

EROS STUDY GROUP

First Meeting

March 12, 1979

Attendees:

| | |
|--|-------------------|
| William B. Overstreet, Chairman | Lowell Starr, TD |
| Frederick J. Doyle, Acting Chief, EROS Program | Les Laird, WRD |
| Gene Thorley, LIA | Hillary Oden, CD |
| Tony England, GD (for Gordon Eaton) | Linda Stanley, AD |

Overstreet

Background: At the Williamsburg Executive Committee Conference in September 1978, various reorganization proposals were discussed including: the establishment of an Office of Communications, the establishment of a National Mapping Service, and a restructuring of the Land Information and Analysis Office and its components. To study the merits and combine these closely related proposals, the Director appointed a Committee of Four-- W. A. Radlinski (Chairman), J. S. Cragwall, Jr., R. B. Southard, Jr., and W. B. Overstreet. Their deliberations resulted in a single reorganization proposal for submission to the Executive Committee which included the recommendation that the EROS program be integrated with components of the Topographic and Publications Divisions and other offices in the formation of a Division of National Mapping. This recommendation was not accepted,, and the Executive Committee suggested that the Director, Associate Director, and the Chief, Land Information and Analysis Office take the lead in determining where the EROS Program should be attached in the Departmental organization structure. Mr. Radlinski met with Mr. Frederick J. Doyle, Acting Chief of the EROS Program, and recommended that an EROS organizational study be undertaken under the direction of Mr. Overstreet.

The recent announcement by the President of the proposed Department of Natural Resources (DNR) raised the question of whether the study should be pursued. Mr. Radlinski indicated it should proceed.

The ultimate product of the group is to be a written report to the Director recommending the organizational position of EROS related to the Department. The report should include recommendations concerning how the Department can best utilize the products of the program, funding, pitfalls, etc.

The composition of the study group is outlined above.

Doyle

Overview of the EROS Program: The EROS Program has several objectives:

(1) To develop the applications of remote sensing--first within the Geological Survey, second, within the Department of the Interior, and finally, in the outside community; (2) To conduct a research program--including technology transfer and training programs through the EROS Data Center in Sioux Falls, South Dakota; and (3) To serve as a distribution center for Landsat data and aerial photography.

These are same - GS is part of the Bureau

Requests to the EROS Data Center for data have been extremely heavy and have resulted in a considerable investment in equipment to meet the demand. Funding this equipment has become a problem resulting in the budget for research dropping in recent years from \$3 million to less than \$1 million.

Mr. Radlinski and others shared some reservations concerning the acceptance of remote sensing technology in the Survey and in the Department, but indications are that there is fair acceptance throughout the Survey and in some other bureaus, particularly LBR, BLM, and NPS.

Another common perception of the research efforts at Isaac Newton Square is that they have not been integrated to any degree into the functions of the Survey. Mr. Radlinski proposed that the researchers at E2 return to the divisions and conduct their research efforts under the aegis of of the division. The EROS researchers, however, feel that their work does not easily fall into place in the divisions--their's is basic research, looking down the road 5 to 10 years, as opposed to the kind of applied research conducted by the divisions.

Multi-disciplinary

Another proposal offered is to combine the technology transfer and training activities with the research program here and let production activities be integrated into the Division of National Mapping. However, this would reduce the program below the critical mass necessary to carry out an aggressive remote sensing technology transfer effort.

Would also weaken user's division aspect of data production

Some have indicated that activities at EDC should be part of an operational program, perhaps administered by NASA, or to deem EDC a "National Facility" for production and dissemination of Landsat data. NASA does not want to be responsible for a data production and distribution center, and the National Facility concept has not been accepted by OMB.

yet

EROS has been disappointed in the transfer of information from NASA to EDC. For example, the quality and timeliness have on occasion been poor and EDC, as the point of distribution, is the target for complaints by users. The EDIPS (EROS Digital Image Processing System) at EDC is equipped to receive 200 frames per day, but to date has not received more than 60 per day from Goddard. The EROS part of this system is fully operational, but Goddard is having some difficulty with their part. As a result, there is a backlog of about 60 days. Mr. England mentioned that some Goddard people have indicated that the blockage is at EDC, but Mr. Doyle said this is not true.

Temporary

Temporary

The Federal Coordinating Committee for Science, Engineering, and Technology (FCCSCT) recommended that NASA fund a digital ground data processing system for Landsat D and install the system at a central data facility (e.g. EDC). NASA, however, has decided to keep the digital system at Goddard and supply film to EDC. In a recent letter from Joan Davenport to Tony Calio, NASA, the Department indicated that the film interface suggestion by NASA would be protested by the Department.

Gordon Law, Science Advisor and Special Assistant to the Secretary, indicated Interior would budget for its part of the ground data system for Landsat D in the amount of \$6 1/2 million. Mr. Doyle feels that the Department should be a major player in the Landsat D program, but is concerned that the money will come out of the Survey budget -- if not from the EROS Program, from some other area of the overall bureau funds.

Mr. Doyle feels that the Department has to decide if we are going to have a major role in the Landsat Program, including operating a data distribution center for space information, or are we simply going to be a user of space data developed by NASA.

A year ago, there was a meeting which included Secretary Andrus, Secretary Bergland of Agriculture, Administrator Frosch of NASA, and Secretary Kreps of Commerce to develop an integrated remote sensing program within the major departments of government. Subsequent to this meeting, the EROS Program sent a letter to all divisions of the Survey and bureaus in the Department requesting an assessment of their requirements for space technology and what participation they were likely to have in space data applications over a period of the next 5 years or so. EROS developed a "Blue Book" which represented the major Interior initiative. This document was forwarded to the secretary, but there was no follow through by the Department. *Didn't reach the Secretary*

Asst. Consequently, an "Ag Initiative" was developed which proposed an alliance of NASA/NOAA/Agriculture/Interior. NASA would provide the satellite data acquisition, NOAA the weather information, Agriculture the analysis of the data, and Interior the Landsat data distribution. The funding would be on the order of \$20-30 million from both Agriculture and NASA, \$1-3 million from NOAA, and virtually nothing from Interior.

The President has asked that the civil and military space programs be reviewed to determine if they can be "integrated" to reduce duplication, etc. This request has resulted in four studies, one of which is the Integrated Remote Sensing System Study (IRS³) headed by Robert S. Cooper, Director of the Goddard Space Flight Center. Mr. Doyle prepared a "think piece" on IRS³ System concepts. A copy is enclosed. Gordon Law was given a copy of this memorandum and has asked that it be recast in the form of a position paper.

No one sees the operation of remote sensing systems as cost reimbursable. Providing remote sensing data, per Mr. Doyle, falls into the same category as the provision of topographic maps, census statistics, etc. -- all activities that are clearly not cost reimbursable. They should be provided to the community as a service underwritten by the payment of taxes.

There is a growing sentiment in the Department that the EROS Program needs to be a Departmental program in the truest sense of the word.

The EROS Program contact in Energy and Minerals is Hank Smith.

Overstreet

Mr. Overstreet then outlined proposed procedural steps for the study group.

- . The study should be pursued in the most expedient manner possible.
- . As a starting point, the group could address itself to the following study areas:
 - Mission
 - Relationships
 - . within the Survey
 - . with other bureaus
 - . with AS/EM
 - . with Gordon Law
 - . with NASA
 - . with NCIC
 - User Assistance Facilities
 - Funding
 - Director's perception of the program

In addition, committee members are asked to submit a list of pertinent "study areas." It may be that the mission cannot be defined until all study areas are examined.

Mr. Overstreet asked Mr. Doyle to arrange for a knowledgeable EROS representative to attend the next meeting and give a comprehensive presentation on the EROS Program--its organizational structure, objectives, functions, etc. Mr. Doyle indicated he would ask Mr. William Hemphill to give the presentation.

Mr. Thorley submitted two pertinent documents for distribution to the group--the EROS "creation" memorandum signed by Under Secretary Luce in 1967 and a chronology of the EROS Program--its history and development. Both items are enclosed.

By mutual agreement, the EROS Study Group will meet every Tuesday and Thursday at 1:30 p.m. in the Publications Division Conference Room, 6-A-412. The meeting will be confined to a period of 1 1/2 hours.

The next meeting will be Thursday, 1:30 p.m., Room 6-A-412.

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Enclosures

- . "Think Piece" prepared by Frederick J. Doyle
- . EROS "creation" memo
- . EROS chronology

Action Items

- . EROS representative (Mr. Hemphill) to give comprehensive presentation on the EROS Program
- . Members of the Study Group to submit suggested study areas



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
EGS-Mail Stop 730

March 7, 1979

Memorandum

To: Robert S. Cooper, Director, Goddard Space Flight Center

From: Frederick J. Doyle, Acting Director, EROS Program

Subject: Integrated Remote Sensing System Concepts

In response to your request at the last IRS³ meeting, we submit the following "strawman system concepts." These have not yet been coordinated with the Bureaus or the Secretariat of Department of the Interior. This memorandum is, therefore, to be regarded solely as a "think piece."

1. Institutional arrangements

No Federal agency has current responsibility for an operational space remote sensing system. However, within the United States the Department of Interior (DOI) has legal responsibility for management of:

- a. Energy and minerals
- b. Land and water resources
- c. Fish and wildlife
- d. Indian affairs
- e. Trust territories

Much of the information required for these management functions is derived from remote sensing, and DOI has provided major impetus for the development of space remote sensing systems.

The President's proposal to create a Department of Natural Resources (DNR) will add to DOI the responsibility for operational weather satellite programs and the oceanographic functions of the National Oceanographic and Atmospheric Administration (NOAA).

These considerations make DNR the logical Federal agency to assume responsibility for an operational space remote sensing system, and the Department is actively working towards this objective.

The requirements for resource inventory and land management data are not just nationwide, but global in extent. Energy and mineral exploration by U.S. commercial enterprise and foreign crop inventories by U.S. Government impose requirements for international coverage in the interest of the United States. Once such a system is in operation, it can also be responsive to coverage requirements by foreign governments in accordance with the President's announced objective of making the program of benefit to mankind. The charter for management of the operational space remote sensing system must, therefore, clearly include foreign coverage as well as the United States.

The relationship between the operational DNR agency for remote sensing satellites and NASA should be essentially the same as that which now exists between NOAA and NASA. Research and experimental spacecraft should be NASA's responsibility. Operational spacecraft and launch services from NASA would be procured by the operating agency.

Although some elements of an operational space remote sensing system are amenable to ownership and/or management by commercial enterprise, we believe that overall direction will have to be provided by the Federal Government for the remainder of this century.

2. Space segment convergence

We believe there are several areas in which space segment convergence is reasonable and desirable.

a. Meteorological satellites

The requirements of both the National Environmental Satellite Service (NESS) and the Defense Meteorological Satellite Program (DMSP) should be satisfied by a single program involving both Earth orbiting and geosynchronous satellites. Transition should be made to Shuttle compatible spacecraft such as the Multimission Modular Spacecraft (MMS).

b. Oceanographic satellites

There is a continuing requirement for synthetic aperture radar (SAR), scatterometer, and scanning multifrequency microwave radiometer (SMMR) data for ocean surveillance and sea-ice monitoring. SAR and SMMR data are also useful over land areas for geologic mapping and soil moisture studies. Requirements from NOAA and Navy should be combined in a single spacecraft as proposed for National Ocean Satellite system (NOSS) or Seasat follow-on, but requirements for land area coverage by some of the same sensors should be recognized. Because of its size SAR is also a candidate for Shuttle sortie missions. Agreement needs to be reached on whether Navy or DNR would manage this system, but DNR would welcome the responsibility.

c. Landsat satellites

Landsat 3, D, and D prime will hopefully settle the question regarding spectral bands and IFOV needed to meet data requirements of a wide variety of users. Follow-on Landsat vehicles should be considered operational and be managed by DNR. Multispectral linear arrays (MLA) are considered the most appropriate sensors if their range can be extended sufficiently into the near-infrared. Independent spacecraft such as MMS, launched and serviced by Shuttle, are most appropriate.

If requirements for digital stereo data are not satisfied by an experimental Stereosat, consideration could be given to combining these requirements with the Landsat series.

d. Magsat, Gravsat, Heat Capacity Mapping Missions (HCMM)

These requirements are appropriately met by small spacecraft such as Applications Explorer Missions (AEM) since the timing and orbits are different for each, and are different from the Landsat series. HCMM sensors should be modified to provide 2 or 3 bands within the thermal infrared. Magsat should be repeated perhaps every 5 years. They should become the responsibility of the DNR operating agency.

e. Photographic satellites

The eventual convergence of photographic satellites serving both civil, defense, and intelligence requirements will depend heavily upon the results of the Declassification Study now underway.

It is anticipated that very high resolution real-time systems will remain classified and under the management of the Defense and Intelligence community. Ground rules need to be established for tasking of these systems by the civil community for special time critical data needs.

If high resolution wide area coverage systems are declassified, civil and military/intelligence requirements should be satisfied by the same spacecraft. Management should probably continue with defense/intelligence, but more liberal ground rules for tasking by the civil community will need to be developed.

Because of its geometric characteristic, frame photography, as exemplified by the Large Format Camera, is useful to many civil agencies, but defense/intelligence does not consider it essential to their missions. Although such a camera can be readily integrated into the wide area coverage spacecraft,

it will probably be better to consider separate spacecraft, so that management can be provided by the civil agency. The frame camera capability can be supplemented by the higher resolution photography exemplified by the Apollo panoramic camera. This would virtually eliminate the need for civil agencies to task the defense/intelligence system. Shuttle sortie missions are appropriate for testing the frame camera or frame-panoramic combination. But the operational system should be on independent spacecraft like the MMS with film supply and retrieval by the Shuttle. Management should be by the DNR civil agency.

3. Command and control

DOI presently has no experience or capability for managing an operational remote sensing satellite program. However, this knowledge does exist within NESS and will be transferable to DOI when DNR becomes a reality. In any event, once a clear assignment of responsibility is made, the necessary competence could be assembled in time to handle the operational systems.

It is anticipated that there would be much commonality in functions and equipment for command and control of weather, oceanographic, Landsat, photographic, and other remote sensing systems, and that considerable duplication could be eliminated by combining these functions for the several systems.

There are, however, major differences in the customers for each type of data, and separate offices might be needed to interface with the variety of users.

At the moment we envision no problem in providing the command and control function through the Tracking and Data Relay Satellite system (TDRSS).

4. Communications

We presume that telemetered data return will be via TDRSS. However, we have several concerns with regard to this system:

- a. Will data capacity be adequate for all systems contemplated?
- b. Can civil systems be assured of adequate priority in tasking TDRSS?
- c. Will the requirement for articulated antennas to communicate with TDRSS adversely affect the stability of data collection spacecraft?
- d. What is the policy impact of eliminating direct transmissions to foreign ground stations?

Responsibility for operation of TDRSS is an open question. Will it be NASA, the DNR operational agency, or should it be commercial? Commercial operation seems viable.

5. Global Positioning system (GPS)

Civil agencies have requirements for precise positioning and attitude control of remote sensing satellites which will permit accuracies compatible with the scale of the products derived from the data. We are hopeful that GPS and precise attitude sensors on the spacecraft can provide this information, thereby eliminating the need for expensive and time consuming ground data processing. This is particularly true for foreign areas where ground control points are not available.

6. Ground processing

Convergence of ground processing of remote sensor data must take into consideration the existence of currently operating facilities at Suitland, Goddard Space Flight Center (GSFC), EROS Data Center (EDC), and White Sands for TDRSS reception. The notion of doing all ground processing at White Sands, and transmitting data to users via a "bent pipe" is appealing and may eventually prove to be most cost effective. However, for the present a more realistic division of responsibilities would seem to be:

- a. Weather data - NESS and DMSP - at Suitland
- b. Earth resources data - Landsat, Stereosat, Magsat, Gravsat, HCMM, photo systems - at EDC
- c. Oceanographic data - NOSS - either Suitland or EDC

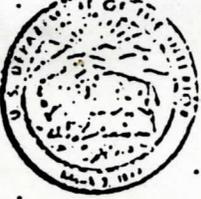
The customers for the several types of data are sufficiently different so that there is little to be gained by combining ground processing, archiving, and dissemination for all data in a single center.

GSFC should be out of the loop for operational systems, but will obviously require a versatile capability for processing data from experimental systems.

We do not foresee any useful convergence in ground systems between unclassified civil programs and classified defense/intelligence systems. Civil use of classified data can continue under existing arrangements.

The Department of Interior and hopefully the Department of Natural Resources look forward to continued cooperation with NASA in bringing operational remote sensing systems to reality.

Frederick J. Doyle



UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUL 12 1967

Memorandum

To: Assistant Secretaries and Bureau Heads

From: Under Secretary

Subject: Earth Resources Observation Satellite Program--
Status and Plans

Within the Department, exploration of potential applications of the EROS program has been underway for some time and is continuing. Understandings have been reached between Interior and Agriculture and between these two resource departments and NASA with respect to a basis of collaboration in carrying out the program. Decisions with respect to 1969 budget recommendations are imminent. It is essential, therefore, that a more explicit understanding be reached within the Department as to organization, program definition, relationship of the EROS program to existing programs, and distribution of responsibilities for budgeting, fund administration and staffing. This memorandum is to establish a working arrangement for these aspects of the EROS program and thus provide a basis for coordinated planning by the Bureaus and Offices of the Department for effective execution of the program.

General Policy--

1. Remote sensors operating from orbital vehicles will provide a powerful and sophisticated tool for more effective and efficient management of our natural resources. It is important, therefore, that in the progressive development and use of this tool it be applied to the most important aspects of our resource responsibilities and that its development and employment be fully integrated with the discharge of our broader resource management responsibilities. For this reason our approach to the program involves a collaborative relationship with NASA and with Agriculture rather than looking wholly to NASA for program design and management. Only in this way can effective integration of this new technology with our resource mission and responsibilities be achieved.

2. In developing and implementing the EROS program we intend to build upon the established expertise and the arrangements for liaison and collaboration which now exist within Geological Survey. EROS is, however, a Departmental program in the fullest sense of the term. Accordingly, the organizational arrangements will provide for participation by using Bureaus in both policy formulation and research and development leading to full and effective use of the technology.
3. Within the Department, the EROS program will be so defined and its funding and management so arranged that it will have the unity and self-sufficiency which are essential for its success. Funds necessary for research and applications studies; hardware and information systems design and acquisition; and data processing, delivery and dissemination to users will be sought as a single appropriation. Participating Bureaus and Offices will, however, provide the staff and resources needs for their operational use of the data derived from the program.

Program Definition--

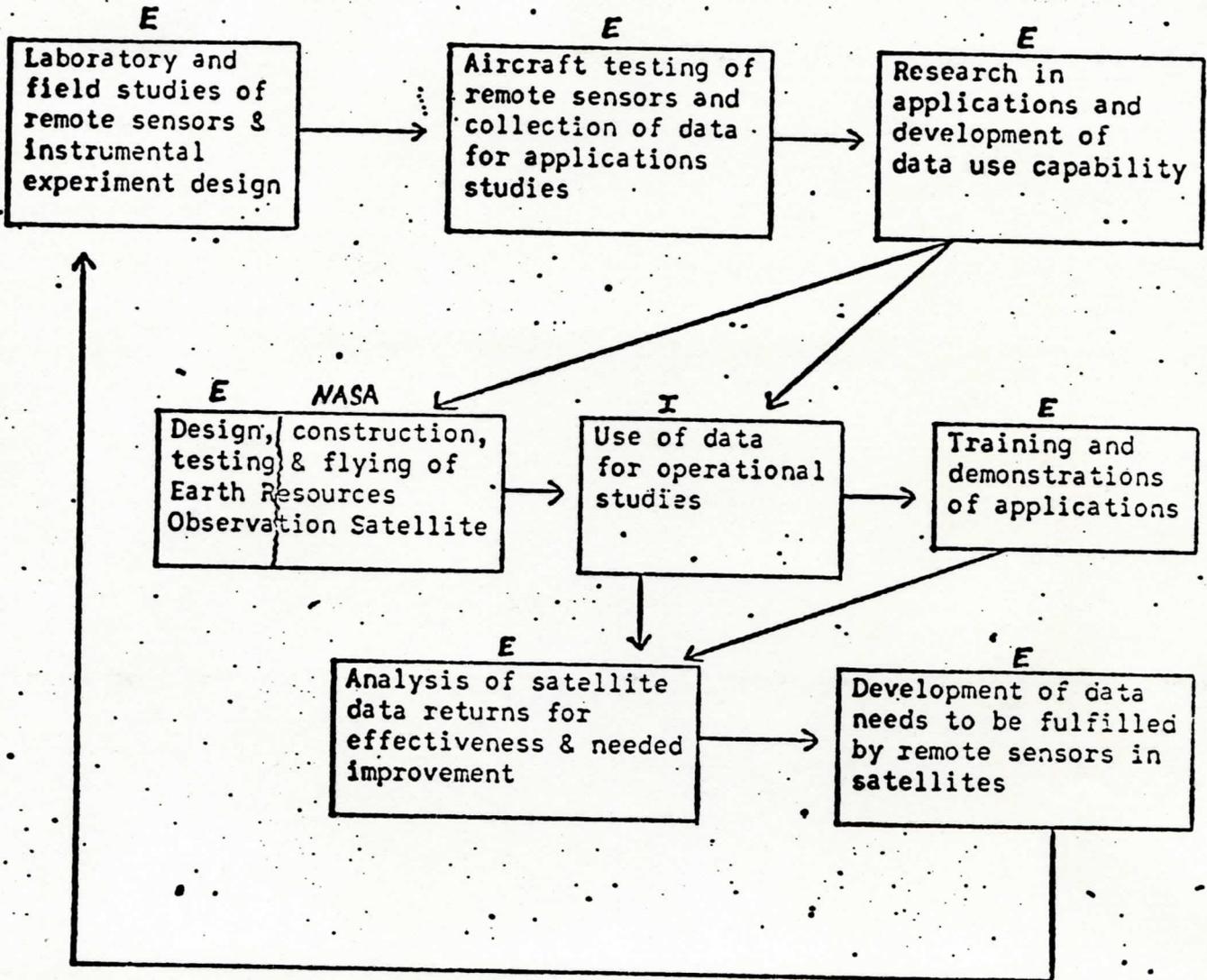
EROS is a Departmental program for the resources utilization of all types of space data, supported by an operational satellite data collection system developed in collaboration with NASA and other resource agencies. The three major objectives of the program are:

1. To construct and fly an Earth Resources Observation Satellite by the end of 1969 and to follow with improved and modified satellites as required by operational needs of resource programs.
2. To provide unclassified remote-sensor data collected by earth-orbital satellites to facilitate assessment of the land and water resources of the United States and other nations.
3. To design specific spacecraft data-collection remote-sensor systems on the basis of data-user requirements, to distribute such data to users, and to make operational use of the data in resource studies and planning.

Figure 1 illustrates the functional relationship of elements of the EROS program and indicates by notation the funding source which will finance different elements of related activity.

In order to further clarify the scope of the EROS program the following list indicates how the EROS program is unique and also how it complements existing Departmental and Bureau programs. The program, to be conducted cooperatively with NASA, provides for:

FLOW DIAGRAM OF EROS PROGRAM ACTIVITY



E - EROS
 I - Interior Program Funds
 NASA - Funds from NASA to Hardware Contractors

Figure 1

1. The design and construction of space flight hardware and related equipment and the launch and operational use of satellites for resource studies.
2. The reception, cataloging, and preliminary processing of satellite data (from whatever source).
3. Analysis of results of data use projects and study programs in terms of future space data requirements.
4. Development of advanced instruments for use in satellites.
5. Continuing applications and benefits research (with emphasis on "new" applications and "new" instruments).
6. Continuing program review, to assure conformity with recommendations of advisory committees, program balance, and maximum use of data.
7. The collection of aircraft data for test purposes.
8. Liaison with NASA on program elements of mutual interest.
9. Conducting seminars for users of space data within the Interior Department.

The EROS program does not provide for:

1. Research leading toward development of equipment that is not amenable to use in space or is not planned for use in space.
2. Collection of remote sensor data from aircraft, for other than test purposes related to planned orbital applications.
3. The acquisition of field or aircraft instruments for operational use.
4. Operational use by Bureaus and Offices of data derived from the EROS program.
5. Dissemination of aircraft or space data to the public. (This to be accomplished, by sale, through normal Geological Survey distribution channels).

Budgeting and Funding--

Activities in 1968 related to EROS will be conducted with existing program funds or through the detail of employees from participating agencies. Commencing in 1969, funds for the EROS program will be derived from appropriations to the Geological Survey (acting as agent for the Department) specifically for the EROS program, and transfers from NASA to the Department for activities within the scope of the EROS program.

In developing 1969 budget recommendations for EROS, Survey will determine probable contributions from NASA and any other participating Departments and Agencies and determine the balance required for efficient prosecution of the program in that year and present and defend estimates for that balance as the Departmental budget for EROS. The Departmental EROS budget, together with fund transfers, will provide for all activities of the EROS program including applications studies by the participating Bureaus. To the fullest possible extent, the distribution of funds in support of such studies among individual Bureaus will be planned and reflected in 1969 and future year budgets. It is recognized, however, that the present state of knowledge may necessitate budgeting a portion of the funds for applications studies in 1969 as a total for application to major program or research areas. Final distribution would be determined as Bureau capability develops and the relative significance of individual study areas emerges from the benefit and feasibility studies now underway. Figure 2 shows the presently expected source and application of EROS funds for 1969. Participating Bureaus must, of course, provide funds within their program budgets for use of EROS data. The relationship of requests for this purpose to EROS should be made explicit in Bureau justifications.

Organization--

An EROS program organization chart is shown in Figure 3. This chart is tentative and for Department of the Interior use only. The organizational arrangement is, however, an appropriate basis for current planning. The 1969 EROS budget will provide for all elements of this organization except for incidental Bureau participation in the Review Committee and part-time assignments of Bureau representatives to working groups. However, in 1968 necessary functions will be sustained by detail of employees from participating Bureaus.

W.T. Pecora, Director of the Geological Survey, will serve as the Director of the EROS program and will keep the Secretary advised of program development and progress toward objectives. The National Academy of Sciences' Advisory Committees are in-being but will need to be enlarged to provide full consideration for land and marine resource applications. The Interior Program Review Committee will

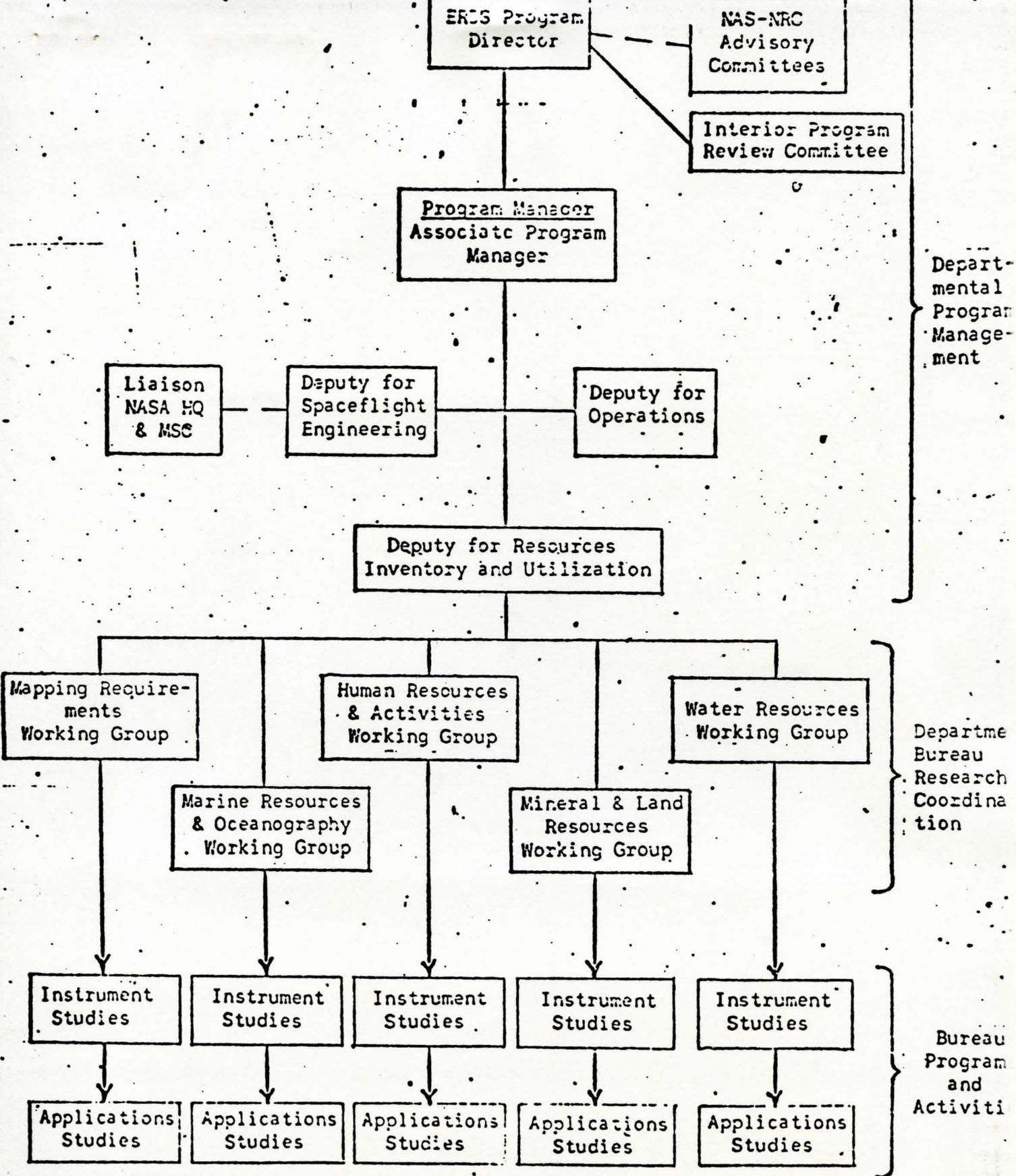


Figure 3

be composed of representatives from each of the Bureaus and Offices of the Department of the Interior that have interest in the EROS program. This committee shall be convened by the Director of the EROS program at intervals required to assure prompt implementation and continuation of the EROS program as a Departmental effort.

Staffing--

As stated earlier with respect to program and budget planning, Geological Survey is to provide in the EROS budget request funds for all activities of the EROS program other than those to be undertaken with NASA transfers. Accordingly, the EROS budget for 1969 and later years will finance permanent staff provided for in the organization chart (Fig. 3) and staff of the Bureaus undertaking application studies and evaluation. Staff planning will be compatible with, but may not precisely parallel, budget planning. In general, Geological Survey in its staff planning will provide for all permanent EROS staff and Bureaus and Offices will provide in their staff planning for personnel to be involved in applications studies to be undertaken with expected Geological Survey appropriations and NASA transfer funds.

The working groups provided for in the EROS organization structure represent a somewhat special case. They are to be financed with EROS funds and will in the immediate future be staffed primarily by Survey. However, in the longer run we expect that responsibility for the various working groups will be delegated to "lead Bureaus" with major responsibilities in the resource area with which each group is concerned. For the present, Survey will provide in its staff planning for all groups but that for Marine Resources and Oceanography which will be the responsibility of the Bureau of Commercial Fisheries. Requests for ceiling adjustments, if essential for implementation of the program, may be submitted to the Departmental Manpower Board for appropriate action within overall Departmental program priorities and needs.

The EROS program provides for two full-time professional employees and administrative support for each of the resource working groups shown on the organizational chart. I am asking that each Bureau that shares an interest in the various resource categories, assign a man to work part time with each of the appropriate working groups. I am specifically asking:

The Geological Survey, as the lead mapping agency within the Department, to continue to staff the mapping requirements working group.

The Bureau of Commercial Fisheries to implement and staff the marine resources and oceanography working group, including consideration of the related mineral resources of the sea programs of Geological Survey and Bureau of Mines.

The National Park Service to assign a scientist engineer to the Geological Survey to supplement the Survey's current responsibility for the human resources and activities working group as part of their geography program. This detail should begin on a full-time basis by mid-1968.

The Bureau of Land Management to assign a scientist to the mineral and land resources working group.

The Federal Water Pollution Control Administration to assign a scientist to the water resources working group and a scientist to the marine resources and oceanography working group.

These requests for assignments are tentative and subject to review by the Interior EROS Program Review Committee and to periodic changes as dictated by progress toward our objectives.

Preliminary EROS manpower estimates for 1968 and 1969 are available only for the Geological Survey and the Bureau of Commercial Fisheries as follows:

| | <u>1968</u> | <u>1969</u> |
|--------------------------------|-------------|-------------|
| Geological Survey | 24 | 40 |
| Bureau of Commercial Fisheries | 6 | 13 |

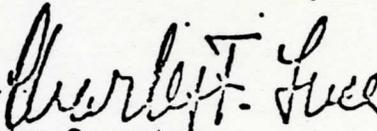
As planned participation of other Bureaus is more fully developed, appropriate estimates of staff requirements should be made and incorporated in program and budget plans.

Specific Matters Requiring Action--

1. Bureaus should develop and submit EROS manpower requirements to the Manpower Board as soon as possible. Requests for ceiling adjustments should reflect the extent to which internal adjustments have been made, including related funding adjustments.
2. I am asking Dr. Pecora to convene a meeting of the Interior Program Review Committee, at the earliest possible time, to review the recommendations, assignments, and budgets contained in this memorandum and to provide guidance as to possible modification. (Because these initial meetings of the Program Review Committee will be concerned primarily with the administrative matters, I hope that you, or someone who can speak for you, will participate in the meeting.)

3. I am asking the Geological Survey to begin discussions with the National Academy of Sciences, National Research Council, with the objective of enlarging the purview of the existing Advisory Committee so that it may consider all Interior Department resource responsibilities.
4. Other Bureaus of the Department are urged to consider their funding and manpower requirements as they pertain to the application of space data to their resource responsibilities and to develop specific budgets for inclusion as line items in the FY 1970 EROS Program budget.
5. I am asking the Geological Survey to develop an issue paper by the fall of 1967; other Bureaus are urged to work with the Geological Survey and provide specific inputs.
6. I have been pleased to learn that several Bureaus have joined with the Geological Survey in funding the development of the EROS program in FY 1967, and I hope similar support will be accorded in 1968. We anticipate that the total amount of funds that will be required will be in the neighborhood of \$200,000. All participating Bureaus are asked to provide funds for this purpose in amounts commensurate with their means and the results of the applications-cost/benefit study now underway. I am asking the Program Review Committee to recommend the division of fiscal responsibility.

The EROS Program has the full support of your Secretary. We are convinced that data acquired from orbit around the earth can assist the Department in fulfilling its resource responsibilities. I know that I can count on your full cooperation.


Under Secretary