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1 April 1976

NASA/Lyndon B. Johnson Space Center  
Technical Library Branch  
Houston, Texas 77058

Attn: Retha Shirkey, Mail Code JM6

Subject: Contract NAS 9-14606

Gentlemen:

This letter report, together with five copies of the Proceedings, is intended to constitute the final report under this contract. Copies of the Proceedings will be forwarded to Dr. A. E. Potter along with their general distribution to symposium registrants in May, 1976. Since the symposia series is but one of a number of informational activities conducted by the Center, the most recent status report, detailing effort toward other meetings, visitors to the Center and various information services, is included as an appendix to this report. It should be stressed that the period covered therein does not coincide with the effective dates of the subject contract, but rather represents the current status report, issued during this contract period.

Tenth International Symposium on Remote Sensing of Environment

The Tenth Symposium was held on the campus of The University of Michigan from October 6-10, 1975. One of a continuing series of programs which began in February 1962, its expressed purpose is to encourage reports on work in progress and to stimulate an exchange of information throughout the interdisciplinary field of remote sensing. The series regularly brings together managers, researchers, educators, and students interested in the application of remote sensing technology to a variety of scientific disciplines.

(NASA-CR-147586) CENTER FOR REMOTE SENSING  
INFORMATION AND ANALYSIS Status Report, 1  
Oct. 1974 - 29 Feb. 1976 (Environmental  
Research Inst. of Michigan) 12 p HC \$3.50

N76-23047

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CSSL 05B G3/82 26786



A total of 154 papers (including those read by title only) was presented this year by authors and/or co-authors from 21 countries other than the U. S. as summarized below:

Australia	2	France	1	Norway	1
Austria	1	Germany	4	Russia	9
Bangladesh	2	Iceland	1	Sierra Leone	1
Brazil	1	Italy	6	Spain	2
Canada	6	Japan	9	Sweden	2
England	3	Lesotho	1	Switzerland	2
Finland	2	Netherlands	3	Yugoslavia	1

Six hundred seventy persons registered for the Tenth Symposium. The breakdown of affiliation of those attending is as follows:

<u>Affiliation</u>	<u>Domestic</u>	<u>Foreign</u>	<u>Total</u>
University	193	36	229
Industry	195	37	232
Government	135	56	191
No Affiliation Reported	<u>9</u>	<u>9</u>	<u>18</u>
Attendance:	532	138	670

These programs both stimulate and reflect the rapidly growing international interest and involvement in remote sensing technology. Foreign registrations comprised 20% of the participants in the Tenth Symposium, compared with 19% of the Ninth Symposium, 17% of the Eighth, 16% of the Seventh, and 8% of the Sixth.

Costs of conducting the Tenth Symposium (including publications distribution) were increased somewhat from those incurred for the Ninth, the result of a nationwide increase in the cost of materials and services. Such expenses continue to increase despite a concerted effort by the Program Committee and symposium organizers to hold down costs, by limiting both the number of papers presented and the number of simultaneous sessions, without compromising the scope or quality of the Symposium.

Comparative Costs - Ninth vs. Tenth Symposium

	<u>Ninth</u>	<u>Tenth</u>
Salaries, Wages, Fringe Benefits, etc.	\$52,490.42	\$70,596.15
Publications (Summaries & Proceedings)	35,127.80	29,734.00*
Conference Department Charges	11,911.16	15,667.51
Materials & Supplies	6,493.57	4,315.61
Travel & Stipends	<u>627.65</u>	<u>1,202.68</u>
	\$106,650.60	121,515.95
Income (Sponsor Funds and Registration Fees)	<u>101,166.92</u>	<u>121,754.47</u>
Balance	\$ -5,483.68	238.52

\*Does not include charges for labor, material, or postage associated with Proceedings distribution

Financial support provided by this contract was expended in meeting costs of organizing and conducting the Tenth International Symposium on Remote Sensing of Environment (including publication of the Proceedings of that meeting) as outlined below:

Salaries, Wages & Fringe Benefits	\$18749.38
Materials & Supplies	978.80
Travel	<u>271.82</u>
Total	\$20000.00
Balance as of 3/15/76	0


The first symposium in this series, held in 1962, was attended by 70 invited U. S. participants. The steady growth of succeeding meetings, and the participation of some 50 countries during the past decade, provide a qualitative measure of the rapidly expanding world-wide interest in remote sensing technology, and in this series in particular.

However, despite the significant growth of both this series, and the global base of the participating remote sensing community, limitations imposed by international travel continue to restrict the number of scientists who can attend and personally participate in these meetings, historically held only in the U. S., at Ann Arbor, Michigan. Recognizing these restrictions, as well as the growing world-wide interest, the program committee began, nearly two years ago, to consider steps designed to make these meetings more truly international in both scope and format, and to increase the global participation in, and benefit from, this series. As an initial step in that direction, resulting from the effort and cooperation of numerous individuals, agencies, and organizations throughout the world, future meetings in this series will be held on an annual basis, alternating their location between Ann Arbor, Michigan and other suitable host countries.

The Eleventh Symposium has been scheduled for April 25-29, 1977 at a suitable European location, to be announced in April, 1976. A Call for Papers for that meeting will be issued shortly thereafter.

Respectfully submitted,

  
Gerald J. Cook  
Project Director

  
Approved by: Richard R. Legault, Director  
Infrared and Optics Division



FORMERLY WILLOW RUN LABORATORIES, THE UNIVERSITY OF MICHIGAN

CENTER FOR REMOTE SENSING INFORMATION AND ANALYSIS

STATUS REPORT

1 October 1974 - 29 February 1976

12 March 1976



STATUS REPORT

1 October 1974 - 29 February 1976

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## Center for Remote Sensing Information and Analysis

### Status Report

1 October 1974 - 29 February 1976

#### 1.0 Background

The Center for Remote Sensing Information and Analysis was established within the Willow Run Laboratories of The University of Michigan in August, 1968 as one of several steps taken to underscore and expand the Laboratories' many activities in remote sensing of the earth and its environment.

On January 1, 1973, the Willow Run Laboratories completed separation from The University of Michigan, and became the Environmental Research Institute of Michigan, an independent, not-for-profit corporation. The University's Board of Regents authorized transfer to ERIM of title to research, equipment and office furnishings being used by Willow Run Laboratories, and further authorized all WRL research activities transferred to ERIM administrative control.

The Center for Remote Sensing Information and Analysis of the Environmental Research Institute of Michigan is actively involved in planning and conducting symposia, seminars and specialized short courses in remote sensing and allied disciplinary fields. Long-range plans include developing a facility for the collection, analysis, and dissemination of information related to all aspects of remote sensing and to provide consultation, advisory services, and technical guidance in the field. In order to achieve these goals, the Center maintains a library of literature and data pertinent to the remote sensing task and plans for the future include the generation of document acquisition lists and bibliographic information.

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ORIGINAL PAGE IS POOR



Facilities of the Center and, through the Center, other elements of ERIM are made generally available to researchers, educators, and students interested in all aspects of remote sensing. The Center provides and/or arranges for information searches, consultation, advice, and technical guidance, drawing upon in-depth experience and talents of ERIM, The University of Michigan, and, as necessary, the world-wide remote sensing community.

Funds for the operation of the Center have been received from a number of governmental agencies and industrial concerns in the form of formal contractual arrangements, grants and direct gifts. Since 1968, the Center's financial support has been provided by:

The Center National d'Etudes Spatiales, Paris, France  
Water Quality Office, Environmental Protection Agency  
Office of Research & Development, Environmental Protection Agency  
Office of Applications, National Aeronautics & Space Administration  
Federal Highway Administration, U.S. Department of Transportation  
U.S. Geological Survey, U.S. Department of the Interior  
U.S. Air Force Office of Scientific Research  
U.S. Navy Office of Naval Research  
Air Force Cambridge Research Laboratories  
U.S. Coast Guard, U.S. Department of Transportation  
Agricultural Research Service, Agricultural Stabilization &  
Conservation Service, Forest Service, U.S. Department of  
Agriculture  
Environmental Science Services Administration, U.S. Department of  
Commerce  
National Oceanic & Atmospheric Administration, U.S. Department of  
Commerce  
Bureau of the Census, U.S. Department of Commerce  
Division of Biomedical & Environmental Research, U.S. Energy  
Research & Development Administration  
Fish & Wildlife Service, U.S. Department of the Interior  
U.S. Army Research Center, Department of the Army  
Division of Water Control Planning, Tennessee Valley Authority  
RCA, Astro-Electronics Division, Princeton, New Jersey  
Barringer Research Limited, Rexdale, Ontario, Canada  
Fairchild Space & Defense Systems, Syosset, L.I., New York  
Japan Research Institute  
Institute of Industrial Science, University of Tokyo  
NAC Incorporated, Tokyo, Japan  
Taiwan Forestry Bureau, Taipei, Taiwan, Republic of China  
Universidad Autonoma, Madrid, Spain





## 2.0 Information Services

2.1 Correspondence, Distribution Functions. The Center maintains continuous communication through general bulk mailing announcements, newsletters and personal contact with researchers, educators and students comprising the world-wide remote sensing community.

In addition to the general distribution of Calls for Papers, Status Reports and the Proceedings of the International Symposia on Remote Sensing of Environment, the Center received and processed hundreds of individual letter requests concerning the availability of various publications, information related to symposia and workshops, proposals for services, and general requests for remote sensing information. In connection with these information services, the Center acts as an interface between the data collection and processing units of ERIM and the remote sensing user community on matters related to the availability of data, imagery, processing and/or interpretation functions.

2.2 Visitors. As a part of their routine duties, personnel of the Center act as liaison between potential visitors and various units of ERIM or other research organizations in the area. In addition to a large number of U.S. visitors, 426 foreign visitors toured the facilities and held in-depth discussions with Center personnel during the last three years (1973-1975, see following table).

### REPRESENTATIVE LIST OF NON-U.S. VISITORS (1 Jan 1973 Thru 1 December 1975)

Argentina	4	Finland	5	Japan	71	Singapore,	
Australia	3	France	19	Korea	2	Republic of	1
Austria	15	Germany	44	Kuwait	1	South Africa	2
Bangladesh	3	Greece	1	Malaysia	1	South Korea	3
Belgium	1	Guatemala	1	Mexico	14	Spain	9
Bolivia	2	Hungary	2	Netherlands	15	Sweden	12
Brazil	7	India	19	Nigeria	2	Switzerland	8
Canada	49	Indonesia	7	Pakistan	2	Thailand	13
China	3	Iran	4	Philippines	1	Turkey	3
Columbia	2	Israel	1	Russia	2	United Kingdom	30
Denmark	1	Italy	28	Saudi Arabia	1	Venezuela	3
Egypt	1	Jamaica	2			Yugoslavia	4
							<u>426</u>

In general, unless specific information is sought or a specific advance contact has been arranged, all visitors tour a major portion of ERIM Laboratories including the Center for Remote Sensing Information and Analysis, the Infrared Information and Analysis Center, the Infrared and Optics Division, the Radar and Optics Division and the Airborne Multispectral Data Collection and Processing facilities. It is impractical to detail individual modifications or specific visitor itineraries, although as far as time and available personnel will allow, each is tailored to the individual interests of the visitor.

### 3.0 Tenth International Symposium on Remote Sensing of Environment

The Center is actively involved in encouraging, organizing, and conducting seminars, workshops, and symposia on various aspects of remote sensing and in applying these techniques in allied disciplinary fields.

Essentially all of the financial support available during this reporting period was expended in preparing for and conducting the Tenth International Symposium on Remote Sensing of Environment. Publication and distribution of the Proceedings of that symposium is anticipated in May 1976.

The Tenth Symposium was held on the campus of The University of Michigan from October 6-10, 1976. One of a continuing series of programs which began in February 1962, its expressed purpose was to encourage reports on work in progress and to stimulate an exchange of information throughout the interdisciplinary field of remote sensing. The series regularly brings together managers, researchers, educators, and students interested in the application of remote sensing technology to a variety of scientific disciplines.

A total of 154 papers (including those read by title only) was presented this year by authors and/or co-authors from the U. S. and 21 additional countries as summarized below:

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4.0 Publication Distribution

A major portion of the Center's activity is devoted to the publication and distribution of documents related to remote sensing, primarily the Proceedings of the series of international symposia conducted by the Center. During the period covered by this report, a total of 411 Proceedings were distributed throughout the world as summarized below:

Proceedings of the International Symposia	<u>Copies Sold</u>
First (Feb. 1962)	Out of Print
Second (Oct. 1962)	15 (Out of Print)
Third (Oct. 1964)	Out of Print
Fourth (Apr. 1966)	34
Fifth (Apr. 1968)	40
Sixth (Oct. 1969)	16
Seventh (May 1971)	31
Eighth (Oct. 1972)	39
Ninth (Apr. 1974)	<u>236</u>
	411

To date, a total of 10,968 sets of these proceedings have been distributed. The Proceedings of the Tenth Symposium will be distributed in May 1976. To date, orders have been received for 700 copies.



## 5.0 Library

The library of remote sensing literature and associated reference works and journals is continuing to grow. However, because of the increased costs of organizing and conducting the international symposia and of the proceedings of those meetings, no funds were available for library maintenance and updating. We hope that this situation will not continue and that funds and personnel will become available to continue this important function.

## 6.0 Personal Presentations

In addition to numerous personal visits, lectures, and briefings in the U. S., Center personnel presented lectures and participated in workshops, seminars, briefings, and discussions with remote sensing investigators in 9 European countries during this reporting period.

## 7.0 Summary

Capabilities of the Center in terms of remote sensing information dissemination continue to expand. Correspondence during this report period increased substantially. This steady growth of demand for the Center's services plus a limitation in funds and personnel have forced a reduction in the number of general distribution announcements and newsletters issued as more time has been devoted to personal presentations, correspondence and preparation for the symposia series.

The Tenth Remote Sensing Symposium again illustrated world-wide interest in remote sensing technology as foreign participation continued to increase. An Eleventh symposium has been scheduled for April 1977 and a Call for Papers for that meeting will be distributed throughout the remote sensing community in the near future.