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JUN 23, 1977

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FROM - Kinshasa
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SUBJECT - ERTS-Zaire (660-0071)

REFERENCE -

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1. Transmitted herewith is one original of the ERTS-Zaire Project Paper.
2. The USAID wishes to express its appreciation for the expertise provided by ERIM in the preparation of this paper as well as the Project Review Paper.
3. Please provide us with 20 copies of the final document when completed.

CUTLER

Attachment:
As stated

PAGE	PAGES
1	OF 1

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A. I. D. AND OTHER CLEARANCES

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ERTS-Zaire

Project Paper

June 1977

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-1-
Part 1. SUMMARY AND RECOMMENDATIONS

AGENCY: U.S. INTERNATIONAL DEVELOPMENT

A. PROJECT PAPER FACESHEET

1. COUNTRY ENTERED: **ZAIRE**

2. PROJECT NUMBER (in digits): **660-0071**

3. ESTIMATED FY OF PROJECT COMPLETION: **80**

4. TRANSACTION CODE: **A** (ADD), **C** (CHANGE), **D** (DELETE)

5. DOCUMENT REVISION NUMBER: **3**

6. BUREAU OFFICE: **AFR** (A. SYMBOL), **06** (B. CODE)

7. PROJECT TITLE (Maximum 40 characters): **ERTS-Zaire**

8. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY **77**, B. QUARTER **4**, C. FINAL FY **77** (Enter 1, 2, 3, or 4)

10. ESTIMATED COSTS \$000 OR EQUIVALENT \$1 **.85**

A. FUNDING SOURCE	FIRST FY 77		LIFE OF PROJECT			
	B. EX	C. C	D. TOTAL	E. EX	F. L C	G. TOTAL
ALL APPROPRIATED TOTAL	435		435	435	-	435
GRANT	435		435	435		435
LOAN						
OTHER (1)						
USA (2)						
HOST COUNTRY		300	300		570	570
OTHER DONORS	58		58	58		58
UNDP						
TOTALS	493	300	793	493	570	1063

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH CODE		E. 1ST FY 77		H. 2ND FY		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	GRANT	J. LOAN	L. GRANT	M. LOAN
1. ST	630	900		435					
2.									
3.									
4.									
TOTALS				435					

A. ADMINISTRATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED
	GRANT	LOAN	GRANT	LOAN	T. GRANT	U. LOAN	
(1) 57					435		MM YY 08 78
(2)							
(3)							
(4) TOTALS					435		

13. DATA CHANGE INDICATOR: WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA BLOCK 12? 1) YES, ATTACH CHANGED PID FACESHEET.

1 NO YES **BEST AVAILABLE DOCUMENT**

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: *Fernando J. Spencer*

TITLE: **Mission Director, USAID/Kinshasa**

DATE SIGNED: MM DD YY **06 21 77**

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

B. Recommendations

-- Grant \$ 435,000

Total New AID Obligations \$ 435,000

-- Waiver of Code 899 for procurement of photographic chemicals and supplies.

-- Congressional Notification for Life-of-Project funding in FY 1977.

C. Description of Project

This project addresses the sector goal of improving the design, planning, and implementation of GOZ survey and development programs. The project intends to improve the planning capability of GOZ institutions by providing a mechanism for obtaining and using accurate and up-to-date resource information derived from satellite data.

An inadequate information base and the lack of trained personnel to acquire timely resource data are key constraints to implementing sound development programs in Zaire. One of AID's primary DAP objectives is to strengthen GOZ administrative and technical services directed at helping the rural poor majority. AID's projects in support of this goal include: Nutrition Planning (055); Agricultural Economic Development (052); Training in Project Planning (068); and INERA Support (064). This project is an incremental step aimed at helping Zaire develop an adequate information base from which to make sound resource management decisions.

The purpose of the project is to make effective use of existing and future U.S. satellite data by the GOZ. The satellite data can provide significantly more accurate and timely resource information than is presently available for planning and development purposes. The project intends to institutionalize the use of satellite data by GOZ technical departments in conducting surveys and inventories and in making environmental assessments.

The quality, quantity, and timeliness of information obtained by the technical departments has not been satisfactory. Encouraged by a World Bank team of planning advisors, the Department du Plan and the Bureau du President have explored for several years the use of satellite data as a source of data which could contribute significantly to the improvement of resource information provided by the GOZ technical departments. In particular, high priority has been given by the Bureau of the President to the creation of the ERTS-Zaire program as a means to participate in the U.S. LANDSAT program.

Satellite data has been shown to provide accurate, up-to-date information concerning the location, extent, and nature of certain forestry, agricultural, hydrological, and geological resources. In addition, the satellite data can be used for monitoring natural or man-induced environmental changes, such as water quality, soil conservation, or surface mining.

A recent study by the National Academy of Sciences (BOSTID Report, 1977) has strongly endorsed the transfer of the use of satellite technology to developing countries. The report cites numerous specific applications in agricultural production, rangeland management, forest management, water resources management, geologic survey and mineral exploration, cartography, land use and regional planning, demography, environment protection, marine resources, oceanography, coastal engineering, and disaster assessment. For example under forest management the report concludes that LANDSAT data is:

"Effective in improving sampling procedures for estimating timber volume, in monitoring of forest cutting of clear-cut type, and in mapping certain types of forest fire burns. Useful to developing countries for monitoring depletion of forests..."

For cartography the report concludes:

"With more than half of developing world not yet mapped at scales larger than 1:1,000,000 (LANDSAT) provides data to map uncharted areas quickly and cheaply, update existing maps with acceptable accuracy, and indicate areas where higher resolution imagery from aircraft is required."

The report concludes that satellite imagery can make a substantial contribution to the information base of developing countries and provide certain specific types of information to up-date, complement, or supplement existing data. Zaire was identified as one of the countries which could benefit most from the currently demonstrated satellite data applications.

To date, satellite data has not been generally available to or used by concerned GOZ technical departments in preparing environmental analyses or obtaining resource information needed for sound development planning. At the technical department level, the GOZ lacks the facilities for organizing, reproducing, and distributing the data. Uncertainty concerning the utility of satellite data by GOZ personnel also hampers its use. Generally, GOZ departments will hesitate to modify established survey procedures until the utility of satellite data is clearly illustrated and its availability assured.

The GOZ technical departments are, however, generally aware that satellite data could assist in making specific decisions concerning implementation of economic and social development programs. They are less aware that, although some decisions may be reliably based on the satellite information alone, in most instances the satellite data should be carefully interpreted and combined with ancillary data to provide a comprehensive data base.

GOZ technical departments are aware of the inadequacy of information available to them for making development decisions. Individually, they have expressed a definite requirement and an interest in learning to use satellite data at both the Ministry level (Agriculture, Environment, Mines, Energy, and Public Works) and in specialized departments (Geographic, Meteorology, and Research Institutes). Specific important applications of satellite data, as seen by potential GOZ users, include such activities as planning and monitoring forest exploitation, siting hydroelectric dams, monitoring rangeland conditions, interpreting geological structures for mineral exploration, assessment of water resources, and planning statistical crop surveys.

In addition to ERTS-Zaire, Canadian foresters providing technical assistance to the GOZ have made extensive use of LANDSAT imagery of the Haut-Zaire region.

No AID-supported satellite-user assistance facilities have as yet been established in developing countries, but proposals for regional assistance centers in East and West Africa and in Southeast Asia are proceeding. The Nairobi regional center will be in operation shortly and the center for West Africa in Oagodougou is in the advanced planning stage. It is anticipated that the experience gained in establishing a national facility in Zaire will be applicable to these programs and AID's further programs to promote the use of space technology.

This project consists of establishing a User Assistance Center within ERTS-Zaire and assisting in its operation for a period of three years. Project inputs will include providing: (i) a full-time U.S. remote sensing application coordinator for a period of two years; (ii) short-term U.S. application specialists (15 w/m) to assist in specific projects; (iii) sending 3 ERTS-Zaire staff members for short-term overseas training (to compliment the 10 to be sent by the UNDP); (iv) providing equipment, materials, and training for three major demonstration projects concerned with agriculture, land use changes, and resettlement-and rural development projects; and (v) provide in-country training, imagery, and access to interpretation facilities for all interested GOZ technical departments.

ERTS-Zaire will organize training and projects to help disseminate the use of satellite data to various technical departments. ERTS-Zaire will provide assistance and materials to those departments that wish to use LANDSAT data for resource inventory and environmental monitoring purposes. In particular, ERTS-Zaire is expected to work closely with the Institute Geographic du Zaire (IGZ) in providing assistance to the Ministries of Agriculture, Environment, Mines, Transport, and Energy and to such agencies as the Department du Plan, Institutes du Hydrologie and Meteorology and Action Kusaïdia (a GOZ rural development agency).

If the training and demonstration projects are successful, the several technical departments will be convinced of the utility of satellite data and be in a position to make use of the data in providing better information upon which to base resource development decisions. ERTS-Zaire, and to a lesser extent IGZ, will be in a position to respond to user requests for data, interpretation facilities and further training. The GOZ will continue to support

ERTS-Zaire as a low-cost approach to obtaining crucial resource and environmental data. It is assumed that the widespread availability of such information will result in better and more timely management decisions on the part of the GOZ, which, in turn, will be beneficial to the well-being of a majority of the population.

The end of project status will consist of a well-trained ERTS-Zaire staff conducting projects and training in direct response to continuing requests for assistance and data from other GOZ technical departments. In addition, various departments will have nuclei of personnel familiar with satellite data applications and who can continue to explore uses of the data and make use of the data interpretation facilities at ERTS-Zaire. The specific results of three major demonstration projects and a dozen short-term user-requested tasks will contribute to better decisions being made in regard to resource development by the various departments.

Specifically, the following conditions will exist at the end of this three year project:

1. Seventy-two technical department personnel will have received local training in the uses of satellite data.
2. Thirteen GOZ specialists will have received short or long-term overseas training in remote sensing applications under UNDP (10) and AID (3) funding.
3. The Ministry of Environment will have completed a detailed survey of the extent and rate of exploitation of the forest resources of northern Shaba.
4. The Ministry of Agriculture, in cooperation with USDA, will have obtained quantitative information concerning major vegetative cover classes, including all active agricultural land, in the Region of Shaba.
5. Action Kusaidia (AKU) will have used up-to-date aerial and orbital imagery in planning three major agricultural, engineering, and resettlement projects.
6. The Ministries of Mines, Energy, and Public Works,

and the Department of Plan will have used satellite data for a number of short-term tasks concerned with resource planning or development.

7. The Geographic Institute of Zaire (IGZ) will have a photographic reproduction facility producing and distributing satellite pictures upon request to all GOZ technical departments.

8. ERTS-Zaire will be staffed and equipped to train and assist technical departments in a wide variety of satellite data applications and to acquire and archive new satellite data.

9. The Bureau of the President will have the capability to do digital image processing of satellite data for selected applications.

D. Summary Findings

The feasibility of this project lies in the capability of ERTS-Zaire to overcome both internal and departmental resistances to cooperation at the technical level between Ministries and institutions. Traditions of departmental isolation at all but the very highest administrative levels make interdepartmental service activities such as this difficult to initiate and subject to considerable suspicion. Only through combinations of responsive technical assistance and high level administrative support are these resistances likely to be overcome. Vigorous efforts by the ERTS-Zaire staff to convince various user agencies to state an interest in utilizing their services suggests a reasonable probability of success. However, it is clear that a data applications specialist from the U.S. will be required to maintain the initiative and service-oriented attitude of ERTS-Zaire.

Current preparations lend considerable creditability to the high level of GOZ interest and support for a ERTS-Zaire User Assistance Center. These preparations include:

1. Moving from the main offices of the Department du President to a centrally located building exclusively devoted to ERTS-Zaire activities. This building, currently being renovated, will provide additional space for data interpretation and equipment facilities, a small photo lab, and office space for an enlarged

ERTS-Zaire staff. The building will provide more than twice the floor space currently available to ERTS-Zaire. Building renovations are likely to be completed by late July 1977.

2. Ten UNDP overseas training scholarships, originally interded to develop technical personnel to manage and operate a Zaire satellite reception station, have been designated for the exclusive support of personnel associated with the AID-sponsored ERTS-Zaire User Assistance Center. These scholarships are expected to initiate overseas training prior to, but in anticipation of, the start of this project. Three additional AID-funded scholarships will be provided during the course of this project.

3. The Director of ERTS-Zaire has officially appointed Mr. Mbaki Mbungu, a European-trained engineer, to act as manager of the User Assistance Center. Mr. Mbungu recently toured remote sensing facilities in Sioux Falls, Brookings, Ann Arbor, Bay St. Louis, Washington, D.C., and Ottawa and developed a good appreciation for the concept of a "User Assistance Center" which is designed to serve the data needs of other organizations.

4. ERTS-Zaire has added to its active staff a qualified local soil scientist and an ITC-trained geologist. This brings to ten the number of qualified ERTS-Zaire personnel.

5. ERTS-Zaire has actively promoted the services to be offered by the User Assistance Center with the various Ministries and has obtained letter of agreement to cooperate with five technical departments and institutes.

6. As a result of a small AID/ERIM grant to ERTS-Zaire and the IGZ to develop the use of LANDSAT data for cartographic purposes, new LANDSAT imagery has been obtained and key repairs are being made to IGZ photo reproduction equipment. This grant activity will provide ERTS-Zaire with a basis for quickly initiating a wide range of user assistance activities that make use of the IGZ facilities.

7. The USAID Mission under the recently completed Planning and Management Services (050) project has independently supported computer processing of LANDSAT data for ten different areas of Zaire. The results of this task are sufficiently promising

to promote the processing of additional frames by USDA in support of the AID-sponsored Agricultural Statistics Project (052) in the Shaba region. ERTS-Zaire has agreed to contribute to that processing effort.

The project meets all applicable statutory criteria.

E. Project Issues

1. What assurance is there that ERTS-Zaire and collaborating technical departments and agencies have made firm commitments and understandings regarding resource surveys prior to initiating the project?

Much effort has gone into the development of demonstration projects of concern to the technical departments in cooperation with the ERTS-Zaire staff. Ministry personnel at both the technical and administrative levels have been contacted by ERTS-Zaire, and commitments for personnel and field support have been received. In most cases the extent of department commitment is flexible. The success of the demonstration projects and short-term tasks (largely in the hands of ERTS-Zaire) is likely to determine the extent of future collaboration and undertakings.

2. What assurance is there that local funds will be available in adequate quantities on a timely basis for implementing the program?

High priority and continuing GOZ support has been accorded to ERTS-Zaire in the past and is expected in the future. The Department du Plan has already approved Z 125,000 in principle for the project and allocation of required additional counterpart funds (total Z 370,000) will be a precondition to disbursement of USAID funds for this project.

3. To what extent will waivers be required for project procurements?

In the past the IGZ has utilized photo-chemicals obtained from Europe for reproducing prints. This represents a somewhat different chemistry and procedure than is required for U.S.

originated photo-chemical products. Also rigorous packaging requirements for shipping from the U.S. may cause delays in sending certain chemicals not associated with European orders. It is recommended that a waiver be provided for IGZ to obtain photo-chemicals from 899 sources.

4. While only limited program support is given to IGZ, they play a key role in the project. What assurance is there that IGZ will cooperate?

There is significant reason for concern (and perhaps hope?) that eventually IGZ and ERTS-Zaire may become competitors for reproducing and distributing LANDSAT data, but currently IGZ lacks the supplies and materials to use its reproduction facilities and therefore must depend on this ERTS-Zaire program. A key component of the IGZ photo-reproduction facilities is being repaired under a USAID/ERIM grant to ERTS-Zaire and IGZ staff will receive overseas UNDP-sponsored training as part of this program. It is clear that IGZ staff are anxious to participate in this program and will seek to play a larger, rather than smaller role.

5. Given the Director of ERTS-Zaire's many outside duties, how will the continuity of the project's day-to-day technical management be assured?

A precondition for initiation of this project is delegation of certain technical responsibility to an ERTS-Zaire project manager to work with the U.S. counterpart. Cit. Mbaki Mbungu has been given that responsibility, but he may be leaving ERTS-Zaire shortly. A new ERTS-Zaire project manager will need to be appointed if Cit. Mbungu leaves, and in fact, an ITC trained ERTS-Zaire geologist has been identified as a replacement for Cit. Mbungu.

Part II: Project Background and Detailed Description

A. Background

1. Owing to the size and turbulent history of Zaire, up-to-date resource and environmental information upon which to base national development plans is very limited. Most existing maps and aerial photography are more than 20 years old and much of the resource information obtained prior to 1960 is not readily available. Topographic or small-scale planimetric maps do not exist for one-third of the country. Larger-scale detailed maps do not exist for even larger areas. No new aerial photography has been collected by the GOZ for more than two years, and some 15 percent of the country has never been photographed.

Since July 1972, the experimental earth resources satellites called LANDSAT have been collecting data concerning the resources of Zaire. Most of the country, with the exception of the Bas-Zaire, has been imaged at least once and several areas, two or three times under low cloud cover conditions. Satellite data has been collected through October 1976, and additional LANDSAT data is expected to be available with the launch of LANDSAT 3 in early 1978. The anticipated continuation of the U.S. space program through the 70's and 80's will insure continuing long-term collection opportunities. These data are made available world-wide at nominal costs through the distribution facilities of the USGS ERC Data Center in Sioux Falls, South Dakota.

The ERTS-Zaire program was established within the Bureau of the President in 1972. This project was designed to take advantage of the availability of the satellite data collected over Zaire for resource inventory purposes. ERTS-Zaire has been successfully operating for the last five years, but most of their activities have been in-house research efforts. While the data is clearly useful for a wide variety of purposes, lack of reproduction and training facilities have greatly restricted the practical application of these data--the raison d'être of satellite technology.

In 1973 NASA approved a Zaire experiment for exploring the uses of earth resources satellite data. This NASA-approved project assured that LANDSAT would record appropriate data over Zaire and that the data would subsequently be available to Dr. Sendwe

K. Ilunga, the GOZ LANDSAT principle investigator. During this period, ERTS-Zaire contracted for extensive technical support and data from a private U.S. contractor, the EARTHSAT Corporation.

Although limited in scope, ERTS-Zaire has initiated wider dissemination of knowledge about LANDSAT data. In 1974 a seminar on the utilization of LANDSAT data was held in ERTS-Zaire, with representatives of 19 GOZ departments attending. In 1975 and 1976 the EPTS-Zaire staff made radio and television presentations to brief the public on the potential uses of satellite data. Unfortunately, most of these efforts were hampered by lack of hard-copy imagery and a mechanism for training interested users in how to apply the data to specific needs.

As previously noted, a small AID-sponsored grant project is helping ERTS-Zaire, in cooperation with the Institute Geographic du Zaire (IGZ), to develop the use of LANDSAT imagery for cartographic (map) substitutes. This work has been proceeding slowly because of the need for a German technician to repair an IGZ photographic reproduction system.

In 1975 a World Bank team of advisors and in 1976 an ECA remote sensing team visited Zaire, and both endorsed the expansion of the role of remote sensing for development. In particular, at the March 1977 ECA Prime Minister's conference, Kinshasa was recommended as the site for both a regional training and assistance center and a LANDSAT data reception station.

In early 1977 the World Bank, with AID funding, completed automatic computer processing of ten frames of LANDSAT data of Zaire. The results of this effort, while still under evaluation, appear sufficiently promising to convince USDA to process additional data under NASA funding in conjunction with a resource survey to be made under this project.

The proposed project differs from ERTS-Zaire's letter of application (see Annex G), dated December 17, 1975, in two respects. The letter appropriately lists agriculture as first priority for the application of satellite imagery, geology and mineral exploration are listed second in importance, followed by hydrology and cartography. The proposed project, however, maintains major emphasis on agriculture and forestry, the use of

satellite data for basic cartographic needs, such as transportation planning, design of sampling schemes, land use inventory, etc., is considered to be of greater value than geology and hydrology applications per se. Satellite maps of areas not adequately surveyed in the past represent primary planning information for all application areas and is therefore given major emphasis in this document, with the concurrence of ERTS-Zaire.

The second difference relates to the desire by ERTS-Zaire to eventually develop the User Assistance Facility (UAF) from one of national scope to one of regional scope. This desire, expressed in the letter of application, presupposes the development of a satellite reception and data processing station in or near Kinshasa. Due to the current Zaire economic austerity measures the reception station is not likely to occur within the time frame of this project. Therefore, the UAF's are designed to service Zaire national needs only. While future activities of the GOZ may allow for expansion of the facilities discussed herein, these facilities are not intended to serve users outside of Zaire. Nor is the establishment of a national user center within ERTS-Zaire intended to either encourage or discourage future GOZ plans for an African regional center, per ECA recommendations.

ERTS-Zaire currently has the basic capital equipment necessary to launch into a user-directed program with a minimum of new investment. During the past year, ERTS-Zaire has also made solid steps towards developing links with other GOZ technical departments to make satellite data available. ERTS-Zaire is collaborating with the IGZ and the Scientific Research Institute (IRS) on general utilization of the data. They have also provided the Departments of Mines, Energy, Environment and the Department of Plan with minor assistance in satellite applications.

B. Detailed Description

1. Design Framework

a. The sector goal of this project is improvement of the GOZ capability to design and implement resource development programs. This goal will assist the poor majority by helping to promote appropriate development of rural areas and protect the

environment from over-exploitation.

b. The purpose of this project is to institutionalize applications of earth resources satellite data within GOZ technical departments to enhance the production of accurate and widely available information for resource planning and development.

c. The detailed planned outputs of this project are:

(i) an ERTS-Zaire satellite data user assistance facility staffed and equipped to provide training and assistance to GOZ technical departments;

(ii) seventy-two GOZ technical personnel trained in-country to apply LANDSAT data to a variety of fields;

(iii) thirteen specialists trained overseas in the applications of satellite data;

(iv) IGZ and ERTS-Zaire equipped to reproduce and distribute large numbers of satellite images to user departments;

(v) the Ministry of Environment completed a detailed survey of the forest resources of northern Shaba;

(vi) the Ministry of Agriculture obtain quantitative information concerning major vegetative cover classes useful to refining their statistical area frame sample;

(vii) information to assist Action Kusaidia plan three important agricultural, engineering, and resettlement projects on the basis of up-to-date remote sensing imagery;

(viii) Ministries of Mines, Energy, and Public Works used satellite for a number of short-term user tasks, which are in the process of being identified (see Technical Analysis for discussion); and

(ix) the computer facility in the Bureau of the President programmed to perform routine digital image processing of satellite data.

d. The planned inputs of the project are:

(i) USAID

(a) \$115,000 in commodities, such as satellite data, interpretation equipment, ground truth equipment, photo lab equipment and supplies, a vehicle, and for collection of supporting aerial photography;

(b) \$270,000 of Technical Assistance in the form of a full-time Application's Manager (24 pm) and short-term specialists (15 pm); and

(c) \$30,000 for Overseas Training of ERTS-Zaire and other technical personnel as a complement to the UNDP training.

(ii) GOZ

(a) \$200,000 for salaries and wages of all GOZ personnel involved in training and projects;

(b) \$320,000 in counterpart funds for per diem and supplies and materials used in field operations; and

(c) \$50,000 in counterpart funds for housing and local support costs of USAID technical assistance.

(iii) UNDP

\$58,000 for five to ten scholarships for overseas training.

2. Design Framework Linkages

a. Inputs-Outputs

(i) Additional satellite data, interpretation equipment, and image reproduction facilities will provide ERTS-Zaire with the technical capacity to train other department personnel and provide technical assistance.

(ii) Acquisition of field equipment, aerial photography, a vehicle, and per diem allowances will allow essential ground truth collection and evaluation of application projects.

(iii) In-country training will provide an expanding number of GOZ technical personnel familiar with the uses of satellite imagery.

(iv) Overseas training will provide in-depth familiarity with the nature of existing and future satellite data and its applications in other countries.

(v) Equipment, photo supplies and materials for IGZ will provide a capability to annotate, reproduce and distribute satellite images in-country.

(vi) U.S. technical assistance will assure orderly and appropriate user training and demonstration projects and develop local data management capabilities in ERTS-Zaire.

b. Outputs-Purpose

(i) The ERTS-Zaire training and technical assistance capability gives their technical personnel the skills and equipment necessary to extract useful information from satellite data.

(ii) Overseas training provides advanced skills and transfer of appropriate data applications to Zaire.

(iii) An enhanced IGZ photographic reproduction capability will assure widespread availability of satellite images from which to obtain information.

(iv) Appropriate training, demonstration projects, and data management capabilities will develop a continuing user demand for data products and technical services.

c. Purpose-Goal

More accurate and timely resource information will result in better planning and implementation of development programs

and help to protect the environment from ill-advised exploitation. These results will help the rural poor who have the closest dependency on the resources of the land.

Part III. Project Analyses

A. Technical Analysis

Remote sensing is basically an information gathering technology. The products of remote sensing, whether acquired from space or aircraft, are useful primarily within the context of a natural resource development or environmental monitoring system. They provide an objective basis for making rapid and accurate assessments of certain natural resources, such as the extent of forests, the condition of grazing or croplands, the occurrence of surface waters and the extent of outcropping of geological structures. Because satellite remote sensing data has been collected for most regions of the earth for the last five years, it provides an ability to determine what changes, if any, have occurred during this period. Thus the applications of satellite remote sensing data should be highly significant for a country as large, diverse, and rich in natural resources as Zaire. The relative paucity of recent detailed maps further enhances the potential value of satellite data. However, no benefits can accrue if the products and knowledge of the applications of these products are not made known to potential users of the data. Relatively small funding requirements are involved in providing this basic data to users.

It is the technical objective of this project to build a multi-component mechanism to foster the use of satellite data by appropriate users. This mechanism is the ERTS-Zaire user assistance and training facility. This center is comprised of three functional components: 1) data products (acquisition, enhancement, and distribution); 2) training (in-country and overseas); and 3) technical assistance (projects and facilities). A fourth component concerned with volume image reproduction resides with IGZ. Each of the components are intended to complement the others in promoting the applications of satellite data. Each are described in detail below.

1. Data Products

Availability of data is prerequisite to applications of remote sensing. Without ready access to remote sensing imagery no training or technical assistance functions can take place. At

present the GOZ does not have a capability to order, reproduce, archive, and distribute existing satellite imagery of Zaire, in spite of its availability in the public domain at very nominal costs. All GOZ imagery in Zaire originated with NASA and was either provided by NASA or the USGS EROS Data Center or was ordered and reproduced by U.S. commercial firms. Current costs for either a negative or print from the EROS Data Center is \$10. If one were interested in a large number or flexibility in producing image products and had access to photo-duplication facilities, a single negative with which to make prints would be a more economical and timely investment than ordering final image products each time. Lack of photo-duplication facilities has largely restricted extensive distribution of imagery in Zaire. The need for in-country photo-duplication facilities is so important that this project will support two -- a small facility in ERTS-Zaire and a major facility in IGZ. Both will be required for full development of the user assistance center, but one can, if necessary, back-up the other on a reduced scale of operations.

The IGZ Klimsch photo-enlarger is presently being repaired under an ERIM/AID grant and is expected to be available to make large numbers of 1:500,000 and 1:200,000 scale black and white images. Photo supplies and chemicals, in short supply in Zaire, will be purchased under this project to support the required satellite image reproduction by IGZ. Reproduction will also include cartographically annotated images and controlled mosaics need for demonstration projects (described elsewhere).

Adequate space has been allocated for a photolab in the new ERTS-Zaire building. USAID will provide equipment and materials required to establish a small volume black and white reproduction capability. Also, training of a single photo-technician to operate the laboratory will be undertaken, if required. An enlarger, dryer, and contact printer are the major items of equipment.

Also, as part of the Data Products function, ERTS-Zaire will order, catalogue, and store satellite transparencies and prints. Approximately 110 individual LANDSAT frames are required to cover all of Zaire -- each frame shows a 179 by 184 km area and has four different images. It is estimated that more than 250 different images of less than 30% cloud cover currently

exist for Zaire. A single 70 mm negative of each will be acquired and archived by ERTS-Zaire. In addition, selected 7.3" images of good quality will also be acquired for use with demonstration projects.

For the first year, only black and white images will be reproduced, although advances in color processing will probably make color reproduction feasible in Zaire before the end of the project. Consequently some false color transparencies and prints of selected areas will be ordered from the EROS Data Center.

2. In-country Training

For technical personnel requiring only generalized terrain information or for those used to working with aerial photography, no special training with satellite data may be required. However, because the data are products of a sophisticated technology, some introduction and training in the uses of satellite data can be beneficial. Satellite data is a tool to be used and it is not necessary to understand all the details of instrument design and operation to make good use of the data. Training will help users in identifying certain characteristics and features of the data which allows certain types of information to be extracted more readily than others. This project will provide short-term (2 week) in-country training for personnel of interested GOZ departments.

In-country training will be organized and conducted primarily by the ERTS-Zaire staff (with short-term U.S. assistance). The training will be directed at building user confidence in the application of satellite data to their respective data requirements, and include time for "hands on" experiences. It is envisaged that approximately six officers representing ministries with similar interests will attend training sessions in the nature and uses of LANDSAT data for periods of up to two weeks. Approximately 12 different training sessions could be conducted during the first two years of the proposed project -- resulting in the introduction of satellite-data applications to 72 technical department personnel. Training sessions may include geological applications (Ministries of Mines and Energy), environmental assessments (Ministries of Environment and Public Works), geography and mapping (Institute of Geography and Service du Plan), agriculture and forestry

(Ministries of Agriculture and Environment), and hydrology (Institutes of Hydrology and Research).

ERTS-Zaire has, within the last two years, conducted seminars concerning satellite data at the University of Zaire and over the local television and radio stations. With the addition of some teaching facilities and two additional staff technicians (in agriculture/forestry and hydrology), ERTS-Zaire will be capable of providing appropriate training to a wide variety of potential satellite-data users.

3. Technical Assistance

In addition to data and training, other forms of activities are planned to help technical departments make use of satellite data. In particular, 3 demonstration surveys utilizing satellite data have been designed by the Departments of Agriculture and Environment, Action Kusaïdia, and the Department of Public Works. These surveys will be implemented in cooperation with ERTS-Zaire personnel and are intended as demonstrations of the utility of remote sensing data for making various users aware of the availability and applicability of LANDSAT imagery. The surveys, discussed below, represent contributions to ongoing programs and are not stand-alone projects:

a. Action Kusaïdia (AKU) Project

AKU of the Bureau of the President has requested the assistance of ERTS-Zaire in using remote sensing techniques to help plan rural development projects in the Kivu Region (Eastern Zaire) directed at the education, public health, and agriculture sectors. These projects include:

(i) Cultivating five selected sites of 100 hectares each to develop and demonstrate new or improved agriculture crops and techniques. Four of the sites are located in or near Fizi, Baraka, Runingo, and Lubanka; the first site is yet to be selected.

(ii) Developing flood control and watershed protection measures for the town of Uvira. This town is built on the floodplain of a natural basin near Lake Tanganyka. Because of

its geographical location, the town is exposed to serious periodic flooding and land erosion.

(iii) Resettling refugees of the recent volcanic eruption in the North Kivu sub-region. AKU is looking for three suitable sites for relocating 11,000 homeless people.

AKU has requested ERTS-Zaire's technical assistance in these tasks plus generalized cartographic and landuse information. In particular, maps at a scale of 1:20,000 and soil, vegetation, relief, and hydrographic information are requested. Specific studies of erosion hazards around Uvira and surface drainage patterns adjacent to major roads are also requested.

The IGZ has agreed to cooperate with ERTS-Zaire in preparing base image-maps and in helping in field surveying efforts. New aerial photography of the selected sites also needs to be collected for the detailed work involving topographic aspects. Since stereoscopic observation is not available from LANDSAT images, the aerial photography will provide an optimal basis for selecting housing location and determining natural drainage and erosion problems.

The LANDSAT images will be used to provide information concerning suitable town sites in relation to availability of surface water and landscape position. Also general road right-of-way planning and major bridge requirements can be determined from the satellite pictures.

In addition to being involved with the required field observations and providing logistical support, AKU personnel will receive training in the interpretation of the LANDSAT imagery by ERTS-Zaire. AKU is an integrated, multi-disciplinary rural development pilot program which, if shown to be effective, will be copied in other areas of Zaire.

b. North Shaba Environmental Monitoring Project

A 300,000 km² area in North Shaba has been identified by the Department of Environment as a priority area for surveillance due to some serious environmental problems. This area of extensive and rich forest cover is being over-exploited by

local inhabitants for preparation of charcoal and cutting of firewood and timber. The vegetation consists of dwindling dense forests (Muhulu), open forests (Miombo), and riverine forests and expanding areas of scrub and savanna. Among the major effects of over-exploitation are degradation of the dense forest reserves, loss of watershed protection (with concomitant desertification of large areas), and initiation of serious soil erosion and stream sedimentation. As the dense forest is removed, it is replaced by savanna vegetation and brush which may be developed for limited grazing.

The Department of Environment has requested ERTS-Zaire to help monitor these changes through the use of sequential satellite imagery. Specifically, it has requested information be developed concerning (i) the rate at which the various forests are being exploited, (ii) the type of vegetation that follows forest cutting, and (iii) the extent to which serious watershed and soil losses are taking place.

In discussions with the Department of Environment, it was concluded that controlled satellite image mosaics of the entire area should be prepared in cooperation with IGZ. These mosaics will serve as base maps for identifying broad patterns of vegetation distribution and serve as a basis for noting further changes from imagery collected on subsequent dates. This interpretation of major ecosystems will be supported by selected field and aerial observations. In addition to providing vital information concerning the extent of existing forests, the interpretation will identify potential grazing areas on the basis of grassland distribution and seasonal availability of surface water supplies.

In addition to the controlled mosaics and aerial and field support, this project will include training of Department of Environment personnel in the use of LANDSAT data for environmental monitoring purposes. This training will include intensive short-term training in the U.S. (EROS Data Center) for one individual and in-country training for several additional technical personnel.

The vegetation information and base mosaics (LANDSAT Bands 5 and 7) will also contribute to the Ministry of

Agriculture's project to utilize satellite data in its statistical crop sampling design (in cooperation with AID and USDA). Its anticipated that as other ministries gain experience with the use of these images, additional requests for imagery and mosaics of other areas will be received by ERTS-Zaire and the IGZ.

c. Vegetation Cover Mapping for the Shaba Region

Related to the Department of Environment Project described above, this project is to be undertaken in cooperation with the Department of Agriculture in support of the USAID-funded program (Project 052) to improve the quantity and quality of rural agricultural data in Zaire. Sampling and samples have been developed for all regions of Zaire for the purpose of acquiring accurate agricultural and rural statistics. If the use of LANDSAT data proves beneficial in Shaba, it will undoubtedly be employed for other regions as well.

Currently insufficient knowledge about land-use and cropping patterns results in a less efficient frame and sample design. The classification of LANDSAT data, using USDA data processing capabilities, may substantially increase knowledge on agricultural densities within frame units thereby permitting refinement of frame and sample design. Such refinement could improve the precision of estimates by 3 or 4 percent without increasing the number of sample units selected, thereby making the entire system more efficient.

The scope of the project will include the following:

(i) Develop "spectral signatures" for specific landuse or vegetation cover types using USDA computer facilities, and ERTS-Zaire ground truth information;

(ii) Edit and classify LANDSAT data for the entire Shaba Region (portions of approximately 25 frames) and obtain statistics for each class; and

(iii) Identify and interpret the nature and consistency of the classification results and use these results for area frame and sample refinement.

The project will be a collaborative undertaking involving personnel and facilities of ERTS-Zaire, the Department of Agriculture, USAID/Kinshasa, and the USDA/SRS.

This study will be implemented as follows:

(i) Establish 10 to 12 types of land cover types on the basis of diversity of sites, actually observed on the ground;

(ii) Recognize on LANDSAT imagery, areas with different spectral signatures and conduct a field reconnaissance of these areas using aerial photos;

(iii) Select within each class representative training sites (an average of 5 to 6 for each);

(iv) Conduct detailed study of classified LANDSAT images in comparison with aerial photography; and

(v) Conduct ground study to (1) determine location of reference points and (2) to describe patterns of soil vegetation, geology, and relief.

For the completion of the project there will be the need for satellite imagerys 1:1,000,000 with enlargements (1:200,000) of selected areas.

The expected outputs are:

(i) An interpretation key for satellite imagery of Shaba;

(ii) A controlled and annotated image mosaic; and

(iii) A vegetation cover classification map and aerial statistics for the same area.

d. End-User Task Surveys

Discussion with a number of technical departments in addition to the Departments of Environment and Agriculture, and AKU have indicated specific needs for information acquired from

satellite data. While not developed as formal projects, ERTS-Zaire will respond to these and other tasks wherever possible. Several examples include:

(i) The Department of Plan requested that satellite data be used to help identify possible sites for construction of hydroelectric facilities on the Zaire River and its tributaries;

(ii) The Department of Mines has expressed a need for satellite data to be used in its petroleum exploration program;

(iii) The Department of Public Works has requested information similar to that to be obtained for AKU, e.g., information concerning terrain and drainage condition that effect road construction and population resettlement;

(iv) The Institute of Meteorology, is interested in weather (cloud) patterns which may be seen from satellite imagery. However, owing to the delays in receipt of the data, these pictures have historical value only; and

(v) The Department of Environment is also concerned with the nature and extent of water pollution and would like to test satellite data for supplying information on water turbidity or chlorophyll content.

Numerous other short-term tasks are expected to emerge during the course of this project and will be addressed accordingly.

B. Financial Analysis and Plan

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SUMMARY COST ESTIMATE AND FINANCIAL PLAN
 (US \$000)

SOURCE <u>USE</u>	AID		GOZ		UNDP		TOTAL		
	FX	LC	FX	LC	FX	LC	FX	LC	FX/LC
<u>1. ERTS-Zaire Functions as Applications Facility</u>	240	(270)		100	58	15	240	100	340
a. <u>Technical Assistance</u> -long-term (24 mm)	160	(180)	(50)	40*			160	40	200
b. <u>Training</u> -short-term (40 pm)					58		58		58
c. <u>Commodities</u> -vehicle	80	(90)					80		80
-supplies, office equipment, etc.	10								
-technical equipment, imagery, etc.	35								
d. <u>Local Salaries</u> - 30 pm				30				30	30
e. <u>Facilities, Equipment, Supplies</u>				30				30	30
<u>2. Satellite data-based Resource Surveys</u>	145	(165)		300			145	300	445
a. <u>Technical Assistance</u> -short-term (15 mm)	100	(110)					100		100
b. <u>Training</u> -short-term (15 pm)	25	(30)	(5)	5*			25	5	30
c. <u>Commodities</u> -supplies and technical equipment	20	(25)					20		20
d. <u>Local Salaries</u> -30 pm				30				30	30
e. <u>Resource Surveys</u> -in-country travel, per diem, POL, air photo, etc.			(315)	225				225	225
f. <u>Facilities, Equipment, Supplies</u>				40				40	40
SUBTOTAL	385	--	--	400	58	--	443	400	843
<u>Inflation Factor: (FX-6%; LC-20%)</u>	25			85	--	--	25	85	140
<u>Contingency Factor: (FX-6%; LC-20%)</u>	25			85	--	--	25	85	140
TOTAL	435			570	58		493	570	1063

() : includes inflation and contingency factors

COSTING OF PROJECT OUTPUTS/INPUTS
(US \$000)

Project Number: 660-0071

Title: ERTS-Zaire

PROJECT INPUTS	PROJECT OUTPUTS*			
	#1	#2	#3	TOTAL
<u>AID APPROPRIATED</u>				<u>435</u>
1. <u>ERTS-Zaire Functions as Applications Facility</u>	150	30	--	180
2. <u>Satellite data-based Resource Surveys</u>	90	--	165	255
<u>GOZ</u>				<u>570</u>
1. <u>ERTS-Zaire functions as Applications Facility</u>	150	120	--	270
2. <u>Satellite data-based Resource Surveys</u>	--	--	300	300
<u>UNDP</u>				<u>58</u>
1. <u>ERTS-Zaire Functions as Applications Facility</u>	50	--	--	50
2. <u>Satellite data-based Resource Surveys</u>	--	--	8	8
TOTAL	440	150	473	1063

*Project Inputs:

1. ERTS-Zaire providing LANDSAT data, expertise and training to GOZ technical departments;
2. working linkages established between ERTS-Zaire and pertinent GOZ technical departments re satellite data applications; and,
3. GOZ planning units using satellite data in planning, implementing and evaluating development programs.

C. Social Analysis

The transfer of appropriate remote sensing technology to user departments is expected to have little social impact. The technology does not replace the need for traditional survey personnel; such as geologists, foresters, and cartographers, but merely provides them with a new tool to aid in their activities, and no significant professional job creation or replacement is anticipated. None of the demonstration projects will have a direct negative social impact on either the participants or the population. Better resource information should eventually spur sound development activities which will create more employment opportunities and the provision of better social services.

For example, the indirect beneficiaries of the AKU project will include 11,000 people scheduled for relocation as a result of a recent volcanic eruption and the reduction of episodic flooding of the town of Uvira. Tangible and intangible benefits are expected to accrue to inhabitants of these areas as a result of better terrain information available from the remote sensor data.

Likewise, the environmental monitoring project concerned with forest areas in Shaba will identify areas of over-exploitation and provide data for planning regulatory measures. While the use of satellite information will not have a direct social impact, the enforcement of forest-cutting regulations could adversely affect local fuel and wood-products industries. The local population, however, would benefit through programs which reduce soil erosion, stream sedimentation, and animal habitat destruction, as environmental protection, while deferring immediate tangible benefits, favors continuing long-term benefits for existing and future generations.

D. Economic Analysis

Since this project is concerned with non-revenue producing services, the economic analysis approach is in terms of the "cost effectiveness" of the project. The direct outputs of the project are summarized, the probable cost of reproducing these outputs through alternative procedures is estimated, and the value of the outputs themselves also estimated.

1. Summary of Outputs

The primary output of this project is generation of spatial and temporal information which, when combined with other types of information (economic, social, etc.) provide a basis for formulating and implementing sound development plans. The project intends to provide fundamental physical resource information which represents a starting point for most revenue-producing or quality-of-life improving development activities. Part of obtaining resource information is the generation of certain data products such as satellite images, aerial photographs, mosaics, annotated image overlays, and computer-extracted statistics which can serve as map-substitutes or map-complements. Their benefit to the planning process can be significant. Types of information gathered includes:

a. Recent satellite images show major discrepancies in the mapped position of major features such as rivers, swamps, and roads. Examples show discrepancies of two kilometers or greater in some instances, and can have an effect on planning decisions;

b. In many cases, maps showing terrain and land use details simply do not exist. For high-cost development projects such as roads, harbors, or dams, it is essential to evaluate and compare different possible sites or locations. Aerial and orbital imagery provides an initial basis for making comparisons, although detailed ground studies are still required;

c. On a broader scale, generalized land cover of landuse information is available for planning certain types of regional or large area programs;

d. The up-grading of personnel capabilities through specialized training is an important output. This project will help technical personnel to recognize information needs of their department and to help solve them through the use of satellite data; and

e. There is a certain value to the existence of a UAF with its associated scientific activity. This facility allows rapid access to the continuing supply and advancement of products collected from U.S. space-platforms. This linkage to the U.S. and

international scientific community can result in continuing benefits for Zaire.

2. Probable cost of reproducing outputs

Aerial photograph collection and ground surveys are the only alternative ways of obtaining spatial and temporal physical resource information. Frequently they are used to compliment each other in producing planimetric or thematic maps. Both methods are extremely costly on a per mission or on a unit area basis. To reproduce the existing satellite data coverage of Zaire using high altitude aerial photography would cost several millions of dollars and involve extensive logistical support not currently available.

If traditional ground survey techniques were required, a team of 80 men (4 topographic crews of 15, and 2 astro-crews of 10) could probably complete a survey for Zaire in 50 years. The cost, however, in supplies, materials, and salaries would be many times greater than that required for aerial reconnaissance and photography.

Once the basic data from alternative methods is collected, the cost of assembling, cataloging, and storing the data is significant. The IGZ employs full-time about 500 people to extract information from existing aerial photography and to prepare maps. Even the size of this facility is inadequate for Zaire's current needs.

3. Economic Value of Outputs

The cost (direct and/or indirect) of reproducing and distributing satellite imagery is very low in comparison to the potential value of outputs.

The possibility of improving forest and savanna management in northern Shaba as a result satellite information is a direct output. For the AKU survey, direct value will accrue in savings in road and new town construction based on reducing environmental uncertainties. Also, values are associated with the prevention or reduction of flooding in Uvira. Increased efficiency of the agricultural area sampling frame for Shaba will increase the accuracy of crop estimates. The end-user task activities will also have direct values associated with better information.

Indirect value results from actions that take place that would not have been considered but for this project. For example, new sets of development activities may occur simply because of the availability of detailed images or image-products. Road construction may be undertaken on the basis of new landuse information. Structural geologic information may lead to exploitation of mineral deposits. Large scale or long range planning can be stimulated on the basis of the availability of objective data, and environmental hazards can be identified from sequential data.

Several studies have been undertaken to develop information about the economic, social, and environmental benefits of an operational earth-resources satellite system -- relating those benefits to the cost of the system. While none of the studies have been entirely adequate from an analytical point of view, primarily due to the lack of quantifiable benefit data, the studies have generally concluded that the net benefits considerably exceed the developmental and operational costs of such a system. For example, for the U.S.^{1/} only, a benefit-cost study by EARTHSAT Corporation for the USGS showed a quantifiable benefit-cost ratio of 0.6-1.9 for a two satellite system. An economic study by ERIM for AID demonstrated the considerable, but non-quantifiable, benefits accruing to developing countries as a result of the availability of earth-resource satellite data. This report documented the significant applications of LANDSAT data to geology, environment, agriculture, forestry, hydrology, and disaster assessment, and provided numerous examples.

^{1/} It is generally conceded that benefit-cost ratio's for the U.S. are much lower than for LDC's because the U.S. has alternative data gathering systems which are relatively effective in terms of LANDSAT data.

Part IV. Implementation Arrangements

A. Administrative Arrangements

1. Recipient

a. Administrative Unit. The project will be implemented by ERTS-Zaire, the specialized technical agency established in 1972 within the Bureau du President to take advantage of U.S. satellite data collected over Zaire for resource inventory purposes. This agency is headed by Dr. Sendwe K. Ilunga. Cit. Mbaki Mbungu, an electronic engineer recently trained in Italy, will be in charge of technical management. These two professionals are assisted by a staff of eight with different professional backgrounds (geology, pedology, cartography, economics). ERTS-Zaire, acting as the main coordinating agency, will have the task of assisting different GOZ technical departments to use remote sensing data as a tool for implementing their own projects. ERTS-Zaire will work in close cooperation with IGZ which will be responsible for preparation and reproduction of maps and image mosaics.

b. Management Capability. At the present time, ERTS-Zaire lacks the full technical capability to carry on its role as a user assistance and training center. Its staff needs further technical background in remote sensing to help other GOZ agencies interpret satellite data to solve specific problems in their own field. Also, additional equipment and materials are required. ERTS-Zaire's ability to work and communicate with other GOZ departments has been well proven: the individual programs submitted by different GOZ organizations (AKU, Agriculture and Environment) have been drafted in close cooperation with one or several members of the ERTS-Zaire staff.

ERTS-Zaire has previously contracted with a U.S. firm (EARTHSAT Corporation) for technical services and, with AID assistance, appears capable of contracting for similar services under this project.

IGZ has trained technicians to perform cartographic work, and qualified technicians to reproduce maps and images in the laboratory. Its personnel needs only minimal training in the handling of satellite data products. This institute appears quite

willing to cooperate with other agencies and, in the past, has contacted different departments to inquire about their needs for maps and cartographic materials.

2. AID

Due to lack of substantial progress by ERTS-Zaire in applying satellite data to resource problems after 4 years of operation, AID must provide a full-time remote sensing application expert for at least the first 18 months of the project. The presence of this expert is not expected to interfere with the role of Dr. Sendwe as the ERTS-Zaire principal administrator. It is expected that the expert will act as a catalyst to ensure consistent progress in the user center operations and help solve technical, motivational, and administrative problems that are likely to occur during early implementation.

It is anticipated that a U.S. contractor will be engaged under a host-country contract to provide the long-term Applications Manager and the required short-term Applications Specialist. A preferred contractor would be an educational or other non-profit institution engaged in applications of remote sensing technology on a user-assistance basis. Several possible institutions are the University of California (Berkeley), South Dakota State University, Purdue University, Texas A&M, Michigan State University, Pennsylvania State University, and ERIM.

The Applications Manager will work within ERTS-Zaire to develop and coordinate the capabilities and activities of the user assistance center and make arrangements for visits of short-term Applications' Specialist. Since his job requires continuous contact with various GOZ technical and administrative personnel, a good command of oral French is essential. The Applications Manager should have a graduate degree in an engineering or natural resource field and at least 3 years experience in applying LANDSAT data (primarily imagery) to resource problems -- one year as an instructor or administrator. Overseas experience, while not essential, would be helpful.

The Applications Specialist are scientists with recognized expertise in the application of remote sensing data to specific resource fields. For example, for a GOZ forestry demon-

stration project a forester skilled in the uses of satellite data for inventory and mapping may be required to provide assistance in project planning and training. It is anticipated that 5 specialists may be required for periods up to 3 months.

A potential constructive conflict between IGA and ERTS-Zaire appear most likely but at the moment is no problem.

The details of the commodities to be procured by AID are described in budgets and lists of required equipments (Annex B.1.). Justification for an 899 origin waiver will be required for approximately \$10,000 of photo-chemicals normally used by the IGZ with their equipment.

B. Implementation Plan

This implementation plan assumes Project Paper and funding approval prior to 30 September 1977.

September 1977: Required GOZ counterpart funds and ERTS-Zaire administrative agreements complete. Six ERTS-Zaire and three other technical department personnel sent for short-term (6 months) overseas training under UNDP funding. USAID contracts with appropriate U.S. institution to provide long-term Application Manager and short-term specialists. New ERTS-Zaire facilities complete.

November 1977: Supplies and equipment ordered by contracted U.S. institution and preliminary arrangements made for collection of aerial photography. Coordinate new data request with NASA-Goddard and order new data.

January 1978: U.S. Applications Manager arrives in Kinshasa. Most of UNDP trainees return to Kinshasa. Preparations for ground truth data collection in Shaba begins. Initiate plans for two-week in-country training workshops.

June 1978: Arrival of equipment and supplies. Training and projects ongoing. Photo-lab set-up in ERTS-Zaire. Arrangements for visits of short-term U.S. experts completed. Candidates for USAID-sponsored overseas training selected. End-user task projects initiated.

March 1979: Short-term training completed. Department of Agriculture demonstration project completed.

September 1979: Department of Environment and AKU projects completed.

December 1979: U.S. Applications Manager returns to U.S. Short-term technical experts continue to be available. Training and end-user task projects continue.

January 1980: Final evaluation and reports.

ERTS-Zaire will be responsible for the overall implementation of the proposed project. AID will indirectly assist ERTS-Zaire in carrying out this responsibility, particularly in the early stages of the project, by providing technical assistance, training and commodities to strengthen ERTS-Zaire in its ability to manipulate satellite data for practical applications. Once this capability is established within ERTS-Zaire, it will assume the leadership and responsibility for the development of collaborative linkages with other GOZ technical departments and implement the program of demonstration resource surveys.

As an integral part of the Bureau of the President, ERTS-Zaire has the organizational capacity to provide the leadership and resources necessary to implement an action program involving several GOZ Ministries. ERTS-Zaire has heretofore concerned itself only with the collection and manipulation of LANDSAT data and not with practical applications. Initial steps, however, have been taken by ERTS-Zaire to involve itself in the applications area. The response by collaborating technical departments is positive, but ERTS-Zaire currently lacks both the technical capability and financial resources to move strongly into the applications field. The PP Design Team believes that the additional resources proposed in this document will result in developing ERTS-Zaire as an institution capable of assuming the leadership and technical expertise to implement the demonstration resource surveys and link the LANDSAT technology with other potential users.

C. Evaluation Arrangements

Evaluation of the project will be undertaken by the USAID, ERTS-Zaire and AID/TAB at the end of 11 months, 25 months, and toward the end of the project to determine progress in achieving project goals.

The first (end of 11th month) evaluation will essentially aim at assessing the capability of ERTS-Zaire of functioning as a true user assistance and training center. This can be translated in terms of the capability of the Center to make basic material, data, and equipment available to eventual users, and to assist different GOZ agencies in preparing maps and collecting data for specific projects. This evaluation is very critical since, on this ability or its absence, will depend the success or failure of the entire program.

The 25th month evaluation will assess the level to which different GOZ agencies are effectively using ERTS-Zaire as a Center for training and assistance. This will be the time to find out how satellite data is being used efficiently to solve practical problems in the field of agriculture, ecology, hydrology, rural development, etc.

The final evaluation will determine to what extent the final goals have been reached. This evaluation will try to discover the deficiencies and successes in carrying on specific points of different programs and make proper recommendations for future programs.

D. Conditions, Covenants, and Negotiating Status

The following Conditions Precedent are proposed for inclusion in the Project Agreement as conditions prior to the disbursement of funds:

1. ERTS-Zaire shall furnish to AID, in form and substance satisfactory to AID, documentary evidence that the GOZ technical departments who are collaborating with ERTS-Zaire on major resource surveys have named a project liaison officer, and have furnished a work plan for carrying out the surveys.

STATUS: At the time of the PP preparation, AKU, the IGZ and the Department of Environment have provided formal letters requesting participation in the project.

2. ERTS-Zaire shall furnish to AID, in the form of a Project Agreement, evidence that the counterpart funding for activities under this project has been placed in a special ERTS-Zaire project account reserved for implementing the project.

STATUS: Z 125,000 has been tentatively approved by the Department of Plan, Counterpart Secretariat, for implementing the ERTS-Zaire project. A draft Project Agreement has been prepared. A request is being prepared for an additional Z 245,000 required for the project.

All preliminary negotiations have been completed between the USAID, ERTS-Zaire, collaborating GOZ technical departments and the USDA/SRS. The Project Agreement could be signed immediately. In fact, certain elements of the project (UNDP training and preliminary work on the Shaba ground cover survey) will begin prior to signing the Project Agreement.

Annex B. PROJECT TECHNICAL DETAILS

1. **ERTS-Zaire Equipment and Supply List**
2. **UNDP Training Candidates and Schedule**
3. **Manual Interpretation Techniques**
4. **Basic Computer Processing Capability**

1. LISTE DE MATERIEL RETENU APRES DISCUSSION ENTRE
LA DELEGATION US/AID ET LE SERVICE ERTS-ZAIRE.-

a) MAT. D'OPTIQUE

3 STREOSCOPES A MIROIR
3 FLOATING ARM MAGNIFIER
3 PLANIMETRE A DISQUE
4 STEREOCOPES DE POCHE
1 DENSITOMETRE
1 ZOOM TRANSOSCOPE
1 DIAZO PRINTER/DEVELOPER
1 CANON 35 mm(Appareil photographique)
1 POLAROID
1 BRONCO (FORD) Véhicule)
6 PORTABLE LIGHT-TABLES
2 RICHARDS LIGHT-TABLES
2 PARRALLAX BARS

b) MAT. DE GEOLOGIE

3 BOUSSOLES GEOLOGIQUES
3 ALTIMETERS

c) MAT. DE MESURES AU SOL (CARTOGRAPHIE)

3 CLINOMETRES

d) EQUIPEMENTS DE TERRAIN

2 DOUZAINES VETEMENTS FILSON CRUISER COOT
4 TENTES
12 GANTS DE TOILETTE
6 PAIRES DE BOTTE (GODASSES)
6 SACS DE TERRAIN
6 PARDESSUS
3 TROUSSES DE SECOURS
COUTEAUX
HACHES
SCIES
LANTERN (FLASLIGHTS)

e) MAT. DE MESURES AGRICOLES

4 SONDES (1,50 m) NON HYDROMORPHIQUES
4 SONDES POUR TERRAIN HYDROMORPHE (1,50 m)
2 MUNSELL SOIL COLOR CHARTS
1 MUNSELL VEGETATION COLOR CHART
1 PH COLOR KITS

.../...

f) PHOTO LAB. EQUIPMENT

- PROCESSING LAB. EXPOSURE, DEVELOPER, FIXER, WASHING AND DRYING INSTALLATIONS
- ENLARGEMENT AND PRINTING FACILITIES.

g) LANDSAT IMAGERY

70 mm = 300 x 2 = 600 images x \$ 10 =
74 " = 33 x 3 = 99 x \$ 10 =

h) SUPPLIES & MATERIALS

PHOTO - IGZ
 ERTS-ZAIRE
MISC.

i) AERIAL PHOTO.

j) AUTRES FOURNITURES

1. - KODAK EKTAGRAPHIC "VISUALMAKER", MODEL 2
(CAMERA X-35)
 - DIAZO PAPER FOR AMMONIA DEVELOPMENT (POLYESTER DRAFTING FILM),
SIZE : 8,5 x 11 cm
50 PACKETS BLACK
50 PACKETS COLOR
 - ESCOCHROME DIAZO POLYESTER FILM (.003 et .005)
10 PACKETS OF BLUE
10 PACKETS OF GREEN
10 PACKETS OF RED
10 PACKETS OF YELLOW
10 PACKETS OF CYAN
10 PACKETS OF MAGENTA
 - 20 PACKETS KODAK SLEEVES TRANSPARENT: 20,3 x 25,4 cm.
 - 10 PACKETS SEALED PLASTIC ENVELOPES
 - 10 PACKETS ACETATE TRANSPARENTS (CELLULOSE ACETATE)
 - FILMS
40 FOR THE POLAROID (20 in BxW and 20 in color),
TYPE 107,3 1/4 X 4 1/4.
 - 40 FOR THE PHOTOGRAPHIC CAMERA (20 in BxW and 20 in color), Size : 24 x 36 mm, 18 x 24 mm.
 - LIQUID AMMONIA FOR DIAZO
- 2) 2 BOITES GRAPHOS (+ PLUMES A-T-R-O DE 0,1 à 10)
2 RAPIDOGAPHS (SET OF 8) à KOH - I - NOOR)

.../...

2 COMPAS DE REDUCTION
4 RAPORTEURS (EN DEGRE)
1 PANTOGRAPH N° 5 - 100
3 CURVIMETRES
1 VERTICAL SKETCHMASTER Type 260 BM + accessoires

+ Plus : 1 à 10 Diopters

- Minus : 1/2, 1, 1 1/2, 2, 3 Diopters.

2. UNDP Training Candidates and Schedule

	<u>NAME</u>	<u>PROFESSION</u>	<u>COUNTRY</u>	<u>START</u>
ERTS-Zaire	Etina	Pedologist	Brazil	mid-July '77
	Mwamba B.	Economist	"	"
	Ulyera W.	Geologist	"	"
	Pongombo O.	Economist	"	"
	Dueme B.	Cartographer	Canada	August '77
	Veda Esanga	Photo- Technician	*	*
IGZA	Mpiolani N.	Cartographer	Canada	August '77
Dept. of Agriculture	Mawapanga M.	Agronomist	Canada	*
Dept. of Environment	Mbusu N.	Forester	Nether- lands	Sept. '77

* To be determined.

3. PROPOSED ERTS-ZAIRE MANUAL INTERPRETATION TECHNIQUES

TECHNIQUE	LANDSAT IMAGERY	EQUIPMENT & MATERIALS	SPECIAL CAPABILITIES	RESULTING PRODUCTS	EXAMPLE USES
Detailed Examination	9" transparent positives B&W or color	light table 10x hand lens	good image resolution from transparencies. can see great scene detail.	identification of small natural and cultural features. location of points of interest.	identify features prior to mapping. detailed examination of small development areas.
Feature Delineation	enlargement B&W or color	photo enlarger, Diaz	achieve scale of complimentary data for comparison	boundary maps of land cover or other large features.	discrimination of variations within forests, geology, land use. pre-field survey, planning, reconnaissance.
	70mm B&W (4 bands) transparent	color additive viewer	may bring out finer detail or make discrimination easier		
Area Determination	boundary maps	planimeter or sampling grid		area statistics, intermixing factors, densities	planning, quantitative analysis of forest, water land use, classes.
	9" transparency or enlargement	sampling grid	useful in areas of mixed small areas		
Map Revision	9" transparency B&W or color	Zoom Transfer scope, map, pencils	optically merge image and maps for ease of comparison and annotation.	revisions made directly on map base.	change detection, information update
Change Detection	9" B&W or color transparency and print of diff. dates.	Zoom Transfer scope, mylar pencils Diaz	(same as above)	image overlay shows changes in same area between two dates.	observe changes in stream channels, vegetation or land use. locate new culture features.
Cellular Mapping	enlargements B&W or color images	grid cell overlay	useful in heterogeneous areas for general mapping	uniform grid map of dominant feature in each cell	graphic representation of large areas. allows direct computer storage, planning

4. Proposed ERTS-Zaire Basic Computer System

A component of this project is to introduce the uses of computer processing of satellite data to complement planned manual processing procedures. The large amounts of quantitative data which are obtained by LANDSAT and recorded on computer-compatible tape (CCT) make some computer processing desirable for certain features are required, computers can rapidly scan the data and make certain types of decisions or data manipulations on a picture-element (pixel) by picture-element basis. (A single 185 km x 175 km LANDSAT frame contains more than 7 million pixels.) Thus, for detailed analysis, where summary statistical information is required, such as determining areas of surface water or the amount of green vegetative cover of rangelands, digital processing procedures are desirable.

While equipment manufacturers in the U.S. have developed highly-efficient special-purpose computers for processing large amounts of satellite data, the same operations can be performed on general-purpose digital computers at some sacrifice of speed. With modest investments of time by computer-programmer personnel (under the supervision of a short-term expert), the GOZ can use existing computer software for processing satellite data on their own computer systems (IBM 360's or 370's). One simplified software package (LIGMALS) currently available in the public domain at very nominal costs has successfully been implemented by local technicians in Sri Lanka. The development of this computer-processing capability in Zaire will reduce the need to spend scarce foreign exchange for such services outside of Zaire.

Annex C. ENVIRONMENTAL ASSESSMENT

DESCRIPTION

The project proposes to develop within the GOZ a capability to utilize satellite imagery in the planning and implementation of development programs. Development planning and implementation imply that the satellite imagery will be used to exploit natural resources with concomitant environmental effects.

Zaire is a vast country encompassing an area roughly equivalent to the U.S. east of the Mississippi River. Zaire is well endowed with natural resources: the Zaire River basin, vast equatorial rain forests, and mineral riches in the south and eastern parts of the country. In the West and South, savannah prairies dominate the landscape.

The GOZ views these natural resources as a source of wealth to be utilized to improve the well being of its people, who are mostly subsistence farmers without access to medical care, educational facilities, and alternative employment opportunities. Increasingly, the rural population is migrating to urban areas which are ill prepared to accept them.

These conditions place substantial political pressure on the GOZ to exploit the country's resources. Already, extensive mining of ores is occurring (strip and underground), hydroelectric power projects are being constructed, and plans for timber harvesting and increased land usage for agricultural production are being developed. But the GOZ also realized that these resources, and the environment which they constitute, are a precious entity in themselves and must be wisely managed and used, not only for the present, but for future generations. To this end, the GOZ is attempting to use the best possible tools for developing comprehensive, coordinated plans for the utilization of these resources.

LANDSAT imagery is one of these tools. Its use will help lead, directly and indirectly, to projects which may have significant environmental impacts. Examples are the extraction of mineral deposits, harvesting of commercially-significant forests, increased grazing pressures on savannah prairies, and the construction of major new roads. The general impact of the use of satellite data should be, however, a reduction of the adverse impacts of any particular project. By supplying overall information on a specific resource or geographic region, the long-term as well as short-term impacts of a particular development plan can be assessed.

The use of satellite imagery to create beneficial environmental effects, or limit adverse effects, is dependent upon the initiative and abilities of the user. From this standpoint, then, the satellite data itself is neutral. The fact that its use can lead to beneficial effects, whereas the lack of information can and generally does lead to poorer management decisions, with unexpected and possibly severe adverse environmental impacts, indicates that the LANDSAT imagery should be regarded as a positive tool for the protection of the environment.

The practical applications element of this project proposes data collection activities which may have environmental impacts as identified in Table I. Referring to Table I, Section A.1.(a).(c).(d), the sub-project program of identifying areas for relocating refugees in the Kivu region could result in new populations moving into formerly unoccupied areas. This movement would probably involve land clearing using the slash and burn process, and planting of crops with little fertilizer used and subsequent land exhaustion. As the total refugee population is estimated at 11,000 the environmental impact is expected to be highly localized and, in any case, will be no worse than if the population is relocated without the assistance of satellite-derived data.

Satellite-derived data from the ground cover is expected to be used, at least in the short-run, for an agricultural statistical sampling program and will have no direct impact on the environment.

The study of the environmental impact of population growth on the ground cover is expected to lead to GOZ policy decisions that will have a direct, positive impact on the environment.

RECOMMENDATION

The proposed project for developing a capability within the GOZ to effectively utilize satellite imagery does not, in and of itself, have any significant effect upon the environment. The logically-connected secondary effects of this program, however, will in many cases have a very significant environmental impact. The decision to go ahead with any of these projects is based upon many factors in addition to the information from satellite data. Included in the decision will be presumably an environmental assessment by the GOZ. Based on these facts, it is recommended that a Threshold Decision be made that the project will not have a significant effect on the environment and, therefore, a Negative Determination is appropriate.

ENVIRONMENTAL IMPACT IDENTIFICATION AND EVALUATION

D. NATURAL RESOURCES

- 1. Diversion, altered use of water ----- N
- 2. Irreversible, inefficient commitments ----- N
- 3. Other Factors ----- N

E. CULTURAL

- 1. Altering physical symbols ----- N
- 2. Dilution of cultural traditions ----- N
- 3. Other Factors ----- N

F. SOCIOECONOMIC

- 1. Changes in economic/employment patterns ----- U
- 2. Changes in population ----- N
- 3. Changes in cultural patterns ----- N
- 4. Other Factors ----- N

G. HEALTH

- 1. Changing a natural environment ----- N
- 2. Eliminating an ecosystem element ----- N
- 3. Other Factors ----- N

H. GENERAL

- 1. International impacts ----- N
- 2. Controversial impacts ----- N
- 3. Larger program impacts ----- N
- 4. Other Factors ----- N

I. OTHER POSSIBLE IMPACTS (not listed above)

Annex D
PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1977 to FY 1980
Total U. S. Funding \$635,000
Date Prepared: _____

Project Title & Number: ERTS-Zaire (660-0071)

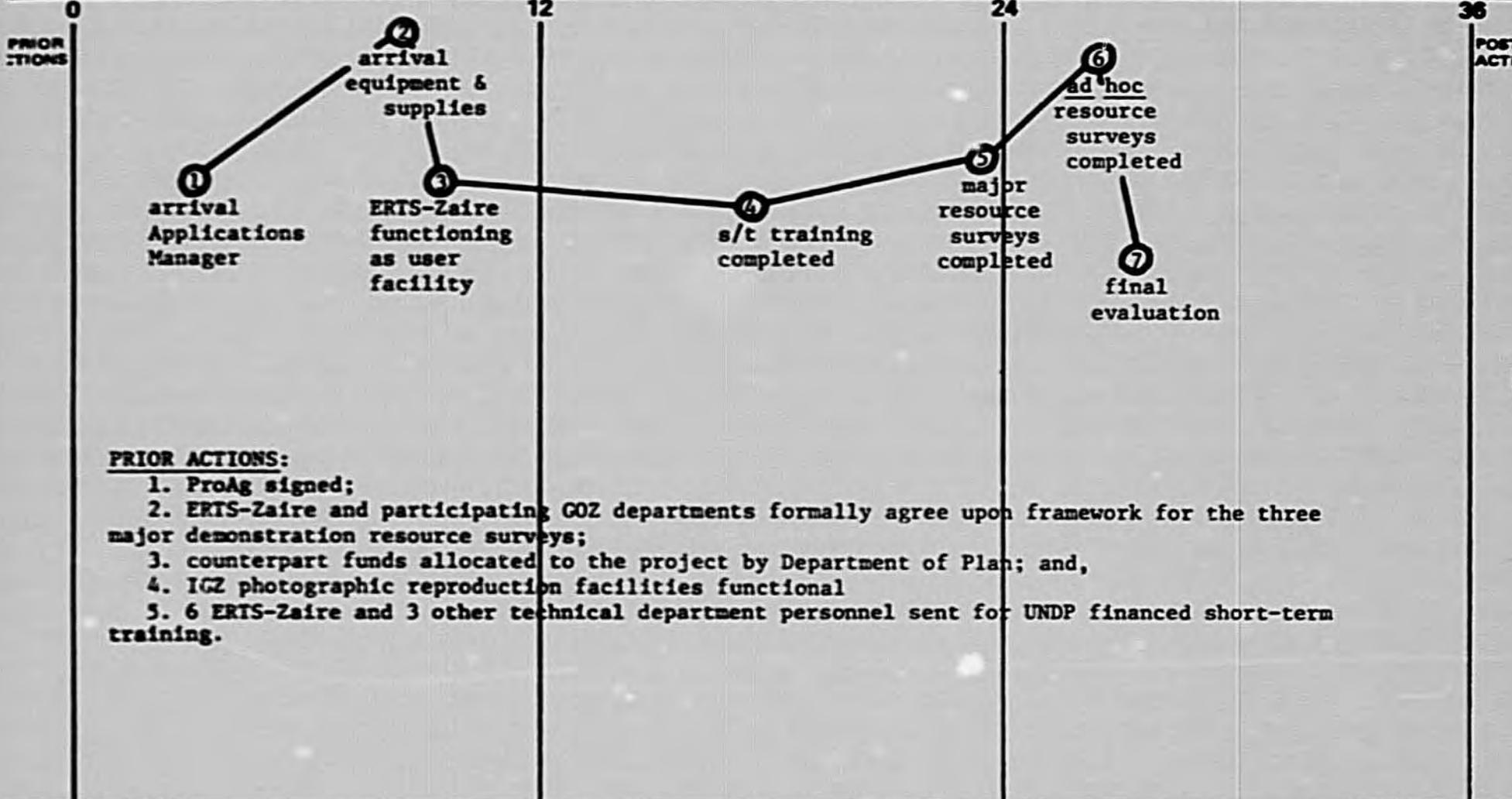
NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION:
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>Improvement of the GOZ data base for the design, planning, implementation and evaluation of economic and social development programs.</p>	<p>Measures of Goal Achievement: GOZ technical departments preparing rational economic and social development plans based on sound resource and environmental data.</p>	<p>Review of GOZ-prepared economic and social development plans.</p>	<p>Assumptions for achieving goal targets: GOZ technical departments understand importance of development planning function for rational allocation of resources.</p>
<p>Project Purpose: Institutionalize applications of earth-resources satellite data within GOZ technical departments to produce more accurate and up-to-date data information for resource planning and development implementation.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> GOZ departments complete 3 major and 12 ad hoc demonstration resource surveys using LANDSAT data; GOZ departments working closely with ERTS-Zaire in continuing satellite data program; and, results of initial and continuing satellite data incorporated into department planning and administrative procedures. 	<ol style="list-style-type: none"> ERTS-Zaire and GOZ technical department files; observation of ERTS-Zaire contacts with other GOZ entities, number of ERTS-Zaire sponsored seminars, number of requests for ERTS-Zaire assistance in LANDSAT data utilization; and, interviews with concerned GOZ department planning staff and review of planning documents. 	<p>Assumptions for achieving purpose: Demonstration of appropriate applications of satellite imagery and training in its use will result in adoption of the technology by GOZ technical departments.</p>
<p>Outputs:</p> <ol style="list-style-type: none"> ERTS-Zaire providing LANDSAT data and training to GOZ technical departments; working linkages established between ERTS-Zaire and pertinent GOZ departments re satellite data applications; and, GOZ planning units use satellite and satellite-derived data in planning and implementing development programs. 	<p>Magnitude of Outputs:</p> <ol style="list-style-type: none"> trained personnel available at ERTS-Zaire in each resource field, equipped for developing satellite applications; ERTS-Zaire provides seminars, conferences and assistance to GOZ departments re satellite data applications; and, 3 major and 12 ad hoc demonstration used in GOZ planning and implementation process. 72 tech. dept. staff trained locally. 	<ol style="list-style-type: none"> ERTS-Zaire personnel records and organization chart; ERTS-Zaire records and reports; and, review of reports prepared and surveys completed. 	<p>Assumptions for achieving outputs:</p> <ol style="list-style-type: none"> ERTS-Zaire maintains qualified personnel and an adequate budget; GOZ departments willing to participate in conducting demonstration resource surveys and training; and, satellite data sufficiently accurate to be applicable for planning and implementing GOZ development programs.
<p>Inputs:</p> <ol style="list-style-type: none"> ERTS-Zaire staffed and equipped to function as a satellite applications facility; and, planning, implementing and evaluating a set of satellite data-based resource surveys between ERTS-Zaire and GOZ technical departments. 	<p>Implementation Target (Type and Quantity)</p> <ol style="list-style-type: none"> 24 pm long-term and 15 pm short-term technical assistance. 13 GOZ Specialist trained overseas Commodities for equipping ERTS-Zaire, supporting ICGZ and implementing resource surveys. In-country support of applications program. 	<ol style="list-style-type: none"> USAID and ERTS-Zaire personnel records; USAID and ERTS-Zaire procurement records; USAID and UNDP training records; Department of Plan records; and, GOZ technical department records. 	<p>Assumptions for providing inputs:</p> <ol style="list-style-type: none"> qualified US advisors and Zairians available; ERTS-Zaire oriented toward practical applications rather than general research; GOZ approves counterpart allocation; and, GOZ departments allocate staff and funds to demonstration surveys.

Annex E

COUNTRY Zaire	PROJECT NO. 660-0071	PROJECT TITLE ERTS-Zaire	DATE	<input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> REVISION # _____	APPROVED
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OR CY	1978	1979	1980
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MONTH	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
	0												12												24												36



PRIOR ACTIONS:

1. ProAg signed;
2. ERTS-Zaire and participating GOZ departments formally agree upon framework for the three major demonstration resource surveys;
3. counterpart funds allocated to the project by Department of Plan; and,
4. IGZ photographic reproduction facilities functional
5. 6 ERTS-Zaire and 3 other technical department personnel sent for UNDP financed short-term training.

ANALYSIS SCHEDULE																																				
PROGRESS VS FINANCIAL																																				
EVALUATION SCHEDULE																																				

CRITICAL PERFORMANCE INDICATOR (CPI) NETWORK

COUNTRY Zaire	PROJECT NO. 660-0071	PROJECT TITLE ERTS-Zaire	DATE	<input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> REVISION # _____	APPROVED
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PROJECT PURPOSE (FROM PRP FACESHEET)

Institutionalize within pertinent GOZ tech departments the use of satellite-derived data as a resource for the planning and implementation of their economic and social development programs.

CPI DESCRIPTION

Number	Description	Date
1	arrival Applications Manager	01/78
2	arrival of equipment and supplies	06/78
3	ERTS-Zaire functioning as user facility	07/78
4	short-term training completed	03/79
5	major resource surveys completed	09/79
6	<u>ad hoc</u> resource surveys completed	12/79
7	final evaluation/reports	01/80

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of: (a) procurement, (b) construction, and (c) other restrictions.

(a) PROCUREMENT:

1. FAA Sec. 602: Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? Yes.

2. FAA Sec. 604(a): Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? Yes.

3. FAA Sec. 604(d): If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? The agreement will contain appropriate provision.

4. FAA Sec. 604(d): If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? N.A.

5. FAA Sec. 608(a): Will U.S. Government excess personal property be utilized whenever practicable in lieu of the procurement of new items? Yes.

6. MMA Sec. 901(b): (a) Compliance will require that at least 50 percent of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately-owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. The agreement will contain appropriate provision.

7. FAA Sec. 621: If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs? Yes.

CHECKLIST (cont'd)

-55-

(b) CONSTRUCTION:

1. FAA Sec. 601(d): If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest? N.A.
2. FAA Sec. 611(c): If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable? N.A.
3. FAA Sec. 620(k): If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million? N.A.

(c) OTHER RESTRICTIONS:

1. FAA Sec. 201(d): If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? N.A.
2. FAA Sec. 301(d): If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights? There is no such fund in this project.
3. FAA Sec. 620(h): Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.? Yes.
4. FAA Sec. 636(f): Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction? Yes.
5. Will arrangements preclude use of financing:
 - a. FAA Sec. 114: to pay for performance of abortions or to motivate or coerce persons to practice abortions? Yes.
 - b. FAA Sec. 620(g): to compensate owners for expropriated nationalized property? Yes.
 - c. FAA Sec. 650: to finance police training or other law enforcement assistance, except for narcotics programs? Yes.
 - d. FAA Sec. 662: for CIA activities? Yes.

- e. App. Sec. 107: to pay pensions, etc., for military personnel? **Yes.**
- f. App. Sec. 107: to pay U.N. assessments? **Yes.**
- g. App. Sec. 110: to carry out provisions of FAA Secs. 209(d) and 251(h)? (Transfer to multilateral organization for lending?) **Yes.**
- h. App. Sec. 501: to be used for publicity or propaganda purposes within U.S. not authorized by Congress? **Yes.**
- i. App. Sec. 504: to furnish petroleum fuels produced in the continental U.S. to Southeast Asia for use by non-U.S. nationals? **N.A.**

COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY:

1. FAA Sec. 116: If assistance is to a government, has it engaged in consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that such assistance will directly benefit the needy?

No. The project aims at helping the needy by strengthening a major potential data gathering institution. Sub-activities, however, are in rural areas and will indirectly impact on the needy (relocation of refugees, for example).

2. FAA Sec. 481: Has it been determined that the government of the recipient country has failed to take adequate steps to prevent narcotics, drugs, and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?

No.

3. FAA Sec. 620(a): Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?

The Secretary of State has determined in accordance with Sec. 601 of the FAA, that waiver of the provisions of Sec. 620(a)(3) of the Act is in the national interest & therefore waived the provisions of that section. (See F.R. Doc. 75-24126 of Sept. 10, 1975.)

4. FAA Sec. 620(b): If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement? Yes.
5. FAA Sec. 620(c): If assistance is to a government, is the government liable as debtor or unconditional guarantor of any debt to a U.S. citizen for goods or services furnished or ordered where: (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government? We are not aware of any such case.
6. FAA Sec. 620(a)(1): If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities. In 1974, Zaire nationalized US oil firms and in Sept. 1975, Zaire initiated moves to nationalize the pharmaceutical industry. However, as of Sept. 1976, Zaire has reversed its position and offered these same firms the opportunity to regain their lost businesses with 100% interest reduced to 60% share after about 5 years. This is a positive private step to attract back foreign private investors and will support domestic investment.
7. FAA Sec. 620(f): Is recipient country a Communist country? No.
8. FAA Sec. 620(1): Is recipient country in any way involved in: (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? No.

9. FAA Sec. 620(j): Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?

No.

10. FAA Sec. 620(l): If the country has failed to institute the investment guaranty program for the specific risks of expropriation, has the AID Administrator within the past year considered denying assistance to such government for this reason?

Zaire has an Investment Guaranty with the U.S.

11. FAA Sec. 620(o), Fishermen's Protective Act, Sec. 5: If country has seized, or imposed any penalty or sanction against any U.S. fishing activities in international waters:

Not applicable.

a. Has any deduction required by Fishermen's Protective Act been made?

b. Has complete denial of assistance been considered by AID Administrator?

12. FAA Sec. 620(q): Is the government of the recipient country in default on interest or principal of any AID loan to the country?

Zaire has been in default for more than 6 months on several loans made under the FAA. The period of default on a few of these loans extends back to more than 9 months. On 5/24/75, the Administrator determined, in accordance with Section 620 (q) of the FAA and delegation of authority issued thereunder, that it is in the national interest of the U.S. to provide assistance to Zaire notwithstanding Zaire's failure to pay principal and interest on AID loans for a period of more than 6 months.

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13. FAA Sec. 620(a): What percentage of country budget is for military expenditures? How much of foreign exchange resources is spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Reg'l Coordinators & Military Assistance Staff (PPC/RC).)

Based on Zaire's recurring budget figures, Zaire's 1976 military expenditure is expected to be about the same as 1975 which is significantly less than that of 1974. In FY76 Zaire concluded a \$19 million Foreign Military Sales Agreement with the U.S. No sophisticated weapons systems were purchased in 1975.

14. FAA Sec. 620(c): Has the country severed diplomatic relations with the U.S.? If so, have they resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?

No.

15. FAA Sec. 620(u): What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?

Zaire's short-term arrearage is approximately \$60,000. It does not pose a problem with regard to provisions of Article 19 of the UN Charter.

16. FAA Sec. 666: Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under the FAA?

No.

17. FAA Sec. 901: Has the country denied its citizens the right or opportunity to emigrate.

We are not aware of any case.

B. FUNDING CRITERIA FOR COUNTRY:

Development Assistance Country Criteria

1. FAA Sec. 102(c), (d): Have criteria been established, and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (a) small farm labor intensive agriculture, (b) reduced infant mortality, (c) population growth, (d) equality of income distribution, and (e) unemployment.

Yes.

2. FAA Sec. 201(b)(5), (7) & (8); Sec. 708; 201(a)(4), (7): Describe extent to which country is:

- Making appropriate effort to increase food production and improve means for food storage and distribution.
- Creating a favorable climate for foreign & domestic private enterprise and investment.

Considering the fact that the GOZ has made agriculture the priority of priorities, important steps have been made to increase food production along with raising the price received by farmers for most foods. Efforts have been made by the GOZ to improve the transportation system by making greater investments in this area while

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c. Increasing the public's role in the development process.

at the same time programs are presently being developed to improve marketing. See FAA 620(e) (1) above.

The GOZ is attempting to increase participation at the local level through the development of cooperative groups ("Associations Agricoles") which would collaborate with local leaders in establishing production objectives and programs for meeting those objectives. Further, by increasing producers' prices, the GOZ has demonstrated a commitment to increasing rural participation in the development process. In this context, the GOZ/DCA was fully supportive of the heavy emphasis on local level participation in decision making contained in this project.

d. (1) Allocating available budgetary resources to development.

More than 74% of the GOZ's capital investment budget is allocated to social and economic development. 7% of the budget goes to health and education, 7% to agriculture, 20% to mining, 15% to transportation and communications, 10% to commerce and industry, and 31% to other projects under the Office of the Presidency covering all sectors.

(11) Diverting such resources for unnecessary military expenditures.

(See FAA Sec. 620(e) above.)

e. Since Independence, the GOZ has aggressively encouraged the growth of a Zairian participation in the private industrial and commercial sectors. Recent decisions regarding pricing and marketing of agriculture commodities are designed to provide incentive for participation of small subsistence farmers in the modern sector through appeals to entrepreneurial propensities.

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f. Otherwise responding to the vital economic, political and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

The GCZ has become increasingly aware of the need for self-help measures to achieve greater economic independence particularly in the agriculture sector. It is taking steps to increase agricultural production in both the long, and the short run, including transportation improvement and land improvements, price incentives, etc.

3. FAA Secs. 201(b), 211(a): Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?

Yes.

4. FAA Sec. 115: Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?

No.

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PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAL funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CRUCIAL REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY.
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Sec. 113. Describe how the Committees on Appropriations of the Senate and House have been or will be notified concerning the project. A Congressional Notification will be sent.
2. PIA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance? Yes.
3. PIA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance? N.A.
4. PIA Sec. 611(b); App. Sec. 102. If for water or water-related land resource construction, is there a benefit-cost computation made, insofar as practicable, in accordance with the procedures set forth in the Memorandum of the President dated May 15, 1962? N.A.
5. PIA Sec. 611(c). If loan is for capital assistance, (e.g., construction) project, and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project? N.A.

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6. FAA Secs. 209, 519. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate.

The UNDP is providing support to the project by funding training. The U.S. has the primary expertise in satellite technology and is better able to administer assistance for the project.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperative, credit unions and savings and loans association; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

This project will provide better information for more efficient planning of economic development programs.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

N.A.

9. FAA Sec. 612(b); Sec. 536(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

Local currency is provided for all local costs and for the in-country support of U.S. technicians. Local currency will be used to fund the international travel of trainees.

10. FAA Sec. 612(n). Does the U.S. own excess foreign currency and if so what arrangements have been made for its release?

N.A.

11. FAA Sec. 640C. Will grant be made to loan recipient to pay all or any portion of such differential as may exist between U.S. and foreign-flag vessel rates?

U.S. - flag vessels will be utilized.

FUNDING CRITERIA FOR PROJECT

(a) Development Assistance Project Criteria

1. FAA Sec. 102(c); Sec. 111. Extent to which activity will effectively involve the poor in development, by extending access to economy at local level, increasing labor intensive production, spreading investment out from cities to small towns and rural areas; extent to which it will help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life.

The project will assist in relocating poor refugees. Other data obtained will be used to plan economic development programs -- generally in rural areas.

2. FAA Secs. 103, 103A, 104, 105, 106, 107. Is assistance being made available:

a. for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; if for agricultural research, is full account taken of needs of small farmers;

Research activities in this project are designed to take full account of small farmers' needs.

b. for population planning or health; if so, extent to which activity extends low cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

N.A.

c. for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

N.A.

d. for technical assistance, energy, research, reconstruction, and selected development problems, if so, extent activity is:

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(1) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development organizations.

N.A.

(2) to help alleviate energy problem; No

(4) research into, and evaluation of, economic development processes and techniques; Yes

(4) reconstruction after natural or man-made disaster; Yes

(5) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; Possible

(6) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development. No

By grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries. No

Sec. 201(a); Sec. 205(a). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)? Yes. The project agreements will require a 60% contribution for an excess of 25% of the cost of the project.

Sec. 201(b). Will grant capital assistance be allocated for projects over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing? N.A.

Sec. 201(c). Intend to which assistance reflects appropriate emphasis on: (a) encouraging development of democratic, economic, political, and social institutions; (b) self-help in meeting the country's food needs; (c) improving availability of trained manpower in the country; (d) programs designed to meet the country's health needs; (e) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and voluntary agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (f) integrating women into the recipient country's national economy. a) The project encourages development of economic and social institutions. b) It will help plan for increased domestic food production. c) It will provide about 20 training specialists to Zaire, in fields underrepresented presently. d) N.A. e) N.A. f) N.A.

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6. Art. 211(a). Extent to which the assistance will contribute to objective of ensuring maximum participation in the task of economic development on the part of the people of the country, through the encouragement of democratic, private and local governmental institutions. N.A.
7. Art. 211(b). Describe extent to which project recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government. The project responds to the GOZ's desire to improve their basic data base for planning economic development programs.
8. Art. 201(a)(1); Art. 211(a)(1). In what ways does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities; or of educational or other institutions directed toward social progress? See Part II of PP.
9. Art. 201(a)(2); Art. 201(a); Art. 211(a)(3). Information and conclusion on an activity's economic and technical soundness. See Part III of PP.
10. Art. 201(a)(4); Art. 211(a)(2). Information and conclusion on activity's relationship to and consistency with, other development activities, and its contribution to realizable long-range objectives. The project is consistent with DAP objectives to improve the GOZ/s planning capacity.

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11. FAA Sec. 201 (b)(9); Sec. 211(a)(8). Information and conclusion of whether the activity will contribute to the achievement of self-sustaining growth. Yes
12. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance of payments position. The project will have no discernable impact on the U.S. economy.
13. FAA Sec. 653(b). Is assistance within country or international organization allocation for fiscal year reported to Congress (or not more than \$1 million over that figure plus 10%)? Yes

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Annex G

/ BPR/CC/N° 3518 /75/

DEC 17 1975

*Président du Président-Fondateur
Président de la République*

A Monsieur FERMINO SPENCER
Directeur USAID

KINSHASA/GOMBE

Monsieur le Directeur,

J'ai l'honneur de vous adresser cette lettre pour d'abord, vous remercier de l'accueil que vous m'avez réservé lors de la réunion d'hier tenue dans votre bureau, et ensuite vous présenter en filigrane, les activités ERTS-ZAIRE à travers les documents ci-annexés.

Le Programme ERTS a débuté en 1972 sous l'égide du Directeur du Bureau du Président-Fondateur. Depuis lors, une dizaine de chercheurs zairois ont été formés à Berkeley (Californie) dans le domaine de la photo-interprétation.

Le but primordial du programme n'est pas de faire seulement de la science pure, mais plutôt bénéficier des avantages qu'offrent les nouvelles technologies par satellite.

Dès le début, quatre priorités ont été retenues dans le cadre du développement du pays, à savoir

1. L'Agriculture (priorité des priorités)
2. La Géologie et l'exploitation de ressources minières
3. L'Hydrologie
4. La Cartographie.

Pour réaliser ce vaste programme d'une très grande envergure, le programme ERTS fait appel à tous les Départements, Organismes et Institutions qui représentent les secteurs vitaux de la vie nationale.

Annex G

ERTS-ZAIRE sollicite aussi une aide étrangère technique, financière et en personnel pour l'assister dans l'accomplissement de sa tâche. Cette aide peut être résumée comme suit :

1. Envoi des spécialistes au Zaïre pour aider les chercheurs zaïrois dans les domaines de l'agriculture et de l'exploration de nouveaux gisements miniers.
2. Formation de spécialistes zaïrois dans le domaine de la télédétection (Remote Sensing) à l'étranger comme au Zaïre.
3. Achat des matériels destinés au laboratoire ERTS, susceptibles de permettre aux chercheurs zaïrois de mener à bien leur tâche.

Nous demandons à l'USAID de faire en sorte que ces besoins résumés en trois points soient pris en considération dans le programme d'aide à court, moyen et long termes.

Le Programme ERTS-ZAIRE a atteint un stade tel qu'il a débordé le cadre national. Et de par sa configuration géographique, la République du Zaïre est mieux placée au centre de l'Afrique pour être en mesure de desservir les 3/4 du continent africain.

La Station de Réception des données LANDSTAT/METSAT qui sera construite à Kinshasa l'année prochaine opérera dans un rayon de 3.000 km, couvrant ainsi 37 pays africains dont 20 entièrement et 17 partiellement.

S'agissant de nos relations avec les responsables de la CEA à Addis Ababa, les négociations vont bon train (cfr documents en annexe). Je me suis personnellement déjà rendu à trois reprises à Addis Ababa en vue de discuter avec les responsables de la CEA de la possibilité d'envisager pour régionaliser le programme ERTS-ZAIRE. Nous attendons, à cet effet, l'arrivée à Kinshasa d'un groupe composé d'experts des USA, du Canada, de la France et du PNUD au début du mois de janvier 1976.

Ce sont là autant des renseignements que j'avais bien voulu vous donner relatifs aux activités du programme ERTS-ZAIRE. Je suis à votre entière disposition quant aux informations complémentaires dont vous auriez besoin.

Annex G

Au nom du Citoyen BISENGIMANA RWEMA,
 Directeur du Bureau du Président-Fondateur du Mouvement
 Populaire de la Révolution, Président de la République,
 je vous invite à venir visiter notre modeste laboratoire
 qui se trouve dans l'enceinte même du Bureau du Président-
 Fondateur au Mont Ngaliema.

Veillez agréer, Monsieur le Directeur,
 l'assurance de ma considération distinguée.



POUR LE DIRECTEUR DU BUREAU

SENDWE KASONGO ILUNGA
 Chargé du Programme ERTS-ZAIRE

Annex H

Draft of Project Description to be Used in Project Agreement

This project seeks to improve the design, planning, and implementation of GOZ survey and development programs. The project intends to improve the planning capability of GOZ institutions by providing a mechanism for obtaining and using accurate and up-to-date resource information derived from satellite data.

The purpose of the project is to make effective use of existing and future U.S. satellite data by the GOZ. The satellite data can provide significantly more accurate and timely resource information than is presently available for planning and development purposes. The project intends to institutionalize the use of satellite data by GOZ technical departments in conducting surveys and inventories and making environmental assessments.

At the technical department level, the GOZ lacks the facilities for organizing, reproducing and distributing satellite data. Uncertainty concerning the utility of satellite data by GOZ personnel also hampers its use. It is expected that GOZ departments will hesitate to modify established survey procedures until the utility of satellite data is clearly illustrated and its availability assured.

GOZ technical departments are aware of the inadequacy of information available to them for making development decisions. Individually, they have expressed a requirement and interest in learning to use satellite data at the department and specialized agency levels.

The project consists of establishing a user assistance center within ERTS-Zaire with AID assisting in its operation for a period of three years. Project inputs include the following during the life of the project:

AID

1. a full-time remote sensing applications expert to assist ERTS-Zaire in building its capacity in the area of user assistance;

2. short-term LANDSAT application specialists to assist ERTS-Zaire in carrying out practical LANDSAT applications;

3. short-term training for ERTS-Zaire/other Department staff in support of practical LANDSAT applications; and

4. equipment, materials and supplies for building up ERTS-Zaire's applications center, and for support of the practical LANDSAT applications.

ERTS-Zaire

1. staff for the operation of the user assistance center, for implementing the application surveys, and propagating the LANDSAT technology to appropriate GOZ departments not involved in the project;

2. staff for short-term training related to the implementation of the project;

3. office space, equipment and supplies for support of the project; and

4. counterpart funds for support of the AID technicians and for implementation of the project.

ERTS-Zaire will organize training and demonstration projects to help disseminate the use of satellite data to various technical departments. ERTS-Zaire will provide assistance and materials to those GOZ departments that wish to use LANDSAT data for resource inventories and for environmental monitoring purposes. In particular, ERTS-Zaire is expected to work closely with the Institute Geographique du Zaire (IGZ) in providing assistance to the Departments of Agriculture, Environment, Mines, Transportation, Energy, and Plan, and to such agencies such as Hydrology, Meteorology and AKU.

The end of project status will consist of a trained ERTS-Zaire staff conducting projects and training in direct response to continuing requests for assistance and data from other GOZ technical departments. In addition, various departments will have a nuclei of personnel familiar with satellite data applications who can continue to explore uses of the data and make use of the data

interpretation facilities at ERTS-Zaire. The specific results of at least three major demonstration projects and approximately twelve short-term user requested tasks will contribute to better decisions being made in regard to resource development by the participating GOZ departments.

PROJECT NUMBER	600040011 209201
PROCESS	
CATALOGUE	✓
ABSTRACT	✓
FICHE	4
COMMENTS:	

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT IDENTIFICATION DOCUMENT FACESHEET
 TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE

A A = ADD
 C = CHANGE
 D = DELETE

PID

2. DOCUMENT CODE 1

3. COUNTRY/ENTITY

ZAIRE

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 DIGITS)

660-0071

6. BUREAU/OFFICE

A. SYMBOL
APRB. CODE
06

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)

ERTS - Zaire

8. PROPOSED NEXT DOCUMENT

A. **2** 2 = PRP
 3 = PP

B. DATE MM YY
 09 71

10. ESTIMATED COSTS

(\$000 OR EQUIVALENT, \$1 =)

FUNDING SOURCE		WAS5c89
A. AID APPROPRIATED		470
B. OTHER U.S.	1.	
	2.	
C. HOST COUNTRY		200
D. OTHER DONOR(S)		
TOTAL		670

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION

a. INITIAL FY 718 b. FINAL FY 719

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1) ST	630	900		280		470	
(2)							
(3)							
(4)							
TOTAL				280		470	

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

089 | 876 | 710

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)

BR | R/CI | R/G | TECH

14. SECONDARY PURPOSE CODE

550

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)

Assist the GOZ improve its ability to design, plan and carry out economic and social development programs.

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)

Establish with the ERTS - Zaire program a division capable of identifying and interpreting satellite derived imagery data for application by GOZ technical departments in implementing their economic and social development programs.

17. FINANCING RESOURCE REQUIREMENTS (staff/funds)

PRP: 3 work-weeks O&M expert satellite facilities (Summer 1976)

--\$3,000 for PRP and PP--

PP: 3 work-weeks agri econ familiar satellite programs (Fall 1976)

18. ORIGINATING OFFICE CLEARANCE

Signature

Title **Fernino J. Spencer**
 Mission Director, USAID/
 Kinshasa

Date Signed

MM DD YY

19. DATE DOCUMENT RECEIVED IN AID/W, or FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

I. BACKGROUND

In 1972 the GOZ established within the Presidency a program for obtaining, processing and utilizing satellite derived imagery. This program is called ERTS-Zaire. The responsibilities of this program include the managing and utilization of space data based on imagery acquired by the Earth Resources Technology Satellite (LANDSAT) of NASA as well as that available from various other meteorological satellites. Dr. Sendwe Llungu, Principal Investigator, heads a 10-man staff of professionals and technicians.

With the assistance from a U. S. private company (EARTHSAT) ERTS-Zaire has undertaken several technical operations involving the manipulation of satellite imagery. Because of the volume of work already produced by ERTS-Zaire they have made a solid start in this new technological field. In fact, it has been stated that Zaire is the leader in the field amongst the LDC's (except Iran and Brazil).

Training of Zairian specialists in photo interpretation techniques began in 1973 when a team of ten Zairians attended a two month course in the U. S. under GOZ sponsorship. An other team of ten Zairians has been selected by the GOZ, under partial UNDP sponsorship, for training in the U. S. which will prepare them for filling key positions at the LANDSAT/METSAT station. 7

In early 1976 an ECA mission visit the ERTS-Zaire facilities to assess the possibility of expanding using these facilities on a regional basis for acquiring and processing satellite data, and training facilities in these fields. A small AID-financed IRIM grant was awarded to ERTS-Zaire for undertaking cartography work with the GOZ Geographical Department. The GOZ also plans to finance from its own resources the establishment of a LANDSAT/METSAT receiving and processing station in Kinshasa.

The initial phase of the ERTS-Zaire project is off to a sound start. However, a note of caution might be sounded. A UNDP review of the program's production indicated that essentially all work has been done by the U. S. consulting firm, that practically no analysis has been undertaken of existing imagery, that only a minor effort has been put into tape analysis (the product of major value for resource evaluation derived from ERTS imagery), that personnel have not classified or catalogued existing imagery, that staff is not field survey oriented (essential for the understanding of image or tape data), and that there has been very little effort made to coordinate operations with the needs of other ministries. (ERTS-Zaire has specifically requested U. S. assistance in the latter area). The above was not a criticism of the program

but to point out that much needs to be done.

II. DEVELOPMENTAL PROBLEM AND PROPOSED RESPONSE

A. Development Problem

Prior to the independence of Zaire in 1960 all positions related to the planning and managing of its development were occupied by expatriates. Few Zairians had received any university education. After independence many who had any education at all beyond primary school were placed in positions of authority and responsibility only to find themselves dependent on expatriate technical and advisory personnel for the execution of their work.

The Government of Zaire (GOZ) recognizes that development will not work unless there are indigenous skilled people to make it work. Zaire has assigned itself the task of equipping its own nationals with the skills needed for economic and social development. All sectors of modern development call for specific analytical skills utilizing modern technologies for collecting information, systematic thinking at the micro and macro levels, and data for analysis, conceptualization and execution of development programs.

The GOZ has recognized that "Zairianization" and authentic development means more than simply placing citizens of the country as titular heads of organizations and operational activities. If external donor organizations still send in specialists to collect development data, to analyze problems and to propose solutions--in other words, to do all of the conceptual work--then Zaire is deprived of the chance to become "entrepreneurial" about its own development, i. e., to make informed choices and devise viable strategies. It is also deprived of the chance to learn from its own mistakes.

President Mobutu has stated that it is important to decentralize the country's administration and services in order to promote a more balanced development and to extend the benefits of development to less-favored Zairians. A move in that direction awaits the time when qualified Zairian human resources and effective technologies are available to plan and manage the country's development projects.

One of AID's key DAP objectives in Zaire is to improve the administrative and planning capacity of GOZ development institutions at all levels. As AID attempts to strengthen GOZ programs directed at the poor majority it is increasingly apparent that training manpower and inadequate information base are key constraints to effective programs. Overcoming these constraints are important objectives in the following AID planned and on-going programs in Zaire: Planning and Management Services; Nutrition Planning; Agricultural Economic Development; Health Systems Development; Development Manpower Training; INERA Support; and Endemic Disease Control.

B., Response

Through the Planning Service, within the Office of the President, the GOZ is attempting to meet priority needs for training of sufficient cadre of Zairians in all sectors and at all levels who have the various skills required to solve development problems, and plan and manage development projects. AID is assisting in this effort through a planned project in Development Manpower Training scheduled for FY 1977 funding.

Construction of an adequate data base from which the GOZ can plan and manage the country's development is an important aspect for acquiring developmental skills. Basic research, which has stagnated since independence in 1960, has been re-organized during late 1975 under a single entity called the Scientific Research Institute (IRS) for better coordination. New technologies for obtaining basic data are being explored and receiving top-level GOZ support.

To enable the public sector develop basic data for economic and social planning purposes, under the dual parameters of limited financial resources and pressing short-run needs, the GOZ has established, in the Office of the President, ERTS-Zaire to develop a national capability for tapping satellite imagery as a resource for planning their development. This program, begun in 1972, is described in Annex A.

The ERTS-Zaire program included the construction of a reception station (Annex B) at N'Sele, and a processing center (Annex C) in Kinshasa. Annex D describes the planned organization for ERTS-Zaire which stresses both the acquisition and utilization of data. Currently, ERTS-Zaire is staffed by a Director and six professionals who are equipped to do limited analysis of satellite imagery.

Who owns reception station now?

PAGE 4

2715 M?

The GOZ plans an investment of \$20.0 million for the reception station and \$7.5 million for the processing center. The basic goal of ERTS-Zaire is to provide basic data for economic development purposes. Priority sectors for the ERTS-Zaire program are: (1) Agriculture; (2) Geology (mineral exploitation); (3) Hydrology (development of energy resources); and (4) Cartography.

ERTS-Zaire reception facilities are centrally situated (Annex E) in sub-Sahara Africa and it is possible to obtain satellite coverage of 27 African countries and partial coverage of an additional 10 other countries (Annex F). Discussions are underway between the GOZ and the UN Economic Commission for Africa (ECA) to establish a Centre Africain de Teledetection at the ERTS-Zaire facilities. The regional center would have both a national and regional program as described in Annex F.

Zaire's interest in utilizing satellite imagery for economic development purposes has been unique in sub-Sahara Africa. Apart from South Africa, Zaire is the only African country to participate 100 percent in the ERTS program, and the only country from the African continent to attend the Third ERTS Symposium held in Washington in 1973.

Notwithstanding this sustained interest and commitment in the part of the GOZ to ERTS-Zaire, it has been necessary to delay construction of the reception station scheduled for 1976 until Zaire's foreign exchange position has improved. This is not a lessening of GOZ support for ERTS-Zaire, but rather, a realistic allocation of scarce FX necessitated by the current economic situation in Zaire.

III. PURPOSE OF PROJECT

Establish within the ERTS-Zaire program a division capable of identifying and interpreting satellite derived imagery data for application by GOZ technical departments in implementing their economic and social development programs.

IV. DESCRIPTION

A. Outputs

1. Establishment of a utilization bureau within ERTS-Zaire which is continually collaborating with GOZ Departments in developing satellite imagery applications for development purposes.

Priority
Should US
support last
priority

2. Trained ERTS-Zaire utilization staff capable of organizing training programs and devising applications for end-user organizations.

3. Practical demonstration of the utility and applicability of satellite imagery through special studies done in collaboration with the GOZ Department of Agriculture (GOZDOA) to include:

- a. identification of rangeland for planned programs to increase cattle production;
- b. estimates of range and intensity of suspected manioc blight;
- c. assess forestry industrial potential in selected regions; and
- d. carry out experiments in soil classification.

B. Kind and Amounts of AID Assistance

1. Personnel	\$300,000
a. long-term (24 wm)	
b. short-term (15 wm)	
2. Training	\$ 60,000
a. long-term (18 pm)	
b. short-term (15 pm)	
3. Commodities	\$100,000
a. reproduction equipment	
b. supplies	
office equipment	
d. vehicle	
4. Miscellaneous	<u>\$ 10,000</u>
	<u>TOTAL</u>
	\$470,000

C. Disbursement Period

FY 1978 - 80

V. MAJOR ASSUMPTIONS

- 1. GOZ constructs the reception and processing facilities no later than FY 1978. (LANDSAT/METSAT)
- 2. GOZ continues to allocate funds and personnel to program.

VI. DESCRIPTION OF OTHER DONOR ACTIVITIES

1. Economic Commission for Africa (ECA)

An ECA mission visited ERTS-Zaire facilities during March 1976 to review an application for ECA assistance in establishing the Zairian facility as a regional receiving center for Sub-Sahara Africa.

2. UNDP

The UNDP is providing scholarships for ERTS-Zaire staff as part of developing a regional capability at the ERTS-Zaire facility.

VII. REALISTIC ALTERNATIVE

1. Ground Sampling Techniques

Ground sampling techniques are costly and time-consuming--although generally more accurate. Ground sampling techniques are a necessary part of data gathering programs, but satellite imagery is a more rapid and efficient technique providing more current data. Zaire's economic state is such that problems need immediate solutions based on techniques which are relatively inexpensive.

2. Aerial Imagery

Low level, fixed-wing imagery techniques are in use in Zaire and comparable to satellite imagery. Costs, however, are high compared to satellite imagery. We envisage the two technologies as mutually supportive with aircraft used to provide selective coverage.

VIII. MAJOR BENEFICIARIES

The major beneficiaries of this project will be the great mass of Zairian people who are expected to receive benefits from GOZ economic and social development programs. Better data will lead to better information for development planners which, in turn, will lead to more efficient allocation of scarce resources for development.

IX. SPREAD EFFECT

This project is focused at establishing a strong working relationship between ERTS-Zaire and the GOZDOA which will demonstrate the feasibility and applicability of ERTS imagery as a tool in development planning.

This demonstration will encourage other GOZ departments to use satellite imagery, and ERTS-Zaire will have the institutional capacity under this project to promote and assist them.

X. FINANCIAL

A. Estimate of Total Costs

FY 1978:	\$405,000
FY 1979:	\$265,000

B. AID Share of Costs

FY 1978:	\$\$280,000
FY 1979:	\$190,000

C. Anticipated GOZ and Other Donor Contributions

1. GOZ

FY 1978:	\$125,000
FY 1979:	\$ 75,000

2. No other direct donor participation anticipated, although substantial other donor participation is likely for the general development of ERTS-Zaire.

XI. DEVELOPMENT OF PROJECT

A. Studies and Analysis

The basic project is expected to be developed jointly by ERTS-Zaire and GOZDOA Bureau d'Etudes (BdE) staff. The latter unit included AID-funded USDA PASA experts who are familiar with satellite technologies.

Short-term TDY assistance will be required during the Spring of 1976 to assist ERTS-Zaire in establishing the organizational framework of the utilization bureau. The expert will advise ERTS-Zaire on organization, staffing, services, training requirements, etc.

During the Fall of 1976 an additional short-term expert will be required to assist ERTS-Zaire and the GOZDOA in developing TOR's for specific studies to be undertaken during the project. This assistance will refine project outputs for the PI.

Was 2/27/76

B. Documentation Schedule

PRP: September 30, 1976
PP: June 30, 1977

C. AID/W Resources Required for PRP and PP Preparation

PRP: 3 workweeks Summer 1976
PP: 3 workweeks Fall 1976

XII. ISSUES OF POLICY OR PROGRAMMATIC NATURE

None

ANNEX A

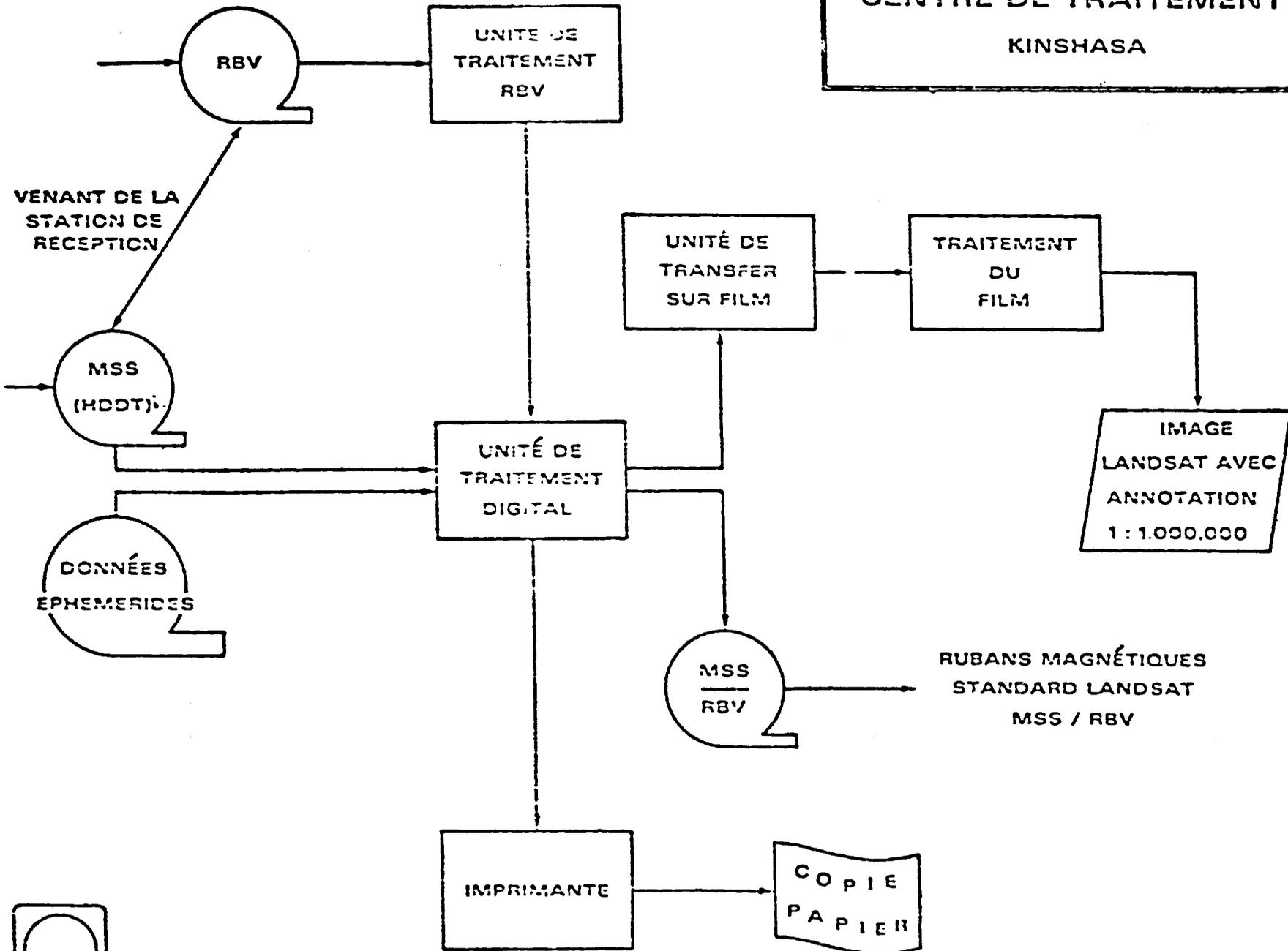


STATION DE RECEPTION LANDSAT-METSAT

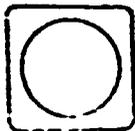
PROGRAMME D'EXECUTION

	MOIS	ACTIVITES
1974	JUIN	ETUDE PRELIMINAIRE EXAMEN PAR ERTS-ZAIRE PREMIERS CONTACTS AVEC LA NASA
	JUIL.	
	AOUT	
	SEPT.	
	OCT.	
	NOV.	DECISION DU BUREAU DU PRESIDENT ALLOCATION DE CREDITS PAR LE GOUVERNEMENT DU ZAIRE REPONSE FAVORABLE DE LA NASA
	DEC.	ECHANGES DE VUE SUR LE "PROJET DE TRAVAIL" (MEMORANDUM OF UNDERSTANDING) ENTRE LA NASA ET ERTS-ZAIRE
1975	JAN.	PREPARATION DES SPECIFICATIONS TECHNIQUES
	FEV.	ANNONCE D'INTENTION ADRESSEE SUR BASE INTERNATIONALE AUX PRINCIPALES FIRMS SPECIALISEES
	MARS	APPROBATION DES TERMES DE L'APPEL D'OFFRE PAR LE BUREAU DU PRESIDENT ENVOI DES APPELS D'OFFRE PAR INVITATION
	AVR.	RECEVUE DES OFFRES PAR LES SOUSMISSIONNAIRES INVITES
	MAI	SELECTION DE LA FIRME EXECUTANTE PASSATION DU CONTRAT POUR LA CONSTRUCTION ET LE COMMISSIONNEMENT DE LA STATION DE RECEPTION
	JUIN	CONSTRUCTION DE L'EQUIPEMENT
	JUIL.	
	AOUT	
	SEPT.	
	OCT.	
	NOV.	EXPEDITION DE L'EQUIPEMENT ET MISE EN SERVICE
	DEC.	MISE AU COURANT DU PERSONNEL ZAIROIS D'OPERATION
1976	JAN.	MISE EN OPERATION DE LA STATION ASSISTANCE DU PERSONNEL DU CONSTRUCTEUR DURANT LA PERIODE DE GARANTIE (UN AN)
	FEV.	
	MARS	
	AVR.	
	MAI	
	JUIN	
	JUIL.	
	AOUT	
	SEPT.	
	OCT.	
1977	NOV.	OPERATIONS PROGRESSIVEMENT REPRISES
	DEC.	PAR LE PERSONNEL D'ERTS-ZAIRE
	JAN.	OPERATION DE LA STATION ASSUREE ENTIEREMENT PAR LE PERSONNEL ZAIROIS PERMANENT
	FEB.	

CENTRE DE TRAITEMENT
KINSHASA



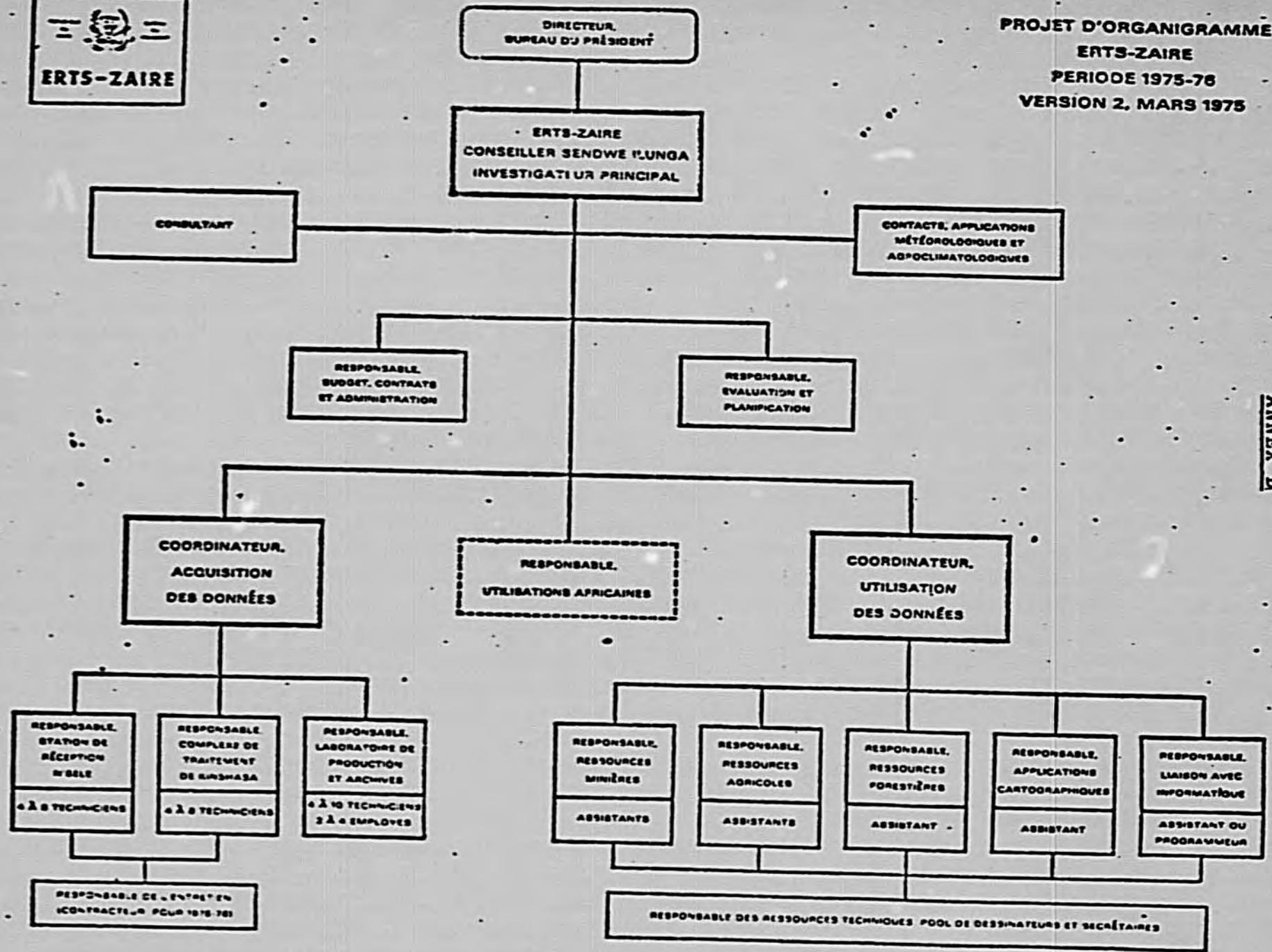
ANNEX C



EARTH SATELLITE CORPORATION



PROJET D'ORGANIGRAMME
ERTS-ZAIRE
PERIODE 1975-76
VERSION 2, MARS 1975



ANNEXE D

STATION DE RECEPTION ERTS METSAT. KINSHASA

NATIONS AFRICAINES DONT LE TERRITOIRE PEUT ETRE COUVERT

COUVERTURE TOTALE		COUVERTURE PARTIELLE
ZAIRE	TCHAD	SOMALIE 15%
GABON	MOZAMBIQUE	ETHIOPIE 45%
REPUBLIQUE DU CONGO	HAUTE VOLTA	SOUDAN 75%
REPUBLIQUE CENTRAFRICAINE	NIGER	LIBYE 10%
ANGOLA	NIGERIA	ALGERIE 5%
RUANDA	CAMEROUN	MALI 35%
BURUNDI	TOGO	LIBERIA 60%
ZAMBIE	DAHOMEY	GUINEE 20%
TANZANIE	COTE D'IVOIRE	REP. SUD AFRICAINE 50%
KENYA	GHANA	LESOTHO 10%
UGANDA	BOTSWANA	
NAMIBIA	SWAZILAND	
RHODESIE	MALAWI	
	GUINEE EQUATORIALE	
27 PAYS		10 PAYS
NOMBRE DE PAYS POUVANT UTILISER DES DONNEES PRODUITES PAR LA STATION DE KINSHASA		

ANNEX. F

ANNEX B

<p align="center">AGENCY FOR INTERNATIONAL DEVELOPMENT</p> <p align="center">PROJECT IDENTIFICATION DOCUMENT FACESHEET</p> <p align="center">TO BE COMPLETED BY ORIGINATING OFFICE</p>	<p align="center">TRANSACTION CODE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">A</div> <p>A = ADD C = CHANGE D = DELETE</p>	<p align="center">PID</p> <p align="center">DOCUMENT CODE 1</p>
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<p>3. COUNTRY/ENTITY ZAIRE</p>	<p>4. DOCUMENT REVISION NUMBER </p>			
<p>5. PROJECT NUMBER (7 DIGITS) 660-0072</p>	<p>6. BUREAU/OFFICE</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; padding: 2px;">A. SYMBOL AFR</td> <td style="width:50%; padding: 2px;">B. CODE 06</td> </tr> </table>	A. SYMBOL AFR	B. CODE 06	<p>7. PROJECT TITLE (MAXIMUM 40 CHARACTERS)</p> <p align="center">FAMILY PLANNING</p>
A. SYMBOL AFR	B. CODE 06			

<p>8. PROPOSED NEXT DOCUMENT</p> <p>A. 2 2 = PRP 3 = PP</p> <p>B. DATE <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">MM</td> <td style="width: 20px; text-align: center;">YY</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">76</td> </tr> </table></p>	MM	YY	12	76	<p>10. ESTIMATED COSTS (\$000 OR EQUIVALENT, \$1 = Z 0.86)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:80%;">FUNDING SOURCE</th> <th style="width:20%;">AMOUNT</th> </tr> <tr> <td>A. AID APPROPRIATED</td> <td align="right">2,000</td> </tr> <tr> <td>B. OTHER U.S.</td> <td> </td> </tr> <tr> <td> 1.</td> <td> </td> </tr> <tr> <td> 2.</td> <td> </td> </tr> <tr> <td>C. HOST COUNTRY</td> <td align="right">1,350</td> </tr> <tr> <td>D. OTHER DONOR(S)</td> <td align="right">2,100</td> </tr> <tr> <td align="right">TOTAL</td> <td align="right">5,450</td> </tr> </table>	FUNDING SOURCE	AMOUNT	A. AID APPROPRIATED	2,000	B. OTHER U.S.		1.		2.		C. HOST COUNTRY	1,350	D. OTHER DONOR(S)	2,100	TOTAL	5,450
MM	YY																				
12	76																				
FUNDING SOURCE	AMOUNT																				
A. AID APPROPRIATED	2,000																				
B. OTHER U.S.																					
1.																					
2.																					
C. HOST COUNTRY	1,350																				
D. OTHER DONOR(S)	2,100																				
TOTAL	5,450																				

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION

a. INITIAL FY 78 b. FINAL FY 80

11. PROPOSED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. FIRST FY		LIFE OF PROJECT	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	H. GRANT	I. LOAN
(1)	370	440		400		2,000	
(2)							
(3)							
(4)							
TOTAL				400		2,000	

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

460

13. SPECIAL CONCERN CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)

PVO

14. SECONDARY PURPOSE CODE

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)

To halt Zaire's increasing rate of population growth within five years.

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)

To assure availability of family planning information and services to at least 10% of the population in each of the 37 Soub-Regions of Zaire.

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)

PP 3 work-weeks population planner/demographer (Summer 1976)

<p>18. ORIGINATING OFFICE CLEARANCE</p> <p>Signature _____</p> <p>Title _____</p> <p>Date Signed: MM DD YY</p>	<p>19. DATE DOCUMENT RECEIVED BY AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION</p> <p align="center">MM DD YY</p>
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A. SUMMARY OF PROBLEM AND PROPOSED RESPONSE

The Government of Zaire is already unable to meet the requirements of its population for educational and medical services, roads, labor force employment, etc. These problems, resulting in part from too rapid population growth, can be expected to become worse in coming years. (See DAP for details).

The GOZ has approved introduction of family planning methods under a program, referred to as "Desired Births", which calls for family planning information and services to be generally available so families may have the number of children they want and can properly care for, spaced for protection of the health of mother and child. While such a program is not openly directed at the problem of population growth rate, it is a major policy move in the right direction.

Currently, family planning (FP) is only available at three GOZ clinics in Kinshasa (developed under the AID assisted MCH/FP services project) and at a few PVO clinics. FP services are included in the planned Basic Family Health Project (067) as part of the GOZ development of a fully integrated health system, but complete project success would only provide services to a very limited geographic area by 1980.

The Director of the Desired Births program has a mandate to make FP services generally available. To do so, he proposed to assist suitable existing medical facilities, both PVO and government, with FP staff training and commodities. On the basis of informal contacts and surveys, an estimated eighty such facilities, widely distributed, could be participating within three project years. However, the GOZ cannot provide the required assistance without outside aid, in view of probably continuing GOZ budgetary constraints. The AID project identified by this PID would provide a major part of the required assistance.

The principal project output will be eighty family planning service outlets, widely distributed throughout Zaire. Outlets will be in existing health facilities, both PVO and GOZ. Other outputs: Functioning supply system, uniform FP records system, and staff FP training for the eighty outlets.

Does GOZ want this?

1. Project Purpose and Project Goal

- a. The project goal is to permit Zaire's families to have the number of children they want, spaced for the protection of mother and child.
- b. The project purpose is to assist the GOZ Desired Births program in initiating family planning services on a nationwide basis.

2. Description of Project

a. Outputs

- 1) Eighty hospitals and/or clinics providing family planning information and services throughout Zaire.
- 2) Effectively operating contraceptive supply system to the above eighty locations.
- 3) Medical staff trained to meet requirements of the 80 FP service outlets.
- 4) GOZ training capability for FP staff expanded to meet the continuing requirements of the program.
- 5) Uniform family planning records system.

b. Kind and Amount of AID Technical and Physical Assistance

- 1) Personnel \$ 36,000
 - a) Long term (none)
(Further consideration may indicate need for logistics advisor beginning in 1979)
 - b) Short term, 6 w/m
- 2) Training 180,000
 - a) Long term, 108 pm
 - b) Short term, 54 pm

Handwritten notes:
80 hospitals
80 clinics
80 FP service outlets

- 3) Commodities \$1,350,000
 - a) Contraceptives (\$950,000)
 - b) Medical equipment and supplies
 - c) Office equipment and supplies
 - d) Vehicles
 - e) AV equipment

- 4) Other Costs 400,000
 - a) Rehabilitation of facilities
 - b) Local personnel
 - c) I.E. & C.
 - d) Local travel and per diem
 - e) Transportation of equipment and supplies
 - f) Research
 - g) Miscellaneous

Disbursement period

FY 1978 - 81

3. Major Assumptions Pertinent to Success

a. The GOZ policy relative to family planning will remain at least as positive as the current "desired births" policy. That is, that family planning information and services should be generally available so families may have the number of children they want and can properly care for, spaces for the protection of the health of mother and child.

b. The GOZ will continue to cooperate with non-government institutions, particularly church organizations, in the provision of Zaire's health care.

c. Existing medical institutions (government, church, and other) in sufficient number and suitable geographic distribution will be willing and able to make staff and space available to provide family planning services in conjunction with their nutrition education and/or MCH services.

Continued.

4. Host Country and Other Donor Activities

a. The GOZ will provide the top administrative staff and the administrative offices for the desired births program. The GOZ will also provide the staff and facilities for the initial FP training classes and the staff and facilities (possibly requiring renovation) for 20 FP service outlets.

b. Private organizations within Zaire (partially supported from foreign sources) will provide staff and facilities (possibly requiring renovation) for 60 service outlets.

c. The Pathfinder Fund, IPPF, and the Population Council will provide complementary assistance; e.g., observation training, surveys, seminars, depo provers, and some operational costs.

5. Realistic Alternatives

Delay the formal bilateral assistance project for one to two years but assure provision of the major assistance elements outlined above through the local use of counterpart funds, AID centrally funded contraceptives, and increased inputs by intermediary organizations such as Pathfinder, IPPF, the Population Council, etc. Action would be essentially as described for formal project.

6. Beneficiaries

The major beneficiaries of this project will be a widely distributed cross-section of Zairian families, representing all levels of society in both urban and rural communities.

7. Spread Effect

This project establishes small FP centers around the country on a broad geographic basis with the expectation that a general national awareness of the existence of family planning methods will develop from these information and service outlets.

II. Financial Requirements and Plans

A. Project Cost

FY 1978	\$ 790,000
FY 1979	1,050,000
FY 1980	1,600,000

total 3,350

does not total same as on face sheet

*Reasonable
who? →*

B. AID Share of Costs (Grant Funded)

FY 1978 \$ 400,000
 FY 1979 600,000
 FY 1980 1,000,000

Commodities \$ 1,350M

C. Host Country and Other Donor Share of Cost

1. GOZ: FY 1978 \$300,000
 FY 1979 450,000
 FY 1980 600,000

2. Other Donors: ¹³⁵⁰ Private organizations within the country (primarily church organizations), the Pathfinder Fund, Population Council, the IPPF, etc., will be providing assistance to this project

FY 1978 \$ 400
 FY 1979 700
 FY 1980 1,000

*601 ³³⁰⁰⁰ 2,100,000
 = 33,000 per unit ?*

Handwritten notes and scribbles on the left side of the page.

III. Development of the Project

A. Studies and Analyses

Short term TDY population planning assistance will be requested in connection with development of the PP in the Spring of 1977. If detailed economic/etc. analyses are required by AID/W for the PRP and/or the PP, additional TDY assistance with the proper expertise will be required.

B. Documentation Schedule

PRP: December 15, 1976
 PP : June 30, 1977

C. AID/W Resources Required for Preparation of PRP and PP

PRP: None, except as indicated above

PP : Three work-weeks, population program planner/demographer, Spring of 1977

IV. Issues

Scheduled project development may well be ahead of the GOZ readiness and/or willingness to accept the outlined assistance, in the frame of reference indicated, on a formal basis. A less formal assistance approach, such as is suggested as alternative "a" under paragraph B.5. may be a more viable path. Best option should become apparent by end of CY 1976.

What is this?

A real issue!