310's).

## 3.2 INFORMATION RESOURCES

By centralizing the holdings of several libraries and by establishing a central repository for technical reports, the

information resources are being physically consolidated into one general area. This provides a real advantage in terms of being able to obtain literature items for requesters. For example, if an on-line literature search is run for someone and journal articles or technical reports of interest are identified by the search, the probability of finding it in the consolidated holdings is excellent. The requester can usually obtain a photocopy of a journal article or a duplicate microfiche immediately in response to documents identified by on-line literature searching.

In addition, a requester has better "browsing" capabilities with the centralized information resources. It is more likely that the user will find more items of interest because of the grouping of the holdings. In the consolidated technical library, for example, books are grouped by the LC classification so that all books pertinent to a subject area will appear together. Similarly, the consolidation of journal holdings results in a single place for all scientific and technical journals.

### 3.3 CO-LOCATION OF TECHNICAL SERIVCES

Another advantage of centralization is that the technical services required for the generation and production of technical reports are co-located. Therefore, the coordination and liaison with the Office of Public Information, technical editing, and printing is made considerably easier. The result is a more efficient production of technical reports.

### 3.4 TRANSFER OF THE INFORMATION OFFICE OF AFML

A major disadvantage of the centralization that we have observed is that the transfer of the information office from the AFML to AFAL has resulted in less personal contact with the users. When the transfer was first effected, some AFML users throught that informations services were no longer being provided. We have had to make significant efforts to provide a continuity of service from the AFAL location. Over a period of time, we

have begun to re-establish close communication with AFML user personnel. Since we are still very much involved in technical report monitoring and coordinating the production of technical reports, the Project Engineers are aware of our efforts, and this has helped us to resume our information services. There is still a need to promote information services not only within the AFML, but also within the other three laboratories.

## SECTION 4
## CONCLUSIONS AND RECOMMENDATIONS

The centralization of information activities of the four Air Force research and development laboratories was brought about in order to improve the efficiency of information services to all the laboratories. The intention was to consolidate information resources into a single location and to effect uniform procedures among the four laboratories for providing information services for monitoring and producing technical reports.

As with any such major reorganization, some disruption was expected. In the initial stages of the transfer of the UDRI-operated information office to the AFAL, the communication with AFML users was seriously affected. Largely through our continuing efforts with the monitoring and production of technical reports, we have maintained some continuity with the AFML and have rebuilt the information services aspect of our work. In addition, we are starting to serve the other laboratories to a greater degree, especially with on-line literature searching.

The centralization of information resources is resulting in an extensive library of both book and scientific and technical journal holdings. Also, the technical reports of the four laboratories as well as technical reports from other Government and civilian agencies are maintained in hardcopy and microfiche form in one location. These centralized resources help support the on-line information searching. When an on-line literature search is performed, we can often locate the original journal articles and technical reports on-site from the resources on hand. Thus, the centralization has the potential for providing improved information services for all the laboratories.

It is recommended that as the information service capabilities of the centralized facility become better established, an extensive promotional effort be implemented to inform the

scientists and eingineers in all the laboratories of the information services available. Such promotion should include demonstrations of on-line literature searches to invited groups of material users. A periodic newsletter is another possibility for informing the laboratory personnel of capabilities and new developments by AFWAL-TIC. Frequent liaison with personnel from all the laboratories is needed to ensure that the centralized information facility is effectively used by the people who need it.

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# APPENDIX A

## ALPHABETICAL LIST OF DATA BASES

# APPENDIX A

## ALPHABETICAL LIST OF DATA BASES *

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>---<br>FILE SIZE | SUBJECT COVERAGE | |
|---|---|---|---|
| ABI/INFORM<br>#15 (D) (O)<br>1971-Present | American Business Institute, Inc. INFORM is a business management data base produced by ABI, Inc.<br>---<br>45,000 citations (Sept. 76) | Accounting<br>Banking<br>Business Law<br>Data Processing<br>Economics<br>Finance<br>General Management | Insurance<br>Management<br>Marketing<br>Personnel<br>Public Administration<br>Real Estate<br>Statistics |
| AGRICOLA<br>(formerly CAIN)<br>#10 (D) (O)<br>1970-Present | National Agricultural Library<br>---<br>Over 1 million citations (Mar. 76) | Ag. Economics & Administration<br>Ag. Engineering<br>Ag. Products<br>Animal Science & Industry<br>Consumer Protection<br>Chemistry & Technology<br>Environmental Pollution<br>Entomology<br>Food & Human Nutrition<br>Forestry<br>General Agriculture<br>Home Economics<br>Information Science | Life Sciences<br>Natural Resources<br>Natural Resources Management<br>Plant Sciences (Diseases, Insect Pests Control)<br>Physical Sciences & Math<br>Rural Sociology, Social Sciences, & Humanities<br>Soils & Fertilizers<br>Veterinary Medicine |
| AHL<br>#38 (D)<br>1964-1974<br>(1975-1976 to be added) | America: History and Life<br>---<br>40,000 citations | American and Canadian history, current affairs, periodical literature. | |
| AIM/ARM<br>#9 (D)<br>1967-Present | The Center for Vocational Education, Ohio State University Abstracts of instructional research materials.<br>---<br>81,500 citations (Nov. 76) | Agricultural Education<br>Business & Office Education<br>Consumer Education<br>Distributive Ed.<br>Health Occupations Ed.<br>Home Economics Ed. | Industrial Arts Ed.<br>Manpower Economics<br>Occupational Guidance<br>Occupational Rehabilitation<br>Trade & Industrial Ed. |
| APILIT<br>(O)<br>1964-Present | American Petroleum Institute<br>---<br>203,000 citations | Petroleum Refining<br>Petrochemicals<br>Air & Water Conservation | Transporation & Storage<br>Petroleum Substitutes<br>Worldwide Literature |

D = Dialog (Lockheed)

O = Orbit (SDC)

E = Elhill (NLM)

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| APIPAT<br>(O)<br>1964-Present | American Petroleum Institute<br>95,300 citations | U.S. and Non-U.S. refining patents. |
| APTIC<br>#45 (D)<br>1966-Present | Air Pollution Technical Information and Control, U.S. Environmental Protection Agency<br>81,500 citations (Nov. 76) | Atmospheric Interaction<br>Basic Science & Technology<br>Control Methods<br>Economic Aspects<br>Effects on Human Health<br>Effects on Materials<br>Effects on Plants & Livestock<br>Emission Sources<br>Governmental Participation (Legal & Administrative)<br>Measurement Methods<br>Pollution Data (Air Quality & Emission Inventories)<br>Social Aspects & Public Involvement<br>Standards & Criteria |
| ART BIB MODERN<br>#56 (D)<br>1974-Present | Art Bibliographies Modern<br>21,000 citations | Comprehensive bibliography of current literature in modern art and design. |
| ASFA<br>#44 (D)<br>1975-Present | Aquatic Sciences and Fisheries Abstracts<br>7000 citations | Marine Biology and Limnology. |
| ASI<br>(O)<br>1973-Present | American Statistics Index<br>Congressional Information Service<br>32,700 citations | Covers statistical publications of the U.S. Government. Subject coverage is therefore as broad as the Government's national and international interest. |
| BIOSIS PREVIEWS<br>(formerly: Bio Abstracts)<br>#5 (D) (O)<br>1972-Present | BioSciences Information Service<br>1,030,000 citations | Worldwide coverage of botany, zoology, medical research, social ecology, public health, and the environment. |
| CAB<br>#50 (D)<br>1972-Present | Commonwealth Agricultural Bureau<br>440,000 citations | Agricultural information from 22 journals. |
| CANCER LIT | Cancer Literature<br>National Library of Medicine<br>80,000 citations | Covers published literature dealing with all aspects of cancer research. |
| CANCER PROJ | Cancer Projects<br>National Library of Medicine<br>16,000 citations | Descriptions of ongoing cancer research projects. |
| CASIA<br>#30 (D)<br>1973-Present | CA Subject Index Alert<br>1,000,000 citations | General subject index headings<br>CAS registry numbers for documents in CA Condensates |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| CEC<br>#54 (D)<br>1966-Present | Council for Exceptional Children<br>21,250 citations | Education of handicapped and gifted children. |
| CHEMCON/<br>CA CONDENSATES<br>#2 (1970-71)(D) (O)<br>#3 (1972-76)(D) (O)<br>#4 (1977- )(D) (O) | Chemical Abstracts<br>2,209,800 citations (as of end of 1976) | World's literature in biochemistry, organic chemistry, macromolecular chemistry, applied chemistry and chemical engineering, and physical and analytical chemistry. |
| CHEMLINE<br>(E)<br>1975-Present | Chemical Dictionary On-line<br>National Library of Medicine | Chemical Abstracts Service Registry Numbers, molecular formulas, substance names, Wiswesser Line Notations (WLN). |
| CHEMNAME<br>#31 (D) | CA Chemical Name Dictionary | CAS registry numbers, CA index names, molecular formulas, chemical name synonyms (drug names, trade names, author nomenclature) and periodic classification terms. |
| CIN<br>#19 (D) (O)<br>1974-Present | Chemical Industry Notes<br>113,000 citations | Brief extracts of articles on production, pricing, sales, facilities, corporate activities, government activities, and people for the Chemical Process Industries. |
| CIS INDEX<br>(O)<br>1970-Present | Congressional Information Service<br>73,500 citations | Multidisciplinary coverage of U.S. Congress publications. |
| CLAIMS/CHEM<br>#23 (1950-76) (D)<br>#24 (1977- ) (D) | Patents<br>392,000 citations | Chemical and chemically related index patents U.S. patent nos. (searchable) chemical abstracts reference equivalent patents in France, Great Britain, Belgium, Germany and the Netherlands. |
| CLAIMS/CLASS<br>#25 (D) | Code Text Dictionary<br>15,000 citations | U.S. Patent Office codes for citations in CLAIMS/CHEM and CLAIMS/GEM. |
| CLIN PROT | Clinical Protocols<br>National Library of Medicine<br>1000 citations | Summaries of clinical protocols for treating specific types of cancer including specific anticancer agents or modalities. |
| COMPENDEX<br>#8 (D) (O)<br>1972-Present | Engineering Index Inc.<br>448,000 citations | Coverage in all disciplines of engineering. |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| COMPREHENSIVE DISSERTATION ABSTRACTS<br>#35 (D) (O)<br>1861-Present<br>(formerly; Dissertation Abstracts Index) | Dissertation Abstracts<br>530,000 citations | Doctoral dissertations, predominately from accredited U.S. institutions. |
| CRECORD<br>(O)<br>1976-Present | Capitol Services, Inc.<br>40,000 citations | Current coverage of activities on the floor of Congress. |
| CRIS<br>#60 (D)<br>1976-Present | Current Research Information System<br>24,000 citations | Current-awareness for agriculturally related research projects produced by the USDA Cooperative State Research Service. |
| DMMS<br>#5 (D) | Defense Market Measures System | Announcements and contract awards for the Engineered Systems and Services Market, RFP's. R&D Sources Sought, Sole Source Negotiations, LRPE's and APPI's. |
| ENERGYLINE<br>(O)<br>1971-Present | Environment Information Center, Inc.<br>10,000 citations | Energy Economics<br>U.S. Policy & Planning<br>Resources and Reserves<br>R&D<br>Environmental Impact<br>Electric Power & Storage |
| ENVIROLINE<br>#40 (D)<br>1971-Present<br>Abstracts from 1975 | Environment<br>Environment Information Center<br>60,000 citations | Key environmental literature, reviews from books and films, extracts from daily Federal Register. |
| ERIC<br>#1 (D) (O)<br>1966-Present | Educational Resources Information Center<br>242,500 citations | Career Education, counseling, and personnel services, disadvantaged, early childhood education, educational management, exceptional children, higher education, information resources, junior colleges. |
| FEDERAL INDEX WEEKLY<br>#47 (D)<br>Current Week | Predicasts, Inc. | Contains latest weekly update for the PTS Federal Index. (File 48) |
| FOUNDATION DIRECTORY<br>#26 (D)<br>Current | Foundation Center<br>2500 citations | Descriptions of over 2500 foundations with assets exceeding $1 million. |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| FOUNDATION GRANTS INDEX<br>#27 (D)<br>1973-Present | Foundation Center<br>27,000 citations | Cumulation of grants records of more than 400 U. S. philanthropic foundations. |
| FSTA<br>#51 (D)<br>1972-Present | Food Science and Technology Abstracts<br>70,000 citations | International Food and Information Service (IFIS) World's food science and technology literature. |
| GEOARCHIVES<br>#58 (D)<br>1970-Present | Geology Literature<br>500,000 citations | Includes Geotitles Weekly, Geocom Bulletin, Geoscience Documentation, and Bibliography of Vertebrate Paleontology. |
| GEOREF<br>(O)<br>1967-Present | Geology Reference File<br>American Geological Institute<br>290,900 citations | Areal Geology<br>Economic Geology<br>Engineering - Environment Geology<br>Geochemistry<br>Geochronology<br>Geomorphology<br>Igneous & Metamorphic Petrology<br>Solid Earth Geophysics<br>Stratigraphy |
| GRANTS<br>(O)<br>Current | Oryx Press<br>1500 citations | Source index to 1500 grant programs offered by Federal, State, and Local Governments, associations, commercial organizations, and private foundations. |
| HISTORICAL ABS.<br>#39 (D)<br>1973-1974<br>(More to be added) | Historical Abstracts<br>ABC-CLIO Producers<br>16,000 citations | Periodical literature on World History (not America or Canada). |
| HUMAN CLINICAL RESEARCH | National Library of Medicine | New drugs and techniques. |
| INSPEC-ELEC/ COMP<br>#13 (D)<br>1969-Present | Institution of Electrical Engineers<br>348,600 citations | Worldwide coverage of electrical engineering, electronics, computer science and control engineering. |
| INSPEC-PHYSICS<br>#12 (D)<br>1969-Present | Institution of Electrical Engineers<br>463,900 citations | Worldwide coverage of physics. |
| ISMEC<br>#40 (D)<br>1971-Present<br>Abstracts from 1975 | Information Service in Mechanical Engineering<br>30,000 citations | From INSPEC and the Institute of Mechanical Engineers in London. Mechanics, materials, devices, production processes, tools and equipment, energy and power, transport and handling, natural resources. |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| LIBCON/E<br>(O)<br>1965-Present | Library of Congress<br>691,700 citations | English-language monographic literature and audio-visual materials in all subject areas. |
| LIBCON/F<br>(O)<br>1965-Present | Library of Congress<br>707,700 citations | Same as LIBCON/E but covers non-English language materials. |
| LLBA<br>#36 (D)<br>1973-Present | Language Abstracts<br>Language Behavior Abstracts<br>University of Michigan<br>20,000 citations | World literature on speech and language pathology. |
| MESH (E) | National Library of Medicine | Thesaurus for MEDLINE. |
| METADEX<br>#32 (D)<br>1966-Present | Metals Abstracts Index; Alloys Index<br>American Society for Metals<br>260,000 citations | Worldwide metallurgical literature. |
| MET/GEOASTRO ABSTRACTS<br>#29 (D)<br>1972-Present | Meteorological Abstracts<br>22,000 citations | Meteorological and geoastrophysical research in both domestic and foreign literature. |
| NICEM<br>#46 (D) | National Information Center for Educational Media | Information on video tapes and other nonprint media in curriculum course planning. |
| NTIS<br>#6 (D) (O)<br>1964-Present | Government Reports Announcements<br>National Technical Information Service<br>509,500 citations | Abstracts of Government research from over 240 agencies. Broad subject coverage includes physics, engineering, behavioral and social sciences, aeronautics and military sciences. |
| OA<br>#29 (D)<br>1964-Present | Oceanic Abstracts<br>National Oceanic and Atmospheric Administration<br>88,400 citations | Marine-related biology, fisheries, geology, oceanography, pollution, engineering, ships, governmental and legal aspects of marine environment. |
| PA<br>#11 (D)<br>1967-Present | Psychological Abstracts<br>American Psychological Association<br>230,000 citations | World literature in psychology and other behavioral sciences. |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>---<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| P. A. I. S.<br>#49 (D) | Public Affairs Information Service | Economic and social conditions, public administration, and international relations. |
| PAPERCHEM<br>(O)<br>1968-Present | Institute of Paper Chemistry<br>---<br>80,000 citations | Pulp-, paper-, and board-manufacturing and utilizing industries. |
| PATENT CONCORDANCE<br>#43 (D)<br>1972-Present | Chemical Abstracts | Relates the various numbers granted to an invention when it is licensed in several countries. |
| P/E NEWS<br>(O)<br>1975-Present | American Petroleum Institute<br>---<br>45,500 citations | Covers five major publications in the petroleum and energy fields. |
| PNI<br>#42 (D)<br>1975-Present | Pharmaceutical News Index<br>---<br>13,000 citations | Four drug industry newsletters, drug research reports, FDC reports. |
| POLLUTION ABS.<br>#41 (D)<br>1970-Present | Pollution Abstracts<br>---<br>42,000 citations | Worldwide coverage of technical literature on pollution, its sources and its control. |
| PTS DOMESTIC STATISTICS<br>#20 (D)<br>1971-Present | Predicasts, Inc.<br>---<br>43,700 citations | General economics industries, detailed products, end uses; published forecasts on US economics, demographics, finance and production. |
| PTS EIS PLANTS<br>#22 (D)<br>Current | Predicasts, Inc.<br>---<br>110,000 citations | Records for 117,000 plants in the U. S., each having more than 20 employees and some sort of industrial output. |
| PTS F&S INDEXES<br>#18 (D)<br>1972-Present | Predicasts, Inc.<br>---<br>537,500 citations | All aspects of business and economics. |
| PTS FEDERAL INDEX<br>#48 (D) | Predicasts, Inc. | Information on Federal Government activities, abstracted from the Congressional Record, Federal Register, Commerce Business Daily, Presidential Documents with citations to Code of Federal Regulations, the U. S. Code, House and Senate bills and other sources. |
| PTS INTERNATIONAL STATISTICS<br>(formerly: Foreign Statistics)<br>#21 (D)<br>1972-Present | Predicasts, Inc.<br>---<br>96,000 citations | Time series and forecasts on foreign economics, demographics, finance, and production. Data for production, prices, wages, shipments, sales, foreign trade, product name, growth rate, and quote source. |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| PTS MARKET ABS.<br>#16 (D)<br>1972-Present | Predicast Chemical and Equipment Abstracts<br>90,000 citations | Domestic and foreign information on chemical process, electronics and data processing equipment industries. |
| PTS WEEKLY<br>#17 (D)<br>Month, Day, Year | Weekly Abstracts added to F&S and CMA-EMA<br>1200 citations/week | Domestic and industry information from F&S financial indexes and information on chemical processes, electronics and data processing equipment from CMA-EMA. |
| RINGDOC<br>(O)<br>1964-Present | Derwent Publications Ltd.<br>466,600 citations | Pharmaceutical Literature<br>(Available to subscribers only) |
| SAE ABSTRACTS<br>(O)<br>1965-Present | Society of Automotive Engineers, Inc.<br>10,000 citations | Self-propelled vehicles; applicable to the aerospace, transportation, and automotive industries. |
| SCISEARCH<br>#34 (D)<br>1974-Present | Institute for Scientific Information<br>962,000 citations | Multidisciplinary index to the literature of science and technology. |
| SOCABS<br>#37 (D)<br>1963-Present | Sociological Abstracts<br>70,000 citations | Sociology and related social science areas. |
| SOCIAL SCISEARCH<br>#7 (D) | Institute for Scientific Information<br>367,500 citations | Multidisciplinary index covering world's most important social science journals, and journals from other disciplines. |
| SSIE<br>(O)<br>1973-Present | Smithsonian Scientific Information Exchange<br>262,400 citations | On-going, unpublished, or recently completed research in Life, Physical & Social Sciences. |
| TOXLINE<br>(E)<br>1966-Present | Toxicity On-line<br>National Library of Medicine | Toxicology; Adverse effect of drugs, chemicals, pesticides, effects of pollutants on humans, animals, and plant life. |
| TULSA<br>(O)<br>1965-Present | University of Tulsa<br>171,300 citations | Oil and Gas Exploration, Development and Production<br>Petroleum Geology<br>Exploration<br>Geophysics and Geochemistry<br>Well-Drilling<br>Well-Logging<br>Well-Completion<br>Pollution<br>Alternative Fuels and Energy Sources |

## APPENDIX A (CONTINUED)

| FILE NAME<br>FILE NUMBER<br>INCLUSIVE DATES | FILE DESCRIPTION<br>---<br>FILE SIZE | SUBJECT COVERAGE |
|---|---|---|
| WAA<br>#33 (D)<br>1968-Present | World Aluminum Abstracts<br>American Society for Metals<br>---<br>43,000 citations | Technical literature on aluminum ranging from ore processing to end use. |
| WPI<br>(O)<br>1963-Present | World Patent Index, Derwent Publications, Ltd.<br>---<br>983,300 citations | World-wide patents<br>(Available to subscribers only) |

APPENDIX B

ON-LINE SEARCHES PROCESSED

1 July 75 - 30 September 77

APPENDIX B

ON-LINE SEARCHES PROCESSED

1 July 75 - 30 September 77

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| July 2 | Low temperature properties of bearing materials | NTIS, EI, ISMEC |
| 2 | Cleaning the sizing from glass-silica cloth; and removing the sizing by chemical etching, leaching, or heat treatment | NTIS |
| 2 | Polysulfones; Polyarylsulfones Polyarylethers | CA, CLAIMS |
| 3 | Icing of airplane wings | NTIS, EI |
| 7 | Crashworthiness of aluminum laminates for aircraft and helicopters | NTIS |
| 14 | Designing instructional manuals, sequencing page by page in advanced organization of material, printed instructional material, business education, history, communication | INFORM/ABI |
| 21 | Effects of exercise on blood coagulation time of women using oral contraceptives | Biological Abstracts, NTIS, CA |
| 23 | Solidification of welds -- sequence rate, segregation and separation, homogeneity, pulsed welding | EI, MECH. ENG. |
| 24 | Liquid sodium heat pipes | NTIS, CA, EI |
| 30 | Electro-optics -- lasers, masers | NTIS, EI, CMA/EMA |
| 30 | Ultra-high molecular weight polyethylene, Graphite-Polyethylene composites used in bioengineering | MEDLINE, CA, NTIS, Biological Abstracts, EI |
| Aug 4 | Ultra High Molecular Weight Polyethylene; Bioengineering | TOXLINE |
| Aug 4 | Ratio of Metals (Ti, Al, Steel) in Jet Engines -- Casting and Design | NTIS, CMA/EMA |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Aug 6 | SDI on Photochromic and Thermochromic Compounds, etc. | CHEMCON |
| 8 | Exceptional Children, Financial Support, Curriculum, Educational Benefits | ERIC |
| 6 | Moly Permalloy | NTIS |
| 8 | SDI on Fluoro, Fluorin | CA |
| 7 | Kapton | NTIS, EI, CA |
| 11 | SDI on Photochromic and Thermochromic Compounds, etc. | CA, CLAIMS |
| 22 | Stress Corrosion of H-11 Steel; Fracture Mechanical Data on H-11 Connection with Bolts | CA, EI, NTIS |
| 22 | Composites: Environmental Testing | NTIS |
| 22 | The Effect of Pitting on Aluminum Alloys | NTIS, EI |
| 27 | Physical Behavior of Elastomeric Materials | CA, INSPEC-Physics, NTIS |
| 27 | Cryogenic Properties of Metal | NTIS, EI |
| Sep 8 | Zirconium Powders: Application and Reduction of Zr powders as Applied to Thermal Batteries | NTIS, CA, EI |
| 9 | Eutectic Composites | NTIS, CA, EI |
| 9 | Effects of Aluminum Alloy Pitting | NTIS, EI |
| 9 | Healing and Rejuvenation of Metals | NTIS, EI |
| 15 | Author Search: Tung-Yang Yoo (on Mass Spectrometry of Organic Compounds) | CA |
| 17 | Elastomeric Hydraulic Systems Seals for Aircraft Systems | NTIS |
| 17 | Thermal Spray Process - Abradable Seals | NTIS, ISMEC |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Sep 17 | Group Technology: Part Classification of Coating, Cellular Manufacturing | EI, CIS, CMA/EMA |
| 19 | Elastomeric Hydraulic Systems Seals for Aircraft Systems | NTIS |
| 19 | How to Retrieve on Imbedded Terms Fluoro and Fluorin Without Left-Hand Truncation | CA |
| 22 | Atherosclerosis, Arteriosclerosis: The Biochemical Mechanism Responsible for Development | MEDLINE |
| 26 | Elastomeric Hydraulic Systems Seals for Aircraft Systems | NTIS |
| 26 | New Candidate Elastomers - Synthesis and Properties | CA |
| 29 | New Candidate Elastomers - Synthesis and Properties | CA (5 searches) |
| 29 | Liquid Crystals Heated; Plastic Foam Elastomers; Ultraviolet Electroluminescence | CA |
| Oct 1 | Physics of Polymer Solutions | CHEMCON |
| 1 | Author Search | NTIS |
| 3 | Physics of Polymer Solutions | NTIS, CA |
| 3 | Synthetic Polymers in Solution | CA |
| 3 | Physics of Polymer Solutions | CA |
| 7 | Kinetic Studies of Polymer Reactions | CA, CHEMCON |
| 8 | Bulk or Solid Polymers | CA |
| 8 | Galactosemia, Galactose Cataract | Biological Abstracts |
| 8 | Formable Sheet Titanium Alloys | NTIS, EI |
| 8 | Thermal Conductivity: Germanates and Silicates | CA |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Oct 8 | Epoxy Graphite Aging Techniques | NTIS, EI |
| 9 | Graphite Fibers | NTIS, EI |
| 10 | Synthesis of Fluorocarbon Ether Heterocyclic Polymers | CA |
| 10 | Aging Techniques for Epoxy Graphites | NTIS |
| 10 | Synthesis of New Fluoride-Containing Polymers | CA |
| 10 | Moisture Measurement or Content of Composites | NTIS |
| 10 | Fluorotriazines, Ethers | CA |
| 14 | Synthesis of Fluorocarbons | CA |
| 14 | Enzyme Dyes | CA |
| 14 | Photochromic and Thermochromic Compounds | CA |
| 14 | Daylight Fluorescence | CA |
| 14 | Ultraviolet Electroluminescence | CA |
| 14 | Plastic or Foam Elastomers | CA |
| 14 | Heated Liquid Crystals | CA |
| 15 | Author Search | EI |
| 15 | Electromagnetic Generation of Ultrasound | INSPEC, EI, NTIS |
| 16 | Fluorotriazines, Ethers | CA |
| 17 | Ultrasound, Acoustic Waves | NTIS, INSPEC |
| 17 | Industry Technology Assessment (3-Day Conference) | NTIS, EI |
| 20 | Mechanical Properties of Metal Matrix Composites | NTIS, CA, EI |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Oct 20 | Detection or Generation of Ultra-sound Waves | INSPEC, NTIS |
| 21 | Microstructure of Polysulfones | CA, NTIS |
| 22 | High Temperature Mass Spectrometry | CA |
| 22 | High Temperature Mass Spectrometry | CA |
| 24 | Adhesion | NTIS, CA |
| 29 | Sialon | NTIS, SCISEARCH, EI, CA, INSPEC |
| 31 | Profile Updates | CA(7), NTIS(1) |
| 31 | Antiastatic Coatings | CA |
| 31 | Lubrication (Stick-Slip Phenomena) | CA |
| 31 | Asperity | CA |
| 31 | Liquid Lubricants | NTIS |
| 31 | Emissivity | CA |
| Nov 3 | High Temperature Mass Spectrometry | CA |
| 3 | 6 SDI Searches | CA(X 6) |
| 3 | SDI Update | CA |
| 3 | Segmented Block Polymers; Fluorocarbons | CA |
| 3 | Aircraft/Helicopter Seals | NTIS |
| 3 | 4 SDI Searches | CA(X 4) |
| 3 | Heating of Liquid Crystals | CA |
| 3 | SDI Profile | CA |
| 4 | 5 SDI Profiles | CA(X 5) |
| 5 | SDI Profile | CA |
| 5 | Electrical Grounding Systems | NTIS |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Nov 5 | Copalum: Used as Terminations in Turbo-Prop Engines | CA |
| 5 | Gadmium Plated Fasteners in Contact with Titanium | CA, NTIS, EI, ISMEC |
| 7 | 27 SDI Updates | CA(X 26), NTIS |
| 10 | Electrical Stimulation of Peripheral Nerves | MEDLINE |
| 10 | Thermal Protection Materials | CLAIMS, NTIS |
| 11 | Test Techniques for Reinforced Composites | EI, NTIS, CA |
| 12 | Carbon/Carbon Materials Development (past 3 years) | NTIS |
| 12 | Post-Failure Fracture Analysis of Composite Structures | NTIS, CA, EI |
| 14 | Plating of Bearings (Indium) | NTIS, EI |
| 14 | SDI Profile on Polymer Composites | NTIS, CA |
| 19 | Creep Fatigue Interactions of Titanium Alloys | NTIS, EI, ISMEC, SCISEARCH, (Twice Each) |
| 21 | Thermal Protection Materials | CLAIMS, NTIS |
| 21 | SDI Profile on Lubricants | CA |
| 24 | Zirconium Powder for Heat Source | NTIS |
| 24 | Zirconium Dioxide Reduction | CA |
| 26 | Cost Analysis of Process Planning for Optimal Manufacturing System | INFORM |
| 26 | Material Composites and Coatings | SSIE |
| 28 | Cost Analysis of Process Planning for Optimal Manufacturing System | INFORM |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Dec 2 | Fatigue Crack Growth Rate | NTIS |
| 3 | Regression Analysis | ABI/INFORM |
| 3 | SDI Profile | CA |
| 5 | Author Search | CA |
| 8 | SDI Profile | CA |
| 8 | SDI Profile | CA |
| 8 | SDI Profile | CA |
| 10 | Cageless, Retainless Bearings | NTIS, EI |
| 10 | SDI Profile | CA |
| 12 | Cageless, Retainless Bearings | CA, NTIS, EI, ISMEC |
| 12 | Electrocatalysis with Nickel or Cobalt Reduction | CA, NTIS, EI, FOUNDATION GRANTS |
| 12 | Filament Winding | NTIS |
| 12 | SDI Profile | CA |
| 12 | Rare Earth Cobalt Magnets | NTIS |
| 15 | Thermophysical Properties of Carbon/ Carbon Composites | NTIS |
| 15 | High Temperature Mass Spectrometry | NTIS, CA |
| 15 | Recovery of Radioisotopes from Nuclear Waste | SCISEARCH |
| 15 | Fault Tree Analysis | NTIS, CA, EI, ABI/INFORM |
| 16 | Microcracks in Ceramics | NTIS |
| 17 | Electron Beam Welding | NTIS |
| 18 | Radionuclides in Coal | CA, NTIS |

APPENDIX B (Continued)

| Date 1975 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| 18 | Macrocyclic Polyethers | CA, NTIS |
| 19 | Titanium Working | CA |
| 31 | Turbulence and Surface Roughness | CA |
| 31 | Frangible Projectiles | NTIS, EI |
| **January 1976** | | |
| Jan 1 | High Temperature Hydraulic Fluids | SDC |
| 7 | High Temperature Hydraulic Fluids | NTIS, EI |
| 7 | Fiber Conductivity Measurements | NTIS |
| 8 | 28 SDI Profile Searches | CA(X 27), NTIS |
| 9 | Computer-Aided Manufacturing | INSPEC 13 |
| 9 | Group Technology | INSPEC 13 |
| 9 | Computer-Aided Design; Manufacturing Processes | INSPEC 13 |
| 12 | Defects in Multi-Layer Metal Bonding | NTIS, EI |
| 12 | Radiography and Image Enhancement (Topography) | INSPEC 13 |
| 12 | X-Ray and Signal Processing | ISMEC |
| 13 | Terminal Ballistics | NTIS |
| 14 | Dielectric Properties of Metals | NTIS, CA, EI, INSPEC 12, INSPEC 13 |
| 15 | Corrosion Failure (SEM) | NTIS, EI, DISSERTATION ABS., INSPEC 12 |
| 16 | Corrosion Detected by SEM | CA, INSPEC 12 EI, NTIS, ISMEC 14, SCISEARCH |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Jan 19 | SDI Profile on Group Technology | INSPEC 13 |
| 19 | Computer-Aided Design | INSPEC 13 |
| 19 | Process Computers (Modeling and Simulation) | INSPEC 13 |
| 20 | Foreign Object Damage to Aircraft | DDC |
| 20 | Author Search | DISSERTATION ABS. |
| 20 | Crack Growth Retardation | CA, NTIS, EI, INSPEC 12, ISMEC, METADEX, SCISEARCH |
| 21 | Dielectric Properties of Special Metals | NTIS |
| 21 | Detection of Defects in Metal Bounding | NTIS |
| 23 | Aluminum Welding | CA, NTIS, EI, ISMEC. CLAIMS, SCISEARCH, CMA/EMA |
| 27 | Liquid Ammonia Permeability | CA, NTIS |
| 27 | High Strength Aluminum Alloys | NTIS |
| 27 | High Strength Aluminum Alloys | METALS ABS. |
| 27 | Author Search | NTIS, CA, EI, INSPEC 14, INSMEC, METALS ABS., SCISEARCH |
| 27 | Thermo-Insulation of Externally Carried Munitions | NTIS |
| 27 | Diffusion in Titanium | NTIS, EI |
| 29 | Diffusion in Titanium Binary Alloys | METALS ABS. |
| 30 | Composition of Volcanic Ash in Alaska | OCEANIC ABS., NTIS, METEOROLOGICAL ABS. |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Feb 1 | Aluminum Anodizing Corrosion | SSIE, CA, NTIS |
| 2 | Hydrazine Corrosion Propellants | NTIS(SCD), EI |
| 6 | Volcanic Ash | METALS ABS. |
| 6 | Chem Abstracts, Volume 83, Issue 8 | CA |
| 7 | Solidification of Welds | METALS ABS., EI |
| 8 | Use of Bray Oil Co. (Brayco) 775 Hydraulic Fluid | NTIS, NTIS(SDC) |
| 8 | A. A. Germelis | FTD |
| 8 | A. A. Germelis | FTD |
| 9 | Use of Brayco 775 Hydraulic Fluid | NTIS, CHEMCON |
| 13 | Acoustics or Ultrasonics for Evaluating Residual Stress | NTIS, METALS ABS. EI, CA, ISMEC |
| 19 | Contract Angle | CA |
| 19 | SDI Profile Search | CA |
| 20 | Use of Brayco 775 Hydraulic Fluid in Lockheed SST | EI, CLAIMS |
| 20 | Forgings of 7000 Series Aluminum Alloys | METALS ABS., NTIS, CA, EI |
| 23 | Autokon or Autoprios | INSPEC 13 |
| 24 | Intermetallic Compounds | METADEX |
| 25 | Diels-Alder Synthesis | CA |
| 25 | Fluoro, Fluorin | CA |
| 26 | Symmetrical Trichlorobenzene | CA |
| 27 | Symmetrical Trichlorobenzene | CA |
| 27 | Liquid Crystals and Heat | CA |
| 27 | Diels-Alder Synthesis | CA |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Mar 1 | Shipping and Storage Containers | NTIS(SDC) |
| 1 | Nose Insulation Sizing Theory | NTIS |
| 3 | Heating of Externally Carried Munitions | DDC |
| 3 | SDI Profile | CA |
| 3 | SDI Profile | CA |
| 3 | SDI Profile | CA |
| 4 | Intermetallic Compounds | CA |
| 5 | Author Search | METALS ABS. |
| 5 | SDI Profile | CA |
| 8 | Aluminum Bronzing | NTIS, METADEX |
| 9 | Corrosion of Steel and Aluminum | NTIS, EI, ISMEC, METADEX |
| 9 | Remote Control Machine Gun Operations | NTIS |
| 10 | Solar Cells | NTIS |
| 12 | Acoustic Insulations | NTIS, EI, CMA/EMA Pollution |
| 18 | Cadimum Sulfide Solar Cells | NTIS, CA |
| 19 | TCB, TATB | CA, NTIS, EI, INSPEC 12, CLAIMS, ABI/INFORM, CMA/EMA, SCISEARCH |
| 19 | Raw Materials Availability | NTIS |
| 19 | Non-Destructive Testing | NTIS, CA, EI, INSPEC, METADEX |
| 22 | Forecasting or Assessment of Non-Materials | CIS INDEX, NTIS(SDC), FOUNDATION GRANTS |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Mar 23 | Forecasting or Assessment of Non-Materials | SSIE(SDC) |
| 24 | Surface Drainage Design | NTIS, NTIS(SDC), METALS ABS. |
| 26 | SDI Profile | CA(X 5) |
| 26 | Missile Design | NTIS |
| 29 | SDI Profile | CA |
| 29 | Antiradar | NTIS, NTIS(SDC) |
| 30 | Antiradar Coatings | DDC |
| 30 | Cast Thermal Stable Explosions | DDC |
| 31 | Cast Thermal Stable Explosions | NTIS |
| Apr 6 | Author Search | NTIS, DISSERTATION INDEX |
| 6 | Tritium Detection | CA, NTIS |
| 9 | Diffusion of Oxygen into Gold, Platinum, Noble Metals, Titanium Alumindes | NTIS, CA, METALS ABS., World Aluminum |
| 14 | Magnesium Fluoride as an Anti-reflective Coating | NTIS |
| 16 | Graphite Fibers, Thermal Aging, Surface Finishes, Sizing | NTIS, Claims-Chem, (Patent) |
| 19 | Titanium Anodizing, Tiodizing | NTIS, CHEMCON(SDC) |
| 19 | Polyurethane Painting -- Effect of Environments on Aircraft | NTIS |
| 19 | Materials Technology | SSIE(SDC), 14X |
| 21 | SDI Profile | CA |
| 21 | SDI Profile | CA |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Apr 21 | SDI Profile | CA |
| 21 | SDI Profile | CA |
| 22 | Organic Compounds of Fluorine | CASHIA, CHEMNAME, CHEM. ABS. |
| 23 | Water Based Paints for Painting Aircraft Exteriors | NTIS, CA, EI |
| 23 | Improving Visibility for Egress from a Survivable Airplane Crash | NTIS |
| 29 | Plastic Container for Air Force Munitions | NTIS |
| 30 | Plastic Containers for Air Force Munitions | SDC, NTIS, ISMEC, SSIE |
| May 5 | Carbondioxide Lasers: 2nd Harmonic Generation Frequency Doubling | DDC |
| 5 | Tiodizing, Coatings and Lubrication | METADEX, EI, INSPEC-Physics, SSIE |
| 7 | Glass/Ceramic Coatings | NTIS |
| 7 | Ultraviolet Transmission Data | CA |
| 10 | Author Search | NTIS, CHEM 7071, EI, CHEMCON, ISMEC |
| 12 | Cordic Algorithms (IBM or General Dynamics) | INSPEC-Computers |
| 12 | Structural Foam Plastic Packaging, Cushioning in Transit Inside Containers | NTIS |
| 12 | Author Search | NTIS |
| 17-18 | Environmental Effects on Advanced Composites | NTIS, EI, 12 Searches |
| 18 | Diffusivity of Porous Materials | NTIS |
| 26 | Lubrication of Aircraft Engines | CA, SDI |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| May 26 | Computer-Aided Manufacturing of Sheet Metal | INSPEC-Computers, NTIS, METADEX, EI |
| 26 | Desk Top Calculators | NTIS |
| 28 | SDI | CA(X 7) |
| 28 | SDI | CA |
| 28 | SDI | CA |
| 28 | SDI | CA |
| 28 | SDI | CA |
| 28 | SDI | CA |
| 28 | SDI | CA(X 6) |
| 28 | SDI | CA(X 6) |
| 28 | SDI | CA(X 5) |
| 28 | SDI | CA |
| Jun 4 | Increased Film Sensitivity | CA, NTIS, CLAIMS/CHEM |
| 4 | Dielectric Behavior in Polymeric Solids | CA, NTIS, SSIE |
| 7 | Soviet Laser Hardening | NTIS |
| 9 | Author Search | CA |
| 9 | Moisture Effects on Epoxy, Epoxies, Composities | CA, NTIS |
| 9 | Celsius-Centrigrade Thermometer Metric System | NTIS |
| 11 | Physical Properties and Theoretical Analysis of Metals, Ceramics and Intermetallics | NTIS, METADEX, CA, World Aluminum Abs., INSPEC-Physics |
| 11 | Chemical Analysis of Lubricants -- Composition, Changes with Deterioration | CA, NTIS, SSIE |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Jun 14 | Chemical Analysis of Lubricants, Composition Changes with Deterioration | SSIE |
| 16 | Hexcel F-178(HX 580) | NTIS, CA, ABI-INFORM, CLAIMS/CHEM |
| 17 | Aircraft Brakes | NTIS |
| 22 | Author Search | NTIS, ENG. INDEX, INSPEC-Physics |
| 22 | Electronic Federal Trust System | SSIE, INFORM |
| 22 | UPC | SSIE, INFORM |
| 23 | Author Search | INSPEC-Physics |
| Jul 9 | Thallium Iodide | SDC(Chemcon), NTIS, CHEMCON, INSPEC, ENG., INDEX |
| 9 | Detection of Aluminum Alloy Corrosion Under Painted Surfaces | SSIE, NTIS, IE, World Aluminum, METADEX, ISMEC |
| 14 | Metallic Hydrogen Production | NTIS, METADEX, EI, INSPEC |
| 14 | Patents Issued to Sol Aisenberg, Ronald Chabot, Whittaker Corp. | CLAIMS-CHEM, CLAIMS-GEM, NTIS |
| 14 | Nickel Superalloys | NTIS, EI, METADEX, DISSERTATION ABS. |
| 16 | Thermal Cycling of Super Alloys | NTIS, ENG. INDEX |
| 19 | Author Search | NTIS, ENG. INDEX, CHEM. ABS. |
| 22 | Comparing the Index of Refraction with the Variation with Temperature of Plexiglas, Polymethyl Metharcylate. and Polycarbon | INSPEC-Physics |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Jul 23 | Comparing the Index of Refraction with the Variation with Temperature of Plexiglas, Polymethyl Methacrylate and Polycarbon | SDC: NTIS, CA, EI, SSIE, CHEMCON, INSPEC |
| 23 | Amorphous Metals | NTIS, EI, CA, COMPENDEX, INSPEC, World Aluminum |
| 26 | Amorphous Metals | METADEX, SSIE, CA, EI |
| 30 | Physical Properties of Magnesium Fluoride, Cerium Fluoride, Lead Fluoride | CA, EI, SSIE, INSPEC-Physics |
| | Ultrahigh Vacuum Systems, Cleaning Materials etc., and Stainless Steel | |
| 30 | Articles on Color Contrast and Legibility | Soc Scisearch, NTIS |
| 30 | Bibliographic Information | NTIS |
| 30 | Refractive Index of Zinc Telluride at Room Temperature | NTIS, CA, EI, INSPEC-Physics, SSIE |
| | Specific Heat of Cadmium Selenide, Sodium Bromide, Silicon Dioxide | |
| 30 | Thallium Iodide | CA |
| 30 | SDI | CA |
| 30 | SDI | CA |
| 30 | SDI | CA |
| 30 | SDI | CA |
| Aug 2 | Heat Capacity or Specific Heat of Cadmium Selenide and Thallium | INSPEC-Physics, INSPEC-Computers, CA, EI, NTIS, SSIE ISMEC, CHEMCON |
| 6 | Effect of the Magnetic Field on Anodic Polarization | CA, EI, METADEX, CHEMCON, NTIS, COMPENDEX |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Aug 9 | Silicones or Siloxanes | CA, INSPEC, NTIS, EI |
| 11 | Metallic Hydrogen | CA |
| 13 | Silicones or Siloxanes | EI, CA, INSPEC |
| 18 | Toxicity of Thallium | TOXLINE |
| 20 | Chlorine Contamination | CA, NTIS |
| 20 | Mechanical Fasteners | NTIS, SSIE, COMPENDEX |
| 20 | Superplasticity | NTIS, EI, SSIE, METADEX |
| 27 | Grain Boundaries; Thin Films; Chemisorption in Water | CA, NTIS, SSIE, INSPEC-Physics |
| 30 | Contamination Control | NTIS, EI |
| 31 | Physical Properties of Chemical Compounds | NTIS, CA, SSIE |
| Sep 10 | Nondestructive testing of Chopped Fibers | NTIS |
| 15 | Contacts with a Metal on Silicon | COMPENDEX, NTIS, EI, INSPEC 12 |
| 21 | Epoxy Resin System - Properties and Cost, Availability | INFORM, CA, CMA/EMA, NTIS |
| 22 | Find Report No. for a Technical Report by Vance Chase, (AD A005 107) | NTIS |
| 22 | Physical Properties of Chemical Compounds (100 separate compounds) | CA |
| 24 | Nondestructive Testing | NTIS |
| 24 | Silver Beta Diketones | CA, NTIS, SSIE |
| Oct 1 | Barium Niobate, Barium Niobium Oxide, Alkali Niobium Oxide, Alkali Niobate - Properties | METADEX |

APPENDIX B (Continued)

| Date 1976 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Oct 1 | Protecting Optical Sensors vs. Laser Light | NTIS, CA, INSPEC-Physics |
| 1 | Electrostriction and Lasers | NTIS, CA, INSPEC-Physics |
| 4 | Diffusion of Water into Polymers | CA, INSPEC 12 |
| 4 | Glass Transition Temperature of Water in Polymers | CA, INSPEC 12 |
| 4 | Water in Polymers as a Diluent/ Plasticizer - Effect on Glass Transition Temperature | CA, INSPEC 12 |
| 4 | Water adsorbed/Absorbed by Graphite Fibers | CA, INSPEC 12 |
| 4 | Author Search - Petropoulas, J.H. | CA, INSPEC 12 |
| 6 | Pseudorandom Noise Doppler Radars | NTIS, EI, DISSERTATION ABS. |
| 6 | Signal Smoke | CA |
| 10 | Lithium Oxide, Lithium Hydroxide -- Properties: Ionic Conductivity, Solid Electrolytes, etc. | CA, INSPEC 12 |
| 10 | Na-B-Alumina - Properties; FAr Infrared Spec. | CA, INSPEC 12 |
| 13 | Pseudo-Random Radar | NTIS |
| 14 | Purification of Coating Materials Lead Fluoride, Magnesium Fluoride, Cerium Fluoride, Sodium Fluoride, Tellurium Iodide | CA |
| 18 | Find 1960 Reference on Androforming Sheet Metal Forming - Stretch Forming | NTIS, METALS ABS. |
| 20 | Methods of Metal Removal: Grinding, Laser Beams, Spark Machining, Cutting, Abrasive Etching, Honing, Turning, Tapping, Chemical Milling, Ultrasonics | NTIS, EI, SSIE METALS ABS., INSPEC/Physics |

APPENDIX B (Continued)

| Date 1977 | Topic of Search | Data Base(s) Searched |
|---|---|---|
| Oct 21 | Shot Peening of Titanium Steel Failure Analysis - Battelle Report DMIC Effect on Mechanical Properties, Fatigue | NTIS, EI, METALS ABS. |
| 29 | Word - Processing | ABI/INFORM, INSPEC 13 |
| Dec 2 | Coal-Water Slurry Systems, Coal Mining - Surfactant, Fluid Mechanics, Rheology | NTIS, ENG. INDEX, ENVIROLINE, SSIE, ENERGYLINE |
| 9 | Ventilation Requirements for Operating Rooms | COMPENDEX, SSIE |
| 10 | Solar Energy For Heating Homes | ABI/INFORM |
| 13 | Flying Saucer, Propulsion, Author Search | INSPEC-Physics, INSPEC-Electronics, NTIS |
| 14 | Optical Properties of Materials Which Limit the Power of Laser Light | NTIS, INSPEC-Physics |
| January 1977 | | |
| 3 | Find Report Number for Contract #F33615-71-C-1674 | NTIS |
| 7 | Chemical Abstracts References Russian Articles and Patents, Author Search (52 Patents, 9 References) | CA, CLAIMS, FTD |
| 12 | Modified Siloxane Polymers | CA, NTIS |
| 20 | Trace Metals or Metal Contamination of Graphite or Carbon Electrodes, Rods, Disks Using Atomic Emission Spectroscopy | CA, NTIS, SSIE INSPEC-Physics |
| 21 | Contamination of Electrodes by Trace Metals | CA, NTIS, INSPEC-Physics |
| 24 | Hydrogen Fluoride, Deuterium Fluoride Lasers, Chemical Lasers, Author Search | CA |

APPENDIX B (Continued)

| Date 1977 | Topic of Search | Data Base Searched |
|---|---|---|
| Jan 24 | Selenium Laser | CA |
| 31 | Selenium Fluoride<br>Selenium Chloride | CA |
| Feb 1 | Aluminum Alloy 2419 | World Aluminum Abs. |
| 2 | Impurities or Contamination in Graphite, Carbon or Metal | CA Abstracts Files #2, 3, 4 |
| 2 | Determination of Halogens in Lubricants | CA Files #2, 3, 4 |
| 9 | Surface Roughness, Asperity | NTIS,<br>INSPEC-Physics,<br>INSPEC-Electronics |
| 11 | SDI on Surface Roughness, etc. | INSPEC-Physics |
| 11 | Physical Properties, Cerium Fluoride, Cerous Fluoride, Cerium Trifluoride, Bismuth Fluoride, Bismuth Trifluoride | CA (7 Searches) |
| 16 | Traveling Wave Tubes, Author Searches | NTIS,<br>INSPEC-Physics,<br>INSPEC-Electronics,<br>SDI Search |
| 21 | Update SDI | CA #4, 3 |
| 21 | Update SDI | CA #4, 3 |
| 21 | Update SDI | INSPEC-Physics |
| 21 | Update SDI | INSPEC-Physics |
| 21 | Update SDI | CA #3 |
| 21 | Update SDI | CA #3 |
| 21 | Update SDI | CA #4, 3 |
| 21 | Update SDI | NTIS |
| 21 | Update SDI | CA #3 |
| 21 | Update SDI | NTIS |

APPENDIX B (Continued)

| Date 1977 | Topic of Search | Data Base(s) Searched |
|---|---|---|
| Mar 7 | | PTS Market Abs. |
| 7 | R. W. Rice - Author Search, Thermal Stress Failure in Ceramics | NTIS, INSPEC-12, DDC, NASA, MCIC |
| 4 | Computer Models for Thermal Stress in Ceramics, Author - R. W. Rice | NTIS, NASA, DDC |
| 11 | Aluminum-Li-Mg Alloys: Rolling, Forging, Corrosion, Melting, Phase Equilibrium | METADEX, NTIS |
| 11 | Lubricants Apiezon, NMR of Carbonyl group | CA3, EI, INSPEC-Physics |
| 14 | Platinum Coating on Titanium Alloys by Ion Implantation, Effect of Mechanical Properties, Oxidation, Elevated Temperature Application: Pratt and Whitney Jet Engines | NTIS, EI, DDC, METADEX, Market Abs. |
| 16 | Ion Implantation, Ion Plating, Electro-chemical Plating, Author Search - W. S. Miller | INSPEC-Physics, METADEX, NTIS, EI |
| 21 | Find What Contractors Have Worked On: Fiber Science, Inc., Structural Composites, Inc. | NTIS |
| 21 | Find Master's Thesis for Maj. Jack C. Hauser - Find Master's Thesis for Capt. Dan L. Boulet, Jr. | NTIS, INSPEC-Physics, DISSERTATIONS, DDC Search from Frank Jones |
| 21 | Find AFML Report on Finishes for Boron Filaments: IITRI - Contractor, G. Peterson and E. Jaffe - Project Engineers, about Mid-60's | NTIS |
| 23 | Hydrogen Retort Cleaning Superalloys, Turbines | CA, NTIS, EI, METADEX |
| 28 | Cleaning Nickel Superalloy Surfaces with Hydrogen Gas | NTIS, CA, SCISEARCH, METADEX |
| 30 | Radio Equipment, Plastics, Housing | NTIS |
| 30 | Any Report of Sulfidation of Cobalt Superalloys, especially Cobalt L-605 | NTIS, METADEX, SCISEARCH |

APPENDIX B (Continued)

| Date 1977 | Topic of Search | Data Base(s) Searched |
|---|---|---|
| May 4 | Characterization of Pyroceram (Technical Report between 1959-1962) | NTIS |
| 6 | Photodissociation of Fluorine Compounds | INSPEC-Physics, CA 3, CA 4 |
| 13 | High Temperature Engine Coatings | NTIS, METADEX |
| 14 | Photodissociation of Fluorine Compounds | INSPEC-Physics, CA 3, CA 4 |
| 16 | Fluorescent Dye Penetrants, Market and Casting, Cracking | MARKET ABS., ABI/INFORM, F & S INDEXES |
| 18 | Electroslag Refining, Melting Plasma | NTIS |
| 19 | Importance of Sewage Treatment for Metal Pollution; Sediment; Heavy Metals, Aeration and Effluent | NTIS |
| 25 | Solvent Clearning for Optics; Laser Windows | INSPEC-Physics |
| 26 | Software Reliability; System Effectiveness | NTIS, EI, ERIC, DISSERTATION ABS., NTIS (SDC) |
| 26 | Physical Properties of $Si_3N_4$ (Silicon Oxygen Nitride) | CA 3, CA 4, INSPEC-Physics |
| Jun 2 | Charged Particle Erosion | NTIS, INSPEC-Physics, METEOR. ABS. |
| 2 | Thermal Expansion at Cryogenic Temperature | NTIS, EI, CA 3, 4, INSPEC-Physics |
| 3 | 1. Trace Impurity Analysis of GaAs Gallium Arsenide; Ion Implantation in Gallium Arsenide. Secondary Ion Mass Specifia. | CA 3, 4 INSPEC-Physics |
| 6 | Find Publications by Ben Weil of Exxon | Socscisearch, ERIC, LIBCON |

APPENDIX B (Continued)

| Date 1977 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Jun 7 | Plating Nickel-Colbalt Alloy | NTIS, EI, METADEX, INSPEC-Electronics, Computer |
| 9 | Patent Search for Magnetic Tape Heads | CLAIMS/GEM, CDI, INSPEC-Comput. |
| 10 | Electrical Properties of Polymers and Composites | SCISEARCH, CA 3, 4, C.D.I. |
| 10 | Diffusion in Polymers | CA 3, 4 |
| 15 | BIS-Diene Synthesis<br>BIS-Pyrone Synthesis | CA 2, 3, 4 |
| 15 | Magnetic Bubble Memories | NTIS, INSPEC-Physics, INSPEC-Elect. |
| Jul 6 | Silicon Crystals | INSPEC-Physics, NTIS, CHEM. ABS., INSPEC-Elect. |
| 6 | Silicon Magneto Resistance | NTIS, CA 4, 3, 2, INSPEC-Physics |
| 7 | Superalloy 901 | NTIS, METADEX |
| 12 | Radar Clutter | NTIS, EI, INSPEC-Physics, INSPEC-Elect. |
| 13 | Expansion of Polymers;<br>Mixing Models for CSTR;<br>Hemodialyzer for Artificial Kidney | CA 3, 4, EI, NTIS, SSIE, BIOSIS, SCISEARCH, CDI, GRANTS, PNI |
| 14 | Hemodialyzer for Artificial Kidney;<br>High Temperature Polymers;<br>Continuous Tank Stirred Reaction | CA 2, PTS Market Abs., PNI, INT. STATISTICS, TOXLINE, MEDLINE |
| 15 | Model Mixing Reactor;<br>PMI, Ordering, Orientation, Expansion;<br>Lubricants | CA 2, 3, 4, CIN, TOXLINE |

APPENDIX B (Continued)

| Date 1977 | Topics of Search | Data Base(s) Searched |
|---|---|---|
| Jul 15 | Capacitance Velocity Gauge | NTIS, EI, INSPEC-Physics |
| 20 | Shelter Materials | NTIS |
| 20 | Impact of Beams | NTIS, EI, SSIE, INSPEC-Physics, ISMEC |
| 21 | Sneak Circuits | NTIS, EI, INSPEC-Physics, INSPEC-Elect., SCISEARCH, DISSERTATION ABS., CLAIMS/GEM |
| 22 | Crack Propagation in Steel | NTIS |
| 22 | What Will Aerospace Metals Cost? | ABI/INFORM, MKT. ABS., PTS WEEKLY, F&S INDEXES, CIN, DOM. STAT., INT. STAT, NTIS, METADEX |
| 25 | Oxidation of Aluminum | CA, NTIS |
| 28 | Toxic Substances | TOXLINE, CA 3, 4, AGRICOLA, NTIS, ENVIROLINE, POLLUTION |
| Sep 6 | High Temperature Crack Growth Under Sustained Loading | NTIS, EI, ISMEC |
| 7 | Journal Search, Creep Crack Growth | NTIS, EI, ISMEC, METADEX, SCISEARCH, SOCSCISEARCH |
| 9 | Space Environment Effects on Materials, Molecular Structure Effects on Strength and Optical Properties | NTIS |
| 12 | Secondary Mass Spectroscopy, Author Search | CA 2, 4, INSPEC-Physics |
| 14 | Positive Displacement, Fluid Motors | NTIS, ISMEC, COMPENDEX |

APPENDIX B (Continued)

| Date 1977 | Topic of Search | Data Base(s) Searched |
|---|---|---|
| Sep 15 | AFML Ceramic Processing Since 1968 | NTIS |
| 16 | Contractor Search: What Research Was Done at Utah University, Salt Lake City, 1974-1977 | NTIS, EI, CA 3, 4 |
| 19 | Comprehensive List of Compounds for Crystal Structure Transitions | CA 2, 3, 4, INSPEC-Physics, SCISEARCH, SSIE, DISSERTATIONS |
| 26 | Space Environment Effects on Materials: Adhesives, Plastics, Resins, Fibers, Glasses Quartz | CA 2, 3, 4, NTIS, EI, INSPEC-Physics, SCISEARCH, DISSERTATIONS |
| 27 | Polymer Structure Effects on Strength and Optical Properties | CA 2, 3, 4, NTIS, EI, INSPEC-Physics, SCISEARCH, DISSERTATIONS |
| 27 | Thin Films - Non-Magnetic, Inorganic, Optical | CA 2, 3, 4, INSPEC-Physics, SCISEARCH |

APPENDIX C

JULY 1, 1978 - SEPTEMBER 30, 1978

REQUESTERS SERVED BY THE UDRI (AFWAL-TIC)

APPENDIX C

JULY 1, 1978 - SEPTEMBER 30, 1978

REQUESTERS SERVED BY THE UDRI (AFWAL-TIC)

| REQUESTER | ORGANIZATION |
|---|---|
| Adams, W. | AFML/MBP |
| Allinikov, S. | AFML/MXE |
| Anderson, C. | AFML/LT |
| Archibald, Mr. | AFML/MBC |
| Arnold, F. | AFML/MBP |
| Arnold, W. | Cox Heart Institute |
| Arvay, E. | AFML/MBC |
| Austin, R. | AFML/LLM |
| Bahjak, S. | AFML/LC |
| Baun, W. | AFML/MBM |
| Becker, D. | AFML/LLM |
| Bentley, F. | AFML/MBC |
| Bhansali, K. | AFML/LLN |
| Bishop | AFML/LLM |
| Blasneak, J. | ASD/ENJEA |
| Boulet, Capt. | AFML/LPJ |
| Brisbane, A. | AFML/MXE |
| Brooks, F. | AFML/MBT |
| Bruce, Mr. | National Forest, Oregon |
| Buell, G. | AFML/MBT |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Chakrabarti, A. | AFML/LLN |
| Cochoy, R. | AFML/MBE |
| Cockerham, Lt. | AFML/DOC |
| Conrardy, W. | AFML/MX |
| Corbly, D. | AFML/LLN |
| Cothern, C. | UDRI |
| Crandall, W. | Alfred University |
| Crawshaw, D. | AFML/MBP |
| Cummings, S. | Wright State University |
| Curci, T. | AFML/MXS |
| Dalioso, P. | AFML/LC |
| Dehavilland Aircraft of Canada | |
| Denman, G. | AFML/LC |
| DeWitt, J. | Monsanto Mound Lab |
| Dinwidde, Capt. | AFML/MBT |
| Dobbs, B. | AFML/MXS |
| Doerr, Lt. | AFML/LTM |
| Drzal, L. | AFML/MBM |
| Duhl, M. | AFML/MXE |
| Dunco, R. | AFML/LLM |
| Eff, K. | Army/CREEL |
| Eisentraut, K. | AFML/MBT |
| Emrich, B. | AFML/MXA |
| Evans, D. | AFML/LPJ |
| Evers, R. | AFML/MBP |
| Fechek, F. | AFML/MXA |
| Fisch, K. | AFML/MBP |
| Fu, Dr. L. | AFML/LLN |
| Fudge, K. | UDRI |
| Fujishiro, Dr. | AFML/LLS |
| Fusek, R. | UDRI |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Gegel, Dr. | AFML/LLM |
| Geisendorfer, R. | AFML/MXE |
| Glastetter, Capt. | ASD/ENAIR |
| Goldfarb, I. | AFML/MBP |
| Graf, Mr. | ASD/DES |
| Graham, H. | AFML/LLS |
| Graham, T. | AFML/MBE |
| Graves, B. | UDRI |
| Greason, P. | AFML/LPO |
| Griffin, W. | AFML/MBE |
| Griffith, W. | AFML/LLS |
| Grosjean, D. | AFAPL |
| Gulley, L. | AFML/MXA |
| Gunderson, A. | AFML/MXE |
| Hall, J. | AFML/LLS |
| Hanley, Capt. | AFML/MBT |
| Hanson, Mr. | American Can Co, Neenah, Wi. |
| Harmsworth, C. | AFML/MXE |
| Harris, R. | AFAL/SY |
| Harry, Daria | Miami University |
| Hermann, Col. | AFML/NA |
| Horowitz, M. | AFML/LLM |
| Hurst, J. | AFML/MBC |
| Hyzak, Lt. | AFML/LLN |
| Jacobsen, D. | AFAL/POE-2 |
| Jeffreary, Mr. | USC (Australia) |
| Johnson, W. | AFML/LPJ |
| Jones, W. | AFML/MBC |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Kearns, J. | AFML/TUA |
| Kelble, J. | AFML/MB |
| Kelley, Dr. F. | AFML/CA |
| Kelto, C. | AFML/MXA |
| Kirchner, Col. | AFML/NA |
| Koenigsberg, H. | FTD |
| Kojola, K. | AFML/LTM |
| Latva, J. | AFML/MXS |
| Lawyer, J. | AFLC/MAVT |
| Lee, S. | AFML/LTM |
| Lehn, W. | AFML/MBE |
| Lewis, J. | AFML/LPJ |
| Long, W. | Editor, SAMPE Quarterly |
| Lyon, S. | AFML/LPJ |
| Macha, D. | AFML/LLN |
| March, D. | AFML/DO |
| March, J. | AFAL/STINFO |
| March, W. Md. | U. of Wisconsin |
| Marsh, R. | AFAPL |
| Martin, P. | AFML/LLM |
| Mercer, Mr. | Rare Earth Scientific, Inc. |
| Materne, H. | AFML/LTN |
| Metzger, G. | AFML/LLS |
| Meyers, F. | AFML/MXA |
| Moddeman, B. | UDRI |
| Morrissey, E. | AFML/MXE |
| Mullins, F. | AFML/LLP |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Nagy, M. | AFML/LLN |
| Nahlovsky, B. | AFML/MBT |
| Nathan, Mr. | AFML/LP |
| Ohmer, M. | AFML/LPO |
| Ormbrek, G. | AFML/MXS |
| Owens, S. | AFML/MXA |
| Palanisamy, Mr. | AFAPL/POE-1 |
| Pantano, C. | UDRI |
| Pedersen, M. | Army |
| Phillipi, C. | AFML/LPJ |
| Powers, K. | NDM Corp. |
| Pratt, C. | AFML/MXS |
| Prochazka, D. | ASD |
| Raag, V. | Syncal Corp. |
| Rhodehamel, J. | AFML/MXE |
| Rivera, M. | AFML/MBT |
| Rolinski, E. | AFML/LPJ |
| Rosenberg, H. | AFML/MBP |
| Rutner, E. | AFML/LPJ |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Sabo, K. | AFLC/IGIS |
| Santner, J. | AFML/LLS |
| Schaffer, L.t | AFML/MBE |
| Schafrik, Capt. | AFML/LTM |
| Schwein, Capt. | AFML/LPO |
| Schumacher, H. | Magnet Program |
| Schwenker, H. | AFML/MBT |
| Seabaugh, P. | Monsanto Mound Lab. |
| Selner, Mr. | AFML/MXA (Tech., Inc.) |
| Sendecky, J. | AFFDL/FBEC |
| Sharp, J. | AFML/LLN |
| Shirrel, Mr. | AFFDL/FBSC |
| Shumaker, G. | AFML/LTM |
| Shunk, D. | AFML/LTM |
| Siegel, Dr. L. | Central State University |
| Sieron, J. | AFML/MBE |
| Slivinski, J. | DHR |
| Snide, Lt. Col. J. | AFML/MX |
| Snyder, C. | AFML/MBT |
| Snyder and Kelly | Mead Technology Labs |
| Stanimen, Capt. | ASD/FTD/EITL |
| Stanton, R. | AFML/LC |
| Stegner, V. | AFAL/RWT-1 |
| Steinmann, A. | AFML/MBC |
| Stelmock, Mr. | Acton Research Corp., Acton, Mass. |
| Stout, Mr. | Eglin AFB |
| Strecker, C. | AFML/LPO |
| Suleiman, J. | SGEL |
| Swenson, Capt. | AFML/LPO |

APPENDIX C (Continued)

| REQUESTER | ORGANIZATION |
|---|---|
| Tamborski, C. | AFML/MBT |
| Theibert, S. | AFML/MXE |
| Thompson, H. | AFAL/TST |
| Tomsashot, R. | AFML/LTN |
| Toto, N. | AFAL/WRW-3 |
| Urzi, R. | AFML/MXE |
| Vitaliani, M. | ASD/YPM |
| Wang, C. | AFAPL/POE-1 |
| Wereta, Capt. | AFML/MBP |
| Wiff, Dr. | AFML/MBP |
| Wilbeck, J. | AFML/LLN |
| Williamson, F. | ASD/ENESP |
| Williamson, J. | AFML/LTM |
| Wisnosky, D. | AFML/LT |
| Yankee, Lt. | AFIT |
| Zoeller, H. | AFML/MXA |