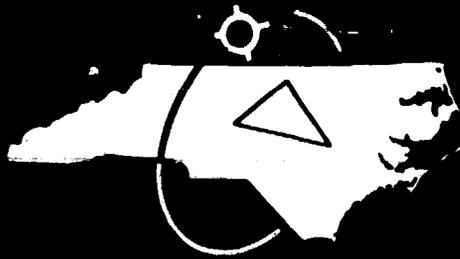


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North Carolina Science and Technology Research Center Research Triangle Park, NC 27709

A unit of the North Carolina Department of Commerce

DRA

FINAL REPORT ON A REGIONAL TECHNOLOGY TRANSFER PROGRAM North Carolina Science and Technology Research Center

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Contract NASW-3055
Period Covered: January 1, 1978 - December 31, 1978



**FINAL REPORT ON A
REGIONAL TECHNOLOGY TRANSFER PROGRAM**

P. J. Chenery, Director

Contract NASW-3055

Period Covered: January 1, 1978 - December 31, 1978

ABSTRACT

This is the final report of the North Carolina Science and Technology Research Center's 14th consecutive contract period as a NASA Industrial Applications Center, serving the information needs of nine Southeastern states. Included in the report are figures for and analysis of marketing efforts, file usage, searches delivered, and other services performed for clients; and information on staff changes, workshops, and special projects in 1978. An appendix contains copies of NC/STRC magazine advertisements, letters from clients, and supplementary information on NC/STRC staff and services.

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SECTION II MARKETING

As a NASA Industrial Applications Center (IAC), NC/STRC is responsible for serving the information needs of business and industry in nine Southeastern states: North Carolina, South Carolina, Virginia, Georgia, Arkansas, Tennessee, Alabama, Mississippi, and Louisiana. Although all technical staff members are required to spend approximately 20% of their time on marketing (via telephone, meetings, or visits to clients), Lem M. Kelly, assistant director for marketing at the Center, assumes the major portion of responsibility for travel, visiting both current and potential NC/STRC clients.

Trips

In 1978 Kelly traveled extensively throughout North Carolina (Asheville, Rocky Mount, Greensboro, Charlotte, and Winston-Salem), South Carolina (Charleston, Florence, Greenville, Columbia, and Orangeburg), Virginia (Danville, Roanoke, Lynchburg, Newport News, Hampton, Richmond, and Petersburg), and Tennessee (Memphis, Nashville, and Knoxville). He also made marketing trips to Alabama, Georgia, and Louisiana. Approximately 30 new clients were obtained and a number of former clients renewed business with the Center as a result of these trips.

Since the loss of a marketing staff member in July 1977, J. Graves Vann, applications engineer at NC/STRC, has assumed marketing responsibility for the Atlanta area; he made five week-long trips there in 1978. Vann also made marketing trips to Richmond, Va.; Nashville and Knoxville, Tenn.; and Baltimore and Annapolis, Md., during which some 10 new clients were obtained and a number of former clients renewed business with with Center.

NC/STRC still faces the problem of losing business from those companies that install their own computer terminals connected to such information services as Lockheed and SDC. These companies often continue to use NC/STRC services, however. When their technical personnel get bogged down with work, they tend to give backlog searches to the Center. In addition, since they have access to a much smaller number of files than NC/STRC, they sometimes need searches of files accessible only at the Center. Companies new to the field of computerized information retrieval also tend to request the help of NC/STRC information specialists, who are more experienced in search techniques.

Competition

Business Assistance Meetings

Field Office Meetings

To stimulate the growth of business and industry throughout the state, the North Carolina Department of Commerce's Business Assistance Division holds periodic meetings throughout the state for field office personnel. Some are also attended by representatives of companies throughout North Carolina. NC/STRC exerts marketing efforts at these meetings through presentations on Center services as well as through personal talks with field office and company representatives.

A meeting at the western field office for the Business Assistance Division was held in Asheville, N.C., on January 25, 1978. There field office personnel and approximately 30 representatives of local business and industry listened to a 30-minute presentation by L.M. Kelly, assistant director for marketing, on NC/STRC services. Referrals made by the field representatives following the meeting resulted in requests for literature searches by companies that previously had not used the Center's services. At a later meeting, held at NC/STRC on February 15, Ms. Sylvia Johnston discussed NC/STRC services with field office personnel.

Buyers-Suppliers Conferences

In addition to those business contacts made on routine marketing trips, L.M. Kelly made additional contacts at two Buyers-Suppliers Conferences held in North Carolina last summer. Also organized by the Business Assistance Division, these conferences brought together purchasing agents and suppliers' representatives from companies in North Carolina in an effort to familiarize these companies with the goods and services available to them within the state, and to help North Carolina suppliers sell their goods and services. One conference, held August 1 in Raleigh, was attended by some 200 company representatives. Since Kelly had already contacted most of the companies represented there, the meeting resulted in few prospects for new business for NC/STRC. Kelly, however, took the opportunity to distribute new marketing literature from the Center, and to bring himself up-to-date on the information needs of the companies represented at the meeting. He also made contact with representatives of two companies he had not previously visited.

A later Buyers-Suppliers Conference proved to be more productive for NC/STRC from a marketing standpoint. Held in Winston-Salem, N.C., the meeting was attended by some 250 to 300 company representatives. Eleven companies represented there that were not among NC/STRC's current clients have the potential for

being good clients, Kelly believes. Marketing calls have been made on all eleven since that meeting.

Last summer, NC/STRC received authorization from the North Carolina Department of Commerce to contract for direct advertising in suitable publications. At the recommendation of A.W. Lockwood, NC/STRC textiles specialist, the Center placed its first paid advertisement in the September 1978 issue of *Chemist and Colorist*, a monthly magazine published in the Research Triangle Park by the American Association of Textile Chemists and Colorists. A second ad, using the same format but with slightly different copy, appeared in the November issue (Appendix Exhibit 4). Present plans call for bimonthly ads for one year on an experimental basis. Thus far, three companies have responded to the first ad, two of which requested searches.

Advertisements

Following the winter conference of Professional Engineers of North Carolina held in Charlotte, NC/STRC was asked to write an article on services the Center can provide for professional engineers. A 1500-word illustrated article was submitted to *Professional Engineers* magazine and published in the March-April issue.

Magazine
Articles

At the request of L.D. Cohick, director of the Division of Economic Development, the North Carolina Department of Commerce, the Center also submitted an article on its services to business and industry for publication in the division's newly authorized monthly newsletter, distributed to management-level employees of some 2,000 companies throughout the state.

NC/STRC will also be the focus of an article to be published in the February 1979 issue of *South* magazine, covering industry in some nine Southeastern states. Written by Jerry DeLaughter, a free-lance writer and space-technology enthusiast, the article will discuss NASA's IAC program using NC/STRC as a case in point. DeLaughter visited NC/STRC in June 1978 for in-depth interviews with staff members.

Three workshops were held in NC/STRC in 1978 to increase the professional skills of staff members from the Center and other research organizations. These workshops also provide opportunities for NC/STRC staff to exert marketing efforts.

Workshops

On March 20, Paul Owen of Predicasts, Inc., Cleveland, Ohio, conducted a workshop on Predicasts file contents and search techniques. In addition to NC/STRC technical staff members, 24 information specialists from the Research Triangle area attended the sessions.

A workshop on the use of transparencies with the overhead projector was held on July 31 for NC/STRC employees. Led by Norman Couch of Cavin's, Inc., Raleigh, a distributor of 3M products, the workshop was aimed at enhancing employees skills in making oral presentations.

On August 22, A.W. Lockwood conducted a workshop for the Textile Information Users Council at NC/STRC. Although an SDC workshop originally had been planned, the sudden cancellation of SDC just prior to presentation time resulted in an unplanned change of focus for the session. What developed was an informal discussion among those people attending on their experiences in processing textile searches. This lent a "frank, forthright flavor to the workshop that a vendor-oriented presentation would have lacked," said Lockwood. (See Appendix, Exhibit 2B, for supplementary information on demonstrations and workshops.)

Exhibits

In 1978 NC/STRC coordinated several exhibits that advertised either NASA technology or NC/STRC services as a NASA Industrial Applications Center. These exhibits were displayed at:

- *The winter conference of the Professional Engineers of North Carolina, held in Charlotte, N.C., January 11-14.* NC/STRC installed a computer terminal on which C. Leon Neal, applications engineer in mechanical and aerospace engineering, ran sample searches. At the request of NC/STRC, NASA provided a background of six panels illustrating the uses of NASTRAN that would be helpful to professional engineers. Peter J. Chenery, director of NC/STRC, and Lem M. Kelly, assistant director for marketing, also attended the meeting and talked with approximately 100 professional engineers. Both Chenery and Kelly termed the meeting "excellent exposure" for NC/STRC.

- *The Annual World Fair for Technology Exchange, held in Atlanta, Ga., February 6-10.* J. Graves Vann, Jr.,

NC/STRC applications engineer, helped man an exhibit booth on NASA patents, reporting later that some excellent contacts were made with potential clients in NC/STRC's marketing territory.

- *A Symposium on Solar Energy Projects in North Carolina, held in Raleigh at North Carolina State University, February 15-16.* Organized by C. Leon Neal and co-sponsored by NC/STRC, the North Carolina State Energy Division, and three departments at North Carolina State University, the meeting drew 140 registrants and some 60 or more who attended single sessions. Gov. James Hunt spoke at the afternoon session to an audience composed of engineers, consultants, "backyard specialists," suppliers, and researchers in solar energy. NC/STRC provided an exhibit on the NASA Tech House, which publicized the availability of floor plans from the Center.
- *The annual Dixie Classic Fair, held in Winston-Salem, N.C., September 28-October 7.* On display was a 1/40 scale model of the shuttlecraft in a self-contained exhibit case, made available by H. E. Mehrens of the NASA Langley Research Center. Teledyne Thermatics, an Elm City, N.C. wire and cable manufacturer, prepared a companion display illustrating its role in the space shuttle program.

In conjunction with the NASA exhibit, NC/STRC displayed its System 70 exhibit, a modular frame enclosing 18 panels of information on the background and function of NC/STRC. Recently modified, System 70 originally contained panels on the Tech House. Since the close of the fair, the exhibit has been on display in the lobby of NC/STRC.

The Dixie Classic Fair draws about 250,000 people annually, mostly from the Triad region of High Point, Greensboro, and Winston-Salem, N.C., but also from as far as southeastern Virginia. A highly industrialized region, the Triad houses a large number of furniture manufacturers, tobacco processors, shipping companies, and textile manufacturers.

SECTION III SERVICES TO CLIENTS

NC/STRC is always adding to its inventory of files available to clients. At last count the Center had access to over 90 databases of some 20 million references from sources throughout the world. Fourteen files were added to NC/STRC's service in 1978:

Files

1. Magazine Index
2. Maritime Research Information Service Abstracts
3. Research Association for the Paper and Board, Printing and Packaging Industries Abstracts
4. Geoarchive Resource
5. International Pharmaceutical Abstracts
6. Modern Language Association Bibliography
7. National Instructional Materials Information System
8. National Foundations
9. Monthly Catalog of United States Government Publications
10. Environmental Periodicals Bibliography
11. Foods ADLIBRA
12. Accountants Index
13. Safety Abstracts
14. Institut Textile de France (TITUS)

NC/STRC makes an effort to attract business from organizations and companies of all sizes. Three service plans available at the Center offer specific economic incentives which vary according to the frequency with which the client uses NC/STRC services.

Service Plans

The Annual Service Package was created in 1977 to stimulate business from medium-sized companies. This plan offers unlimited retrospective and current awareness searches to a client during a one-year period for a fixed fee of \$2,400. Seven clients now subscribe to the Annual Package, three of which are textile companies.

The Prepaid Subscription Plan, which was also made available last year, offers a bonus credit of 15% to those clients who deposit a minimum of \$1,000 for services to be used at NC/STRC within the following year. At the end of December, 13 clients had placed money on deposit at the Center.

Both plans reduce the cost per search for those clients with moderate-to-high information needs, and save the client the delay of issuing individual purchase orders. Those clients uninterested in either plan may, of course, request individual searches as needed, and pay for them when the searches are delivered. Most NC/STRC clients use this third type of services, known as Demand Service. (See Appendix, Exhibit 2A, for additional information on service plans.)

Retrospective Searches

Retrospective searches mailed to clients rose to 846 in 1978, exceeding the total for the last contract period by 42%. Chemical Abstracts (CA) was again the most frequently searched database. With CA searches totalling 143, usage of the database increased 71% this contract period. Usage of the Biosis database doubled to 46 in 1978. The sharp increase in chemical and biomedical searches may be attributed largely to the personal marketing efforts of Dr. Monica Nees, manager of technical operations at NC/STRC and the information specialist chiefly responsible for searches run in those fields. Reflecting in part added business from new clients, the increase was also a result of the wholesale searching offered in the Annual Service Package, to which a few of Dr. Nees's clients subscribe.

Though searches of Toxline and Medline fell far below those of the Chemical Abstracts, the former were used quite heavily this contract period. Searches totalled 46 on Toxline and 42 on Medline, reflecting an almost equal amount of usage as that during the last contract period.

Textiles questions continued to generate a major number (approximately 21%) of searches run at NC/STRC in 1978. The Institute of Textile Technology (ITT) database, searched 88 times, and World Textile Abstracts (WTA), searched 64 times, ranked second and third respectively in usage at the Center. Both were used considerably more than last year; ITT searches increased by 49%, WTA searches, by 36%. TITUS, a new textiles database acquired in 1979, was searched 28 times. (As a result of dwindling demand, wholesale searching for textiles clients was terminated in January 1978; as noted previously, wholesale searching is now offered in the Annual Service Package.)

Searches run on the Engineering Index (EI) database increased from 32 to 52, or 62%. Educational Information Resources Center (ERIC) searches increased by 50%, and Predicasts searches more than doubled. (Predicasts is one of NC/STRC's newer databases, however, and the total number of Predicasts searches remained low.) NASA searches stabilized; 50 were run both in 1977 and 1978. Only two databases showed substantial decreases in usage at the year-end's final tally: Food Science and Technology Abstracts (FSTA) searches dropped from 28 to 17, while Cancerline's fell from 20 to 14.

DATABASES USED MOST OFTEN IN 1978 AT NC/STRC

<u>File</u>	<u>Times Searched in 1977</u>	<u>Times Searched in 1978</u>	<u>Differential</u>
CA	83	143	up 71%
ITT	59	88	up 49%
WTA	47	64	up 36%
EI	34	52	up 53%
NASA	50	50	--
Toxline	47	46	down 2%
Medline	47	42	down 11%
ERIC	20	30	up 50%
GRA/NTIS	25	27	up 8%
Biosis	24	22	down 8%
Predicasts	9	22	up 144%
FSTA	28	17	down 39%

Current awareness searches--or updates--are follow-ups to previous retrospective searches, and provide current bibliographies to clients from specific files that they have requested. Such searches, provided under contract, are conducted regularly (weekly, monthly or otherwise, depending on the file) throughout a one-year period. Most current awareness searches are run on the Chemical Abstracts file (43% in 1978); many are also run on the World Textile Abstracts and Institute of Textile Technology files (28% for both in 1978). Together, updates run on these three files constituted 71% of all updates delivered to clients this contract period.

Current
Awareness
Searches

Total updates mailed in 1978 dropped by 39%, reflecting primarily a few cancellations for CA updates and one cancellation for ITT. The number of current awareness searches run on the WTA file and on the remaining files remained almost constant in 1978.

CURRENT AWARENESS SEARCHES DELIVERED BY NC/STRC

<u>File</u>	<u>1977</u>	<u>1978</u>
Chemical Abstracts	553	381
Institute of Textile Technology	293	132
World Textile Abstracts	129	117
Subtotal	975	630
Other files	244	245
Total	1,219	875

Document Orders

Document orders dropped by 43% in 1978. This overall decrease was mainly a function of the drop in demand for Medline documents (down 85%), and N and A documents (down 73%); orders for PB documents also dropped considerably (45%).

Demand for the following documents increased substantially in 1978:

<u>Document</u>	<u>Times Ordered in 1977</u>	<u>Times Ordered in 1978</u>	<u>Differential</u>
T	149	282	up 89%
Agricola	56	103	up 84%
C	70	189	up 170%
ASM	14	56	up 300%
ABI	0	19	--

Demand for documents from Management Contents, a database acquired by NC/STRC last year, totalled 17. These requests, along with the increase in requests for documents from Abstracted Business Information (ABI) seem to indicate a growing interest in the field of business and management.

Tech House Plans

Despite NC/STRC's efforts to publicize the availability of Tech House floor plans (several articles have appeared in the *Technical Bulletin* and *TECH TOPICS*, and a Tech House exhibit was displayed

at the solar energy symposium held in Raleigh in February), orders for the plans totalled only 263 in 1978, a 50% decrease from the previous contract period. In December, however, the Center received several requests in response to an article on the Tech House published in the November-December issue of *Automation in Housing and Systems Building News*. Entitled "NASA Tests Space Research in Real Home Environment," the two-page article included a bold-face closing paragraph on the availability of Tech House floor plans from NC/STRC.

Publications

Orders for references publicized in NC/STRC's monthly *Technical Bulletin*, mailed to some 1,000 subscribers throughout the country, totalled 415 for 1978. Although most were from North Carolina, requests also came from 28 other states and the District of Columbia, from as far north as Michigan and as far west as California.

Technical
Bulletin

As in 1977, the most popular references dealt with some aspect of solar energy or energy conservation. Fabric flammability and polymeric materials were also popular subjects. The most frequently requested references were:

- #7808 "Comparative Performance of Solar Heating with Air and Liquid Systems," C00-2868-1
- #8706 "Fundamentals of Solar Heating," HPC/M4038-01
- #8001 "Urea-Formaldehyde Based Foam Insulations," NBS-TN-946
- #8009 "Wind Machines," NSF-RANN-75-051
- #8207 "A Solar Air-Conditioning Study," AD-A043951
- #8003 "Savings in Energy Consumption by Residential Heat Pumps," ORNL/CON-4
- #8303 "Concrete Polymers: Past, Present, and Future," BLN-22524
- #8102 "Passive Solar Buildings: A Compilation of Data and Results," SAND 77-1204

#8409 "Durability of Structural Adhesive Bonds," SAND-76-9082

#8705 "Corrosion Inhibitors for Solar Heating and Cooling Systems," DOE/NASE TM-78180

TECH TOPICS

The mailing list for *TECH TOPICS*, NC/STRC's quarterly newsletter, dropped to 700 in 1978. This did not necessarily reflect a proportional loss of interest, however. With the state's requirement that all North Carolina agencies "purge" their mailing lists annually, subscribers are asked each year to request in writing by a specified deadline renewal of their subscription for the following year. Should interested readers for any reason fail to meet the deadline, they are dropped from the list, resulting in an almost inevitable annual decrease in subscribers. To combat this problem, the communications office of NC/STRC may submit a formal request for exemption from this requirement. Since *TECH TOPICS*, unlike most other in-state publications, is used as a marketing tool by the Center, it is crucial that maximum distribution be maintained.

Information Resources Catalog

In April, 2,500 copies of the Center's new catalog--*Computerized Information Resources Available at the North Carolina Science and Technology Research Center* -- were received from the printer. This version (as opposed to the previous duplicated issue) has been well received and reportedly motivated several clients to decide on using the Center's services.

The Library Search Service

In 1968 the Graduate Student Program was instituted by NC/STRC in an attempt to draw business from that sector of business and industry composed of university graduates. Under the original program, doctoral and master's degree candidates at any college or university were permitted to obtain NC/STRC searches at a reduced fee. The program anticipated follow-up business from those students later employed in business or industry who were favorably impressed with NC/STRC services.

Because of the high cost of operating the program on a one-to-one basis, the service was revised in 1972. Under the new program, renamed the Library Search Service (LSS), librarians from those schools using the LSS have been trained by Center technical staff members in the writing of search strategies. Students needing literature searches consult these librarians, who write the

Here they are processed without technical assistance from the information specialists, and the bibliographies obtained are forwarded to the librarian. Graduate student searches are restricted to five files: Educational Resources Information Center (ERIC), NASA, National Technical Information Service (NTIS), World Textile Abstracts (WTA), and the Institute of Textile Technology (ITT). NC/STRC will obtain for the student at the usual fee any reference not available at the student's school library.

In recent years many universities, in an attempt to cope with the "information glut," have been installing their own computer terminals, subscribing to such information services as Lockheed and SDC. Thus usage of the LSS has decreased significantly over the past few years. Another reason for dwindling response to the LSS is the small number of files to which graduate student searches are limited. As a result of decreasing demand, NC/STRC is phasing out the service; no efforts have been made to solicit new or to increase current LSS business.

In 1978, 170 graduate student searches were processed, as compared with 207 during the previous contract period. Like the last contract period, most--approximately 88%-- of the searches processed in 1978 were ERIC. One school discontinued usage of the LSS in 1978, while one was added to the service. In total, twenty-three schools from eight states and Washington, D.C., used the LSS this contract period.

**ACTIVE UNIVERSITIES UNDER
THE LIBRARY SEARCH SERVICE
1978**

Austin Peay State University Clarksville, Tenn.	University of North Carolina at Charlotte, Charlotte, N. C.
College of William and Mary Williamsburg, Va.	University of North Carolina at Wilmington, Wilmington, N. C.
Duke University Durham, N. C.	Virginia State College Petersburg, Va.
George Washington University Washington, D. C.	Winthrop College Rock Hill, S. C.
Georgia Institute of Technology, Atlanta, Ga.	University of Sarasota Sarasota, Fl.
Joint Universities Libraries Vanderbilt, Tenn.	Clemson University Clemson, S. C.
North Carolina Central University, Durham, N. C.	Andrews University Berrien Springs, Mich.
North Carolina State University, Raleigh, N. C.	Campbell College Buies Creek, N. C.
Old Dominion University Norfolk, Va.	Cleveland County Technical Institute, Shelby, N. C.
University of North Carolina at Greensboro, Greensboro, N. C.	DePaul University Chicago, Ill.
University of Miami Coral Gables, Fl.	Elizabeth City State University Elizabeth City, N. C.

SECTION IV SPECIAL PROJECTS

Solar Activities

In response to the numerous inquiries the Center has received on solar energy, Dr. F. O. Smetana, consultant for special projects at NC/STRC, prepared a report on solar electric power generation entitled "Electricity from the Sun." This paper describes a research project conducted by Smetana to develop a solar system that will produce 33 kwh of electricity per day to be used at whatever rate or time of day the consumer desires, at the lowest cost possible. Now being completed, the system developed by Smetana uses solar panels and Rankine cycle energy conversion. Researchers at North Carolina State University estimate that this system costs approximately one-fourth the cost of a system utilizing solar-cell technology. Hardware for Smetana's system was funded by the state of North Carolina.

Solar
Electric Power

In other research funded by the state, Dr. Smetana traveled throughout four western states to visit solar thermal power generation test sites. Traveling a total of some 8,400 miles, Smetana compared the solar systems in operation at these sites with the system he himself had developed in terms of hardware used, operation costs, and principles of operation. The test sites visited were located in Denver and Ft. Collins, Colo.; Mountain View and Los Angeles, Calif.; Gila Bend, Ariz.; and Willard, Los Alamos, and Albuquerque, N.M. Though not taken expressly for NC/STRC, the trip has nevertheless aided the Center by increasing Smetana's expertise in solar energy systems. Smetana noted that shortly after his return, he was called upon to conduct a literature search on small turbines for Rankine cycle applications; he included with the bibliography a report on his findings from the trip.

Two technical reports written by Dr. Smetana and Clay B. Jones, a graduate student in mechanical engineering at NCSU, have been accepted by NASA for publication as Contractor's Reports. One is entitled "Heating Cycle Performance Tests of a Solar-Assisted Heat Pump"; the other, "An Analytical Investigation of the Effectiveness of Solar Collectors as Night-time Heat Radiators." Expected publication date for both is February or March 1979.

NC/SEA

In February 1978, C. Leon Neal, applications engineer and solar energy specialist at the Center, was instrumental in founding the North Carolina chapter of the American Section of the International Solar Energy Society (ISES). A non-profit organization, the North Carolina Solar Energy Association (NC/SEA) was formed to educate the public in solar technology and solar commercialization. Neal now serves as chairman of the association.

Solar Symposium

The first meeting of NC/SEA was held in conjunction with a February symposium on solar energy projects in North Carolina, held in Raleigh. Organized by Neal and co-sponsored by NC/STRC, the symposium attracted some 200 engineers, consultants, suppliers, researchers, and lay solar enthusiasts. NC/STRC coordinated a NASA Tech House exhibit for the meeting, and publicized the availability of Tech House floor plans.

From August 28-31, 1978, Neal attended the annual meeting of the American section of ISES, held in Denver, Colo. Following the ISES meeting, he visited the Solar Energy Research Institute (SERI) in Golden, Colo., where he offered NC/STRC's assistance in establishing a computer-searchable file of solar technical information. While there, he also met with Dana Moran, deputy director of SERI, to discuss solar commercialization in North Carolina.

Solar in North Carolina

Two technical papers on solar energy in North Carolina were written by Neal this contract period: "Distributors and Manufacturers of Solar Energy Equipment in North Carolina," and "Solar Meteorological Data for North Carolina." The latter provides such information as the average cloudiness index, average monthly temperature, and average daily radiation on a horizontal surface for ten urban areas in North Carolina, South Carolina, Virginia, and Georgia.

As a result of his activities in the solar energy field, Neal was hired by North Carolina State University's Industrial Extension Services to prepare a report on the status of solar commercialization in North Carolina. Submitted to the recently formed Southern Solar Energy Center (SSEC) in Atlanta, this report, along with reports from 14 other southern states, will be used by SSEC to draw up a comprehensive plan for solar commercialization in the South.

SECTION V IMPACT CASES

Low Income Housing development of North Carolina, Inc, obtained a federal contract to carry out a three-part project:

- (1) to develop a prototype low-cost (under \$500) design for a solar water heater to be marketed to low-income families throughout the state,**
- (2) to evaluate the potential for such a device, and**
- (3) to evaluate the potential for self-help workshops in North Carolina that would teach how to build such a device.**

Mr. Henry Gaither of LIHDC, in charge of the project, was able to complete only the prototype development in the short period of time allotted for the project.

In conversations with Leon, NC/STRC solar energy specialist, Gaither expressed the need for someone to complete the market analysis. Neal suggested William Rupp, a former employee of NC/STRC, and Rupp's fellow students in the MBA program at Duke University for this analysis. Through Rupp's efforts, the project was completed ahead of schedule, and Gaither was pleased with the market research results.

*** * * ***

A North Carolina subdivision of a major American manufacturer of electric generating equipment was considering entry into the solar energy field. In response to the company's request for information and advice on potential strategies for making this entry, C. Leon Neal did a search on mission analysis in alternate energies and put the company representative charged with investigating solar in touch with solar researchers and nationwide manufacturers of solar equipment. On the basis of the information provided by these contacts and Neal's search, a corporate decision was made to enter solar. The company has since obtained proposals from various energy groups for contracts in solar and and alternate energy areas.

*** * * ***

About two years ago, A. W. Lockwood, NC/STRC textiles specialist, ran a retrospective search of the Institute of Textile Technology (ITT) and World Textile Abstracts (WTA) files on "Dust in the Carding and Opening Operations" for a large textiles machinery manufacturing company. Company representatives subsequently ordered several documents from this search, including WT 70-6880, "Feed Systems on Flat Cards" from Poland, which NC/STRC had translated into English.

On a recent visit to the company, Lockwood was told that personnel there feel that the article provides the most thorough treatment of the subject of any they have read. With the information obtained from the article, the company made certain changes in its production lines. The new technology they applied, say company personnel, has proven "very useful." They acknowledged that they probably would never have found the article, had they not conducted the search through NC/STRC.

Production personnel said they did not know yet whether the company had saved money as a result of this new technology; they had not had time to conduct the cost studies necessary to determine this.

* * * *

In 1976 A. W. Lockwood ran a series of retrospective searches of the ITT, WTA, and CA files for Professor Charles Riggs of Texas Woman's University, Denton, Texas. Dr. Riggs later ordered many documents from these searches.

At least two of Dr. Riggs's students used material found in these searches to support their doctoral theses. (One was entitled "The Effect of Carbonate Detergents on Flame Retardant Fabrics"; the other, "The Effects of Fabric Softeners and Detergents upon Flame Retardant Fabrics.")

After their publication, these two theses were picked up by Chemical Abstracts Services and entered in the Chemical Abstracts database in mid-1978. They were also cited in a Chemical Abstracts update mailed to another NC/STRC client who is interested in detergent formulations. When the client saw the references, he promptly ordered the two theses in full from NC/STRC; he later told Lockwood that they proved to be of value to the company.

* * * *

APPENDIX

NC/STRC TECHNICAL STAFF, 1978

CHENERY, Peter J., director

B.S., engineering sciences, Harvard University, research assistant, aeronautical engineering, M.I.T. Former director of research and manager of contract products, Wright Machinery Division, Sperry Gyroscope Co. Past chairman and North Carolina delegate, Southern Interstate Nuclear Board; past vice chairman and North Carolina delegate, National Governors' Council on Science and Technology; past president, Association of Scientific Information Dissemination Centers; member, American Association for the Advancement of Science, American Society for Information Science; senior member, Institute of Electrical and Electronics Engineers. Holder of five patents in textile machinery and automatic flight control equipment. With NC/STRC since 1963.

FORD, Phillip C., III, computer programmer/analyst

B.S., aerospace engineering, M.S. and Ph.D., mechanical engineering, North Carolina State University. Visiting assistant professor in mechanical and aerospace engineering, NCSU. Joined NC/STRC in October 1978.

GREEN, Hannah O., information specialist

B.S., chemistry, Carnegie Mellon University; M.S. and Ph.D., biochemistry, Cornell University. Six years' experience as research associate with Duke University Medical Center and the University of Hawaii. Author of numerous publications in the fields of enzymology, protein chemistry, and membranes. With NC/STRC since 1974; resigned in May 1978.

JOHNSTON, Sylvia S., information specialist

B.S., engineering operations, North Carolina State University. With NC/STRC since 1972.

KELLY, Lem M., assistant director for marketing

B.S., applied mathematics, Henderson State Teachers College, Arkansas. Graduate of the Command and General Staff School and other Army service schools. Five years with the Army Research and Development Program. With NC/STRC since 1967.

LOCKWOOD, Arthur W., information specialist

B.S., chemistry, Furman University. Seventeen years' industrial experience in synthetic fiber research and development. Patent-holder and author of publications in the field of man-made fiber production. With NC/STRC since 1967.

METTER, Mary M., information specialist
B.A., psychology, University of Rochester, New York; M.S., library science, University of North Carolina at Chapel Hill. Reference librarian three years and coordinator of Automated Reference Services one year, Health Sciences Library, UNC-CH. Joined NC/STRC in November 1978.

NEAL, C. Leon, information specialist
B.S., mechanical engineering, North Carolina State University; M.S., aeronautical engineering, Purdue University; graduate work in interdisciplinary studies and research, State University of New York at Buffalo. Eight years as aeronautical engineer, Cornell Aeronautical Laboratories. With NC/STRC since 1969.

NEES, Monica, manager of technical operations
B.S., chemistry, and M.S., organic chemistry, Roosevelt University; Ph.D., organic chemistry, University of Maryland, College Park. Four years of college and university teaching; in information retrieval since 1968. With NC/STRC since 1972.

NICHOLS, Mason, computer programmer/analyst
B.S., mathematics, East Carolina University. With NC/STRC since 1970; resigned July 1978.

POTTER, T.R., information specialist
B.E.E., North Carolina State University. Ten years' industrial experience in radio and electronics design and product engineering. With NC/STRC since 1966.

SMETANA, Frederick O., assistant director for special projects
B.M.E. and M.S., mechanical engineering, North Carolina State University; Ph.D., University of Southern California. Former vice president, Philcord Co.; former research scientist, U.S. Air Force and University of Southern California Engineering Center. Professor of mechanical and aerospace engineering, NCSU, since 1961. Twenty-seven years' experience in research, design, and testing. Author of more than 100 publications on aeronautics, energy, and fluid mechanics; recipient of numerous grants in these areas. With NC/STRC since 1966.

VANN, J. Graves, Jr., information specialist
B.S., ceramics, M.S., metallurgy, North Carolina State University. Seventeen years' industrial experience in metals, food processing, ceramics, and management. With NC/STRC since 1964.

NC/STRC TECHNICAL STAFF, 1978
 AREAS OF SPECIALIZATION

AGRICULTURE	Green, Metter, Nees
BIOLOGY	Green, Metter, Nees
BUSINESS & MANAGEMENT	Johnston
CHEMISTRY	Green, Lockwood, Nees
COMPUTER SYSTEMS	Ford, Nichols
EDUCATION	Johnston, Metter
ENERGY	Neal, Potter
ENGINEERING (from aeronautics & biomedical to electrical and mechanical)	Johnston, Neal, Potter, Smetana
FOOD SCIENCE	Green, Metter, Nees
LIBRARY & INFORMATION SCIENCE	Metter
MATERIALS (ceramics, metals, plastics)	Neal, Vann
MARKETING	Johnston, Potter
MEDICINE (clinical & basic sciences)	Metter, Nees, Potter
PATENTS	Nees, Potter, Vann
PHYSICS	Neal, Potter
SOCIAL SCIENCES	Johnston, Metter
TEXTILES (from fibers to end use)	Lockwood
TOXICOLOGY	Green, Metter, Nees

**PETER J. CHENERY, DIRECTOR, NC/STRC
PROFESSIONAL MEETINGS AND CONFERENCES**

- January 12-13 Attended the annual meeting of the Professional Engineers of North Carolina, and demonstrated information retrieval at NC/STRC exhibit there.
- February 8 Visited the North Carolina Department of Labor to discuss the impact of OSHA on North Carolina industry.
- February 16 Made a presentation on NC/STRC programs to the North Carolina Economic Development Board in Raleigh.
- March 1 Met with Clement A. Cole of the Economic Development Council of New Orleans Area in New Orleans at the request of NASA (Dr. Frosch) to discuss ways for NC/STRC to help industry identify and utilize NASA technology.
- April 23-25 Attended a meeting of ASIDIC, the Association of Information Dissemination Centers, in New Orleans, La.
- May 4 Welcomed participants of a DIALOG workshop at NC/STRC.
- May 8 Spoke to the Durham Rotary Club about NC/STRC programs.
- May 11 Met with Gov. James Hunt and representatives of major industries in North Carolina to discuss services to industry in North Carolina.
- May 15-18 Attended IAC Directors' meeting at NASA's Langley Research Center, Hampton, Va.

- June 12-16** **Attended the annual meeting of the Southern States Energy Board in San Juan, Puerto Rico.**
- August 23** **Welcomed TIUC, the Textiles Information Users Council, to an on-line training session at NC/STRC.**
- August 31** **Conducted a press conference at NC/STRC to announce its publication of a new book on barrier islands.**
- October 30** **Attended a meeting of the North Carolina On-Line Users Group at Duke University.**
- November 13-16** **Attended the annual meeting of ASIS, the American Society for Information Services, in New York.**

**NC/STRC Staff
PROFESSIONAL MEETINGS AND CONFERENCES, 1978**

- January 11-14 Lem. M. Kelly and Leon Neal attended the winter conference of the Professional Engineers of North Carolina in Charlotte.
- February 6 J. Graves Vann, Jr., attended the World Fair for Technology Exchange in Atlanta, where he manned an exhibit booth on NASA patents.
- February 9 Drs. Hannah Green and Monica Nees attended a CASIA/CAC workshop at Burroughs Wellcome Company, led by Dr. Kenneth Ostrum of Chemical Abstracts Services, Columbus, Ohio.
- February 15 Leon Neal presented a paper entitled "Manufacturers and Distributors of Solar Energy Equipment in North Carolina" at a solar energy symposium held in Raleigh at North Carolina State University.
- February 14 NC/STRC technical staff members attended a field office meeting of North Carolina's Business Assistance Division.
- March 6 Leon Neal attended a Professional Engineers meeting in Greensboro, N. C.
- March 16-18 Leon Neal attended the Second National Conference on Passive Solar Energy in Philadelphia.
- March 30 Dr. Monica Nees attended the Second Annual Symposium of the Cancer Research Center at the University of North Carolina School of Medicine, Chapel Hill, N. C.
- May 8-9 Leon Neal attended a workshop on "The Status of Solar Energy in the South" held at the Southern Solar Energy Center in Atlanta.

- July 9-14** Dr. Monica Nees attended the Gordon Research Conference on "Scientific Information Problems in Research" in Plymouth, N. Y.
- August 1** P. J. Chenery, Lem M. Kelly, and Doris Schroeder attended a "Buyers-Suppliers Conference" held in Raleigh, N.C.
- August 8** Lem M. Kelly attended a "Buyers-Suppliers Conference" in Winston-Salem, N. C.
- August 22** Art Lockwood attended the first meeting of the TITUS Task Force, formed to look out for American interests in the TITUS database, at Monsanto, Research Triangle Park, N. C.
- September 28** NC/STRC technical staff members met with Lou Mogavero and Floyd Roberson of NASA.
- September 30** Dr. Monica Nees attended a joint fall meeting of SLA (Special Libraries Association) and ASIS (American Society for Information Science) at Burroughs Wellcome Company, Research Triangle Park, N. C.
- November 10** Leon Neal was re-elected chairman of the North Carolina Solar Energy Association at its annual meeting in Raleigh.
- November 17** Sylvia Johnston served on a panel to discuss computerized literature searching at a workshop organized by the North Carolina Education Service.
- January - December 1978** D. K. Schroeder, director of communications, served as president of the Raleigh (N. C.) Public Relations Society during 1978 and was invited to serve as a judge of the international competition (annual) of the Society for Technical Communication.

North Carolina Science and Technology Research Center SERVICE PLANS

Clients may obtain NC/STRC scientific and technical information services under one of three plans:

- (1) ***Annual Service Package*** - for a fixed charge payable in advance retrospective searches and current awareness service will be provided for a one-year period.
- (2) ***Prepaid Subscription Plan*** - clients who deposit \$1,000 with NC/STRC for services to be used within the following year receive a bonus credit of 15%.
- (3) ***Demand Services*** - clients may obtain searches and current awareness services as required. Each service will be billed when delivered.

Details of these plans are given below.

ANNUAL SERVICE PACKAGE

The Annual Service Package permits advance budgeting and a single purchase order for all information needs. The following services are provided:

- (1) Retrospective searches will be made on subjects of interest to the client. NC/STRC staff will assist in defining problems, interpreting search results, and applying the information retrieved. Files to be searched will be selected by NC/STRC after discussion with the client. The typical search will utilize three files and will yield about 100 to 300 citations or abstracts. Both manual and computer searches will be made as indicated by the subject.
- (2) Current awareness service will be provided during the period of the service package on subjects identified by the client. Again, selection of files will be by NC/STRC.

The Annual Service Package provides retrospective searches (with continuing current awareness service, if desired) during a twelve-month period for a fixed price of \$2,400. It is intended for organizations with moderate information needs. Special quotations will be made where specific requirements for service can be defined.

PREPAID SUBSCRIPTION PLAN

The Prepaid Subscription Plan offers a bonus credit of 15% of the amount deposited to those clients who deposit a minimum of \$1,000 for services to be used within the following year. The bonus is justified on the basis of the volume of services to be provided as well as the saving from not having to invoice each service as it is provided.

(Over)

PREPAID SUBSCRIPTION PLAN - CONTINUED

The bonus will be credited at the time the deposit is made and must be used, after the deposit has been used, within twelve months after it is credited. If the deposit is not used within twelve months, any balance will remain available indefinitely, but the bonus credit will be cancelled.

Quarterly statements will be provided showing services provided and funds remaining. Funds on deposit may be used for any services offered by NC/STRC, including retrospective searches, current awareness service, document copies, translations, and technical assistance.

DEMAND SERVICES

NC/STRC will provide quotations for any desired information services on request. The following list of typical prices is intended to assist our clients in budgeting for their information needs. Specific estimates will be made after discussion of search questions, desired results, files to be searched, etc. Each service will be billed when delivered.

Retrospective Searches of Various Files

NASA	\$100	Institut Textile de France-TITUS	\$ 80
NTIS	\$100	Institute of Textile Technology	\$ 80
Engineering Index	\$110	World Textile Abstracts	\$ 80
Chemical Abstracts	\$150	New York Times	\$ 50
BIOSIS	\$125	ERIC	\$ 85
Food Science & Technology	\$ 85	MEDLINE	\$ 50
Agricola	\$ 80	Manual Searching	
TOXLINE (per compound)	\$ 25	Graduate Student -	\$10/hour
SSIE	\$ 75	Professional Staff -	\$20/hour

Current Awareness Service (SDI)

Prices listed are for a 12-months period of service; the number of issues provided depends on the frequency of file updating, and can vary from 26 or 52 for Chemical Abstracts to 12 for most other files.

NASA	\$180	Engineering Index	\$200
NTIS	\$180	Food Science & Technology	\$200
Chemical Abstracts Condensates		Institut Textile de France-TITUS	\$180
(even <u>or</u> odd issues)	\$220	Institute of Textile Technology	\$180
(even <u>and</u> odd issues)	\$375	World Textile Abstracts	\$180

Documents

Documents identified in searches can be provided by NC/STRC at their cost plus \$1.75 per document handling charge.

Effective November 1, 1978

NC/STRC
Industrial Applications Center for

NASA
National Aeronautics and Space Administration

NC/STRC DEMONSTRATIONS AND WORKSHOPS, 1978

- January 5 Sylvia Johnston made a presentation on NC/STRC services at a North Carolina Business Assistance meeting held at NC/STRC.
- January 23 Sylvia Johnston made a presentation on NC/STRC social sciences resources to a group of staff members from the Research Triangle Institute, Research Triangle Park, N. C.
- January 24 Dr. Monica Nees talked about NC/STRC files in chemistry and biology to a group of chemists and biologists from the Research Triangle Institute.
- March 20 Paul Owen of Predicasts, Cleveland, Ohio, led a Predicasts workshop at NC/STRC.
- April 26 Dr. Monica Nees conducted a workshop on the BIOSIS database for UNC and Duke University MEDLINE operators.
- May 25 Leon Neal gave a lecture on "Solar Energy--What You Can Tell Your Membership" at the Membership Service Conference of the Electric Membership Corporation at Pinehurst, N. C.
- August 23 Art Lockwood conducted a workshop at NC/STRC for TIUC, the Textile Information Users Council.
- September 14 Leon Neal gave a talk on "What to Tell Electric Customers on Solar Energy" to field engineers from Carolina Power and Light, in Raleigh, N. C.
- October 30 Dr. Monica Nees gave a presentation on NC/STRC services at the fall meeting of the North Carolina On-Line Users Group at Duke University.

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ESTABLISHED 1921
 DESIGNERS AND BUILDERS OF DYEING, BLEACHING, EXTRACTING AND DRYING MACHINES
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April 28, 1978

North Carolina Science and Technology Research Center
 P.O. Box 12235
 Research Triangle Park, North Carolina 27709

ATTENTION: MR. J. G. VANN, TECHNOLOGY UTILIZATION MANAGER

Dear Mr. Vann;

As Director of Research and Development with a major manufacturer of textile machinery, I am required to be familiar with the state of the art in many associated fields in which I have little or no direct experience.

We are constantly striving to improve our existing range of products and to develop new technology, or to apply technology from other fields where it would confer an advantage in textile applications.

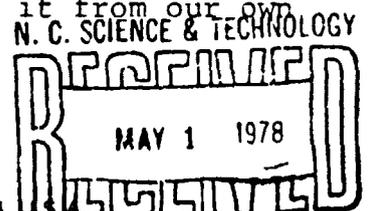
We have had occasion to spend quite large sums on patent search, to find appropriate patents, sometimes discovering that the patents were not entirely relevant, or that the state of the art had taken a different course since the patents were issued.

We maintain files on many subjects, copies of the Official Gazette of U.S. Patents and information on foreign patents in related fields, but it is impossible to find the time or maintain the necessary organization to keep up with them.

Technical journals are excellent sources of information but the human mind can only retain a small part of the information gained while glancing through them and passing them on to the next addressee. While we file the journals we do not index the contents, and retrieval of information from them is difficult.

It is particularly in those cases where we do not know whether the information we are seeking, or the technology that interests us from time to time, is covered by patents or is accepted as standard practice that we have found the services of the North Carolina Science and Technology Research Center of great value.

You have provided for a reasonable fee, lists of all the relevant information that has ever been published on the subject in question, and in some cases we have been able to retrieve it from our own files.



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Mr. J. G. Vann

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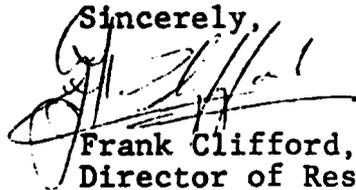
April 28, 1978

It is difficult to estimate how much time this has saved, or how the ultimate value to our company can be assessed, but I find myself relying more on your reports and have discontinued the use of other expensive information sources since becoming aware of the excellent service you offer, which I have found to be the most comprehensive, quickest and least expensive information source of which I am aware.

As a company we are proud to be participants in and contributors to the economic growth of North Carolina, and to continue to do this effectively we must keep abreast of the latest developments in Science and Technology. I am sure there must be other companies who share these aims and ideals who are in need of similar information and who may not be aware of the value of your service, and if this letter would help you to bring it to their notice please feel free to use it for that purpose.

It is my intention to continue to expand our use of your service as the need arises and I wish you all success and thank you for your prompt replies to my inquiries.

Sincerely,



Frank Clifford,
Director of Research
and Development

FC/js

GILBARCO INC.
GREENSBORO, N.C. 27420
CABLE ADDRESS "GILBARCO"
PHONE 919/292-3011

November 15, 1978

Mr. Lem Kelly
North Carolina Science
and Technology Research Center
PO Box 12235
Research Triangle Park, NC 27709

Dear Lem:

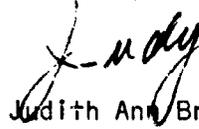
I would like to express our appreciation of the excellent services your group is continuing to provide our company. I have received glowing compliments from our engineers of the studies performed thus far. I encourage them to give me feedback in written form, but engineers seem to have a natural aversion to pen and paper. I have received one bit of feedback in the form of a note, and I will enclose a copy of that note for you.

I have several pages of document requests, primarily reprints, which I will also enclose. I have typed the name of the engineer submitting the request at the top of each page. Because of the great volume of document requests and orders which flow through the Library, I would like to request that the name of the requesting engineer be indicated on each document forwarded to me. If that practice could also be used in the literature searches forwarded to me, it would greatly facilitate the handling of the information flow through this Library. The documents and the invoices should still be addressed to me for tracking purposes.

The A.D. Little, Inc. report to OSHA, which we discussed yesterday, is for Craig Hartsell, and both the report and invoice should be addressed to me.

Again, I would like to thank you, Bob Potter, Leon Neal, and your entire group for the excellent guidance and support you are providing for our Research and Development efforts.

Sincerely,



Judith Ann Brennan
Technical Information Coordinator



NORTH CAROLINA

EDUCATIONAL COMPUTING SERVICE

Box 1203b Research Triangle Park, North Carolina 27709
Area Code 919 549-0671

November 28, 1978

Ms. Sylvia S. Johnston
N. C. Science & Technology
Research Center
P. O. Box 12235
Research Triangle Park, NC 27709

Dear Sylvia:

I am writing to express my thanks for your participation in our recent workshop on "The Uses of Computers and Communications in Academic Libraries". As you know, it was well attended and there was a high level of interest. The intent of the workshop was to share experiences, and its success was due to the contributed presentations and demonstrations such as yours.

Looking towards the future, I would appreciate your thoughts on workshop programs or other joint activities. If you have some ideas, please give me a call (800-672-8244).

Again, on behalf of NCECS and the workshop participants, thank you for your contribution.

Sincerely,

R. R. Pearson
Development Manager

RRP:cpp

N. C. SCIENCE & TECHNOLOGY
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News

and president of Monsanto Co., called for greater affirmation of innovation by the government in order to prevent further decline of America's world technology leadership. "There should be a realistic review of federal policies," he said, "to see whether they help or hinder innovation; encouragement for Congress to bring the regulatory apparatus under control; work

toward tax law changes to encourage corporate emphasis on innovation; and efforts to take the politics of innovation to the people for the public's involvement in the Washington decision making process."

Honorary chairmen for the awards dinner included John Brooks of Celanese, James D. Finley of J. P. Stevens, Edmond R. Haggard of The Haggard Co., William A. Klopman of Burlington Industries, Donald F. McCullough of Collins & Aikman, E. A. Morris of Biue Bell and Irving S. Shapiro of The Du Pont Co.

Allied Chemical Completes Expansion At Baton Rouge

Allied Chemical Corp. has completed an expansion at its Baton Rouge, La., plant which has doubled the output of its specialty chemicals division's line of high density oxidized polyethylenes. According to the company, the boost in productive capacity makes Allied the world's largest supplier of high density oxidized polyethylenes which are used in a broad range of applications including textile finishing, printing inks, adhesives and others.

Draper To Move Its Loom Operations To Greensboro

The Draper Division of Rockwell International is moving its loom assembly and engineering operations to North Carolina from Hopedale, Mass., where they have been since 1841. The company has acquired a 308,000 square foot plant near Greensboro currently occupied by Carolina-American Textiles Inc., a yarn texturing subsidiary of Macfield Texturing Inc. The transfer of machinery and equipment will begin in December.

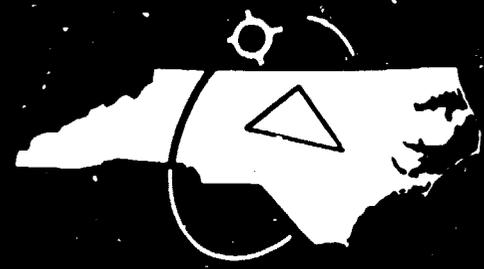
Clemson Short Course On Fabric Preparation

Clemson University is offering a short course on the theory and practice of fabric preparation next month that will cover desizing, scouring, bleaching, mercerization and heatsetting.

One of a series of professional development courses offered at the university, the December 5-6 program will be cochaired by Professor Edward S. Olson of the textile department and Edwin I. Stearns, former head of the textile department. Serving as moderators will be J. C. King who recently retired as regional technical manager for Verona Dyestuffs at Rock Hill, S. C., and Broadus L. Rutledge of Dan River Inc., Danville, Va.

Speakers and their topics include:

- Desizing Starch with Enzymes, Marvin Huckabee, GB Fermentation Industries, Des Plaines, Ill.
- Reclamation of PVA, E. C. Moley, J. P. Stevens & Co., Clemson.
- A Practical View of Mercerization, Leonard A. Sitzer, Dexter Chemical Co., Bronx, N. Y.
- Heatsetting: Fiber Viewpoint, Herbert T. Pratt, The Du Pont Co., Wilmington, Del.
- Heatsetting: Machine Viewpoint, Don Foreman, Fab-Con Machinery Development Corp., Port Washington, N. Y.
- Energy Conservation in Drying and Heatsetting, William Beckwith and John N. Beard Jr., Clemson University.
- Scouring Machinery, Carl Schmidt, Greenville Steel Textile Ma-



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N. C. Science & Technology Research Center

Research Triangle Park, N. C. 27709

A Unit of the N. C. Department of Commerce and an Industrial Applications Center for

NASA
National Aeronautics and Space Administration

VISITORS TO NC/STRC--1978

- April 11 Brad Tucker of the Education Information Center, North Carolina Department of Public Instruction, met with Sylvia Johnston to be trained in ERIC search-writing techniques.
- June 19 Richard Mix, an industrial consultant from Cleveland, Ohio, met with Bob Potter and Graves Vann to discuss NC/STRC services.
- July 7 Millie Covington of the International Trade Center, Research Triangle Park, N. C., talked with Sylvia Johnston about NC/STRC services.
- July 26 Dr. John Chou, senior chemist at Sun Chemical, Chester, S. C., talked with Dr. Monica Nees about Chemical Abstracts searching.
- August 25 Tim Branno of the National Center for Lifelong Learning, Washington, D. C., visited NC/STRC to assist Sylvia Johnston in a foundations grants search.
- September 15 Emil Braun of the Netherlands Agency for Aerospace Programs met with Peter Chenery to obtain information on a technology-utilization program.
- September 27-28 Lou Mogavero and Floyd Roberson of NASA headquarters, Washington, D.C., met with Peter Chenery to discuss NC/STRC programs and IAC operations.
- October 18 Tom Golden of NASA-Goddard spoke with Peter Chenery about technology utilization by state government.
- November 17 Masanao Ozaki, senior writer for the Asahi Shimbun newspaper in Tokyo, talked with Peter Chenery about NC/STRC services and about research activities in the Research Triangle Park.

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