TECHNOLOGY UTILIZATION IN A NON-URBAN REGION: FURTHER IMPACT AND TECHNIQUE OF THE TECHNOLOGY USE STUDIES CENTER (6)

C. HENRY GOLD, Ed.D
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FINAL REPORT, NASw-2629

TECHNOLOGY USE STUDIES CENTER
SOUTHEASTERN OKLAHOMA STATE UNIVERSITY
DURANT, OKLAHOMA 74701

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ACKNOWLEDGEMENTS

All personnel of the Technology Use Studies Center contributed special time and effort toward the preparation of this Final Report.

Special recognition is noted on behalf of Mr. Bill Dodd, Industrial Specialist, and Mrs. Susan West, Administrative Assistant and Secretary, who were responsible for compiling the details and written content of the report.

Others who made valuable contributions to the report are A. M. Moore, Senior Industrial Specialist; Kenny Hebert, John Martin, and James Aina, Information Retrieval Assistants; and Linda Coker, Brenda Futrell, Susan Grossman, Sherry Rider, Teri Smith, and Darlene White, Clerical Assistants.

As usual, the University Print Shop personnel, and especially its manager, Cecil Sullivan, were most helpful and professional with the printing/duplication aspect of the finished report.

C. Henry Gold

January 1976

SUMMARY

NASA Contract NASw-2629 provides that the Technology Use Studies Center (TUSC) submit a Final (annual) Report as set forth in Article III.

TUSC clientele data has been updated and is shown in Chapter I. This information is presented as a continuation of client data included in prior-year Final Reports.

NASw-2629 contract-year date (June 1, 1974 to May 31, 1975) was amended through contract modification no. 2 to extend time of performance to December 31, 1975. Therefore, this report covers a time period of nineteen months. The contract modification resulted from the desire of the NASA TU office to contract the TUSC effort on a calendar-year basis. Work performance and contractor accomplishments have been routinely reported through Quarterly Status Reports; i.e., QSR #36, QSR #37, QSR #38, QSR #39, and QSR #40. Acitivities, functions, and accomplishments for the last quarter (October-December 1975) are included in this report.

Chapters II, III, IV, and V have been arranged and sets forth data to correspond with the Statement of Work as provided in Article I of the TUSC contract (Dissemination and Assistance, Faculty Information Service, Cooperation with Other Agencies, and General Aviation News Letter.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

TUSC CLIENTELE INFORMATION

TUSC "clients" are firms, agencies, or individuals with whom the Center has provided a service; i.e., anyone who has requested (and received) information or a service of TUSC.

For the purpose of Annual Report continuity, client information to follow is a continuation of that which has been reported in previous Annual Reports. Tables I, IV, and VI identify clients as Firm, Individual, and/or Special. Special Clients include research organizations and local, state, or federal agencies. For example, TUSC enjoys a special relationship with TU personnel in the Small Business Administration. Because of the fine dialogue and success of the Center's cooperative interactions with the SBA Region VI TUO, we have also had the privilege of working with SBA TU representatives located in New York, Colorado, Pennsylvania, and Illinois.

When considering the long-standing challenge related to NASA Technology Utilization; i.e., "provide for the widest practical and appropriate dissemination of information concerning NASA activities and results thereof," the cooperative interchange with the SBA not only makes sense, it is a practical and appropriate mode for information dissemination on behalf of one of the most important sectors of the Nation's public.

TABLE I

NUMBER OF NEW TUSC CLIENTS BY CLASSIFICATION AND YEAR

Year	Firms		Special		Individuals	
1964	9	(cum)	--	(cum)	--	(cum)
1965	12	21	--	--	8	8
1966	37	58	--	--	11	19
1967	21	77	--	--	10	29
1968	22	99	10	10	39	68
1969	34	133	9	19	32	100
1970	21	154	16	35	36	136
1971	11	165	2	37	40	176
1972	6	171	7	44	46	222
1973	4	175	4	48	19	241
1974	11	186	9	57	45	286
1975	5	191	5	62	80	366

TABLE II

TUSC CLIENTS FIRMS, BY NUMBER OF EMPLOYEES

Number of Employees	Number of Firms
Below 25	106
25-49	26
50-99	26
100-249	13
250-499	9
500 and over	11
Total	191

TABLE III

COMPOSITION OF TUSC CLIENT FIRMS, BY TYPE OF FIRM

Item	Number
Services	47
Mining	3
Manufacturing	141
TOTAL	191

TABLE IV

TUSC CLIENTS BY GEOGRAPHIC LOCATION

	Firms	Individuals	Special
Oklahoma Project Area (19 counties)	107	277	31
Remainder of Oklahoma	53	32	13
Texas Project Area (15) counties)	10	22	1
Remainder of Texas	12	22	4
Other States	9	13	13
TOTAL	191	366	62

NOTE: A map of TUSC's Project Area is included as Appendix A.

TABLE V

MANUFACTURING FIRMS BY SIC CLASSIFICATION*

Two Digit SIC Classification		Number of Clients
13	Crude Petroleum and Natural Gas	2
19	Ordnance and Accessories	0
20	Food and Kindred Products	7
22	Textile Mill Products	1
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials	4
24	Lumber and Wood Products, except Furniture	5
25	Furniture and Fixtures	4
26	Paper and Allied Products	4
27	Printing, Publishing and Allied Products	2
28	Chemical and Allied Products	6
29	Petroleum Refining and Related Industries	4
30	Rubber and Miscellaneous Plastic Products	11
31	Leather and Leather Products	2
32	Stone, Clay and Glass Products	12
33	Primary Metal Industries	6
34	Fabricated Metal Products, except Ordnance, Machinery and Transportation Equipment	23
35	Machinery, except Electrical	33
36	Electrical Machinery, Equipment and Supplies	14
37	Transportation Equipment	11
38	Professional, Scientific and Controlling Instruments: Photographic and Optical Goods; Watches and Clocks	9
39	Miscellaneous Manufacturing Industries	13

*Total will not equal 141 because some firms have more than one manufacturing classification.

TABLE VI

RECIPIENTS OF TUSC SERVICE

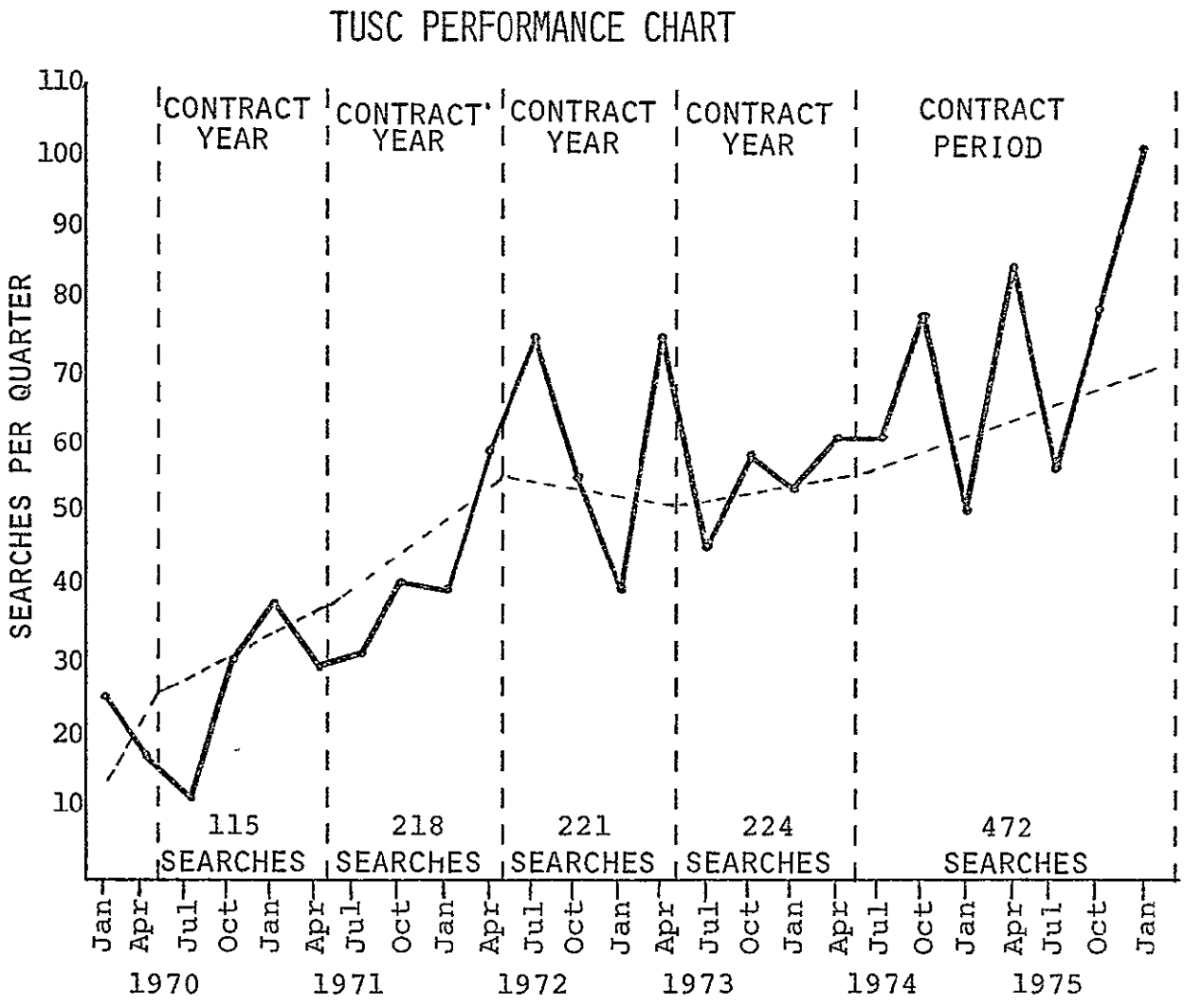
Classification of Recipient	Number of Recipients	Number of Searches*
Firms	191	402
Individuals:		
Southeastern State University	206	327
East Central State College	8	18
Oklahoma State University	9	18
University of Oklahoma	5	22
Other Oklahoma Colleges	9	33
Texas Colleges	14	19
Other Colleges	4	4
Other Individuals	111	154
Special	62	805
TOTAL	619	1,802

*All requests (for searches and assistance) are included in the "Number of Searches" column (including general or non-technical information requests); therefore, the total number of searches reflected in this table will not coincide with the total number of searches as reported in Appendix B.

CHAPTER II

DISSEMINATION AND ASSISTANCE

The contractor shall disseminate information and provide technical assistance to industrial firms and other organizations.... This dissemination and assistance service shall be provided in a manner designed to bring about the utilization of NASA-generated technology by recipients and to promote a better understanding of the process by which such technology is made available... (Statement of Work, NASw-2629)

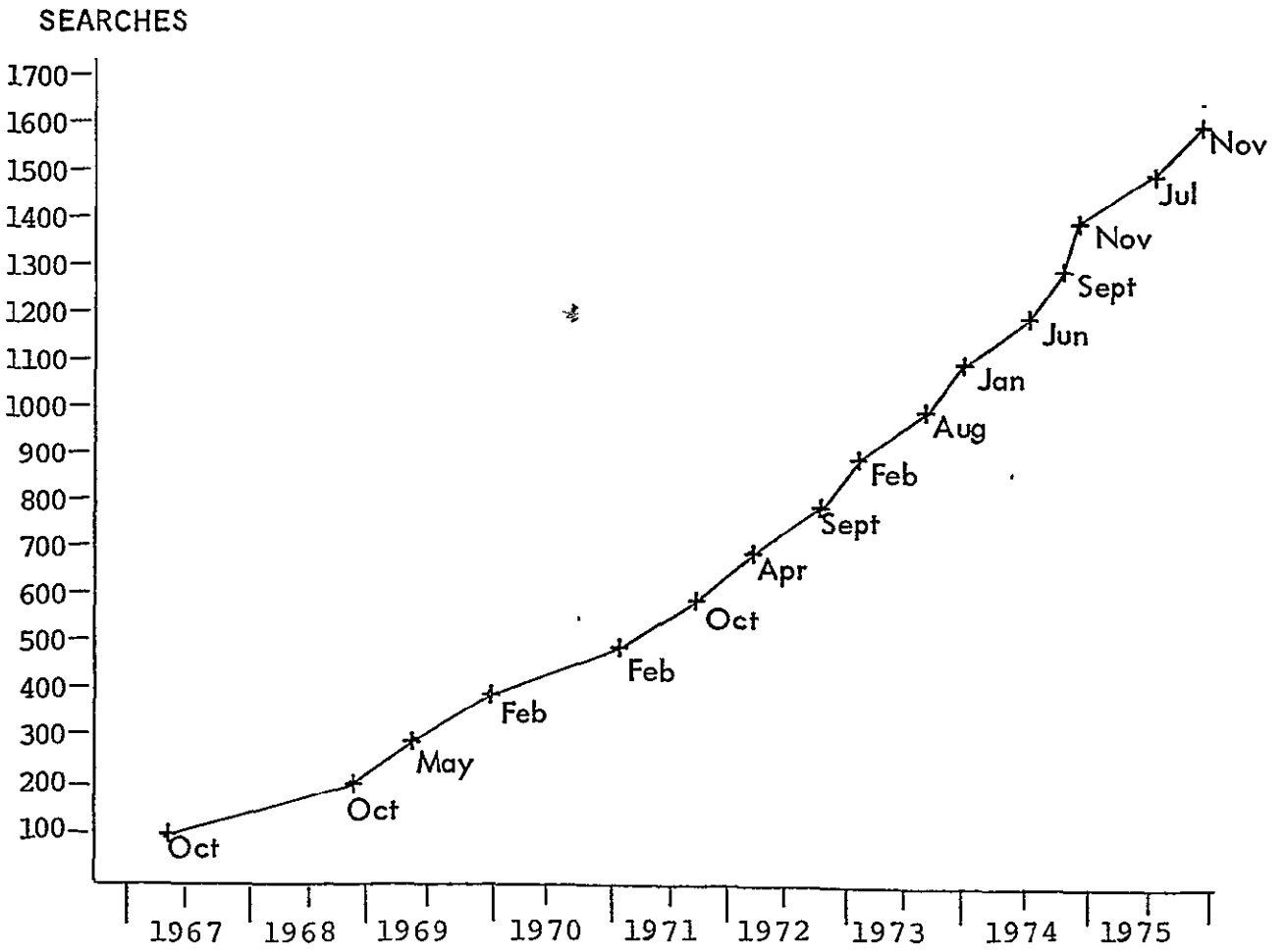


The foregoing TUSC Performance Chart sets forth relevant satistical data as to quarterly and annual search accomplishments of the Center.

The chart below graphically illustrates the trend of the Center's dissemination/assistance service for an eight-year time period (searches were not recorded before September 1966).

SEARCH HISTORY AND ACCOMPLISHMENTS

BY TUSC PER CALENDAR YEAR



As mentioned in the Summary, NASw-2629 was amended by NASA to provide for work performance, and time of performance based on the calendar year. An all-time record number of searches (324) were processed in 1975 by the Center. A calendar-year comparison was tabulated for 1974, 1973, 1972, and 1971. Searches processed per year were 293, 201, 229, and 142, respectively. These search numbers will not coincide with those shown on page 7, the vertical dash lines indicate the months included in each contract year, which generally has been the fiscal year.

Data pertaining to the Center's accomplishments during the first three quarters of 1975 have been reported in QSR Nos. 38, 39, and 40. The October-December TUSC accomplishments are included herein. More searches have been processed in this quarter (101) than any quarter in the history of the Center. Approximately 50% of the search activity relates to the "Faculty Information Service" work statement in the contract. It was reported in QSR #37 that the University had included a course of study concerning information retrieval systems. The course was offered again in the fall semester of 1975 and 45 of the above-mentioned searches resulted from student research on technical data retrieved through the assistance of TUSC personnel (reference searches 1627 through 1671, pages 65-68). The course provides an excellent overview of NASA's TU program to a wide range of people, and students explore a broad area of technology. A complete list of searches processed during the contract period (1 June 1974 - 31 December 1975) is set forth in Appendix B). The period of performance, as previously mentioned; was

extended seven months; therefore, this Final Report covers a nineteen-month time period.

TUSC has continued its mode of operations relative to information retrieval. The vast majority of information disseminated was obtained using manual retrieval resources and techniques; also the Information Retrieval Team consists of 100% student employees. Typical clients are individuals with limited resources, and very small business firms. The Center maintains a very strong alliance with the Small Business Administration, especially the Region VI Technology Utilization Officer because the SBA client and the TUSC client have so much in common.

Another effective source of information dissemination by TUSC has been the General Aviation News Letter; it is edited and published locally with outstanding cooperation and assistance from the NASA General Aviation Technology Office. The NASA Field Centers also provide valuable information included in various issues of the News Letter. Appendix D provides information in greater detail about the News Letter.

Two areas of continuing special interest to TUSC are the Occupational Safety and Health Act of 1970 (OSHA) and the Equal Employment Opportunity Act (EEO). To remain current on guidelines or revisions to laws that affect virtually all sectors of industry, the Center has been represented at OSHA and/or EEO state and local meetings.

During the contract period, a Technology Management Information System (MIS) was developed to improve "results" reporting by the various Industrial

Applications Centers (IACs). The MIS report was applicable to the last two quarters of calendar year 1975. However, information included in the report covered the entire year. An important aspect of the report refers to Client Benefits. Class A benefits are those wherein an economic gain (whatever its form) is documented and Class B benefits are those wherein the recipient documents acknowledgement of gain but cannot express a specific "payoff." For 1975, TUSC reported four Class A benefits and seventeen Class B benefits. The reader of this report will probably conclude that TUSC has been conservative in the reporting of benefits after reviewing client correspondence included in Appendix C--the information relates to the nineteen-month contract period; however, not all information set forth in Quarterly Status Reports Nos. 36, 37, 38, 39, and 40 is included in this report.

The above-mentioned benefits are considered as NASA TU Transfers, two of which occurred during the final quarter; they are:

Transfer 185 -- Design and manufacture of an inverter for wind energy systems...(Search 1488). The president of C-D Electric Motor Sales provides documentation (page 86) of the value of information obtained, i.e., "I am at present considering becoming a distributor for this inverter. This would not have been possible had I not received the article from Mr. Pierce" (SBA).

Transfer 186 -- Elimination of noise pollution in a machine shop... (Search 1480). The firm, Terry Southwest, Inc., communicated (page 87) that: "We have effected a barrier and, to a great extent, eliminated the problem (noise) we previously reported."

The interest of TUSC/SBA clients is consistent with that as reported in the 1974 Final Report; i.e., energy, electronics applications, pollution, waste disposal, and wastewater treatment. The following list of searches are representative, but not all-inclusive:

Energy -- Searches 1307, 1323, 1324, 1332, 1335, 1357, 1444, 1587.

Electronics -- Searches 1207, 1260, 1279, 1292, 1347, 1373, 1438, 1488.

Pollution -- Searches 1344, 1359, 1430, 1480, 1501, 1556, 1588, 1598.

Recycling Waste or Disposal -- Searches 1203, 1276, 1318, 1355, 1401, 1540, 1570, and 1620.

Wastewater Treament -- Searches 1283, 1457, 1460, 1485, 1513, 1599, 1612.

Questions concerning various technical applications for energy by far outnumber all other requests pertinent to a particular topic. The subject of safety also ranks high on the list of information retrieved. It is interesting to note that client requests reflect a growing concern for matters related to mankind's environment.

TUSC has maintained a high level of cooperation with the University Biology Department and personnel working with the Wastewater Treatment Project. Requests for information about the water treatment method (pages 57-60, 1974 Final Report) of the Project are routinely coordinated with personnel involved in the Project and the Center. From the standpoint of potential, the University Wastewater Treatment Project probably presents TUSC the

opportunity to extend NASA's TU services and "benefit payoff" far beyond any achievements of the Center in its history. Throughout the contract period TUSC has cooperated closely with the University Biology Department and personnel involved in various wastewater research activities (pages 119-120). Grayson County College (Texas) is planning to install a six-lagoon wastewater treatment system incorporating the major operating principles of the system for water treatment as set forth in the 1974 Final Report (pages 57-60). TUSC is coordinating a request from the Cooke County (Texas) Environmenral Agency to visit the University facility. The University had a visitor from Bolivia to seek assistance concerning water treatment problems. Bolivia's national disruptions have delayed further progress; however, communications remain open with Bolivians directly concerned with wastewater management.

Other South American countries have communicated an interest in the University Wastewater Management Program through a representative of the University of Monterey (Mexico). Dr. Frank Wade, a Southeastern biologist, has been extended an invitation to discuss matters pertaining to aquaculture and wastewater management. Countries that have extended invitations to Dr. Wade are Costa Rica, Guademala, Panama, Colombia, and Venezuela.

Appendix C provides a Transfer and Impact Report. It is a compilation of letters from TU clients responding to quiries about the value of the TU program from an individual or business prospective.

CHAPTER III

FACULTY INFORMATION SERVICE

> The Contractor shall continue to provide information services to selected faculty research personnel at Southeastern State University, Oklahoma State University, the University of Oklahoma, and other state colleges and universities. (Statement of Work, NASw-2629)

A basic function of the Center is to provide information dissemination and assistance service; as quoted above, the service is extended to colleges and universities. Some of the cooperative efforts have previously been mentioned in Chapter I. During the contract period, approximately 25% of the searches processed (120) provided information services as set forth in the Statement of Work. This level of service is consistent with such services during previous years.

We are extremely pleased with the reciprocative nature of the working relationship that has been a trademark of the TUSC/Faculty interaction. Part of the information provided with Search 1466 was obtained by the Center from the University Technology Department (Electronics). The client responded favorably and requested TUSC to provide additional information (Search 1502). A firm that manufactures rat and mouse poison was referred to TUSC by the University Biology Department (Search 1512). The Biology Department also assisted the Center with Searches 1457 and 1460. The

interaction resulted from a field trip by Industrial Safety students. The plant manager was familiar with the University's Wastewater (sewage) Project and inquired about possible solutions to the plant's wastewater problem. As a result, TUSC extended an invitation to the quality control supervisor of the plant to visit with the Project Director, Dr. Frank Wade. Although industrial waste differs in that it is nonorganic, Dr. Wade discussed possible alternatives that could lead to a relatively inexpensive solution to the problem (pages 113-114).

TUSC has been serving as an intermediary relative to requests concerning wastewater treatment. It helps Professor Wade by relieving him from administrative duties and it helps us by providing a channel through which the TU program and benefits are exposed.

We have been pleased to provide assistance to the University Debate Team. The most recent request of the Debate Team concerned information relating to the topic of land usage; i.e., reservoirs and recreation, highways, housing and urban development, farming and agriculture, etc.

In cooperation with Oklahoma State University, TUSC provided assistance in the location of three reports which our clients were unable to obtain through NTIS and other information retrieval sources. In this regard, the Center is acquiring somewhat of a "bird dog" reputation through the successful retrieval of otherwise unobtainable data.

The University of Oklahoma referred graduate students to TUSC for economic reference material pertaining to southeastern Oklahoma.

One of the more distant examples of college/university cooperation involved TUSC assistance to Ohio State University. The request was no doubt a spin-off of the General Aviation News Letter as the Department of Aviation made a telephone request about NASA CR-2557 "Cloud Motion in Relation to the Ambient Wind Field"--a copy of the report was obtained and forwarded.

Other contacts with colleges/universities relative to the General Aivation News Letter are mentioned in Chapter V.

CHAPTER IV

COOPERATION WITH OTHER AGENCIES

> The Contract shall continue to work closely with and attempt to develop new cooperative efforts with (1) institutions operating under or in conjunction with the Oklahoma State Technical Services Program, (2) organizations established under the Public Works and Economic Development Act of 1965, and (3) other public and private organizations and institutions concerned with promoting the economic and technological development of the region. (Statement of Work, NASw-2629)

Small Business Administration

The excellent (continuing) cooperative effort and related communications with the Small Business Administration (SBA Region VI) has been previously implied through references in Chapter II. SBA selected documentation is set forth in Appendix C (Transfer and Impact Reports) as a reflection of the Center's working relationship with the SBA. Quarterly Progress Reports (QSR Nos. 36-40) contain most of the documentation for time periods covered; therefore, it is not practical to reproduce and include a repeat documentation of all SBA interactions in this report. For example, during the contract period, TUSC has filed 180-200 pages of related SBA material pertinent to TU activities.

That which is included in Appendix C is intended to give the reader an example of the NASA-SBA cooperative effort and accomplishments through TUSC.

A different aspect of SBA cooperation was mentioned in our 1974 report; i.e., the Small Business Institute (SBI). The School of Business provides service to selected small businesses on a contractual basis. For the present academic year, the SBA contracted for 32 SBI cases--12 cases have thus far been completed. The TUSC Director is the budget administrator and coordinates matters pertaining to the SBI. Basically, the purpose of SBI is to provide management counseling for selected SBA clients. It provides a "real life" workshop for students and faculty of the School of Business and Industry. As previously reported in QSR #40, the TUSC Director, Dr. C. Henry Gold, was honored by the SBA by his appointment to a two-year term on the Oklahoma District Advisory Council (SBA), reference page 70.

Not only has the Center rendered assistance to the SBA Region VI TU Officer, but SBA TU Officers located in Pennsylvania, New York, Colorado, and Illinois, as well.

Department of Labor

Although there have been no direct contacts with DOL, TUSC is a resource, and provides information to clients on matters relating to the Occupational Safety and Health Act and that portion of the Equal Employment Opportunity Act of which DOL has cognizance/responsibilities.

Department of the Interior

The University has a contractual relationship and obligation relative to the Interior Department's responsibilities to provide various First Aid and Mine Safety

certificate programs. One of the most innovative aspects of the Safety program is the "School on Wheels" or mobile training unit--TUSC search assistance was mentioned in QSR Nos. 37 and 39. A news article on the Mobile Mine Safety and First Aid Program is included in Appendix C. The "moving classroom" has been utilized in approximately 36 safety training sessions wherein approximately 400 persons received training (or retraining). A measure of its success is validated by the fact that the Department of the Interior is expanding the program through the authorization of newer training units that will have the capability to train 1,000 mine personnel. Safety training subjects will include electrical hazards/permissibility, hydrostatic and/or hydrolic systems safety as well as first aid and mine safety. Three mobile units will be utilized in the effort. TUSC provides search services and assistance.

Oklahoma Association for Affirmative Action

The Association was formed to help promote formal liaison with national, state, and local agencies involved with equal opportunity compliance in employment (and in education). TUSC Industrial Specialist, Mr. Bill Dodd, was elected to serve a two-year term as vice president of the Association. Membership includes representatives of all state-supported institutions of higher education. Industry representatives are also encouraged to attend meetings; thus, it provides a fruitful area whereby the services of TUSC are made known.

The Center has cooperated with various agencies on matters pertaining to aviation; these cooperative efforts/services are included in Chapter V, General Aviation News Letter.

CHAPTER V

GENERAL AVIATION NEWS LETTER

> The contractor shall prepare and distribute a newsletter directed to the general aviation audience. This newsletter should be issued quarterly during the period of performance of this contract. (Statement of Work, NASw-2629)

The General Aviation News Letter approach to disseminating information was approved originally by the NASA TU office through a no-cost letter agreement as another information dissemination experiment by TUSC. The success of the News Letter has been especially rewarding to our Senior Industrial Specialist, Mr. A. M. Moore, who also serves as editor of the publication.

Appendix D of the Center's 1974 Annual Report provides background information on the first five issues of the publication. At that time, we had received 245 formal responses to our mailing list that totaled 420 recipients. Now the mailing list numbers well over 1,700, of which 263 receipients are USAF Junior ROTC units. TUSC approved a request from the ROTC to reproduce the News Letters for distribution to the 32,000 students involved in the ROTC program. There is no doubt a spin-off circulation of unknown numbers as a result of the ROTC distribution.

This particular medium of information dissemination has been slanted to give more exposure to the first "A" in NASA's title; i.e., aeronautics. Furthermore, it is addressed to the aviation community where the greatest number

of people having an interest in aeronautics are found; namely, general aviation. This particular effort has been closely coordinated with NASA's General Aviation Technology Office to insure that there has been no duplication. The TUSC publication is written in non-engineering language for the non-engineer person who has an interest in aviation research and development programs or advancements; whereas, the NASA office distributes engineer-level publications in answer to the needs of the typical aeronautical engineer.

To help stay abreast of current trends in aviation, Mr. Moore has aligned himself with the National Aerospace Writers Association, the National Business Aircraft Association, the National Agricultural Aviation Association, etc. He is also in frequent contact with NASA Field Center personnel involved in or knowledgable of research projects and developments of interest to the typical general aviation enthusiast.

The News Letters published in 1974 are identified as Volume I; a total of five were published. The 1975 News Letters are identified as Volume II; seven were published. Therefore, beginning with each contract year, the News Letter series will be identified by Volume and the next succeeding Roman numeral.

The most recent issue of the News Letter (Volume II, No. 7) is included as a part of Appendix D for information of the reader.

Agencies and organizations that have corresponded with the Center, in addition to those mentioned above, include the Flying Physicians Association, Inc.; Professional Pilot; San Jose State University; Bakersfield College; Northwestern University; Lock Haven State College; Montana State Superintendent; Oklahoma

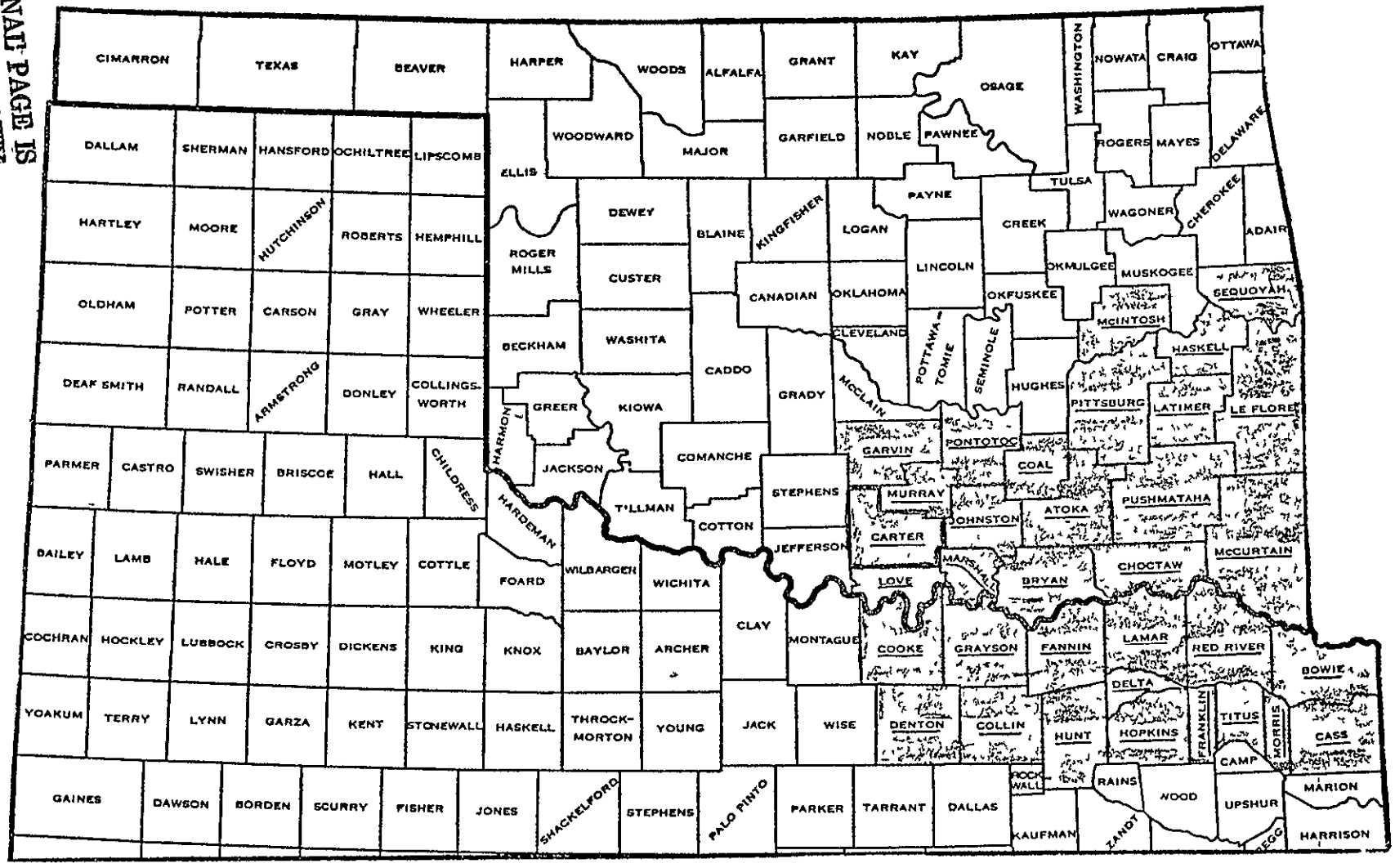
Aeronautics Commission; Jet Propulsion Laboratory; AOPA; University of Nevada; and the Connecticut Bureau of Aeronautics.

Correspondence referring to the General Aviation News Letter is included in Appendix D.

APPENDIX A

TUSC PROJECT AREA

TUSC PROJECT AREA



Scale - Statute Miles

0 100 200 300

APPENDIX B

SUMMARY CHARACTERISTICS OF TUSC TECHNICAL SEARCHES

SUMMARY CHARACTERISTICS OF TUSC TECHNICAL SEARCHES

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1201	Airport Planning, SOTA	I-O	Bovay Engineers, Inc.	Houston, TX
1202	Thermoforming Plastics	I-T	S. Charles Pierce, SBA	Dallas, TX
1203	Recovery and Recycling of Organic Solvents	I-T	S. Charles Pierce, SBA	Dallas, TX
1204	Security Means, Fences, etc.	I-T	S. Charles Pierce, SBA	Dallas, TX
1205	Structural Shapes, Plastics	I-T	S. Charles Pierce, SBA	Dallas, TX
1206	Orifice Designs for Projecting a Highly Columnated "Jet" of Air to Obtain Maximum Heat Transfer by Impingement	I-T	S. Charles Pierce, SBA	Dallas, TX
1207	Inverter Circuits with Transformers	I-F	Thomas Potter Darmstadt Career Center	APO New York (West Germany)
1208	Filteration of Formaldehyde	I-T	S. Charles Pierce, SBA	Dallas, TX

I-S -- An individual student
I-T -- Any individual who is working in technology research for a government agency
I-F -- An individual faculty member
I-O -- Any other individual who is not employed by a manufacturing firm, agency, or a school system

NOTE: Unless otherwise indicated, client is located in the State of Oklahoma.

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1209	SOTA in Underwater Welding	I-F	Harold Lynn, SSU	Durant
1210	Transferring Gas to Liquid Using Stainless Steel Vessels	I-T	S. Charles Pierce, SBA	Dallas, TX
1211	Telemetry, Transmission of Weak Electric Signals	I-T	S. Charles Pierce, SBA	Dallas, TX
1212	Corrosion Control, Cathodic Protection	I-T	S. Charles Pierce, SBA	Dallas, TX
1213	Soil Sampling Techniques	I-T	S. Charles Pierce, SBA	Dallas, TX
1214	Methods for Soil Density Tests	I-T	S. Charles Pierce, SBA	Dallas, TX
1215	Methods for Soil Moisture Tests	I-T	S. Charles Pierce, SBA	Dallas, TX
1216	Testing of Asphalt and Concrete used in the Construction of Airports, Highways, Runways, and/or City Streets	I-T	S. Charles Pierce, SBA	Dallas, TX
1217	Radiographic Testing, Steel Fabrication	I-T	S. Charles Pierce, SBA	Dallas, TX
1218	Radiographic Testing, Steel Fabrication	I-T	S. Charles Pierce, SBA	Dallas, TX
1219	Ionization Method of Smoke Detection	I-T	S. Charles Pierce, SBA	Dallas, TX
1220	Impact Testing of Metal at a Low Temperature	I-T	S. Charles Pierce, SBA	Dallas, TX
1221	Location and Facilities for Fire Stations	I-T	Mrs. Adeline Bainstock Okla City Planning Department	Oklahoma City

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1222	Sensors, Carbon Dioxide	I-T	S. Charles Pierce, SBA	Dallas, TX
1223	Location and Facilities for Fire Stations	I-O	Fire Department	Durant
1224	Isotope, Neutron Emitting CF-252	I-T	S. Charles Pierce, SBA	Dallas, TX
1225	Suppliers of Leather Located in this Area	31	R & S Leather Co.	Durant
1226	Welding of Stainless Steel	I-T	S. Charles Pierce, SBA	Dallas, TX
1227	Welding of Aluminum	I-T	S. Charles Pierce, SBA	Dallas, TX
1228	Materials for Molds	I-T	S. Charles Pierce, SBA	Dallas, TX
1229	Corrosion Prevention, Coatings	I-T	S. Charles Pierce, SBA	Dallas, TX
1230	Casting Methods	I-T	S. Charles Pierce, SBA	Dallas, TX
1231	Bonding Aluminum Oxide Ceramics at 850-900° C	I-T	S. Charles Pierce, SBA	Dallas, TX
1232	Strain Gauge, SOTA	I-T	S. Charles Pierce, SBA	Dallas, TX
1233	Tachometer or Other Instruments Available that will Record RPM's up to 1000 at 20,000 psi and Temperatures up to 400°F	I-T	S. Charles Pierce, SBA	Dallas, TX
1234	Restlessness of the Corporate Climbers	I-S	David Thummel, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1235	Printing Methods, SOTA	31	R & S Leather Co.	Durant
1236	Corrosion of Nickel Alloys at 850-900°C in the Presence of Hydrogen Sulfide and Sulfuric Acid Fumes	I-T	S. Charles Pierce, SBA	Dallas, TX
1237	(1) Fabrication of Tapered Bearings, (2) New Methods or Equipment for Earth or Moon Drilling, and (3) Equipment Used to Manufacture Tapered Roller Bearings and Cylindrical Roller Bearings for the Automotive Industry	I-T	S. Charles Pierce, SBA	Dallas, TX
1238	Acid Fume Collection Methods	I-T	S. Charles Pierce, SBA	Dallas, TX
1239	SOTA of Ultra-High Pressure Pumps	I-T	S. Charles Pierce, SBA	Dallas, TX
1240	Has there been an update on the "Cryogenic Materials Data Handbook, Volume I and II"	I-T	S. Charles Pierce, SBA	Dallas, TX
1241	SOTA, Heat Treatment of SAE-S2 Tool Steel	I-T	S. Charles Pierce, SBA	Dallas, TX
1242	Is there a listing of all available NASA Tech Briefs?	I-T	S. Charles Pierce, SBA	Dallas, TX
1243	SOTA, LC Display Systems	I-T	S. Charles Pierce, SBA	Dallas, TX
1244	LC Manufacturing Methods	I-T	S. Charles Pierce, SBA	Dallas, TX
1245	SOTA, Seismograph Earthquake Monitoring	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1246	Reduction of Niobium	I-T	S. Charles Pierce, SBA	Dallas, TX
1247	Steel Hardening	I-O	Jerry Smith	Springfield, CO
1248	Machining of Graphite Material	I-T	S. Charles Pierce, SBA	Dallas, TX
1249	SOTA, Propylene Carbonate	I-F	Jack Robinson, SSU	Durant
1250	Use of Micro-computers or Programmable Controllers to Numerically Control Machine Tools	I-T	S. Charles Pierce, SBA	Dallas, TX
1251	SOTA, Ceramics	I-F	James Barnett, SSU	Durant
1252	Source of Central Mass Spectra Retrieval System	I-T	S. Charles Pierce, SBA	Dallas, TX
1253	Identification of Bacteria	I-T	S. Charles Pierce, SBA	Dallas, TX
1254	Welding Techniques Developed by NASA and the Department of Defense	I-T	S. Charles Pierce, SBA	Dallas, TX
1255	Identification of Polymers	I-T	S. Charles Pierce, SBA	Dallas, TX
1256	Design of Induction Coils	I-T	S. Charles Pierce, SBA	Dallas, TX
1257	Radioactivity Effect on Elastomers, Vitons, Buta-N Fluoro-Elastomers Used for O-Rings, Gaskets and Limit Switches	I-T	S. Charles Pierce, SBA	Dallas, TX
1258	Piezoelectric Accelerometer with Integral Impedance Matching Amplifier	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1259	Effects of Radioactivity on Elastomers and Other Polymers	I-T	S. Charles Pierce, SBA	Dallas, TX
1260	Design Parameters of Voltmeters	I-T	S. Charles Pierce, SBA	Dallas, TX
1261	Real Time Spectrum Analyzer for Vibration Analysis	I-T	S. Charles Pierce, SBA	Dallas, TX
1262	Corrosion Control	I-T	S. Charles Pierce, SBA	Dallas, TX
1263	High Temperature Coatings	I-T	S. Charles Pierce, SBA	Dallas, TX
1264	Information on Use of Film Coatings, Anti-static	I-T	S. Charles Pierce, SBA	Dallas, TX
1265	Simmer Power Supplies for Lasers, especially Xenon Flash Tubes	I-T	S. Charles Pierce, SBA	Dallas, TX
1266	SOTA, Gas Chromatography	I-F	Jack Robinson, SSU	Durant
1267	SOTA, Pyrolysis	I-F	Jack Robinson, SSU	Durant
1268	Use of Lasers in Cutting	I-T	S. Charles Pierce, SBA	Dallas, TX
1269	Status of Emergency Medical Systems	I-T	S. Charles Pierce, SBA	Dallas, TX
1270	SOTA, Mining of Minerals, Gold, and Other Precious Metals	I-T	Carl Echols, SBA	Oklahoma City
1271	Nondestructive Testing for Metals	34-35	Don R. Hinderliter, Inc.	Tulsa

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1272	Methods of Casting	I-T	S. Charles Pierce, SBA	Dallas, TX
1273	Nondestructive Testing for Residual Stress	I-T	S. Charles Pierce, SBA	Dallas, TX
1274	Optical Polishing Methods for Large Telescope Mirrors	I-T	S. Charles Pierce, SBA	Dallas, TX
1275	Large, 5-foot Diameter Mirrors for Use in Telescope s	I-T	S. Charles Pierce, SBA	Dallas, TX
1276	Sewage Waste Treatment Plants for Family Dwellings	I-T	S. Charles Pierce, SBA	Dallas, TX
1277	Use of Neutron Radiography in the Medical Field	I-T	S. Charles Pierce, SBA	Dallas, TX
1278	SOTA, High Voltage Power Supplies	I-T	S. Charles Pierce, SBA	Dallas, TX
1279	Plated-Through-Holes for Printed Circuit Boards	I-T	S. Charles Pierce, SBA	Dallas, TX
1280	Methods of Fusing Glass to Metal for Use in Telescope Mirror Development	I-T	S. Charles Pierce, SBA	Dallas, TX
1281	SOTA, Optically Encoded Electronic Keyboard	I-T	S. Charles Pierce, SBA	Dallas, TX
1282	Biochemical/Bioconversion Energy Sources	I-T	S. Charles Pierce, SBA	Dallas, TX
1283	Keeping Ground Water out of Sewage Lines	I-T	S. Charles Pierce, SBA	Dallas, TX
1284	Conversion of "Black and White" Video Signal from a TV Camera to Color	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1285	Methods for Reduction of X-Ray Radiation	I-T	S. Charles Pierce, SBA	Dallas, TX
1286	Miniature, Remote-Controlled Color Camera	I-T	S. Charles Pierce, SBA	Dallas, TX
1287	Equipment Required to Log Data for Oil Well Operations	I-T	S. Charles Pierce, SBA	Dallas, TX
1288	Electronic Humidity Sensors, Relative Humidity Sensors, Dew Point Sensors, etc.	I-T	S. Charles Pierce, SBA	Dallas, TX
1289	A Source of Light Sheet Metal	34	McDonald's Sheet Metal	Oklahoma City
1290	Safety in Relation to Man-Machine Interface	I-F	Jim Adcock, SSU	Durant
1291	What are the Most Frequently Cited OSHA Violations?	I-F	Jim Adcock, SSU	Durant
1292	Information on Alternator Operation and Systems	I-F	Jim Adcock, SSU	Durant
1293	Viscoelasticity of Asphalt Pavement	I-T	S. Charles Pierce, SBA	Dallas, TX
1294	Plated-through-holes Technology in Printed Circuit Board Technology	I-T	S. Charles Pierce, SBA	Dallas, TX
1295	Electronic Harness Wiring Assembly, Cable Assembly, Chasis Assembly and Electronic Connector Innovations	I-T	S. Charles Pierce, SBA	Dallas, TX
1296	Printed Circuit Board Fabrication, Manufacturing, and Assembly	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1297	New Techniques for Electroplating Metals and Annodizing Aluminum	I-T	S. Charles Pierce, SBA	Dallas, TX
1298	Innovations for Fire Protection of Large Bldgs.	I-T	S. Charles Pierce, SBA	Dallas, TX
1299	HALON System of Fire Protection	I-T	S. Charles Pierce, SBA	Dallas, TX
1300	Molybedenum Mining--Environmental Impact	I-T	S. Charles Pierce, SBA	Dallas, TX
1301	Measuring Size and Determining Numbers of Air Particles by Light Scattering Techniques	I-T	S. Charles Pierce, SBA	Dallas, TX
1302	Light Scattering Photometers Prior to 1962	I-T	S. Charles Pierce, SBA	Dallas, TX
1303	Generating Particles of Uniform Size and Mono-dispersed Aerosols Through Aerosol Generation	I-T	S. Charles Pierce, SBA	Dallas, TX
1304	Hardcoating of Metal with Ceramics; Flame Spray or Plasma Spray Process of Coating	I-T	S. Charles Pierce, SBA	Dallas, TX
1305	Operational Information About the SMS-1 Weather Satellite	I-O	M. Young Stokes, III, MD	Denison, TX
1306	Adolescent Psychology	I-O	Ray Haley	Durant
1307	Solar Cells	I-T	S. Charles Pierce, SBA	Dallas, TX
1308	Mineral Deposits; Infrared Photos at Land, for Certain Counties in Idaho	I-S	Mary Irene Conn, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1309	Decoder, BCD Logic Level Output	I-T	S. Charles Pierce, SBA	Dallas, TX
1310	Echo, Suppression of In-telephone Lines	I-T	S. Charles Pierce, SBA	Dallas, TX
1311	Non-destructive Testing of Welds	I-T	S. Charles Pierce, SBA	Dallas, TX
1312	Welding of Aluminum, DC Welder	I-T	S. Charles Pierce, SBA	Dallas, TX
1313	Methods and Equipment for Forming or Extruding Plastic Foams	I-T	S. Charles Pierce, SBA	Dallas, TX
1314	Design, Development, and Manufacture of Solar Cells	I-T	S. Charles Pierce, SBA	Dallas, TX
1315	Radio Broadcast Production	I-O	Steve Gentry	Ardmore
1316	Design, Manufacture, and Uses of Solar Cells as a Substitute for Conventional Energy Sources	I-T	S. Charles Pierce, SBA	Dallas, TX
1317	Purification of Air at a High Pressure of 200-300 PSI Using a Baffling System with a Dry Membrane	I-T	S. Charles Pierce, SBA	Dallas, TX
1318	R&D Advances in Increasing Efficiency of Combustion of #5 and #6 Grade Heavy Fuel Oils or Bunker "C" Heavy Fuel Oil	I-T	S. Charles Pierce, SBA	Dallas, TX
1319	Use of Ultrasonics in Medical Diagnostic Activity	I-O	Dan Moore	Lubbock, TX
1320	Filter Media that Can Be Used to Eliminate Toxic Gases Accumulated Inside a Closed Automobile from An Internal Combustion Engine	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1321	Hard Surfacing, Flame Spray, Plasma Spray	I-T	S. Charles Pierce, SBA	Dallas, TX
1322	Plastic Materials Meeting FDA Approval for Use in Contact with Potable Water	I-T	S. Charles Pierce, SBA	Dallas, TX
1323	Use, Design, and Manufacture of Solar Cells	I-T	S. Charles Pierce, SBA	Dallas, TX
1324	Conversion of Wind Energy to Useful Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1325	Design, Development, and Manufacture of Fuel Cells; Costs Related to Manufacture	I-T	S. Charles Pierce, SBA	Dallas, TX
1326	Electrode Coating	I-S	Mohammad Malakouti, SSU	Durant
1327	Manufacturing and/or Purification Techniques of Hydrochloric Acid and Sodium Hydroxide	I-T	S. Charles Pierce, SBA	Dallas, TX
1328	Melting Shredded Scrap and Honeycomb in Processing Aluminum	34	Chillcan Industries	Burnsflat
1329	Power Supply--Miniature High Voltage	I-T	S. Charles Pierce, SBA	Dallas, TX
1330	Wave Soldering	I-T	S. Charles Pierce, SBA	Dallas, TX
1331	Power Supply--High Voltage	I-T	S. Charles Pierce, SBA	Dallas, TX
1332	Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1333	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1334	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1335	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1336	Protective Clothing in Acid Environment	I-T	S. Charles Pierce, SBA	Dallas, TX
1337	Protective Devices, Techniques, and Equipment Used in the Handling of Acid Pipelines under Pressure	I-T	S. Charles Pierce, SBA	Dallas, TX
1338	How to Separate or Clean Out Hydraulic Oil from Waste Water System	I-T	S. Charles Pierce, SBA	Dallas, TX
1339	Five copies of Part 1910 of Chapter 17, USC Title 29 (OSHA)	I-T	S. Charles Pierce, SBA	Dallas, TX
1340	Physical Activities Related to Mental Ability	I-S	Linda Cassidy, SSU	Durant
1341	Filling Containers, Automated	I-T	S. Charles Pierce, SBA	Dallas, TX
1342	Secondary Oil Recovery, Using CO_2	I-T	S. Charles Pierce, SBA	Dallas, TX
1343	Firm Manufactures Industrial Cleaning Chemicals	I-T	S. Charles Pierce, SBA	Dallas, TX
1344	Filter Electronic Sound	I-T	S. Charles Pierce, SBA	Dallas, TX
1345	Elastomer Material for Seals	I-T	S. Charles Pierce, SBA	Dallas, TX
1346	Bernoulli's Principle	I-S	Frank Cross, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1347	Converters, DC to AC and AC to DC	I-T	S. Charles Pierce, SBA	Dallas, TX
1348	Cleaning Boiler Tubes	I-T	John Ward, SBA	New York, NY
1349	Metallizing Beryllia Ceramic	I-T	S. Charles Pierce, SBA	Dallas, TX
1350	Preventing Boiler Water Deposits	I-T	Noel Mann, Ardmore Air Park	Ardmore
1351	Jet Pulse Type Bag Filter Collectors	I-T	John May, SBA	Bala-Cynwyd, PA
1352	Technical Aspects of Setting Up a Human Blood Bank	I-T	S. Charles Pierce, SBA	Dallas, TX
1353	Mini-computers in an On-line Environment, Using BASIC Language	I-T	S. Charles Pierce, SBA	Dallas, TX
1354	Potting Techniques, Especially Epoxy	I-T	S. Charles Pierce, SBA	Dallas, TX
1355	Disposal of Waste in Spacecraft/Spacesuits	I-T	S. Charles Pierce, SBA	Dallas, TX
1356	Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1357	Solar Heating/Air Conditioning Systems	I-T	S. Charles Pierce, SBA	Dallas, TX
1358	Thermal Insulation in Heat-treat Furnances	I-T	John May, SBA	Bala-Cynwyd, PA
1359	Heating Oil Combustion Characteristics and Pollution Control	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1360	What are the Most Frequently Cited OSHA Violations?	I-T	Ardmore Development Authority	Ardmore
1361	Hazardous Materials Transportation Risks (Pipeline and Tanker)	I-T	S. Charles Pierce, SBA	Dallas, TX
1362	Reliability of Pumps and Compressors Used in Piepline Transportation	I-T	S. Charles Pierce, SBA	Dallas, TX
1363	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1364	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1365	Conservation of Steam in Heat Exchangers	I-T	S. Charles Pierce, SBA	Dallas, TX
1366	Lamination/Adhesion Process for Flurorahalocarbon Film	36	Graphics, Inc.	Poteau
1367	New Methods of Manufacturing Face Brick or Other Ceramic Building Products	I-T	S. Charles Pierce, SBA	Dallas, TX
1368	Design of Large Radiator Fan Blades	I-T	S. Charles Pierce, SBA	Dallas, TX
1369	Lost Wax or Shell Coasting	I-T	S. Charles Pierce, SBA	Dallas, TX
1370	Simulators for Training Operators of Heavy Machinery	I-F	Jim Adcock, SSU	Durant
1371	Reverse Osmosis Membranes-Fouling Characteristics	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1372	Manufacture of Carbon Steel Tanks and Pressure Vessels Used for Gasoline and LPG Storage and Quality Control	I-T	S. Charles Pierce, SBA	Dallas, TX
1373	Electronic Replacement of Flurescent Lamp Starters	I-T	John May, SBA	Bala-Cynwyd, PA
1374	Physics of Aerodynamics	I-F	Lewis Barker, SSU	Durant
1375	Measurement of Acoustical Emissions	I-T	S. Charles Pierce, SBA	Dallas, TX
1376	Manufacture of 12-14 Gauge Carbon Steel Tanks and Pressure Vessels	I-T	S. Charles Pierce, SBA	Dallas, TX
1377	Solar and Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1378	Non-destructive Testing Methods	I-T	S. Charles Pierce, SBA	Dallas, TX
1379	Non-destructive Testing Methods	I-T	S. Charles Pierce, SBA	Dallas, TX
1380	LeFlore County, Human and Material Resources	I-F	Tommy Wilson, Supt. of Schools	Panama
1381	Adhesives for Soft Ferrites	I-T	S. Charles Pierce, SBA	Dallas, TX
1382	Use of Alginic Acid	I-O	Vincent B. DeSousa	West Germany
1383	Extraction of Protein From Plants for Human Consumption	I-O	Vincent B. DeSousa	West Germany
1384	Resources of Granite Supply in the U.S.	I-O	Arber Murray	Ardmore

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1385	Hall Effects, Device, Circuit, Multipliers, etc.	I-T	S. Charles Pierce, SBA	Dallas, TX
1386	Photographic Equipment and Techniques Used by Space Vehicles	I-F	Mrs. Donny Rowland	Coleman
1387	Photography Equipment Used by Weather Satellites	I-F	Mrs. Donny Rowland	Coleman
1388	Aircraft Dispersal Equipment and Techniques Used for Agricultural Purposes	I-T	S. Charles Pierce, SBA	Dallas, TX
1389	Pesticide Residues on Edible Products	I-T	S. Charles Pierce, SBA	Dallas, TX
1390	Pyrometers	I-S	Tongfu Siriwongse, SSU	Durant
1391	Cryogenics and Cryogenic Applications	I-S	Piphat O. Vutikum, SSU	Durant
1392	Reverse Osmosis for Purification and Recycling Water	I-S	Karim Mahmoudisad, SSU	Durant
1393	Composites in Metallurgy	I-S	Santi Sinarpa, SSU	Durant
1394	Use of Lasers in Cloth Fabrication	I-S	Musa Es-sayyad, SSU	Durant
1395	Using ERTS for Crop Identification and Acreage Measurement	I-S	Charles Armstrong, SSU	Durant
1396	Conformal Coating of Printed Circuit Board	I-S	Lloyd Bohannan, SSU	Durant
1397	Neutron Activation Analysis in Non-leaded Gas	I-S	Ben Butler, SSU	Durant

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1398	Wind Engines	I-S	Boonlert Charoenadhan, SSU	Durant
1399	Defense Mechanism of Projection	I-S	E. R. Davis, SSU	Durant
1400	Testing Bulls for Fertility	I-S	T. W. Davis, SSU	Durant
1401	Reverse Osmosis Water Recycling Process	I-S	Daniel M. Garvey, SSU	Durant
1402	Mechanism Defense	I-S	Boonlert Charoenadhan, SSU	Durant
1403	A New Type of Wiring for Model 101 SL Floor Heater	I-S	Nam H. Kim, SSU	Durant
1404	Solar Cell	I-S	Phaisal Lertdamrongdej, SSU	Durant
1405	Laser Surveying Devices	I-F	Kay Parham, SSU	Durant
1406	Library Periodicals	I-F	Kay Parham, SSU	Durant
1407	Insulation	I-S	Kitti Petdara, SSU	Durant
1408	Satellite Solar Power	I-S	Anong Podhayannkul, SSU	Durant
1409	Corn Blight Experiment	I-S	Donald G. Worsham	Durant
1410	Leadership Techniques	I-S	Pip Ongpatana Vutikum, SSU	Durant
1411	Heat Pipes	I-S	James Sawyer, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1412	Corrosion and Other Chemical Resistant Coatings or Paints to be Used on Metal and Fabric Surfaces of Agricultural Aircraft	I-T	S. Charles Pierce, SBA	Dallas, TX
1413	Technical Information on Methods and Equipment Used in Starting a Coal Mine	I-T	S. Charles Pierce, SBA	Dallas, TX
1414	Optical Pyrometers (2400°F)	I-F	James Barnett, SSU	Durant
1415	Speed/Weight Characteristics of Representative Aircraft that are Operating in the 1970's	I-F	Lewis Barker, SSU	Durant
1416	Atomic Absorption Analysis--Laboratory Procedures for Analyzing Water for Heavy Metals	I-T	S. Charles Pierce, SBA	Dallas, TX
1417	Carbon Dioxide Solidification at Low Temperatures in Various Pieces of Equipment	I-T	S. Charles Pierce, SBA	Dallas, TX
1418	Using an Emission Spectrograph to Sample for Various Metals in the Process or Refinement of Titanium Ore	I-T	S. Charles Pierce, SBA	Dallas, TX
1419	Stellite/Metallurgy	I-T	S. Charles Pierce, SBA	Dallas, TX
1420	Analytical Methods or Preparation of Titanium Mineral Samples for Atomic Absorption Analysis	I-T	S. Charles Pierce, SBA	Dallas, TX
1421	SOTA, Thermocouple-type Transducer	I-O	John Earl Walker	Sulphur
1422	Transducer: Weight to be Measured. 0-500,000 lbs. and 0-5,000 lbs.	I-O	John Earl Walker	Sulphur

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1423	Recovery of Silver from Photographic Wastes or Photographic Materials	I-T	S. Charles Pierce, SBA	Dallas, TX
1424	Adhesive to Bind a Molded Paper Collar to Polyproplene--Single Vehicle (no mixing), Long Pot Life, Air Cured Strong Adhesion and Flame Retardant	I-T	S. Charles Pierce, SBA	Dallas, TX
1425	SOTA, Various Processes Used for Molding Plaster Objects Used for Art Work	I-O	Herman Roberts	Durant
1426	Pliable Molding Substance Such as a Water-Latex Spray	I-O	Herman Roberts	Durant
1427	Wave Soldering Techniques in Printed Circuit Board Manufacturing	I-T	S. Charles Pierce, SBA	Dallas, TX
1428	Stuffing and Soldering Printed Circuit Boards	I-T	S. Charles Pierce, SBA	Dallas, TX
1429	Methods for Industrial or Plant Water Treatment in Power Plants	I-T	S. Charles Pierce, SBA	Dallas, TX
1430	Elimination of Noise Pollution in an Ornamental Iron Plant	I-T	S. Charles Pierce, SBA	Dallas, TX
1431	Crash Fire Rescue Services, Particularly at Airports	I-O	University Engineers, Inc.	Norman
1432	Can the Slam or "Suction Effect" be Eliminated from Check Valves Used in Sewage Treatment Plants?	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1433	Resistance of Various Sheet Plastics to Deformation	I-T	S. Charles Pierce, SBA	Dallas, TX
1434	Stack Gas Sampler to Determine Efficiency of Combustion by Analyzing Flue Gases	I-T	S. Charles Pierce, SBA	Dallas, TX
1435	Products Related to the Use of Solar and Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1436	Computer Program Library System in the BASIC Language	I-T	S. Charles Pierce, SBA	Dallas, TX
1437	Disposal of Phosphate Coating Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1438	Metallic Electroplating on Silicone Rubber	I-T	S. Charles Pierce, SBA	Dallas, TX
1439	Spring-loaded Backflow Prevention Value or Spring-loaded Check Valve for Use in Potable Water Lines fiom 3/4" to 3"	I-T	S. Charles Pierce, SBA	Dallas, TX
1440	An Optical Lens Which Will Concentrate the Strobe Source to Make it Send Out Light Like a Spotlight	I-T	S. Charles Pieice, SBA	Dallas, TX
1441	SOTA, Electrical Discharge Machining (EDM)	I-O	Richard Butler	Roanoke, TX
1442	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1443	Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1444	Conversion of Geothermal Energy to Useful or Commercially Available Energy for Plant Use	I-T	S. Charles Pierce, SBA	Dallas, TX
1445	Equipment and Techniques for Heat Treating Shock Resistant Tool Steels	I-T	S. Charles Pierce, SBA	Dallas, TX
1446	Equipment/Techniques Used in Freezing Shock-Resistant Tool Steels to Obtain Transformation From Austenite to Martensite	I-T	S. Charles Pierce, SBA	Dallas, TX
1447	SOTA, Dry Chemical Agents, Light Water Agents, and Foams Used for Fighting Fires	I-T	S. Charles Pierce, SBA	Dallas, TX
1448	Petroleum, Petroleum Products, and Natural Gas, Fire Prevention Management Techniques and/or Fire Fighting Equipment	I-T	S. Charles Pierce, SBA	Dallas, TX
1449	SOTA, General Fire Fighting Equipment for Fixed Systems, Skids, Trailers and/or Fire Trucks	I-T	S. Charles Pierce, SBA	Dallas, TX
1450	Conversion of Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1451	Conversion of Wind Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1452	Conversion of Geothermal Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1453	Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1454	Spollo-Soyuz Test Project Information	I-O	Robert Engles, MD	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1455	Production of Hydrogen from Natural Sources	I-T	S. Charles Pierce, SBA	Dallas, TX
1456	Information on Wind Tunnel or Flight Test Data for Whitcomb Wing or GAW-1 Wing	I-T	S. Charles Pierce, SBA	Dallas, TX
1457	Purification of Industrial Waste Water Containing Inorganic Suspended Solids	30	Johns-Manville	Denison, TX
1458	Research Performed to Develop Foam Concrete	I-T	S. Charles Pierce, SBA	Dallas, TX
1459	Conversion of Wind Energy into Useful Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1460	Inexpensive Methods for Reducing High pH Count of Industrial Waste Water	30	Johns-Manville	Denison, TX
1461	Solar Heaters or Solar Energy Collection Devices	I-T	S. Charles Pierce, SBA	Dallas, TX
1462	Commercial Techniques for Converting Solid Wastes into Fuel or Methane Gas	I-T	S. Charles Pierce, SBA	Dallas, TX
1463	Hot Forging or Cold Forging Methods of S-5 Steel for Manufacturing Nut Setters, Sockets, and Extensions	I-T	S. Charles Pierce, SBA	Dallas, TX
1464	Insulation Material for a High Voltage, Low Frequency Navigation System Antenna and High Voltage Box Enclosure	I-T	S. Charles Pierce, SBA	Dallas, TX
1465	How to Combine or Add Power from Several or Many Push-Pull Amplifier Modules into a Single Outlet in Power Amplifier Circuits	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1466	Prime Mover Using a DC, Reversible Electro-Magnet Solonoid	I-T	S. Charles Pierce, SBA	Dallas, TX
1467	How Does Digital Output from a Computer Control a Flight Control Surface	I-F	A. M. Moore, SSU	Durant
1468	Insulation Technology Applicable to Oil Field Tanks and Vessels	I-T	S. Charles Pierce, SBA	Dallas, TX
1469	New Materials and Methods Used for Insulating Large Collection Tanks	I-T	S. Charles Pierce, SBA	Dallas, TX
1470	Recent Developments in Device, Meters, Orifices	I-T	S. Charles Pierce, SBA	Dallas, TX
1471	Natural Gas Flow and Natural Gas Flow Measurement Research	I-T	S. Charles Pierce, SBA	Dallas, TX
1472	Corrosion Inhibitors Applicable to Oil Well Production	I-T	S. Charles Pierce, SBA	Dallas, TX
1473	High Temperature Lubrication for Mandrels During Metal Forming	I-T	S. Charles Pierce, SBA	Dallas, TX
1474	Use of Surfactants to Release Petroleum from Porous Rock Formations in Water Flooding Operations that Involve Tertiary Recovery	I-T	S. Charles Pierce, SBA	Dallas, TX
1475	Hydroponic	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1476	Elas-General Purpose Computer for the Equilibrium Problems of Linear Structures	I-T	S. Charles Pierce, SBA	Dallas, TX
1477	OSHA - Welding Standards	I-O	Small Business Institute, SSU	Durant
1478	SOTA, Mining Technology and Mining Safety	I-F	Jim Adcock, SSU	Durant
1479	Geothermal Energy Resources	I-T	S. Charles Pierce, SBA	Dallas, TX
1480	Elimination of Noise Pollution in a Machine Shop	I-T	S. Charles Pierce, SBA	Dallas, TX
1481	Psysiological or Biological Response to High Frequency Lighting in the 20,000 Hz Frequency Range	I-T	S. Charles Pierce, SBA	Dallas, TX
1482	Information on Converting Undecylenic Acid to a Zinc Compound of Undecylenate	I-T	John Ward, SBA	New York, NY
1483	Use, Design, and Manufacture of Heat Pipes	I-T	S. Charles Pierce, SBA	Dallas, TX
1484	Practical Applications of Solar Collectors and Reflective Surfaces	I-T	S. Charles Pierce, SBA	Dallas, TX
1485	Aquaculture/Fisheries Information	I-F	Frank Wade, SSU	Durant
1486	Recycling Nickel-cadmium Aircraft Battery Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1487	Nuclear Power Industry's Quality Assurance Program for Manufacturing Firtings	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1488	Design and Manufacture of an Inverter for Wind Energy System Changing AC to DC Current in 6000 Watt Range	I-T	S. Charles Pierce, SBA	Dallas, TX
1489	Solid State, Integrated Circuit Sewing Machine Needle Positioning Device Utilizing a Permanent-magnet DC Motor	I-T	S. Charles Pierce, SBA	Dallas, TX
1490	Grinding of Optical Glass in Aspherics or Free From Spherical Abberations	I-T	S. Charles Pierce, SBA	Dallas, TX
1491	SOTA, Solar Heating and Cooling	I-F	Paula Platter, SSU	Durant
1492	Disposal of Plating Wastes Including Cadmium, Nickel, Etc.	I-T	S. Charles Pierce, SBA	Dallas, TX
1493	Dust Processing from Steel Mill Furnances	I-T	S. Charles Pierce, SBA	Dallas, TX
1494	Setting Up a Forging Operation for Stainless and Carbon Steels, Molybedenum and Chrome Moly-bdenum ring cylinders	I-T	S. Charles Pierce, SBA	Dallas, TX
1495	Electronic Circuitry with a Crystal Controlled Oscillator Divided to Give One Pulse Every 24 Hours	I-T	S. Charles Pierce, SBA	Dallas, TX
1496	PVC Pipe Strength of Materials and Criteria for Designing Underground Pipelines	I-T	S. Charles Pierce, SBA	Dallas, TX
1497	Defending Use of San Blasting Using Silica Sand and Alternatives	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1498	Sensing Temperature of Animals Without Contact	I-S	Carl Hill, SSU	Durant, OK
1499	Instrumentation to Measure Combined Nitrogen	I-T	S. Charles Pierce, SBA	Dallas, TX
1500	Sound Depressive Materials/Coatings Used in Home or Office Construction to Lower to Noise Level	I-T	S. Charles Pierce, SBA	Dallas, TX
1501	Noise Pollution Countermeasure for Use in Machine Shops	I-T	S. Charles Pierce, SBA	Dallas, TX
1502	SOTA, Solenoid	36	End Devices, Inc.	Midland, TX
1503	Friction on Sliding Supports for Pipe	I-T	S. Charles Pierce, SBA	Dallas, TX
1504	Bonding of Dissimilar Materials, Especially Wood to Liquid Polyruethane	I-T	S. Charles Pierce, SBA	Dallas, TX
1505	Ablative Protection and/or Fire Resistant Coating Material Capable of Long-term Protection	I-T	S. Charles Pierce, SBA	Dallas, TX
1506	Hydraulic Symbols and Their Use	I-T	S. Charles Pierce, SBA	Dallas, TX
1507	Hydraulic Machinery and Its Application to the Iron Works Industry	I-T	S. Charles Pierce, SBA	Dallas, TX
1508	Flexible Steel Simple Construction Couplings	I-T	S. Charles Pierce, SBA	Dallas, TX
1509	Plastic Bottle Material Handling Equipment Having an Automatic Processing Feature	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1510	Flow Properties and/or Processability of Rigid PVC or Polyolefin Resins	I-T	S. Charles Pierce, SBA	Dallas, TX
1511	Is There a Non-fire Supportive Construction Material, in the Foam Plastic Family, to Substitute for Polyurethane Foam?	I-T	S. Charles Pierce, SBA	Dallas, TX
1512	Rattus Norvegicus and Rattus Rattus	28	Cowley's Rat & Mouse Poison	Hugo
1513	What Continuous Monitoring Device is Available for Measuring Sewage Effluent Qualify?	I-T	S. Charles Pierce, SBA	Dallas, TX
1514	Research and Development, Design and Manufacture of Thermoelectric Coolers on Thermoelectric Cooling Process and Devices	I-T	S. Charles Pierce, SBA	Dallas, TX
1515	Cybernetics	I-S	Gary Beathard, SSU	Durant
1516	Incenerators Used for Burning Waste Sewage	I-T	S. Charles Pierce, SBA	Dallas, TX
1517	Measurement of Human Stress on Centrifuge-- Visual Evoked Responses	I-T	S. Charles Pierce, SBA	Dallas, TX
1518	Measurement of Human Stress on Centrifuge-- Fatigue	I-T	S. Charles Pierce, SBA	Dallas, TX
1519	Measurement of Human Stress on Centrifuge-- Arterial O_2 Saturation	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1520	Measurement of Human Stress on Centrifuge-- Glavanic Skin Responses	I-T	S. Charles Pierce, SBA	Dallas, TX
1521	Measurement of Human Stress on Centrifuge-- Muscular Tension	I-T	S. Charles Pierce, SBA	Dallas, TX
1522	Measurement of Human Stress on Centrifuge-- Limb Volume	I-T	S. Charles Pierce, SBA	Dallas, TX
1523	Measurement of Human Stress on Centrifuge-- Temperature	I-T	S. Charles Pierce, SBA	Dallas, TX
1524	Measurement of Human Stress on Centrifuge-- Visual Function (acuity, field)	I-T	S. Charles Pierce, SBA	Dallas, TX
1525	Measurement of Human Stress on Centrifuge-- Blood Flow and Circulation Time	I-T	S. Charles Pierce, SBA	Dallas, TX
1526	Measurement of Human Stress on Centrifuge-- Indirect Arterial Pressure	I-T	S. Charles Pierce, SBA	Dallas, TX
1527	Measurement of Human Stress on Centrifuge-- Electroencephalogram (EEG)	I-T	S. Charles Pierce, SBA	Dallas, TX
1528	Measurement of Human Stress on Centrifuge-- Ventricular Function	I-T	S. Charles Pierce, SBA	Dallas, TX
1529	Measurement of Human Stress on Centrifuge-- Venous Pressure	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1530	Measurement of Human Stress on Centrifuge-- ECG (Scalar and Vectorcardiogram)	I-T	S. Charles Pierce, SBA	Dallas, TX
1531	Aerobic Type Sewage Disposal Systems	I-T	S. Charles Pierce, SBA	Dallas, TX
1532	Downhole Corrosion or Rust Inhibitors Related to Oil or Petroleum Production	I-T	S. Charles Pierce, SBA	Dallas, TX
1533	Recently Developed High-foam Agents, Compounds or Chemicals for Removing Water from Oil Wells	I-T	S. Charles Pierce, SBA	Dallas, TX
1534	Individual Designs for Irrigation Pipe of 3004 Alclad	I-T	S. Charles Pierce, SBA	Dallas, TX
1535	New Techniques or Methods Used for Asphalt Paving	I-T	S. Charles Pierce, SBA	Dallas, TX
1536	Automative Safety and Automobile Accident Reconstruction	I-T	S. Charles Pierce, SBA	Dallas, TX
1537	Highway and City Traffic Planning Information	I-T	S. Charles Pierce, SBA	Dallas, TX
1538	Use or Development of Heat Exchangers to Replace Radiators on Fixed Place Gasoline Engines	I-T	S. Charles Pierce, SBA	Dallas, TX
1539	Corrosion Inhibitive Primers	I-T	S. Charles Pierce, SBA	Dallas, TX
1540	Recycling/Reprocessing	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1541	Plastic Material of About 50 Durometers Hardness that can Withstand Ultraviolet Rays for 4-5 Yrs	I-T	S. Charles Pierce, SBA	Dallas, TX
1542	Solar Heating and Air Conditioning for Residential and Commercial Buildings	I-T	S. Charles Pierce, SBA	Dallas, TX
1543	Composite Pipe Material Having Aluminum Skins for Covering of Glass or other Material	I-T	S. Charles Pierce, SBA	Dallas, TX
1544	Solar Heating for Use in Hothouses or Greenhouses	I-T	S. Charles Pierce, SBA	Dallas, TX
1545	SOTA, Communications Systems Development	I-T	S. Charles Pierce, SBA	Dallas, TX
1546	Land Usage - Indian Reservations	I-S	Debate Team, SSU	Durant
1547	Land Usage - Highways	I-S	Debate Team, SSU	Durant
1548	Land Usage - Railroads	I-S	Debate Team, SSU	Durant
1549	Land Usage - Coal Mining	I-S	Debate Team, SSU	Durant
1550	Land Usage - Nuclear Power Plants	I-S	Debate Team, SSU	Durant
1551	Land Usage - Oil and Natural Gas	I-S	Debate Team, SSU	Durant
1552	Land Usage - Reservoirs and Recreation	I-S	Debate Team, SSU	Durant
1553	Land Usage - Forests	I-S	Debate Team, SSU	Durant
1554	Land Usage - Housing and Urban Development	I-S	Debate Team, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1555	Land Usage - Farming and Agriculture	I-S	Debate Team, SSU	Durant
1556	Land Usage - Pollution	I-S	Debate Team, SSU	Durant
1556A	Planning, Development, and Successful Operation of Youth Camps	I-F	Jim Adcock, SSU	Durant
1557	Equipment to Emboss or Encode Message on Plastics Using CR Characters	I-T	Marian Brunell, SBA	Denver, CO
1558	SOTA, Automatic Direction Finding Equipment	I-O	R. R. Moose, MD	Caddo
1559	OGEE Wingtip for Aircraft Wings and Aircraft Propellers	I-T	S. Charles Pierce, SBA	Dallas, TX
1560	Disposal of Industrial Wastewater	I-T	S. Charles Pierce, SBA	Dallas, TX
1561	Erosion Control Using Hydro-mulch	I-T	S. Charles Pierce, SBA	Dallas, TX
1562	SOTA, Wind Energy	I-O	Charles Calhoun	Durant
1563	SOTA, Solar Energy	I-O	Charles Calhoun	Durant
1564	Ore Logging Techniques (for coal, uranium)	I-T	S. Charles Pierce, SBA	Dallas, TX
1565	Geothermal Logging Techniques	I-T	S. Charles Pierce, SBA	Dallas, TX
1566	Oil Well Logging Methods and Equipment	I-T	S. Charles Pierce, SBA	Dallas, TX
1567	Available Equipment for Baling Solid Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1568	Various Products Manufactured from Waste Paper	I-T	S. Charles Pierce, SBA	Dallas, TX
1569	Available Methods and Equipment for Recycling Aluminum Cans, Scrap Metals, Scrap Plastics, and Wastepaper and Rags	I-T	S. Charles Pierce, SBA	Dallas, TX
1570	New Methods of Land Fill Operation or Incineration of Solid Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1571	Mineral Insulation Cable	I-T	S. Charles Pierce, SBA	Dallas, TX
1572	Harms of Natural Gas Deregulation	I-S	Debate Team, SSU	Durant
1573	SOTA, Weather Satellite Picture Receiving Station	I-S	Bernie Bareis, Skyline High Sch	Dallas, TX
1574	Of What is Fiberglass Composed	I-S	Jimmy Blan, SSU	Durant
1575	Uranium Mining	I-S	Debate Team, SSU	Durant
1576	Availability of a Gel for Use in a Phosphatizing Coating	I-T	S. Charles Pierce, SBA	Dallas, TX
1577	Exotic Fuels of Future Space Travel	I-O	Verne Briggs	Atoka
1578	Computerized Management Systems	I-T	Fed. Food & Drug Administration	Dallas, TX
1579	Cadmium Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1580	Sterilization Methods for the Destruction of Clostridium Botulinum	I-T	Fed. Food & Drug Administration	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1581	Heat Transfer Characteristics for the Maintenance of Sterilization of Low Acid Food Products in Hermetically Sealed Containers	I-T	Fed. Food & Drug Administration	Dallas, TX
1582	SOTA, Reverse Osmosis	I-T	S. Charles Pierce, SBA	Dallas, TX
1583	Methods Used to Pulverize Tires, Products Developed from Old Tires, EPA's Suggestions as to Disposal of Old Tires	I-T	S. Charles Pierce, SBA	Dallas, TX
1584	What Procedures will Need to be Changed if a Foundry Changes from Casting Grey Iron to Steel	I-T	Harry Wegert, SBA	Chicago, IL
1585	SOTA, Laminated Plywood Truses	I-F	Jim Adcock, SSU	Durant
1586	Weather Satellite Picture Receiver Station - How to Build and Operate	I-S	Bernie Bareis, Skyline High Sch	Dallas, TX
1587	Commercially Available Solar Cells or Panels	I-T	S. Charles Pierce, SBA	Dallas, TX
1588	Firms Approved by OSHA and/or Dept of Mines to Conduct Dust and Sound Pollution Levels	I-F	Ron Abner, SSU	Durant
1589	Fireproof Materials Available that Can Be Foamed and Molded (in the price range of polyrinethane)	I-T	S. Charles Pierce, SBA	Dallas, TX
1590	Fire Prevention	I-S	Debate Team, SSU	Durant
1591	Hydraulic Pneumatic Value Actuators	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1592	Telcon Instructional Technology	I-F	Ernest Sturch, Jr., SSU	Durant
1593	Co-efficients of Friction of Various Lubricants and Effect on Torque	I-T	S. Charles Pierce, SBA	Dallas, TX
1594	Ceramics and High Temperature Adhesives	I-T	S. Charles Pierce, SBA	Dallas, TX
1595	Liquification of Methane and Natural Gas	I-T	S. Charles Pierce, SBA	Dallas, TX
1596	Destruction of Solid Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1597	Methods and Equipment Used in Gas Tungsten Arc Welding of Metals	I-T	S. Charles Pierce, SBA	Dallas, TX
1598	Sand Filters for Pollution Control of Water	I-T	S. Charles Pierce, SBA	Dallas, TX
1599	Tertiary Treatment Systems for Sewage Disposal	I-T	S. Charles Pierce, SBA	Dallas, TX
1600	Production Method to Bond Sheets of Embossed 10-15 mil Thick Aluminum	I-T	S. Charles Pierce, SBA	Dallas, TX
1601	Torque vs. Tension in Threaded Bolt Applications	I-T	S. Charles Pierce, SBA	Dallas, TX
1602	Application of Solar Energy to Aerate Stored Grain	I-T	S. Charles Pierce, SBA	Dallas, TX
1603	Economical Selective Surface for Solar Power Collector Panels	I-T	S. Charles Pierce, SBA	Dallas, TX
1604	SOTA, Motorcycle Mufflers	I-S	M. I. Kahn, SSU	Durant

SEARCH NUMBER	SEARCH NUMBER	SIC	CLIENT	LOCATION OF CLIENT
1605	Colostrum - Methods Used in Preservation	I-F	Jack Robinson, SSU	Durant
1606	Aerobic Sewage Disposal - Methods, Equipment	I-T	S. Charles Pierce, SBA	Dallas, TX
1607	Printed Circuit Board Wave Solder Techniques and Equipment	I-T	S. Charles Pierce, SBA	Dallas, TX
1608	Evapo-Transpiration Method of Sewage Disposal	I-T	S. Charles Pierce, SBA	Dallas, TX
1609	Thick Cell Hybrid Electronics Technology	I-T	S. Charles Pierce, SBA	Dallas, TX
1610	Creatinine Serum Blood Test	I-T	S. Charles Pierce, SBA	Dallas, TX
1611	Methods and Equipment Used for Destroying or Eliminating Odors	I-T	S. Charles Pierce, SBA	Dallas, TX
1612	Method of Cleaning Waste From Lap Plate Channels to Obtain Grease-Free Product	I-T	S. Charles Pierce, SBA	Dallas, TX
1613	Use of Bottom Ash in Concrete or Concrete Products	I-T	S. Charles Pierce, SBA	Dallas, TX
1614	Weather Recording Devices	I-T	S. Charles Pierce, SBA	Dallas, TX
1615	Dissipation of or Transfer of Heat Through Epoxies to Metals or Air	I-T	S. Charles Pierce, SBA	Dallas, TX
1616	Solid Sate High Current Switching Technology	I-T	S. Charles Pierce, SBA	Dallas, TX

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1617	Methods, Equipment Used in Hard Chrome Plating	I-T	S. Charles Pierce, SBA	Dallas, TX
1618	Heating and Air Conditioning Equipment Based on the Utilization of Solar Energy	I-T	S. Charles Pierce, SBA	Dallas, TX
1619	Design of Solar Panels, Collectors, Reflective Coatings and Surfaces	I-T	S. Charles Pierce, SBA	Dallas, TX
1620	Solid Wastes	I-T	S. Charles Pierce, SBA	Dallas, TX
1621	Battery or Other Power Source that will Operate at Temperatures up to 400°F	I-T	S. Charles Pierce, SBA	Dallas, TX
1622	Beneficial Use of Bath and Laundry Wastewater	I-F	Frank Wade, SSU	Durant
1623	Tape Recorder Test Equipment	I-F	Harold Lynn, SSU	Durant
1624	Analyzation Response of Shock Physics in Regard to Explosive Loading	I-T	S. Charles Pierce, SBA	Dallas, TX
1625	Propeller Type Fans; Airfoils	I-O	Donald O'Dell & Associates, Inc.	Tulsa
1626	Smoke Detecting Using Light Scattering Principle	I-T	S. Charles Pierce, SBA	Dallas, TX
1627	Wind Energy	I-S	Somporn Ongsakorn, SSU	Durant
1628	Minicomputers	I-S	Sithiporn Chaichow, SSU	Durant
1629	Feasibility of Manufacturing Fire-Proof Paint	I-S	M. Iqbal Khan, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1630	Hydrogen as Automotive Fuel	I-S	Veerachart Punyavut, SSU	Durant
1631	Use of Activity Carbon	I-S	Orchorn Sidthithanont, SSU	Durant
1632	Solar Energy to Heat Greenhouses	I-S	Stephen L. Avard, SSU	Durant
1633	Hydrogen as an Auto Fuel	I-S	Sajid Aziz Kuraishi, SSU	Durant
1634	Human Behavior Under Stress	I-S	J. E. Cline, SSU	Durant
1635	Human Factors Engineering	I-S	Sumana Chutaganot, SSU	Durant
1636	Composite Structure Materials	I-S	Pattanapong Pupeerapitug, SSU	Durant
1637	Human Factors Engineering	I-S	E. Janyce Barrett, SSU	Durant
1638	Computer Hook-up for Sensors that Detect Smoke and Fire	I-S	Charles Sims, SSU	Durant
1639	Minicomputer	I-S	Miyos Thongtan, SSU	Durant
1640	Uses of Lasers	I-S	Pinyo Kamalaporn, SSU	Durant
1641	Concorde	I-S	Jawed Mohammad, SSU	Durant
1642	Wind Energy	I-S	Mohammad Aslam, SSU	Durant
1643	Human Behavior Under Stress	I-S	Stanley Ward, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1644	Human Behavior Under Stress	I-S	Soomphan Siripoobala, SSU	Durant
1645	Secondary Uses of Waste Paper	I-S	Charles D. West, SSU	Durant
1646	Preventing Aluminum Alloy Pipe from Corrosion	I-S	Joe Epelbaum, SSU	Durant
1647	Hydrogen as a Substitute Energy Source	I-S	Suwattana Vonggapun, SSU	Durant
1648	Fuel Cells	I-S	Ray N. Thorp, SSU	Durant
1649	Human Factors Under Stress	I-S	O. Ray Mathes, SSU	Durant
1650	Concorde	I-S	Bizhen Matin, SSU	Durant
1651	Fuel Cells	I-S	O. D. Barnes, SSU	Durant
1652	Hydrogen Auto Fuel	I-S	Asghar Muhammad, SSU	Durant
1653	Minicomputers	I-S	Vasan Choophaichitr, SSU	Durant
1654	Use of Lasers	I-S	Sina Shamsabadi, SSU	Durant
1655	Fireproof Paint	I-S	Sommanous Na-Bangchang, SSU	Durant
1656	Sensors to Detect Smoke and Fire	I-S	Larry I. Moody, SSU	Durant
1657	Use of Lasers	I-S	Charasphant Charaseri, SSU	Durant
1658	Wind Energy and Its Practical Application	I-S	J. D. Stiles, SSU	Durant

SEARCH NUMBER	SEARCH SUBJECT	SIC	CLIENT	LOCATION OF CLIENT
1659	Fireproof Pai nt	I-S	Suraphol Tankawatanakul, SSU	Durant
1660	Hydrogen as a Substitute Energy Source	I-S	Tadatsura Suzuki, SSU	Durant
1661	Geothermal Energy	I-S	Mohsin Arif Siddiqui, SSU	Durant
1662	Airconditioning System by Solar Energy	I-S	Somwhung Wirushsilpa, SSU	Durant
1663	Evaluating Materials for Corrosive Service	I-S	H. L. Moyers, SSU	Durant
1664	Heat Pipes	I-S	SSU Student	Durant
1665	Apollo-Soyuz Project	I-S	SSU Student	Durant
1666	Apollo-Soyuz Project	I-S	SSU Student	Durant
1667	Secondary Uses of Waste Paper	I-S	SSU Student	Durant
1668	Geothermal Energy	I-S	SSU Student	Durant
1669	Hydrogen as a Substitute Energy Source	I-S	SSU Student	Durant
1670	Metal Corrosion Control	I-S	SSU Student	Durant
1671	Light Scattering Photometers	I-S	SSU Student	Durant

APPENDIX C

TRANSFER AND IMPACT REPORTS

U S GOVERNMENT
SMALL BUSINESS ADMINISTRATION
WASHINGTON, D C. 20416

OFFICE OF THE ADMINISTRATOR

AUG 5 1975

Mr. C. Henry Gold
Dean, School of Business and
Industry
Southeastern Oklahoma State
University
Durant, Oklahoma 74701

Dear Mr. Gold:

On behalf of the Small Business Administration, I am pleased to appoint you to a two-year term on the Oklahoma District Advisory Council.

This Agency, the only one created specifically to help small business, relies heavily on its advisory councils.

The members do many things to assist the SBA in helping the nine-million small businesses of this country.

Details of this activity are outlined on the enclosed memorandum and more information will be provided for you by the District Director, Truman Branscum.

You will learn from association with the other members of the council at the meetings at least twice a year, that outstanding community leaders are appointed to the councils.

These dedicated citizens serve without pay.

With your help we can make a significant contribution to the economic well-being of this Nation, and I have full confidence that this can be done.

The time and effort you give to SBA and small business will be greatly appreciated.

Sincerely,

Thomas S. Kleppe

Thomas S. Kleppe
Administrator

Enclosure

ASSOCIATED FOOD EQUIPMENT CO.

2051 VALLEY VIEW LANE P O BOX 34568 DALLAS, TEXAS 75234 PHONE (214) 247-9(

August 8, 1974

Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Re: Technology Utilization Officer:

Dear Mr. Grose:

I am pleased to respond to your inquiry regarding the information provided by Mr. Charles Pierce, Technology Utilization Officer.

Information on two items was requested. In the general category of heat transfer from gas to liquid and and specifically sheet metal fin design, useful references were provided promptly and a follow up call by a specialist, Mr. Peavy of the National Bureau of Standards, added book references and knowledgeable review. This information is being studied and will be considered in improved design of our food processing equipment.

The second item of information regarded orfice design for columnated air. The prompt and extensive bibliography will require considerable study but is being studied now. Mr. Ruegg of the National Bureau of Standards followed this inquiry and was, also, knowledgeable and helpful.

Both of these technical inquiries can improve our products and help us make better new food fryers and ovens.

Sincerely yours,

ASSOCIATED FOOD EQUIPMENT COMPANY

Donald Paul Smith

Donald Paul Smith, President

Transfer 171
TUSC Search #1210
NASA TB's 68-10504, 63-10346,
67-10555, 65-10291
NASA Lit. Search #26073

ma

ASTRO Ecology Corp
P O BOX 58159 HOUSTON, TEXAS 77058 713-~~XXX-XXXX~~ 332-2484

September 16, 1974

Mr. Donald D. Grose
Assistant Regional Director
Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

Thank you for your letter of September 3, 1974. It has provided us an opportunity to express our appreciation and thank you for the excellent help given us by Mr. Charles Pierce.

We asked Mr. Pierce's help in obtaining information on two very highly technical subjects. We received the benefit of the NASA data bank and were put in personal contact with a NASA expert in the field. While only a small company, we are working on certain advanced technology and have a patent position in the field of high temperature combustion.

It is very gratifying to know that NASA, the technology leader of the world, has set up such a fine system of technology transfer. Without it, it seems our county would lose the benefit of such a large investment of past highly successful technical space programs.

Please give our personal thanks to Mr. Pierce and feel free to use these comments as you please.

Sincerely yours,

John W. Small
General Manager

JWS:es

Transfer 172

NASA Lit. Search #26303
TUSC Search #1231
NASA TB's 67-10608
70-10215
72-10199
71-10455
71-10116
70-10580
NASA SP-5052

THE PENETRYN SYSTEM INC
POLLUTION CONTROL SERVICES DIVISION
DIVISION OFFICE 1316 PALMETTO AVE / WINTER PARK FLORIDA 32789 / TEL (305) 645 5353

September 16, 1974

Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Attention: Charles Pierce

Re: Our request for availability of miniature color photographic cameras

Dear Mr. Pierce:

We wish to thank you for your assistance in the search we requested. The literature which we received contained a total of four evaluation forms which I very hurriedly answered in part. Very simply stated, we did not obtain anything concerning miniature color photographic cameras; however, the volume of references concerning aerial photography, television cameras, and liquid waste problems round the United States and the world was very impressive.

The literature did contain one reference number, A71-35788 sub-miniature television camera by Westinghouse Electric Corporation. The referenced TV camera is 1.5 x 1.5 x 5 inches and presents a backward type solution to our type problem using this sub-miniature TV camera in conjunction with a standrad water-proof sewer survey camera, we may be able to achieve the desired result. We have contacted the Westinghouse Electric Corporation and this camera is, in fact, available although somewhat expensive in single quantities. The sub-miniature TV camera, in addition, permits the solution of other difficult inspection problems we have. In short, Mr. Pierce, the literature search was beneficial although the evaluation sheets may not tend to indicate so.

Sincerely,

THE PENETRYN SYSTEM, INC., PCSD

James T. Conklin, P.E.
Division Engineer

JTC:ahg

Transfer 173

TUSC Search #1286
NASA TB's 67-10469
72-10190
72-10733
NASA Lit. Search #26894

INVESTIGATION TESTING CONSTRUCTION [illegible] AND PRESERVATION OF STRUCTURES AND UTILITIES [illegible]

INSTITUTE FOR RESEARCH, INC.
8330 WESTGLEN DR • HOUSTON, TEXAS 77042 • 713/783-8400

ARD/PA
TUO

November 18, 1974

Mr. Donald D. Grose
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Re: Your letter of November 4

Dear Mr. Grose:

Shortly after making my request for technical information from Mr. Charles Pierce, I received both telephone calls and written information concerning both areas of interest. The information regarding an antistatic agent for teflon FEP film was somewhat sparse, due in part to the fact that little work has been done on such coatings by government or industry. We did receive a few samples of commercially available material, but found them unsatisfactory for our purposes.

The information concerning a high temperature and abrasion resistant coating for aluminum castings has been quite helpful, especially that provided by Goddard Space Flight Center. We are currently formulating paints following the Goddard procedures, and hope to obtain a useable formulation within a few months. When completed, this paint will be used by the casting manufacturer as a part of his processing operations.

In general, we have been quite pleased with the information obtained from the SBA, and I have always found Mr. Pierce to be exceptionally prompt and knowledgeable.

Sincerely,

INSTITUTE FOR RESEARCH, INC.

Dan E. Posey
Laboratory Manager

Transfer 174

TUSC Search #1264
TUSC Search #1263

ELECTRONIC FABRICATION
PRINTED CIRCUIT MFG
INSTRUMENT REPAIR
CALIBRATION SERVICES

MISSOURI RESEARCH LABORATORIES, INC.

AREA CODE 505 243-6772
630 HAINES AVENUE NORTHWEST
ALBUQUERQUE, NEW MEXICO 87102

MRL-022-A-January 14, 1975

Mr. Donald D. Grose
Assistant Regional Director
for Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose

In reply to your letter of January 8, 1975, let me advise that we have received correspondence and information pertaining to P. C. board fabrication and electronic assembly. We are most grateful for this information and have been able to put it to good use. This kind of information is good in two respects; first, it tells us about government quality standards and in general high-quality standards. Secondly, it helps us measure our own quality. We hope that you will be able to supply additional data of this nature from time to time.

More importantly to our present needs is sales. We are extremely anxious to learn of governmental agencies and private industry who contract for services we provide. Let me assure you that we will follow up on each and every lead you provide.

To recap briefly our capabilities, we are essentially a contract engineering and manufacturing facility. We produce P. C. boards, cables, chassis, test sets, panels and any other type of electrical and electronic assembly. All of which are produced to customers' specifications and drawings. We also provide instrument repair

and calibration service. This service is primarily provided to local and regional customers. However, the assembly work and engineering services are provided for a nation wide customer base.

We continue to appreciate your assistance.

Very truly yours,

R. H. ANDERSON - Divisional Vice-President

RHA.shn

Transfer 175

TUSC Search #1294
NASA Search #27174

TUSC Search #1296
NASA Search #27180
TB's 73-10393
73-10145

TUSC Search #1295
NASA SP-5043
NASA TB's 73-10211
71-10054
71-10415
71-10417
71-10419
71-10421
NASA Search #27182

ORBIT INC.
MANUFACTURERS OF VACUUM FORMING MACHINES FOR SKIN AND BLISTER PACKAGII
FACTORY & OFFICE DEMING INDUSTRIAL AREA
DEMING, NEW MEXICO 88030 • PHONE 505/546 7175

January 27, 1975

Mr. Donald D. Grose
Asst. Regional Director for
Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

In reply to your letter of January 8, 1975, the information you have furnished us regarding solar cells as a substitute for conventional energy sources has been very useful, and we are going to venture to build solar panels which will be useful to everyone and economical enough to obtain.

Of particular interest was the information in the NASA TECH Brief B73-10527 on coating aluminum substrates. We would appreciate more information on this, and also information as to whether it would be possible to obtain sheets of this aluminum already coated and what would be involved in commercializing this process.

Sincerely yours,
ORBIT, INC.

James A. Poppenberg
Plant Superintendent

JAP/nh

Transfer 176
TUSC Search #1316
NASA TB's 72-10058
72-10090
72-10177
72-10517
73-10156
73-10374
73-10493
74-10090
TB's 74-10099
73-10484
73-10527
73-10485
73-10524
NASA Lit. Search #27386

FILTERLAB HIGH EFFICIENCY AIR FILTRATION

CORPORATION

February 19, 1975

Mr. Donald D. Grose
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose,

Thank you for your letter of February 10, 1975, regarding the information sent to us by Mr. Charles Pierce of your office. The information sent to us by Mr. Pierce has been of great assistance to our engineering staff in evaluating materials for the development of a miniature high voltage power supply, which we expect to market sometime during the latter part of this year. In addition, some of the electronic data supplied by Mr. Pierce is invaluable reference material in assisting us in power supply developments.

We would like to take this opportunity to thank you and your staff for the expeditious manner in which our request have been handled.

Very truly yours,

FILTERLAB CORPORATION

Charles W. Soltis
President

CWS:pj

Transfer 177

TUSC Search #1329
TUSC Search #1331
NASA Lit. Search #27590
NASA Lit. Search #27574
TUSC Search #1334

6850 WYNWOOD / HOUSTON TEXAS 77008 / TELEPHONE (713) 869 0159

ASEPTICS INC.
13010 Player P O Box 45029 Houston Texas 77045 (713) 721-4643

FEB 27 9 52 AM 1975

February 25, 1975

Mr. Donald D. Grose
Assistant Regional Director
for Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

In reply to your letter of February 10:

The information supplied by Mr. Charles Pierce, Technology Utilization Officer, has been made part of a research file for a new business that we will open the mid part of this year. As you well know, basic research to begin a new business is a costly, time consuming affair. I am of the opinion that the information you have supplied will result in a man-hour savings of 340 hours at a dollar value of $1,600.00. I am most pleased with your help.

Let me, at this time, commend Mr. Pierce for his quick understanding of my requirements and his kind attention to my need.

Sincerely,

John Ballard
President

Transfer 178

JB/lc

NASA Lit. Search #28005
TUSC Search #1352
NASA Lit. Search #27569

ARDIPA #
TUO

W.W. TRANSFORMER CO.
2325 Mimosa Lane #30
Houston Texas 77019

~~774-9736~~ 529-2195 ~~523-5188~~

April 25, 1975

Mr. Donald D. Grose
Assistant Regional Director
for Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose,

Please excuse the delay in answering your letter.

We have reviewed the information you provided and evaluate it thusly.

Solar Energy. The problems that will arise to use solar energy will be severe. First, building codes will have to be changed. Second, even an experimental building will require professional and licensed people. Only large firms will be able to afford the expense. We are not able to use this information.

Electronic Filters. We are using some of the reprints.

Power Supplies. The references were to subjects that were too specific. We will keep these for reference should a particular application arise.

Thank you for your assistance.

Yours truly,
Fahey Widerstrom

Transfer 179
TUSC Searches 1335
1344

Transfer 179

UNIVERSITY ENGINEERS, INC.

405-321-5778 P O BOX 1033 1215 WESTHEIMER DRIVE NORMAN, OKLAHOMA 73069

April 28, 1975

Mr. S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, TX 75235

Dear Mr. Pierce:

I received a letter today from Donald S. Grose, Assistant Regional Director for Procurement Assistance, asking for comments on four searches that you have had performed for us.

We have found the bibliographies provided extremely useful and have ordered copies of reports cited in all of them.

These searches have saved us a considerable amount of time and effort; specifically, I have had the time to search other sources which I would have been unable to do otherwise.

The only problem that I have encountered is in the area of obtaining copies of specific items. For example, in the DDC Search on the liquefied natural gas/pumps, lines, etc. (Search Control No. 026318), I ordered copies of AD 923,390 and AD 923,368 from NTIS since they are unclassified. I received a notice from NTIS stating they are not in their collection and refer to the source of information for availability. I assume this is DDC, but I don't have the required order form. I find it very frustrating to know that information I need exists and is unclassified, but I can't get my hands on it. Can you help me out here? Both reports are pertinent to our study for the U. S. Coast Guard.

I hope that this letter is of some help in your evaluation. Incidently, I thought that we had filled out and returned the evaluation forms included with these searches. If we missed any, I apologize. We really appreciate your service.

Sincerely,

Mary Ann Mento

Mary Ann Mento

Transfer 180
TUSC Searches
1361
1362
1417

MAM:akh

ALLISON LABORATORIES, INC
911 PRAIRIE TRAIL
AUSTIN, TEXAS 78758
512/836-5160

ARD/PPA
TU-C

June 27, 1975

Mr. S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce:

I am sorry to have delayed in responding to your nice letters asking about the usefulness of your service. We have no excuse other than being "just too busy".

The information was very good and we followed a number of the leads and sent for several papers noted in your information resumes. We received a great deal of help from both. It led us to Mr. Dunnegan of Dunnegan Endenco who helped a great deal by referring us to sources of hydro phone made by Gould Industries. We have purchased this equipment and are using it for calibration of our Acoustic Emission Transducers (pickups).

We are now in the process of widening our scope in the AE field and are going to order added material from NTIS which we are sure will be helpful.

Again, we are sorry for the late response and thanks again for your valuable help.

Very truly yours,

E. U. Parsons
President

EUP:pp

Transfer 181

TUSC Search 1375
NASA SP-5093
Tech Brief 67-10471
Tech Brief 69-10045
Tech Brief 71-10157
Tech Brief 71-10114
Tech Brief 73-10325
Tech Brief 72-10427
Tech Brief 71-10045
NASA Literature Search 28260

Complete Line of Barricade Warning Lights For Every Purpose

ELECTRIC TILES Company

2504 W Vickery Blvd ◆ Fort Worth, Texas 76102 ◆ AC (817) 332 7961

July 29, 1975

Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Attn: Mr. Donald Grose

Dear Sir:

Thank you very much for your letter of July 23, directed to Mr. Blaylock. We certainly appreciate the assistance supplied to us by the Small Business Administration sending us Technical Data regarding to Optical Lenses. This did lend support to us in one area of development project for a new product. The new product is now in a proto-type stage and we should be able to get it into production in the next three months, thus generating hopefully substantial revenues for our Company.

Thanks again for the assistance by the SBA.

Very truly yours,

Robert P. Falconer
Vice-President

RPF/sw

cc: AB

Transfer 182

TUSC Search 1440
NASA SP-5941(01)

L H INDUSTRIES / COMMUNICATIONS ENGINEERING DIVISIO
1022 Wyoming Avenue / El Paso, Texas 79902 / 915 + 544-512

ARD/FA II
TUO

July 30, 1975 LOG: 75-HRL-0250

U.S. Government
Small Business Administration
Region VI
1720 Regal Row
Dallas, TX 75235

Subject: Technology Program Effectiveness

Reference: SBA ltr to LH Industries dtd 23 Jul 1975, same general subject.

Attention: Mr. Donald D. Grose
Assistant Regional Director for Procurment Assistance

Gentlemen:

This is to thank you for the assistance Mr. Charles Pierce has rendered to us in connection with the SBA Technology Program. This type of information dissemination is particularly useful to us in evaluating state-of-the-art development.

Your help is sincerely appreciated.

Very truly yours,

LH INDUSTRIES, LTD.
Communications Engineering

Harry R. Lamberth, P.E.
General Manager

HRL:aj

Transfer 183

NASA Literature Search 27300
TUSC Search 1310
NASA Literature Search 27283

Production Automation
Emdl Devices Inc
P O Box 522
Midland, Texas 79701
(915) 694 6632

ARD/FP
TWO

August 29, 1975

Small Business Administration
Region VI
1720 Regal Row
Dallas, TX 75235

Attention: Donald L. Grose

Gentlemen

The response that we received to Mr Pierce's efforts on our behalf in obtaining information on technology for downhole pumping motor was almost overwhelming We received response from a number of agencies and organizations By and large, the responses were prompt and contained much valuable information

If this case is representative of the results obtained by such efforts, I believe that you can evaluate the effectiveness of your technology program as excellent It is difficult to estimate the amount of time saved for us by this program

Unfortunately the financial requirements of this development program are such that we will not be able to immediately act upon the information which we have received. We are, however, actively pursuing methods of financing the program

We feel that if we are successful in developing the downhole equipment, that it will make a significant contribution to the oil producing industries effectiveness

I would like to thank your department in general and by carbon of this letter, Mr. Pierce in particular, for doing an excellent job on our behalf.

Yours truly,

Wayne Westerman

Wayne Westerman

-85

Transfer 184

TUSC Search 1466

WW-an
cc: Mr. Charles Pierce

ARDIPA
TWO

- C - D ELECTRIC MOTOR SALES
1334 Agnes Street
Corpus Christi, Texas 78401

October 14, 1975

Small Business Administration
Regional Office
1720 Regal Row
Dallas, Texas 75235

Att'n: Donald D. Grose

In answer to your letter of September 25, 1975, Mr. Pierce supplied our firm with an article from October issue of Popular Science"Wind Power Without Batteries".

It concerns a new inverter which when used with a DC Power source, does not require storage batteries.

I am at present considering becoming a distributor for this inverter. This would not have been possible, had I not received this article from Mr. Pierce.

I deeply appricate all the information you have supplied us with.

Sincerely,

Allen McElvany

Allen McElvany
President
C-D Electric Motor Sales

AM/jm

Transfer 185

NASA Literature Search 2973
TUSC Search 1488

TERRY SOUTHWEST, INC.
A SUBSIDIARY OF THE TERRY CORPORATION OF CONNECTICUT
5911 SCHUMACHER • HOUSTON, TEXAS 77027
TELEX 762-782
PHONE 713/781-0482

October 2, 1975

ARD/PA
TUC

U. S. Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Attention: Mr. Donald D. Grose

Dear Mr. Grose,

In response to your September 25 letter, I think I can make a general comment that we were "overwhelmed" with material, and have received several follow-ups, both by telephone and written message.

We have effected a barrier and, to a great extent, eliminated the problem we previously reported.

By way of comments pertaining to my evaluation of the program, I can only say that, if anything, it is guilty of "overkill". To eliminate this type of thing, from a taxpayer's viewpoint, I can visualize that with more explicit descriptions of the problem by ourselves, we would have eliminated the tremendous flow of printed material pertaining to actual articles and the voluminous indices of articles available on the subject.

To sum it up, I gues I can state that I was impressed with the response; however, I feel that the system can be refined by requiring a more definitive written description in order to reduce the overall cost of printing, mailing and personal follow-ups on material not required.

I hope my comments can be found beneficial.

Thank you for your interest.

Very truly yours,

TERRY SOUTHWEST, INC.

Carl A. Stendebach

CAS/ps

Transfer 186
TUSC Search 1480
NASA Literature Search
29747

TUO

Trasor CORP

P. O. BOX 45522, TULSA, OKLAHOMA 74145 PHONE. (918) 628-0494

July 10, 1974

Small Business Administration
Region VI - PMA Division
1100 Commerce Street
Dallas, Texas 75202

Attn: Donald D. Grose

Subject: Recent research for information regarding manufacturing. Please refer to your letter dated June 7, 1974.

Dear Mr. Grose:

It appears that the information that you recently sent to us will be very helpful.

Within the past several weeks we have hired an engineer to conclude this project; however this may require nine to twelve months.

We appreciate the service you have offered and hope that this will continue to be available.

Sincerely,

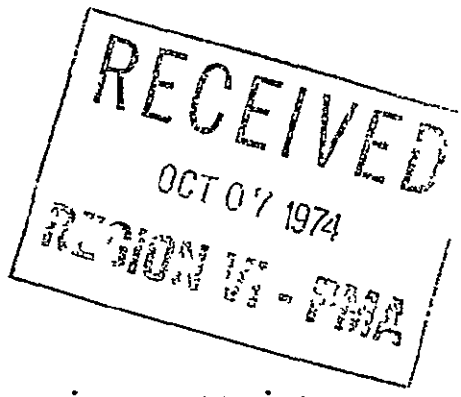
CHARLES H. MYERS, Pres.

CHM:jlb

TUSC Search #1168
NASA Lit Search #25305

United Technology Laboratories, Inc.
P.O BOX 30102 • DALLAS, TEXAS 75230 • PHONE (214) 494-3421 • TWX (910) 860-5167

2 October 1974
L-74-1346



Mr. Donald D. Grose
Assistant Regional Director
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

We received your letter of September 3, 1974, concerning our opinion about your service in providing the information of "all types of smoke detectors using ionization chambers or the ionization technique, especially theory of operation and safe levels of radioactive radiation from devices using ionization techniques".

In fact, we are very satisfied with your prompt response and the information from you. The material from you did save us time and effort in finding the information which we are interested in. It led us to a lot of related technical publications and as a result of that, several important decisions were made. We hope that you will provide information to a greater extent in the future.

We would like to express our sincere thanks and wishes for your Technology Program to be a great success.

Sincerely yours,

R. L. Zinke

Robert Zinke
Program Manager

NASA Lit. Search #26248
TUSC Search #1219

RZ:jh

TECHNOLOGY INCORPORATED
LIFE SCIENCES DIVISION
8531 N. New Braunfels Ave , San Antonio, Texas 78217
Tel (512) 824-7373

4 November 1974

TOO

Small Business Administration
Regional Office
1720 Regal Row
Dallas, Texas 75235

Attention: Donald D. Grose, ARD/PA

Reference: Your letter dated October 31, 1974

Dear Mr. Grose:

The only comprehensive response I can make at this time is "WOW". I received at least an order of magnitude more data on EMS systems than I expected and have not had time to effectively review the bulk of it.

Yes, the information received is useful and there is a high probability that it will be used by Technology Incorporated. Perhaps the most useful response I can make is to assure you that I intend to make more frequent use of the SBA information retrieval services in the future.

Sincerely,

Roy W. Thompson

Roy W. Thompson
Associate Principal
Research Engineer
San Antonio Laboratory

TUSC Search #1269
NASA Lit. Search #26832

RWT/slj

P O Box 34606
Houston Texas 77034
8450 Lockheed
Houston Texas
(713) 644-5445

Refractory Metals Inc

October 4, 1974

Mr. Donald D. Grose
Assistant Regional Director
for Procurement Assistance
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

In response to your inquiry regarding the technical search and assistance program, I must say we are delighted. We are a technically oriented company. However, being a small business constricts our ability to acquire new technology in our areas of activity. Most of our time is spent on day-to-day problems.

The Technology Utilization Program provides an access to new technology with very little initial effort by the participating small business. All literature received is not always right on target, but some of it is, and further effort by Mr. Pierce has brought good results.

Mr. Pierce has been aggressive and efficient in his duties. His response to our needs and inquiries has been excellent.

We are very interested in the program's continuance. Keep up the good work.

Sincerely,

J. B. Huddleston

J. B. Huddleston
Vice President - Operations

JBH:mae

NASA SP-5071
TUSC Search #1246
NASA Lit. Search #26861

SCIENTIFIC SYSTEMS
CORPORATION

MAIN OFFICE
9020 SOUTH CHOCTA
BATON ROUGE LA
PHONE (504) 926-69

September 25, 1974

Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Attention: Donald D. Grose, ARD/PA

Dear Mr. Grose:

The aid and assistance given to us by Mr. Charles Pierce, of the Technology Utilization program, has indeed been most impressive and efficient. I do not mind admitting that I made my request for the desired information with some reservation, knowing full well that in the past, somewhat similar programs had not been too satisfactory for us. But in this case, the information came to us quickly, well documented, and efficiently screened and surveyed.

We are still working with the material, and it looks like it will be most helpful to us. Please express my appreciation to Mr. Pierce and thank all concerned for their assistance.

Sincerely,

John S. Forrester
SCIENTIFIC SYSTEMS CORPORATION

JSF/ph

TUSC Search #1288
NASA Lit. Search #26171
TUSC Search #1222
NASA TB's 71-10090
71-10536
65-10390
72-10526

CONTROL INSTRUMENTS, INC.
7015 ATWELL / HOUSTON TEXAS 77036 / OFFICE 667-5067 NIGHTS 665 6887

October 21,1974

Mr.S.Charles Pierce
Small Business Administration
1720 Regal Row
Dallas
Texas 75235

RE: Liquid Crystals and
Micro-Processors Informatio

Dear Mr.Pierce:

My sincere thanks for the mass of information you sent me on the Liquid Crystals and Micro-Processors.

The amount of data referring to the various reports was far more extensive than I had anticipated, so needless to say it will take quite a while for me to sift through the computer print-outs and pick the reports or papers most relevant to our problems.

Thanking you again for your cooperation in this matter and looking forward to being in touch with you in the near future for further assistance.

Sincerely,

K.Mirdadian
President.

TUSC Search #1243
NASA TB's 72-10746
72-10083
72-10183
NASA Lit. Search #26629
NASA Lit. Search #26621
TUSC Search #1250
NASA TB's 70-10599, 70-10581

ACD/PA ✓
TUO

MADE WELL MOLDS

P O BOX 254
SANGER, TEXAS 76266

October 21, 1974

Dear Mr. Grose,

Thank you very much for your letter of Septeber 3, 1974. I do apologize for the long delay in answering. We have been pretty well snowed around here.

The materials which we recieved from your office have been interesting and informative. They have also allowed us to look indifferent directions for solutions to our various problems. However, in so far as immediate, concrete answers are concerned, we have not been able to find them.

We are familiar with the majority of the materials available to this daye. And, without sounding smart, U. S. Gypsum offers very little more than we already know about their products.

Unfortunately, available information in our area of interest, seems to be rather sparce.

In so far as this SBA service is concerned, I must say that it is very effieient and valuable. Please keep it up. It is one of the few areas nowadays in which we can see some return from our tax dollars.

Cordially,

S.J. Doggett

NASA Lit. Search #26327
TUSC Search #1228
NASA TB's 63-10008, 64-10270, 65-10177,
66-10328, 67-10302, 70-10403,
70-10512, 70-10019, 70-10273,
72-10234, 72-10175, 71-10063
NASA SP-5044

I.T.M. INCORPORATED

Instruments • Technology • Machinery

818 EAST MYRTLE STREET • SAN ANTONIO, TEXAS 78212 • PHONE (512) 227-9492

TUO — ARD/PA

November 11. 1974
KS:164:74

Small Business Administration
Region VI, 1720 Regal Row
Dallas, Texas 75235
Attn. Mr. Donald D. Grose
Assistant Regional Director for Procurement Assistance

Subject: Information on High Voltage Power Supplies, lowering X-ray dose to Patient, and use of Neutron Radiography in the Medical Field.

Dear Mr. Grose:

The efforts of the Small Business Administration, Dallas Regional Office, have once again provided I.T.M. with extremely helpful Information.

The references supplied were so numerous, that we are still engaged in the follow up of these leads. Contacts were made, which show great promise; as was our office contacted by known experts commenting on their experience in related fields.

Please accept our sincere thanks for your invaluable contribution to our program and also please transmit our thanks to Mr. Charles Pierce, who as usual has done an excellent job in helping us in solving our problems.

Very truly yours

Karl Senghaas

Karl Senghaas
Vice President, I.T.M. Inc.

TUSC Search #1278
NASA Lit. Search #26896
NASA Lit. Search #26847
TUSC Search #1285
NASA Tech Briefs 69-10344
72-10232
TUSC Search #1277
NASA Lit. Search #26875

HEMPHILL CORPORATION
4834 SOUTH 83RD EAST AVENUE
TULSA, OKLAHOMA 74145

OFFICE-(918) 622-5133 • AFTER HOURS 587-5822 • 627-2126 • 836-192

ENGINEERS
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MECHANICS • CONCRETE TESTING • ASPHALT TESTING • METAL TESTING • CONTRA
DRILLING • WATER WELL CONSTRUCTION • BARGE DRILLING • PRESSURE GROUTI

July 29, 1974

Mr. Donald D. Grose
Assistant Regional Director
U. S. Small Business Administration
1100 Commerce Street
Dallas, Texas 75202

Dear Sir:

I wish to apologize for delaying an answer to your letter of June 7, 1974, regarding our utilization of information supplied by Mr. Charles Pierce of your office.

Both Mr. Hemphill and I read the material and consider it a valuable addition to our technical library. It is hard to pinpoint any specific material that is of more importance than any other. Rather we consider the best use for the material, to date, is keeping us updated on the state of the art, and advances being made in drilling and water well technology.

We value this material, and hope you will keep us on your mailing list.

Yours truly,

C. Howell Mullis, Jr., Ph.D., P. E.
Chief Engineer

CHM/smj TUSC Search #1177
NASA Lit. Search #25312
TUSC Search #1182
NASA TB's 71-10159
71-10481
71-10140
66-10146
69-10304
69-10571
67-10473
NASA Lit. Search #25320
NASA Lit. Search #25325
TUSC Search #1176

C-2

96

Pixley Coating, Inc.
SPECIALISTS IN SANDBLASTING & EPOXY COATINGS

VELMA INDUSTRIAL PARK
Box 805
Telephone 405 / 444-2140
VELMA, OKLAHOMA 73091

September 3, 1974

Mr. Donald D. Gross
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Gross:

In reply to your letter of September 3rd, relating to information sent to us by Mr. Charles Pierce, concerning protective epoxy and resin coatings, the information is so voluminous that I have not had time to go through all of it. I have found a number of technical bulletins that I need to order, as the research applies to our type of work.

As I mentioned to Mr. Pierce, small companies like us do appreciate the availability of this extensive research for our own use. I am still studying the information that was sent to us and I really do appreciate it.

Yours very truly,

H. R. Haines,
President

HRH:ah

NASA Lit. Search #26297
TUSC Search #1229
NASA TB's 67-10149
65-10140
64-10206
66-10207

TUC

SPECTRIX CORPORATION

October 7, 1974

Mr. Donald D. Groce
Assistant Regional Director
for Procurement Assistance
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr Groce:

The cooperation of the Small Business Administration is greatly appreciated by our firm. The information supplied through the efforts of Mr Charles Pierce and his colleagues is presently being utilized in our laboratory research and development program, and will enable us to provide better services to our clients.

Thank you , again.

Sincerely yours,

Harris A. Lichtenstein

Harris A. Lichtenstein, Ph.D.
President

NASA SP-5021 (11), (12), and (13)
Index to NASA Tech Briefs 1970
Index to NASA Tech Briefs 1971
Index to NASA Tech Briefs 1972
NASA Lit. Search #26638
TUSC Search #1255
NASA Lit. Search #26662
TUSC Search #1253
NASA TB's 73-10406, 72-10207,
67-10243, 70-10525
TUSC Search #1252

5760 RICE AVE • HOUSTON, TEXAS 77036 • P O BOX 36501 • (713) MO

TU

METRIX
INSTRUMENT CO.

October 9, 1974

Mr. Donald D. Grose
Small Business Administration
Region VI - PA Division
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose,

In response to your letter of October 1, 1974, we wish to express our appreciation for the prompt action taken by your administration in supplying us with many references and articles pertaining to product developments, about which we had requested information. This information should prove to be very useful to us.

Very truly yours,

P. C. Sundt

PCS:slh

NASA Lit. Search #26622
TUSC Search #1258
NASA Lit. Search #26652
TUSC Search #1261
TUSC Search #1245
NASA TB's 63-10551, 66-10085
NASA Lit. Search #26664

Rothe Developments Inc.
Material Testing-Research and Development Labo

4614 SINCLAIR ROAD
SAN ANTONIO TEXAS 78222
(512) 648-3131

5 November 1974

Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235
Attention: Mr. Donald D. Grose

SUBJECT: Inquiry as to Effectiveness of Technology Program

Dear Mr. Grose:

The program activated by Mr. Pierce in our behalf was found to be most effective. It can be stated now that the material received under the sponsorship of the program saved us considerable basic research efforts and permits us to concentrate on developmental activities. Please be aware that the program execution here is of rather low profile and long range.

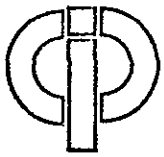
Thanking your office for the assistance, I remain,

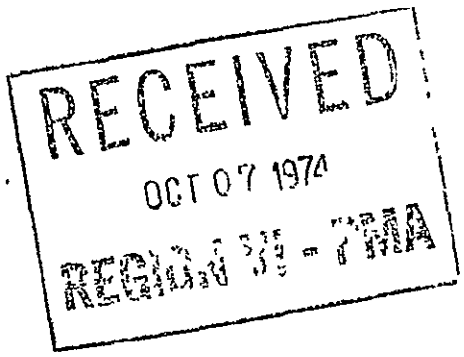
Sincerely,
ROTHE DEVELOPMENT INC.

W. E. Rothe
President

NASA Lit. Search #26831
TUSC Search #1282

WER/bf





October 2, 1974

S. Charles Pierce
Technology Utilization Officer
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce:

Our company was very pleased with the assistance provided by the Small Business Administration Office. Unfortunately we did not find the CO_2 sensor indicated, but we feel your office did as thorough a job as possible.

Sincerely,

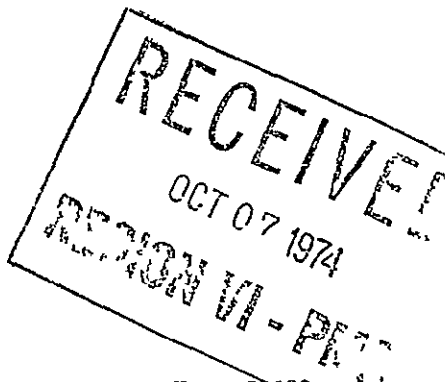
W. G. Mondshine

W.G. Mondshine
Operations Manager

WGM:jdm

NASA TB72-10168
TUSC Search #1161
NASA TB 72-10198
NASA TB's 72-10420
65-10316
64-10259
64-10319
69-10092
65-10390
72-10207
72-10402
73-10381
72-10526

NASA Lit.
Search #22571



Cardio-Pulmonary Instruments Corporation 6400 Westpark Suite 150 P O Box 36424 Houston Texas 77036

texas carbide manufacturing co.
P O BOX 8616 • HOUSTON TEXAS 77009 • 861-1892

February 13, 1975

U. S. Government
Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

We wish to thank you and your organization for the excellent manner in which they prepared the literature search on solar energy and wind energy for our company. The abstracts are very complete and has undoubtedly saved the company considerable manhours.

Give my regards to Charles Pierce and thank him for the splendid job. I will be needing his assistance at a later date.

Yours truly,

E. F. Jernigan
Vice President
TEXAS CARBIDE Mfg., Co.

TUSC Search 1333
NASA TB's 72-10058
72-10177
72-10517
73-10156
73-10374
73-10493
74-10090
TUSC Search 1332
NASA Lit. Search 27571

FRANTZ CHEMICAL CONSULTANTS
SUITE 255 SPA BUILDING
7255 CLAIRWOOD
HOUSTON TEXAS 77036
(713) 771-2431

CONSULTANTS
- CHEMICALS
- PETRO CHEMICALS
- PETROLEUM
- NATURAL GAS

SERVICES
- MARKET SURVEYS
- ECONOMIC EVALUATIONS
- PROCESS DESIGN
- DETAILED DESIGN
- CONSTRUCTION SUPERVISI

February 13, 1975

Mr. Donald D. Grose
U.S. Government
Small Business Administration
Region VI, 1720 Regal Row
Dallas, Texas 75235

Re: Your Letter of 2/10/75

Dear Mr. Grose:

The information supplied to us on Solar Energy has been of value. We are trying to build up files and knowledge for future projects.

We did get some information in areas of little interest, and much of the information was just a lead as to where to start looking.

Communication is frequently a problem in all areas of business. We do feel that if we had communicated our interest in more detail that we could have saved you some work and narrowed the amount of information we had to sort through.

We think it is a good program and should be continued. Better communication between our needs and just what service and/or information you can supply could improve the value of this service.

Sincerely,

FRANTZ CHEMICAL CONSULTANTS

Joseph F. Frantz
President

NASA Lit. Search 37596
TUSC Search 1333
NASA TB's 72-10058
72-10090
72-10177
72-10517
73-10156
73-10374
73-10493
74-10090

JFF:ch

marlow industries
incorporated
3640-A MARQUIS DRIVE • GARLAND, TEXAS 75042 • 214-494-2521 • TWX 910-860-5161

21 March 1975

Mr. Donald D. Grose
Assistant Regional Director
for Procurement Assistance
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Grose:

In response to your letter, I would have to evaluate the results of the Technology Utilization Program as only partially successful so far. I attribute this to several reasons.

For one, the technology information offered by sources (NASA, Battelle) was not as recent as I was obtaining through a patent literature research and vendor product brochures. It seems the really good information is available after it is patented and ready to be marketed.

Also, when I asked for information, I had already eliminated several branches of associated work as being not feasible. Your department's work was very broad, and I was already down to a very narrow point.

But let me add that Charles Pierce was very enthusiastic, obtained a lot of information in a hurry, and it was information that filled a lot of gaps in my knowledge at a great savings in cost and time to me as a small business.

I would use the service again, but I would try to use it to help me define a technology I know absolutely nothing about. In other words, let the literature help me in finding branches of the technology that would help me rather than eliminating literature referencesthat are not in the branch I have already chosen.

Sincerely yours,

Porter B. Click, Jr
Director of Technology

PBC:gm

WESTPORT GROUP, INC.
One of the PRO-MARK companies

March 31, 1975

Mr. F. Charles Pierce
Technology Utilization Officer
U. S. Government Small Business Administration
Region 6
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce:

Please excuse the delay in replying to your letter of February 27th and Mr. Grose's letter of January 8. The information you supplied for our study of filtration systems was most helpful. We still have not found a solution for the removal of CO but the technical information your office furnished was very comprehensive and saved us a lot of time in evaluating our project.

Thanks again for your effort on our behalf.

Very truly yours,

WESTPORT GROUP, INC.

A. J. Huber

AJH/re

NASA Literature Search

7636 East 46th Street / Tulsa Oklahoma 74145 Phone 918-662-5809

American Excelsior Company

P O BOX 5067 850 AVENUE H EAST ARLINGTON, TEXAS 76011 (817) 265-7151

October 22, 1975

Mr. S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce:

I sincerely appreciate the assistance that you have given us on our request for information on hydro-mulch material.

I will be writing Vance Setterholm of the U. S. Forest Products Lab. in Madison, Wisconsin and also the Paper and Pulp Industry in Atlanta and the Paper Stock Institute in New York City for additional information. I have ordered several documents from the National Technical Information Service from the book that you kindly sent to us. The booklet which was on loan to us has been returned under separate cover.

Thanks once again for your help in this matter.

Yours very truly,

AMXCO, Inc.

W.E. Johnson

W.E.Johnson
Vice President

WEJ:la

TUSC Search 1561

Buchanan's Realty

325 Hwy. 77 So.
Marion, Ark. 72364

Terry Buchanan, Broke
Rex Rogers, Broker
Dorothy Buchanan, Br
Ann Rogers, Broker
Carl Perkins, Broker

(501) 735-5800 — 735-3

ARD/PP
TUO

October 30, 1975

Donald D. Grose
Assistant Regional Director
for Procurement Assistance
1720 Regal Row
Dallas, TX 75235

Dear Mr. Grose:

I appreciate very much Mr. Charles Pierce's information and service. The information has been useful and I do plan to use it in the future. Since Solar Energy is certainly in its infancy, in so far as practical application to homes are concerned, I am sure you will understand that it will take a while for us to absorb the information; and even more time to determine its actual practical application. I hope we can start using existing technology within a year.

We also will no doubt be in touch later as plans for Solar Energy use can be made to insure that we have the latest technology.

Thank you for your interest.

Sincerely yours,

Terrance O. Buchanan
Rex Rogers Construction Co

TB/ph

TUSC Search 1126
TUSC Search 1460
9 Tech Briefs

VICTOR ENGINEERING COMPANY
PIPING CONSULTANTS
10927 SAGEVALE LN • HOUSTON TX 77034 • PHONE (713) 481-1700 OR 481 6291

Nov. 1, 75.

Mr. Donald D. Grose,
Asst. Regional Director,
S.B.A, Region VI,
1720 Regal Row
Dallas, Tx. 75235

Dear Mr. Grose

Thank you for your letter dated Sept. 25, 75. We feel that Technology utilization service is very useful. This program saves money and time for small businesses.

The technical paper we received on Friction on sliding supports helps us to understand this topic better. We believe this information will be useful to us.

I would be failing in my duty if I do not mention about the very prompt attention we received from Mr. Charles Pierce. He is very helpful.

We hope that we would continue to receive this help from your department in the future also.

With Best regards,

S Kannappan
S.KANNAPPAN

TUSC Search 1496
NASA Literature Search 29748
" " 29939
" " 29743

TECHNOLOGY INCORPORATED
LIFE SCIENCES DIVISION
8531 N. New Braunfels Ave , San Antonio, Texas 78217
Tel (512) 824-7373

19 September 1975

Mr. S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce

The information you have supplied us on the non-invasive physiological monitoring devices has been extremely helpful.

As you know, this is only one of several times we have called on you for help. Each time, the results have been very rewarding.

We thank you, your staff and those agencies who have so willingly helped us.

Keep up the good work -- thank you again.

Sincerely,

T. Gerald Stafford/
Manager
San Antonio Laboratory
Life Sciences Division

TGS/slj

TUSC SEARCHES 1517-1530

LEWIS REFRIGERATION CO.
P O Box 45639 Houston Texas 77045 (713) 433-6711, Telex 76-2459

October 2, 1975

ARD/PA
TWO

U. S. Government Small Business Administration
Region VI
1720 Regal Row
Dallas, Texas 75235

Attention: Mr. Donald D. Grose

Reference: Your Letter of September 25, 1975
Geothermal Energy Resources

Dear Mr. Grose:

I have received your literature with great enthusiasm and have surveyed it as to our useful appliation of the information. We think that geothermal energy has great potential in the field of heat source for absorption refrigeration systems in chemical industry.

As of the present time, we do not have a specific application to apply this information or technology, but we are looking forward to working with your office and possible potential customers in the future. We do appreciate your effort on our behalf, and do feel that your information is most informative and quite helpful technically.

When we do develop a specific application for it's use, we will more than likely be back in touch with your organization in order to provide ourselves of any additional or up to date information available.

Thank you very much for your help in this matter.

Sincerely yours,

James J. Shepherd
Vice President
Manager Central Division

JJS/cmb

TUSC Search 1479
NASA Literature Search 29740

U.S SMALL BUSINESS ADMINISTRATION
REGION VI
1720 REGAL ROW
DALLAS TEXAS 75235

January 5, 1976

Mr. Augie Moore
Technology Use Studies Center
Southeastern Oklahoma State University
Durant, OK 74701

Dear Augie:

Enclosed are three SBA Forms 487, representing five case studies, and letters of evaluation resulting from information furnished to TU clients by this office. A search and/or other technical information from TUSC was a part of the information furnished in each case.

Thanks again for your part in making the TU Program a success in our area.

Sincerely,

S. Charles Pierce
Technology Utilization Officer

Enclosures

NOTE:

Approximately 10-12 other SBA forwarding letters of similar content were received during the contract period.

Rec'd 6/9

COSMIC
UNIVERSITY OF GEORGIA
Computer Software Management and Information Center

June 4, 1975

Mr. S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, Texas 75235

Dear Mr. Pierce,

In response to a letter from Mr. C. Henry Gold of Southeastern Oklahoma State University, I have searched our inventory for programs that apply to inventory control. Unfortunately, we do not have any programs for this application that would be suitable for you,(i.e. written in either basic or assembler code and implementable on a mini-computer).

I regret that we cannot be of help to you in this regard, but perhaps the enclosed abstracts will be of interest to you in your efforts to develop theatrical lighting systems.

In any case, if I can be of assistance, please do not hesitate to call.

Sincerely,

Ron English
Customer Services

RE:jag
Enclosures

cc: C. Henry Gold

SUITE 112, BARROW HALL, ATHENS, GEORGIA 30602, (404) 542-3265

Johns-Manville
Products Corporation

Pipe Division

Denison, Texas 75020
(214) 465-6390

May 28, 1975

Technology Use Studies Center
Southeastern State College
Durant, OK 74701

Gentlemen: Attention: Mr. Bill Dodd

I appreciate very much the work you put into researching the subject of "Purification of Industrial Waste Water Containing Inorganic Solids".

Even though, after reading the material, I didn't come out with a specific course to follow, the material was very broadening and informative and gave me insights into things we could try.

Again, thanks very much for your help.

Sincerely,

Alan M Curry

Alan M, Curry
Quality Control Supervisor

AMC/tm

TECHNOLOGY USE STUDIES CENTER
AREA CODE 405 / 924-5452 / SOUTHEASTERN STATE COLLEGE / DURANT, OKLAHOMA 74701

To speed the use of knowledge a cooperative effort of the University of Oklahoma, Oklahoma State University and Southeastern State College.

June 9, 1975

Mr. Alan M. Curry
Quality Control Supervisor
Johns-Manville Products Corporation
Denison, Texas 75020

Dear Alan:

Thank you for your letter of May 28. The information on purification of industrial waste water was mailed to you at the time I was attending a NASA conference at Langley Field, Virginia. We hope the information will be of value to add to your resource or library file.

I mentioned to you that we would also do a search concerning the problem of lowering pH in industrial waste water. We were not too successful in locating specific reports on the subject of pH; however, we are sending one abstract, report N68-22975 for your review. If you would like to have the report, we can assist you in obtaining a copy of it. As additional information, we are also sending two special reports on water treatment; they are quite extensive and cover most aspects of the treatment of water. This material is being mailed under separate cover.

Both Frank Wade and I enjoyed your visit. Please feel free to call on us if we can be of assistance.

Sincerely,

Bill

Bill Dodd
Industrial Specialist

BD/sw

Production Automation
End Devices Inc.
P. O. Box 533
Midland, Texas 79701
(915) 694 663

May 20, 1975

Small Business Administration
1720 Regal Row
Dallas, TX 75235

Attn: Mr. S. Charles Pierce

Gentlemen:

I would appreciate help in exploring the possibility of developing a new type prime mover for operating subsurface fluid pumping equipment used in oil production.

The basic concept employs a DC, reverseable electro-magnet solonoid attached to the pull tube of the pump. When current of one polarity is applied, the solonoid rod is retracted pulling the pump up. When current of the reverse polarity is applied, the solonoid rod is extended forcing the pump plunger down.

The solonoid is connected to the surface by an electrical conductive, insulated cable which serve both as conductor as well as mechanical transport for the solonoid and the pump.

General specifications as follows

1. Length of stroke minimum of 12 inches (longer if possible).
2. Maximum length of solonoid 35 feet.
3. Maximum OD of solonoid 1.75 inches.
4. Pull tube diameter from 1/2 to 1 inch OD.
5. Solonoid pull (minimum) 5000 PSI
6. Solonoid cycle rate 120/minute (maximum)

Any information on existing equipment, technology or design data will be greatly appreciated.

As we mentioned in our conversation this date, we are starting a new industrial electronics supply house Any trade association information or other input will also be appreciated.

Yours truly,

Wayne Westerman

Wayne Westerman

WW:an

It was suggested by the Electronics Department of Southeastern Oklahoma State University that a segmented solonoid be used, each section having its own coil. This should be used in conjunction with a liner commutator that would allow the solonoids to maintain their forward momentum. An electro-mechanical engineer should be able to design the necessary circuits and equipment.

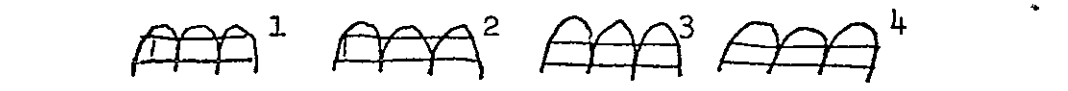
If this design is not applicable, please let us know.

Edward Pruitt
Information Retrieval
Assistant

June 1975

- - - - - - - - - - - -

Segmented Series Solonoid



Linear Control Commutator

As solonoid 1 reaches the peak of travel, then solonoid 2 starts forward, and so on down the line. This will maintain the forward momentum.

Production Automation End Devices Inc. P O Box 522 Midland, Texas 79701 (915) 694 6633

June 20, 1975

Technology Use Studies Matter
Southeastern Oklahoma State University
Durant, OK 74701

Attn: A. M. Moore
Subject: Search No 1466 Case No. 065-8
Title: Prime Mover Using a DC Reversible Electro-magnetic Solonoid

Gentlemen:

Thank you for your correspondence dated June 5, 1975 received June 16, 1975. The suggestion of the electronics department of Southeastern Oklahoma State University that a segmented solonoid be used sounds very good We would appreciate having design data for designing the solonoid itself While our design capabilities include electronic analog and digital circuits, we have no experience in solonoid design.

Any information that you could provide to us on this subject would be greatly appreciated.

Yours truly,

G. Wayne Westerman

GWW:an

cc: S. Charles Pierce
Small Business Administration
1720 Regal Row
Dallas, TX 75235

TUSC Search 1502
Tech Brief 69-10704
3 STAR Abstracts
STAR Index-"Solonoid/valves"

OKLAHOMA ASSOCIATION FOR AFFIRMATIVE ACTION

Officers

President: Walter O. Mason, Affirmative Action Officer
University of Oklahoma
660 Parrington Oval
Norman, OK 73069

Vice President: Bill Dodd, Affirmative Action Officer
Southeastern Oklahoma State University
Durant, OK 74701

Secretary: Ellen Cole, Project Specialist
Affirmative Action Office
University of Oklahoma
660 Parrington Oval
Norman, OK 73069

Treasurer: Pauline Kopecky, Director of Affirmative Action
Oklahoma State University
Whitehurst Hall
Stillwater, OK 74074

Director: Virginia Farmer, Director of Equal Employment Opportunity
Oscar Rose Junior College
6420 SE 15th
Midwest City, OK 73110

Director: William Lee, Director of Counseling
Cameron University
2800 Gore Blvd.
Lawton, OK 73501

Director: Wayne Day, Chairman, Affirmative Action Committee
Seminole Junior College
P. O. Box 351
Seminole, OK 74848

Committees

Membership: Betty R. Jackson, Vice President for Teaching
Claremore Junior College
College Hill
Claremore, OK 74017

Program: Larry Williams, Director of University Personnel Services
Central State University
100 North University Drive
Edmond, OK 73034

ENVIRONMENT IMPROVEMENT
CASE HISTORY REPORT SERVICE

FREED PUBLISHING COMPANY • P O BOX 1144, FDR STATION • NEW YORK, NEW YORK 10022 • (212) 753 2769

September 1975

FISH UTILIZED IN WASTEWATER RECLAMATION SYSTEM

A new wastewater purification system now being developed at Durant, Okla. will utilize aquatic plants and rough fish, including carp, suckers, catfish, shad, crawfish, and fresh water mussels and clams. The water reclamation plant is patterned after a system that has been used successfully by the Bavarian Power Co. in Munich, Germany for the past 25 years. The Chinese used similar systems as far back as 400 B. C.

Wastewater from Durant's existing primary and secondary treatment facility (after the standard filtration process) will run through a series of six lagoon ponds where fish will eat the nutrients and shellfish will lower the concentration of organic matter. It is estimated the ponds will handle 1.5 million gallons per day. The water will be held for 72 hours before it is released into nearby Mineral Bayou, and then into two rivers. Officials say the towns located downstream should receive potable water capable of meeting the U. S. Environmental Protection Agency standards that go into effect in 1976.

An old refining building has been converted into a fish hatchery. Over 3000 lbs. of fish are now available, which is about 10% of the capacity of the lagoon system.

A biology professor at Scutheastern Oklahoma State University in Durant, Dr. Frank Wade, drew up the plans for the new low-budget system, much of the work was done by biology students. Officials consider it a pilot project which they believe will have application for other municipalities with a population of 15,000 or less.

For more information, contact Bill Dodd, Industrial Specialist, Technology Use Studies Center, Southeastern Oklahoma State University, Durant, OK 74701.

ooo

PLANT OPERATING PERSONNEL

New Water Treatment Plan Viewed By College Trustees

By JAMES BURNS
Herald Staff Writer

A lagoon system for waste disposal, described as "nature's way" of treating water, was outlined to Grayson County College trustees at a board meeting Tuesday night

Dr Frank Wade of Southeastern Oklahoma State University told GCC board members the lagoon treatment system such as one in operation in Durant is less expensive, easier to maintain and more natural than conventional sewage disposal methods

"The system duplicates what a creek or pond system does (in cleaning water)," Dr Wade said

Following the hour-long presentation in the college's administration building, trustees agreed to form an ad hoc committee to investigate the possibility of such a facility at Grayson County College

Under the innovative waste disposal plan outlined Tuesday, several one-acre lagoons and a small catch basin would be constructed on a hillside near the west parking lot on the main campus Waste water from the college's present treatment plant would be pumped to the uppermost lagoon The water would then be filtered in each lagoon and naturally cleansed as it passes from one basin to the next Following its treatment, the water could be released into a small creek which flows through the campus

Cost of the lagoon treatment system is estimated at $42,000 Although no EPA funds are available for construction, Dr Wade said the facility would be considerably cheaper than its alternatives For example, connection with Denison's sewage system could cost the college approximately $200,000, he said

The college is currently seeking a new waste disposal method due to more stringent regulations formulated by the Environmental Protection Agency Although the school's treatment system meets present EPA guidelines, new restrictions, in effect July 1, 1976, are forcing the college to investigate more efficient methods, according to GCC President Truman Wester

Other possibilities mentioned by Dr Wade include construction of a new chemical-mechanical treatment system or connection with the Denison system Both of these alternatives are considerably more expensive and might not be completed in time to meet the 1976 EPA standards, the SOSU scientist pointed out

One drawback to the lagoon system is the uncertainty of its approval by the federal environmental agency, Dr Wade said The EPA does not guarantee approval of each and every system constructed but checks them individually, he explained The agency has, however, already approved some lagoon facilities, including a large system in Oklahoma City, Dr Wade noted

"It's a gamble, but you're gambling with fewer dollars And I think it's a safer gamble," he said Even without EPA approval of the college's lagoon system, it could be blended in with more conventional disposal methods, he added

In addition to its lower cost, the lagoon system has several advantages, according to Dr Wade These advantages include the ability to irrigate the entire campus in summer months, commercial fish breeding, elimination of an ugly treatment plant, and involvement in the project of several college classes

The ad hoc committee approved Tuesday will investigate the lagoon system and present the proposal to the EPA, Texas Water Quality Board and the Grayson County Health Department

In other action at the GCC board meeting, trustees

—approved a resolution opposing a policy proposal in regard to tenure, academic freedom and faculty responsibility in Texas universities and colleges

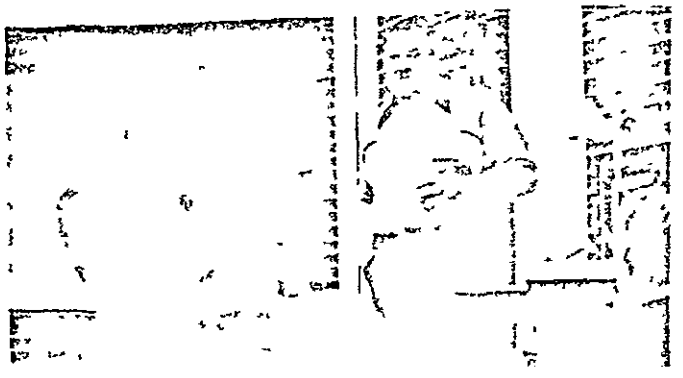
—discussed proposed changes in requirements for instructors in nursing programs

—approved college participation in a renovation project to be funded with $332,500 in federal funds and requiring a 20 per cent GCC match

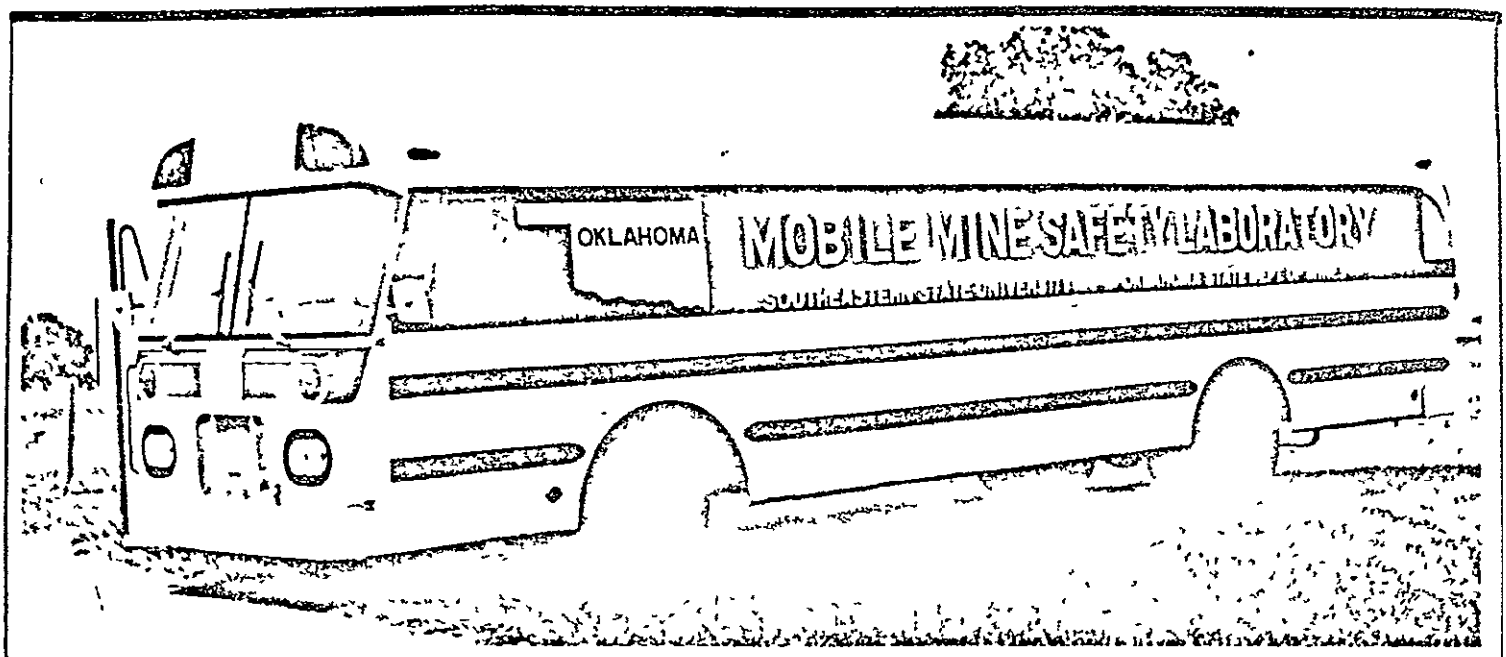
—gave final approval to two chapters of the new board policy manual and received a section on educational programs to be considered at the December board meeting

—recognized Mrs Jessica Russell, new journalism instructor, and Dr David Petrash and Gerald Locke, GCC nominees for a Piper Foundation award

—and approved monthly bills totaling more than $117,000



LAGOON DISCUSSION—Dr Frank Wade of Durant discusses the merits of a new waste water treatment method with GCC board members Tuesday. As outlined by Dr Wade, the method, which uses several lagoons to clean waste water, is inexpensive and maintenance free. (Herald Photo)



Southeastern commits for Community Service

MINE SAFETY—The large blue and white bus that travels from its campus headquarters to mine sites all over southeastern Oklahoma is a complete multi-media classroom on wheels The classroom provides mandatory safety training to coal miners

Jim Adcock, Coordinator of the program explained how to get started "The program was two years in the planning stage and is federally funded, administered by the State Chief Mine Inspector of Oklahoma and implemented by Southeastern"

Ward Padgett, State Chief Mine Inspector, worked with Adcock on the program "Until now, the total responsibility for all federally required safety training has been with mine inspectors in addition to their regular monthly mine inspections on all coal mines in Oklahoma"

Out on the open road the mobile training unit will be headed by Ron Abner from Southeastern "Included in our curriculum are video tapes of actual mine operations and simulated mine accidents Miners will use push button consoles to register answers to questions asked in each class period," Abner explained "Every miner will spend a certain number of classroom hours annually in the mobile unit"

Jim Adcock points out that "one thing developing from this program is the ground work for our own workshops in mine safety at Southeastern We'll call it the Southeastern Mine Safety Institute"

Out on the open road the mobile training classroom will be headed by Ron Abner from Southeastern, who is a first aid instructor certified by both the American Red Cross and the United States Bureau of Mines.

"The heart of our program is an electronic teaching system that uses all kinds of audio-visual teaching aides," Abner explained as he demonstrated some of the impressive equipment. "The course we'll be teaching are a combination of material from the Federal Bureau of Mines and material we've developed here at Southeastern."

"Included in our curriculum are video tapes of actual mine operations and simulated mine accidents. These will be used to help teach mine safety and first aid."

"We have to work in compact time periods," Abner emphasized. "So this won't be a regular classroom situation. Miners will use push button consoles to register answers to questions asked throughout each class period Then the instructors can immediately tabulate right and wrong answers. This helps us evaluate how effectively we're teaching."

In preparation for the program, Abner spent time touring Oklahoma coal mines with the state mine inspectors "All miners I met were receptive to the training program we'll offer. The potential hazards of their jobs constantly remind them that it pays to learn."

One such mining hazard is the methane gas that goes hand-in-hand with coal mining. "There is always the possibility of mine explosions in underground mining," Abner explained "While most of Oklahoma's mining is above ground, there are a number of underground coal mines that may be worked in the near future."

Counties that will be serviced by the new classroom on wheels are Craig, Nowata, Rogers, Mayes, Tulsa, Wagner, Okmulgee, Muskogee, McIntosh, Sequoyah, Haskell, Latimer, LeFlore, Pittsburgh, Coal and Atoka. All training sessions at mine locations in these counties will be arranged by the state mine inspectors with coal mine operators.

Ltr: NASW 2629

October 22, 1974

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY DURANT, OKLAHOMA 74701 PHONE 405-924-0121

Dr. Lawrence Weller
Cincinnati Electronics (Dept. 515)
2630 Glendale-Milford Road
Cincinnati, Ohio 45241

Dear Dr. Weller:

In response to your recent inquiry requesting a list of our available publications and reports, TUSC information retrieval personnel use various resource publications. Those most frequently used are Scientific and Technical Aerospace Reports (STAR), International Aerospace Abstracts (IAA), and U. S. Government Research and Development Reports (USGRDR).

The Center also subscribes to various professional publications related to technical matters, such as The Welding Journal, Modern Plastics, Electronics, Oil & Gas Journal, etc.

We would be pleased to conduct a search or searches for you, since we have access to numerous electronic research reports. In addition, TUSC employs an electronics graduate student who functions as an information retrieval assistant.

Thank you for your inquiry. We hope to be of service to your firm in the future.

Sincerely,

C Henry Gold

C. Henry Gold, Director
Technology Use Studies Center

CHG/sgw

File
NASW 2609

TECHNOLOGY USE STUDIES CENTER

AREA CODE 405 / 924-0121
EXT 2517
SOUTHEASTERN STATE COLLEGE / DURANT, OKLAHOMA 74701

To speed the use of knowledge: a cooperative effort of the University of Oklahoma, Oklahoma State University and Southeastern State College.

November 12, 1974

Ms. Jody Rubenstein
Serials Clerk, Fondren Library
Southern Methodist University
Dallas, Texas 75275

Dear Ms. Rubenstein:

Thank you for your letter of November 8 requesting TUSC "Bulletins." This publication is our annual report which is printed usually in the month of June or July of each year. We will be happy to forward these reports to you.

Thank you for your interest in the information dissemination service provided by this Center.

Sincerely,

C. Henry Gold

C. Henry Gold
Director

CHG/sgw

File
JASC
Miscellaneous

January 27, 1975

Mr. F. William Koop
Executive Office of Water Resources Research
U. S. Department of Interior
18th and E Streets, Room 5413
Washington, D. C. 20240

Dear Mr. Koop:

I am most pleased to hear about Mr. Dodd's recent telephone visit with you, and we do extend an open invitation to you and/or your field personnel to visit the Durant/Southeastern water treatment facility. The enclosed material will provide you with background information about Dr. Wade's project. (The last page is a sketch intended to show a general view of the wastewater treatment facility in relation to the City's sewage facility.)

The water treatment system is envisioned as a pilot project especially suited to populated areas of 15,000 and under. The overwhelming cost of a properly engineered and mechanically equipped water treatment plant is simply beyond the budgetory constraints of a small community. As you know, the past approach to the water quality problem has been to release effluents into a stream or river; then hope for dilution--it has not worked and it gets worse with the passage of time. The new EPA Standards prohibit the practice; thus, an alternative, inexpensive method must be researched and developed. The Durant projects presents a viable, timely, and needed alternative --the quality of water is vastly improved and the system is well within the economic constraints previously mentioned.

Dr. Wade is set up to accomplish valuable research in this particular area or aspect of water quality, and we would indeed welcome the opportunity to work with the Water Resources Research Office of the Department of the Interior. I am confident that Dr. Wade has the partial answer to a pressing national problem.

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY DURANT, OKLAHOMA 74701 PHONE 405-924-0121

Thank you for your interest. Any assistance you can render will be greatly appreciated.

Sincerely,

Leon Hibbs
President

LH/sw

cc: Speaker Carl Albert

"ENGINEERED PRODUCTS"

HALL TANK COMPANY

BUCKEYE AT EAST FIFTH ST - P O DRAWER 5787

TELEPHONE 945-3211

NORTH LITTLE ROCK, ARKANSAS 72119

October 14, 1975

Technology Use Studies Center
Southeastern Oklahoma State University
Durant, Oklahoma 74701

Re: In-House Search Request
Search Number 1570
Dated - September 29, 1975

Gentlemen:

You requested information relative to the usefulness of the material furnished on the above search and it appears that the information will be very helpful. We are continuing to study this material and if we have comments after that time, we will contact you again.

Thank you for your help.

Yours very truly,

HALL TANK COMPANY

Richard D. Hall

RDH:pgc

APPENDIX D

GENERAL AVIATION NEWS LETTER

DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE OFFICERS TRAINING CORPS
MAXWELL AIR FORCE BASE, ALABAMA 36112

REPLY TO
ATTN OF: JRC-5

FEB 12 1975

SUBJECT: Distribution of TUSC News to AFJROTC Units

TO: Technology Use Studies Center
Southeastern Oklahoma State University
Durant, Oklahoma 74701

Gentlemen:

Reference our telephone discussion with your office on 4 Feb 1975. As per our telephone agreement we would like to place the 263 Air Force Junior ROTC Units on your mailing list for the TUSC News. Attached is a listing of all AFJROTC Unit addresses.

The High School Curriculum Division is responsible for providing educational materials to 263 Air Force Junior ROTC Units involving 32,000 students. We are continually searching for new publications which offer current information concerning Aerospace Education. The AFJROTC Aerospace Education Curriculum is heavily oriented toward aviation. TUSC News is an excellent publication and would enable instructors and students alike to remain abreast of current aviation research and developments.

We appreciate your assistance in this matter. We are confident that your publication will be a valuable additional resource at every school hosting AFJROTC.

James D. Elmer

JAMES D. ELMER, Lt Colonel, USAF
Chief, High School Curriculum Division
Directorate of Junior Program

1 Atch
Unit Addresses

Florida Department of Transportation

REUBIN O D ASKEW
GOVERNOR

Haydon Burns Building 605 Suwannee Street Tallahassee Florida 32304 Telephone (904) 488-8772

WALTER L REVELL
SECRETARY

WILLIAM K FOWLER DIRECTOR
DIVISION OF MASS TRANSIT OPERATIONS

July 5, 1974

Rec'd
7-8-74

Mr. A. M. Moore, Editor
The TUSC News
Southeastern State College
Durant, Oklahoma 74701

Dear Mr. Moore:

We have recently received Volume II, Number 1, General Aviation - Technical Edition. Please send the publication by Paul L. Vegas entitled "A Detailed Procedure for the Use of Small-Scale Photography in Land Use Classification, NASA TN D-7542", which is shown on Page 3.

Also, please send us NASA TN D-7666 which concerns intermingling STOL traffic with normal traffic.

Sincerely,

C. E. Nilson, Administrator
Safety & Inspection Section
Bureau of Aviation
DIVISION OF MASS TRANSIT OPERATIONS

CEN:jl

ENCLOSURE

Rec'd July 15, 1974

LOCK HAVEN STATE COLLEGE

LOCK HAVEN, PENNSYLVANIA 17745

July 15, 1974

The TUSC News
General Aviation - Technical Edition
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Sirs:

Would you please add the following names to your mailing list to receive the General Aviation Technical News Letter. Thank you very much.

Mr. Stephen Daley
511 Greenwood Avenue
Apt. C-2
Glenside, Pa. 19038

Mr. John Gephart
524 East Main Street
Lock Haven, Pa. 17745

Mr. Charles D. Gilmore
P.O. Box 492 B
R.D.#1
Mill Hall, Pa. 17751

Dr. Marcus Konick
Director Academic Services
Lock Haven State College
Lock Haven, Pa. 17745

Mr. Richard Lutey, Jr.
2526 Riverview Place
Elkhart, Indiana 46514

Mr. Victor Marchioni
R.D.#2
Williamsport, Pa. 17701

Mr. David Seamans
1035 Foxhill Road
State College, Pa. 16802

Mr. Richard S. Terrill
R.D.#1
N.A. 28
New Alexandria, Pa. 15670

Sincerely yours,

Evelyn M. Sedivy

(Miss) Evelyn M. Sedivy
Director, Aviation/Aerospace
Workshop, Lock Haven State College

STATE OF MONTANA

OFFICE OF THE STATE SUPERINTENDENT

HELENA 59601

File:
Vol II, No 1

DOLORES COLBURG
Superintendent of
Public Instruction

July 16, 1974

Rec'd
7-19-74

Mr. A. M. Moore, Editor
General Aviation Technical News Letter
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Mr. Moore·

I have replied under separate cover to your letter of June 26, and I have indicated that I do want to be placed on your mailing list. I am most appreciative to you for making your services available.

I noted in your letter that you conduct literature searches for persons receiving the newsletter. The June issue makes reference on page five to a NASA Technical Memorandum entitled "Feasibility of Space Disposal of Radioactive Nuclear Waste" (NASA TM X-2912). If your services include making a copy of this publication available, I would be most appreciative if you could have a copy sent to me.

Yours truly,

J. WAYNE PYRON, Coordinator
Satellite Technology Demonstration

JWP/es

Rec'd 9-3-74

UNIVERSITY OF NEVADA, RENO

COLLEGE OF EDUCATION
TEACHING AND RESOURCE CENTER
RENO CAMPUS

August 30, 1974

The TUSC News
Technical Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

ATTENTION: A. M. Moore, Editor

Gentlemen:

Some time ago we received the first General Aviation Technical News Letter which was addressed to our Mr. A. V. Mundt here at the College of Education.

We have not received any other News Letters since this first one published in June, and Mr. Mundt is wondering if you got the request slip he returned stating he wished to be included on your mailing list. In the event he is not on your list, he would very much appreciate receiving any forthcoming issues at the following address:

MR. A. V. MUNDT
Learning & Resource Center
College of Education
University of Nevada
Reno, Nevada 89507

Thank you for checking into this for us.

Very truly yours,

Norma R. Cowlishaw

NORMA R. COWLISHAW, A/V Librarian
Learning & Resource Center
College of Education

nc

San José State University
SAN JOSE, CALIFORNIA 95192

SCHOOL OF ENGINEERING

Department of Aeronautics (408) 277-2466

March 4, 1975

Mr. A. M. Moore, Editor
Technology use Studies Center
Southeastern Oklahoma State University
Durant, Oklahoma 74701

Dear Mr. Moore,

Recently I had the opportunity to read a copy of the TUSC News on General Aviation - Technical Edition. I found it very interesting and directly related to the Aeronautics offerings at SJSU.

I would appreciate being placed on your mailing list for the publication. Would it be possible to receive issues prior to the Vol. II, Number 3 December 1974 edition? Please advise if there are any charges for the publication.

Respectfully,

N. M. Milichevich

NMM:cs

bakersfield college founded 1913

3100 Durrwood St
Bakersfield,CA 93304
March 10,1975

A.M Moore,Editor
Aviation Technical News
Southeastern Oklahoma State Univsrsity
Durant, Okla. 74701

Dear Mr Moore

A friend who is a professor at Pepperdine University kindly sent a copy of your February 1973 newsletter While this is dated material the Aerial Applicators article is of special interest to me since I teach Agricultural Aviation at Bakersfield College

Would you please put me on your mailing list to receive your fine little Aviation Technical News? I would certainly appreciate it.

Best wishes-

Sincerely,

June B. Edwards (Mrs)
Instructor

June B. Edwards & Assoc's
3100 Durrwood Street
Bakersfield, Calif. 93304

NORTHWESTERN UNIVERSITY
TRANSPORTATION CENTER LIBRARY
EVANSTON, ILLINOIS 60201

THE TRANSPORTATION CENTER THE TRAFFIC INSTITUTE

March 25, 1975

Technology Use Studies Center
Southeastern State College
Durant, Lk. 74701

Gentlemen:

Can you supply a complimentary copy of the publication listed on the attached form?

Thank you.

Sincerely yours,

M. Roy

M. Roy
Librarian

PUBLICATION REQUEST Order No 19GE375

Author General Aviation Technical Newsletter

Title Please place this library on your mailing list for future issues.
We would also appreciate any back issues still available for distribution.

Source
Technology Use Studies Center
Southeastern State College
Durant, Ok. 74701

Price

Copies

TRANSPORTATION CENTER LIBRARY NORTHWESTERN UNIVERSITY
Evanston, Illinois 60201

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF AERONAUTICS
24 WOLCOTT HILL ROAD P O DRAWER A
WETHERSFIELD, CONNECTICUT 06109

October 30, 1975

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Sirs:

We are in the process of establishing an aviation safety and education reference library and would appreciate any pertinent, complimentary materials you may be able to extend to us.

Our address is: Connecticut Department of Transportation
Bureau of Aeronautics
Aviation Safety & Education
P.O. Drawer A
Wethersfield, Connecticut 06109

Thank you in advance.

Very truly yours,

H. A. Preissner

Herbert A. Preissner
Director of Aviation Safety & Education
Bureau of Aeronautics

TECHNOLOGY USE STUDIES CENTER

November 5, 1975

Mr. Herbert A. Preissner, Director
Aviation Safety and Education
Bureau of Aeronautics
State of Connecticut
24 Wolcott Hill Road
Wethersfield, Connecticut 06109

Dear Mr. Preissner:

The University Safety Education Department is interested in expanding the Safety Program to include aviation safety. As yet, the program has not been developed, thus relevant materials requested in your letter of October 30 are not available.

There are numerous NASA reports indexed under the Aviation Safety classification; however, we do not believe they would be appropriate for your purpose since these reports usually refer to specific incidents or equipment research.

The Directorate of Aerospace Safety of the USAF Inspection and Safety Center, Norton AFB, California; the Army Safety Center at Fort Rucker, Alabama; and the FAA Academy, Oklahoma City, Oklahoma, are good references for Safety Education materials. Both USC and Arizona State have outstanding safety programs. They provide safety education programs to most military services on a contract basis. Either one or both of these schools can provide you with a current bibliography of safety references and possibly materials as well.

Thank you for contacting TUSC; we hope this information will be of value.

Sincerely,

Bill Dodd

Bill Dodd
Industrial Specialist

BD/sgw

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY DURANT, OKLAHOMA 74701 PHONE 405-924-0121

OKLAHOMA AERONAUTICS COMMISSION

424 UNITED FOUNDERS TOWER BUILDING

AREA CODE 405 — 521-2377 — OKLAHOMA CITY, OKLA 73112

"Safety Through Education"

July 18, 1974

Mr. Gold:

Thank you for sending the TUSC News to our office, we have enjoyed these publications very much.

You note that we are on your mailing list, however, we have not received the June Issue, if June was the last issue.

The latest one we have is April 1974, if there have been any others since that date, we would appreciate receiving those.

Thank you and keep up the good work!

Frank T. Edwards
Director

Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701
Area Code 405 --- 924-0121
Ext. 2517

July 19, 1974

Mr. Frank T. Edwards
Director
Oklahoma Aeronautics Commission
424 United Founders Tower Building
Oklahoma City, OK 73112

Dear Mr. Edwards:

Thank you for your note of July 18, 1974.

Yes, we did have a June issue of the General Aviation News Letter, and we regret your not having received your copy. We mailed some 750 copies of the News Letter. Either yours was lost in the mail; or due to our oversight, we failed to send your copy. In any event, here's your belated copy.

Thanks again for your kind comments about the publication.

Sincerely,

C. Henry Gold

C. Henry Gold
Director

CHG:vd

Enclosure

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LEWIS RESEARCH CENTER
CLEVELAND, OHIO 44135

REPLY TO
ATTN OF 1012

July 22, 1974

Mr. A. M. Moore
Technology Use Studies Center
Southeastern Oklahoma State University
Durant, OK 74701

Dear Mr. Moore:

It was a pleasure meeting and talking with you at the Technology Utilization Program Conference in Denver last week. In response to your request, our Public Information Office has added your name to the distribution list for the LEWIS NEWS. Meantime, a copy of the most recent issue is enclosed. In turn, could you send me the TUSC NEWS? I feel very strongly that better communications among the elements of the Technology Utilization Program is our most pressing problem. Whenever we can be of assistance, please let me know.

Sincerely,

Paul Foster

Paul Foster
Technology Utilization Officer

Enclosure

Send 7-25-74

JET PROPULSION LABORATORY · California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91103

July 29, 1974

A. M. Moore, Editor
The TUSC News
Southeastern STate College
Durant, Oklahoma 74701

Dear Mr. Moore:

In reference to your letter of June 26, 1974 please add my name to your mailing list for the General Aviation Technical News Letter.

Sincerely,

Benito Casados, Manager
Public Educational Services

BC:dn

Telephone 354-4321 Telex 675421 Twx 910-588-3294

AIRCRAFT OWNERS AND PILOTS ASSOCIATION/WASHINGTON D C 20014/Tel (301) 654 0500/cable address AOPA, Washington, D C

Reply to
Don Downie, 19138 Mauna Loa Ave , Glendora, Calif 91740;-Phone 213 963-1429

Rec'd 8-12-74

7 Aug 74

Mr. A. M. Moore, Editor,
TUSC News,
Southeastern State College,
Durant, Okla. 74701.

Dear Mr. Moore,

Cliff Cernick, Public Affairs Director, FAA NW region in Seattle sent me a copy of your most recent mailing, 26 June, '74.

From the scope of material you are working with, I would certainly appreciate being added to your mailing list.

I am the Western Editor for AOPA PILOT Magazine (Circ. 180,000+) and almost all my photography and writing is in the field of general aviation.

I've been a member of the Aviation/Space Writers Assn. for more than 25 years and am a member of the Society of Experimental Test Pilots. I've been flying for more than 35 years, have nearly 8500 hours and keep my CFII rating current. Much of my flying these days is done in a 1952 Cessna 170B that my wife and I own.

Many thanks, in advance, for adding me to your mailing list. Please use the Glendora, Calif. mailing listed above and not the home office address in Washington, D.C.

Sincerely,

Don Downie
Western Editor

August 19, 1974
3332 Fernway Drive
Montgomery, Alabama 36111

The TUSC News
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Sirs,

I have recently had occasion to read the Volume II, Number 1, June, 1974 issue of your newsletter, and I found it intensely interesting and informative of current aerospace developments. Since I am professionally involved in communicating aerospace concepts graphically, I would like very much to be included in future distribution. Please inform me if any costs are involved in this matter.

I thank you for your time and attention.

Respectfully,

James O. Johnson

NATURAL RESOURCE CONSULTANTS Inc.

MAILING ADDRESS P O BOX 8976 UNIVERSITY STATION RENO, NEVADA 89507
OFFICE LOCATION 385 FREEPORT BLVD , SUITE # 4 SPARKS, NEVADA 89431
(702) 358-4376

September 16, 1974

Technical Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Sirs:

Could you please send us the following report?

> Paul L. Vegas, A DETAILED PROCEDURE FOR THE USE OF SMALL-SCALE PHOTOGRAPHY IN LAND USE CLASSIFICATION (Houston, Texas: Lyndon B. Johnson Space center, April 1974), NASA TN D-7542.

Thank you very much.

Sincerely,

Garwin Lorain

Garwin Lorain
Principal

GL/di

RECEIVED
SEP 20 1974
TUSC

RECEIVED
SEP 20 1974
TUSC

TECHNOLOGY USE STUDIES CENTER

AREA CODE 405 / 924-0121 EXT 1413 SOUTHEASTERN STATE COLLEGE DURANT, OKLAHOMA 74701

To speed the use of knowledge- a cooperative effort of the University of Oklahoma, Oklahoma State University and Southeastern State College

S: P.
NASW 2629

October 17, 1974

Reference: Telecon, Moore to Lorain
October 17, 1974

Mr. Garwin Lorain
P.O. Box 8976
Reno, NV 89507

Dear Mr. Lorain:

Enclosed you will find report number TN D-7542. We trust that this will meet your requirement and that we may be of further service to you. The cost of this report is $2.00.

Sincerely yours,

A. M. Moore

A. M. Moore
Industrial Specialist

AMM:bf

The TUSC News

File Newsletter Correspondence

GENERAL AVIATION - TECHNICAL EDITION

Published by TECHNOLOGY USE STUDIES CENTER
Southeastern Oklahoma State University, Durant, Oklahoma 74701
(405) 924-0121 Extension 413

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
CONTRACT NASW 2629

December 2, 1974

Mr. Mitch Mayborn
3164 Whitehall
Dallas, Texas 75229

Dear Mr. Mayborn:

Today via third class mail we sent you a copy of the NASA TT F-806 report as you requested on your post-card. On page 2 you will find information on ordering reports mentioned in the Letter.

We Xeroxed this report, because the $.05 per page for xeroxing is cheaper than the price quoted on page 2.

We trust that this procedure is satisfactory and that we may be of further service to you.

Sincerely,

A. M. Moore
Editor

AMM/sgw
Enclosure

FLYING PHYSICIANS ASSOCIATION, INC.

26 November 1974

A. M. Moore, Editor
Aviation Technical News
Southeastern Oklahoma
State University
Durant, Oklahoma 74701

Dear Mr. Moore,

Enclosed is the reply card with my address for your mailing list. Enclosed also is a copy of the quarterly magazine "The Flying Physician" of the Flying Physician's Association. We are approximately 2500 physician fliers who are interested in aviation safety and aviation medicine. I will read your newsletter with interest and wonder about the possibility of reprinting some of your information from time to time in our magazine.

Would appreciate hearing from you regarding this.

Very truly yours,

George M. Gumbert, Jr., M. D.

GMG/ew

Enclosure

The TUSC News

Late Newsletter Correspondence

GENERAL AVIATION - TECHNICAL EDITION

Published by TECHNOLOGY USE STUDIES CENTER
Southeastern Oklahoma State University, Durant, Oklahoma 74701
(405) 924-0121 Extension 413

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
CONTRACT NASW 2629

December 2, 1974

George M. Gumbert, Jr., M.D.
Editor, Flying Physicians Association, Inc.
2537 Larkin Road
Lexington, Kentucky 40503

Dear Sir:

Thank you for sending me the copy of "The Flying Physician." It is a very fine publication and I shall subscribe to it.

You are welcome to use any material appearing in the TUSC "General Aviation-Technical News." None of the material is copyrighted, and we would be pleased to have you use it.

If you or your staff would like a full copy of reports you find mentioned in the Newsletter, we will lend a hand in securing such copies.

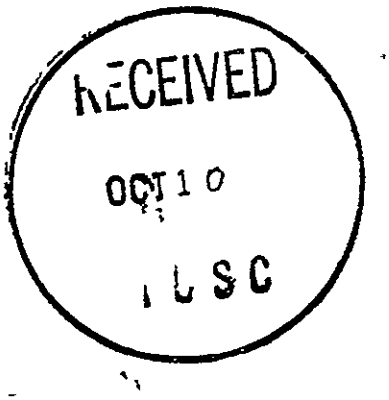
Sincerely,

A. M. Moore
Editor

AMM/sgw

WEATHERS TECHNICAL SYSTEMS
BOX 51A, RT 1, QUARTZ VALLEY, FORT JONES, CA 96032
TELEPHONE: (916) 468-2234

7 October 1974



Mr. A. M. Moore, Editor
The TUSC News, General Aviation - Technical Edition
Technology Use Studies Center
Southeastern State College
Durant, Oklahoma 74701

Dear Mr. Moore:

Mr. Al Dubiel, Director of Public Relations at Los Angeles Ontario International Airport, recently gave me a copy of the September, 1974 issue of your general aviation NASA technology utilization newsletter. I found it most interesting for several reasons.

Perhaps most notable was my surprise about not knowing of your publication previously. As a commercial pilot and aircraft owner, I try to keep abreast of developments in general aviation. This includes subscribing to a variety of periodicals ranging from Aviation Week to General Aviation News, but I cannot recall having seen any mention of The TUSC News.

I thought I was pretty well aware of NASA TU publications, also. (The week before Al gave me this copy I was in Jeff Hamilton's office at NASA HQ discussing commonalities between NASA TU and the Navy's Technology Transfer program on which I was working.)

At any rate, I am definitely interested and would like to be placed on your distribution list if at all possible. What is the availability of copies of back issues?

Finally, I was particularly interested in the article by Frank Cross on fluidics. I wonder if he is familiar with a TU Survey on fluidics that I did a couple of years ago? It's NASA Contributions to Fluidic Systems (SP-5112). I'll enclose a synoptic of it in case he's interested.

I tend to split hairs and differ slightly from Frank Cross's definition of fluidics. The most accepted definition in my experience uses the term "Fluid dynamic phenomena" rather than "fluids (liquid or gas)". As his article states, there are hybrid systems, and indeed the example he cites from NASA Tech Brief B70-10167 is actually a moving-part hybrid fluidic device.

I enjoyed your September issue and shall look forward to seeing others.

Yours sincerely,

Terry M. Weathers

Terry M. Weathers
Engineering Consultant

encl: AIAA fluidics synoptic

P.S. How may I obtain more information on the Technology Use Studies Center?

Gile
Gen Aviation Technical
Newsletter -
Correspondence

The TUSC News

GENERAL AVIATION - TECHNICAL EDITION

Published by TECHNOLOGY USE STUDIES CENTER
Southeastern State College, Durant, Oklahoma 74701
(405) 924-0121 Extension 2517

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
CONTRACT NASW 2512

October 11, 1974

Mr. Terry M. Weathers
Engineering Consultant
Weathers Technical Systems
Box 51A, Route 1, Quartz Valley
Fort Jones, California 96032

Dear Sir:

We were pleased to receive your letter dated 7 October, 1974, and will comply with your request for your name to be put on the mailing list.

Our "Newsletter" is rather new and experimental in nature. It has been designed specifically for a technical level expected in an average state Aeronautics Commission. We have found that these political appointees have considerable responsibility in aviation and with very limited means for obtaining technical information. We do not have the ability to write for the engineer and, therefore, try to aim for this "laymen" level.

I will take up with Jeff Hamilton his failure to inform you of our publication, since it took considerable badgering on our part to get Jeff to fund it.

We concede your point on the Frank Cross article regarding fluidics. We deliberately moved away from engineering terminology for the reason mentioned above. Incidentally, fluidics has been used for years around drilling rigs and in oil fields. Not long ago I watched them proportion dry cement into a drilling mud . . a very unique fluidic system that has been in use for many, many years.

The Technology Use Studies Center was originally established as a part of the Regional Dissemination Center concept. We opted to remain small and avoided charging for our services and explore many avenues for disseminating technology. This Newsletter is one of the typical experiments we have carried on for this purpose. The Newsletter goes to about 750 addressees and is being well received from our viewpoint.

Your name on our list, as well as the comments of your letter, are most welcome.

Sincerely,

A. M. Moore
Editor

AMM/sgw

Wolfe Publishing, Inc.

File Aviation Newsletter Correspon

2517 College Avenue
P O Box 1094
Dial AC 915 573-6318
Snyder, Texas 79549

December 2, 1974

A. M. Moore, Editor
Southeastern Oklahoma State University
Durant, OK 74701

Dear Mr. Moore:

In regard to your letter of November 20, 1974, please add our name to your mailing list for the "General Aviation Technical News" letter.

Thank you for your consideration.

Sincerely,

M Gene Dow

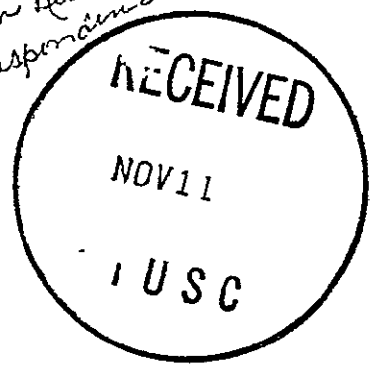
M. Gene Dow
Editor

MGD:sh

West Building, Washington National Airport, Washington, D C. 20001 703 684-8270

PROFESSIONAL
PILOT

File Aviation Newsletter Correspondence



December 4, 1974

Dear Sir:

We have found your TUSC News to be excellently prepared -- brief, informative and valuable.

If it wouldn't be too much to ask, I would like to receive both an office copy for our editorial staff and a home copy for myself.

Our office address is on the letterhead and my home address is given below my signature. Keep up the good work and many thanks

Sincerely,

Murray Smith

Murray Smith
Publisher, PRO PILOT
701 So. Pitt Street
Alexandria, VA 22314

Editor, The TUSC News
General Aviation - Technical Edition
Technology Use Studies Center
Southeastern State College
Durant, OK 74701

Rec'd 12/27/74

SUITE 808, 1101 - 17TH STREET N W, WASHINGTON, D C 20036
202 223 2822

F FARRELL HIGBEE
EXECUTIVE DIRECTOR

FIELD OFFICE
BOX 717
LOVELAND COLORADO 80537
303 667 5533

December 19, 1974

Mr. A. M. Moore, Editor
General Aviation Technical News Letter
Technology Use Studies Center
Southeastern Oklahoma State University
Durant, OK 74701

Dear Mr. Moore:

With reference to your letter of December 10, 1974, we have added your name to the World of Agricultural Aviation mailing list as a complimentary subscription. We will be please to receive you General Aviation Technical News Letter.

Sincerely,

F. Farrell Higbee

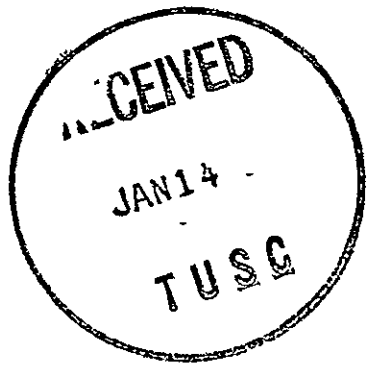
F. Farrell Higbee
Executive Director

fh/dg

Aviation News Letter Correspondence

A. J. SMITH, ARCHITECT 804 NORTH EVANS TECUMSEH, MICHIGAN 49286

7 JANUARY, 1975



A. M. MOORE, EDITOR
THE TUSC NEWS
SE OKU
DURANT OK

DEAR MR. MOORE:

I WAS PLEASED TO HAVE YOUR CARD PASSED ALONG TO ME. THE GENERAL AVIATION TECHINAL DIVISION, TUSC NEWS SEEMS PARTICULARLY VALUABLE TO ME. I HAVE BEEN TRYING FOR SEVERAL YEARS NOW TO HELP AND ENCOURAGE NASA TO DO MORE WORK IN THE LONG NEGLECTED LOW SPEED REGIMES. EVEN WITH THIS CLOSE RELATIONSHIP IT'S DIFFICULT TO KNOW WHAT CURRENT ACTIVITY IS IMPORTANT TO THIS FIELD. YOUR PUBLICATION HELPS TO SOLVE THIS PROBLEM FOR ME. YOUR FORMAT IS QUICK AND EFFICIENT.

PLEASE INCLUDE ME ON YOUR MAILING LIST FOR GENERAL AVIATION, LOW SPEED, HIGH EFFICIENCY AERODYNAMICS TOPICS. AND, OF COURSE, AIRPORT PLANNING.

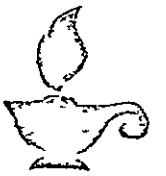
MY BEST WISHES FOR YOUR EFFORTS.

A J Smith
A. J. SMITH

IF POSSIBLE, PLEASE MAIL PREVIOUS ISSUES OF AVIATION TECHNICAL NEWS.

sent 1/14/75

File
USC
Miscellan



January 23, 1975

Commander Aircraft Division
Rockwell International
Executive Office
5001 North Rockwell Avenue
Bethany, Oklahoma 73008

Dear Sir:

Mr. A. M. Moore, editor of the General Aviation Technical News Letter and staff member of the University, visited your plant facility on January 17. I join Mr. Moore in thanking you for the courtesy extended to him by all personnel in the Bethany plant. Mr. Rick Alexander was especially helpful and thoughtful during Mr. Moore's visit.

Our Aviation program here at the University is structured to train professional people for operational duties in general aviation as well as to offer the best in training for A & E professionals. In view of our purpose, it is necessary for our staff personnel to keep abreast of the developments in the field. The visit to your facility will help us serve general aviation's training needs.

Thanks for your cooperation.

Sincerely,

Leon Hibbs
President

LH/sw

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY DURANT, OKLAHOMA 74701 PHONE 405-924-0121

File
DUSC
Miscellaneous

January 23, 1975

Messrs. Bob Chambers and Hugh Wilson
Dusters & Sprayers Supply, Inc.
Box 766
Chickasha, Oklahoma 73018

Dear Messrs. Chambers and Wilson:

Mr. A. M. Moore, editor of the General Aviation Technical News Letter and staff member of the University, visited your facility on January 16. He has apprised me of the fine operation you have created and of your rather unique and world-wide service to agricultural aviation.

I join Mr. Moore in thanking you for the courtesy extended to him during his visit. It is incumbent that our staff personnel keep abreast of developments in general aviation because of our programs which embrace both operations and maintenance of general type aircraft. I thank you for helping in our effort to keep our University Aviation program viable.

It is pleasing to learn that we have in Oklahoma an organization of your stature and with the capabilities for serving Agricultural Aviation on a world-wide basis. I congratulate Dusters & Sprayers Supply, Inc., upon the service you are rendering; and I thank you for helping the University in its efforts to serve.

Sincerely,

Leon Hibbs
President

LH/sw

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY DURANT, OKLAHOMA 74701 PHONE 405-924-0121

March 17, 1975
Box 73
Howard Lake, MN 55349

T.U.S.C.
Southeastern Oklahoma State University
Durant, Oklahoma 74701

Dear Sirs:

I am a senior at St. Cloud State College and I desparately need (by 4/15/75) information comparing the costs associated with a dirigible with the costs of other types of air transporation.

Precisely, the information I am looking for is bibliographies and/or technical reports covering the feasibility of the dirigible for:

1. Air freight.

2. Passenger travel, e.g. a world cruise

Any information that you can supply me with in these areas will be sincerely appreciated.

Yours truly,

Jerry D Thorson

Jerry D. Thorson

TUSC Miscellaneous

TECHNOLOGY USE STUDIES CENTER

AREA CODE 405 / 924-0121 EXT 2517 SOUTHEASTERN STATE COLLEGE DURANT, OKLAHOMA 74701

To speed the use of knowledge: a cooperative effort of the University of Oklahoma, Oklahoma State University and Southeastern State College.

March 20, 1975

Mr. Jerry D. Thorson
Box 73
Howard Lake, MN 55349

Dear Mr. Thorson:

There has been considerable interest demonstrated in lighter-than-air vehicles in the past months. We have had several inquiries and have searched the literature for information similar to what you request. However, our searches have not been fruitful; all of the information is dated in the 1920's and involves materials that have been replaced by better materials and cost figures that are not at all realistic.

A fall issue of Fortune magazine has a very fine article on lighter-than-aircraft, but it may not give you answers that are satisfactory. It is informative, and I believe it is in the December 1974 issue.

I am sorry that we cannot respond satisfactorily to your inquiry.

Sincerely,

A. M. Moore
Industrial Specialist

AMM/sgw

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
HAMPTON, VIRGINIA 23665

REPLY TO
ATTN OF 139A/TU&APO

APR 22 1975

Mr. Auggie M. Moore, Director
Technology Use Studies Center
Southeastern Oklahoma State Univ.
Durant, OK 74701

Dear Auggie:

Consistent with our recent telephone conversation, I have enclosed copies of papers that were presented by Langley personnel, which you may find of interest. I will continue to send you copies of papers that cover the aeronautical field.

I hope to see you at the Technology Utilization Program Conference at Langley May 20-22, 1975.

Sincerely,

John Samos
Technology Utilization and
Applications Programs Officer

6 Enclosures

File Aviation News Letter

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY

Durant Oklahoma 74701

AVIATION TECHNICAL NEWS

Area Code 405/924-0121 Ext 413

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CONTRACT NASW 2629

April 24, 1975

Mr. John Samos
Technology Utilization and
Applications Programs Officer (139A)
National Aeronautics and Space
Administration
Langley Research Center
Hampton, Virginia 23665

Dear John:

The enclosures with your letter dated 22 April, 1975, are appreciated very much. Material such as this keeps our wheels rolling and, we hope, some exposure for personnel at Langley. Our News Letter goes to 33,000-plus readers now, and we are in need of help such as you offer.

Thanks again, John, and I look forward to seeing you in May.

Sincerely,

Aggie

A. M. Moore, Editor
General Aviation Technical
News Letter

AMM/sgw

File Aviation Newsletter Correspondence

Durant Oklahoma 74701

AVIATION TECHNICAL NEWS

Area Code 405/924-0121 Ext 413

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CONTRACT NASW 2629

April 24, 1975

Mr. Clinton T. Johnson
Technology Utilization Officer
National Aeronautics and Space Administration
Flight Research Center
Box 2731
Edwards, California 93523

Dear Clint:

I am deeply grateful for the help you are providing to us from FRC. I have not been getting from the other centers the type of material you provide. However, I do get considerable material from the general aviation office in D. C.

Your material has been especially helpful; and, again, we thank you.

Sincerely,

Augie

A. M. Moore, Editor
Aviation Technical News Letter

AMM/sgw

General Aviation Manufacturers Association

Stanley J Green
Vice President - General Counsel

Suite 1215
1025 Connecticut Ave , N W
Washington, D C 20036
(202) 296-8848

July 17, 1975

Mr. A. M. Moore
Editor
AVIATION TECHNICAL NEWS
Technology Use Studies Center
Southeastern Oklahoma State
Durant, Oklahoma 74701

Dear Mr. Moore:

Your newsletter, AVIATION TECHNICAL NEWS, is excellent. The articles included are timely, well-written, and of interest to us at the General Aviation Manufacturers Association. It is always good to see newsletters which better inform us on developments in general aviation.

Would you please continue sending us this newsletter. Thank you.

Sincerely,

Stanley J Green

SJG:jhs

SOUTHEASTERN OKLAHOMA STATE UNIVERSITY

Durant Oklahoma 74701

AVIATION TECHNICAL NEWS

Area Code 405/924 0121 Ext 413

SPONSORED BY THE TECHNOLOGY UTILIZATION DIVISION NATIONAL AERONAUTICS AND SPACE ADMINISTRATION CONTRACT NASW 2629

Volume II, No. 7 November, 1975

HiMAT

Rockwell International Corporation has been awarded a contract to build two "highly maneuverable aircraft." The aircraft will be unmanned, "Remotely Piloted Research Vehicles," 21 feet long, with a wing space of 15 feet. Large canards are on the end of each wing and twin verticle tails are on booms off the wing trailing edge. They will have a GE J85 jet engine capable of achieving supersonic speed and a maneuvering capability of 8 Gs.

AIRCRAFT FUEL-SAVING, SENATE BRIEFING
(Langley Researcher, October 3)

Dr. George M. Low and associates briefed the Senate Committee on Aeronautical and Space Science on a proposed government-sponsored research program aimed at a 40-50% reduction in fuel consumption by civil transport aircraft. Six programs of research were presented:

Engine component improvement	by 1980	5% improvement in fuel savings
Fuel conservative engine	1990	10%
Fuel conservative transport	??	15-20%
Turboprops	??	15-20%
Laminar flow control	1985	20-40%
Composite primary structures	??	10-15%

A VISIT TO THE CARRIER LEXINGTON

The writer recently had the privilege of spending two days observing flight operations on both land (at Kingsville NAS) and the flight deck of the Carrier Lexington. The well-known skill and professionalism of Navy pilots needs no defense or exhortation in this publication. However, other observations made during the visit might be of interest.

When France wound down the Algerian War in the late fifties and early sixties, many T-28's used as fighters in that war found their way into the aircraft boneyard of France. The USAF had largely deleted them from the inventory by the early fifties and production ended. I observed some of these aircraft on the Navy flight line which looked like they might have left the Columbus, Ohio, factory the week before. The added burden of protecting these aircraft from corrosion in a salt atmosphere probably contributed to their new-from-the-facrory look. However, a peek under the inspection panels and into the innards of the birds convinces one that this Navy maintenance is more than skin-deep. The USN maintenance is truly outstanding.

Many football teams could profit from observing the teamwork and coordination exhibited by the flight deck crew of the Lexington. A canted deck allows landings and takeoffs simultaneously. Aircraft are hand-moved from the landing side to the launch side, and I believe it takes the crew less time to retrieve and then launch a fighter than it would take to land a Cessna 150, stop the aircraft, taxi back to the takeoff end of the runway, and take off. During the move from the tail hook cable to the launch, the fighter is inspected, the trim is verified by the ground crew, and other launch preparations are completed. This and other work is performed amid the moving cables of the arresting system and the launch system, the scream of jet engines at full power being held on the arresting cable, and at launch position.

The smell of jet exhaust and tiring effect of a 27K wind across the deck are with the crew constantly. It takes some fine physical attributes, dedication, and a lot of training to do the job the flight deck crew performs. I have a great respect for these people.

Skeptics have viewed the difference between a land-based aircraft and one designed for arrester hooks on a carrier as being chiefly that of having the tail hook mechanism welded on to the longerons of the land-based job. Operations on a canted deck and with jet engines involves a bit more than adding a tail hook as an afterthought. A carrier jet hits the end of the arresting cable at full engine power so that it can become airborne again if the hook fails to catch. Stopping a jet fighter from flying speed to zero speed with the engine at full bore takes a lot of stopping in that distance. There has to be many pounds of pig iron in the aft end of an airplane to take the punishment of arrested landings.

INTEGRATED PROGRAMS FOR AEROSPACE VEHICLE DESIGN (IPAD)

Ref: NASA SP-372, pages 213-271

By George W. Brooks

Milestones in aviation have been mentioned quite frequently in this publication. Some have been recognized as they occurred by those connected with the industry. A development came to our attention during an August visit to Langley Research Center which has been difficult to categorize; with time to think about the development, it now appears that it may be worthy of the designation of "milestone" in aviation.

IPAD provides a means for exploiting the capability of modern computers and computer techniques in the design and development of aircraft. Programs for analyzing structures, aeroelasticity aerodynamics, and general structural arrangement are in being and will be available to the designer on a custom basis. Langley Research Center advertised in the Commerce Daily on August 19 for proposals from organizations having the capability to respond to requests from designers for this service. They had more than a dozen respondents to the RFP and, hopefully, the project will be operational in the spring of '76. Wide publicity will be provided when the concept comes on line. Figures 1 and 2 (next page) depict pictorially how the system will work.

This newsletter is not published on a fixed calendar basis. When TUSC has received research results affecting general aviation to a significant degree, we try to get the information to our readers.

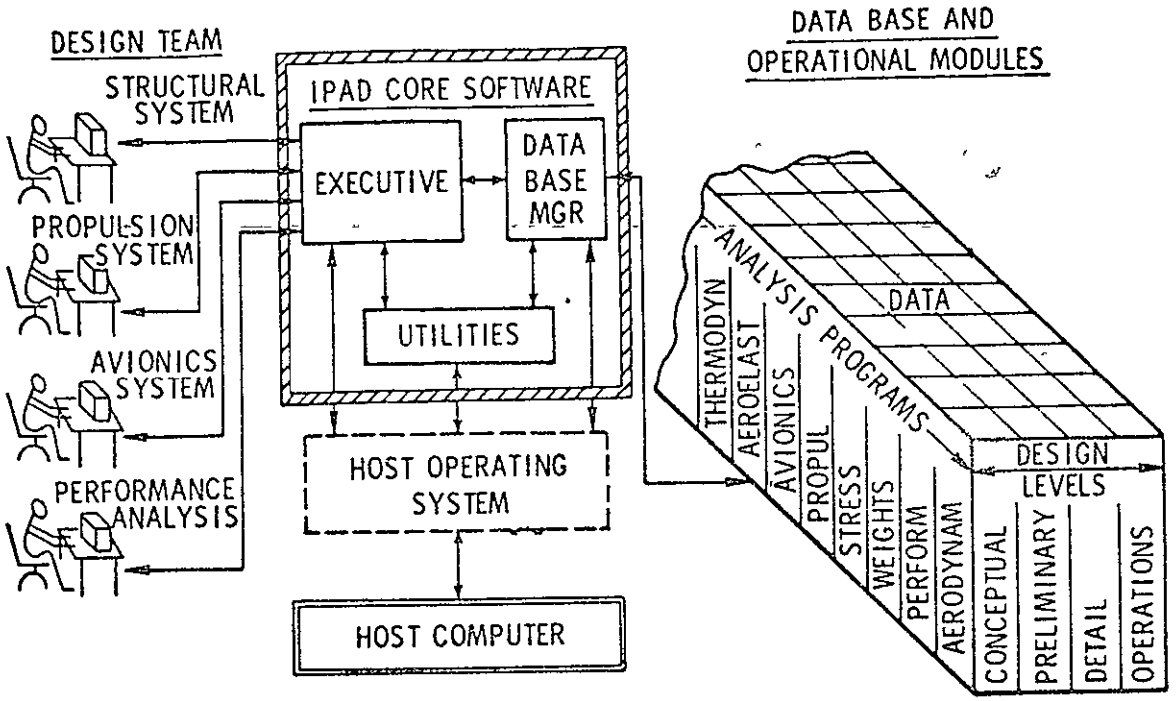


Figure 1.- NASA integrated programs for aerospace-vehicle design (IPAD).

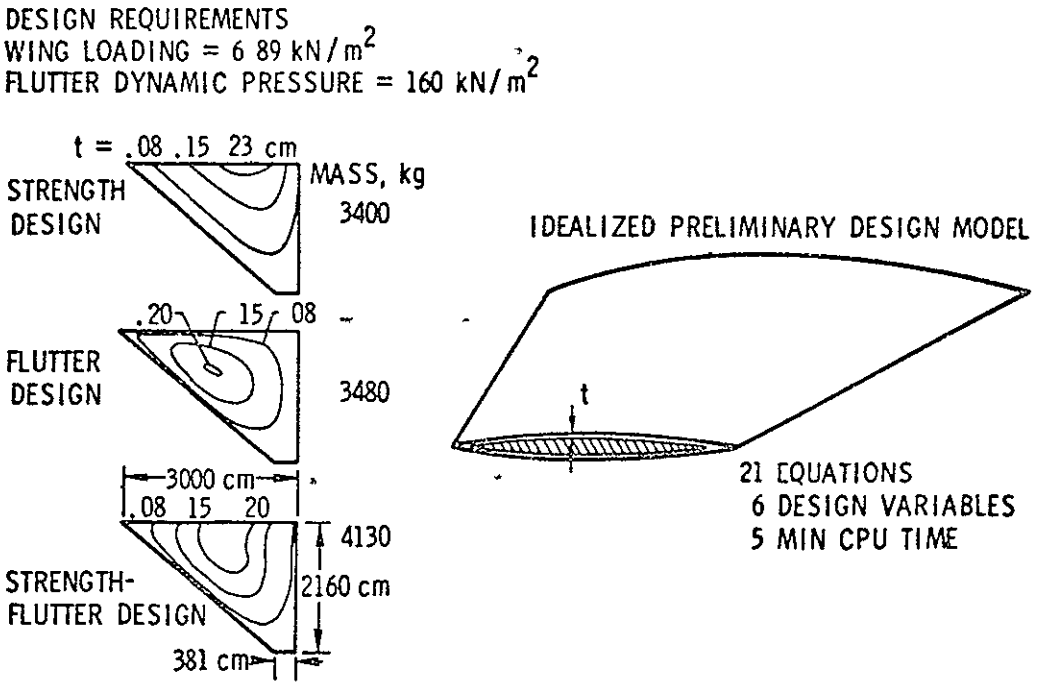


Figure 2.- Contour plots showing wing cover thickness distributions for flutter, strength, and combined designs (ref. 35).

COMPOSITE -- FIBERS

We have tried to keep up with the development and employment of "fibers" or "whiskers" in metalurgical applications. They are being tested and gradually finding a place in aeronautical structures. Wide usage has been hampered by the lack of fabrication know-how and the price of the fibers themselves. When the fibers retailed for around $3,000.00 per pound in the mid-sixties, there were not many applications that would pay off in the commercial field. It is a case of the price being high because of the limited demand and the demand being limited by the price. Now, composite and fiber fabrication and utilization are getting over into the non-aerospace field. Skyline Industries, Inc., of Fort Worth, Texas, is coming out with a line of sports equipment that will employ graphite fibers manufactured by Union Carbide. The company has experience in the field of composites as a result of their work with General Dynamics, Bell Helicopter, and others. They will be making tennis rackets, golf clubs, and fishing rods with appropriate application of composites.

(American Metal Market/Metal Working News)

ERROR IN AUTHORSHIP

In the July issue (Volume II, No. 6) of this publication, the wrong person was credited with authorship of an article. "United States Fuel Economics" was written by Arthur Alexander III.

OBLIQUE WING

We have "fixed wing" and "retary wing" pilots. It appears that we may add a third classification. LTV is making a feasibility study of putting an "oblique" wing on an F-8 Navy fighter. The wing pivots at the mid-point so that one wing tip gets ahead of the other for high speed flight. The artist's conception of the F-8 looks like the leading edge of the wing might move from the 90-degree position in relation to the fuselage to about a 60-degree angle on the side with the leading wing tip. The NASA Flight Research Center is monitoring LTV's study and if it results in hardware, the "oblique" will probably be flown there.

STATUS AND TRENDS IN ACTIVE CONTROL TECHNOLOGY

Ref: NASA SP-372, Article by Herman A. Rediess and Kenneth J. Szalai

The emergence of highly reliable fly-by-wire flight control systems makes it possible to consider a strong reliance on automatic control systems in the design optimization of future aircraft. This design philosophy has been referred to as the control configured vehicle approach or the application of active control technology.

Active control technology refers to a class of functions that can be performed by control systems to enhance an aircraft's design. If flight control specialists as well as aerodynamics, structures, and propulsion specialists are involved in the preliminary design process, the synergist effect of an integrated design can be exploited to an extent not previously possible. This design

philosophy has been referred to as the control configured vehicle approach or the application of active control technology. Several studies and flight tests sponsored by the Air Force and NASA have demonstrated the potential payoffs of control configured vehicles and the application of active control technology.

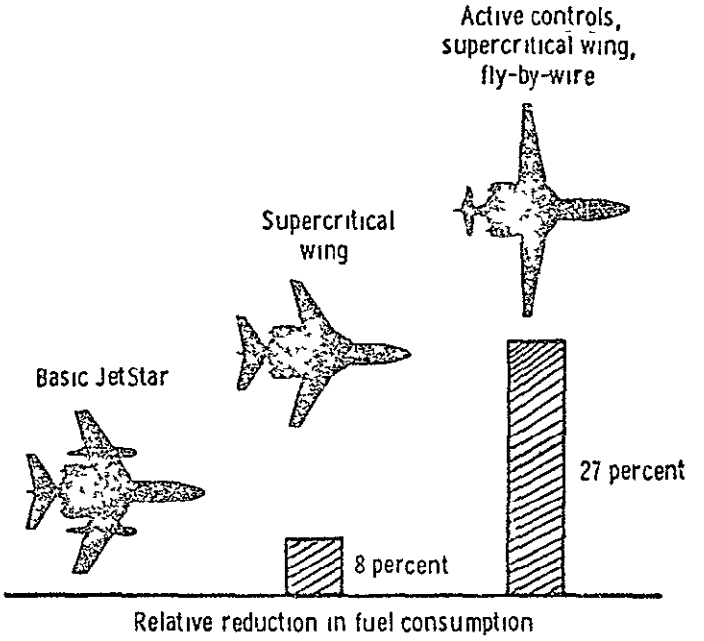


Figure 3.- Potential benefits of applying active control technology.

COANDA EFFECT

Apparently there will be an increase use of jet exhaust and air bled from compressors to increase lift in the next generation of aircraft. Boeing is running ads on their YC-14 transport and mentioning that they are taking advantage of COANDA EFFECT for the remarkable performance they expect. Here is how "the book" describes the COANDA EFFECT: The tendency of a jet gas to follow the wall contour when discharged adjacent to a surface, even when the surface curves away from the jet discharge axis, is known as the COANDA EFFECT.

OPERATIONAL FLIGHT EVALUATION OF THE TWO-SEGMENT APPROACH FOR USE IN AIRLINE SERVICE (NASA CR-2515)

The aviation press has given generous coverage of the difference in view of pilots in regard to two-segment approaches for landing aircraft. The time-honored approach has been at a 3-degree angle. This flat slope exposes a lot of geography to a high decible-count noise. Someone came up with the idea of breaking the glide slope into two segments, a 6-degree slope at the beginning of the let-down procedure, and flattening the glide to 3 degrees before touch down.

United Airlines wrote a report for Ames Research Center summarizing the results of transport pilot's evaluation of the TWO-SEGMENT approach in the B-727 aircraft.

The approach profile evaluated consists of a 6-degree segment initiated at 3000 feet or more above ground at typical approach speed and flattening the slope to 3 degrees and a stablized condition at 500 feet above the field.

Besides an intense simulator evaluation, 196 two-segment approaches were made in a B-727 during Engineering Flight Evaluation. An additional 102 two-segment approaches were made in a United Airlines B-727 before the system was tested in service. Fifty-seven pilots from thirteen airlines and pilot associations, aircraft manufacturers, and government agencies participated in flights before the system was put into service. UA put the system into service, in one airplane, on the West Coast in April 1973 and tested it over a six-month period. During more than 700 approaches, 555 were documented two-segment approaches.

This statement appears in the summary of the report· "The consensus of these pilots is that the system provides a safe, easy-to-fly two-segment approach. With proper coordination, the procedure can be integrated into the existing air traffic control environment with negligible impact."

NOTE. Two unacceptable constraints were found with the 727 in this procedure. (1) During the higher altitude 6-degree segment, a tail wind of 20K. or more slows the airspeed in order to stay on the slope so that the sink rate is too high. (2) Power is retarded on the 6-degree slope to a setting that doesn't provide enough hot air bleed for anti-icing.

In regard to noise abatement, these statements appear in the report· "...both the out-of-service and in-service evaluations verified that the profile provides significant noise abatement. Results indicate that, beyond 2.8 n.m. from touchdown, a 6-8 EPNdB reduction is achieved under the path of the two-segment approach as compared to the standard ILS.

SST

The Concorde is generating a lot of noise pollution; about 50% of it comes from groups on the ground. The Wall Street Journal for Thursday, October 16, carried an article which repeats statements generally accepted as true which in fact have not been proven nor accepted by knowledgeable people. The article mentions that a study has shown that a "large fleet of high-flying SST's could seriously damage the ozone shield in the stratosphere, which protects humans on earth from overdoses of ultraviolet light from the sun, a sizeable rise in skin cancer could result." The article mentioned, it is believed, is the one that has 500 SST's flying in the 80's with engines having exhaust characteristics of the mid-fifty engines. There is still much argument among scientists in regard to the location of the ozone belt with relation to the poles, how thick the layer is, origin of ozone, and how it is replenished The article continues· "The Environmental Defense Fund has unearthed documents showing that in 1972 the British and French asked the FAA for an exemption allowing the Concorde to arrive at U.S. airports with "less than normal fuel reserves" and for "preferential" landing rights so it could "avoid normal holding patterns." The FAA says that it will give the Concorde no special treatment and that it doesn't "now need such help." The Environmental Defense Fund had to get over into the

cockpit to bring that one up. Thankfully, the EDF "buzz words"--cancer and ozone--didn't stampede the FAA.

The Brits pioneered jet transports with the Comet; it is hoped that their venture with the French in the Concorde will not be shot down by half-baked slogans and junveile jealousies. It would be nice for young Americans to get a look at a modern transport even if it's not American made.

ATLIT

The Advanced Technology Light Twin-Engine Airplane flying at Langley Research Center has made a total of 32 flights as of November 10th. The aircraft is a production Piper Seneca with GA(W)-1 airfoil wing replacing the production wing. There appears to be some aerodynamic drag associated with saddling the fuselage on to the wing that was not designed to fit the curvature of the wing. Tufts indicate turbulance along the fuselage aft of the wing TE and around the front half of the baggage door. They expect to go into the full-sized wind tunnel and accumulate more precise data on the airplane. Spoilers are used for roll control and the bread-board installation has a bit of friction which is disturbing in initial small increments of roll control. The spoilers are giving satisfactory "aileron control."

OPPORTUNITIES FOR AERODYNAMIC-DRAG REDUCTION

The use of end plates to reduce induced drag was involved in a patent obtained by Lanchester in 1897, although the first experiments utilizing end plates did not take place until about 1924. Since that time, end plates have been suggested on a relatively continuous basis as a means for reducing induced drag. Applications to date, however, have shown that for cruise lift coefficients, the added skin-friction drag of the end plates more than offsets any reduction in induced drag.

Just recently the concept of a specially tailored end plate has been proposed by Whitcomb. These winglike devices, or "winglets," at the tip of the main wing are designed with the same attention to flow field detail as in the design of a main wing. For example, supercritical sections with appreciable camber are used. To minimize skin friction, the chords of the winglets are less than the wing chord, and the area is about 2 percent of the area of the main wing. The top winglet is attached near the trailing edge, and the lower winglet is placed forward in order to minimize interference. The winglets are canted out from the main wing about 17.5°. The aspect ratio and sweep of the upper winglet are approximately the same as for the main wing. The lower winglet is "clipped off" for ground clearance. A recent addition has been a small vortex generator just inboard of the upper winglet to break up a small separation bubble. At this writing, the winglets are still under extensive wind-tunnel development. Preliminary results indicate induced-drag reductions or more than 15 percent.

(Exceprt of article by Robert E. Bower, Langley Research Center, NASA SP-372)

A. M. Moore, Editor