PROJECT PAPER

GAMBIA RIVER BASIN DEVELOPMENT PROJECT (OMVG)

625-0012

Authorization Date: May 27, 1981

Total Authorized: $13,394,000

Project Officer: Joel Schlesinger
AFR/DR/SWAP

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Amendment Number: _____

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Gambia River Basin

3. PROJECT NUMBER: 625-0012

4. BUREAU/OFFICE: AFR/SWA — 06

5. PROJECT TITLE (maximum 40 characters): Gambia River Basin Development Project

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 86

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 81 B. Quarter 3 C. Final FY 85

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 81 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	4,000	0	4,000	13,394	0	13,394
(Grant)	(4,000)	(0)	(4,000)	(13,394)	(0)	(13,394)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country						
Other Donor(s)						
TOTALS	4,000	0	4,000	13,394	0	13,394

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) SH	771	ENV				13,394		13,394	
(2)		710							
(3)									
(4)									
TOTALS						13,394		13,394	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)
A. Code
B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

In conjunction with other donors to establish an effective planning division within the OMVG by December, 1985.

14. SCHEDULED EVALUATIONS
Interim MM 09 YY 82 MM 09 YY 83 Final MM 03 YY 85

15. SOURCE/ORIGIN OF GOODS AND SERVICES
[X] 000 [ ] 941 [X] Local [ ] Other (Specify) _____

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY
Signature: Frederick E. Gilbert for
Title: Irvin Coker, Director, AFR/SWA
Date Signed: MM 04 DD 28 YY 81

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM 02 DD 18 YY 81

AID 1330-4 (8-79)

22 MAY 1981

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THRU: ES

THRU: AA/PPC, Charles Paolillo

FROM: Acting AA/AFR, W. Haven North

SUBJECT: The Gambia River Basin Development Project 625-0012

I. Problem: Your approval is required to execute a grant of $13,394,000 pursuant to FAA Section 121 (Sahel Development Program) to the Gambia River Basin Commission for the Gambia River Basin Development Project, 625-0012. It is planned that $4,000,000 will be obligated in FY 1981.

II. Discussion

A. Project Description

1. Background and Project Purpose

The Gambia River, rising from its source in the Fouta Djallon Mountains of northeastern Guinea, flows a distance of 1,184 kilometers through Senegal and The Gambia to the Atlantic Ocean at Banjul. The Basin carved by this river flow comprises virtually the entire land surface of The Gambia, small areas of the Senegalese provinces of Casamance and Sine Saloum and the majority of the province of Senegal Oriental as well as the northernmost area of Guinea.

In terms of economic significance and preoccupation of local populations, it is impossible to overestimate the role of agriculture, broadly defined, in the development of the Basin. Agriculture is the backbone of the Basin economy and the main source, directly or indirectly, of most individual or regional income: about 85% of the population earns its livelihood from crop farming, animal husbandry or related rural activities; more than 2/3 of the region's gross domestic product is derived from these activities as well.

For some time, potential for major increases in agricultural productivity in the Basin has been considered significant. In order to better promote the physical exploitation of land and river resources, Senegal and The Gambia created the Organization pour la Mise en Valeur du Fleuve Gambie (OMVG) in 1976. The OMVG is responsible for coordinating planning and development activities in the Basin. The People's Republic of Guinea applied for membership to the OMVG in 1979 and is expected to be formally admitted during the summer of 1981.

The principal constraint restricting increased agricultural production in the Basin is the almost complete dependence upon rainfall. The uncertainty of rainfall results in low returns when compared to the factors of production and encourages drifts of agricultural labor into occupations that are financially more rewarding and/or socially more attractive. In a very direct sense, then, increased agricultural productivity and income are closely related to the ability to control and subsequently employ the water available from the Gambia River and its tributaries.

In order to harness the Gambia River, the OMVG is proceeding with the study and eventual construction of an anti-salinity barrage in The Gambia (Yelitenda) and a dam in Senegal (Kekreti). In addition to providing for large-scale irrigation, the dams show considerable promise for improving the energy situation in the Member States. Moreover, the coordinated development of the Basin will present an excellent opportunity to rationalize many economic and social systems which have evolved to date in a competitive manner among the Member States. These systems include transportation networks, pricing and taxation schedules, flow of goods and services and trade positions vis-a-vis external markets.

Within this overall program, the member countries of the OMVG have established their priorities for development in the Basin area through the year 2000. These priorities include grain self-sufficiency (rain-fed and irrigated agriculture), meat production (livestock and poultry), and forestry growth. In order to meet the proposed production targets, the OMVG will need to assemble total investment funding of approximately $511 million. Of this sum, $60 million will be expended for pre-investment plans and studies, $350 million for infrastructure (principally for construction of the Yelitenda and Kekreti dams) and $101 million for production research and implementation.

The OMVG is now actively seeking contributions in support of its development program. This $13.4 million AID project, and a UNDP commitment of $8.3 million, will provide for pre-investment study of the critical areas which need to be addressed for purposes of planning and implementation of production projects. The OMVG has further stated that sufficient funds for the $64 million Yelitenda Barrage construction have already been pledged by the EEC, Federal Republic of Germany, the Islamic Development Bank and the African Development Fund. The Federal Republic of Germany has also indicated its intention to fund the $2.8 million feasibility study of the Kekreti Dam.

Current estimates place the amount of potentially irrigable land during the period 1981-2000 at 77,000 hectares. The Gambia already has at least 5,700 hectares under irrigated cultivation, while Senegal is irrigating at least 1,100 hectares. Both The Gambia and Senegal plan to continue and expand agriculture projects as the OMVG program unfolds. The OMVG has stated that Saudi Arabia, Kuwait, Abu Dhabi, the Caisse Centrale (French), CIDA (Canada) and FAC (French) have each expressed interest in funding these agricultural research and production projects. It is the intention of the OMVG to conduct a meeting of interested donors in early 1982 to clarify commitments to these projects.

To this point, AID has noted that systematic planning and development activities are proceeding in a manner consonant with achievement of the economic production goals for the year 2000, as set forth in the UNDP study. Further, as summarized below, this AID project is designed to provide the institutional basis for monitoring and reviewing feedback which will permit local decision-makers to assess progress towards these goals over time.

Thus, the OMVG is an organization with an enormous and challenging task. The mid-term goal of this AID project is to establish the OMVG as an effective coordinating agency for the development of the Gambia River Basin in conjunction with Member States and other donors by December, 1985. Accomplishment of this mid-term goal will depend upon achievement of the project purpose: the creation of an effective planning division within the OMVG.

The major outputs of the AID project which will contribute to the achievement of its purpose are:

a. the complete aerial photography, mapping and ground surveys of the Basin in order to provide land utilization and inventory data on which to plan interventions;
b. an environmental and socio-economic study which will collect data for planning purposes, predict the positive and negative impacts of dam construction, recommend mitigative actions necessary to offset or maximize those impacts and provide specific data on the economic feasibility of proposed activities for donor investment; and
c. provision of long-term American technical assistance (environmentalist, sociologist, natural resource economist and river basin planner) and on-the-job and academic training to increase the capacity of the OMVG to carry out its full responsibilities.

2. Conformance to AID Strategy

As set forth in the AFR/SWA Development Assistance Program (DAP) 1976-1980, AID has concluded that certain economic and social problems are best addressed through regional programs. In particular, development of West African trans-national river basins is viewed as being a significant means of transforming regional economies. While conforming to the general AID strategy of valorizing river basins, this project is in harmony with established AID priorities in sectoral development. The successful evolution of the OMVG as an effective regional organization is a necessary precondition to the gains in agriculture, livestock and forestry productivity which are expected as a result of Basin development.

3. Beneficiaries of the Project

The most direct beneficiary of the project will be the OMVG, which will be provided the means by which to strengthen its institutional capacity and ability to plan and coordinate Basin development. The development related agencies within the Member States will also benefit through the acquisition of data and on-the-job training to be derived from participation in the environmental and socio-economic studies.

However, the ultimate beneficiaries of this project are the poor rural inhabitants of The Gambia River Basin. It is intended that the training,

data and analysis contributed by this project will result in socially sound plans, programs and projects which will promote their improved socio-economic well-being. The estimated population of the Basin in the year 2,000 will be 2,000,000.

B. Financial Summary

AID financing over the five years of the project totals $13,394,000, of which $4,000,000 constitutes funding for the first fiscal year, FY 1981. The overall dollar breakdown of funds requested is presented below in tabular form:

	FY 81 (000)	LOP (000)
Commodities:	156	298
Technical Assistance:		
Long-term specialists	18	1,338
Implementation contracts	3,325	9,167
Participant Training:	136	136
Other:		
Evaluation		150
Inflation (15%)		1,196
Contingency (10%)	365	1,109
	4,000	13,394

The Gambia River Basin Commission will contribute in the form of provision of office space and clerical support for the long-term American technical assistance personnel, full employment and budgeting support for the four local technical counterparts and other training participants and handling of all customs procedures and administrative requirements.

C. Socio-economic, Technical and Environmental Description

1. Socio-economic Acceptabililty

This project will engage in an array of activities designed to increase the capacity of institutions in the Basin to more effectively plan for the development of natural and human resources.

A major attraction of this project, therefore, is that social and economic soundness analysis should be built into the planning activities of the OMVG and that this data will be used to determine social and economic feasibility of projects over time. The provision of this data increases the chances for economic and social success of specific strategies and projects which will directly involve and benefit agricultural production of local populations.

2. Implications With Respect to Human Rights

Senegal and The Gambia, as peaceable democratic nations, have excellent human rights records and no issues of concern to the U.S. exist in this regard.

3. Technical Analysis

This project has been reviewed by AID and host country officials and is considered technically sound.

4. Environmental Analysis

A negative determination has been accorded this project since the principal activities consist of study research and provision of technical assistance, neither of which will have significant environmental impact. No future environmental analyses are necessary.

D. Condition Precedent and Covenants

1. The project contains one condition precedent and five covenants. These items are listed in their entirety in Sections 3.b. and 3.c. of the attached Project Authorization.

2. Waivers

Source and origin of goods and services provided under this project shall be the U.S., The Gambia and Senegal unless AID otherwise agrees in writing.

3. Implementation

The Implementation Plan for the project has been reviewed by the Project Committee which believes it sets forth a reasonable time frame in which to carry out the project.

4. Implementation Agencies

This project will be implemented by the Gambia River Basin Commission (OMVG) under authority of the High Commissioner who is the principal officer. AID participation in the project will be managed by USAID/Senegal and the OAR/Gambia with the project manager based in Banjul. When the anticipated move of the OMVG headquarters from Kaolack, Senegal to Dakar takes place, USAID/Senegal will assume responsibility for AID management.

E. Committee Action and Congressional Apprisement

1. Project Committee meetings took place in late March and April, culminating in the Project Review held May 8, 1981. The unanimous consensus of the Project Review is to recommend this project for approval and authorization to the Administrator for the Agency for International Development.

2. The Africa Bureau Executive Committee for Project Review (ECPR) met on May 19, 1981 and agreed with the recommendation of the Project Review that the project be forwarded for approval and authorization to the Administrator for the Agency for International Development.

3. The Congressional Notification expired on May 23, 1981, without comment.

F. The requirements of section 611(a) of the FAA have been satisfactorily met. A statement to that effect is contained in Annex B of the Project Paper (Tab A).

G. Officers Responsible for this Project are:

Anthony Funicello Program Officer OAR/Banjul	Joel Schlesinger Project Officer AFR/DR/SWAP

H. Other Items of Note

Funds for the extension of the aerial photography and mapping study into northeast Guinea have been included in this project. To do otherwise would risk negatively influencing the validity and completeness of data collection in Senegal and The Gambia, hence jeopardizing the development planning process in those countries. Sahel Development Program funds may be used in a neighboring non-Sahelian country if the purpose of that expenditure is to valorize and critically support projects in the Sahelian country.

Any extension of other elements of this project into Guinea will be assessed at a future date following completion of a UNDP study and a determination that Guinea's preparedness level is such that studies can be appropriately conducted. Consideration of such extensions would be a matter for review by the Africa Bureau as a whole at that time.

III. Recommendation

That you sign the attached Project Authorization, and thereby approve life-of-project funding of $13,394,000 for the Gambia River Basin Project.

Clearances:

AAA/AFR/DR:JWKoehring (draft)	AFR/DR:NCohen (draft)
AFR/DR/SWAP:JRMcCabe (draft)	AFR/DR/ARD:CScherrer (draft)
AFR/DR/ENGR:MGould (draft)	AFR/SWA:ICoker (draft)
AFR/DP:JGovan (draft)	GC/AFR:TBork (draft)
AFR/SWA:DMaxwell (draft)	GC: JBolton JRB 5/22/81
	AAA/PPC/PDPR:DEriksson

Drafted by:AFR/DR/SWAP:JSchlesinger:fn:5/11/81: Ext 28242
redrafted/retyped: mon:5/20/81

PROJECT AUTHORIZATION

Name of Country/Entity: Sahel Regional

Name of Project: The Gambia River Basin Development Project

Number of Project: 625-0012

1. Pursuant to Section 121 of the Foreign Assistance Act of 1961, as amended, I hereby authorize The Gambia River Basin Development Project for the Organization pour la Mise en valeur du Fleuve Gambie (OMVG) involving planned obligations of not to exceed $13,394,000 in grant funds over a five year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project consists of assisting the OMVG to develop an effective Planning Division by financing the cost of technical assistance, on-the-job and academic training, aerial photography, mapping and ground surveys of the Basin and an environmental and socio-economic study.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the project shall have their source and origin in The Gambia, Senegal or in the United States except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

b. Conditions Precedent

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, the OMVG shall furnish in form and substance satisfactory to A.I.D. evidence that (1) the terms of reference for the counterparts to the four long-term American technical specialists have been approved by the appropriate Member State(s) and (2) that the OMVG has made all arrangements necessary for financing the employment costs of the counterparts.

c. The OMVG Shall Covenant as Follows:

(1) To hire and maintain an administrative and technical staff adequate in numbers and quality to effectively carry out the project;

(2) to prepare and update annually a full OMVG budget which covers the period up to September 30, 1988. This budget will include an identification of costs generated by all activities and the source of funds for the financing of such costs;

(3) to prepare, by no later than the PACD, an action plan which addresses agricultural pricing policy considerations within The Gambia River Basin;

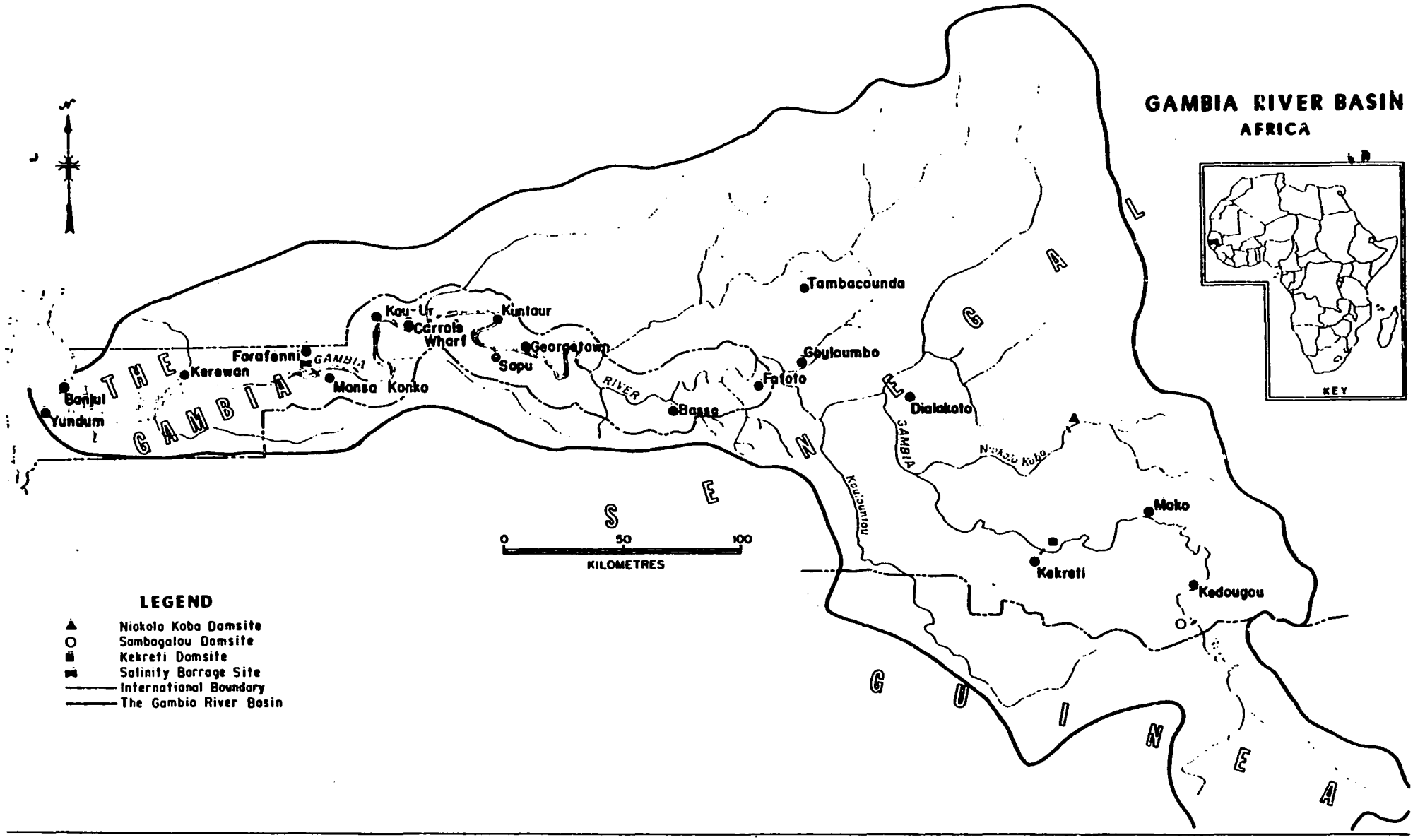
(4) to utilize Member State technicians and resources to the maximum extent possible in order to encourage effective communication between Member States and to insure that Member State development priorities and strategies are reflected in the OMVG planning and coordinating process; and

(5) to provide evidence, in form and substance satisfactory to AID, that the counterparts to the four long-term technical assistants have been nominated and approved by August 1, 1981 and hired by December 31, 1981.

M. Peter McPherson
Administrator

May 27, 81
Date

Clearances:
A-AA/AFR:WHNorth Date 5/22/81
GC:JBolton Date 5/22/81
A-AA/PPC:CPadillo Date 5/22/81


GAMBIA RIVER BASIN
AFRICA
KEY
THE GAMBIA
GAMBIA RIVER
GAMBIA
Banjul
Yundum
Kerewan
Farafenni
Mansa Konko
Kau-Ur
Carrols Wharf
Kuntaur
Georgetown
Sapu
Basse
Fatoto
Gouloumbo
Tambacounda
Dialakoto
Niokolo Koba
Koulountou
Mako
Kekreti
Kedougou
SENEGAL
GUINEA
0 50 100
KILOMETRES
LEGEND
Niokolo Koba Damsite
Sambagalou Damsite
Kekreti Damsite
Salinity Barrage Site
International Boundary
The Gambia River Basin

GAMBIA RIVER BASIN PROJECT
625-0012

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III. Design Note and Team Members

The people who have helped to produce this project paper are listed below. A preliminary draft was written on site in Senegal and Gambia and reviewed by Senegalese, Gambian, OMVG and AID officials. Subsequent revisions were reviewed once again and finally accepted by the same officials. Thus, the project design reflects contributions and concensus of those parties who have ultimate responsibility for its implementation.

Since 1974, AID has participated in the development of the Senegal River Basin, which lies to the north and east of the Gambia River Basin. Assistance to the Senegal River Basin Organization (OMVS) has included aerial photography, socio-economic and environmental studies similar to those herein proposed for the OMVG. The OMVG project design team has interviewed AID/Washington and contract personnel who participated in OMVS activities with the intent of understanding the positive and negative aspects of the OMVS experience. Consequently, this OMVG project has been designed with lessons learned from the previous OMVS activities in mind.

Preliminary Draft

Elroy Carlson	Dimpex Associates
John Erikson	Dimpex Associates
Ken Mittleholtz	Dimpex Associates
Will Reedy	Dimpex Associates
Peter Wiel	University of Delaware
Robert Bush	U.S. Bureau of Census
Joan Goodhue	U.S. Bureau of Census

Final Draft

Patricia Lerner	AID/Washington
Michael Gould	AID/Washington
Carole Scherrer	AID/Washington
Linda Handon	AID/Washington
Ray Lanier	USDA

Project Officer: Joel Schlesinger AID/Washington

IV. Background, Priority, and Relevance of the Proposed Project

The Gambia River, rising from its source in the Fouta Djallon Mountains of northeastern Guinea, flows a distance of 1,184 kilometers through Senegal and The Gambia to the Atlantic Ocean at Banjul. The Gambia River Basin comprises essentially the entire land surface of The Gambia, small areas of the Senegalese provinces of Casamance and Sine Saloum and the majority of the province of Senegal Oriental, and the northernmost areas of Guinea.

The total Basin drainage area is 77,850 square kilometers and is apportioned among the three riparian nations in the following manner:

Nation	National Land Areas as % of the Total Basin	National Basin Areas as % of Total National Land
Guinea	9	3
Senegal	77	30
The Gambia	14	99

The Gambia River Basin is relatively flat except for the eastern part of Senegal and Guinea where elevations in the Fouta Djallon Mountains reach 1,150 meters above sea level. The lower reach of the Gambia River from Gouloumbo, Senegal to Banjul, The Gambia is about one-half the length of the river and is under tidal influence. The river and its tributaries provide a plentiful but highly seasonal supply of surface water to the Basin. Optimal utilization of these seasonal surface flows is possible if necessary infrastructure is provided for proper year-round water management. In this regard, there are several sites in the Basin at which dams and storage reservoirs could be built. Ground-water resources in the Basin are known to be significant and may offer an alternative source of water in some areas.

The demographic projections for the Basin contained in the UNDP Final Mission Report of April 1980 are presented in Table 1 of this project paper.

Table 1 - Demographic Projections (thousands)

Geographical Unit	Population Segment	1976	1985	1990	2000
The Gambia	Rural	403.3	494.89	554.48	696.05
	Urban	135.5	195.93	238.63	349.30
	Total	538.8	690.82	793.11	1,045.35
Senegal Oriental (in basin)	Rural	207.0	249.58	276.90	317.63
	Urban	32.7	57.76	75.93	147.42
	Total	239.7	307.34	352.83	465.05
Sine Saloum (in basin)	Rural	190.4	240.51	273.85	352.54
	Urban	7.8	13.61	17.90	32.00
	Total	198.2	254.12	291.75	384.54
Casamance (in basin)	Rural	50.0	56.36	60.24	68.82
	Urban	0	0	0	0
	Total	50.0	56.36	60.24	68.82
Total Basin 1/	Rural	850.7	1,041.34	1,165.47	1,435.04
	Urban	176.0	267.29	332.46	528.72
	Total	1,026.7	1,308.63	1,497.93	1,963.76

1/ Exclusive of Guinea

An approximate rate of human population growth in the Basin of 2.8% per annum would result in a doubling of the human population of the Basin over the period 1976 to 2000, and a minimum indicative figure of about 2,000,000 persons at the turn of the century. There exist, however, recent studies of natural population increase and migration flows into the basin 1/ which seem to indicate that the rates used in population growth projections are already too low and that flows due to in-migration may increase dramatically if projects initiated in the context of general Basin development result in substantial economic and

1/ Colvin, L. G. et al, The Uprooted of The Western Sahel: Migrants' Quest For Cash In The Senegambia, USAID Contract No. AID/Afr-C-1363 with University of Maryland, Baltimore County, 1980.

social incentives for the existing and projected manpower pool of the entire historic area of Senegambia - i.e., Senegal, The Gambia, and parts of Mauritania, Mali, and the Guineas. The mean human population density for the Basin is 13.2 persons per square kilometer but area densities are highly variable. In the most densely populated rural areas of The Gambia, the figure easily exceeds 75 persons per square kilometer, whereas large areas of Senegal Oriental are virtually devoid of human settlement.

As stated above, the flood plain of the Gambia River is extremely flat within the limits of the country of The Gambia, so much that the effect of the saltwater intrusion is felt as far as 250 kilometers upstream from the river's mouth. The results of this intrusion are such that, in the lower reaches of the flood plain, there are mudflats with a high salt content and poor agricultural potential. Further away from the river and in the upstream reaches, alluvial flood plains do offer agricultural potential. The slopes of the low upland terraces and the surface of the plateaus, which consist of colluvial and alluvial-colluvial materials, are farmed and hold additional potential for agricultural production.

In total, about 45% of the land in The Gambia is under cultivation or in recent fallow. This cultivation is almost entirely on the colluvial and alluvial-colluvial soils which are more suited to the traditional rainfed agriculture practiced in the country than are the heavier alluvial soils. The latter soils are presently used for the somewhat limited swamp rice production practiced along the river.

Agriculture is maintained on about 13% of the land in Senegal Oriental, while forests, livestock grazing and national park lands constitute the utilization pattern for the remainder. In the parts of the Casamance and Sine Saloum, which lie within the Basin and along the borders of The Gambia, the pattern of semi-commercialized mixed cropping and livestock farming is virtually identical to that existing in The Gambia.

In terms of physical exploitation of the land surface, economic dependency, and devotion of human resources, it is impossible to overestimate the role of agriculture, broadly defined, in the Basin area. It is the backbone of the Basin economy and the main source, directly or indirectly, of most individual and regional income. About 85% of the population earns its livelihood directly from crop farming, animal husbandry and related rural activities. More than two-thirds of the area's gross domestic product is derived from these same activities, with over 60% attributable to the area's main cash crop - i.e., groundnuts. Food crop production combines compound vegetable gardening with subsistence-level production of upland and swamp rice, millet, sorghum, and maize. Livestock of all species are well-integrated into the indigenous farming systems and provide a number of important products to the compound agricultural production units.

The single biggest constraint upon the existing agriculture of the Basin is its almost total dependence upon annual precipitation. The existing cropping patterns are a clear reflection of the desire

of local farmers to avoid the risks and uncertainties inherent in an annual rainfall regime that is highly variable in both spatial and temporal terms. This is so even though the quantitative totals for annual rainfall in the Basin would appear to be adequate to sustain a rather high level of permanent agricultural production.

Linked directly to the above constraint are the problems of low returns to the factors of production from an uncertain agriculture system and the consequent drift of agricultural labor into occupations and activities that are financially more rewarding and/or socially more attractive. In a very direct sense, increased productivity from the agricultural land of the Basin is intimately related to the ability to first control and then effectively employ the available water from the Gambia River and its tributaries. Improved water utilization would have a profound effect on agriculture as it exists in the Basin. The ability to produce substantial quantities of rice and other food grains on a sustained yield basis from the irrigable lowland areas of the Basin would necessarily introduce a new flexibility into the land use patterns for the upland areas as well. The potential for improved combinations of high value cash crops, livestock production, and forestry utilization on the uplands would be greatly improved by the development of an irrigated agriculture in the lowlands.

In addition to the potential for improvement in the agricultural situation flowing from the development of large-scale irrigation in the Gambia River Basin, there is considerable promise for improvement in net energy situations in the member states. Hydroelectric power from planned dam infrastructure in the Basin could greatly relieve the twin pressures of increased consumptive demand in both urban and rural areas for all energy-related products and the increasing real cost of satisfying the increased demand from external fossil fuel suppliers.

Finally, the development of the Gambia River Basin through a determined effort at integrated planning and project implementation provides an excellent vehicle for rationalizing many economic and social systems that have evolved to date in a competitive manner. The successful development of regional transportation networks, joint pricing and taxation schedules, freer flows of goods and services, and effective trade positions vis-a-vis external markets flowing from the nucleus of a river basin planning effort would result in enormous gains in economic efficiency in both technical and allocative terms in the future.

In sum, then, the successful development of the Gambia River Basin is an extremely high priority issue with all the member states of the historic Senegambia region of West Africa and not simply for the two states that are current members of the Organization pour la Mise en Valeur du Fleuve Gambie (OMVG). (Guinea is currently negotiating the terms by which it will enter OMVG.) For The Gambia, of course, development of the Gambia River Basin is synonomous with development of the country. For Senegal, successful development entails at a minimum development of 30% of its land surface in the most underprivileged part of the country.

In April 1980, the United Nations Development Program (UNDP) issued the Final Mission Report of its Multi-disciplinary Multi-donor Mission to study the development of the Gambia River Basin. Initiated in 1977, the report is intended, in part, to assist the riparian countries in choosing long-term strategies for Basin development and identifying resources required for implementation of that strategy. The completed UNDP report and accompanying Action Plan (approved by the OMVG Council of Ministers in March, 1981) clearly set forth the strategies and study and project activities required to begin the coordinated development of the Gambia River Basin. The elaboration of these strategies was the result of a highly intensive collaboration between the UNDP study team and the representatives of the member states culminating in the establishment of national development priorities in the basin throught the year 2000.

Both the Gambia and Senegal have chosen to concentrate their Basin development efforts in the sectors of grain self-sufficiency (rain-fed and irrigated agriculture), meat production (livestock and poultry) and forestry growth. Beginning with a description of a Base Case (i.e., if no activities other than those which are current or are committed by 1978 are undertaken) several strategies for technical packages were considered. Assuming that the selected strategies are implemented, it is projected that the Gambia will by the year 2000: (1) decrease its grain deficit from an estimated 99,400 tons to 6,000 tons, (2) increase meat production by 69%, (3) develop 94,500 hectares of forest plantations where none currently exist. The Basin area of Senegal will (1) reverse its estimated 74,700 ton food deficit to a 110,000 ton surplus, (2) increase meat production by 2,000 tons and (3) develop 84,000 hectares of forest plantations where none currently exist.

In order to achieve these developmental goals, it is estimated that the OMVG and member states will need to assemble total investment funding of approximately $511 million, of which approximately $60 million will be expended on pre-investment plans, studies and projects, approximately $350 million on infrastructure development and approximately $101 million on production research and projects.

The OMVG has begun soliciting contributions for these activities. Regarding pre-investment plans and studies, this $13.4 million AID project and a UNDP commitment of $8.3 million for pedilogical and hydrological studies will encompass the four critical areas which must be addressed as a precondition to planning for production projects. Donor support for other pre-investment elements is currently under discussion.

The OMVG has stated that sufficient (grant) funds for the $64 million anti-salinity barrage construction have already been pledged by four donors, the EEC, Federal Republic of Germany, the Islamic Development Bank and African Development Fund. The Federal Republic of Germany has further indicated its intention to fund the $2.8 million feasibility study of the Kekreti Dam. Funds for Kekreti dam construction costs have not yet been solicited due to the very preliminary status of planning for the dam.

Some experience in irrigated agriculture has already been gained through prior implementation of projects along the River. In The Gambia, at least 5,700 hectares have been irrigated during the period 1950-1980. This irrigation has been carried out under projects implemented by the Commonwealth Development Corporation in cooperation with the Netherlands, the Taiwanese Rice Mission, the World Bank and the Peoples' Republic of China. In Senegal, at least 1,100 hectares have been irrigated since 1977 in projects implemented by AID, Catholic Relief Services and the FED.

Current estimates place the amount of potentially irrigable land in the period 1981-2000 at 77,000 hectares. Gambian projects to be implemented in support of these targets include testing of crops other than rice, alternative forms of land development for irrigated agriculture, soils surveys and identification of higher technological packages. In Senegal, projects to be implemented include development of vegetable crops, integrated aspects of agricultural development and exploitation of previously uncultivated lands. Plans connected with the Yelitenda include developing irrigation plots at the rate of 300 hectares per year with gradual expansion to 700 hectares per year by 1986 and over 1000 hectares per year in the 1990s.

In addition, the OMVG has stated that Saudi Arabia, Kuwait, Abu Dhabi, the Caisse Centrale, CIDA and FAC have all expressed interest in funding irrigation and other agricultural production projects. It is the intention of the OMVG to conduct a meeting of interested donors in early 1982 to clarify commitments to these projects.

To this point, AID has noted that systematic planning and development activities are proceeding in a manner consonant with achievement of economic production goals for the year 2000 as set forth in the UNDP study. Further, as explained below, this AID project should provide the basis for monitoring and reviewing feedback which will perimit local decision-makers to assess progress towards these goals over time.

V. PROJECT DESIGN LOGICAL FRAMEWORK MATRIX

NARRATIVE	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
GOAL: The socio-economic development of the rural population of the Gambia River Basin.	Aggregate increases in production/income in the areas of rainfed and water-managed agriculture, livestock and forestry as projected in Final Report of UNDP Study of April, 1980.	GOS and GOTG statistics; production statistics	
SUB-GOAL: To establish an effective coordinating agency for Gambia River Basin Development in conjunction with member states and other donors by December, 1985.	1. Important OMVG tasks such as management of barrages being handled in efficient manner by January, 1985. 2. OMVG has secured funds and/or commitments for funds for 25% of studies contained in UNDP Action Plan by 12/81 and 50% by 12/82. 3. OMVG serves as effective clearing house for information and coordination of OMVG national projects within the Basin. 4. 50% of projects/studies for which funds have been secured by 12/82 are in the process of implementation. 5. OMVG staff routinely play significant role in implementation, monitoring and evaluation of OMVG regional development projects by 9/82. 6. Donors and member states recognize OMVG as the overall coordinating agency for Gambia River Basin development by 1985.	1. Correspondence 2. OMVG Project files 3. USAID and other donor observations 4. Interviews	1. Contribution of means to implement development strategy by member states and external donors. 2. Active participation of Basin population in all aspects of development projects. 3. Principal study funding and conclusions do not run contrary to desire and interests of the OMVG member states.

Purpose: In conjunction with other donors to establish an effective planning division within the OMVG by December, 1985.	1. 75% of key staff positions are filled by nationals of member states by January 1985. 2. Planning Division recommendations are recognized as an important project planning and implementation resource by donors and member states and applied on a routine basis as they become available. 3. Effective collaboration between the Planning Division and member state institutions are demonstrated by regular meetings, joint collection and monitoring of data, preparation of policy recommendations, etc. by 12/83. 4. Master development plan prepared and approved by member states by 1986. 5. OMVG High Commission and member states recognize the Planning Division is a key coordinating unit in the Gambia River Basin by 1985.	1. OMVG books and records 2. Interviews 3. Correspondence 4. Master development plan	1. OMVG is staffed and equipped to undertake designated role. 2. Trained staff remain in Planning Division positions once assigned. 3. OMVG supports distribution of studies. 4. Member states and donors provide Planning Division with information on proposed sub-project development activities and proposed research studies.

OUTPUT: 1. Studies effectively completed and recommendations accepted by OMVG as valid.	1. a. Socio-economic and environmental studies are carefully integrated to provide consistent conclusions/ recommendations. b. Study teams flexible enough to respond to feedback and to incorporate modifications over study period. c. Study designs and work plans are approved by OMVG. d. Studies are concise documents containing base-line collection, predicted impacts and mitigative measures. e. Study results are accepted by OMVG as valid. f. Study teams work closely with host country institutions and do not duplicate already existing data.	1. Final studies 2. Interviews 3. Correspondence 4. Diplomas 5. OMVG reports 6. Contractor reports	1. OAR/Banjul and USAID/Dakar provide sufficient management/ backstop personnel to keep project on track and studies integrated. 2. Member State governments make policy and financial decisions and implement actions enabling OMVG to develop its role as an effective Basin development program. 3. OMVG distributes copies of final reports to interested donors within a reasonable period after study conclusion. 4. Bureaucracies of the Member States accept study conclusions and recommendations. 5. UNDP Action Plan is accepted by Member States and international donor community as a basis for Basin development.
A. (1) Environmental Study (a) River resources component (b) Public health component (c) Wildlife/vegetarian component	A. (1) (a) Contract award 1/82, surveys begin, 6/82, 100 copies final report 8/83. (b) Contract award 1/82, surveys begin, 6/82, 100 copies final report 11/83. (c) Contract award 1/82, surveys begin 6/82, 100 copies final report 7/83.		

(2) Socio-Economic Study

B. Aerial Photography/Mapping

(1) Contract #1
(a) Ground Surveys
(b) Aerial photography

(2) Contract #2
(a) preparation of planimetric photomaps

2. Training

A. Academic/on the job

(1) Environmentalist, civil engineer/river basin planner, rural sociologist, natural resource economist.

(2) Junior statistician

(3) Geodetic/cartography staff

(4) Interaction with other study team members.

(2) Contract award 1/82, team in country 2/82, 100 copies final report integrated with environmental studies 1/84.

B. (1) Contract award 10/81
(a) begin 11/81, end 7/81
(b) begin 12/81, end 6/82

(2) Contract award 8/82
(a) 50 sets of photomaps in French/English and metric system, 10/83

A. (1) Complete Masters Degree program and 1½ years work with TA specialists by 2/84.

(2) Training for 1 year in data collection/statistics.

(3) Provision of 8 and 6 months working with contractors

(4) Approximately 500 person-months of contractual TA overlap.

6. Weather conditions do not force long delays in implementation.

7. OMVG adequately prepares HC institutions about purposes of Project and what is expected of them.

8. Counterpart staff assigned to OMVG by arrival of TA team.

9. TA Team has access to transportation as needed.

10. TA Team has access to planners and decision-makers.

B. Technical	B.
(1) Two OMVG/host country staff	(1) 6 months, each in data processing
(2) Four staff	(2) 1 month each for observation/ orientation in mapping and photographic procedures, Fall 1982.
3. U.S. Technical Assistance	
Long term (on the job and function effectively)	
A. Environmentalist	A. Assigned 2/82, complete 12/85
B. Civil Engineer/Basin Planner	B. Assigned 2/82, complete 12/85
C. Rural Sociologist	C. Assigned 2/82, complete 12/85
D. Natural Resource Economist	D. Assigned 2/82, complete 12/85
	E. TA specialists have precise job descriptions and the means to carry them out. TA in part responsible for designing overall Basin study plan for monitoring studies.

INPUTS: 1. Training 2. Technical Assistants 3. Funding for Studies 4. Commodities 5. Funding for evaluations 6. Contingency fund (10%) 7. Inflation (15%)	See financial plan contained in Annex I.	1. PIO/Ts, PIO/Ps, PIO/Cs. 2. Contracts. 3. USAID Regional Controller records	1. OMVG can supply the permanent qualified host country counterparts and their support as required in the project documents. 2. U.S. technical assistants can be engaged who can adapt to living/working conditions as required. 3. Congressional appropriations and AID allocations are sufficient and timely to execute the project as planned. 4. OMVG able to handle customs and logistics concerns in a timely fashion. 5. Qualified institutions available to undertake studies within specified time frames. 6. OMVG will have another donor furnish agronomist. 7. Institutions can recruit qualified people to work on studies that can adapt to living and working conditions. CP The TORS for the counterparts to the appropriate long-term specialists must be approved by the appropriate HC authority and evidence presented that financial provision has been made for their engagement by the OMVG before funds for the Project may be disbursed. Covenants 1. The OMVG will make every effort to live and maintain technical and administrative staff at number and quality needed to effectively achieve stated project objectives throughout LOP.

2. The OMVG will prepare and update annually an OMVG budget projected to two years past the PACD of this Project. Budget should include, as minimum, the costs generated by all activities and sources of funding to cover these costs.

3. The OMVG agrees to provide an Action Plan addressing agricultural price policy considerations within the Gambia River Basin by the end of the project.

4. OMVG should maintain its current practice of relying as much as possible on technicians and resources available from Member States.

5. OMVG will provide evidence that counterparts to the four long-term technical assistants have been nominated and approved by August 1, 1981 and hired by December 31, 1981.

VI. Project Purpose

This AID project is institution-building in nature, its mid-term goal being to establish the OMVG as an effective operating agency for the coordination and management of a development planning and project implementation program. Accomplishment of this mid-term goal will depend upon achievement of the project purpose: the creation of an effective planning division within the OMVG. In order to develop such a planning division, AID will provide for the following outputs: (1) environmental and socio-economic studies of the Basin, (2) aerial photographs, surveys and maps of the Basin, (3) academic, on-the-job and technical training, and (4) long term U.S. technical assistants.

1. The long term technical assistance specialists will work with OMVG staff in developing the capability of that staff to direct and guide what promises to be a complex, multi-agency program. This assistance will include, among other things, providing guidance to donors and member states in design and completion of many interrelated studies. The management vehicle to be used by the technical assistance specialists and the staff of the OMVG High Commission will be the study plan of work which is to be prepared in the first months of the project. The study plan will be reviewed, revised and updated, as needed, to meet changing circumstances throughout the approximate five year study phase.

2. The execution of technical studies to assist the OMVG to design, analyze and monitor the impact of projects proposed for implementation during the study phase as well as the long range planning and development program of the OMVG consist of:

   (A) An aerial photography and mapping activity, which will provide detail not presently available, but necessary for identification of potential structural sites and irrigable areas. Basin-wide maps will be furnished in order to provide soils interpretation and productivity information; current and potential land use and land use conflict areas; demographic and migration patterns; and for surveys and analyses concerning livestock, forestry, transportation and environmental factors; and

   (B) A carefully integrated environmental and socio-economic study. (1) The environmental portion will focus on collecting and developing baseline information and analytical capability needed to determine the environmental impact of proposed dams,

other structures and irrigation developments on the Gambia River. As such, the study is not intended to be a comprehensive study of all environmental effects, but will be focused on the most important elements. (Further studies will be identified and designed if deemed necessary or useful.) This study will also assist in identifying potential mitigative measures if needed. While this study will focus on the riverine environment, its design will be compatible with other basin-wide environmental studies which may be identified as needed by the study work plan or which are currently in progress or completed.

Due to the environmental conditions that exist in the proposed barrage area, water-related human diseases are already endemic. Given the seriousness of these diseases, it is necessary that the impact of the proposed projects on human health be projected. Consequently, as part of the environmental study, a public health study will be carried out to review existing medical data and determine information requirements specific to the assessment of the impact of the proposed development and related changes of the environment on public health. The study calls for gathering of necessary field data, projecting the impacts on public health related to the development activities, and recommending mitigative measures, monitoring programs, and organizational requirements to succeed in planning and implementing these measures.

(2) The OMVG action plan also includes a socio-economic study which will provide baseline information on the existing socio-economic patterns in the basin emphasizing the farming and livestock sectors and the intersection of those two activities. Focusing on the riverine portion of the basin, the study will provide data and analytical capability to determine social impacts and economic returns of structures and irrigation developments proposed. Potential compensating or mitigating actions as well as those actions which may need to be taken to ensure that projected development outcomes are actually achieved will be provided.

This project paper provides an initial framework from which to begin implementation. Since projects are organic in nature and require frequent modification based on feedback, management will have to maintain a flexible, pragmatic attitude during implementation. This attitude is best characterized by a tenacity on the part of management to accomplish the desired impact.

VII. The Problem

The problem herein addressed is to achieve the socio-economic development of the population in the rural areas of the Gambia River Basin. Through the (a) stimulation of employment possibilities for rural people, (b) promotion of a more equitable distribution of revenues, and (c) promotion of agro-industrial and industrial development not only within the project zone but also in the other regions of the riparian states, it is expected that the per capita income of the rural population will be increased.

AID funding is requested to assist the socio-economic development of the target group in the basin. The program strategy for addressing this problem is to assist in a project designed to establish the OMVG as an effective coordinating agency for Gambia River Basin development by the beginning of 1986. By achieving the purpose of the project, it is expected that there will be a direct effect upon increases in production and income in the sectors projected in the final report of the UNDP study of April, 1980.

VIII. Project Development Process and OMVG Strategy

The current membership of the OMVG consists of Senegal and The Gambia. In 1979, the People's Republic of Guinea filed an application for membership status within the OMVG. This application was accepted, in principle, in the Spring of 1980 and the specific terms governing Guinea's entry are now under negotiation. Final ratification of Guinea's membership in the OMVG is expected during 1981.

The present member states of the Gambia River Basin Development Organization (OMVG) have established a program for the development of the Basin. The objective of the program is the integrated development of the lands, water, and human resources of the basin. The central strategies for achieving these objectives are contained in the preliminary investigation study of the UNDP Mission, entitled Development of the Gambia River Basin, April 1980. As a result of this study, an initial Action Plan for the Development of the Gambia River Basin has been drafted by OMVG member country experts working with the UNDP multi-donor team. This action plan identifies a number of prefeasibility studies and development projects which represent the initial implementation phase of the development strategies set forth in the study. A summary of these strategies is outlined in section XV A, Economic Analysis.

The OMVG intends to have a final development action plan approved by member states of the Basin by 1986. At that time, the OMVG expects to be engaged in the design and implementation of individual projects.

In order to implement the development strategies, the OMVG must undertake a number of basic studies in the next few years to (1) provide the basic data necessary to design specific production projects indicated by the development strategies, (2) complement the preliminary feasibility estimates of the UNDP Mission Report, (3) prepare detailed design and project reports, and (4) determine socio-economic and environmental impacts and identify mitigation actions which may be required to offset possible negative aspects of certain development activities including construction of the dam and anti-salinity barrage. The basic studies include, but are not limited to, areas such as the environment, cartography, socio-economic, agronomic research, irrigation, navigation, hydrology, hydropower, dams, and soils.

Though these and other required studies will be conducted under the overall direction and coordination of the High Commission of the OMVG, much of the actual work will be undertaken by contract or arrangement with OMVG member states or international donor agencies. A full study work plan detailing the required research will be developed and will serve as the basic organizing document.

IX. AID Project Strategy

The AID project strategy for supporting basin development planning for Senegal and The Gambia is such that in order to develop these plans, aerial photography, mapping and surveying of the basin as a whole must be carried out. Because approximately 80% of the volume of the water in the Gambia River originates in Guinea, it is necessary to include the northwest portion of that country in the aerial photography exercise. The failure to include Guinea in this portion of the project would risk negatively influencing the validity and completeness of data collected in Senegal and The Gambia, hence jeopardizing the development planning process in those countries. This decision to provide for non-Sahelian activity within a Sahel Development Program (SDP) project in no way violates SDP regulations. Sahel funds may be used in a non-Sahelian country if the purpose of that expenditure is to valorize and critically support projects in the Sahelian country.

AID is aware of the importance of treating the Gambia River Basin as a single, integral unit. Given the current status of Guinea's involvement in the OMVG, and the fact that the UNDP study is only just beginning, it is at this time premature to consider extension of AID activities beyond Senegal and The Gambia. Though it may at some future time be deemed desirable to extend project activities into Guinea, the appropriateness of such an extension must be based on an assessment that 1) project activities underway in either Senegal or The Gambia will result in significant socio-economic or environmental impact in Guinea or that activities underway in Guinea will have a similar impact in Senegal or The Gambia and 2) that Guinea's preparedness level is such that studies can be appropriately conducted. Such an assessment will be undertaken by the socio-economic and environmental study teams unless they determine that the UNDP study to be carried out in Guinea sufficiently addresses this issue. The consideration of any extension of project activities into Guinea (with the exception of the aerial photography, mapping and surveying referred to above) would be a matter for review by the Africa Bureau as a whole at that time. It is not anticipated that funds for any extension into Guinea would be required before FY 1983.

The strategy for the AID project is to implement three components: (a) provision of technical assistance specialists; (b) aerial photography and mapping; and (c) an environmental and socio-economic study. The terms of reference for each project component will be found in Annex G.

1. Technical Assistance

This component of the project will provide assistance to the OMVG in building institutional capabilities for technical planning of implementation activities in the Gambia River Basin. Long-term and short-term technical assistance personnel, experienced in river basin planning and development, will be provided under AID personal service contracts to work with the OMVG High Commission

staff, at the OMVG headquarters in Kaolack, Senegal. OMVG will supply counterpart technicians. These counterparts will provide the necessary local perspective to the technical assistants and will receive on-the-job and academic training. The counterpart technicians will be expected, ultimately, to become the senior core planning professionals of the OMVG High Commission and to replace the foreign technical assistants.

a. Long-Term Technical Specialists

Four long-term technical assistants, specialists in key aspects of river basin planning, will arrive during the latter part of the first year of the project for a three year term. The specialties required are: a) civil engineer/river basin planner, b) environmental specialist, c) rural sociologist and 4) natural resource economist. These specialists will assist in developing and revising the study work plan and, based upon that plan of work, will assist OMVG in overall study management leading to development and implementation actions. The technical assistants, working with their counterparts, will provide on-the-job training in the technical specialty common to both.

b. Short-Term Technical Assistance

A geodetic advisor, a cartographic advisor and other instructors will spend various periods of time assisting and training staff on aerial photographic and mapping procedures and techniques. The geodetic and cartographic advisors will be provided under the terms of the aerial photography and mapping contract.

c. Long-Term Technical Assistance

In addition to the long-term technical assistants, technical staff from the environmental and socio-economic study teams will work closely with and train appropriate staff of OMVG and host country institutions.

2. The Aerial Photography and Mapping Component

The existing topographic map coverage of the Gambia River Basin is adequate for only very preliminary planning studies. The maps of the Senegalese portion of the Basin are at a scale of 1:50,000 with a 40-meter (about 130 foot) contour interval. The Basin area in The Gambia has also been mapped out at a scale of 1:50,000, but without elevation contours. Aerial photography at a contact print scale of 1:25,000 and planimetric land classification maps at the same scale will be prepared for the entire country of The Gambia under the AID-financed Mixed Farming Project, which began in the Fall of 1980. The mapping under this project will not duplicate this prior mapping and will provide uniform Basin-wide maps.

The OMVG, as well as the riparian states, needs better maps for river basin planning activities and other uses. The most useful maps at this stage of Basin planning are controlled planimetric photomaps. These, together with stereoscopic use of contact prints, will be used to identify potential structure sites and irrigable areas. Contour maps of identified potential dam and reservoir sites will be prepared by photogrammetric use of the aerial photography and ground control surveys. 1:10,000 scale contour maps will be provided

for the area south of the Kekreti dam site identified as suitable for irrigated agriculture development. The controlled photomaps would also be valuable for a variety of other purposes, such as land use and preliminary land classification mapping, demographic and sociological studies, livestock surveys, transportation planning, and environmental analyses.

Accordingly, the mapping component includes preparation of controlled planimetric photomaps at a map scale of 1:25,000. The Senegalese and Gambia Basin area will be flown at a contact print scale of 1:50,000 using both panchromatic black-and-white and color infrared photography. Ground control surveys will be performed to ensure adequate horizontal accuracy of the completed photomaps. The photomaps will be prepared using panchromatic photography, and prints and transparencies of the infrared color photography will be provided.

OMVG and Ministry personnel will receive on-the-job training during the course of the mapping project. This will include observing the activities of and working with personnel of the contractors during all phases of the mapping project. Instruction will also be provided to train nationals in the use of the completed photographic materials.

Implementation of the mapping component will require U.S. contractual assistance. The mapping is programmed for funding as two separate fixed-price contracts. The first contract will include the aerial photography and ground control survey. Ground control surveys should begin in November 1981 and aerial photography in December 1981, following award of contract during the first year of the total project. The contract will be completed in June 1982, about eight months after work is started.

The second contract will cover the preparation of the controlled planimetric photomaps at 1:25,000 scale and the topographic or the photomaps at 1:10,000 scale using the photography and ground control surveys obtained from the first contract. The contract should be awarded as soon after delivery of materials from the first contract as possible, ideally August 1982. The contract will be completed with delivery of the photomaps in November 1982, about 16 months after the contract is awarded. In the following month, short-term technical assistance specialists will train national personnel in the use of the photographic materials.

3. Environmental and Socio-economic Studies

This component of the project is to be undertaken by a single contract to a university, private organization, consortium or any other institution which chooses to compete. The work is to be implemented in phases under the guidelines set forth below. At the conclusion of each phase the contractor will submit a report to AID which will contain findings of the just completed phase and a detailed work plan for the forthcoming phase. Where findings so indicate, the report should contain recommendations for redirection of studies as proposed in the guidelines. The recommendation should include justification for any deviation from the terms of reference or for proposed new studies. A rationale for establishing data

collection and subject priorities should be part of the report. Each report will be reviewed by the OMVG for consistency and compatibility with planning and contract implementation needs and schedules. Upon the recommendation of OMVG, and with AID technical concurrence, AID funds will be released for each succeeding phase.

It is recommended that the environmental and the socio-economic studies are to be carried out by one contractor. This would enhance the interrelatedness of the two components. While it is expected that separate teams with appropriate technical expertise will be involved, it is of paramount importance that the data collected by both be compatible and that the analysis of impacts and mitigation potentials clearly explores possible tradeoffs between environmental and socio-economic objectives.

Phase I: The contractor will prepare a detailed work plan for the environmental and socio-economic studies. This will include the identification of secondary data and the priority needs for new data collection. Both the member states possess a good deal of socio-economic data. The contractor must rigorously assess this data in order to avoid duplication and take full account of experiences gained in the OMVS. Analytical methods proposed for the collection of primary data will be described in detail. Highly sophisticated mathematical models should be avoided if possible; however, the analytical framework proposed should fully reflect the interactions of the physical, biological and socio-economic environments. Full consideration should be given to coordination and compatability with other studies ongoing in the basin.

Phase II: This phase will consist of data collection and preliminary analysis of impacts and mitigation proposals. At the end of this phase a preliminary report will be provided for review by OMVG. At that time the OMVG, member states and donors will be able to consider the preliminary impacts of such development proposals as the anti-salinity barrage and Kekreti dam.

Phase III: This phase will give the OMVG, member states and donors the opportunity to revise their program and/or devise further mitigating measures which would be analyzed with the contractor. The contractor team will provide the terms of reference for further studies they identify which will certainly include environmental impacts, resettlement options, land use patterns, pastoral vs. sedentary population issues, etc.

a. The Environmental Study

One of OMVG's roles is to cooperate with the national agencies of the member states in defining an integrated plan for developing the Basin's water-related resources. This plan will include major river control projects that significantly affect more than one member state.

Both Senegal and The Gambia have given high priority to completion of the feasibility studies of the salinity barrage at the Yelitenda site in The Gambia. Initial steps are being taken toward

agencies and the OMVG requires that they incorporate information on farming systems and socio-econimc feasibility studies into their program planning and project design processes.

(1) Descriptive Function

The Socio-economic study will yield information of a quantitative and qualitative nature describing and analyzing the exixting farming systems in all Senegalese and Gambian areas of the Basin with the purpose of providing information that will authoritatively delineate the characteristics of the various farming systems and the constraints on participants in those farming systems. To this end, baseline information will be collected to determine farmers' access to the factors of production (i.e., land, labor, capital, and management) and the marketing system, and the resulting econimic costs and returns of crops, livestock, and off-farm enterprises. These should isolate critical factors that impact on farmers' economic mobility as rural producers in the Gambia and Senegal Oriental. From this information it will be possible to develop relevant research priorities for national agencies of member states of the OMVG and research coordination and support priorities for the OMVG.

The agriculture production goals for the year 2000 set forth in the OMVG study set highly ambitious targets. The socio-economic base-line data and subsequent analyses should be able to provide: (1) information to policy makers and national government technical services to examine these goals in light of existing production levels, and (2) data on positive and negative effects that would occur in the public, private and community sectors. Finally, the studies will provide specific and clear mitigating measures to decrease potential harmful effects.

The socio-economic studies should include, but are not limited to, the following data on farming systems: (a) external institutions and research agencies, including parastatals; (b) land input, including farm size and distribution; (c) labor input, including division of labor between males and females in the production unit; (d) seasonality of agriculture and allocation of time; (e) capital and cash input (household income and expenditure data); (f) livestock, mixed farming, and cropping systems, including existing practices such as ridge, mound or flat cultivation or flood irrigation; (g) assessment of soil fertility; (h) technical change; (i) levels of living and income distribution; (j) storage and processing of local produce; (k) the marketing system within the community, Gambia River Basin, and adjacent areas; and (l) price structure in relation to actual cash crops (e.g., cotton, groundnuts), including the relationship of this structure to other options (such as labor migration to urban centers).

The socio-economic study is also intended to provide information and objective judgements of the impact of the proposed dams, the proposed irrigated agricultural interventions and interventions in other aspects of rural production systems.

(2) Testing Function

The socio-econimic study as a whole will provide the basis for testing at the field level particular methodologies and approaches to socio-economic data acquisition in order to assess their relevancy to local farming systems. Methodologies for socio-economic data gathering and processing will be refined and modified

the special agreement between the member states that would permit construction of the barrage. Potential donors have indicated that their participation may be contingent upon the findings of an environmental impact study. Furthermore, terms of reference are being prepared for feasibility studies of the Kekreti project in Senegal, and it is expected that a contract for these studies will be awarded in the near future.

It is within this framework that OMVG has requested that certain environmental studies be carried out in the Gambia River Basin as one component of this AID project. These studies are divided into the following components:

(1) River Resources
(2) Public Health
(3) Wildlife-Vegetation

(1) River Resources Study. This study will include four separate components: (a) analysis of existing baseline data and collection of new data where needed; (b) outline the ecology of the river, i.e. the interaction among the river life form and between them and their natural environment; (c) an analysis of the major impacts on river ecology that will be caused by the proposed water resource and irrigation projects; (d) recommendations of mitigative measures to reduce impacts of the anti-salinity barrage and the irrigation projects; and (e) a preliminary evaluation of the impacts on river ecology that might be caused by the potential Kekreti project; (f) impact of the salinity barrage on West African marine fisheries, especially in light of other salinity barrages on other major West Africa rivers; and (g) an indication of further studies which may need to be conducted, along with relative need for these studies. The baseline data to be collected during the study will include but may not necessarily be limited to: physical and chemical characteristics of the river; types, signs and migration patterns of the fish populations; number and types of algae and other aquatic plants; number and types of plankton; and data on crustacean and mollusk populations, with emphasis on shrimp. The team to perform this survey will probably include experts in fishery resource, aquatic biology, marine biology, fishing economics, and water chemistry, with support from technicians.

It is expected that this survey will require about 15 months to complete as the river will be sampled over one entire annual cycle of flow. Allowing for time to mobilize, field surveys will begin in June 1982.

(2) Public Health Impact Study. As part of the environmental study, a public health impact study will be carried out in order to better gauge potential impacts. In the Gambia, the principal water-related human diseases, malaria and schistosomiasis (bilharzia), are already endemic. With impoundment and use of fresh water behind the salinity barrage, incidence of these two diseases is expected to increase. Thus, projection of the impacts of the barrage on these

diseases and on the human population and the recommendation of mitigative measures are needed.

In the Senegal portion of the Gambia River Basin, the main existing disease is onchocerciasis. Impacts, either adverse or beneficial, of the water resources projects in Senegal Oriental on the incidence of this disease should be projected. Possible increase in the prevalence of schistosomiasis must also be considered.

The public health study will include four components: (a) review of existing medical data and definition of field studies to gather additional information; (b) field survey; (c) projection of impacts on public health; (d) evaluation of mitigation measures and/or monitoring programs that may help in reducing adverse impacts.

The contractor will provide a full-time health specialist and short-term experts as required over the 18 month estimated study duration. The contractor's personnel will be expected to fully utilize the established local institutions of the Medical Research Council, an agency of the British Government, which has several decades of experience studying water-born diseases in The Gambia as well as the Pasteur Institute in Dakar. Mobilization is scheduled to begin in June 1982 and the report is to be completed by November 1983.

(3) Wildlife-Vegetation Study. The construction of the Yelitenda salinity barrage, the Kekreti dam and the related development of irrigation projects can be expected to have impact on wildlife and natural vegetation. This study will include four components: (1) review and synthesis of data from current literature on the wildlife (including river wildlife, such as crocodile, manatee, and hippopotamus and natural plant resources of the Gambia portion of the basin; (2) acquisition of supplemental data, where necessary, through field inspection of the natural fauna and flora of the barrage zone of the basin: (3) identification of uses and project impacts on the environment including socio-economic consequence and (4) identification and testing of the feasibility of measures to mitigate the impacts on wildlife and natural vegetation. The contractor will be responsible, when appropriate, for obtaining technical supporting services from suitable international non-profit conservation organizations. The study period will extend from June 1982 through June 1983.

b. Socio-economic Study

Several socio-economic studies have already been conducted in The Gambia portion of the Gambia River Basin. Complementary information is required for the Senegal portions of the basin. For all portions of the basin, information is required on the manner in which existing farming systems will be affected by the introduction of improved agricultural practices. The farming systems are existing basin resources and will be the foundation for the socio-economic development of the Basin. Effective management by the member state

agencies and the OMVG requires that they incorporate information on farming systems and socio-economic feasibility studies into their program planning and project design processes.

(1) Descriptive Function

The Socio-economic Study will yield information of a quantitative and qualitative nature describing and analyzing the existing farming systems in all Senegalese and Gambian areas of the Basin with the purpose of providing information that will authoritatively delineate the characteristics of the various farming systems and the constraints on participants in those farming systems. From this information it will be possible to develop relevant research priorities for national agencies of member states of the OMVG and research coordination and support priorities for the OMVG.

The agriculture production goals for the year 2000 set forth in the OMVG study set highly ambitious targets. The socio-economic base-line data and subsequent analyses should be able to provide: (1) information to policy makers and national government technical services to examine these goals in light of existing production levels, and (2) data on positive and negative effects that would occur in the public, private and community sectors. Finally, the studies will provide specific and clear mitigating measures to decrease potential harmful effects.

The socio-economic studies should include, but are not limited to, the following data on farming systems: (a) external institutions and research agencies, including parastatals; (b) community norms, structures and beliefs; (c) land input, including farm size and distribution; (d) labor input, including division of labor between males and females in the production unit; (e) seasonality of agriculture and allocation of time; (f) capital and cash input (household income and expenditure data); (g) livestock, mixed farming, and cropping systems, including existing practices such as ridge, mound or flat cultivation or flood irrigation; (h) assessment of soil fertility; (i) technical change; (j) levels of living and income distribution; (k) storage and processing of local produce; (l) the marketing system within the community, Gambia River Basin, and adjacent areas; and (m) price structure in relation to actual cash crops (e.g. cotton, groundnuts), including the relationship of this structure to other options (such as labor migration to urban centers).

The socio-economic study is also intended to provide information and objective judgements of the impact of the proposed dams, the proposed irrigated agricultural interventions and interventions in other aspects of rural production systems.

(2) Testing Function

The socio-economic study as a whole will provide the basis for testing at the field level particular methodologies and approaches to socio-economic data acquisition in order to assess their relevancy to local farming systems. Methodologies for socio-economic data gathering and processing will be refined and modified

in relation to the expressed data needs of the member-state agencies and the OMVG. Testing is thus intended to create an institutional foundation for the long-term monitoring of socio-economic processes in the Basin by member-state agencies and the OMVG.

(c) Training of OMVG and Host Country Personnel

This training will be provided under three categories: academic training, technical training, and on-the-job training.

Academic training will be provided for the four local counterparts on the OMVG Technical Services staff to the American long-term technical assistance specialists. It is expected that each counterpart will have the equivalent of a Bachelor's degree in his specialty before his assignment to the OMVG staff. Shortly after that assignment, each counterpart will spend one year in Master's level course work in his specialty at an American university and then return to the OMVG to assist with current studies. Following this study participation each counterpart will return to the U.S. to write a Master's thesis based on his work in the Basin studies and then return to permanent assignment with OMVG.

One year of academic training will also be provided for a junior statistician from OMVG or one of the national agencies in the field of data collection and statistics. Costs for this training include additional funds to permit travel and visits to agencies or firms experienced in data collection and statistical processing.

Technical Training will include training two persons from OMVG or national agencies (to be determined by OMVG) in data processing for six months each at a site to be selected by the contractor for the socio-economic study.

Four qualified students will be selected for observation and orientation in mapping procedures and care and use of photographic materials. This training will be for one month in the fall of 1982 and will be given at appropriate sites to be determined by the contractor (second mapping contract).

On-the-job-training will take several forms. The local counterparts will receive one and a half years of training from working with the long-term American technical assistant specialists in a general sense and by participating with the contractors during the course of the environmental and socio-economic studies.

It is expected that the Ministries of the member states will assign personnel to work with OMVG and the contractors during the studies. In doing this work they will receive on-the-job training and guidance from the American technical assistance specialists or from the contractor's staffs.

Logistic Support will be provided to OMVG including both specifically identified and unidentified purchases of equipment and supplies. The major item is the purchase of four vehicles for use

by the four American technical specialists during their assignments to OMVG. Operation and maintenance costs for these vehicles are also covered. Vehicles and equipment purchases needed to carry out the socio-economic and environmental studies and aerial photography and mapping are the responsibility of the contractor. The RFP's for contractor solicitation shall state that the contractor will do its own procurement.

Funds are included in each of the first four fiscal years (FY 1981, 1982, 1983 and 1984) for general use and purchase of miscellaneous equipment and supplies. Though the specific items are not identified at this time, they can be selected at the option of OMVG staff in consultation with the four American technical assistance specialists. One option is employment of a management consultant to advise on the role and structure of OMVG. Another option is purchase of equipment, such as microfiche reproduction and storage files, as a basis for establishing a documentation center. Miscellaneous office equipment, such as copying machines, typewriters, and desk calculators, could also be purchased. It is noted that long procurement lead times require that decisions for disbursements for unidentified purchases be made as early as possible during implementation.

X. Project Beneficiaries

The discussion of beneficiaries of the Gambia River Basin Development Project is addressed in three categories, as follows:

A. The OMVG - The most direct beneficiary of the project is the Technical Services Division of the OMVG High Commission. The OMVG will receive the services of four full-time technical assistance personnel, be provided with the results of three major studies of the Basin which are essential prerequisites to obtaining funding for the most important development initiatives, (the dams in The Gambia and Senegal), acquire trained long-term staff (four counterpart staff members), which they will assign to permanent senior positions within OMVG, develop experience in coordinating research activities of member state agencies and acquire some discretionary funds for the possible acquisition of short-term technical assistance.

B. The Development Related Agencies of Member States with responsibilities in the Basin zone are the next most-direct beneficiaries of the project. They will acquire the reports of the studies for their use in planning the development of the Basin, gain training experience for both senior and junior staff through participation in aspects of the environmental and socio-economic studies, and benefit to the extent that the studies lead to the funding and construction of their highest priority development interventions, the Yelitenda Salinity Barrage and the Kekreti Dam. It is expected that the staff of the OMVG will thoroughly prepare the member state agencies to work with the study teams.

C. Less direct beneficiaries of the project are the people of the Basin. The extent of benefits accruing to them will derive from the socially and economically sound planning programs and projects which result from the data and analyses provided by the project activities.

XI. Project Adaptability to New Development

The basin development strategy contained in the OMVG Study will serve to focus the decision-making factors and facilitate the deliberation process for river resources development project proposals. It can be expected that during the early stages of basin development and prior to the evolution of the master plan expected in 1986, opportunities for investment will be seized by various public and private donors. Thus, the preinvestment picture can change rapidly. For example, an offer has been made by the West Germans to finance the feasibility studies of the Kekreti Dam in line with their ultimate interest of purchasing electricity for mineral exploitation once the dam is constructed.

AID is limiting the environmental and socio-economic study elements in this project to those of obvious importance given the currently known projects identified during the pre-investment study period. However, since new requirements may arise, great flexibility will need to be maintained in the implementation of this project to permit adaptation to new plans as they materialize.

One task of the long term specialists provided under the project will be to identify and design other studies to meet the new requirements as they arise. It is understood that AID is not providing funding for all the elements desirable in a comprehensive environmental assessment and a socio-economic survey, but is providing funding for those elements considered necessary to further investment plans given our knowledge of current plans for the basin.

XII. Constraints to Development as They Relate to Local Problems

The capacity of the local population to participate in future Gambia River Basin development will obviously depend on the nature of the development strategies followed and on the type of programs and projects implemented. The local farmers, herdsmen, and fishermen are the most important development resource in the basin, and they are members of relatively dynamic, open-ended systems. They are susceptible to change and indeed have frequently changed in the past as new opportunities have appeared. While specific socio-cultural constraints to development can be expected to arise in specific cases (which will require identification and careful handling) there is no evidence to suggest that local populations are unresponsive to new ideas and technologies as such. The principal constraints to development which are presently known can be summarized as follows:

a. The development from above syndrome, the very nature of which makes it difficult to involve local populations, affects the planning, implementation and evaluation of development and the use of existing socio-cultural systems, highly adaptive land and water use systems as a basis for development. Obviously it is not possible to facilitate local initiatives and enhance existing systems of production, if planners are ignorant of both these initiatives and these systems. The solution to the problem is to improve our understanding of the nature of these systems through research and then design appropriate development strategies to incorporate them. The socio-economic study conducted under this project will add substantially to our knowledge of existing farming systems and will begin to lay out alternative development strategies for consideration which will build on the existing agricultural systems.

b. The difficulty of highly centralized governmental structures to reach the rural populations in influential decision-making at the local level.

c. The existing price structure, which continues to favor the urban consumer at the expense of the rural producer, whether farmer, herdsman or fisherman.

d. High labor migration rates, which themselves are largely a reflection of the existing price and opportunity structure and, hence cannot be viewed as solely a local constraint. Indeed the impact of labor migration must be carefully evaluated in each case since there are always important trade-offs involved. Provided opportunities exist, labor migrants may be a major source of capital for rural development, as has been demonstrated in East Africa. Information on migration will be gathered in the socio-economic study.

XIII. Relationship to AID Assistance Strategy

In terms of the direct interests of AID in development of this river basin, the general case is presented in the AFR/SFWA Development Assistance Program (DAP) for 1976-1980. AID has concluded that there are important socio-economic problems that are best addressed by donor organizations through regional programs. As the DAP notes, one striking feature of the Sahel region is that large areas prone to periodic drought conditions coexist with several large West African river systems. AID and other donors see river basin development as the most significant means for fundamentally transforming the regional economies of West Africa. This envisages harnessing the rivers to achieve significant levels of food production in the face of the general pattern of recurrent drought in the area. A modest degree of prosperity based on irrigated cropping for domestic consumption and export, hydro-electric power, and improved transportation networks would be expected to result from this regional strategy.

In addition to the general AID strategy statement on river basin development in West Africa, direct assistance to this particular river basin fits well into the AIL philosophy and established approaches to sectoral development. The strategy elements here are provision of significant benefits to rural people through investment in effective projects behind dam infrastructure; development of local skills through on-the-job training; and inculcation of higher-level expertise through carefully planned short- and long-term training programs. The designated vehicle for achieving the developmental strategies of the member states and the donor agencies involved in the Gambia River Basin is the OMVG. The successful evolution of this organization as an effective regional planning and coordinating body is therefore a key element in this overall strategy. The project which is detailed in succeeding sections of this paper is aimed at assisting in that successful evolution.

XIV. AID and Other Donor Experience

Appendix F includes a listing and summary description of other activities related to development of the OMVG and the Gambia River Basin. The listing is in three parts: (1) a list of activities sponsored by OMVG, (2) a list of activities under the aegis of the United Nations Development Program; and (3) a list prepared by AID/Banjul of all relevant activities now in progress in The Gambia. The reader is referred to Annex F for information on these activities.

XV. Project Analyses

A. Economic Analysis

1. Introduction

Though the water resources of the Gambia River Basin remain essentially undeveloped, the land resources retain their potential for increased productivity as a result of better management, application of more intensive technology and a coordinated water and land management program. Within the member states there is now a growing sense of need for Basin development in order to provide for increased and more equitable income distribution, improved self-sufficiency in food production, better diet and a more active export sector.

Given these factors, the countries of Senegal and The Gambia are engaging in a joint effort to develop the water and land resources of the Gambia River Basin. The organization of the OMVG represents a very important institutional step taken by these countries. The OMVG is entrusted with the responsibility of managing the planning, development and implementation of proposals to improve resource use in the Basin. Experience demonstrates that water and related resource development and management, a complex program, may be further complicated when more than one government entity is involved. Since creation of an international agency can enhance the efficiency and effectiveness of resource development involving the multistate interests, the decision of Senegal and The Gambia to establish the OMVG must be regarded as a very positive step.

The AID project proposed herein is designed to assist the OMVG in developing its basin planning, management, and coordination capabilities. This institutional development will be accomplished, in part, by provision of specific information which experience has shown to be a necessary precondition to sound river basin planning.

This section will outline the proposed development strategies and discuss anticipated outcomes of water and land reserve programs. The economic analysis will conclude with an appraisal of the AID project's contribution toward achieving those anticipated outcomes.

2. Development Strategies Under Consideration

The Mission report of the United Nations Development Program (Development of the Gambia River Basin, April 1980) and the draft Action Plan (November 1980) which ensued following the mission report, provide the OMVG with preliminary conclusions of and suggestions for river basin development. Given that basis, the OMVG is organizing the planning studies necessary for final

selection and design of feasibility analyses leading to eventual wide-scale project implementation.

Senegal and The Gambia have selected the following categories to be accorded priority during basin development activities: (1) rainfed agriculture, (2) water-managed agriculture, (3) livestock, and (4) forestry. A summary of development strategies for Senegal and The Gambia as contained in the Action Plan appears below.

A. Gambia Development Strategy

Rainfed Agriculture

For rainfed agriculture an intensive development is planned. A gradual upgrading of farmers to higher yielding cultivation techniques is envisioned, and would include proper land preparation, animal traction, mechanical seeders, high rates of fertilizer and pesticide applications, and some postharvest mechanization. The specific component of the technology will be devised through national and donor research cooperation and packages for upland rice, millet, maize, groundnuts, and cotton will be developed. The latter two crops should contribute substantially to the farmer's cash income.

Water-managed Agriculture

Construction of the Yelitenda salinity barrage, which could ultimately provide an estimated 24,000 ha of irrigated land, is planned. Some attention will be given to small-scale water-managed projects, including surface pumping.

Livestock

The livestock strategy confronts three major problems: those of (1) poor animal health, (2) social stresses caused by farmer-herder competition, and (3) destruction of forests and pastures due to overgrazing. Improved animal husbandry techniques, increased animal off-take rates, marketing improvements, credit availability, and expanded livestock extension services are the major components of this strategy. Further, grazing areas with safe and dependable water sources are planned. Finally, the integration of the livestock and agriculture sectors, primarily through increased use of animal traction and agricultural residue for livestock feed, should provide benefits to both herders and farmers.

Forestry

Maintenance of sufficient forest coverage and the preservation of riverbank stability are of high priority. To accomplish these objectives, as well as to provide for the wood needs of the Gambian population, a sub-sector strategy has been designed. This strategy combines various elements from the list below:

a. Introduce the management of natural forests

b. Campaign against bush fires

c. Establish a plantation programme using fast-growing tree species

d. Exploit the mangroves upstream from the salinity barrage before they are wasted

e. Introduce the management of mangrove forests downstream from the damsite

f. Reduce the reliance on charcoal as a domestic fuel

g. Introduce and promote the use of alternative energy sources, e.g. butane gas, mineral coal, agricultural wastes, bio-gas, and solar energy

h. Reduce firewood consumption by the design and promotion of more efficient wood-burning cookers.

B. Senegalese Development Strategy

Rainfed Agriculture

As in The Gambia, an intensification of traditional culture is the cornerstone for development of Senegalese agriculture. A rapid upgrading of farms to higher yielding technologies is planned for the departments of Senegal Oriental, Sine Saloum, and Casamance. Food grain self-sufficiency and eventual regional export of food grains are major priorities. Increased consumption of millet and maize is an important goal, helping to reduce rice and wheat imports. Finally, substantial gains in farmer income from groundnut, cotton, and cereal production are targeted. The actual components of the technological package will be developed by cooperating national and donor research efforts.

Water-managed Agriculture

For water-managed agriculture, 8,800 ha of small-scale, double-cropped cultivation is planned by the year 2000. The preponderance of this land (7,500 ha) will be in Senegal Oriental. Further, the Kekreti Dam project has been considered as part of this strategy. The introduction of Kekreti has been postulated for 1987, allowing sufficient time for proper prefeasibility and economic studies. The Kekreti site would eventually provide for 29,000 ha of irrigated surface. A similar analysis of the dam at Nikolo Koba has also been made.

Livestock

Senegal is currently in the process of regenerating its animal stock following the costly drought years. The major objective is for livestock production to be sufficient not only to meet the needs of the Basin population but to provide regional exports to

meat-deficit areas of Senegal.

The Senegalese portion of the Basin is divided into five distinct ecological zones. Availability of crop residues, pastureland quality, water sources, and environmental-health effects differ in each of these zones. The breeding, raising, fattening processes will be located, when practical, in the most appropriate areas. Improved animal health, increased availability of marketing outlets, access to producer credit, and more effective livestock extension activity will be stressed. A more rational use of available natural pasturelands, a better integration of the livestock and agricultural subsectors, and a concentration on necessary infrastructure projects will characterise the Senegalese livestock development effort. This effort will be more intense in Sine Saloum due to the more severe land constraints existing in that portion of the Basin.

Forestry

The primary objectives are (1) to protect lands in the Senegalese portion of the Basin and (2) to provide wood production sufficient for in-Basin consumption and regional export to wood-deficit areas of Senegal.

The specific components of this forestry program are:

a. Management of natural forests

b. Creation of firebreaks

c. Conversion of 3,000 ha to cashew plantations

d. Establishment of a plantation programme using fast growing tree species

e. Improved charcoal conversion techniques

f. Establishment of a sawmill

g. Use of alternative energy sources when practical.

3. Cost and Benefit Estimates of Proposed Programs

The strategies above are, of course, based on preliminary investigation and subject to change in the detailed planning stages. The following tables provide a summary of cost/benefit information as contained in the draft Action Plan (November, 1980).

Table 1 - Rainfed Agriculture

Region and years	Total incremental costs 2/	Total incremental benefits 3/	Discounted B/C
	(millions of dollars)		
The Gambia			
1985	1.93	6.95	3.24
1990	3.15	11.02	3.5
2000	6.18	19.89	2.90
Senegal			
1985	2.30	4.66	1.82
1990	3.84	7.72	1.80
2000	7.61	11.82	1.63

Notes:

1/ Incremental means increase due to proposed program over and above expected values without program.

2/ Costs are sum of government and private production costs.

3/ Benefits are production benefits.

Water-managed agriculture

Tables 2 and 3 present the estimates of the UNDP team on capital costs and internal rates of return for large scale developments.

Table 2 - Large-scale developments - capital costs
(thousands of dollars)

	Preinvest-ment cost	Single purpose		Joint costs			Total costs
		Irrigation	Power	Irrigation	Power	Trans	
Niokolo Koba	300	3,000	-	-	-	-	3,300
Kekreti	4,850	-	17,200	12,780	68,020	-	102,850
Kekreti (without salinity barrage)	4,850	-	17,200	27,195	53,605	-	102,850
Sambangalou	6,800	-	14,000	12,780	109,620	-	143,200
Salinity barrage (Yelikebda)	1,180	-	-	34,123	-	23,203	58,506a/

a/ Of which $2,730,000 is a dredging cost in year 15 required for navigation because by that year water levels in the impoundment will be lowered by irrigation extractions to below current levels.

Table 3 - Water-managed agriculture - internal rates of return for four large-scale projects in the Gambia River Basin

Item	Gambia salinity barrage	Niokolo Koba	Kekreti with salinity barrage	Sambangalou
1. Purpose				
Irrigation (ha)	24,000	12,000	29,000	29,000
Power (kWh/106)	None	None	360	610
Transport	Yes	No	No	No
2. Resettlement	No	Yes	Yes	Yes
3. IRR				
P e/ = 0.02 L f/ = 0 a/		10.7	d/	d/
b/		8.3	11.8	6.5	6.2
P = 0.02 L = 300 a/		8.5	d/	d/	d/
b/		5.6	6.8	3.7	4.0
P = 0.05 L = 0 b/		c/	c/	8.8	9.2
P = 0.05 300 b/		c/	c/	6.6	7.7

a/ Price of paddy is $232/ton.
b/ Price of paddy is $183/ton.
c/ Power price is irrelevant since no power is generated.
d/ Only the paddy price of $18o/ton was tested.
e/ P = price of power, $kWh.
f/ L = price of labor, $/man-year.

As the UNDP Action Plan report points out: "The unsatisfactory level of the IRR's can be used to substantiate the argument that devoting additional resources - land and labor - to groundnut production would better serve the Basin economies. However, the Basin governments have established food self-sufficiency as an imperative policy objective. Further, in a risky world where rice import prices are liable to fluctuate and/or the availability of imported rice is questionable, a certain degree of food self-sufficiency, i.e., domestic rice production, is warranted. Basin policy makers must determine the optimal degree of food self-sufficiency given the costs and risks. Finally, the governments must be prepared either to raise the consumer rice price and/or to subsidize domestic rice production."

Livestock

The costs of the livestock improvement programs have not been comprehensively estimated. As a result, it is not possible to present an economic analysis of the livestock options. A complete economic analysis for the livestock component of the country development strategy must await a more thorough elaboration of the costs associated with the programs comprising the options.

Forestry

Costs and returns for programs in this sector are not included in the draft UNDP Action Plan. That report does show the consumer forestry prices which would cover the economic costs of program establishment, exploitation, and provide a 10 percent return on capital invested. Table 4 below, demonstrates that for The Gambia these prices are considerably higher than prevailing prices. The alternative - complete deforestation - implies a very significant social cost.

Table 4 - Producer price and tax for forestry products ($/m^3)

	Charcoal	Saw logs	Firewood
Gambia			
Producer price	10.00	20.00	5.00
Tax	3.00	5.00	2.50
Consumer price a/	13.00	25.00	7.50
Senegal			
Producer price	8.00	20.00	2.82
Tax	0.98	2.75	0
Consumer price a/	8.98	22.75	2.82

a/ The consumer price has been derived to cover the economic costs of program establishment and exploitation, and to provide a 10 percent return on capital invested.

4. Overall impacts

The draft Action Plan provides a summary of the overall quantitfiable inputs of the proposals: It compares the expected per capita production under two projected future conditions: without the proposed program and with the proposed program. A summary comparison for the year 2000 is presented below:

Table 5 - Summary Comparison

Country and indicator	Without program	With program	% increase
The Gambia			
Grain production per capita (kg.)	87.4	173.3	198
Meat per capita (kg.)	5.26	8.9	169
Exploitable wood per capita (M^3)	0.17	2.1	1235
Senegal			
Grain production per capita (kg.)	127.9	306.3	239
Meat per capita (kg.)	16.1	18.6	116
Exploitable wood per capita (M^3)	4.14	5.9	143

It is apparent that the program has the potential to make sufficant contributions to improvement in the standard of living of the basin populations. Finally, the planned development of contiguous areas of member states encompassed by the watershed of a major river can, if effective, lead to greater economic efficiency through any of the following means:

(1) More functional development of regional transportation for movement of goods and services within a region;

(2) Rationalization of labor flows for agricultural and other purposes within a region;

(3) Liberalization of trade and other exchange relationship between the member states;

(4) Equalization of regional price schedules for important commodities and services and fostering of more competitive conditions in regional markets;

(5) Better use of regional natural resources, including but not limited to water, through joint projects for major river infrastructure projects and agricultural development behind such major structures.

5. Evaluation of AID project impact upon the achievement of OMVG resource development goals

The complexity of river basin planning activities cannot be overemphasized. Many organizational entitites, from both member states and donor-states will have to undertake detailed planning, feasibility and implementation studies. These studies will be needed to identify the most efficient mix of structural and management programs needed to meet the objectives of the Basin's people and governments, and they will require a high level of experienced management. It is evident that the OMVG has been given a clear mandate by the member nations to perform the river basin planning and coordination responsibilities.

A minimum condition for efficiently and successfully meeting the OMVG goals is that studies of the socio-economic and environmental impacts be carried out.

Another obvious requirement of this planning program is for a basin-wide set of maps that are consistent and of sufficient detail to support engineering, soils surface and use and groundwater studies.

In summary, experience amply demonstrates that institution building and management experience are pre-requisites to basin production resource development. Furthermore, socio-economic and environmental studies and maps are required elements of the planning process.

This AID project provides support to OMVG in these areas. In addition, through the technical assistance component, this project will make significant contribution to the total planning and implementation program. As a consequence of this project, experience indicates that there will be an increased likelihood that the OMVG program will produce efficient planning and effective resource development implementation.

6. Cost effectiveness of the AID project

This AID project is designed to provide:

1. technical assistance and training for institution building;

2. maps for use in planning and design; and

3. socioeconomic and environmental studies for use in determining resource development feasibility impacts and mitigative measures.

These are not tangible products which are conducive to evaluation in conventional market value terms. Thus the cost-effectiveness approach is adapted according to AID Handbook 3, Part 1.

Alternative Number 1

Train Gambians and Senegalese to set up a group, generate data, plan and implement program without foreign assistance on site.

Evaluation of alternative 1

This alternative likely would extend the planning and implementation program five to ten years. Substantial cost increases over proposed project could be expected, given the following factors:

1. Basin society is currently experiencing substantial social costs in terms of poor diet, lack of employment opportunities, dislocation of family members, low income, and environmental degradation.

2. Development delayed would be expected to result in more massive and extensive intervention to compensate, if possible, for the added environmental and social problems during the period of delay.

3. Lack of capital precludes member states from accomplishing resource development alone.

Alternative 2

Use of self-contained foreign firm.

Evaluation of alternative 2

This would substantially reduce the effectiveness of achieving project objectives of institution-building and management capabilities of OMVG staff. While costs might decline somewhat, effectiveness would be substantially reduced.

In any case, recruitment of a foreign firm would only occur if no U.S. firms were available to undertake the work. At this time, it is anticipated that no major problems will be confronted in securing a U.S. firm.

B. Administrative Analysis of the OMVG and the Report

The mandate and structure of OMVG are discussed in Annex E. The organization was formally and legally established by the Convention for the Creation of the Gambia River Basin Organization signed in 1978. This convention was drafted under the personal direction of the Gambian and Senegalese Heads of State. Their continued support is apparent in the August, 1980 Presidential address of Sir Dawda Jawara of The Gambia.

".... drawing on the common historical heritage of the West African sub-region, and the socio-economic realities of today, we have been relentless in our endeavor to promote and intensify close and meaningful ties of cooperation with our neighbors. The last year has witnessed two meetings between myself and President Leopold Sedar Senghor in addition to regular meetings at Ministerial and Expert levels. As a result, significant advances have been realised in the various areas of Senegalo-Gambian co-operation..... It is within this framework, and under the management of the OMVG, that the bridge/barrage projects, to which the Governments of The Gambia and Senegal are equally committed, has evolved from a bilateral scheme into a multilateral development program in which the People's Revolutionary Republic of Guinea has agreed to participate..... This, I believe, is indicative of my Government's appreciation of the essentially collective nature of sub-regional cooperation, and its importance as a necessary step towards the realization of continental integration and unity through inter-regional collaboration."

It is a fundamental assumption of this project that the mandate given to OMVG expressed here will continue to be enforced at the highest levels.

The responsibilities charged to OMVG by the Convention of June 30, 1978, and responsibilities assigned to the High Commissioner in that same document, indicate the potential of a strong role for OMVG in coordinating and promoting the physical and economic development of the Gambia River Basin.

1. Local Leadership

The current High Commissioner of the OMVG is a graduate engineer with considerable experience in a national Ministry. The director of Technical Services is also a graduate engineer who has demonstrated potential in both technical and administrative endeavors. The major deficiency of the organization at present is lack of adequate support staff. The High Commissioner has indicated that steps are being taken to employ necessary staff and that approval of this AID project will speed up this process. As a minimum, four local technicians must be hired as counterparts to the four American technical assistance specialists: an environmental specialist, a civil engineer/river basin planner, a rural sociologist, and a natural resource economist. These four local counterparts are critical to the success of this project and their employment must be

made a necessary element in the AID project agreement with the OMVG. Both academic and on-the-job training will be provided the four local technicians to assist them in becoming well-qualified counterparts. In order to provide institutional continuity and leadership, they must be assigned as permanent staff to OMVG following completion of their training.

2. Structure

The OMVG is a permanent agency with full legal authority to implement the project activities as anticipated. The organizational structure as described in Annex E is satisfactory and would be adequate if fully staffed. Nonetheless, experience in building regional institutions in Africa has demonstrated that full staffing is normally unattainable in the first few years. Thus, considerable initial support may have to be provided by agencies of the member states and outside donors.

3. Role and Commitment

As discussed in Annex E and mentioned above, the broad, long-term role of OMVG in coordinating and promoting the physical and economic development of the Gambia River Basin has been determined by the member states. Although the specific details of the OMVG role have not yet been spelled out, the High Commissioner has confirmed they will extend to the management of the infrastructure operations. There is a strong commitment on the part of the current technical staff to carve out a major and significant role. In view of these commitments, the successful attainment of the project objectives is indicated.

4. Resources

Both Senegal and The Gambia are currently experiencing financial difficulties affecting fiscal allocation which are unlikely to be of a temporary nature. The expected rapid increase of the OMVG budgetary requirements is a cause for some concern without the understanding that firm commitments at the top policy-making levels will guarantee that increasing demands are met.

The current OMVG budget is being financed 70% by Senegal and 30% by The Gambia. Current year (1980) allocations from The Gambia have exceeded the amount requested and the High Commissioner has established a "reserve" account for the surplus to be used for unanticipated activities. He also plans to submit a projected budget to the member state governments to indicate future requirements.

This commitment at the top levels is based on the expectation that successful achievement of OMVG goals will bring with them revenue-producing results. Bridge and river transportation tolls, water-use fees, and electricity profit will all contribute

to the eventual support of OMVG. The issue of recurrent costs becomes one of determining the length of time subsidies will be required before sufficient income is generated. The projected completion of the Yelitenda Barrage in 1986-7 and the Kekreti Dam by 1990 could mean that the subsidization of OMVG will peak in about 1987 and probably be completely halted in 10 years. In the near term, however, traditional institution-building constraints can be anticipated.

Implementing agencies in developing countries can almost always, in the larger sense, be said to be understaffed and underfinanced, and those factors are key constraints to any development process. In the OMVG, major areas of personnel weakness with regard to project activities are the lack of an environmental specialist, a civil engineer/river basin planner, a rural sociologist, and a natural resource economist. These deficiencies will be met by assigning American technical assistance specialists in each of those fields to OMVG, and requiring that the OMVG assign local counterparts in each discipline. In addition, the OMVG will secure other donor funding for an agronomist.

5. External Administrative Environment

Some high-level personnel (but below the minister level) in the Gambian national agencies raised questions relating to the desirability of an OMVG with a broad administrative mandate. Statements have been made to the effect that the OMVG should not be responsible for operating and managing a project within a country's territory even though it may be of mutual interest to another country as well. This faction is not yet convinced that regional economic integration is worthwhile. As discussed above, however, the current policies of the member states are to support regional economic integration. A major assumption of this project is that commitment to this policy will be continued by the GOTG.

The specific relationship between OMVG and the parastatal organizations in Senegal (SODEFITEX, SODEVA, and SOMIVAC) has not been defined by the member states. This relationshp will likely evolve as projects in the OMVG action plan attract financing. For example, during the summary session of the Action Plan Conference in Banjul on August 18-21, 1980, a pilot Gambian project experimenting with an aspect of livestock feeding was identified. The head of the Senegalese delegation promptly offered to share the experience of a similar project which had already been attempted in Senegal by a parastatal.

There exists concurrence at all levels that OMVG should cooperate closely with the ministries and parastatal organizations in the basin areas of the individual member states. This cooperation should include defining an integrated plan for studying and developing the basin's water-related resources. The AID project is designed for the purpose of the institutional development of OMVG, providing basic physical data useful for further basin planning, and providing

environmental and socio-economic information useful for evaluating the feasibility of potential projects and mitigation measures.

6. Grass Roots Consideration

Although none of the components of the project will directly benefit the rural population of the basin, all the components have the potential of indirectly benefitting them by developing the capability of the basin planning organization and obtaining data that will be useful for planning and evaluating specific developmental infrastructures and projects in a way that will provide benefits to the general population. It is not expected that any organized non-governmental agencies will participate directly or formally in the project. There will be, however, considerable contact with the rural population through the socio-economic study and to a lesser extent through the public health survey. Local enumerators, supervisors, and data collectors will be used in both these studies. It is not planned that there will be any specific managerial participation by local, grass-roots organizations.

Summary

AID has been pleased with the support provided by the OMVG during preparation of this project. AID further expects that there will be adequate administrative support provided by the OMVG and various levels of the governments of the member states to permit and promote successful implementation and conclusion of all components of the project.

C. Social Soundness Analysis

The Gambia River Basin Development Project will engage in an array of activities designed to increase the capacity of the institutions in the Basin to more effectively plan for the development of the natural and human resources.

The attractiveness of this project and of AID's participation in it, as elaborated in the Project Paper, is that social soundness analysis is being built into the planning activities of the OMVG and that this data can be used for monitoring and evaluation of projects over time. Hence, the possibility exists of providing information that increases the chances of the success of current and subsequent development strategies in the Basin and of specific programs and projects which more directly involve and benefit local populations.

Obviously, the involvement of social soundness analysis in this planning stage does not guarantee that subsequent plans will in fact be socially sound. While AID's involvement in the socio-economic study is socially sound, this conclusion must not be extrapolated to subsequent AID projects within the Gambia River Basin, each of which must be separately appraised.

1. The OMVG as Beneficiary of the Project

The conventions and agreements establishing the OMVG are indicative of the intentions of the member countries to utilize the OMVG as the designated agency to coordinate the development of the resources of the Gambia River Basin. At the present time, the OMVG's executive arm, the High Commission, consists of a High Commissioner, a Technical Services Director, a Financial Director, and a minimum supporting staff. A headquarters office building has been secured in Kaolack, Senegal, and hydrology teams are currently operating in Tambacounda and Kedougou, Senegal.

The AID project will be the first significant regional project to be implemented under the direct supervision of OMVG. In this context the project proposal in this paper is viewed as socially sound. The components of the project are all supportive of the development of the Basin. The three study components are all responsible and rational prerequisites for the effective planning of the Basin's development and for the acquiring of donor funding for programs and projects on the most reasonable terms. The studies should, moreover, create a basis for timely and effective planning of the mitigation of adverse environmental and socio-economic impacts of such major possible interventions as the dams and the related irrigation and agricultural activities.

The socio-economic study should play a major role in focusing attention on the human resources of the Gambia River Basin, and on influencing future development strategies as they relate to these

resources. Since this study will include an examination of farming systems which include livestock practices, AID has the opportunity to survey the current land and water-use systems of the local populations and on the basis of those surveys to make recommendations for further research. This research will provide information for involving local people more actively in the development process.

2. Member State Agencies

This project, by institutionalizing the capacity to use and, to some degree, acquire development-related data will in part support member state agencies through the participation of personnel in various aspects of the three studies. The project activities offer the possibility for the agencies concerned to supplement their grasp of the development possibilities of the Basin, especially its human resources through the socioeconomic study. Further strengthening of the agencies' capacities to build social soundness into their planning and implementation is strongly related to their commitment of permitting the local population to actively participate in the planning process.

The work of an internationally known Senegalese Sociologist, Jacques Faye, is beginning to bear fruit in Senegal. He has founded the Institut de Recherche Sociologique (IRS) with headquarters in Kaolack, Senegal. Many agents are working in applied sociological activities in various parts of Senegal. Although the work is as yet unreported, the results of dispute resolution and facilitation of mechanized cultivation through the squaring of farmer land plots is attracting attention throughout the area. The activities of OMVG, as a regional organization, can be expected to both utilize the capabilities of the IRS and to further encourage the dissemination of their capabilities throughout the basin.

3. Local Populations and the Strengthening of the OMVG

The ability of local populations to benefit from past development initiatives has been uneven. Those basin institutions responsible for development have been characterized by a highly centralized approach within their geographical areas. Centralization in development agencies makes it difficult to involve local populations in the planning, implementation, and evaluation of development and to draw upon existing socio-cultural systems (including existing farming systems) as a basis for development. The OMVG as a supra-national organization is even further removed; thus on the surface the link to local populations appears more difficult to make.

The principal decision-making power rests with the national governments, and this emanates in both directions, inwardly toward the local populations and outwardly toward the international organizations. In a sense, the development objectives

in the mandate of regional organizations like OMVG reinforce the need for participation of local population in development activities. It is a fundamental assumption of this project that the trend towards greater farmer participation demonstrated by the Senegalese government in implementing small-perimeter irrigation projects along the Senegal River and voiced by President Jawara of The Gambia in his August 19, 1980, address to Parliament will continue.

It is also an assumption that the OMVG, working in conjunction with international technical assistance agencies, will encourage the increased participation of local populations in projects promoted under the OMVG development strategy. It is nevertheless essential that AID evaluate the results of this process and utilize the results of that evaluation as a basis for the consideration of any future assistance to the OMVG as an institution. This in no way implies that projects in the future in which OMVG plays an important role will be socially sound. Each project must be evaluated on its merits in relation to the institutional development and roles that the OMVG and its member state agencies are playing at the time of the proposal of any future project.

D. Environmental Analysis

An initial environmental examination was conducted during the design of this project paper and is contained in Annex J. The analysis highlights the facts that:

(1) The project is specifically directed at providing technical assistance and local training to develop a regional capability to better plan and manage the existing natural resources of the Gambia River Basin; and,

(2) One of the major outputs of the project is an environmental study to provide essential baseline data and analyses on the natural and human resources of the Gambia River Basin and to estimate quantitative and qualitative impact of alternative Basin development strategies on these resources.

Therefore, the analysis recommends that a negative determination is appropriate and that the project itself will not require an environmental impact expected as a result of project activities.

XVI. Financial Plan for the Project

The total U.S. Government contribution to this project will be $13,394,000. Funding is scheduled for project components to be implemented over a period of time beginning in CY 1981 and stretching into FY 1985. Funds allocated to each component will be variously utilized for technical assistance (long- and short-term), commodities, supplies, training, and contractual services. There are no construction or credit fund allocations included in this budget. There are no funds involving reimbursements to AID or OMVG or national agencies; therefore it is unnecessary to determine interest rates for repayment schedules. All funding under this project is grant funding. The budget has been allocated over the five fiscal years FY 1981 to FY 1985.

OMVG will be responsible for supplying four counterpart technicians to the long-term technical assistance team to be supplied by AID under the project. It will also be responsible for supplying adequate office space, secretarial assistance, and access to standard office equipment for all technical assistance personnel supplied under the project while they are operating in the Basin area. The OMVG will also supply occasional translation services to American technical assistance personnel on assignment in the Basin. Finally, the OMVG will be responsible for handling procurement activities as outlined in section XVII of this project paper. A complete breakdown of budget costs will be found in Annex I.

XVII. Implementation Plan for the Project

A schedule of major implementation activities for the life of this project is contained in Annex H of this project paper. The schedule sets forth the sequence of events for implementation of the project and the timing of each event. The balance of this section deals with implementation issues in three separate sections.

A. Administrative Arrangements for Implementation of the Project

During the summer of 1980, the OMVG member states decided to relocate the headquarters of the OMVG High Commission from Kaolack to Dakar. The OMVG High Commissioner estimates that this relocation may take as much as one year to complete and recommends that the existing links between OMVG and USAID/Gambia be maintained during the transition period. The maintenance of the USAID/Gambia and OMVG contact will provide continuity and permit an orderly and gradual transfer of project management responsibility to USAID/ Senegal. This transfer should be fully effected by the time the relocation is complete.

Therefore USAID/Gambia and USAID/Senegal agree to form a coordinating committee comprised of representatives of both Missions. The committee will meet in Banjul, Kaolack and Dakar as appropriate. It is anticipated that this committee will meet frequently throughout the transfer period. Overall management responsibility for the project will be retained by USAID/Gambia as long as the OMVG headquarters remains in Kaolack or until both Missions agree otherwise.

USAID/Gambia will be responsible for ensuring that major tasks such as drafting of the project agreement and implementation letters as well as preparation of contractual terms of reference, CBD announcements and RFPs are implemented in collaboration with USAID/Senegal. Assistance of REDSO staff may also be necessary to complete certain of these tasks.

A project manager will be provided for under the terms of a direct AID personal services contract. A job description for the project manager may be found in Annex G, Section 3. Funds for the full cost of the project manager are provided for in the contingency item of the project financial plan contained in Annex I.

The principal local agencies to be involved in the implementation of this project are the OMVG, the Ministries of the member states concerned with sectoral development, and the parastatal organizations in Senegal concerned with the regional development of the Sine Saloum, Casamance and Senegal Oriental provinces. On the part of AID, the principal agencies are the AID Representative's Office in Banjul and the AID Mission in Dakar, supported by the AID Regional Controller's Office in Dakar and REDSO/WA in Abidjan. In addition, major contractual services are required from one or more technical organizations.

It is recommended that the contractual services required under this project be obtained by direct AID/contractor agreements. The RFP's for technical service contracts required under the project will be prepared by USAID/Gambia. Technical assistance proposals will be reviewed on site, and contract execution will be carried out with assistance from REDSO/W.

All project monitoring activities with regard to AID financing, obligations of the parties to the Project Agreement, critical performances indicators and the like will be the primary responsibility of the AID Representative in Banjul, the AID Director in Dakar or their designated project managers. Designated project managers will be assisted in their monitoring of financial disbursements under the project by the Regional AID Controller's Office in Dakar. Continuing legal and contracting assistance to AID will be supplied on an as needed basis by REDSO/WA or relevant Offices in AID/W.

Specialists of the quality desired on a river basin planning and coordinating staff are not readily available in the overseas development personnel market. Thus special provisions should be taken to obtain and retain the specialists required. It is recommended and provision is made in the budget for six months French language training for three of the four specialists (a French speaking rural sociologist can probably be found). Depending on the implementation of the tentative decision to move OMVG headquarters to Dakar, provisions for location of staff residences will have to be made.

Contract Activity	Type of Contract	Anticipated Contractor
1. Aerial Photography and Mapping		
Aerial Photography and Ground Controls	Fixed Fee	U.S. Private Firm
Cartography	Fixed Fee	U.S. Private Firm
2. Environmental Study		
River Resources Survey	Cost plus Fee	U.S. private firm or University
Public Health Impact Survey	Cost plus Fee	U.S. private firm or University
Wildlife Vegetation Survey	Cost plus Fee	U.S. private firm or University
3. Socio-Economic Study	Cost plus Fee	U.S. private firm or University

Under the above arrangement, it is possible, should AID so desire, to cover all American organizational contractual participation in the project under two large phase contracts: one for aerial photography and cartography and a second for the environmental and the socio-economic study.

B. Procurement Plan for the Project

This section will outline the scope of the required procurement, the responsibilities of the procuring agencies involved and the steps to be followed in implementing procurement actions.

(1) Control of Goods and Services

The final responsibility for procurement of goods and services under the Grant rests with the OMVG and, where so designated, the contractors executing the individual studies (contractors will be required to procure their own equipment and vehicles). The OMVG, upon acceptance of this procurement plan, will designate their official(s) responsible for local procurement and will specify their method of control and/or documentation of such procurement. The OMVG is committed to procuring goods and services for the project from U.S. sources to the maximum extent possible but currently, due to staffing inadequacies, has very limited ability to accomplish this procurement itself in accordance with AID regulations. AID/Banjul, or AID/Dakar, therefore, upon receipt of an official request for U.S. procurement of the required goods and services itself, will locate an acceptable Procurement Services Agent (PSA) independent of the contractors involved in executing elements of the project, or will designate an existing contractor involved in the project as a procurement agent for certain specified items.

(2) Use of a Procurement Services Agent

If AID/Banjul or AID/Dakar chooses to locate and utilize a PASA for this project, it is anticipated that it would refer the matter to AID/W for specific recommendations on availability and location of such firms, and on assistance in negotiating any necessary contractual arrangements. It is essential, due to long procurement lead times, that a PSA be engaged as soon as possible.

(3) Technical Assistance and Participant Training

It is anticipated that all technical assistance to be provided under this project will be accomplished through contracts between AID and an American university or private technical firm. AID General Regulations will apply to all these contracts and the selection of the American university or the American private firms will follow standard AID procedures for requesting proposals, evaluating technical proposals and bids, and award of contracts. It is anticipated that the mechanism for requesting expressions of interest and technical proposals will be advertisements in the Commerce Business Daily.

Engagement of all technical assistance will be by Project Implementation Orders/Technical with the agreement of the OMVG. Participant training program will be filled by candidates from the member states selected by the OMVG and approved by the member governments. Actual training will take place at American universities or other institutions in the United States as may be designated by the OMVG and AID. Participant training will be implemented through Project Implementation Orders/Participant as issued by AID.

(4) Procurement Sources and Origins

The authorized code for this project is 000 (U.S. only). It is expected that all procurement of goods and commodities using foreign exchange will come from the United States. Therefore, no waiver for procurement is anticipated at this time.

(5) Payments

Payment to a procurement agent for services rendered will be made by the Direct Letter of Commitment method. Upon receipt of the PIO/C in AID/W (SER/COM/BFD), the Letter is sent directly to the designated agent to initiate procurement. When the agent has completed its purchasing actions, documents are presented to the AID Controller's Office in New York for payment. For all local payments, procedures established by the Regional AID Controller's Office in Dakar will be followed.

(6) Delivery of Commodities

All commodities ordered and imported into Senegal and/or The Gambia for purposes of this project will be shipped on the basis of costs, insurance and freight (CIF) to the ports of Dakar or Banjul. The procurement agent will provide all-risk marine insurance in the amount of 120% of the CIF cost of the Commodities. AID's normal marketing requirements for overseas shipments will be carried out by the designated procurement agent.

(7) Receipt, Inspection, Utilization and Logistics

The OMVG is held responsible for the proper receipt and port clearance (exonerations of all in-coming project commodities.) Inspections of incoming shipments must be made and receiving documents will be used to comment on damage and/or losses.

Damage/loss reports will be made expeditiously so that claim actions can be effected against the suppliers or carriers. The designated procurement agent will act on behalf of the OMVG if it receives reports regarding shipments from the United States.

Following clearance and inspection procedures, the OMVG will be fully responsible for providing all logistical and transport requirements to ensure that all incoming commodities and/or vehicles are delivered to the designated project areas of work sites.

The OMVG will be required to submit to AID/Banjul receiving reports of all project-related goods released from the ports of Dakar or Banjul.

C. Source/Origin Waivers, Vehicle Waiver Justification

As discussed in the body of the procurement plan, all procurement under the project will be of U.S. and cooperating member state source and origin.

D. Vehicle Maintenance

American vehicles will be purchased and spare parts made available. Maintenance of these vehicles will be handled in the following manner:

-- Adequate facilities exist in Tambacounda and Basse (both belonging to the Department of Water Resources in Senegal and The Gambia respectively);

-- Use of Ministry of Agriculture facilities at Yundum in the case of The Gambia. For the first and last cases some training of technicians on American vehicle maintenance techniques may be required.

E. Fueling of Vehicles

Unless an agreement on duty free supplies is obtained with Shell, Texaco or BP, whichever will be acceptable to AID/Banjul, it may be necessary to sink fuel pumps at Yundum, Farafenni or Mansakonko and Basse to refuel vehicles in the Gambian sector. This problem does not arise in the Senegalese sector as duty free petrol will be available on request from OMVG.

XVIII. Project Evaluation

Evaluations should be undertaken at varying intervals and should involve the OMVG, donor agencies, member states and the basin population. Project management should schedule evaluations to coincide with key decision-making points or phase changes in the implementation process. The subject areas and sources of information will remain essentially constant throughout the series of evaluations, and information for subsequent evaluation should be comparable with baseline information in order to measure progress or lack thereof. However, each evaluation should, as appropriate, recommend new topics to be covered in future evaluations, or changes of emphasis, methodology, etc. In this way the evaluations should become more incisive over time. Evaluation efforts will measure discrete activities. One comprehensive evaluation should be undertaken after approximately 3 years of operational experience.

The AID project manager and the OMVG officer in charge of evaluation will work closely to monitor project progress and ultimately, project impact. They will be responsible for identifying, in collaboration with the long-term technical assistants, OMVG staff and other relevant officials, when project management concerns of decision-making requirements signal the need for an evaluative exercise. For example, assuming the project proceeds according to the schedule set forth in the Implementation Plan, a first evaluation could be scheduled in the period from July to November, 1983. At that time, most output issues as well as some purpose issues could be examined. These issues would include relevance of studies to actual development projects and the degree to which study findings are communicated to member countries.

The ensemble of evaluations should deal with success in mobilizing and applying inputs as well as success in achieving outputs, project purpose and goal. These elements are indicated schematically in Chart I which includes a general description of each element and the respective source of information for purpose of evaluation.

Chart II shows in greater detail the topics to be covered in the evaluations. Allowance would have to be made for still greater specificity in each evaluation scope of work, which would be prepared with the advantage of feedback from operating experience. Subprojects referred to in Chart II represent development activities associated with OMVG but not funded under this AID project.

Besides the elements included in the charts, which deal with project-specific evaluation issues, there are broader issues which may be applicable to all projects of this type. Therefore, information bearing on these issues is of interest in all

evaluation efforts on this project. These issues include, but are not limited to, the following:

1. What progress has been achieved toward the institutional development of OMVG?

2. How effective is cooperation among member states and donors in river basin development?

3. What are the potential impacts, both positive and negative?

4. How can potential positive impacts be exploited and negative impacts avoided?

5. Have policy constraints toward achieving production goals been identified and dealt with?

6. Have project assumptions remained valid?

Chart I (Schematic Evaluation Plan)

Design Element	Source of Data
I. Inputs	
a. Member State Inputs	OMVG/Donors
b. Donor Inputs	OMVG/Donors Contractors
c. Other	
II. Outputs	Contractors Member State Agency Management AID Project Management
III. Purpose	OMVG/Donors Member State Agencies
IV. Goal (Impacts on Member State Development)	OMVG/Donors Member State Agencies Basin Population

Chart II (Some Project Specific Evaluation Issues)

1. Member State Inputs

   1. Adequacy of resources and support provided by member states/OMVG including appropriateness of policy and financial decisions.

   2. Provision for representatives of basin populations of member states in decision-making on development projects to be undertaken.

   3. Record of member states in insisting, particularly with donors but also with member state agencies, that OMVG is the coordinator of Gambia Basin Development.

   4. Providing qualified experts to participate in the technical planning and coordinating activities of OMVG.

2. Donor Inputs

   1. Timeliness and quality of donor inputs such as studies, training and technical assistance.

   2. Competence of donor management.

   3. Support for coordination efforts by OMVG.

   4. Donor flexibility in responding to reasonable OMVG needs for support.

3. OMVG Inputs

   1. Effective uses of OMVG resources to build institutional strength.

   2. Recruiting qualified counterparts.

   3. Staffing with member state nationals.

   4. OMVG record in coordinating activities including keeping host country agencies informed.

   5. OMVG staff involvement in all aspects of regional sub-project planning, implementation and evaluation.

4. Outputs

1. Promptness in raising issues to member states, and through them to target groups, that arise from OMVG studies.

2. Relevance of studies to member states' decision-making processes.

3. Inclusion of appropriate variables in each study phase.

4. Maintenance of updated action plan based on original UNDP proposal, that is fully supported by member states.

5. Inclusion of appropriate variables in the studies.

6. Relevance of initial study work plan and subsequent changes to member states decisions.

7. OMVG record in supplying qualified counterparts, and degree of member state participation in study activities.

5. Purpose

1. Relevance (including timeliness and quality) of studies to OMVG and member states decision-making processes.

2. Adequacy of Planning Unit input to maintaining an updated version of the action plan.

3. Extent of Planning Unit staffing with member state nationals.

4. Degree of Planning Unit success in obtaining funding commitments for studies through OMVG management.

5. Record in coordinating studies, influencing study scopes of work, and keeping member countries informed for study progress and findings; and adequacy of standard procedures for doing so.

6. Responsiveness of studies to interests/concerns of local populations.

7. Extent of Planning Unit participation in evaluations of regional development sub-projects, and feedback of results into information base for future planning.

8. Degree to which Planning Unit monitors and evaluates studies for relevance and quality.

6. <u>Sub-Goal</u>

1. Degree to which the regional sub-projects developed and funded reflect information (including project selection criteria and recommendations regarding mitigating measures) derived from studies.

2. Promptness of OMVG in raising issues to donors and member states, and through the latter to target groups, that arise from studies.

3. Record of funding of sub-projects based on study conclusions and recommendations.

4. Record of OMVG in moving sub-projects through design to implementation phase.

5. Maintenance of updated action plan based on original UNDP proposal, that is fully supported by member states.

6. OMVG record in providing for representation of basin populations of member states in decisions on regional development sub-projects.

7. Record of member states and donors in insisting that OMVG is the coordinating agency for basin development.

8. Donor flexibility in responding to reasonable OMVG needs for support.

9. Record of OMVG use of resources for building institutional strength.

10. Record of OMVG in coordinating activities and informing member state units.

11. Degree to which OMVG staff is involved in all aspects of regional sub-projects planning, implementation and evaluation.

CHART III

OMVG Evaluation Resource Requirements

1. Final Comprehensive Evaluation

A.	Preparation	1 week
	Field time	4 weeks
	Report writing	1 week
	Total	6 weeks

B. Illustrative Team

1. Evaluation Officer
2. Water Resources Planning Engineer
3. Public Administration Specialist
4. Economist (Private/Public Sector)
5. Anthropologist/Sociologist
6. Environmentalist/Health Specialist

Total of 36 person-weeks/9 person-months

The comprehensive evaluation will be done under contract, with assistance from AID/W or REDSO/WA as appropriate and available.

The life of project evaluation budget provides funds for at least one, and possibly two, comprehensive evaluation activities, plus evaluations focussed on special issues or at key project decision making points that may be more limited in nature and scope.

XIX. Conditions and Covenants

The Project Agreement will contain one condition precedent and five covenants as follow:

A. Condition Precedent

1. The terms of reference for the counterparts to the appropriate long-term specialists must be approved by the host country authority and evidence presented that financial provision has been made for their engagement by the OMVG before funds for the project may be released.

B. Covenants

1. The OMVG will make every effort to hire and maintain technical and administrative staff at the number and quality needed to effectively achieve the stated project objectives throughout the life of project.

2. The OMVG will prepare and update annually a budget projected to two years past the PACD of this project. This budget should include, as a minimum, the costs generated by all activities and sources of funding to cover those costs.

3. The OMVG agrees to provide an action plan addressing agricultural price policy considerations within the Gambia River Basin by the end of the project.

4. In order to a) encourage effective communication and b) to ensure that member country development priorities and strategies are reflected in the OMVG planning and coordinating process, the OMVG should maintain its current practice of relying as much as possible on technicians and resources available from member states.

5. The OMVG will provide evidence, in form and substance satisfactory to AID, that the counterparts to the four long term technical assistants have been nominated and approved by August 1, 1981 and hired by the OMVG by December 31, 1981.

ANNEX A

COMPLETED STATUTORY CHECKLIST

SC(T) - COUNTRY CHECKLIST

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

GENERAL CRITERIA FOR COUNTRY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights?

   Although the project is primarily directed at fostering an institutional planning capacity within the OMVG for the Gambia River Basin the goal of all activities are socio-economic benefits for the peoples of the Senegambia.

   The Department of State has made no determination of gross violations of human rights for any member state of the OMVG.

2. FAA Sec. 481. Has it been determined that the government of 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?

   No. The Gambia has no aircraft or international cargo ships under its own flag. Senegal does not furnish any assistance to Cuba through its aircraft or cargo ships.

4. FAA Sec. 620(h). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?

   Yes, both member states have democratically elected governments, not controlled by the international Communist movement.

5. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on 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?

   No.

6. FAA Sec. 620(e)(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?

   No.

FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?	No. No assistance will be provided to the countries listed.
8. FAA Sec. 620(l). 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. The Gambia has no military forces of any kind. Senegal has no such agressive or subversive intentions.
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, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?	No.
11. FAA Sec. 620(o); Fisherman's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,	No. No seizures, sanctions, or penalties have ever been imposed against U.S. fishing activities within international waters.
a. has any deduction required by Fisherman's Protective Act been made?	No.
b. has complete denial of assistance been considered by AID Administrator?	No.
12. FAA Sec. 620(q); App. Sec. 506. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?	No. No AID loan has ever been made either to The Gambia or Senegal.
13. FAA Sec. 620(s). "If contemplated assistance is development loan (including Alliance loan) or security supporting assistance has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the amount spent for the purchase of sophisticated weapons systems?" (An affirmative answer may refer to the record of the taking into account, e.g.: "Yes, as reported in annual report on implementation of Sec. 620(s)." This report is prepared at the time of approval by the Administrator of the Operational Year Budget.	None. No determination has been made since The Gambia has no military forces of any kind and Senegal does not maintain a significant military force.

* Revised

* Upward changes in the Sec. 620(s) fa occurring in the course of the year, sufficient significance to indicate an affirmative answer might need rev should still be reported, but the st tory checklist will not normally be preferred vehicle to do so.) *

14. FAA Sec. 620(c). Has the country s diplomatic relations with the Unite States? If so, have they been rest and have new bilateral assistance a ments been negotiated and entered since such resumption?

No. Neither member state has severed diplomatic relations with the United States.

15. FAA Sec. 620(u). What is the paym status of the country's U.N. oblig If the country is in arrears, were arrearages taken into account by t Administrator in determining the c AID Operational Year Budget?

Neither member state is in arrears.

16. FAA Sec. 620M. Has the country gi sanctuary from prosecution to any dual or group which has committed of international terrorism?

No.

17. FAA Sec. 666. Does the country o on basis of race, religion, natio origin or sex, to the presence of officer or employee of the U.S. t to carry out economic development under FAA?

No.

18. FAA Sec. 669. Has the country d or received nuclear reprocessing, enrichment equipment, materials, technology, without specified ar ments on safeguards, etc.?

Neither member state has any nuclear processing or enrichment capabilitie

19. FAA Sec. 901. Has the country citizens the right or opportuni emigrate?

No.

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country

a. FAA Sec. 700(c), (d). Has been established, and taken ini to assess commitment and progr country in effectively involvi poor in development, on such i (1) small-farm labor-intensive culture, (2) reduced infant mo (3) population growth, (4) equ income distribution, and (5) u

Yes. Both member states emphasize agricultural development, redress of urban/rural income balances, and rural development in their respective development plans.

b. FAA Sec. 207(b)(5), (7) & 208; 211(a)(5), (7). Describe which country has

(1) taking appropriate effort food production and improv food storage and distribu

Both member states adhere to the goal of food self-sufficiency for their populations. Food distribution and storage are critical elements in these plans.

(2) Creating a favorable climate for foreign and domestic private enterprise and investment.

(3) Increasing the public's role in the developmental process.

(4) (a) Allocating available budgetary resources to development.

(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.

(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.

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

Both member states encourage both domestic and foreign private enterprises and investments through tariff concession, positive tax structure, and profit repatriation.

One of the fundamental themes of the development plans is self-reliance and public participation in the development process.

Over 50 % of budgetary resources in the development budgets are oriented toward agriculture and rural development.

There are no unnecessary military expenditures or interventions in other nations by either member state.

Both states are democratic in all respects. Land tenure systems provide access to land for all people needing it and using it properly. Both states are expressly committed to redress of urban/rural disparities and are directing resources to improving the quality of life for the urban and rural populations. Both states encourage participation i their political processes. Individual freedom and freedom of the press are rights of citizens.

Since Independence, both member states have dedicated themselves to the betterment of their citizens' lives through government policies and actions that permit full participation of the people in governing processes. Fulfillment of these principles of government is predicated on self-help through rural development and budgetary resources.

c. FAA Sec. 201(h), 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.

d. 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.

2. Security Supporting Assistance Country Criteria.

a. FAA Sec. 507B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?

N/A

b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?

N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

N/A

SC(2) - PROJECT CHECKLIST

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

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

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

   (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

   Notification was supplied in the FY 1981 Sahel Development Program Annual Budget Submission.

   Current total proposed budget is in excess of the total reported to the Congress.

2. FAA 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.

   Yes.

3. FAA 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?

   No legislative actions are required.

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, no. 174, Part III, Sept. 10, 1973)?

   Yes. Issues are dealt with in the Initial Environmental Examination. A negative determination has been requested.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), 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?

   Yes. The 611e determination is included in the project paper as Annex C. No construction of any kind is required for this project.

FAA Sec. 209, 619. 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 project is designed as a regional program under the direction of the Gambia River Basin Commission.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). 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 cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

N/A

One of the specific activites of the Gambia River Basin Commission is the rationalize international trade flows between The Gambia, Senegal and the other countries of the Senegambia region. River basin development should be envisaged to include increased opportunities for private initiative and competition. Credit and the credit organizations listed in the question are essential to development of a viable agriculture. There are no elements of this project specifically targeted to reduce monopolistic practices in the Basin. The encouragement of technic efficiency in agriculture and commerce is essential to successful agricultural development in the Basin.

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).

Project implementation will be through private contractors and TITLE XII institutional arrangements. All possibl equipment and supplies will be advertise for US private contractor participation.

9. FAA Sec. 612(b); Sec. 636(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.

There are essentially no host country contributions to this project. There are no US-owned foreign currencies for use in this project.

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

N/A

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) 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; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

There are no specific plans to involve the poor in this project. The project entails institutional development of a regional river basin authority. Any impact upon the rural poor, spread of investment to rural areas, cooperative development, and demonstrated movement toward democratic private and local government institutions indirect through the actions of the GRVG and not directly through the activities of this project.

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [Include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] 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;

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal 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;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

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

(b) to help alleviate energy problem;

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

(d) reconstruction after natural or manmade disaster;

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

(f) 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.

It would appear that Code 105 is the singlemost appropriate code for this project although the project includes elements of all other code areas. It is basically an institutional development project with particularly emphasis on development of human resources in technical skills relevant to river basin planning. The information-gathering activities under the project are directly targeted at providing more detailed and current information on the natural and socio-economic environments in which river basin planning will take place. Proper utilization of the data collected, when coupled with effective formal and non-formal training program for local staff technicians, should result in greater understanding and consideration of the problems of rural families.

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). 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)?

The requirement has been waived for The Gambia and Senegal as a "relatively Least-developed" set of countries within the context of the Special Sahel Development group of eight countries.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made and efforts for other financing?

The grant assistance under the project will be disbursed over a four year period. Adequate justification to the Congress has been made in the context of the Special Sahel Development Program.

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on: (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained workers in the country; (4) programs designed to meet the country's health needs; (5) 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 (6) integrating women into the recipient country's national economy.

The individual activities in the project as proposed address all of the issues raised by the question. The project i basically an effort in strengthening a river basin planning program. The principal coordinating agency for this planning is the OMVG. Assistance to OMVG is directed at encouraging development of democratic, comprehensive socio-economic planning processes throughout the Gambia River Basin. The central goal of the river basin planning is to provide additional capacity for irrigated agricultural production for food self-sufficien. Strengthening of the planning process in the member states essentially means training local manpower. The environmental study included in this project has as its objective the determining of health impacts from river basin and finding ways to mitigate them.

f. FAA Sec. 281(b). Describe extent to which program 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.

All project elements in this project were articulated by local representatives of the member states during a three year planning process sponsored by AID and UNDP prior to the writing of this project paper.

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(d); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

Project activities contribute to all of the objectives listed in question G. They are most relevant to strengthening local institutions directed toward social progress. The project activities are fully consistent with and related to member state priorities and objectives in river basin development. The project paper provides all required economic, social and technical soundness analyses.

h. 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.

No effects of any kind are envisaged for the U.S. economy as a result of this project. Virtually all commodities and equipment under this project is U.S. source and origin.

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

The project entails grant funding only. None of the questions in this section therefore are relevant.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

c. FAA Sec. 201(e). If loan is not part of or pursuant to a multilateral plan, and the amount of the loan exceeds $1,000,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and institutional resources requirements and relationship between ultimate objectives of the project and overall economic development?

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Security Supporting Assistance

FAA Sec. 531. How will this assistance support promote economic or political stability?

The project does not involve security supporting assistance.

4. Additional Criteria for Alliance for Progress

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(2). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este, and to what extent will the activity contribute to the economic or political integration of Latin America?

The project and the participating member states have no relationship whatsoever with the Alliance For Progress.

b. FAA Sec. 251(b)(8); 251(h). For Loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

5C(3) - STANDARD ITEM CHECKLIST

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?	U.S. small businesses will be able to participate in furnishing of goods and services under the project.
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, except for any specific waivers requested in the project paper.
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?	Neither member state discriminates against U.S. marine insurance companies. All U.S. commodities purchased under the project will be insured by U.S. insurance companies.
4. FAA Sec. 604(e). 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?	There will be no procurement of agricultural commodities of any kind under the project.
5. FAA Sec. 603(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Use of U.S. Government excess property is not anticipated in the project.
6. MSA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum 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.	Ocean transport by U.S. flag carriers will be used to the maximum extent possible consistent with carrier availability and fair and reasonable rates.
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,	Technical assistance under the project will be provided for by American private companies and/or American Title XII universities. If the facilities of other U.S. government agencies are utilized, the listed assurances under FAA Section 621 will be provided by AID.

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available? — Yes.

5. 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? — No construction of physical structures is included in this project.

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. All funding under the project is grant assistance.

2. FAA Sec. 307(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights? — All funding under the project is subject to full audit privileges by the Controller General.

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(i). 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? — NO.

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(o). to compensate owners for expropriated nationalized property? **Yes.**

c. FAA Sec. 660. 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. 103. to pay pensions, etc., for military personnel? **Yes.**

f. App. Sec. 106. to pay U.N. assessments? **Yes.**

g. App. Sec. 107. to carry out provisions of FAA Sections 251(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.**

ANNEX B

611 (a) Criteria

ANNEX B

611 (a) Criteria

The project is divided into several components, the two being a series of three studies and the provision of long-term technical assistance. Cost estimates for these components, as well as for the total project, have been reviewed and approved by the AID/W members of the Project Committee which include engineers, social scientists and environmentalists. The OAR/Banjul has also reviewed and approved project costs.

ANNEX C

REQUEST FOR FUNDING OF BASIC STUDIES INSTITUTIONAL AND LOGISITC SUPPORT FOR THE GAMBIA RIVER BASIN DEVELOPMENT ORGANIZATION (O.M.V.G.)

ANNEX C

15th July 80.

OMVG/USAID/BG/(8) B. P. 60, KAOLACK.

REQUEST FOR FUNDING OF BASIC STUDIES INSTITUTIONAL AND LOGISTIC SUPPORT FOR THE GAMBIA RIVER BASIN DEVELOPMENT ORGANIZATION (O.M.V.G.)

In pursuance of the various meetings, discussions and exchanges that we have had in the recent past, I am now submitting a formal request through you to USAID for the funding and assistance in the implementation of some of the activities of the organization which are considered indispensable for either the broad-based planning of the river basin development or the execution of the vital infrastructural projects.

These activities are essentially in the areas of:

1. Studies
   - Cartography and Topography,
   - Environmental Studies,
   - Socio-economic Studies.
2. Institution building.
3. Logistic support and other activities.

1.1. Cartography and Topography

This programme will enable the preparation and planning of the various actions envisaged in the framework of the multi-donor mission reports in particular in the sectors of both irrigated and rain-fed agriculture, livestock, forestry and transportation.

It will also assist in the execution of the socio-economic and environmental studies. In short, it will form a basic tool for planning all pre-investment and investment programmes for the basin!

For this reason the OMVG has attached very high priority and urgency to its execution.

1.2. Environmental Studies

The organization is seeking in this connection to avoid creating, through its development programmes, situations that could either negate the efforts being put into the basin development or create situations of conflict through unexpected interaction of the activities in the various sectors being addressed.

From the water-based development projects the organization envisages certain environmental impacts which must be discerned at this stage and mitigating factors built into the conception and design of the related structures as well as the formulation of control measures.

The expansion that would emanate from implementation of the development strategies has to be clearly seen in the context of the total environment supporting the sectoral activities. The environmental studies will enable the adjustment of these activities so as to achieve compatibility between the sectoral activities.

The environmental study programme should therefore

- determine the base case or existing conditions,
- indicate possible changes that should be envisaged,
- recommend mitigating factors to contain hazards due to these changes.

1.3 Socio-economic Studies

To date a considerable amount of work has been carried out in certain portions of the basin, in particular in The Gambia. Very little

socio-economic study has, however, been carried out in the Senegalese part of the basin.

It is evident therefore, that a socio-economic study covering the basin will help in the evaluation of the human and economic factors prevailing in the sub-region and which are vital motivating factors for a successful implementation of the development strategies retained by the basin states.

2. Institutional Support

The OMVG, being only two years old, has in the past sought to tailor its requirements in terms of personnel to its on-going programmes. It had, up to now, utilized consultation for the implementation of part of its work programme, especially the basic infrastructural projects.

It has now become evident that the existing staffing would not be adequate to cope with the increasing number of activities in both the technical, financial and legal fields.

In view of this and the expected increase in activities in the near future, both the Council of Ministers and the Conference of Heads of State have taken decisions bearing on reinforcement of the structures of the organization.

The organizational structures as had been conceived by the multi-donor mission was approved by the Council of Ministers during its 3rd Ordinary Session in February 1980.

The Conference of Heads of State also directed that the staffing be reinforced to cater for the diverse activities to be undertaken, as well as the creation of a General Secretariat.

The absence or inadequacy of expertise in the basin states calls for a request for expatriate technical assistance coupled with attachment and training of national counterparts, in particular in the fields of:

- the environment,
- river basin planning,
- macro-economics and finance,
- socio-economics.

3. Logistic Support

This support is essentially in the areas of documentation and data processing.

The possibilities of using micro-filming for classification and storage of the several documents that had been prepared over the years in the basin states and OMVG calls for particular attention.

As to data processing capabilities, this had been the subject of discussions in Washington, Dakar and Banjul.

It is evident that for the implementation of certain studies and monitoring of the implementation of the basin development strategies, access should be had to computation facilities.

As regards the latter, it is the view of the OMVG that the model used by Nathen Associates would require expensive hardware as well as software and that a simpler model could be utilized on a smaller machine.

It is to be noted that there are other models of the organization held outside the basin and used on a time basis for determining certain factors related to the river and based on which the countries have taken vital and crucial decision relating to their development efforts.

The establishment of a data processing capacity would in itself be very welcome.

This request is therefore designed to seek assistance from USAID in the areas mentioned above, and it is hoped that USAID will once again consider it with the same good will that it has continuously shown towards two countries that have always sought to establish a privileged relationship with the United States of America and its people.

Finally, I would like to take this opportunity to inform USAID that the Peoples Revolutionary Republic of Guinea has been accepted to become a member of the OMVG, and in this connection, the organization is desirous to extend its plan of action to cover the Guinean part of the basin.

In formulating my best wishes for the successful implementations of your tasks in the Gambia and now in Senegal as well, I would like to renew to you the assurances of my highest considerations.

M. A. K. John,

High Commissioner (OMVG).

Mr. Thomas MOSER,

USAID Representative,

Buckle Street,

B A N J U L.

ANNEX D

APR 09 1981

ACTION MEMORANDUM FOR THE ACTING ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: AAA/AFR/DR, ~~John W. Koehring~~ J W Koehring

SUBJECT: The Gambia River Basin Development Project 635-0012

The Project Identification Document (PID) and Project Review Paper (PRP) for the subject project were submitted to AID/W in late 1975 and early 1977 respectively. An ECPR was subsequently held on March 10, 1977, which set forth several conditions which needed to be satisfied before AID proceeded to the Project Paper (PP) design stage. A PRP approval message was never formally transmitted to OAR/Gambia at that time.

However, AID did undertake significant involvement in the Gambia River Basin through participation in the 3 year study activity conducted by UNDP. As a result of this extensive involvement, the conditions raised during the ECPR were considered to be satisfied and the PP design effort commenced.

The Project Committee is currently studying the PP and has noted the absence of a formal PRP approval message. In reviewing this situation, GC/AFR has indicated that AA/AFR may waive the policy requirement for issuance of a PRP approval message if the circumstances so warrant. The Project Committee believes such a waiver is justified based on its assessment that the project is technically sound and in line with the original PRP design. Therefore, it is hereby requested that you approve a waiver of the policy requiring issuance of a PRP approval message as a pre-condition to PP design.

APPROVED [signature]

DISAPPROVED _____

DATE 4/10/81

Clearances:
GC/AFR:TBork (draft)
AFR/SWA:HGray (draft)
AFR/SWA:HWoods (draft)
AFR/DR/SWAP:JRMcCabe (draft)
AFR/DR:NCohen (draft)
AFR/SWA:DMaxwell (draft)

Drafted by:AFR/DR/SWAP:JSchlesinger:fn:4/7/81:Ext 28242

ANNEX B

DESCRIPTION OF THE MANDATE AND STRUCTURE

OF THE OMVG

ANNEX E

DESCRIPTION OF THE MANDATE AND STRUCTURE OF OMVG

History of Basin Agreements

Treaty of Association (April 19, 1967)

Agreement on the Integrated Development of the Gambia River Basin (July 31, 1968)

Convention on the Establishment of the Coordinating Committee for the Development of the Gambia River Basin (April 16, 1976)

Convention on the Status of the Gambia River (June 30, 1978)

Mandate of the OMVG

Convention for the Creation of the Gambia River Basin Organization (June 30, 1968)

Structure of the OMVG

Analysis of the Role of OMVG

Institutional Needs of OMVG

ANNEX E

DESCRIPTION OF THE MANDATE AND STRUCTURE OF OMVG

This annex begins with a brief history of interstate agreements regarding development of the resources of the Gambia River Basin. The major focus, however, is on the mandate of the Gambia River Basin Development Organization (OMVG), its organizational structure, its institutional needs, and a program for developing and improving its institutional capability.

History of Basin Agreements

The first agreement in the development of the Gambia River Basin was signed by representatives of the Governments of Senegal and The Gambia on February 18, 1965. It was fully superseded by the agreement of July 31, 1968, and therefore is not discussed here.

A Treaty of Association was signed by representatives of the Governments of Senegal and The Gambia on April 19, 1967. It was a general agreement and not related specifically to the Gambia River Basin. It did, however, establish an Inter-State Ministerial Committee and an Executive Secretariat, with responsibility for study measures to strengthen the coordination and cooperation between the two countries. The Executive Secretariat was subsequently assigned responsibility relating to the basin development by the agreement of July 31, 1968. On July 31, 1968, representatives of the two governments signed the Agreement on the Integrated Development of the Gambia River Basin. It was agreed that the Executive Secretariat of the Inter-State Ministerial Committee would be responsible for initiating and coordinating the problems of the development of the basin. The Secretariat would also prepare a development program for the basin

aimed at formulating applications for technical and financial assistance from international agencies and friendly governments. Any territorial scheme that would affect the flow of the river should be submitted to the Inter-Ministerial Committee for approval. The Secretariat would also study development projects and advise the States on the means to carry them out. This agreement superseded that of February 18, 1965.

The Convention on the Establishment of the Coordinating Committee for the Development of the Gambia River Basin was signed by ministers of the two states on April 16, 1976. The Committee was to be responsible for (1) promoting and coordinating studies and work relating to the development of the Basin's resources, (2) all technical and economic activities entrusted to it by the member states within the framework for basin development, and (3) promoting the setting-up of an authority to be responsible for developing the Gambia River Basin. A Council of Ministers was to be the decision-making body, with responsibility for elaborating and defining priorities for development of basin resources. The Coordinating Committee was to be composed of representatives of the riparian states chosen from the ministries concerned with development of the basin. It was to oversee the implementation of the decisions of the Council of Ministers.

The Convention on the Status of the Gambia River was signed by the presidents of the two republics on June 30, 1978, and was subsequently ratified by each contracting state. It recognizes prior pertinent agreements. The convention declares that the Gambia River is a river of regional interest within the national territories of the riparian states. The states agree to a close cooperation which will

facilitate the rational development of the resources of the Gambia River. Approval of the contracting states is required before a project is carried out that is likely to cause serious modifications in the characteristics of the river or of its natural resources. A separate agreement between the contracting states shall define the conditions governing the implementation of each project of common interest as well as the mutual obligations of the states concerned. The convention also discusses conditions and responsibilities of the states regarding navigation on the river. In a significant article (No. 11) the states agree to set up a joint organization for cooperation, which will be responsible for implementing the agreement and promoting and coordinating studies and projects for the development of the Gambia River. The details of the organization are to be dealt with in a special agreement.

Mandate of the OMVG

The mandate of the OMVG is best described by a summary of the conference that established it. A subsequent section analyzes the mandate from the viewpoint of OMVG itself, of the ministries of the member states, and of potential donors.

The Convention for the Creation of the Gambia River Basin Organization is the most significant of the agreements with regard to the purpose and activities of this project paper. The convention, held to fulfill Article 11 of the June 30, 1978 agreement, was also signed by the presidents of the Republics of The Gambia and Senegal on June 30, 1978 and subsequently ratified by each contracting state. The French name of the organization is Organisation pour la Mise en Valeur du Fleuve Gambie; hence, the acronym OMVG, which will be used to refer to the organization throughout the rest of this annex.

The Convention states that any riparian state may join the organization. Although only The Gambia and Senegal have signed and ratified the Convention, the Heads of State of those two countries, at a meeting in Dakar on July 8, 1980, accepted the request of the Republic of Guinea to become a member state. Formal signing of the Convention and ratification by Guinea is expected soon.

The OMVG is charged with three responsibilities:

(1) To apply the Convention on the status of the Gambia River

(2) To promote and coordinate the studies and works for the development of the basin within the national territories of the member states.

(3) To execute such technical and economic projects as member states wish to assign to it. In order to do this, the organization may receive donations, obtain loans, and launch appeals for technical assistance with the consent of the Council of Ministers.

The Convention states that the OMVG shall in no way act as an obstacle to the creation, the existence, or the workings of national or regional organizations embracing different or larger areas of cooperation.

The Convention provides for the following four permanent bodies and such other organs as may be necessary to achieve its program:

(1) The Conference of Heads of State and Governments

(2) The Council of Ministers

(3) The High Commission

(4) The Permanent Water Commission

The Conference of the Heads of State and Governments is the supreme body of OMVG. It defines the policies of cooperation and development and makes decisions concerning the political, economic, and general interests relating to the organization's objectives.

The Council of Ministers consists of a single minister representing each member state; however, the ministers are advised and supported by representatives of the several ministries and other entities within the respective governments that are concerned with basin development. The Council of Ministers defines the general policies for developing the basin, for utilizing its resources, and for cooperating between the states, and exercises overall control of the organization. River basin development programs that are of interest to one or more states shall be submitted to the Council for approval prior to execution, and the Council determines the order of priority for development projects. The Council decides on the work program of the OMVG, approves its operating budget, and determines the financial contributions of each member state.

The Permanent Water Commission is responsible for defining the principles and methods for apportioning the use of Gambia River waters among the member states and among the sectors using the water: industry, agriculture, and transport. The Commission is composed of representatives of the member states and serves as an advisory group to the Council of Ministers and reports regularly regarding execution of those decisions and of all initiatives assigned to it by the Council. The Commission is directed by a High Commissioner who is appointed by the Conference of Heads of State and Governments on recommendation of the Council of Ministers,

to which he is responsible.

The primary responsibilities of the High Commissioner are described in the Convention as follows:

(1) He represents the OMVG between sessions of the Council of Ministers

(2) He proposes the structure of the OMVG, which is fixed by the Council

(3) He is responsible for the financial operations of OMVG, specifically its operating budget and its study and construction budgets.

(4) He examines the projects evolved by the States for the development of the Basin and submits them with his opinions to the Council of Ministers.

(5) He may be charged by one or more States with the execution of studies and the actual control of works linked to implementation of a project.

(6) He represents the member States in their relations with international and bilateral aid institutions with reference to the Basin

(7) He is empowered to negotiate and make contacts within the powers delegated to him by the Council in the name of all the States.

(8) He may be charged by one or more States to find funds for implementing development programs in the Basin.

The High Commissioner is assisted and supported by Directors of

the two services, Technical Services and Administration and Financial Services. He may delegate authority to the Directors as he deems necessary, but he is ultimately responsible for the management and activities of the Commission. The Directors are appointed by the Council of Ministers on the recommendation of the High Commissioner. The Directors brief the High Commissioner on the operation of the Services and in particular on administrative and financial matters. They also execute programs and projects for Basin development that are submitted to them by the High Commissioner.

This description of the mandate and basic structure of OMVG provides the background for a more detailed discussion of its organization and role.

Structure of the OMVG

The organization chart of OMVG shown on the following page has been approved by the Council of Ministers. The present staff of the High Commission consists of the following persons:

High Commissioner: Malik A. K. John

Director of Technical Services: Mamour Gaye

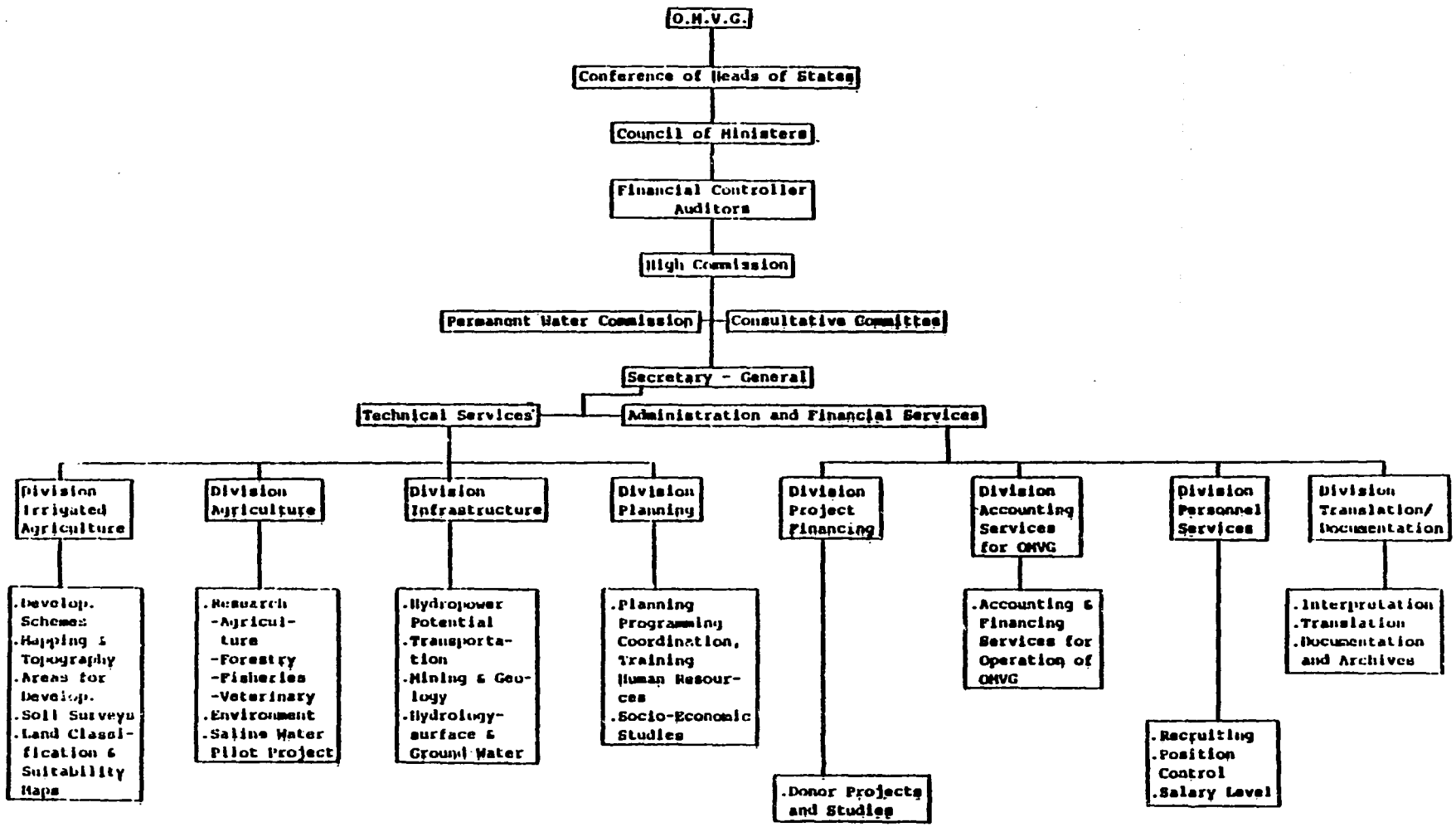
Director of Administration and Financial Services: Omar Njie

Accounting Officer: Sally Tandinet

A translator and four secretaries and typists

The United Nations Development Program (UNDP) has also assigned Jean Rene Conde, an agronomist, as a technical advisor to the Technical Services. His primary responsibilities are expected to be with the Agricultural Division.

The Consultation Committee shown on the organization chart was approved by the Heads of State at a meeting on July 8, 1980. It


O.M.V.G.
Conference of Heads of States
Council of Ministers
Financial Controller Auditors
High Commission
Permanent Water Commission
Consultative Committee
Secretary - General
Technical Services
Administration and Financial Services
Division Irrigated Agriculture
Division Agriculture
Division Infrastructure
Division Planning
Division Project Financing
Division Accounting Services for OMVG
Division Personnel Services
Division Translation/ Documentation
.Develop. Schemes
.Mapping & Topography
.Areas for Develop.
.Soil Surveys
.Land Classification & Suitability Maps
.Research
-Agriculture
-Forestry
-Fisheries
-Veterinary
.Environment
.Saline Water Pilot Project
.Hydropower Potential
.Transportation
.Mining & Geology
.Hydrology-surface & Ground Water
.Planning Programming Coordination, Training Human Resources
.Socio-Economic Studies
.Donor Projects and Studies
.Accounting & Financing Services for Operation of OMVG
.Recruiting
.Position Control
.Salary Level
.Interpretation
.Translation
.Documentation and Archives

will have broad advisory responsibilities, with special emphasis on liaison with donors.

The Secretary-General, a position recently approved by the Council of Minister, will report directly to the High Commissioner. He is expected to have a strong legal-background. Specialized legal advice will be obtained from part-time consultants as needed.

The Council of Ministers has approved the job descriptions and the required qualifications for the heads of the several divisions in both the Technical Services and Administration and Financial Services.

These activities were the precursors of a major effort to fill certain positions on the High Commission staff. This would be in line with the increased scope of work that would evolve from this and several other projects under preparation. The High Commission confirmed that this recruitment programme will commence in July, 1981 and will include the four (4) counterpart staff of the proposed American technical assistants as well as other key positions in the Division of irrigated agriculture, of planning and project financing.

Analysis of the Role of OMVG

The intention of the Heads of State in creating the OMVG was to establish an organization that would promote and coordinate the development of resources of the Gambia River.

Firstly it must be understood that all projects of a regional scope and character are automatically assigned for execution and exploitation to the OMVG, in particular the infrastructure programme. In these cases the OMVG takes the attributions of a supra-national institution vis-a-vis any single member state but not vis-a-vis all three member states taken together.

Where the project is of a national character with no regional implications or consequences, a member state as of right shall be responsible for its execution although it may wish to "assign it to the OMVG". In this case, OMVG may undertake the execution on the understanding that the member state fulfills all the obligations arising or deriving from execution of such a project - financial, legal, etc.

If the project is national in character but entailing negative consequences towards another state, then OMVG will envoke the provisions of its statutes bearing on execution of all projects related to the river, and request remedies to the situation. This is in line with the "monitoring" role of the OMVG.

As regards the provisions of the "legal status of common structures" this refers essentially to

a. the rights of use of these structures

b. the mutual and reciprocal obligations of the member states vis-a-vis donors and each other for their construction on the former case and operation and maintenance on the latter case

c. the administrative machinery for their exploitation.

The conditions governing their execution do not limit the role of the OMVG as it is the institution responsible for their execution and exploitation. The sole objective of the document is to ensure that the right and obligations of the member states, themselves are respected throughout by all parties. It provides the legal framework through which OMVG executes and exploits these common structures.

Institutional Needs of OMVG

Certain critical needs for staffing the High Commission are related to the specific studies that are part of this project, namely: aerial photography and mapping, environmental studies, and socio-economic studies. In support of these studies, the project includes provision of four long-term technical assistance

specialists: a civil engineer (river basin planner), an environmental specialist, a sociologist, and a natural resources economist. These specialists would also provide advice and assistance to OMVG on all studies and activities related to their disciplines, in addition to the three specific studies mentioned above. Certain actions on the part of OMVG are required as a precursor for AID funding. Priority staff development of OMVG must include utilization of the best qualified personnel available, within minimum requirements, in the four disciplines mentioned above, to work with the four technical specialists on the general and specific studies. Appropriate academic or technical training would be provided these employees so that, with the on-the-job training obtained by working with the specialists and with the contractors for the specific studies, they would ultimately become well-qualified counterparts. It is essential that these counterparts be permanent staff members of OMVG in order to assure institutional continuity.

The four local technicians discussed above would be employed in the Technical Services Division of OMVG. Adequate staffing would also be required in the Administration and Financial Services to perform at least the minimum in those required activities to support the larger technical staff.

As stated earlier under the discussion of the structure of OMVG no detailed organization chart showing either the short-range or long-range projections of staffing requirements for the High Commission has been in evidence. One reason may be that the OMVG , although described in the Convention of June 30, 1978, establishing the

organization, is still not fully defined nor supported at all levels of the member governments. A more likely reason is that the OMVG has not yet developed the work load to require a larger staff. It is recommended that the OMVG organization chart show the anticipated dates for the projected personnel and that provisions be made for obtaining support funding.

In support of this effort to better define the role and staffing needs of OMVG, the institutional development component of this project suggests a contract with a university or management consultant to make an in-depth study of OMVG. The contractor would provide the member states with its recommendations regarding the most effective role for OMVG and an appropriate organizational structure. This possible study is not specifically included in the project, but is an option that could be adopted on the recommendation of the four technical assistance specialists, in consultation with the High Commissioner of OMVG. Funding could come from the $50,000 provided in each of Fiscal Years 1982 and 1983 for logistic support of OMVG.

We are aware of some problems that OMVG faces in staffing the High Commission. The seemingly contradictory elements must be considered in this end[illegible]. First, it is necessary to staff the Commission with per[illegible]nominated by the national governments. Second, there is a [illegible] number of qualified persons for such nomination, which c[illegible] a problem even considering the simplicity of the Commission c[illegible]ation.

There is disparity between the states in the number of qualified persons available for nomination. OMVG does not require exactly equal staffing from the member countries. The main emphasis will be on employing the best qualified persons available, regardless of country. The attempt will be made, however, to keep a reasonable balance.

The OMVG as an international organization has higher salary scales than those of the national governments. Because the headquarters office of OMVG is in Senegal, the Senegalese working there must pay local taxes. The Gambians working there, however, get higher salaries than they would in The Gambia, and do not have to pay local taxes. The Senegalese still get roughly 30% higher salary than those working for the parastatal organizations. The fact that 60 applications were received for one recent opening is indicative of the ability of OMVG to attract personnel.

TREATY OF ASSOCIATION

The Government of The Gambia and the Government of the Republic of Senegal.

CONSIDERING the close historical, political, economic and social ties between the two countries;

WISHING to consolidate those bonds of friendship and fraternity, congratulating themselves for the steps already taken in the area of cooperation, the following agreements signed between the two countries;

DETERMINED to further the fruitful cooperation within the framework of a policy of close association;

HAVE RESOLVED to sign the present treaty entitled "Treaty of Association: and

HAVE AGREED TO THE FOLLOWING TERMS:

Article 1. The purpose of the treaty of association between The Gambia and Senegal is to promote and expand the coordination and cooperation between the two countries in all areas.

Article 2. The two Heads of Government shall meet once a year, alternately in Bathurst or Dakar, for the purpose of a broad examination of the different aspects of the cooperation between The Gambia and Senegal.

The annual meeting of Heads of Government shall take place on the second Tuesday in January.

Article 3. A Senegalo-Gambian inter-state ministerial committee shall be created. This committee shall study all measures tending to strengthen the cooperation and solidarity between the two countries and shall submit its findings to the two Governments for approval.

Article 4. The inter-state ministerial committee shall include the Ministers of Foreign Affairs and those Ministers concerned with the matters to be discussed.

These ministers may be assisted by officials,

Article 5. The inter-state ministerial committee shall meet at least once a year, alternately in Senegal or The Gambia.

Article 6. The inter-state ministerial committee shall exercise supervision over all committees established under former agreements between The Gambia and Senegal.

Article 7. The inter-state ministerial committee shall be assisted by an Executive Secretary appointed by joint decision of the two Governments.

A separate protocol will cover the organisation of the secretariat.

Article 8. This treaty shall enter into force as soon as the instruments of ratification are exchanged between the two countries.

Article 9. Both Governments shall send a copy of the present treaty to the Secretary-General of the United Nations and to the Secretary-General of the Organisation of African Unity.

DONE AT BANJUL ON THE 19th April, 1967.

IN ENGLISH AND IN FRENCH, THE TWO TEXTS BEING EQUALLY AUTHENTIC.

FOR THE GOVERNMENT OF THE GAMBIA

FOR THE GOVERNMENT OF SENEGAL.

AGREEMENT ON THE INTEGRATED DEVELOPMENT OF THE GAMBIA RIVER BASIN

P R E A M B L E

The Government of the Republic of Senegal and the Government of The Gambia, conscious of the need to find ways and means to consolidate their relationship,

RECALLING

that at the request of the two governments, the Secretary General of The United Nations, in September 1963, appointed a committee of experts:

> "to examine the present constitutional, legal economic and fiscal systems of Senegal and The Gambia, and to provide data to enable the two Governments concerned to consider and to decide upon the form which the future relationship of the two countries might take on the attainment of Independence by The Gambia."

CONSIDERING

that one of the fundamental objectives of Senegalo-Gambian cooperation is the harmonisation of their development Programmes,

CONSIDERING

that the co-ordinated development of the Gambia River Basin with a view to a rational exploitation of its various resources offers prospects of productive economic co-operation,

TAKING NOTE

that within the framework of the mission entrusted to the United Nations, the F.A.O. has examined the implications of the economic integration of the two countries in the field of agriculture, and has drawn up a report which is the basis for a hydro-agricultural study of the development of the Gambia River Basin,

CONSIDERING

the importance of this river in the fields of navigation, power supply and industrialisation,

CONSIDERING

that it appears necessary and urgent to agree to joint development of the Gambia River Basin,

HAVE AGREED AS FOLLOWS:

CHAPTER I

ORGANISATION:

ARTICLE 1

The Executive Secretariat of the Inter-State Ministerial Committee shall be responsible for initiating and co-ordinating the problems of the development of the Gambia River Basin, particularly with regard to:

(a) the implications of the long-term projects recommended in the F.A.O. Report;

(b) the implications of the short-term projects recommended in paragraphs 4201 to 4263 of that report, taking into account available technical assistance;

(c) the financial problems involved, and a suitable apportionment of costs between the two countries.

ARTICLE 2

The Executive Secretariat shall be responsible for the implementation of decisions of the Inter-Ministerial Committee and the preparation of the Development Programme referred to in Article 3.

CHAPTER II

IMPLEMENTATION

ARTICLE 3

A Development Programme for the Gambia River Basin shall be prepared by the Secretariat, within the context of the F.A.O. Report, with the aim of formulating applications for technical and financial assistance from International Agencies and friendly Governments to be presented jointly by the two Governments.

ARTICLE 4

Any territorial scheme which will affect the flow of the river shall first be submitted to the Inter-Ministerial Committee for approval. The Executive Secretariat shall be informed of local development schemes undertaken by either state within the river basin, and may study development projects and advise on the means to carry them out.

CHAPTER III

FINAL PROVISIONS

ARTICLE 5

Any disagreement which might arise between the signatories of the present agreement concerning its interpretation or its implementation shall be settled amicably.

ARTICLE 6

The present agreement may be amended at the request of one of the Member States.

ARTICLE 7

The Agreement shall come into force after approval by both States, in accordance with their constitutional requirements.

ARTICLE 8

The present agreement supersedes the agreement signed in Bathurst on the 18th February, 1965.

DONE AT Bathurst this 31st day of July, 1968 in two original copies in French and in English both texts being equally authentic.

(SGD.) KARIM GAYE
ON BEHALF OF THE GOVERNMENT
OF SENEGAL.

(SGD.) ANDREW CAMARA.
ON BEHALF OF THE
GOVERNMENT OF THE GAMBIA.

CONVENTION ON THE ESTABLISHMENT OF THE CO-ORDINATING COMMITTEE FOR THE DEVELOPMENT OF THE GAMBIA RIVER BASIN

CHAPTER I - PREAMBLE

The Government of the States bordering The Gambia River

- DETERMINED to strengthen their fruitful co-operation within the framework of their policy relating to the integrated development of the Gambia River Basin in conformity with the Agreement signed on 31st July, 1968,

- DESIROUS of creating an Authority to be responsible for the development of the Gambia River Basin,

- DESIROUS of obtaining a more effective co-ordination and control of the project of the development of the Gambia River Basin,

- Have Agreed to establish a committee to be known as "The Co-ordinating Committee for the Development of the Gambia River Basin" with the following terms:

CHAPTER II - FUNCTIONS OF THE COMMITTEE

Article 1. - The Committee shall be responsible for:

(a) the promotion and the co-ordination of the studies and the work relating to the exploitation of the resources of the Gambia River Basin on the national territories of member states;

(b) all technical and economic activities entrusted to it by all member states within the framework of the development of the Gambia River Basin;

(c) promoting the setting-up of an Authority to be responsible for the development of the Gambia River Basin.

Article 2. - A Council of Ministers of the Committee comprising the Ministries concerned with River Basin Development shall be the decision taking body and shall have full control over the Committee.

- It shall be responsible for elaborating the general policy for the development of the Gambia River Basin and for the exploitation of its resources.

- It shall define the priorities for the development of The Gambia River Basin and the exploitation of the resources.

Article 3. - The Council of Ministers shall fix the contributions of member states towards the Budget for the functioning and operation of the studies and the work of the Committee and shall also approve the Budgets.

Article 4. - The Council of Ministers shall take all decisions regarding the creation of all temporary or permanent organs considered useful for the smooth running of the Committee.

Article 5. - The Council of Minsters shall meet at least once a year.

CHAPTER IV - ORGAN

Article 6. - The Co-ordinating Committee shall oversee the implementation of decision of the Council of Ministers.

- In this regard it shall be responsible particularly for the promotion and the co-ordination of the studies and works related to the exploitation of the resources of the Gambia River Basin.

Article 7. - The Co-ordinating Committee shall be composed of representatives of the riparian states chosen from Ministries concerned with the development of the Gambia River Basin.

Article 8. - The Co-ordinating Committee shall propose, from amongst itself a Co-ordinator for approval by the Council of Minsters.

The Co-ordinator shall, on behalf of the Committee report to the Council of Minsters and the Senegalo-Gambian Inter-State Ministerial Committee on the Activities of the Co-ordinating Committee.

Article 9. - The Co-ordinating Committee shall meet twice annually in ordinary sessions; it could meet in extra-ordinary sessions at the request of the Co-ordinator or of one of the member States.

CHAPTER V - BUDGET

Article 10. - The Budget of the Committee shall be prepared by the Co-ordinator and approved by the Council of Ministers and the Senegalo-Gambian Inter-State Ministerial Committee.

Article 11. - The Budget will be met from:

- Contributions of member states fixed by the Council of Ministers
- Subventions
- Loans
- Voluntary contributions from external sources in the form of grants or legacies.

Article 12. - The Headquarters of the Committee shall be at Banjul.

CHAPTER VII - GENERAL TERMS

Article 13. - All activities and funds relating to the development of the Gambia River Basin previously under the aegis of the Senegalo-Gambian Permanent Secretariat shall be transferred to the Co-ordinating Committee.

Article 14. - The present convention shall come into force after ratification by the member states in accordance with their respective constitutional procedures.

DONE AT DAKAR THIS 16th DAY OF APRIL 1976

In English and in French both texts being equally authentic.

For the Republic of SENEGAL

ASSANE SECK

(Minister of State responsible for Foreign Affairs)

FOR the Republic of THE GAMBIA

ALIEU BADARA NJIE

(Minister of External Affairs)

FINAL VERSION

CONVENTION ON THE STATUS OF THE RIVER GAMBIA

We, The Heads of State and Government of
The Republic of Senegal
The Republic of The Gambia

HAVING regard to the United Nations Charter, signed the 26th June 1945.
HAVING regard to the Charter of Organisation of African Unity, signed the 25th May, 1963.
HAVING regard to the treaty of Association of 19th April, 1967.
Having regard to the revised agreement for the integrated development of the Gambia River Basin of 31st July 1968.

Having regard to the Convention signed on the 16th April, 1976, creating the co-ordinating committee of the Gambia River Basin.

Considering that the co-ordinated development of the Gambia River for the rational exploitation of its natural resources offers prospects for fruitful economic co-operation.

Considering the agreement of the member states to proceed through stages of regulation to the general development of the Gambia River and to the utilisation of its water with the triple objective mainly of developing energy production, irrigation and navigation.

Considering that the joint exploitation of the River implies freedom of navigation and equal treatment for all contracting states in conformity with the provisions of this present convention.

Have agreed on the following: --

PART I - PRINCIPLES AND DEFINITIONS

ARTICLE 1: Within the frame-work of the provisions of the present agreement the Gambia River and its tributaries is declared a river of regional interest within the national territories of the riparian states.

ARTICLE 2: The contracting states solemnly express their determination to set up a close co-operation which will facilitate the rational exploitation of the resources of The Gambia River.

ARTICLE 3: The utilization of the River Gambia shall be open to each contracting state according to the procedures established in this agreement.

PART II - AGRICULTURAL AND INDUSTRIAL EXPLOITATION

ARTICLE 4: No project which is likely to bring about serious modifications on the characteristics of the river flow, on its navigation conditions, the agricultural and industrial exploitations of the river, the sanitary state of the waters, the biological characteristics of its fauna or flora, its water level shall be carried out without the prior approval of the contracting States.

The contracting States shall be duly informed of all projects involving the use of the river.

ARTICLE 5: A special agreement between the contracting States shall clearly define the conditions governing the execution and exploitation of any works of common interest as well as the mutual obligations of the states concerned.

Upon ratification by the Governments of the contracting States, copies of such agreements shall be forewarded to the General Secretariat of the United Nations Organisation and to the Organisation of African Unity.

PART III - NAVIGATION AND TRANSPORT

ARTICLE 6: On the national territories of the contracting States, navigation on the River Gambia and its tributaries which will be indicated later on, shall be open to nationals, merchants ships and goods of the contracting States to vessels chartered by one or more contracting states and this equal basis as far as port charges and commercial navigation dues are concerned.

ARTICLE 7: The contracting States agree to keep the part of the river situated within their national territories limits navigable.

The financing method for works or projects aimed at improving navigation conditions of the River Gambia as well as procedures for the maintenance, exploitation of the river, and the amortization of the costs of projects shall be defined either by special agreement or by utilization regulations.

ARTICLE 8: Charges and dues to be paid by ships or goods making use of the river including the estuary and its tributaries shall be related to the services rendered to navigation and facilities provided and shall exclude any form of discrimination.

Traffic along the river shall be dealt with in a joint regulation approved by the contracting states.

ARTICLE 9: Roads railways, lateral canals which may be built as a substitute for the non-navigability or imperfections of the water-way in certain sections of the river, its tributaries, branches and derivatives may be considered, in the context of special regulations approved by the contracting states as dependent on the river navigation and as such open to all traffic.

Lakes may under the same conditions be considered as open to all traffic.

Tolls and other charges shall be calculated on the basis of the costs of construction, maintenance, replacement and adminstration.

As to the rate of these tolls and charges nationals of the contracting states shall be equally treated.

ARTICLE 10: The contracting States shall set up a common system in order to guarantee safety of and control over navigation on the river.

PART IV - IMPLEMENTATION

ARTICLE 11: The contracting States agree to set up a joint organisation for co-operation which will be responsible for the implementation of this agreement, the promotion and co-ordination of studies and projects for the development of the River Gambia.

ARTICLE 12: The Statute of this Organ, its structure, conditions of operation, as well as the powers that the contracting States will invest on the officer responsible for this organ within the framework of the General Development of the River Gambia shall be dealt with in a special agreement.

PART V - MISCELLANEOUS

ARTICLE 13: The present agreement shall be subject to ratification by each contracting State in accordance with its own constitutional procedures; the instruments of ratification shall be deposited with the Government of the Republic of The Gambia which shall notify each contracting State.

ARTICLE 14: The present agreement shall take effect, after it has been ratified by all the Contracting States, immediately after the deposition of the last instrument of ratification.

ARTICLE 15: Any riparian State of the River Gambia may adhere to this agreement. In this connection, an application in writing shall be forwarded to the State retaining the instruments of ratification. This State shall notify the other member State.

ARTICLE 16: The present agreement may be amended at the request of one of the contracting States, such a request shall be forwarded in writing to the State retaining the instruments which shall notify the other contracting States.

ARTICLE 17: The present agreement may be denounced by one of the contracting States after a period of 60 years starting from the day of its entry into force. The denunciation shall be forwarded in writing to the State retaining the instruments which will notify the other contracting States.

It shall take effect after a period of six months. Unless there is a contrary agreement, this denunciation shall not affect any committments undertaken prior to this notification.

ARTICLE 18: Any dispute that may arise between the contracting States regarding the interpretation or implementation of the present agreement shall be settled through conciliation or mediation. If no agreement is reached, the contracting States shall place the matter before the Conciliation and Arbitration Committee of the OAU. As a last resort, they shall have recourse to the International Court of Justice at the Hague.

In the event of an emergency, the Institution mentioned in Article 11 shall take all necessary measures designed mainly to safeguard the principles of the agreement pending the settlement of the dispute.

ARTICLE 19: Provisions contained in treaties, conventions and agreements relative to the development of the Gambia River Basin and which are contradictory to the dispositions of the present convention are abrogated.

ARTICLE 20: On coming into force, the present agreement shall be forwarded for registration to the United Nations' General Secretariat in accordance with Article 102 of the United Nations Charter.

In witness whereof, we, The Heads of State and Government of the Republic of Senegal and the Republic of The Gambia, have signed the present Agreement in five copies written in French and English, both texts being authentic.

Done in Kaolack, 30th June 1978.

The President of The Republic of Senegal	The President of The Republic of The Gambia
Leopold Sedar SENGHOR	Sir Dawda Kairaba JAWARA

CONVENTION FOR THE CREATION

OF

THE GAMBIA RIVER BASIN DEVELOPMENT ORGANISATION

P R E A M B L E

The Heads of State and Government of:

- The Republic of Senegal
- The Republic of The Gambia

HAVING regard to the United Nations Charter of 26th June 1945.
HAVING regard to the Organisation of African Unity Charter of 25th May 1963.
AND HAVING regard to the Convention concerning the status of the River Gambia, notably Article 11.
DESIROUS to promote and to intensify co-operation and economic exchange and to pursue in common their efforts for economic development of the resources of the River Gambia.
RESOLVED to maintain and reinforce between their states the favourable condition for the realisation of these objectives.

HAVE AGREED TO THE FOLLOWING:

II. PURPOSE OF THE ORGANISATION

ARTICLE 1: There is hereby created a Joint Organisation of Co-operation for the Development of the Gambia River Basin, whose headquarters shall be located at Kaolack in the Republic of Senegal. It can be transferred to any other location by a decision of the Heads of State and Government.

This Organisation is charged with the responsibility:

(1) To apply the convention relating to the status of the River Gambia.

(2) To promote and to co-ordinate the studies and works for the development of the Gambia River Basin within the national territories of the member states of the organisation.

(3) To execute such technical and economic projects as the member states would wish to assign to it. In order to realize this objective, the Organisation may receive donations, obtain loans and launch appeals for technical assistance with the consent of the Council of Ministers.

ARTICLE 2: This Organisation shall in no way act as an obstacle to the creation, the existence and the workings of national or regional organisations embracing different or larger areas of co-operation.

III. PERMANENT ORGANS

ARTICLE 3: The permanent bodies of the Organisation for the development of The Gambia River Basin shall be:

(1) The Conference of Heads of State and Governments

(2) The Council of Ministers

(3) The High Commission

(4) The Permanent Water Commission

(5) Such other organs which may be deemed necessary for the realisation of the programme of the Organisation.

IV. CONFERENCE OF HEADS OF STATE AND GOVERNMENT

ARTICLE 4: The Conference of the Heads of State and Government of the Organisation shall be the supreme organ of the organisation. It shall define the policies of co-operation and development of the Organisation. It shall take decisions concerning the political, economic, and general interests of the Organisation and all decisions relating to its objectives.

ARTICLE 5: The Conference of Heads of State and Governments of the Organisation shall hold its ordinary session once a year. It may be convened into an extraordinary session on the initiative of its Chariman or at the request of a member state.

Decisions shall be taken by the unanimous vote of all members.

ARTICLE 6: The decisions adopted by the Conference shall be binding on all member states, who are obliged to see to their implementation.

ARTICLE 7: The Chairmanship of the Conference of Heads of State and Governments shall be in rotation and shall last for two years for each Head of State and Government.

V. THE COUNCIL OF MINISTERS

ARTICLE 8:
(1) The Council of Ministers shall consist of a single Minister representing each member state. The Ministers may be accompanied by members of their respective governments.

(2) The Council of Ministers shall define the general policies for the development of The Gambia River Basin, for the utilisation of its resources and for co-operation between contracting states and shall exercise overall control of the Organisation.

(3) The Council of Ministers may create any new organs which it deems necessary for the proper functioning of the Organisation.

(4) The order of priority of projects for the development and exploitation of the resources of the Gambia River shall be determined by the Council of Ministers.

(5) River Basin Development programmes which are of interest to one or more member states shall be submitted for the approval of the Council of Ministers prior to execution.

(6) The Council of Ministers shall decide the work programme of the Organisation and shall approve its operating budget, deciding the financial contributions of each member state therto.

(7) The decisions of the Council of Ministers shall be taken unanimously and shall be binding on all member states.

The Council of Ministers shall approve the internal regulations of the High Commission.

ARTIGLE 9: The Chairmanship of the Council of Ministers of the Organisation States shall rotate amongst member states and shall last two years.

ARTICLE 10: The Council of Ministers of the Organisation shall meet in ordinary sessions twice a year, and shall be convened by its Chairman into Extraordinary sessions at the request of a member state.

The Chairman of the Council of Ministers shall control and preside at the Ordinary and Extraordinary Sessions.

Meetings shall take place in rotation in each member state. Each state shall be obliged to attend meetings of the Council of Ministers.

The Council of Ministers shall report to the Conference of Heads of State and Government by the intermediary of its chariman assisted by the High Commissioner.

VI. THE HIGH COMMISSION

ARTICLE 11: Between sessions of the Council of Ministers, the High Commissioner shall represent the Organisation.

He shall make all decisions within his capacity in accordance with the directives of the Council of Ministers and within the limits of the powers bestowed on him.

ARTICLE 12: The High Commission of the Organisation shall be directed by a High Commissioner. The High Commissioner shall be appointed by the Heads of State and Government Conference on recommendation of the Council of Ministers for a period of 4 years which is renewable. He shall relinquish his duties in the same manner.

The High Commission shall be the executive organ of the organisation. It shall apply the decisions of the Council of Ministers of the Organisation and report regularly as regards the execution of these decisions and of all the initiatives that it has been called upon to take in conformity with the directives given by the Council of Ministers.

The structure of the High Commission shall be fixed by the Council of Ministers proposed by the High Commissioner.

ARTICLE 13: The High Commissioner of the Organisation shall be responsible for the financial operations of the Organisation notably its operating budget, its study and its construction budgets.

ARTICLE 14: The High Commissioner shall be responsible to the Council of Ministers to whom he shall report on his management and the activities of the High Commission.

ARTICLE 15: The High Commissioner may be charged by one or more member States to find funds for the implementation of programmes connected with the Development of the Gambia River Basin.

ARTICLE 16: The High Commissioner shall represent member states in their relations with international and bilateral aid institutions with reference to the Gambia River Basin.

In this regard he is empowered to negotiate and to make contacts within the ambit of his powers which are delegated to him by the Council of Ministers in the name of all the member states of the organisation.

In this regard he is empowered to negotiate and to make contacts within the ambit of his powers which are delegated to him by the Council of Ministers in the name of all the member states of the organisation.

The High Commissioner shall examine the projects evolved by the States for the development of the Gambia River Basin and shall submit them with his opinions to the Council of Ministers of the Organisation.

The High Commissioner may be charged by one or several member states with the execution of studies and the actual control of works linked to the implementation of the scheme.

ARTICLE 17: The High Commissioner shall be assisted by directors. The High Commissioner may delegate authority to the Directors if he judges it necessary for the smooth functioning of the Organisation, however he shall remain ultimately responsible.

ARTICLE 18: The Directors shall be appointed by the Council of Ministers on the recommendation of the High Commissioner. Their functions shall be terminated in like-manner.

The Directors shall assist and support the High Commissioner in his functions.

They shall assume amongst other things the following: --

-- the complete briefing of the High Commissioner on the running of the Services and in particular on matters relating to administrative and financial matters.

— the programming, follow-up and execution of programmes and projects formulated in relation to the development of the Gambia River Basin submitted to them by the High Commissioner.

VII. THE PERMANENT WATER COMMISSION

ARTICLE 19: The Permanent Water Commission shall be charged with the responsibility of defining the principles and modalities of the utilization of the Gambia River waters between the states and between sectors using the water: industry, agriculture and transport.

The Commission shall be composed of the Representatives of member states of the organisation.

It shall serve as a consultative organ for the Council of Ministers.

It shall meet when required and convened by the High Commissioner.

VIII. BUDGETS

ARTICLE 20: The operating budget, the implementation budgets of the Organisation shall be paid for by member states and from all other resources, either internal or obtained from the external sources by the Council of Ministers.

IX. VARIOUS PROVISIONS

ARTICLE 21: Any riparian state of the River Gambia may join the organisation. To this effect it shall address a written request to the state retaining the instruments of ratification, who will inform the other member states.

ARTICLE 22: The present convention may be revised at the request of a member state. The request for a revision shall be written and addressed to the Chariman of the Conference of Heads of State and Governments.

ARTICLE 23: In the absence of agreement between states, all differences which might arise between member states in relation to matters of interpretation or the implementation of the present convention shall be resolved by discussion and mediation. In the absence of agreement, the member states shall inform the Commission of Conciliation and Arbitration of the Organisation of African Unity. As a last resort the member states shall seek the assistance of the International Court of Justice at the Hague.

ARTICLE 24: Any member state that wishes to leave the organisation shall in writing inform the Chairman of the Conference of Heads of State and of Governments who will immediately notify the other member states.

The present convention shall then cease to apply to such a state after a

delay of six months following the date of notification without affecting the obligations previously contracted.

ARTICLE 25: The present convention shall be ratified by the member states in conformity with their constitutional rules.

The instruments of ratification shall be deposited with the Government of the Republic of The Gambia, who will inform member states.

ARTICLE 26: The present convention shall become effective after the deposition of the instruments of ratification by the contracting states having signed these conventions.

ARTICLE 27: The present convention shall be registered at the Secretariat of the United Nations when it becomes operational in conformity with article 102 of the Charter of the United Nations.

For which reason we the Heads of State and Government of the Republic of The Gambia and the Republic of Senegal, sign the present convention the 30th day of June 1978 in six copies in the French and English Languages, both texts being authentic.

The President of the Republic of The Gambia	The President of the Republic of Senegal
Sir Dawda Kairaba JAWARA	Leopold Sedar SENGHOR

ANNEX F

DESCRIPTION OF OTHER ACTIVITIES RELATED TO DEVELOPMENT OF THE OMVG AND THE GAMBIA RIVER BASIN

MEMORANDUM

FROM: Donna S. Frelick

TO: T. A. Moser, A. A. Funicello, et al.

RE: External Aid to The Gambia

This report has been compiled from several sources - interviews with donor representatives and government officials, project documents and The Gambia Government Estimates 1979-80. It is meant to be as accurate a listing as possible of donors and their projects and contributions, but it is by no means a definitive list. Due to the pressures of time and limited availability of printed data it may well have some inaccuracies or omissions.

Several categories of projects have been omitted deliberately as a matter of course. These include all projects in which USAID is involved as a donor, which will be the subject of a later report. Projects for which donors have not yet been positively identified or for which implementation is still several years away (these include the Gambia River Barrage, Gambia River Basin Development and Jakhaly-Patcharr evelopment Projects among others) have also been omitted.

This report can be seen as a starting point for discussion of external aid in The Gambia. Comments, corrections, etc., from those dnor representatives and government officials who will receive copies of this report will be helpful in future efforts to update/upgrade the information it contains.

Abbreviations and Notes

EEC	European Economic Community - figures represent conversion from EUA to dollars at $1.40 per EUA
UNDP	United Nations Development Program - all figures give in dollars
FAO	Food and Agriculture Organization - figures in dollars
UNCDF	UN Capital Development Fund - conversion from dalasis at rough rate of 2 dalasis per dollar
WFP	World Food Program - figures in dollars
UNSO	UN Sahel Office - figures in dollars and dalasis at 2 dalasis per dollar
UNICEF	UN Children's Fund - figures in dollars
UNFPA/	UN Fund for Population Action
UNESCO	UN Education, Scientific and Cultural Organization - figures in dollars
UK/ODA	United Kingdom, Overseas Development Administration (formerly ODM) - figures represent conversion from pounds sterling to dollars at rough rate of 2 dollars per pound
IDA	International Development Agency (World Bank) - figures in dollars and dalasis converted as above
ADB	African Development Bank - figures in dollars and dalasis as above
BADEA	Arab Bank for Economic Development in Africa, figures in dollars and dalasis as above
OPEC	Organization for Petroleum Exporting Countries in dalasis as above
SDF	Saudi Development Fund - in dollars and dalasis as above

Abu Dhabi in dalasis as above

Kuwait same

Qatar same

ISF Islamic Solidarity Fund - in dalasis as above

Libya in dalasis as above

PRC People's Republic of China - in dalasis as above

FRG/KFW Federal Republic of Germany/German Aid Agency - in dollars and dalasis as above

Netherlands in dalasis as above

NORAD Norwegian Aid Agency - in dalasis as above

DANIDA Danish Aid Agency - in dalasis as above - was not able to get details on this fund from any source - assume it is an unallocated grant

Nigeria in dalasis as above

FFHC Freedom From Hunger Campaign - in dollars and dalasis as above

NOVIB Netherlands Aid Agency

PACT American private organization

Action Aid Private British charity which operates on private donations

MRC Medical Research Council

WEC World Evangelical Church

GLF Gambia Local Funds

- x's represent years in which project operates except for purchases or one-time contributions to ongoing projects as indicated
- Dates for FY's refer to figures used, not necessarily that government or agency's official FY
- All figures are rounded off to the nearest $100.
- All figures represent thousands of dollars

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Period	Total Life of Project
E F C March 30 FY	1) Agricultural Credit - distribution of implements - fertilizer - seed packages to [illegible] Coops (complement to RDP Phase II); 150 tons of seed, 1100 packages	purchase complete but distribution now at a standstill due to new requirements for 95% loan repayment by Coops.			x	x	x	x		1,374.8	1,374.8
	2) Fisheries Development establishment of pilot center in Gunjur to teach better fish-handling methods, ice-plant in Brikama; revolving fund for fishing gear	planning in progress; work to begin in June-July, 1980	1,813 x	98 x	7 x		x	x		2,079	2,079
	3) Bunjadu - Albreda-Kuntair Road - North Bank Division, Niumi Districts	work in progress				5,545.4 x	x			5,545.4	5,545.4
	4) Brikama College - Phase I (academic block, administrative block, assembly hall, dorms, workshops) and Phase II (dorms, library, staff quarters, agriculture buildings)	work in progress; Phase I to be completed 1980; Phase II begins 1980		2,143.4		269.5				4,838.4	4,838.4

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
E E C	5) Poultry Feed Mill- purchase of equipment to get up facility at GPMB	purchase complete, mill in operation		56 x						56	56
	6) Rural Vocational Training Program - purchase of educational materials	To be ordered				140 x				140	140
	7) Water Pumps for Community Development - purchase of educational materials	equipment now being shipped				25.2				25.2	25.2
	8) Functional Literacy Project - purchase of materials and provision of technical assistance for NLAC project	purchase pending; expert not yet identified								Not yet determined	
	9) Other Projects - (A) 50% financing of non-profit pharmaceutical import and manufacturing center w/West Africa Dispensary Association B) Contribution to FFHC seed processing and storage project C) Contribution to Catholic Mission well-digging program	A) proposed B) complete C) complete			2,114 x	1,370.6 x				3,484.6	3,484.6

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
E E C	10) Food Aid - 1,000 tons of rice per year	being reconsidered after a decision to stop								payment in kind	
	11) Stabilization of Export Earnings - cash payment to make up for short falls in export earnings from EEC	dependent on exports								3.500	
	12) Regional Projects - A) Dakar - Banjul - Guinea - Bissau Road - 122 km from Mandinaba, The Gambia to Guinea - Bissau (600) B) Aflatoxin Research Program in six countries of West Africa (see FAO) (5,000 all countries)	A) planning in progress B) ongoing								detailed figures not available for The Gambia	
	13) Banjul Sewerage Improvement - studies and master plan for Banjul town	final draft under discussion			196 x	x				196	196
	14) Feasibility Study for GPMB - renovation of mills, etc.	complete		74.2						74.2	74.2

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
E E C	15) Ministry of Works and Communications - technical assistance to set up planning unit	ongoing				200 x	x			200	200
	16) Fellowships, training for Gambian personnel	fund exhausted	84 x	565.6 x	274.4 x					[illegible]	
	Total All Projects (excluding regional programs)									23,217.6	
UNDP June-30 Fiscal Year	1) Strengthening of Economic Planning - technical assistance in planning, administration, etc.	ongoing	prior to 1977 53.6 x	99.5 x	150.3 x	228.4 x	372.8 x	x		851	
	2) Strengthening of Statistics Division - technical assistance training in data collection	ongoing	prior to 1977 68 x	68.2 x	69.5 x	260 x	288.3 x	x		696	
	3) Indigenous Business Advisory Service - to encourage and provide business advice for small-scale local businesses operating in Banjul, Farafenni and Basse areas.	ongoing with increasing Gambianization	prior to 1977 57 x	x	125 x	85.9 x	84.9 x	x		295.8 (78,79,80)	

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Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
UNDP	4) Curriculum Development Center - setting up center for materials production and curriculum planning	complete and in operation	prior to 1977 84.4 x	x	x	77-79 316 x				316	316
	5) Vocational Training/ Management Development Institute - technical assistance for setting up the National Vocational Training Program and for setting up institute to train management personnel for both government and the private sector (see also World Bank Education Project)	vocational training program ongoing MDI planning in progress		80 x	166.9 x	231 x	232.9 x	x		710.8	
	6) (w/FAO) Strengthening of Agriculture - setting up planning unit within MANR	ongoing			189.9 x	348. x	457 x			1,150.2	1,150.2
	7) (w/FAO) Crop Protection - technical assistance	Phase I ends 12/79; second Phase not yet funded			23 x	60 x	22 x			105	
	8) w/WMO - Strengthening of Hydrometeorological Services - technical assistance	ongoing			115.9 x	154 x	142 x			411.9	

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Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
UNDP	9) (w/FAO) Integrated Fisheries Development - studies, technical assistance, cold storage equipment, expanded [illegible] capacity, trawlers and training vessels	ongoing; reorganization essentially complete, [illegible] of vessels complete		14.9 x	134 x	499. x	343. x	x		1,051.4	1,051.4
	10) Rural Telecommunications - technical assistance on all aspects of planning and technical operation of system	ongoing			64.9 x	121 x	106.3 x	x		291.7	
	11) Purchase of Generators			20 x						20	20
	12) Miscellaneous Fellowships			x	x	100 x	x	x		200	200
	13) Contribution to FAO Fertilizer Marketing, Credit Assn. Project - for technical assistance					60 x				60	60
	Special Fund for Least Developed Countries									2,000	2,000
	Total All Projects									8,149.6	9000.

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
FAO June-30 FY	1) Construction of small Warehouses - one per division for storage of food aid and agricultural tools	planning in progress (at tendering)					171.5 ↑ proposed addition x	x		171.5 ↑ 30 proposed addition	171.5 or 201.5 (est.)
	2) w/USAID Fertilizer Marketing and Credit Scheme - supply of 1,000 tons of fertilizer (700 tons sold to set up revolving fund for farmers, 300 for demonstration purposes); expert to demonstrate fertilizer use, 2 vehicles, assistance in setting up marketing channels to farmers	ongoing					x	x		414	414
	3) "Soft Loan" Assistance to Animal Disease Control/Watering Points Project - 2 vehicles, vaccines, veterinary products	purchases in progress			240 x	x				240	240
	4) Gravity Separator for Seed Processing Factory (see project #6)	purchase in progress					30 x			30	30

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
FAO	5) Various Contributions for ongoing technical assistance	ongoing					30 x			30	30
	6) Seed Processing and Storage - fully-equipped factory, for Sapu for selection and processing of seeds	purchase complete, [illegible] in operation due to govt. difficulties in funding foundations				96.4 x				96.4	96.4
	7) Seed Processing and Quality Control - equipment for seed testing labs at Sapu	purchases complete				115 x				115	115
	8) Contribution to Village-Based Farmer Training Program (which trains farmers and oxen teams to use ox-drawn equipment for ploughing, etc.) - materials to supply mobile training unit	purchase complete				65 x				65	65
	9) Assistance to Tractor-Ploughing Scheme - supply of two fully-equipped mobile workshop Land Rovers for repair of tractors and other equipment	purchase complete				55 x				55	55

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
FAO	10) "Soft Loan" Assistance to Fish Marketing Corporation - new cold storage equipment, expanded freezing capacity, weighing scales	purchase complete				238 x				238	238
	11) "Soft Loan" Assistance for Afforestation - infrastructure development (2 vehicles, nursery eq.)	purchase complete				[illegible] x					
	12) Plastic Sheets - to protect food aid in the port	purchase complete				15 x				15	15
	13) Regional Project - Aflatoxin Research (w/UNDP) in six West African Countries (funds provided for new equipped testing labs at Cape St. Mary and Yundum) (see EEC) ($729.8 for all countries)	ongoing labs here complete								Detailed figures for The Gambia not available	
	Total All Projects (excluding regional projects and proposed additions)									1,589.9	1,589.9
UNCDP	Contribution to Rice Consolidation Program - relining of irrigation canal, maintenance, replacement of equipment, etc.	ongoing, but not at levels originally funded				100	50			150	150

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
UNSO June-30 FY	1) Feeder Road Rehabilitation Phase I - rural roads including Bassa, Fetete, Choya, Danhunku, Jessadi, ect. (Phase II - Kiang west roads - will be financed by the German KfW - see FRG/KfW)	Phase I complete Phase II in progress			2,100 x	1,385 x	1,350 x	x	x	4,835	7,000 (Phase I and II)
	2) Rural Water Supply - well-digging and supply of foot pumps in villages in UBO as pilot project for nation wide program	pilot phase nearly complete expansion under discussion	prior to 1977 48.7 x	66 x	127 x	199.5 x	195.9 x			588.4	
	3) Borehole Development - for humans and livestock (Animal Disease Control/ Watering Points) - (see FAO, BADEA)	28 wells drilled, rest 1979/ 80				x	x			850 (all donors)	850 (all donors)
	4) Green Buffer Zones - establishment of six reserved land areas between villages in Urban and peri-Urban areas to prevent Urban and preserve endangered plant species pilot project at Bakoti paid for by U.S. Self Help Fund	proposed								263	263

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
WFP	(w/FAO) School Feeding Program - foodstuffs to provide one hot meal a day for all school children; planned extension to literacy program - $1,150 1 year	ongoing	x	x	x	x	x	x		5,750	
UNICEF	1) Fund for equipment such as refrigerators, scales, vehicles, vaccines	ongoing being renegotiated for another 5-year period		x	x	x	x	x		497.3	
	2) Salaries for Personnel - School of Public Health- $22 per year	ongoing		x	x	x	x	x		110	
	Total All Projects									607.3	
UNFPA/ UNESCO	1) Supply of limited amount of contraceptives and educational materials for family planning	complete	75 & 76 x	x	x					54	54
	2) Construction of Health Center in Serrekunda and 8 dispensaries with water and electricity; provision of contraceptives to all hospitals, health centers and MCH clinics; transport, educational materials; technical assistance	approved, planning in progress				x	x	x		1,332.6	1,332/6

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
UN	Total All Projects									1,386.6	1,386.6
UK	1) RDP Phase I (Integrated agricultural development project concentrated in LRD & NBD) - grant contribution to overall program, used mostly for buildings and civil works and technical assistance (All donors - $11,700) (involvement in RDP Phase II, which will cover the whole country, planned but not yet outlines)	all buildings complete, technical assistance ongoing			3,048 x	1,487.6 x				4,535.6	
	2) VHF Trunk System - new telephone system in Banjul area	in place but not yet functionary (testing)			175.5 x	993.5 x	246 x			1,415	1,415
	3) Assistance to Royal Engineers/Field Force Pioneer Unit (unit set up to undertake large-scale rural construction) - road-building and earth-moving equipment, vehicles, technical assistance	purchases complete, technical assistance ongoing		44.4 x	226 x	14.4 x	25.8 x			310.6	
	4) Rural Piped Water Supply - Phase 1 provision of piped water to compounds in Farafenni, Kerewan, Darra (see FRG/KfW for extension of project)	work in progress				192.7 x	277.7			470.4	470.4

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan	Total Life of Project
UK	5) Contribution of Maternal and Child Health Programme - studies, vehicles, construction of 6 [illegible] part of MCH pilot program	just starting construction				18.1 x	x	x		500	
	6) Central Abattoir - 50% of costs of construction and equipping of facilities at Abuko (Gambia Government paid the rest)	complete and in operation			x	x				268	268
	7) Warden's House and Offices for Abuko Nature Reserve	complete and in operation				x				45.5	45.5
	8) Construction of Post Offices - Farafenni, Serrekunda, Georgetown and Basse	Farafenni in operation, others in progress				9.9 x	x	x		98	98
	9) Contribution to Village-Based Farmer Training Project (see FAO) - details not available	ongoing			13.3 x		92.8 x			106.1	
	10) Grant for Self-Help Projects - through Community Development, including several community centers, Basse export lodge and rural construction projects throughout the country	complete		x	x					50	50

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
UK	11) Replacement of Lady Wright new boat build in UK	in operation		1,971.6 x						1,971.6	1,971.6
	12) Purchase of cattle barge for Livestock Marketing Board	in operation				332.3 x				332.2	332.1
	13) Purchase of x-Ray and Hematological Equipment for Royal Victoria and Ramsang Hospitals	in operation				121 x				121	121
	14) Air Freight cost for generators	complete			287.6 x					287.6	287.6
	Total All Projects - grant given in 1976 for 5 years									10,511.7	10,511.7
IDA June-30 FY	1) PDP Phase I - loan contribution to costs of project used for extension and training, implement packages, construction of crop extraction roads, management unit, seed multiplication unit, functional literacy, studies, etc. (All donors - Phase I - $11,700) (contribution to Phase II planned, but not yet outlined)	all implement packages distributed units in operation; roads complete, studies complete extension and training ongoing	x	x	x	x				4,100	4,100

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
IDA	2) Tourism infrastructure - roads, electricity and water service, telecommunications, handicraft markets for Kotu Beach area, administrative costs for building Hotel Training School, studies on socio-economic effects of tourism and on investment and promotion, project management, technical assistance	roads, water, telecoms essentially complete, power station under construction, Hotel Training School under construction, studies complete	x	205.4 x	98.3 x	1,934 x	972 x	x		4,000	4,000
	3) Education Project - credit to set up technical institute in Banjul to provide technical training in mechanics, construction trades, etc.; construction and equipping of new training school for nurses at Bansang, hostels for trainee nurses at Basse and Farewan, dorms and furnishings for Nursing School Banjul, technical assistance in health; establishment of Management Development Institute (see UNDP), upgrading secondary technical schools by providing special rooms for	bids for construction due 1/80, technical assistance ongoing, fellowships next school year, rest in planning					1,000 x	2,000 x	1,900 x		

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Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
EDA	3) home economics wood-working, etc; regional education centers; fellowships for science/math teachers										
	4) Rural and Urban Enterprises Project - line of credit at GCBD to supply loans for local businesses and small-scale industries, including agri-businesses; construction of new GCBD office building, technical assistance to revise bank accounting procedures	line of credit in operation, plans recently approved for building			x	x	x	x		3,000	3,000
	5) Vegetable and Horticultural Development - pilot scheme at Yundum (w/BADEA)	Equipment purchased				50 x	37.5 x	x		87.5	87.5
	6) Feasibility Study - groundnut marketing	complete			7.4 x	46.6 x				54	54
	7) Fuel Supply Facilities - design and preliminary work	Discontinued due to construction of Kotu Power Station				50 x				50	50

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
IPA	Alternative Fuel Supply Study	complete				80 x				80	80
	Total All Projects									17,371.5	17,371.5
AID June-30 FY	1) Cotton Development Scheme - to encourage production of cotton as a cash crop - now on pilot basis in URD - tour vehicles and storage facilities	4,200 acres cultivated so far; 4,000 targeted in 1979/80	x	x	1,545.9 x	250 x	x	x		2,[illegible]	[illegible]
	2) Tourism Infrastructure Project - electricity development Banjul, Kotu Power Station	3600 UV generator ordered; Kotu Power Station under construction			68.9 x	1,500 x	6,000 x	x		10,000	10,000
	3) Banjul-Serrekunda Dual Carriageway (W/UK and BDF) - expected to take 50-60% of local costs Total All Donors - $8,000, $6,500 in 5-Yr. Plan Period	design complete if approved work starts 1980				x	x	x	x	Details not available for individual donors	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
AUA	4) Runway Reconstruction and Extension - Yundum Airport including lighting drainage, fencing, etc. - Phase II (w/OPEC, SDF - Abu Dhabi)	completed; Phase III now underway		x	4,000 x	x				4,000	4,000
	5) Laminate-Pakalinn Road - North Bank Road to secondary status from parallel with Georgetown to parallel with Fatoto (w/Liiya) Total All Donors - $7,500, $500, in Plan Period	[illegible]						x	x	Details not available for individual donors	
	Total All Projects (excluding multi-donor projects for which there is no detailed breakdown)									16,880	16,880
BADEA June-30 FY	1) NDP Phase I - loan contribution to overall project used for technical assistance, livestock and coop development (credit, vehicles, equipment, maintenance and supplies for crop extraction roads and seeds multiplication unit, studies, etc.	see UK, IFA	x	x	x	x				3,280	3,280
	NDP - Total All Donors for Phase I		7,511,4	4,898,7	5,104,9	4,253,2				11,7	Phase I 11,7

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
DANIDA	2) Industrial Fisheries Development - expansion and strengthening of industrial production of fish, including Fish Marketing Corporation, expanded plant capacity, rehabilitation of plant and equipment (w/UNDP, DANIDA)	ongoing (see UNDP)			x	75 x	176 x	x		251	251
	3) Assistance to Animal Disease control/watering points project (w/FAO and UNDO) - vehicles	28 wells drilled, rest this year				x	240 x			240	240
	4) Nurseries for National Tree-Planting Campaign - equipment purchase	complete					115 x			115	115
	5) Vegetable and Horticultural Development - pilot scheme at Tupdum (w/IDA)	see IDA				x	62			62	62
	6) Airport Development Phase III - expansion of runway, etc., (w/OPEC, SDF) Total All Donors - $9,500	work in progress complete 1980				x	x			Details not available for individual donors	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
BADEA	Total All Projects (including multi-donor projects for which detailed breakdown not available)									3,940	3,940
OPEC June-30 FY	1) Airport Development Phase II (see ADB, SDF, Abu Dhabi)	complete		x	x	x				2,650	2,650
	2) Airport Development - Phase III (see BADEA, SDF) Total All Donors - $9,500	work in progress, complete 1980				x	x			Details not available for individual donors	
	3) Purchase of Capital Items for Civil Aviation Authority	complete 1980				1,195 x	281,5 x			1,476,5	1,476,5
	Total All Projects (excluding multi-donor projects for which detailed breakdown is not available)									4,126,5	4,126,5
SDF	1) Airport Development Phase II (see ADB, OPEC, Abu Dhabi)	complete								6,000	6,000

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
SDF	3) Airport Development Phase III (see OPEC, BADEA) Total All Donors - $9,500	complete 1980				x	x			Details not available for individual donors	
	[illegible] Dual Carriageway (see AfDB) Total All Donors - $8,000, $6,500 in 5-Yr. Plan Period	design complete, if approved work begins 1980					x	x	x	Details not available for individual donors	
	4) Airport Development Phase III and Banjul-Serrekunda Dual Carriageway - combined early estimate										7,000
	5) Total All Projects (including early estimate)										11,000
Abu Dhabi	1) Airport Development Phase II (see AfDB, OPEC, SDF)	complete		x	x	x				1,566.5	1,566.5

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
Kuwait	1) Some - Y.B.K. Road Bituminization 30m Dalaal - Y.B.K. - Basse 24m Dalaal planned	ongoing estimated date of completion Dec/81				5,000 x	8,000 x	x	x	15,975	27,975 (roughly)
	2) Construction of Rural Micrwave - Georgetown, Bansang, Basse	planning in progress						1,500 x	x	1,500	4,970
	3) Technical Assistance	ongoing				250				500	500
	Total All Projects									17,975	33,445
Qatar June-30 FY	1) Rural Radio Broadcasting - purchase of transmitters and equipment for Radio Gambia	purchase complete, installation in 1980		x	50 x	68.6 x	96.3 x			664.9	664.9
	2) Rural Telecommunications equipment to improve telephone service in provinces	complete 1980	x	x	144.9 x	73.5 x	364.2 x			582.6	582.6
	Total All Projects									1,247.5	1,247.5

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
IBF June-30 FY	Contribution to Costs of Brikama College Construction Phase I (see EEC)	Phase I complete 1980			x	x	x			325	325
[illegible] June-30 FY	[illegible] Construction of new quadrangle block (offices)	[illegible] completion. Just under construction by GLF	[illegible] to 1977 303 x	264 x	122 x	3.5 x	x			692.5	692.5
	2) Purchase of Road Maintenance Equipment for PWD	complete			900 x					900	900
	3) Public Transport Development - purchase of buses	buses in operation	480.5 x	421 x	x	x				901.5	901.5
	4) Purchase of Patrol Vessel (w/GLF) - two vessels for patrol of Gambian waters, Total All Donors - $1,300	in operation	x	x		x				Details not available for individual donors	
	5) Contribution in Kind to Medical and Health - 20 tons of medicines, IV feeder's etc.	being used			x	x	x			Difficult to assess dollar amount	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
Libya	Total All Projects (excluding gift in kind and multi-donor projects for which detailed breakdown not available									2,494	2,494
PRC June-30 FY	1) Irrigated Rice Expansion Program - capital items and personnel for schemes concentrated largely in MID	2,000 acres reclaimed 250 Ha planned in 1979-80 Chinese team leaves 1980	x	x	x	x	x			100	100
	2) Multipurpose Stadium and Hostel - construction at Mile 7	ground-breaking, work in progress					7,500 x	2,500 x	x	10,000	12,000
	3) Construction of Health Centers in Farafenni, Karantaba, Kuiang, including generators except at Farafenni; construction and equipping of 50-bed hospital at Kaur	construction to begin early 1980					x	x	x		1,600

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
PRC	4) Technical Assistance to Medical and Health-medical team, including doctors and lab tech-..i i..s, plus drugs and equipment for Bansang Hospital	ongoing	x	x	x	x	x			difficult to assess dollar amount	
	Total All Projects for which costs are available										13,700
FRG/ KFW	1) Feeder Road Rehabilitation Program Phase II (see UNSO) - concentrated in Kiang West - will be implemented on a commodity basis (KFW)	work in progress					1,000 x	x	x	1,000	2,200
	2) Rural Piped Water Supply expansion of project (see UK) to all divisions (KFW)	to begin 1980					250 x	2,750 x		3,000	3,000
	3) Hotel Training School - construction and equipment (FRG)	work in progress				x	525 x			525	525

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
FRG/ KFW	4) Banjul Water Supply - digging of new bore-holes in Banjul/Kombo area, construction of new mains in Serrekunda and Fajara and a new pumping complex in Serre-kunda; technical assistance (KFW)	essentially complete	x	416.7 x	1.364.5 x	2,564.9 x	x			4,900	4,900
	5) Loan Contribution to improvement of Banjul - Barra Ferry Service (new ferry terminal, etc.) (KFW)	complete								2,214	2,214
	6) Contribution to FFHC program for improved food production (FRG)	ongoing	100	190	200	800	500+			1,790	
	7) German Embassy Self-Help Fund (Dakar) - contribution to FFHC well-digging program	complete				2.5 x				2.5	2.5
	Total All Projects									13,411.5	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
Netherlands	1) Animal Health Care Program - establishment of a revolving fund for purchase of simple drugs for livestock - farmers will take over cost completely in third year; project will begin in MID and UMD and expand to other divisions in 2-3 years if successful	project begins 1980-to be ongoing (Dutch contribution in first 2 years only)					1,500 x	x	x	1,500	1,500
	2) Feasibility Study and design for development of Jakhaly-Patcharr Swamp (completion of study begun by consultant agency)	to be completed 1980					250 x			250	250
	Total All Projects									1,750	1,750
MOEAD	Purchase of "Bintang Bolong" cargo ship				3,850 x					3,850	3,850
PANIDA	Grant contribution to development efforts - planned allocations include road maintenance equipment for Field Force Pioneer Unit.	committed but not yet spent								4,000	4,000

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
DANIDA	equipment for CD, ground service equipment for airport, purchase of trawlers/training vessels for Industrial Fisheries										
Nigeria	Contribution to Construction Costs of Brikama College - unallocated grant	committed but not yet spent								100	100
FFHC (German FFHC)	1) Staff Support, office equipment, project activities	ongoing	x	10 x	19 x	61 x	311 x			392	
(World Council of Churches)	2) Seed Distribution Program - 2 vehicles for MAKR; temporary training lecturer for CD	complete				63.5 x				63.5	
(PACT)	3) Matching Fund - for establishment of cereals bank	ongoing			x	x				11.5	
FFHC (Oxfam)	4) Purchase of vehicle for Young Farmers' Club Program	complete			19 x					19	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Period	Total Life of Project
(SOS Sahel)	5) Food Aid - allocated to MCH clinics, school feeding program, etc.	complete				80				80	
(NOVIB)	6) Seed Storage Project - construction of village seed stores	proposed								10	
(Young Gardener Club of Cologne)	7) Improved Garden Schemes - YFC projects in URD	complete			5.5					5.5	
	Total All Projects									581.5	
Action Aid	Construction of 50 community center/primary schools to serve 5,000 school children; project will feed, clothe, provide functional literacy/numeracy for children, recruit train and pay teachers, equip centers; Gambia Government to take over project in 5-8 years after start - up to $800 per year by third year	planning in progress					£800	£800		£1,600	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
NMC	Research Program in tropical diseases, mosquito behavior, liver cancer, and nutrition research at Kenema (by Dunn Nutrition Unit, Cambridge); hospital facilities at Fajara $1,000 per year	ongoing	x	x	x	x	x	x	x	5,400	
Red Cross	Emergency relief, temporary food distributions, 8 day nurseries in WD, LRD, NBP, 10 first aid posts, drugs and dressings	ongoing	x	x	x	x	x	x	x	difficult to access	
Netherlands Leprosy Relief Assn.	Equipment, including motorbikes, technical assistance, training and salary for orthopedic shoemaker (1976-78)	complete	from 1971 x	x	x	500 x				500	
Religious Missions	Ahmadiyaa- 4 doctors NEC - 16 bed Health Center at Sibanor, clinics at Fajara, Jarrol, Somita	ongoing	x	x	x	x	x	x	x	difficult to access	

Donor	Project Description	Status	76	77	78	79	80	81	82	Total Five-Year Plan Per.	Total Life of Project
Relig. Missions	Methodist- clinic at Marakissa, outposts at Jiborah and Sifo [illegible] unit, clinic at Funkujang, well-digging in MU, St. Augustines, St. Joseph's Secondary Technical School near Basse										
	7th Day Adventists - planned clinic at Yundum										

ON THE SERVICE OF THE GAMBIA GOVERNMENT

National CILSS Secretariat
No 5 Marina Parade
Banjul.

Nat/CILSS/M/(83) 9th February, 1980.

CILSS FIRST GENERATION PROGRAMME 1977-82.

I submit herewith, for your information, the list of Gambian projects in the CILSS First Generation Programme. The total cost of the projects was estimated in March 1977 at U.S. $133,500,000, a figure which has now been revised upward to U.S. $191,759,000. As of January 1980, firm commitments for funding of the projects amounted to U.S. $50,500,000.

It should be noted that the programme as revised extends to the year 1985. Thus, some of the projects will overlap into the Second Generation Programme.

I should also mention, in passing, that the total estimated cost of the CILSS First Generation Programme as of March 1977 was U.S. $3 billion and that firm commitments for funding as of January 1980 was U.S. $1,659,450,000 or 55% of the total cost. It is encouraging to note that there has been a 17% increase in firm commitments for funding of projects since the Club du Sahel Conference in Amsterdam in November 1978.

National Secretary/Coordinator

The Secretary General
President's Office
Banjul.

cc: All Permanent Secretaries/
Heads of Departments.

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 1. DRYLAND FARMING

COUNTRY b. GAMBIA (GAM)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE*	OBSERVATIONS/COMMENTS
1.	Integrated Rural Development of Western part of the country.	12,000	IDA/ GRE.BRI BADEA.	III	Rural Development Project in Western Region. Phase I to be completed in June 1980.
			EDF	III	Agricultural credit support 1.1 millio dollars for the Eastern Region of RD.
2.	Integrated Rural Development Project (RDPII).	25,000	IBRD/IDA USAID, FIDA GREAT BRI.	II	[illegible] project to take place in [illegible]
3.	Strengthening of the Planning unit of the Ministry of Agriculture.	887	UNDP/FAO	III	Agriculture; Credit, Marketing and Dept. Management, Sociologist $690,000
4.	Establishment of a Horticultural fund for the development of the Horticultural Crops in villages.	2,500	IDA/FAO	I	Project to be formulated.
5.	Reorganisation and the strengthening of Extension service.	500	-	II	Essentially to intergrate the extensic service and make it more oriented by providing equipment supplies for cerea production.
6.	Financing of cereals storages in villages.	500	FRG/FAO	III	Food assistance $0.85M.
	SUB - TOTAL	$ 41,387			

*Type III = Firm commitments I.E. funds have been secured or agreement have been signed.
Type II = Interest expressed and feasibility studies being undertaken.
Type I = No interest expressed.

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 2. IRRIGATED AGRICULTURE (IRA)

COUNTRY b. GAMBIA (GAM)

DONOR EXPRESSION OF INTEREST

NO.	TITLE	ESTIMATED COST (US $000')	NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Development of irrigation in the area of Jakhally and Patcharr (feasibility study).	500	NETH	III	Final study and design being undertaken
	Development of the perimeter (4,000ha) of Jakhally and Patcharr.	42,000	(FRG (NETH (IFAD	I I I	500 hectares of the 4,000ha will be developed on a pilot basis to be followed by major phase after construction of the barrage.
2.	Land development aspect of the River Gambia Barrage scheme.	6,000	-	1	Estimated total cost of developing 24,000ha, $100,000,000 spread over 20 years.
3.	Rehabilitation of 50 small irrigation perimeters (well-watered), totalling 1,500ha and the development of 1,000ha of new perimeters including rehabilitation of access routes.	7,409	FRG IBRD ADF	II I II	Irrigated perimeters. Small perimeters. Study for small dams.
4.	A rice mill of 15,000 tons.	800	EDF/EIB	I	Part of the Jahali and Patcherr irrigated rice project.
5.	Study for the irrigated development of the Gambia River.	800	UNDP/UK UNOTC/ UNSAID/ CIDA.	III	Study for the development of the Gambia river $0.3m. multi-donor, multi-disciplinary team study completed. Barrage studies also realised.
	SUB - TOTAL	$ 57,509			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 3. VILLAGE AND PASTORAL HYDRAULICS (VPH)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Strengthening of Hydrogeological Department: Project CILSS/RAF/116/412.	496	UNDP/ OTC/FRG	III I	Rural Water Supply $0.310, assistance to national service.
2.	German Rural Water Supply Project (boreholes).	3,200	FRG	III	Feasibility study underway.
3.	Rural Piped Water Supply (provincial centres). e.g. Barra, Kerewan, Farafenni, etc.	1,500	UK	III	Implementation in progress.
4.	Rural Water Supply Project wells programme (village).	4,[illegible]	UNDP/ UNICEF GAMGOV	III	UNDP $2.000 pilot project completed. UNICEF $1.000 countrywide programme in progress. GAMGOV $1.200.
5.	Hydrogeological survey (countrywide).	2,500	UNSO/ UNDP	I	No progress.
	SUB - TOTAL	$ 11,896			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 4. LIVESTOCK (LIV)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Animal Health Care Programme.	240	GTZ	III	
	Central Veterinary Pharmacy.	500	GTZ	I	Implementation in progress.
		400	HOLLAND	III	
2.	Livestock Watering Points Development points wells and boreholes.	851	UNSO	III	Satisfactory progress.
3.	Animal disease control and provision of watering points for livestock.	172	BADEA/ FAO	III	-
4.	Rural Development Project. Phase II (Livestock Marketing).	1,600	IBRD	II	Project to be appraised in April 1980.
5.	Gambian Mixed Farming and resource management project.	6,000	USAID	III	-
6.	Multiplication and improvement center for N'Dama cattle.	4,500	IRAQ/ FAO	I	-
7.	Research project on Trypano-tolerance.	5,000	USAID	I	-
8.	Tannery Project.	500	UNIDO	I	Feasibility study being undertaken.
9.	Marketing of livestock.	1,500	IRAQ	I	
10.	Fellowships.	30	EDF/ GTZ	III	
	SUB - TOTAL	$21,333			

STATUS OF FIRST GENERATION PROJECT AS OF 12TH JAN. 1980.

SECTOR 5. FISHERIES (FIS)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Development of Artisanal Fisheries (maritime)	3,000	EDF	III	Development of artisanal fisheries, phase I being implemented. Additional funds being provided under Lome II.
2.	Study of fish resources in Gambia River	800	UNDP/UK	I	Basic studies under Barrage project.
3.	Fish processing and marketing project - Institutional aspects.	1,200	FAO/UNDP Badea	III	Artisanal/Industrial Fisheries Development.
4.	Aqua-Culture Project (Inland).	200	-	-	(Local efforts initiated).
	SUB - TOTAL	$ 5,200			

STATUS OF FIRST GENERATION PROJECT AS OF 12TH JAN. 1980.

SECTOR 6. CROP PROTECTION (CRP)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Strengthening of National Crop Protection Services.	2,000	OSRO UK/FAO/ USAID/ UNSO/ IRELAND	III	To-date $834,000 funded by USAID/UNSO FAO/OCLALAV funding gap of $1,213,000 is required for phase III of the programme.
	SUB - TOTAL	$ 2,000			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 7. ECOLOGY AND FORESTRY (FOE)

NO.	TITLE	ESTIMATED COST (US $000;)	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Integrated reafforestation programme.	3,000	USAID/ FRG BADEA	III II III	Reafforestation $1.575. Participation of $180,000.
2.	Soil and water resources management.	2,500	USAID	III	Soil and water resources development $.2M.
3.	Pasture development and protection of land around livestock watering points.	1,340	UNSO/ CILSS	I	Items 3 to 9.
4.	Establishment of green buffer-zone around peri-urban and urban areas - pilot project	263	UNSO/ CILSS	I	Anti-desertification programme. Joint sponsorship - UNSO/CILSS.
5.	Fire protection and management of natural vegetation.	2,250	UNSO/ CILSS	I	
6.	Support to the extension aid unit.	318	UNSO/ CILSS	I	
7.	Regional programme for the strengthening of the agro-met and hydrological services in the Sahel - national component.	3,500	UNSO/ CILSS	I	
8.	Bee-keeping.	200	UNSO/ CILSS	I	
9.	Strengthening of natural CILSS secretariat for coordination of anti-desertifications on programme.	100	UNSO/ CILSS	I	
10.	Formulation of national energy policy and programme of action - year 2000.	200	UNSO/	I	(Study).
	SUB - TOTAL	$ 13,671			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 8. PRICE, MARKETING AND STORAGE (PMS)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	National Food Crop Buffer stock (part of regional project).	8,000	-.	I	Pre-investment studies undertaken by FAO. Main feasibility study about to be launched.
2.	FAO Food stores.	360	FAO	III	
	SUB - TOTAL	$ 8,360			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 9. TRANSPORTATION AND INFRASTURCTURE (TRI)

NO.	TITLE	ESTIMATED COST (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Rehabilitation and maintenance of rural roads	6,900	USAID	III	Maintenance and rehabilitation $4.6M
			IDA	III	Maintenance and rehabilitation $2,4M Project about to be implemented.
2	UNSO/CILSS Feeder Road Programme.	7,000	CANADA/ UNSC/PRG/	III	Phase I completed. 100KM Constructed Phase II in progress. 120KM to be constructed.
			NETHERLAND	II	Phase III under preparation (Kiang West 210KM).
	SUB - TOTAL	$ 13,900			

STATUS OF FIRST GENERATION PROJECTS AS OF 12TH JAN. 1980.

SECTOR 10. HUMAN RESOURCES (HUR)

NO.	TITLE	ESTIMATED COSTS (US $000')	DONOR EXPRESSION OF INTEREST NAME	TYPE	OBSERVATIONS/COMMENTS
1.	Support of multipurpose rural training centers and providing for increased mobility of agricultural extension workers.	1,000	-	I	-
2.	Curriculum development unit-establishment.	2,000	UNDP/EDF	III	Phase I of curriculum development unit project completed. EEC to provide funds for infrastructure under Lome II.
3.	Implementation of a National Vocational Training Programme.	1,000	UNDP/ILO EEC/IDA	III	Implementation in progress.
4.	Establishment of a National Commission on Women and development - Women's Bureau.	335	UNFPA	I	Niamey meeting (Local efforts initiated).
5.	Creation of a management development institute to upgrade management in both government and private sectors.	800	IDA	III	IDA education project $5.5M implementation in progress.
6.	Assistance to small firms (IBAS).	3,000	UNDP/ILO IDA/EDF/ UNCDF	III III I	Implementation in progress.
7.	Functional Literacy Programme.	200	IDA	III	Part of Rural Development Project Phase I.
8.	National Programme for health rehabilitation primary health care.	6,200	UK/WHO IDA/UNFPA USAID	I + II	Phase 1 - 1981 - 1986 project to be formulated.
9.	Health Planning Unit.	340	UNFPA/WHO USAID/IDA	I	Niamey meeting.
10.	Disease control unit.	830	USAID	I	Evaluating a survey report on medical and health aspects in the Sene-Gambia
	SUB - TOTAL	$ 15,705			

ORGANISATION POUR LA MISE EN
VALEUR DU FLEUVE GAMBIE

O. M. V. G.

SECTEUR DE L'AGRICULTURE

Liste des Projets

Les projets qui sont donnés ci-après sont soit en cours de realisation soit prévus pour le cours terme 1981-85.

I - LA GAMBIE

Projets en Cours

- 1°/ Le projet de développement du coton-financé par la Banque Africaine de Développement (BAD) pour mettre en valeur environ 4000 ha de coton.

- 2°/ Le projet d'aménagement de riz irrigué financé par la République Populaire de Chine (RPC). Ce projet s'efforce de mettre en valeur environ 1600 ha pour la culture irriguée du riz.

- 3°/ Le projet d'aménagement rural intégré financé par IDA, BADEA, ODM et CEE. Ce projet organise la distribution du matériel et des engrais par l'entremise de coopératives et il fournit l'infrastructure et les programmes institutionnels et d'appui des études de recherches, la multiplication des graines, des procédés de vulgraisation, la formation etc...

- 4°/ D'autres programmes portant sur :

- la consolidation des vieilles zones à riz irrigué
- l'amélioration des marécages d'eau douce et d'eau salée
- la promotion des récoltes d'horticulture
- des activités de recherches sur les récoltes de plateau sur le riz et en agronomie.

LE SENEGAL

1°) Région du SENEGAL - ORIENTAL
Les cultures pluviales

La réalisation de ces projets est prévue en début 1980 et va couvrir toute la période du VI plan de développement économique et social du Sénégal (horizon 1985).

L'objectif est de poursuivre et d'intensifier les actions ci-après :

a) Développement de la culture cotonnière.

Les actions en cours ont permis d'atteindre les résultats ci-après :

Une superficie plantée de près de 15 000 ha avec des rendements proches de 1 tonne de coton graine à l'ha (et des pointes de 1,5 t/ha). Il s'agit donc d'une culture où les paysans ont acquis un niveau technique relativement élevé (utilisation des techniques ULV, fertilisation minérale, semoir mécanique, labour, etc...)

L'objectif du programme comporte donc une extension limitée (2000 - 3000 ha) des superficies cotonnières ainsi que l'intensification des techniques culturales pour arriver à un rendement cible de 1,2 tonne/ha.

b) Intensification des cultures céréalières en assolement avec le coton.

Ce programme a démarré en 1974/1975 avec la SODEFITEX; il a concerné en 1978/79:

- 5000 ha en faveur de mil et sorgho.

Il s'agit, grâce à l'application de techniques simples (semis en ligne à bonne densité, variétés sélectionnées, fumure minérale appropriée), d'obtenir un supplément de rendement de l'ordre de 500 kg/ha.

Les résultats attendus pour 1984/1985 sont :

- superficies encadrées : 9000 ha
- rendement : 1200 - 1250 kg/ha

c) Intensification de la production du maïs

Ce programme correspond à l'objectif de diminution du déficit vivrier et également de développement de nouvelles cultures commercialisées. Eu égard à son prix au producteur (37 F/kg), le maïs intensif peut devenir une véritable culture à rente.

Les résultat escomptés en 1984/1985 sont :

- superficie encadrées : 13000 ha
- rendement : 2200 kg/ha.

d) Intensification de la production d'arachide d'huilerie

Dans le cadre d'une approche globale des systèmes de production des unités de production familiale, dans lesquels l'arachide tient une place importante (+ 50%), les actions de l'encadrement devront tendre à stabiliser les superficies arachidières.

Cette action de stabilisation devra s'accompagner d'une action d'intensification par la vulgarisation de thèmes techniques devant permettre d'obtenir un rendement moyen de 1200 kg/ha.

Les résultats escomptés en 1984 - 1985 sont :

- superficies encadrées : 8000 ha
- rendement : 1200 kg/ha.

e) Développement de la production de l'arachide de bouche.

Les résultats escomptés en 1984/1985 sont :

- superficies encadrées : 5000 ha

- rendement : 1350 kg/ha.

f) Extension de la riziculture de bas-fonds.

Il s'agit de poursuivre les opérations entreprises depuis 1973 et en particulier dans la zone de Kédougou où la riziculture a connu un développement très rapide (5500 ha encadrés en 1978/1979 avec un rendement moyen de 2,1 t/ha).

Les programmes prévus contribuent également à satisfaire trois objectifs principaux :

- couverture des besoins vivriers des exploitations ;
- permettre à la rizerie de Kédougou de travailler à pleine capacité ;
- mise en valeur agricole des sols de bas-fonds inaptes à d'autres spéculations que le riz.

En dehors des actions de vulgarisation, il est envisagé aussi de realiser des travaux de micro-hydraulique pour l'aménagement des bas-fonds. Ces travaux consistent en l'établissement de petites diguettes (20 cm de hauteru en crête) de façon à augmenter la rétention des eaux pluviales et en la réalisation de fossés de drainage, le cas échéant.
Le supplément de rendement escompté par les aménagements de micro-hydrauliques peut être evalué à 600 kg/ha en année de pluviométrie normale ; mais en année déficitaire, un supplément égal ou supérieur à 1,0 t/ha peut être attendu.

Une étude devant préciser le programme détaillé des bas-fonds à aménager sera entreprise prochainement ; on peut cependant estimer à 4 000 ha la superficie qu'il sera possible d'aménager entre 1981 et 1985.
Les résultats attendus globalement en 1984/1985 avec l'intensification de la riziculture sont :

- superficies encadrees : 8 200 ha

  dont 4000 ha de bas-fonds aménagés

- rendement : 2 500 kg/ha.

Les cultures irriguées

Ce programme concerne la mise en place de petits périmètres irrigués d'une superficie unitaire moyenne de 15 à 20 ha pour la culture du riz. L'irrigation se fait directement à partir de l'eau du Fleuve Gambie ou de ses défluents.

Le projet a démarré en 1978 au Sénégal-Oriental ; 32 ha ont été mis en culture en hivernage et ont donné un rendement de 4,8 t/ha. Pour l'hivernage 1979-1980, 300 ha sont exploités ; les résultats attendus sont prometteurs.

Le programme envisagé pour 1981 - 1985 est la continuation de celui en cours de 750 ha avec un rendement initial de 3,5/ha. Les résultats obtenus (4,8 t/ha) permettent de situer l'objectif de rendement à un niveau (4,2 t/ha) supérieur à celui envisagé au départ.

Pour la campagne 1984 - 1985, un objectif global de 1500 ha aménagés (750 ha supplémentaires) doit être atteint dans les zones de :

- la moyenne vallée de la Sandougou ;
- la moyenne vallée de la Gambie ;
- la haute vallée de la Gambie (zone de Kédougou).

La double culture y est envisagée suivant le plan culturel ci-apres :

- riz : repiquage et irrigation d'appoint en début et fin de cycle pendant l'hivernage sur la totalité des surfaces.
- en contre-saison : riz repiqué ou maïs sur 80% des superficies suivant la texture des sols.

Recapitulation

L'évolution des superficies encadrées par rapport à la situation de base se présente comme suit :

Situation de base 1978 - 1979		Situation des superfices encadrees à 'horizon 1984-85
Coton :	15000 ha	17 à 18000 ha
Mils et sorgho :	5000 ha	9000 ha
Maïs :	6 2000 ha	13000 ha
Arachide d'huilerie :	5000 ha	8000 ha
Arachide de bouche :	1000 ha	5000 ha
Riz pluvial :	5500 ha	8200 ha
Riz irrigué :	300 ha	1500 ha

On constate que les superficies encadrées passeront de 38 000 ha (situation de base) à près de 63 000 ha ce qui représente un accroissement de 40%.

2°) Les Actions Envisagées en Casamance (période 1981 - 1985)

Les programmes à réaliser en Casamance sont à peu de choses près, les mêmes que ceux prévus pour le Sénégal-Oriental tant du point de vue structurel que qualitatif.

L'accent sera particulièrement mis sur l'intensification des systhèmes de productions en vue d'accroître les rendements des spéculations végétales essentielles de l'exploitation.

Les accroissements de surface, dans la partie du bassin du Fleuve Gambie, seront faibles ; ils concernent :

- le coton = 500 à 1000 ha
- les mil et sorgho = 1000 à 2000 ha
- le maïs = 1500 ha probablement
- l'arachide d'huilerie = 1000 à 1500 ha
- l'arachide de bouche = néant

- le riz pluvial = 500 à 1000 ha
- le soja
- le tabac
- le colatier

Il convient de signaler que le programme de développement des trois dernières cultures n'est pas assez bien défini à l'heure actuelle. Il s'agit uniquement d'idées qui devront se développer lors de la finalisation du schéma directeur de la Casamence. Celui-ci doit promouvoir, d'une façon globale et équilibrée, un programme à long terme de développement agricole intégré de l'ensemble de la Casamance y compris évidemment, la partie sénégalaise du bassin.

3°) Les Actions Envisagées au Sine - Saloum (1981 - 1985)

En dehors du maïs (+8000 à 10 000 ha) et du coton (+ 1000 à 1500 ha), cette partie du bassin ne connaitra pas beaucoup d'accroissement de superficies.

La SODEVA, tout en prenant davantage en compte les activités des coopératives en liaison avec les communautés rurales, devra s'orienter sur l'intensification des cultures céréalières (maïs, mil et sorgho) et industrielles (arachide d'huilerie et de bouche) ainsi que sur des actions dans le domaine des productions animales pour une meilleure intégration de l'agriculture et de l'élevage.

Quant à la S.N, elle devra consolider les résultats acquis par MAKA I et MAKA II par une plus grande intensification des systèmes de production.

Les programmes d'irrigation dans la zone du bassin sont encore en cours d'étude ; il s'agit du Bao-Bolon et de quelques vallées situées dans le département de Foundiougne (Néma, Sine - Pakala, etc...).

ANNEX G

TERMS OF REFERENCE OF PROJECT COMPONENTS

1. Aerial Photography and Mapping
2. Environmental and Socio-economic Studies
3. Technical Assistance Job Description

ANNEX G

TECHNICAL ANALYSIS OF PROJECT COMPONENTS

1. AERIAL PHOTOGRAPHY AND MAPPING

Introduction

The existing topographic map coverage of the Gambia River Basin is adequate for only very preliminary type planning studies. The maps of the portion of the basin in Senegal are at a scale of 1:50,000 with a 40-meter (about 130 foot) contour interval. The basin area in The Gambia is also covered by maps at a scale of 1:50,000, but without elevation contours; these are color-enhanced planimetric maps prepared from aerial photography taken in 1972. The maps show villages, roads, vegetative cover, geodetic stations and spot elevations. Aerial photography at a contact print scale of 1:25,000 and planimetric land classification maps at the same scale will be prepared for the entire country of The Gambia under the Mixed Farming Project, which began in the fall of 1980. The available mapping of the basin in Guinea is unknown.

The OMVG, as well as the three riparian states, needs better maps for river basin planning activities and for many other uses. Topographic maps at a scale of 1:25,000 or even 1:50,000, with a 5-meter contour interval, would be very useful for preliminary planning. However, the cost of such maps at either scale would be too great for inclusion in this project. Furthermore, such contour maps in areas of very low relief, which is the case with most of the Gambia River Basin, would be of little value.

A more useful map at this stage of basin planning would be controlled planimetric photomaps. These, together with stereoscopic use of contact prints, could be used to identify potential structure sites and irrigable areas. Rough contour maps of identified potential dam and reservoir sites could be prepared by photogrammetric use of the aerial photography and ground surveys. More detailed maps of structure sites and irrigable areas would be required for feasibility planning studies. The controlled photomaps would also be used for a variety of other uses, such as land use and preliminary land classification mapping, demographic and sociological studies, livestock surveys, transportation planning, and environmental analyses. The maps will be produced in French and English and in metric units.

Large scale topographic orthophotomaps are needed to develop 70,000 hectares of promising land just south of the Kekreti dam site for irrigated agriculture. A useful scale would be 1:10,000 with one meter contour intervals. The maps may also be used for land use planning. The 1:10,000 scale maps will serve as the basic tool for developing large areas of irrigated agriculture, particularly as a basis for economic land classification, delineation of specific

boundaries of irrigable land and preliminary irrigation project design and cost estimating. The selected areas within the 1:10,000 scale mapping area which will undergo actual development and construction will then eventually be mapped in more detail, say 1:2,000 with 9.25 meter contour interval. This is not part of the present plan since it is an echelon removed in the sequence of development and can probably best be done at a future date with ground surveys.

The best location for the contractor teams for this exercise is Banjul because of the simpler modes of application of fiscal and customs regulations governing execution of OMVG contracts with large equipment, material and financial components. The mapping exercise costs are extremely senesitive to delays due to clearance procedures related to the three components cited above.

Purpose

The purpose of this component is to provide the OMVG and member-state development agencies with aerial photographs, controlled planimetric maps and large scale maps of a specific area that will be useful to them for preliminary river basin planning studies and a variety of other uses.

Personnel

This component will require no full-time personnel permanently assigned. Two technical advisors will be assigned for short-term assistance. A geodetic advisor will be detailed for about eight months to monitor ground control surveys and a cartographic advisor will spend about three months in the field to monitor the aerial photography. The latter will also spend about three months at the contractor's plant (divided between the first and second contracts) to monitor the photogrammetric preparation of the photomaps and to inspect the materials to be delivered.

An additional short-term detail (about one month) for two instructors will provide training for OMVG personnel and host-country nationals in the use of the completed photographic materials. A civil engineer (river basin planner) to be provided under the Technical Assistance Component of this project will also be available for additional advice as needed.

Activities

The mapping is programmed for funding as two separate fixed-price contracts, executed on behalf of OMVG.

First Contract. The first contract will include the aerial photography and the ground control surveys. The entire basin area (about 77,850 square kilometers) will be flown at a scale of 1:50,000 using both panchromatic (black and white) and color-infrared

film. The Kekreti Dam Site area will be flown at scales of 1:12,500 and 1:25,000 using panchromatic film. The larger scale will be used for vertical compilation and the smaller scale for aerotriangulation and the production of the photomaps. The areas will be photographed in the period from December 1981 through February 1982 to take advantage of the clear, stable weather conditions. Cropped areas should be flown first while they can still be distinguished. Proper clearances will be completed with appropriate agencies of the local governments prior to the flights.

The ground control surveys will include enough accurately established horizontal and vertical control points to permit preparation of the 1:25,000 scale controlled planimetric maps and the 1:10,000 scale topographic maps to the desire accuracy. Ground control will consist of points established by Doppler stations, by Autosurveyor method, and by altimetry.

The first contract will be awarded to a photogrammetric mapping firm that has experience in West Africa.

Second Contract. The second contract will cover the preparation of controlled planimetric photomaps at a scale of 1:25,000 and orthophoto topographic maps at a scale of 1:10,000 using the photography and ground control surveys from the first contract. The second contract should be awarded as soon as practicable after delivery of the material from the first contract.

Training

Personnel assigned to the mapping project by the members states will receive valuable on-the-job training by working with and observing the activities of the contractor's personnel and of the short-term geodetic and cartographic advisors. Four qualified students will be selected for three weeks' observation and orientation at appropriate U.S. Government agencies and in the contractor's plant in early 1983. The orientation will include mapping procedures and care and storage of photographic materials.

After the photomaps are completed, two instructors will provide OMVG and host country nationals training in the use and interpretation of photographic materials.

Outputs

First Contract. The following material will be delivered as outputs of the first contract:

Panchromatic products

Original aerial film exposed on the project
10 trimmed contact prints of each acceptable exposure
30 copies of each index
1 duplicate copy of uncut aerial negatives

3 copies of each duplicate photo index negative

Color I R Products

Original aerial film exposed on the project
6 cut and trimmed contact prints of each acceptable exposure
3 cut and trimmed contact transparencies of each acceptable exposure
1 duplicate copy of uncut positives

Ground Control Surveys

Data on horizontal and vertical positions of each identifiable control point.

Second Contract. The following materials will be delivered as outputs of the second contract:

50 copies of each controlled planimetric photomap and topographic orthophotomap.
3 duplicate negatives of each map.

The photomaps will be on a photographic print base of thickness, stability and durability suitable for field use. They will include the elevations of control points established in the field and the type of control (Doppler, Autosurveyor, etc.) will be superimposed on the maps. The data on the map shall be in French and English.

Photo Interpretation Skills. OMVG staff and nationals of the member states will be trained in the interpretation and use of photographic materials.

Inputs

The major inputs to this component are the direct contracts for aerial photography and ground control surveys and for map preparation. Additional minor inputs are the short-term details of technical specialists as advisors and training instructors.

Relationship to Other Components

The aerial photos and the controlled photomaps will be used to obtain and portray portions of the data that will be collected as part of the environmental studies and the socio-economic studies. The training activities of this component will contribute to the institutional development of OMVG and its staff.

Relationship to Other Ongoing Projects

The aerial photos and the controlled photomaps will be used by OMVG and the member states for river basin planning studies, such

as identifying potential structure sites and irrigable areas. Photogrammetric use of contact prints and ground control surveys would permit drawing rough contours of dam and reservoir sites.

The controlled photomaps would be useful for other studies, such as land use and preliminary land classification mapping, demographic and socio-logical studies, livestock surveys, transportation planning, and environmental analyses.

Evaluation

Successful completion of this component will result in:

1) Current aerial photos, controlled planimetric photomaps and topographic orthophotomaps by OMVG and agencies of the member states

2) Personnel of OMVG and host country agencies that have received training in photomapping procedures and in use and interpretation of photographic materials.

Financial Plan

The estimated costs for the work associated with the two contracts are tabulated in Annex I. The contracts are assumed to be fixed-price contracts. The costs were estimated on the basis of the surface of basin area in Senegal, The Gambia and Guinea.

Implementation Plan

The implementation plan discussed below is based on the assumption that there will be two fixed-price contracts for producing the controlled planimetric photomaps and topographic orthophotomaps.

First Contract. The first contract, for aerial photography and ground control surveys, will be awarded to a contractor with work experience in West Africa. The proposed implementation schedule for the first contract is as follows:

April, 1981	Project Paper approved
August, 1981	Request for Technical Proposals distributed to potential contractors and a statement published in the Commerce Business Daily.
October, 1981	Contract awarded
November 1, 1981	Geodetic control surveys begin (Doppler Stations). Geodetic advisor assigned to mobilizes for aerial photography.

December 1, 1981	Aerial photography begins. Cartographic advisor assigned to monitor the project.
February 1, 1982	Complete field work for Doppler stations.
March 1, 1982	Complete photography. Complete computations for Doppler stations. Begin Autosurveyor work.
April 1, 1982	Begin altimetry.
June 1, 1982	Complete altimetry.
June 30, 1982	Deliver material - data on ground control surveys and panchromatic and color photographic materials. First contract completed.

Second Contract. The second contract, for map preparation, will not require any field work but can be performed at the contractor's plant in the United States. The contractor will be furnished the data on ground control surveys and the photographic materials that will be obtained under the first contract. The second contractor may or may not be the same one that performed the first contract. The schedule for the second contract is based on an assumed completion date of June 30, 1982 for the first contract. Preliminary activities should be completed prior to that time, so the second contract can be awarded as soon as practicable after the first contract is completed. The proposed schedule for the second contract, based on an assumed award date of August 1982 is as follows:

April, 1982	Request for Technical Proposals distributed to potential contractors and a statement published in the Commerce Business Daily.
June , 1982	Receipt of proposals from potential contractors.
August, 1982	Contract awarded.
September, 1982	Contractor begins work on aerotriangulation.
January, 1983	Complete aerotriangulation. Four students in U.S. for observation and orientation.
November, 1983	Deliver completed maps and other materials. Second contract completed.
December, 1983	Train OMVG and national personnel in use and interpretation of photographic materials.

Contract Monitoring. In the cost estimates for total work done under the first contract a geodetic advisor will be assigned to the field for the entire 8 months of work. The cartographic advisor will be assigned to the field for the 3 months of aerial photography and will inspect the photographic materials before delivery. For the second contract, the cartographic advisor will monitor the map preparation at the contractor's plant and inspect the completed photo-maps before delivery.

If the work for this component is done under fixed-price contracts as is strongly recommended, it is the completed work that should be inspected. Thus, monitoring during performance of the contract could be minimized. If the contracts are carefully written, the contract monitoring could be largely accomplished after the work is done. If appropriate penalty clauses are included, the contractor would do careful inspection himself. The first contract monitoring would then consist mostly of inspecting the quality of the aerial photography and adjustments of the survey work. It is expected that some reasonable spot checks should be conducted in the field for the quality of the altimetry and the photo-identification of the control points.

Liaison. The contractor should provide OMVG (and the geodetic and cartographic advisors, if they are assigned) with a schedule of planned activities a month in advance, along with locations and addresses where the chief of contractor's operation can be located throughout the period. Because it is expected that the work will advance rapidly and that the chief of operations will be a working chief who moves with the work, no permanent office nor office staff will be established.

In addition to providing this monthly schedule of operations planned, the chief of the contractor's operations will provide a monthly report of accomplishments and progress.

Storage of Materials

It is especially important to store the photographic materials and photomaps in a facility suitable for archival storage. The color transparencies should be stored on the spools or in individual sleeves. High relative humidity promotes the growth of mold and therefore must be minimized. Storage temperature above 26°C (80°F) must be avoided. All the materials should be stored in a dark, dust-free area at a temperature of 10-21°C (50-70°F) and a relative humidity of 30-50 percent.

Terms of Reference

Attached as an appendix to this component are draft scopes of work for the two mapping contracts that can be used to prepare detailed terms of reference.

SCOPE OF WORK FOR FIRST CONTRACT

FOR AERIAL PHOTOGRAPHY AND GROUND CONTROL SURVEYS

1. General Requirements

The purpose of this contract is to provide total coverage of the Gambia River Basin (about 77,850 square kilometers) in Senegal, The Gambia, and Guinea with 1:50,000 scale panchromatic and color-infrared photography and ground control surveys suitable for preparing controlled planimetric photomaps at a scale of 1:25,000.

In addition, 1:12,500 and 1:25,000 scale panchromatic photography of 70,000 hectares just south of the Kekreti Dam Site will be required. Supporting ground control surveys will be accomplished to control the photography for 1:10,000 scale, one meter contour interval Class A orthophotomaps. The preparation of photomaps is not a part of this contract; it will be covered in a subsequent contract.

2. Aerial Photography

2.1 Photography. Acquire 1:50,000 scale, 152 mm focal length, simultaneously exposed, panchromatic and color-infrared cartographic aerial photography for about 77,850 square kilometers. The panchromatic photography will be used to construct 1:25,000 scale controlled photomaps without contours. The photography shall be completed during one flying season.

Acquire 1:12,500 and 1:25,000 scale, 152 mm focal length, panchromatic photography for about 70,000 hectares. The larger scale will be used for vertical compilation and the smaller scale for aerotriangulation and orthophotomap production at a scale of 1:10,000.

2.2 Aircraft Requirements. The aircraft selected must be a pressurized project or jet capable of sustained performance at the project altitude. It must be capable of mounting two 152 mm focal length cameras. The aircraft and engines must have sufficient air time remaining to complete the project without a time between overhaul (TBO). The cameras must be installed so that the cameraman can correct both cameras for drift while on flight line. The cameras are to be bore sighted prior to taking project photography to assure identical coverage and simultaneous exposure.

2.3 Negative Quality. The aerial film shall be fresh, fine grained, and on a 4 mil stable base. Examples are Kodak Plus X Aerographic 2402 or Double-X Aerographic 2405 panchromatic films and Aerochrome infrared 2443 false color reversal film. The film shall be exposed only when atmospheric conditions are such that

clear, well-defined photographic images can be made. Favorable atmospheric conditions include minimum haze, no dust or clouds or cloud shadows. Streams and rivers shall be within their normal banks. The panchromatic photography shall be used for making photomaps, therefore extreme care must be exercised to obtain uniform tonal quality of the negatives.

2.4 Photographic Indexes. Upon completion of the numbering and titling of panchromatic and color infrared film, photographic indexes shall be prepared at a three times reduction in scale. The color infrared and panchromatic photography shall have indentical numbering. Photo indexes shall be made with the panchromatic photography only.

3. Ground Control Surveys

3.1 Doppler Stations. The precise Doppler network will serve as the reference system from which controlled planimetric photomaps will be drawn. This will require about 20 stations distributed throughout the project area. In addition, about 15 stations will be required for the large scale orthophotomaps. These stations will be permanently monumented and located along roads in or near villages whenever possible. Some 12th Parallel stations to which the Senegambia traverse is tied shall be included as well as some of the Senegambia stations themselves. All of the Doppler stations shall be accessible by vehicle in such a way that they can be easily tied by a vehicle-mounted Autosurveyor. Consideration to photo identification shall be given to site selection. The computed Doppler positions shall be on the same system as the 12th Parallel project. Expected accuracy of the Doppler positions would be at least comparable to accuracies of such points in the OMVS project. The final accuracy agreed to at the time the contract is signed might be better if equipment and methods improve by that time, but at least 1 meter horizontally and vertically would be expected.

3.2 Mapping Surveys for 1:25,000 Scale Mapping. The mapping surveys shall consist of two types of points: those with horizontal and vertical position and those with vertical position only.

3.2.1 There shall be about 165 points with horizontal and vertical positions, including the Doppler stations and any 12th Parallel stations that fall into the project area. The vertical and horizontal points between the Doppler stations and/or 12th Parallel or Senegambia Traverse Stations shall be tied to the latter (Doppler or Traverse) by Autosurveyor method or any other method that gives adequate accuracy. The minimum accuracy requirements for the intermediate points shall be + 6 meters horizontally and + 5 meters vertically. Adequate checks against blunders shall be made.

Those points established by Autosurveyor that will serve as the reference system for the 275 vertical points (see Para. 3.2.2) must have a minimum vertical accuracy of 2 meters. Though the points tied by Autosurveyor method do not have to be marked by survey monuments, they will have to be easily photo identifiable and recovered on the ground.

3.2.2 There shall be about 440 points of vertical position, including the points of horizontal and vertical position. The minimum accuracy for these vertical points is 5 meters. The 275 points for which vertical position only will be known will probably be tied by barometric leveling.

3.3 Mapping Surveys for 1:10,000 Scale Mapping. The mapping surveys shall consist of two types of points: those with horizontal and vertical positi ns and those with vertical positions only.

3.3.1 There will be about 15 points with horizontal and vertical values. The horizontal values will be established by Doppler consistent with paragrahp 3.2.1. The points shall be horizontally accurate within one meter.

3.3.2 There will be about 36 points of vertical positions established within 0.1 of a meter. Vertical values will also be established to the Doppler stations to the same accuracy. All the points must be readily photo-identifiable and recoverable on the ground.

4. Materials to be Delivered

4.1 Panchromatic Products

(1) Contract prints, resin coated - 10 each of acceptable exposures
(2) Photo indexes - 30 sets
(3) All original aerial film exposed on the project
(4) Duplicate aerial negatives - 1 for each roll of original negatives
(5) Duplicate photo index negatives - 3 sets

4.2 Color Products

(1) Contact prints - 6 each of acceptable exposures
(2) Transparencies - 3 each of acceptable exposures
(3) All original aerial film exposed on the project
(4) Duplicate aerial positives - 1 for each roll of original positives

4.3 Ground Control Surveys

(1) Complete station description of all Doppler stations - 15 copies in French and 15 copies in English
(2) Report on Doppler stations, showing the positions of each, the number of passes from which the position

was derived, the method of computation, expected accuracy and other relevant information - 15 copies in French and 15 copies in English.

(3) Map of the project area showing the location of the Doppler stations and other stations used to control the planimetric photomaps and orthophotomaps to be prepared under a subsequent contract - 15 copies in French and 15 copies in English.

(4) Autosurveyor runs, showing closure and adjustments - 3 copies in French and 3 copies in English.

(5) Barometric leveling runs, showing closures, adjustments and redundancies - 3 copies in French and 3 copies in English.

(6) Spirit leveling runs, showing closures and adjustments - 3 copies in French and 3 copies in English.

5. Assessment of Needs of Personnel

5.1 Personnel of the Contractor and Subcontractor. (1) The contractor's personnel shall be highly qualified and shall have extensive experience in cartographic aerial photography surveys, geodetic surveys and cartography . Key officers shall be subjected to selection procedures prior to award of the contract. The pilots employed on the project shall have logged a minmum of 800 hours as an aerial photographic pilot and the cameraman shall have logged a minimum of 400 hours as an aerial photographer. The mechanic must be airframe and power plant certified. The laboratory technician must have five years of recent experience processing cartographic aerial photography.

(2) The work shall be carried out under the supervision of competent technical personnel of the contractor. However, a part of the work to be done can be executed by qualified local firms and sub-contractors of member states of OMVG qualified for the level of work required.

5.2 The OMVG Personnel. The OMVG desires to take part in on-the-job training for its members and qualified agents during the aerial photography and geodetic operations in the Basin. The level of participation shall be determined in conjunction with the contractor. The contractor shall attempt to furnish the participants the same housing and subsistence allowances as those of his own personnel. The contractor shall provide the participants from each country the means of transportation between their normal place of work and the training site. The contractor shall decide the means of transport. In the event of a change in the participants decided by the concerned agencies, the agencies shall be responsible for the supplemental transport costs. Salaries of participants shall be borne by the funding sources.

6. Installation and Facilities

The contractor shall open an office in Banjul for the duration of the aerial photography and geodetic phases of the contract.

The contractor is obliged to provide manpower, housing, installation, means of transportation, equipment and supplies necessary for the execution of the contract. The installation shall include storage facilities for the photographic equipment and supplies at recommended temperature and humidity levels.

7. Source Documents

In addition to the assistance of the OMVG, the contractor may have access to data and information in the survey offices of the member states. The list of the following documents is available either from the geographical services of the members states of OMVG or at the Dakar office of L'Institute Geographique National (IGN) and the Directorate of Overseas Surveys (DOS), Great Britain.

(1) Topographic maps of the Gambia River Basin at a scale of 1:200,000 and 1:500,000.

(2) Defense Mapping Agency (DMA), Joint Operations Graphics (JOG's) (Air and Ground) Series 1501 at a scale of 1:250,000.

NC 28-2	ND 28-5	ND 28-11
NC 29-1	ND 28-6	ND 28-12
	ND 28-7	ND 28-15
	ND 28-9	ND 28-16
	ND 28-10	ND 29-9
		ND 29-13

(3) DMA Series Operational Navigation Chart (ONC), K-1 Edition No. 3 at a scale of 1:1,000,000.

(4) Directorate of Overseas Surveys (DOS) 1958 Land Use Map at a scale of 1:25,000 (approximate) from aerial photography dated 1946 and 1956.

(5) DOS 1978, Series DOS 315, line maps with 10 ft. contour intervals of the Jombo Peninsula region at a scale of 1:25,000. The earstern-most longitude with the coverage is 16° 30' west.

(6) DOS 1975, Series G724 (DOS 415P) at a scale of 1:50,000 from aerial photography flown in 1972. The Gambia has complete coverage with these maps.

(7) DOS 1974 and 1975 selected sheets of towns at a scale of 1:2,500, Series DOS 015 with and without contours. These large-scale sheets were compiled from aerial photography dated 1960 and 1967.

(8) Hydrological and Topographic Study of the Gambia River Basin, 1974 by Howard Humphreys & Sons.

(9) Photographic coverage of the Senegalese protion of the Basin at a scale of 1:50,000 flown in 1954.

(10) Photographic coverage at a scale of 1:25,000 of the Gambian territory and 1:10,000 scale coverage of low lying areas of portions of Gambia taken in 1972 (from UNDP).

(11) List of traverse points along the 12th Parallel.

(12) List of traverse points of the Senegambian connection.

(13) List of astronomical points in the entire basin.

8. ERTS & LANDSAT Imagery

The Contractor may obtain ERTS & LANDSAT satellite imagery from the National Cartographic Information Center at Arlington, Virginia (Phone 703-860-6045) or from Sioux Falls, South Dakota. Both facilities are under the U.S. Geological Survey. The imagery may prove helpful for an overview of the entire Basin from the standpoint of vegetation and water resources. Comparisons of imagery over a period of time will prove useful to detect temporal changes in the environment.

9. Contract Inclusions

To prevent costly overruns, it is recommended that the contract be written on a fixed-cost basis. The following items are to be considered when preparing the contract.

Item #	Services	Quantity	Unit	Unit Price	Amount
1	Mobilization of air -craft & Crew	1	Lump Sum		
2	Demobilization of aircraft & crew	1	Lump Sum		
3	Mobilization of Laboratory & personnel	1	Lump Sum		
4	Demobilization of Laboratory & personnel	1	Lump Sum		
5	Aircraft & crew standby	90	Days		A
6	Laboratory standby	90	Days		A
7	Flying time	80	Hours		A
8	Acceptable photography	77,850	Sq. Kilometer		

Explanatory Notes

Payments: A = Approximate totals based on estimated quantities and firm unit prices.

a. Items 1 & 3: These are lump sum items and will be paid when all personnel, aircraft, laboratory and equipment arrive at the project site and the contractor is ready to commence operations.

b. Items 2 & 4: These are lump sum items and will be paid upon receipt by the Contracting Officer of a certified statement that the personnel, aircraft, laboratory and equipment have been demobilized.

c. Items 5 & 6: These are daily standby charges for personnel, aircraft, laboratory and equipment to accomplish the project. The Contractor shall be paid monthly for these items only for the time during which the project personnel, aircraft, laboratory and equipment are operational on the project site.

d. Item 7: This is the charge for each hour flown in the performance of the contract. The Contractor shall be paid monthly only for those hours actually flown.

e. Item 8: The Contractor shall be paid 60% of the square kilometer price when the entire area to be photographed has been completed with acceptable panchromatic and color-infrared photography according to OMVG or their technical representative. The remaining 40% will be paid upon receipt and acceptance by OMVG or their technical representative of all materials stated in the contract except the photomaps and photomap negatives. Payment shall be paid monthly.

10. Data Furnished by the Defense Mapping Agency

Data following this paragraph were furnished by the Defense Mapping Agency as detailed information to be included in the Terms of Reference for the aerial photography. The data include Specific Project Data (SPD) and Technical Provisions - Specifications for Aerial Photography. The SPD are tailored for a specific project. The SPD lists the project name, photography to be obtained, area to be photographed (diagram included), materials and specifications needed for the project, flight plan, and materials to be delivered to the OMVG and host countries. The SPD may modify and therefore takes precedence over the Technical Provisions - Specifications for Aerial Photography.

The Technical Provisions - Specifications for Aerial Photography controls the quality of the aerial photography and ensures uniformity of related products. The SPD may modify the specifications depending upon specific project requirements.

SCOPE OF WORK FOR SECOND CONTRACT

FOR MAP PRODUCTION

1. General Requirements

The purpose of the second contract is to provide 1:25,000 scale monochromatic controlled planimetric photomaps of the Gambia River Basin using the 1:50,000 scale photography acquired by the first contract. In addition to provide 1:10,000 scale monochromatic topographic orthophotomaps of an area adjacent to the Kekreti Dam Site in Senegal.

2. Map Accuracy

2.1 1:25,000 Scale Photomaps

The maps shall be horizontally accurate according to Class B National Map Accuracy Standards: Ninety percent of the planimetric features shall not be in error by more than 0.04 inches (1.0mm) at map publication scale (25 meters horizontally on ground).

2.2 1:10,000 Scale Orthophotomaps

The maps shall be horizontally accurate according to Class A National Map Accuracy Standards: Ninety percent of the contours shal be accurate within one half of the contour interval. Ninety percent of the planimetric features shall not be in error by more than 0.2 inches (0.5 mm) at map publication scale (5 meters horizontally on ground).

3. Map Description

3.1 1:25,000 Scale Photomaps

In most cases the photomaps can be made from rectified photographs. However in areas of excessive relief, orthophotographs will be used to conform with the horizonal accuracy requirements.

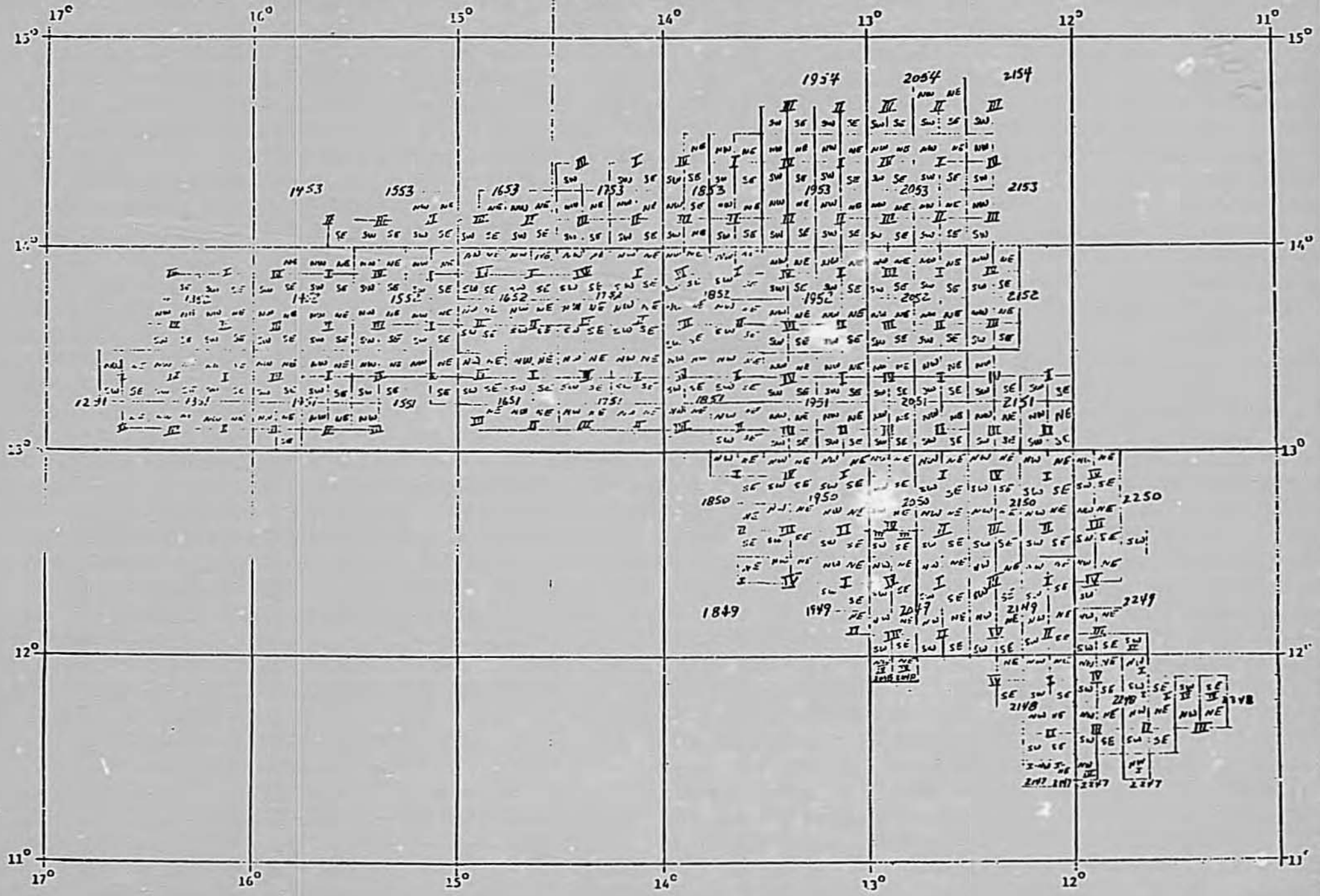
The final maps, numbering about 483 sheets, shall be black and white on a photographic print base of suitable thickness, stability and durability, suitable for field use. (An example of a suitable paper is Kodabromide Paper, Kind 1894, Water Resistant). Included within the 483 sheets are individual sheets which include small percentages of Basin Area. During the compilation phase of these sheets, the decision can be made to compile the sheet or include the area upon the adjacent sheet. The Universal Transverse Mercator Grid, geographic coordinate (graticule) ticks and names shall be superimposed on the maps. Marginal data shall include bar scales, a diagram of "Index to Adjacent Sheets," north arrows and other pertinent information. In addition the elevations of the control points established in the field and the type of control (Doppler, Autosurveyor, etc.) shall be superimposed on the

maps. The data on the maps shall be in French and English. The actual map interior shall be 7½ minutes by 7½ minutes. Sufficient names data shall be included on the maps, such as population centers, area names, hydrography and topography features and read identification. Names shall be obtained from source data as well as field classification surveys.

3.2 1:10,000 Scale Orthophotomaps

In most cases the photomaps will be made from orthophotographs. In areas with little or no relief rectified photographs may be used.

The final maps will number about 20 sheets. Superimposed on the map will be one meter contours, numerous spot heights and all the information set forth in paragraph 3.1. The data on the maps shall be in French and English. The actual map interior shall be 2½ minutes by 5 minutes.


17°
16°
15°
14°
13°
12°
11°
1453
1553
1653
1753
1853
1953
2053
2153
1954
2054
2154
1852
1952
2052
2152
1851
1951
2051
2151
1850
1950
2050
2150
2250
1849
1949
2049
2149
2249
2148
2248
2247

USAID, THE GAMBIA RIVER BASIN DEVELOPMENT PROJECT

SPECIFIC PROJECT DATA

Project Name:	GAMBIA RIVER BASIN DEVELOPMENT PROJECT
Photography to be Obtained:	(1) About 77,850 square kilometers (30,060 square miles) of 152 mm focal length, 1:50,000 scale, dual camera, simultaneously exposed panchromatic and color infrared cartographic aerial photography. The area to be photographed is the entire Gambia River Basin. See page 6 "Area to be Photographed". (2) About 70,000 hectares (270 square miles) of 152 mm foca. length, 1:12,500 and 1:25,000 scales, panchromatic cartographic aerial photography. The area is just south of the Kekreti Dam Site in southeastern Senegal. Exact area limits shall be furnished to the Contractor.
Flight Plan:	The flight lines for the photography shall be drawn by the contractor's photographic organization. The number of flight lines shall be the minimum required to cover the project areas and provide the specified average sidelap.
Flight Direction:	1. East-West for 1:50,000 scale photography. 2. Direction to be determined after award of contract for 1:12,500 and 1:25,000 scales photography.
Flight Altitude:	1. 7620 meters (25,000 feet) for 1:50,000 scale photography. 2. 1905 meters (6250 feet) for 1:12,500 scale photography. 3. 3811 meters (12,500 feet) for 1:25,000 scale photography
Sidelap:	Average 30% Minimum 15%
Forward Lap (End Lap):	Average 60% Minimum 55% Maximum 65%
Solar Altitude:	Minimum 40%

Cameras to be Used:
(See Paragraph 2, page 8)

1) Zeiss RMKA 15/23, Wild RC-10 152 mm the equivalent.

2) Dark yellow filters with 50% internal transmittance of 525-535 mm and above shall be used.

3) Current calibration certificates shall accompany the bid.

4) Bore sighted cameras are to be oriented and operated in such a manner that identical coverage and simultaneous exposures are taken. The cameras shall be so installed that the cameraman can correct both cameras for drift while on flight line.

5) Collimation markers (fiducials) shall be clearly recorded on the exposures.

6) A single camera malfunction while on flight line shall be sufficient cause for rejection of product from the operating camera.

Aircraft to be Used:

Pressurized project or jet capable of mounting two 152 mm (6 inch) focal length cameras and so equipped that it can navigate the flight lines to maintain the sidelap requirements. Airframe and power plant shall have sufficient remaining hours to complete project without down time for "T.B.O."

Weather Conditions:

Clear, stable air without clouds or cloud shadows.

Film to be Used:

1) Fresh stable base, fine grained panchromatic film of Kodak 2402, 2405 or its approved equivalent.

2) Color infrared Kodak 2443 or its approved equivalent.

3) Kodak Aerographic Duplicating Film 2421 or its approved equivalen

4) Aerochrome Duplicating Film 2447 or its approved equivalent.

Contact Printing Paper to be Used:	Kodachrome II Resin coated or Kodak Polycontrast rapid resin coated of the grade that best accomodates the negative contrast or its approved equivalent.
Camera Service Test: (See Paragraph 3, page 10)	1) Expose three or more consecutive exposures over the Casa Grande Test Range, Arizona for each camera and magizine to be used on the project. The flight line shall be delineated on the map to be furnished. The cameras shall be bore sighted and corrected for drift during the service test. 2) Alt: 7620 meters (25,000') AMT 3) Perform camera service test measurements and furnish control point residuals and RMS errors for all measured stations.
Line Plots:	Not required.
Photographic Indexes:	1) Photographic indexes shall be prepared for the panchromatic photography (excluding color) at a three time reduction (1:50,000,000, 1:75,000 and 1:37,500 scales). 2) Refer to Paragraph 10, page 16 for preparation of photographic indexes. Appendix VII shows detailed information required on an index. The small scale indexes shall cover an area 1 by 1. One index each shall be prepared for the larger scales photography. 3) Negatives shall be on the 7 mil thick film and prints on kind 1594 medium weight, resin-coated, water resistant base or its approved equivalent.
Check Prints:	1) Contact check prints shall be made immediately after the film is processed and negatives numbered.

2) Check prints shall be prepared as requested by Project Technical Advisor.

Check Prints:

1) Contact check prints shall be made immediately after the film is processed and negatives numbered.
2) Check prints shall be prepared as requested by Project Technical Advisor.

Titling:

1) A film titler with an automatic numbering system with pressure equalization to assure sharp, clear negatives and positive annotation without distortion shall be used.

2) Titling procedures to be used on project materials shall be prescribed by OMVG and project technical advisor. See 5(A).

Commencement Data: See contract schedule.

Photography Completion Date: See contract schedule.

Delivery Date: See contract schedule.

Facilities for USAID/OMVG Project Advisor:

1) Desk, chair and desk lamp.
2) Light table suitable for viewing aerial negatives and positives.
3) Layout table suitable for evaluation of printed flight strips.
4) Densitometer such as the Tobias Associates Model TBX or its equivalent.

Materials to be Delivered:

1) Panchromatic (black and white) products:

   a) Contact prints, resin coated - 10 each of acceptable exposures
   b) Photo indexes prints - 30 sets
   c) Duplicate photo index negatives - 3 sets
   d) All original aerial negatives exposed on the project
   e) Duplicate aerial negatives - 1 for each roll of original negatives

2) Color IR products

   a) Contact prints - 6 each of acceptable exposures
   b) Transparencies - 3 each of acceptable exposures
   c) Duplicate aerial positives - 1 for each roll of original positives
   d) All original film exposed on the project

3) All duplicate color (IR) and panchromatic film products are to be retained by the contractor until after acknowledgement of receipt of all original film products have been acknowledged by OMVG.

Available Maps for Project Area:

1) ONC k-1, 1:1,000,000 scale
2) JOG 1:250,000 scale, series 1501:
   ND 28-5
   ND 28-6
   ND 28-7
   ND 28-9
   ND 28-10
   ND 28-11
   ND 28-12
   ND 28-15
   ND 28-16
   ND 29-9
   ND 29-13

TECHNICAL PROVISIONS

SPECIFICATIONS FOR AERIAL PHOTOGRAPHY

1. DAYS SUITABLE FOR AERIAL PHOTOGRAPHY

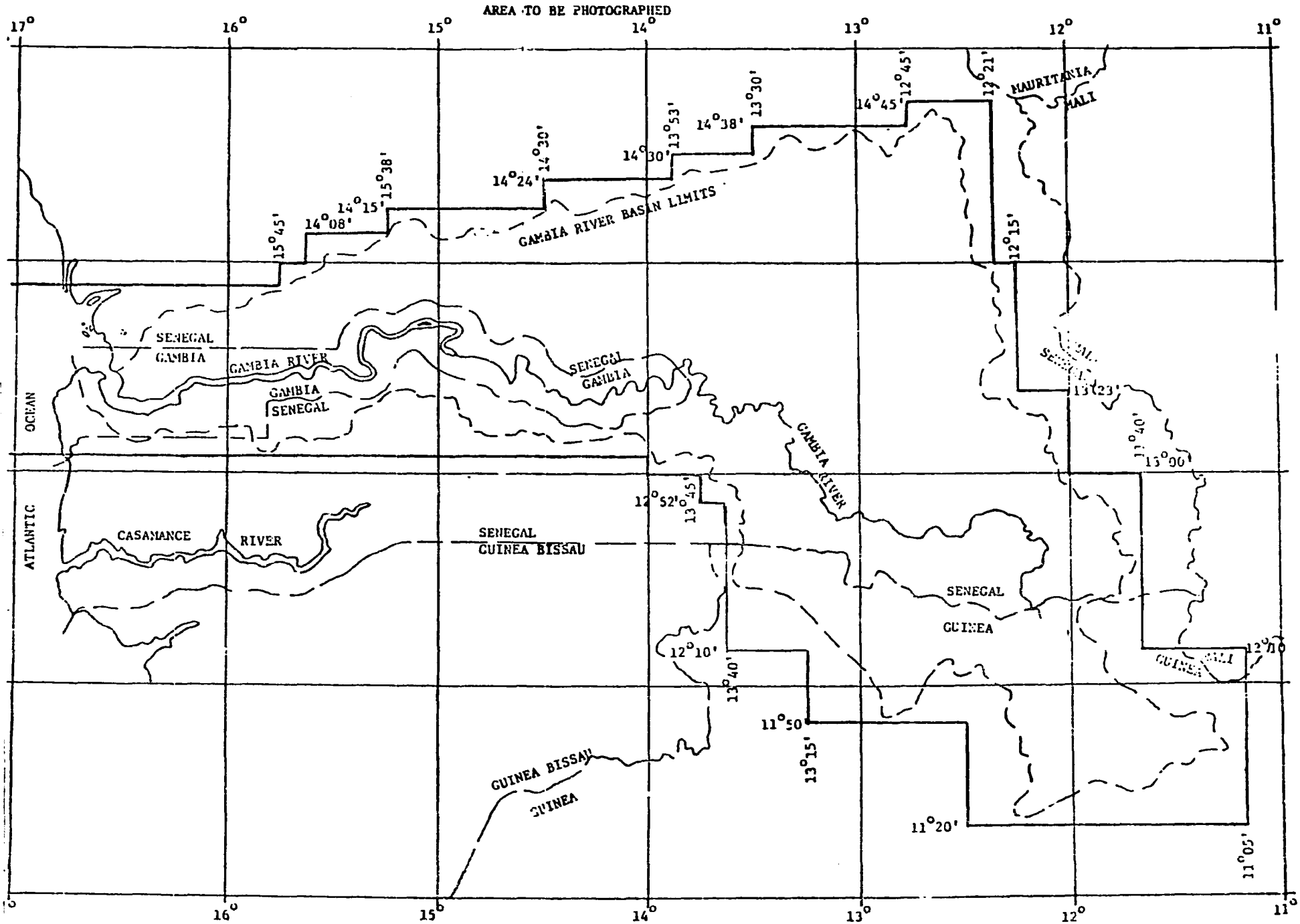
The aerial photography shall be exposed when atmospheric conditions are such that clear, well defined photographic negatives can be made. In addition, the following conditions shall be met unless modified by the SPD or the Contracting Officer's Representative.

a. The streams in the project area shall be within their normal banks.
b. The atmosphere shall be free of smoke and haze shall be at a minimum.
c. The minimum solar altitude shall be specified in the SPD.
d. The project area shall be free of snow with the exception of permanent snow fields.
e. The SPD shall state whether deciduous tree foliage is permissible.
f. Clouds or cloud shadows are not permissible.

2. CAMERA AND ACCESSORIES TO BE USED

a. Aerial photography shall be exposed with a precision cartographic aerial camera of the type specified in the Specific Project Data (SPD) to be approved by the Contracting Officer or his Representative. The camera and related accessories shall be maintained in proper working condition. The camera system shall obtain aerial photography conforming to these specifications.

b. Contractors shall furnish a current standard camera calibration certificate, prepared by the Optical Calibration Laboratory of the U.S. Geological Survey (USGS), for each camera to be used on the project. The expense of calibration shall be borne by the Contractor. The camera calibration certificate shall be no more than three years old. Each camera lens unit submitted for calibration shall be accompanied by the magazines and filters that may be used with the camera. The certificate shall be based on tests and measurements made after final assembly of all components of the camera-lens-magazine unit, with the light filter in place. The certificate shall precede or accompany the bid. The information and precision of measurement that are included in a standard USGS camera calibration certificate (Report of Calibration) is detailed in Appendix 1 - Sample of Report of Calibration.


AREA TO BE PHOTOGRAPHED
17°
16°
15°
14°
13°
12°
11°
15°45'
14°08'
14°15'
15°38'
14°24'
14°30'
14°30'
13°53'
14°38'
13°30'
14°45'
12°45'
13°21'
12°15'
13°23'
11°40'
11°00'
12°52'
13°45'
12°10'
13°40'
11°50'
13°15'
11°20'
11°05'
12°10'
GAMBIA RIVER BASIN LIMITS
MAURITANIA
MALI
SENEGAL
GAMBIA
GAMBIA RIVER
GAMBIA
SENEGAL
SENEGAL
GAMBIA
GAMBIA RIVER
CASAMANCE
RIVER
SENEGAL
GUINEA BISSAU
SENEGAL
GUINEA
GUINEA BISSAU
GUINEA
ATLANTIC
OCEAN

c. Camera and accessories shall be required to meet the following criteria and conditions:

(1) Area Weighted Average Resolution (AWAR), as measured on Type V-F Spectroscopic Plates at maximum aperture, as stated in the Report of Calibration, shall exceed the following values for the given focal length cameras:

(a) 87 mm f/1 - 40 lines/mm
(b) 152 mm f/1 - 55 lines/mm
(c) 305 mm f/1 - 40 lines/mm

(2) The absolute value of radial distortion measured at maximum aperture, as stated in the Report of Calibration, shall not exceed:

(a) 87 mm f/1 - 15 pm
(b) 152 mm f/1 - 10 pm
(c) 305 mm f/1 - 15 pm

(3) If a camera with eight fiducials or an internal or external reseau is specified, then these data shall also be calibrated and be included in the camera calibration certificate.

(4) The lines joining opposite pairs of fiducial markers shall intersect at an angle within one minute of 90°.

(5) The intersection of the lines between fiducials - the fiducial center - shall not be further than 0.030 mm from the point of autocollimation.

(6) The calibrated principal point 0 the point of symmetry - shall not be further than 0.030 mm from the point of autocollimation and fiducial center.

(7) The magazine platen shall not depart from a true plane by more than 0.013 mm.

(8) The camera shall have a between-the-lens shutter of the variable speed type. The shutter shall have a minimum efficiency of 70% at a speed of 1/200 second measured at maximum aperture.

(9) The specified glass filter with a metallic antivignetting coating shall be used. The coated surface shall be toward the camera lens. The filter shall have surfaces within ten seconds of arc verified by the camera calibration certificate. The filter shall have an optical quality that will distribute the light uniformly over the focal plane and not cause a degradation in resolution.

(10) Cameras equipped with interrupted cruciform fiducials shall have a dot in the center of the cruciform.

(11) Any disassembly or reassembly of the aerial camera, which will affect the calibration constants, shall require a recalibration.

(12) All information shown in the data recording chamber and/or negative format shall be verified, prior to photographic operations, by comparison with the camera calibration certificate. The data shall be exposed clearly on the film. Note panel information, if any, shall be determined by the Contracting Officer's Representative after award of the contract.

(13) The camera shall be mounted so that movements and vibration will not adversely affect the quality of the aerial film.

(14) If a camera window glass is used in the aircraft, then the glass shall have paralled surfaces within four seconds of arc over a testing length of 6.35 cm (2.5 inches). Ground "M" glass is an acceptable example.

(15) All fiducial marks and other marks intended for precise measurement shall be clear, well defined and in sharp focus on the aerial negatives. The standard deviation of repeated readings of the coordinates of each mark made on a comparator shall not exceed 0.002 mm.

3. CAMERA SERVICE TEST

a. A camera service test is an operational airborne service test of camera(s) and associated equipment. When required by the SPD, the contractor shall perform a service test with the camera(s) and associated equipment that he proposes to use on the project. He shall submit all material and data to the Contracting Officer and his Representative for the purpose of determining the quality of the aerial negatives. The results of the tests must, in the opinion of the Contracting Officer or his Representative, prove that the photographic equipment be suitable for precise photogrammetric purposes. The service test shall be accomplished prior to commencement of the project and at any other time during the progress of the work, regardless of prior approval, that may be deemed necessary by the Contracting Officer or his Representative. Corrections to the photographic equipment, as may be found necessary at the completion of the test, shall be made before commencing or continuing with the project. All costs of the initial and subsequent tests, shall be borne by the Contractor and no additional payment will be made.

b. The test shall consist of exposing a strip of three or more consecutive aerial photographs to test the quality of the steroscopic models. All negatives will be considered a part of the test. The test area shall be outlined on appropriate maps including exposure stations if necessary. If exposure stations are specified on the furnished maps, then the principal point of the photography shall not deviate more than 1,000 feet or as specified in the SPD. The altitude of the aircraft shall be included in the SPD. Forward overlap shall be 58% average, 55% minimum, and 62% maximum.

c. Each camera unit must be service tested.

d. The camera service test is to satisfy precise photogrammetric requirements as stated in these specifications and as further defined in the SPD.

e. The film exposed on the service test must be completely identified as to exposure number, contract designation, Contractor's name, location of test area, altitude of photography, calibrated focal length of the camera, date of photography, type and serial number of lens, cone and filter, camera number, magazine number, name of project, type and license number of aircraft, and type of glass in the camera port.

4. FLIGHT ALTITUDE

Mapping photography shall be flown at the flight altitude above mean sea level specified in the SPD. Departures from altitude shall not exceed 2% low or 3% high.

5. FLIGHT LINES

a. The number of flight lines shall be specified in the SPD. All islands, off-shore rocks, reefs and hazards to surface navigation that fall within the general area of the project shall be considered as part of the project despite their possible omission from the flight map or chart.

b. The flight lines shall be flown in the direction indicated in the SPD.

c. The flight lines shall be as straight as possible. The mean bearings of adjacent strips shall be within 5° parallel. The centers of the first and last exposures of each flight line shall fall beyond the project boundaries. The outermost flight lines shall be placed so that at least 15% of each exposure shall fall outside the project boundaries. In no case will the turn at the end of a flight line be started before all the negatives have been exposed. No photographs shall be taken while the aircraft is in a bank between the flight lines. The aircraft will be on line before the first negatives are exposed. Photographs taken on a flight line shall be continuous, consecutive exposures. However, when a flight line is broken, that end of the flight where the photography was discontinued must be covered by an overlap of at least three exposures.

d. One or more blank exposures shall separate flight lines.

6. CONTROL FLIGHT LINES

When control flight lines are specified in the SPD, the following additional requirements apply:

a. Each flight line must be continuous and unbroken throughout its length as shown on the flight map.

b. No flight line shall deviate from its flight map position by more than 5% of the specified flight height.

7. FORWARD LAP

The overlap between successive exposures in the same line of flight, or forward lap, as delineated by the image along the leading and trailing edges, shall be as stated in the SPD. The only departure in forward lap shall be in areas of extreme relief. The maximum forward lap may be exceeded as long as the minimum overlap is 53-56%.

8. SIDE LAP

The side lap between adjacent strips shall be stated in the SPD. Side lap shall be determined after all deduction for crab, tilt, relief and other factors have been considered.

9. CRAB

As measured from the line of flight, crab shall not exceed 10° between two consecutive exposures or an averages of 5° for any flight line.

10. TILT

Tilt shall not exceed 3° for any exposure. The average tilt shall not exceed 2° for any 10 consecutive exposures or 1° for the entire project.

11. IMAGE MOTION

In no case shall the ground speed in miles per hour exceed the flight height in units of thousands of feet divided by ten times the shutter speed in seconds.

12. AERIAL PHOTOGRAPHY FOR OTHOPHOTOMAPPING

When orthophotomapping photography is specified in the SPD, the following additional requirements apply:

a. Acceptance of photography shall be based on coveraged of the minimum unit area, defined in the SPD.

b. All flights over a unit area shall progress in sequence with minimum time lapse between adjacent flights.

c. All photography within a unit area shall be completed within the same flying day.

d. Rejection of any negative shall be cause for rejecting the remaining negatives providing coverage of that minimum unit area.

e. Scratches on the aerial film that are detrimental to image reproduction for orthophotography shall be cause for rejection of the entire minimum unit area. Extreme care must be taken in handling and processing the aerial film.

f. Photography shall be undertaken only between the hours of 9:30 a.m. and 2:30 p.m., local standard time, with minimum haze, and with lighting and weather conditions suitable for obtaining acceptable negatives. Exceptions to the stated time period will be made if shadow detail will enhance ground images or if reflections or hot spots will mar the imagery on the aerial negatives. Exceptions will be specified in the SPD.

13. ORIGINAL FILM QUALITY STANDARDS

a. Only fresh, fine grained, polyester base, 0.10 mm (4 mil) thickness aerial film shall be used. The film shall not be used beyond its expiration date.

b. The film must be exposed and developed under controlled sensitometric conditions to contain all highlight and shadow detail. A calibrated step wedge shall be exposed on at least one end or attached on both ends of each roll of film prior to processing and shall be delivered with the aerial film. Base plus fog of the aerial film shall not exceed 0.10 density unit. The minimum density as measured in the shadow area on the aerial negative shall be 0.3 ± 0.1 above base plus fog. Maximum density shall approach but not exceed 1.35. The density shall be measured with the densitometer having a scale range of 0 to 3.0 or more. Proper allowances will be made for extremes in density such as snow, black lava beds, etc. The film shall be processed to a gamma of 1.2 ± 0.4.

c. The negatives shall be sharp in detail, fine grained, and free of clouds and cloud shadows, smoke, haze, light streaks, static marks, excessive snow, tears, scratches, dirt, water marks, and other detrimental defects. The photography shall be rejected by the Contracting Officer's Representative if it is not suited for its intended purpose.

d. After processing and drying, the negatives shall not show a differential change in dimensions of more than 0.1 millimeter. Differential change in film dimension shall be determined by comparing the focal place dimensions as given in the Camera Calibration Report with the dimensions as determined by measuring between the same points as recorded on the film.

e. Storage of raw and processed film shall be governed by the manufacturer's specifications.

14. DUPLICATE FILM

a. The film must be exposed and developed, under controlled sensitometric conditions, to contain all highlight and shadow detail of the original film. A calibrated step wedge shall be exposed

on at least one end or attached on both ends of each roll of film prior to processing and shall be delivered with the film. Base plus fog shall not exceed 0.2 density unit. The density as measured in the shadow area shall be 0.3 ± 0.1. The film shall be processed to a gamma of 1.2 ± 0.20.

b. The quality standards for Original Film, paragraph 13.a., c., d., and e., apply to duplicate film.

15. RESIDUAL SILVER TEST

A residual silver test shall be performed on all film processed to assure thorough fixation. The test shall be performed on the emulsion side in a clear area of the processed film. A test solution, the equivalent to Kodak Residual Silver Test Solution ST-1, shall be used. Negative test results shall be cause for rejection. The test shall remain a part of the roll for delivery to the Contracting Officer's Representative.

16. ARCHIVAL ASSURANCE TEST

The thoroughness of film wash to assure archival quality, shall be performed by a Hypo patch test solution equivalent to the Kodak Hypo Estimator and Kodak test solution HT-2. The patch test shall be performed on the emulsion side in a clear area of the processed film. Negative test results will be a cause for rejection. The patch test shall remain part of the roll for delivery to the Contracting Officer's Representative.

17. FILM ROLLS

a. A roll of film is defined as a continous length of film exposed in a single camera and/or lens cone combination on a specific project. All exposures made on a project shall be retained on the film rolls.

b. All film rolls shall have a leader and trailer of clear film, each 1.14 meters (45 inches) long. If a splice is necessary to provide the required length of leader and trailer, then the splice shall not be less than 25.4 cm (10 inches) from the first and/or last useable exposure. The thickness of the leader and trailer shall be the same as the exposed film. Splices for leader or trailer are the only splices permitted in a roll.

c. Short rolls of film may be spliced together for spooling, but they shall not lose their identity as separate rolls.

18. TITLING

a. Each roll of film shall be numbered in consecutive order beginning with number one.

b. Each exposure, accepted or rejected, shall be numbered in consecutive order starting with exposure number one on roll number one, and the numbering shall continue in consecutive order throughout the project.

c. A strip is defined as a succession of overlapping aerial photographs taken along a single heading. Each strip shall be numbered in consecutive order starting with strip number one and the numbering shall continue in consecutive order throughout the project. One or more blank exposures shall separate strips.

d. When the exposure is oriented to a base map and the upper edge of the photo is oriented north, then the exposure number will be placed in the upper left hand corner on North-South flights and the lower left hand corner on East-West flights. For purposes of this provision, flight directions with compass headings between 315° and 45°, and 135° and 225° shall be defined as north-south flights. All other flight directions shall be deemed as east-west flights.

e. The exposures shall be numbered with figures not less in size than 12 PT type. The exposure number shall be placed in the appropriate corner (explained in previous paragrph) 3 mm (1/8") from the bordering edges within the exposed portion of the negative.

f. The titling data required on the first and last exposure of each continuous strip of photography shall be shown as indicated in Appendix II and shall be lettered outside the exposed portion of the film (on the clear strip of film between exposures). The letters shall be placed adjacent to the applicable exposure edge. Only the exposure number shall appear within the limits of the exposed portion of the film. Each item must be so spaced as to set it apart from the other items. The required information shall be placed as shown in Appendix II.

g. All exposures, except the first and last in a strip, shall have the titling data arranged in the same manner as outlined in the previous paragraphy, but shall exclude Greenwich mean time, geographic coordinates and strip number.

h. All titling data shall be in upper case letters, not less in size than 10 PT.

i. Explanation of Camera Position, Item Number 2, in Appendix II: This entry identifies the position of the camera(s). Cameras will be numbered from nose to tail along the line of flight and where two are side by side, the port (left) camera will be numbered first. The following symbol will be used to indicate camera position: "V" - Vertical. The letter "V" will be preceded by a numeral IV to indicate the first vertical camera, and 2V to indicate a second vertical camera.

j. Explanation of Item Number 7 in Appendix II:

S - Surveying and Mapping Photography, first or highest order of accuracy

C - Photography for charting, photo revision or for any purpose when first order accuracy is not required.

k. All other items are self explanatory.

l. Stamping machines or devices, mechanical lettering guides, or freehand lettering shall be used for numbering and titling the negatives. The film shall not be distorted by titling. The titling shall be legible and of a permanent nature. The titling shall not obliterate fiducial markers. The methods of titling shall be approved by the Contractin Officer's Representative.

m. The leader and trailer of each roll of film shall be titled as shown in Appendix III. The titling shall be applied on the base side of the film.

n. The container for each roll of film shall be labeled by affixing a completed typewritten Final Film Log. Also, a copy of the log will be placed inside the container. (See Appendix IV.)

19. LINE PLOTS

a. A project line plot shall be prepared by the Contractor, of all exposed photography. Separate plots shall be made for accepted and rejected photography (See Appendixes V and VI). Separate line plots shall be made when project requires more than one focal length camera or more than one altitude. The photography shall be plotted on a stable, transparent medium, measuring 61 cm by 76 cm (24 inches by 30 inches), keyed to the maps furnished the Contractor.

b. Geographic coordinates shall be placed in the corners of the line plot. The coordinate values shall be to the nearest minute of latitude and longitude. A north arrow shall be placed on the plot.

c. The first and last exposure of a flight line, or portion of a flight line, shall be plotted, connected with a straight line. Flight lines entering or leaving a plot sheet shall be marked with an arrow to indicate direction of flight.

d. The ends of each flight line shall be indicated by a square. The size of the square shall be the area covered by an exposure on the base map. Within each square the exposure number shall be recorded. In addition, the first plotted exposure on each flight line shall be identified with the strip and roll numbers.

e. Exposure numbers shall be lettered perpendicular to the line of flight. Strip and roll shall be lettered parallel to the flight line.

g. The following information shall be recorded in two columns across the top of each plot:

(1) Column One:

(a) Item 1, Project Name and Number
(b) Item 2, Area Number (if more than one area)
(c) Item 3, Contractor and Code
(d) Item 4, Type of Photography. Indicate attitude of camera (such as, vertical, low or high oblique), general type of film used (such as, panchromatic, infrared, color, or color infrared) and purpose of photography (such as, mapping or reconnaissance).

(2) Column Two:

(a) Item 5, Altitude
(b) Item 6, Scale of Photography
(c) Item 7, Map Reference and Scale

20. PHOTOGRAPHIC INDEXES

a. The contractor shall deliver the indexes required as stated in the Specific Project Data under Materials to be Delivered.

b. Scale of Photographic Indexes:

(1) Single focal length camera operation — one/fifth the scale of the photography.

(2) Multiple focal length camera operation

(a) 152 mm focal length photography — one/fifth the scale of the photography.
(b) 85-88 mm focal length photography — scale and coordinates equal to 152 mm photography.
(c) 305 mm photography — one/fifth the scale of the photography.

c. The index shall be prepared by photographing an assembly of contact prints with trimmed edges. The prints shall be laid to match corresponding images with successive strips and prints within a strip. This assembly is then photographically reduced and a print from the negative constitutes the photographic index.

d. Numbering of Prints in a Photographic Index:

(1) Black numbers on a white rectangular tag shall be used to identify the prints.

(2) The numbers shall be legible on the final photographic index.

(3) The numbers shall be placed on the first, every fifth, and last exposures of each strip.

Form 9-1780
(rev. 8-75)

APPENDIX I

USGS Report No. WA-W/450

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

10 January 1979

SAMPLE

REPORT OF CALIBRATION

of Aerial Mapping-Camera

Camera type	Zeiss RMK A 15/23	Camera serial no.	118498
Lens type	Zeiss Pleogon A4	Lens serial no.	119064
Nominal focal length	153 mm	Maximum aperture	f/4
		Test aperture	f/4

Submitted by: Global Air Surveys, Inc.
Syracuse, Maryland 20543

Reference: Global Air Surveys Purchase Order No. W6852, 27 December 1978.

These measurements were made on Kodak micro flat glass plates, 0.25 inch thick with spectroscopic emulsion type V-F Panchromatic, developed in D-19 at 68°F for 3 minutes with continuous agitation. These photographic plates were exposed on a multicollimator camera calibrator using a white light source rated at approximately 3500K.

I. Calibrated Focal Length: 153.126

This measurement is considered accurate within

SAMPLE

II. Radial Distortion:

Field angle (degrees)	$\bar{D}_c$	D_c for azimuth angle 0°A-C m	90°A-D m	180°B-D m	270°B-C m
7.5	-2	-1	0	-2	-1
15	-1	-2	-4	-3	0
22.5	0	1	0	2	1
30	3	0	-2	1	4
35	1	4	5	0	2
40	2	3	2	6	3

The radial distortion is measured for each of 4 radii of the focal plane separated by 90° in azimuth. To minimize plotting error due to distortion, a full least-squares solution is used to determine the calibrated focal length. $\bar{D}_c$ is the average distortion for a given field angle. Values of distortion D_c based on the calibrated focal length referred to the calibrated principal point (point of symmetry) are listed for azimuths 0°, 90°, 180°, and 270°. The radial distortion is given in micrometres and indicates the radial displacement of the image from its ideal position for the calibrated focal length. A positive value indicates a displacement away from the center of the field. These measurements are considered accurate within 5 µm.

III. Resolving power in cycles/mm Area-weighted average resolution

Field angle:	0°	7.5°	15°	22.5°	30°	35°	40°
Radial lines	145	145	134	95	81	66	55
Tangential lines	145	142	120	82	67	57	46

The resolving power is obtained by photographing a series of test bars and examining the resulting image with appropriate magnification to find the spatial frequency of the finest pattern in which the bars can be counted with reasonable confidence. The series of patterns has spatial frequencies from 5 to 268 cycles/mm in a geometric series having a ratio of the 4th root of 2. Radial lines are parallel to a radius from the center of the field, and tangential lines are perpendicular to a radius.

IV. Filter Parallelism

The two surfaces of the B No. 116264, D No. 116444, and C-F No. 116021 filters accompanying this camera are within ten seconds of being parallel. The D filter was used for the calibration.

V. Shutter Calibration

Indicated shutter speed	Effective shutter speed	Efficiency
1/200	3.6ms = 1/250 s	80%
1/400	1.8ms = 1/500 s	80%
1/600	1.3ms = 1/750 s	80%
1/800	1.0ms = 1/1020 s	78%
1/1000	0.9ms = 1/1280 s	78%

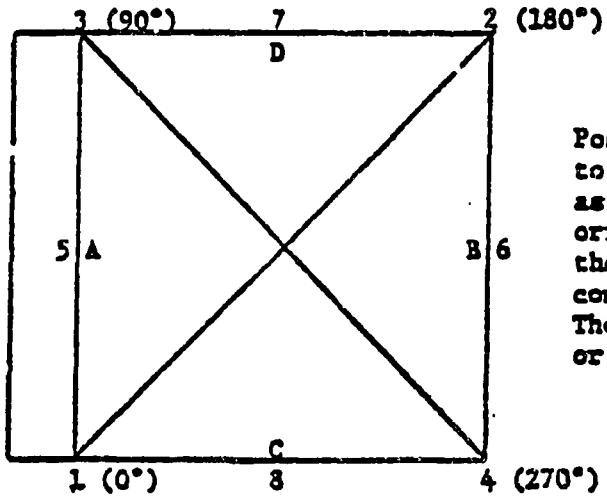
The effective shutter speeds were determined with the lens at aperture f/ The method is considered accurate within 3%. The technique used is Method I described in American National Standard PH3.48-1972.

VI. Magazine Platen

The platen mounted in FX 24/116 film magazine No. 126001 does not depart from a true plane by more than 13 μm (0.0005 in).

(2 of 4)

VII. Principal Point and Fiducial Coordinates



Positions of all points are referenced to the principal point of autocollimation as origin. The diagram indicates the orientation of the reference points when the camera is viewed from the back, or a contact positive with the emulsion up. The direction-of-flight fiducial marker or data strip is to the left.

	X coordinate	Y coordinate
Indicated principal point, corner fiducials	0.001 mm	-0.001 mm
Indicated principal point, midside fiducials	0.002	0.003
Principal point of autocollimation	0.0	0.0
Calibrated principal point (point of symmetry)	0.000	0.000

Fiducial Marks		
1	-103.948	-103.936
2	103.940	103.921
3	-103.946	103.932
4	103.950	-103.939
5	-112.991	0.004
6	112.985	0.001
7	0.000	113.009
8	0.001	-112.989

VIII. Distances Between Fiducial Marks

Corner fiducials (diagonals)

1-2 293.966 mm 3-4 293.993 mm

Lines joining these markers intersect at an angle of 90° 00' 16"

Midside fiducials

5-6 225.985 mm 7-8 225.989 mm

Lines joining these markers intersect at an angle of 90° 00' 04"

Corner fiducials (perimeter)

1-3 207.878 mm 2-3 207.871 mm

1-4 207.878 mm 2-4 207.869 mm

The method of measuring these distances is considered accurate within 0.005 mm.

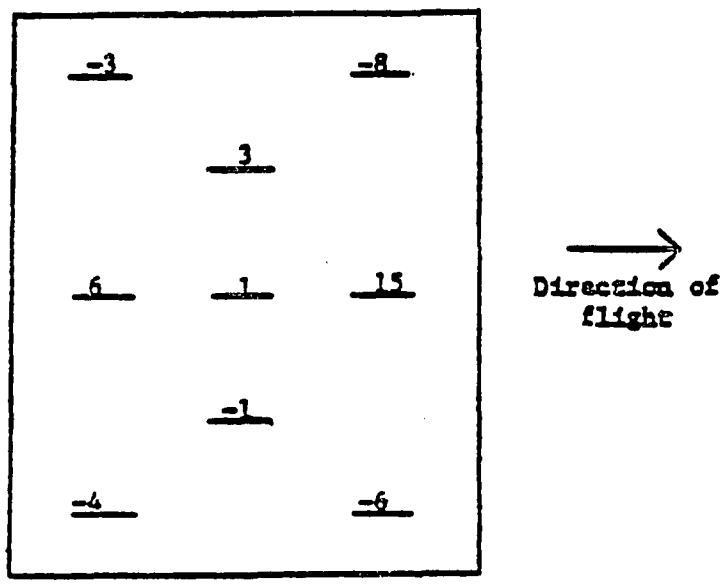
USGS Report No. WA-W/450

STEREOMODEL FLATNESS TEST AND FILM RESOLUTION

Camera No. 118498 Lens No. 119064 Magazine No. 126001

Focal length 153.126 Maximum angle of field tested 40°

Base-height ratio 0.6 Accuracy of determination 5um



Stereomodel
Test point array
(values in micrometres)

The values shown on the diagram are the average departures from flatness (at negative scale) for two computer-simulated stereomodels based on comparator measurements on contact glass (Kodak micro flat) diapositives made from Kodak 2405 film exposures.

Resolving Power, in cycles/mm Area-weighted average resolution 44.1
Film: Type 2405

Field angle:	0°	7.5°	15°	22.5°	30°	35°	40°
Radial lines	82	68	58	46	39	38	32
Tangential lines	82	68	58	46	39	33	26

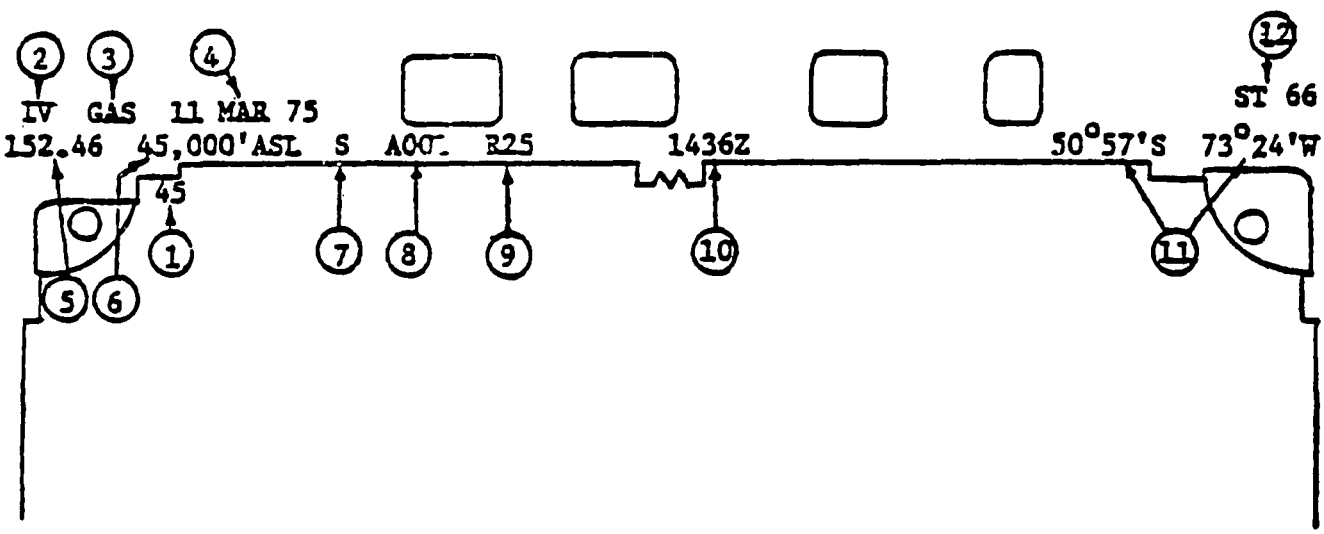
William P. Tayman
Branch of Research and Design
Topographic Division

APPENDIX II

SAMPLE ARRANGEMENT OF TITLING DATA TO BE PLACED ON AERIAL EXPOSURES

1. Exposure Number
2. Camera Position
3. Photographic Organization (Code to be assigned by Contracting Officer)
4. Date Photography Flown
5. Calibrated Focal Length (MM)
6. Altitude (ASL)
7. Type of Photography
8. Project Number (to be assigned by Contracting Officer)
9. Roll Number
10. Greenwich Mean Time
11. Geographical Coordinates of Center of Exposure
12. Strip Number

Items 1 through 12 appear on the first and last exposure of each continuous strip. Items 1 through 9 appear on each exposure.



APPENDIX III
SAMPLE OF LEADER AND TRAILER FOR EACH ROLL

PROJECT NAME Americas

PROJECT NUMBER 74-1

PHOTOGRAPHIC ORGANIZATION Global Aerial Surveys (GAS)

KIND OF PHOTOGRAPHY Surveying and Mapping (s)

ALTITUDE (FT.) 45,000' ASL

DATE(S) FLOWN 11 Mar 1975

MISSION NUMBER 74-1

ROLL NUMBER 1, 2

CAMERA POSITION IV

CAMERA TYPE RMK A 15/23 SERIAL NO. 21220

LENS TYPE Pleogon A SERIAL NO. 98183

FOCAL LENGTH (MM) 152.46

FILTER Minus Blue

MAGAZINE TYPE Zeiss SERIAL NO. 54-398

FILM Kodak Aerographic Plus X 2402

ACCEPTED EXPOSURES 1 TO 94, 100 TO 144

149 TO 194, ___ TO ___, ___ TO ___

___ TO ___, ___ TO ___, ___ TO ___

REJECTED EXPOSURES 95 TO 99, 145 TO 148

___ TO ___, ___ TO ___, ___ TO ___

___ TO ___, ___ TO ___, ___ TO ___

SECURITY CLASSIFICATION Unclassified

APPENDIX IV
SAMPLE

FINAL FILM LOG

PROJECT NAME	PROJECT NUMBER	ROLL NUMBER
AMERICAS	74-1	1 & 2

FLYING ORGANIZATION	APPROXIMATE PHOTO SCALE
GLOBAL AERIAL SURVEYS	1/90,000

CAMERA DATA

	1.	2.	3.
TYPE CAMERA & SERIAL NUMBER	RMK A 15/23 21220		
LENS SERIAL NUMBER	Pleogon 98183		
CALIBRATED FOCAL LENGTH	153.46 mm		
MAGAZINE SERIAL NUMBER	54-398		
MAGAZINE SERIAL NUMBER			

The following data will be based on the first and last exposure of each strip listed below and enclosed in this can of film.

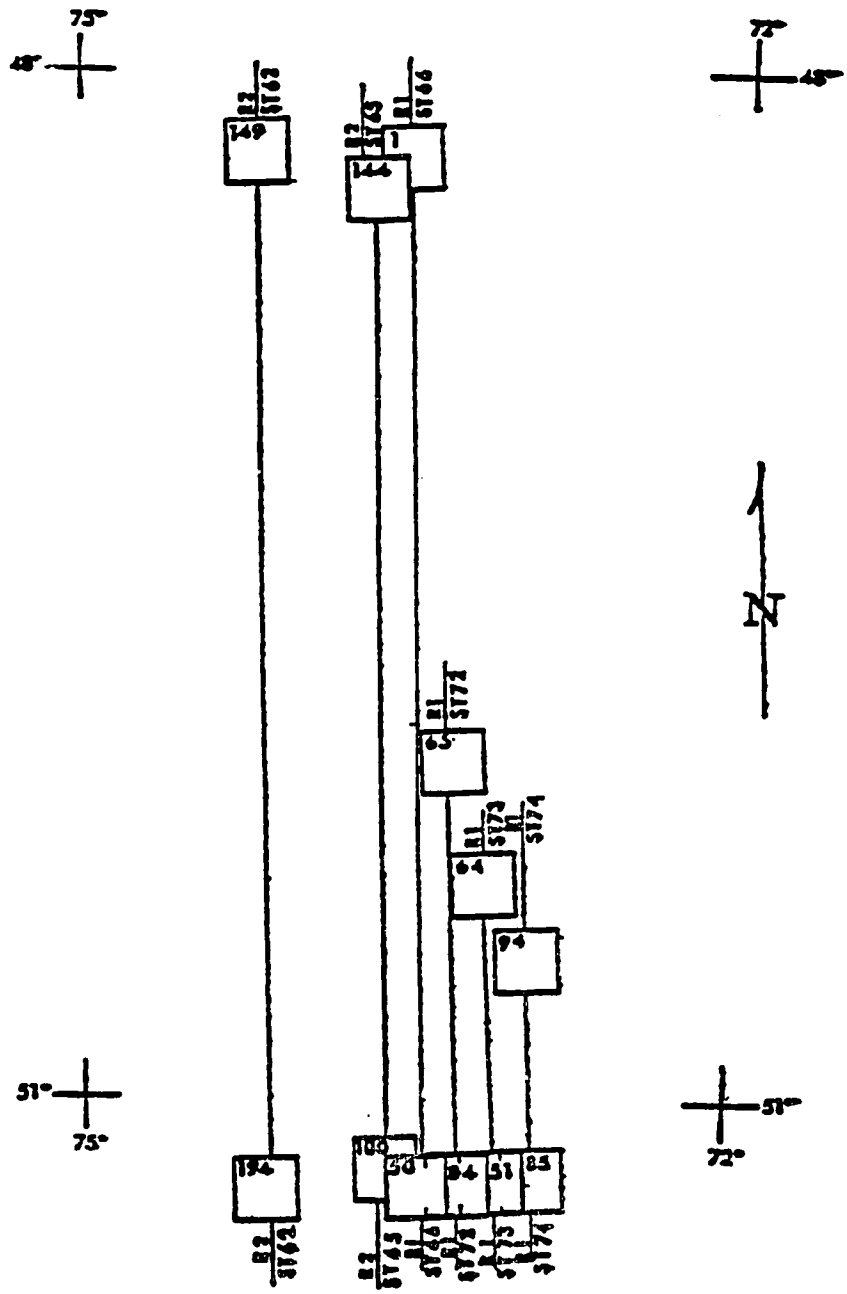
STRIP NUMBER	MISSION NUMBER	EXPOSURE NUMBER	DATE FLOWN	APERTURE	SHUTTER SPEED	ALTITUDE ASL	TIME OF DAY (Z)	GEOGRAPHIC COORDINATES OR LOCATION NAME
FIRST 66	008	1	11 Mar 75	f 8	1/300	45,000	1414	48°15'S 73°30'W
LAST		50					1438	51°19'S 73°24'W
FIRST 73		51	11 Mar 75	f 8	1/300	45,000	1446	50°24'S 72°06'W
LAST		64					1453	51°17'S 73°06'W
FIRST 72		65	11 Mar 75	f 8	1/300	45,000	1500	50°02'S 73°16'W
LAST		84					1510	51°16'S 73°15'W
FIRST 74		85	11 Mar 75	f 8	1/300	45,000	1516	55°22'S 72°55'W
LAST		99					1524	51°16'S 72°54'W
FIRST 65		100	11 Mar 75	f 8	1/300	45,000	1640	51°17'S 73°35'W
LAST		148					1703	48°12'S 73°40'W
FIRST 62		149	11 Mar 75	f 8	1/300	45,000	1711	48°16'S 74°11'W
LAST		194					1734	51°18'S 74°07'W
FIRST								
LAST	Accepted Exposures: 1-94, 100-144, 149-194.							
FIRST	Rejected Exposures: 95-99, 145-148							
LAST								
FIRST								
LAST								

DD FORM 1 JAN 65 1516

APPENDIX V
SAMPLE LINE PLOT

PROJECT NAME & NO. AMERICAS 74-1
AREA: 2
CONTRACTOR: GLOBAL AERIAL SURVEYS
TYPE OF PHOTOGRAPHY: VERTICAL, PAN-CHROMATIC, MAPPING

ALTITUDE: 45,000' ASL
SCALE OF PHOTOGRAPHY: 1:90,000
MAP REFERENCE & SCALE: ONC T-18, ONC S-21 1:1,000,0



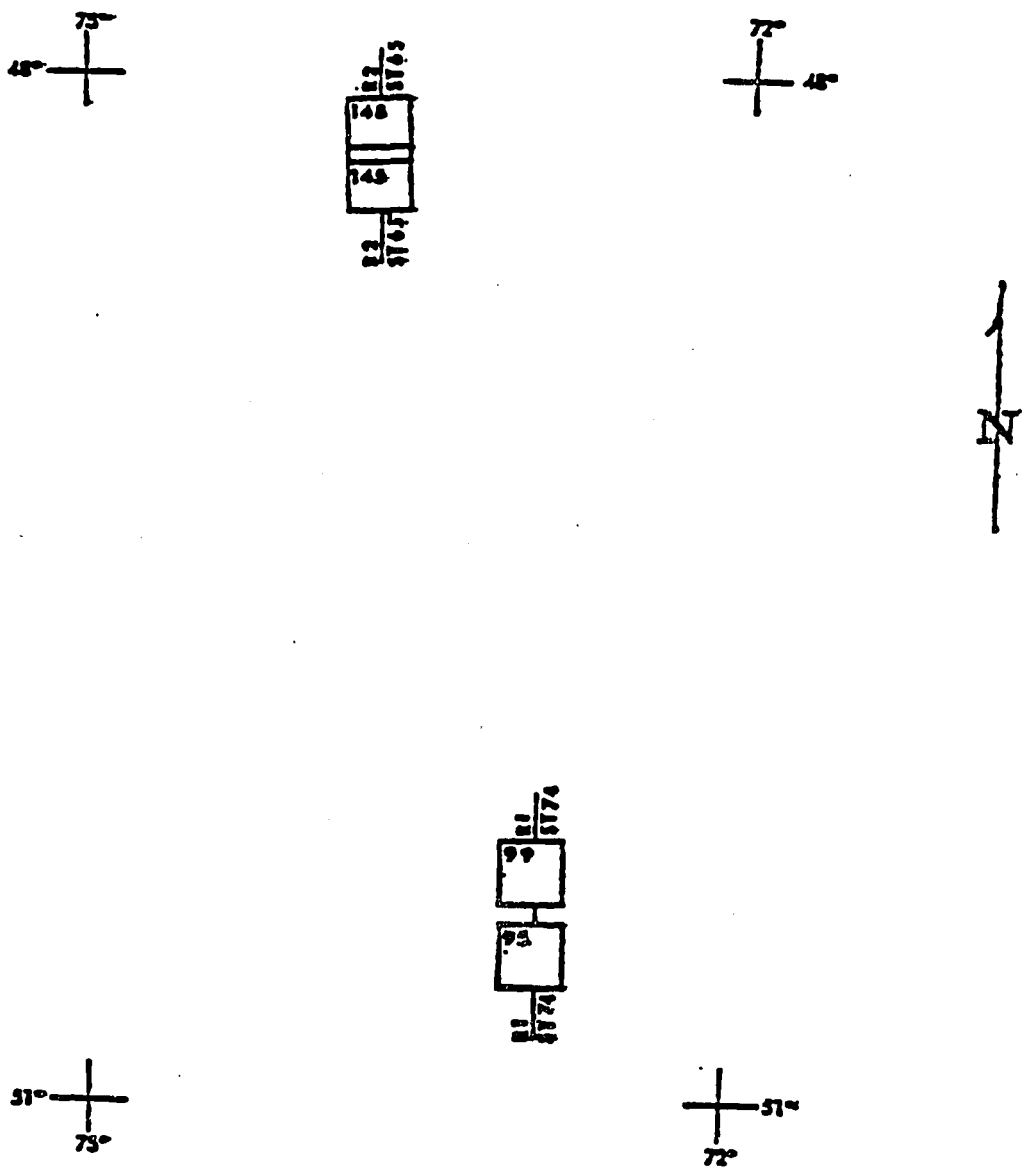
AREA 2: ACCEPTED PHOTOGRAPHY

CAMERA TYPE: ZEISS RMK A 15/23				FOCAL LENGTH: 152.46mm		
ROLL	STRIP	EXPOSURE NUMBER	DATE FLOWN	CAMERA NUMBER	LENS NUMBER	MAGAZINE NUMBER
1	66	1-50	11 Mar 75	21220	98183	54-398
	73	51-64				
	72	65-84				
	74	85-94				
2	65	100-144	11 Mar 75	21220	98183	54-398
	62	149-194				

APPENDIX VI
SAMPLE LINE PLOT

PROJECT NAME & NO. AMERICAS 74-1
AREA : 2
CONTRACTOR: GLOBAL AERIAL SURVEYS
TYPE OF PHOTOGRAPHY: VERTICAL, PAN-CHROMATIC, MAPPING

ALTITUDE: 45,000' ASL
SCALE OF PHOTOGRAPHY: 1 :90,000
MAP REFERENCE & SCALE: ONC T-18, ONC S-21 1 :1,000,000



AERA 2: REJECTED PHOTOGRAPHY

CAMERA TYPE: ZEISS RMK A 15/23				FOCAL LENGTH: 152.16 mm		
ROLL	STRIP	EXPOSURE NUMBERS	DATE FLOWN	CAMERA NUMBER	LENS NUMBER	MAGAZINE NUMBER
1 2	74 65	95-99 145-148	11 Mar 75	21220	98183	54-398

APPENDIX VII

SAMPLE

INFORMATION TO BE INCLUDED IN PHOTO INDEX TITL.

AMERICAS

PROJECT NO, 74-1

AREA - 2

Aerial Photography By:

GLOBAL AERIAL SURVEYS (GAS)

For:

DEFENSE MAPPING AGENCY
TOPOGRAPHIC CENTER

Approximate scale of Photography

1 :90,000

Approximate Scale of Index

1 :270,000

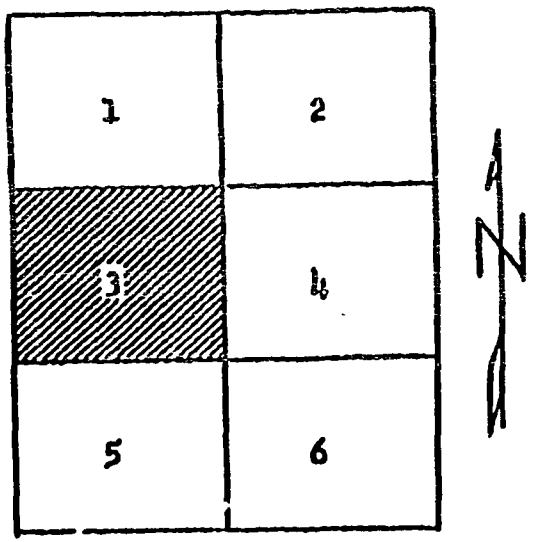
RMK A 15/23 Camera Nos, 21220

Pleogon A Lens Nos, 98183

Calibrated Focal Length 152.46 mm

Magazine Nos, 54-398

INDEX TO SHEETS



SHEET 3 of 6

EXPOSURES USED IN INDEX

Strip	Roll	Exposure No.	Date
66	1	1-50	11 Mar 75
73	1	51-64	"
72	1	65-84	"
74	1	85-94	"
65	2	100-144	"
62	2	149-194	11 Mar 75

EXPOSURES OMITTED FROM INDEX

Strip	Roll	Exposure No.	Date
74	1	95-99	11 Mar 75
75	2	145-148	11 Mar 75

ANNEX G

2. ENVIRONMENTAL AND SOCIO-ECONOMIC STUDIES

2. Environmental and Socio-economic Studies

A. Introduction

This component of the project is to be undertaken by contract to a university, university consortium, private consultant or other qualified organization. The work to be performed will be carried out in phases under the guidelines set forth below. At the conclusion of each phase the contractor will submit a report to OMVG and USAID which will contain findings of the preceding phase and a detailed work plan for the succeeding phase. Where findings so indicate, the report should contain feedback and recommendation for redirection or modification of studies as proposed in the guideline. Such recommendations should include sufficient justification for any deviation or for proposed new studies. A rationale for establishing priorities should be part of the report. Each report will be reviewed by the USAID provided technical assistants and other OMVG personnel for consistency with planning and implementation needs and schedules.

The environmental and the socio-economic studies are to be carried out under the terms of a single contract. Such a procedure will help to ensure that the interrelation between the two studies is adequately respected and that their integration is complete. While it is expected that separate teams with appropriate disciplines will be involved, it is of the utmost importance that data collected is compatible and that analysis of impacts and mitigation potentials clearly explores possible tradeoffs between environmental and socio-economic objectives.

Phase I:

The contractor will prepare a detailed work plan for the environmental studies and socio-economic studies. This work plan will include the identification of secondary data and the priority needs for new data collection. Analytical methods proposed for this study will be described in detail. Highly sophisticated mathematical models should be avoided if possible; however, the analytical framework proposed should fully reflect the interaction of the physical, biological and socio-economic environments. Full consideration should be given to coordination and compatability with other studies ongoing in the basin. After review and concurrence by OMVG and USAID, funds will be released for the second phase.

Phase II:

This phase will consist of data collection and preliminary andlysis of impacts and mitigation proposals. At the end of this phase a preliminary report will be provided for review by OMVG.

At that time, the OMVG, member states and donors will be able to consider the preliminary impacts of development proposals such as the anti-salinity barrage and Kekreti dam.

Phase III:

This phase will give OMVG, member states and donors the opportunity to revise their program and/or devise further mitigating measures which would be analyzed with the contractor. The contractor team will provide the terms of reference for further studies they identify which will certainly include environmental impacts, resettlement options, land use patterns, pastoral vs. sedentary population issues, etc.

B. Environmental Studies

Introduction

Proposed water resource developments in the Gambia River Basin will impact on the total environment and therefore affect the utilization of the natural resources of the basin. If modern basin management is to be employed in developing the basin, it is necessary to determine the changes in the physical and biological environments and their relation to the social environment. Beneficial impacts should be ascertained so that they can be optimized and recognized as countering negative impacts. Negative impacts on the environment will result in limitations to future utilization of natural resources as well as social costs.

Both Senegal and The Gambia have given priority to completion of the feasibility studies of the salinity barrage at the Yelitenda site in The Gambia and the Kekreti dam in Senegal. However, donors may insist on the initiation of environmental impact studies with the view to establishing mitigating and impact control measures. It is within this framework that OMVG has requested that certain environmental studies be carried out in the Gambia River Basin as one component of the AID project.

Purpose

A major purpose of the environmental studies is to collect and develop necessary baseline information and to determine the environmental impacts that will likely be caused by the construction and operation of the salinity barrage. The barrage will have two major uses: (1) to provide a fresh water reservoir for irrigation and (2) to provide vehicular access across the river. At present, irrigation projects are being considered to irrigate 24,000 hectares of rice in The Gambia and 6,000 hectares in Senegal. The potential impacts of these projects are to be examined as part of the environmental study.

A second major purpose is to collect and develop baseline information in the upper basin (primarily in Senegal Oriental) and to evaluate the potential environmental impacts of the Kekreti project. There are less data available for this area of the basin and the probable facilities and water uses of the project are less well defined than those for the salinity barrage. Therefore, the greater emphasis in this area will be in determining what baseline data already exists and in collection of key data which is still needed; the evaluation of impacts will be at a preliminary level only.

Technical Assistance Personnel

The environmental impact study will require one full-time technical assistance specialist on permanent assignment to the OMVG. This specialist, provided under a personal services contract with AID, may be an expert in one phase of ecology but should have broad experience in dealing with a variety of environmental problems and studies. This environmental specialist will be assigned to OMVG by February 1982 and will remain throughout the entire project. A job description for this specialist may be found in section 3 of Annex G.

Activities

These studies will cover three different types of environmental surveys:

1. River Resources
2. Public Health
3. Wildlife-Vegetation

It will be the responsibility of the contractor to integrate the reports from the three separate studies into a single report. The technical assistance environmentalist, as a representative of the OMVG, will oversee the activities of the contractor and will provide direction as necessary.

1. River Resources Survey

a. Background for the Study Activities

Due to the lack of basic information on the biological characteristics of the Gambia River, an assessment at present of the impacts that may be associated with the water resources projects may be too general. This lack of baseline data has led previous missions, and now the OMVG itself, to give the River Resources Survey the highest priority. It is anticipated that this survey will take approximately 15 months to complete, as field data should be obtained in both the wet (July-September) and the dry (November-May) seasons.

One year is allowed for field work and 3 months for data analysis and report preparation. This survey will cover the Gambia River from its interaction with the Atlantic Ocean up to the Kekreti project site - including the area that is to be irrigated. The contractor shall provide personnel, equipment and logistical support necessary to perform the activities described under the Scope of Work. It is possible that a suitable laboratory boat for river sampling and analysis work will be needed. Due to the lack of eating and sleeping accomodations along the river, it is recommended that the boat be large enough to sleep the survey team as well as contain the necessary equipment for the physical and chemical analysis of the river. Smaller boats or canoes will allow the staff flexibility in moving between sampling points and the laboratory boat. While preparing its technical proposal, the potential contractors should examine whether a mobile land-based camp may be more cost-effective. This scheme was used for the environmental study in the Senegal river basin with success.

b. Scope of Work

The scope of work for the River Resources Survey will consist of seven separate components: (a) determination of already gathered existing data and collection of baseline data, (b)outline the ecology of the river, i.e. the interaction among the river life forms and between them and their natural environment, (c) analysis of the major impacts on the river ecology that will be caused by the salinity barrage and the potential irrigation projects, (d) the recommendations of mitigative measures tc reduce adverse impacts of the barrage and the irrigation projects, and (e) a preliminary evaluation of the impacts on the river ecology that might be caused by the Kekreti project, (f) impact of the salinity barrage on West African marine fisheries, especially in light of other salinity barrages on other major West African rivers, and (g) an indication of further studies which may need to be conducted along with relative need for these studies.

(1) The baseline data to be collected shall consist of the following:

(a) The general physical and chemical characteristics of the river including but not limited to dissolved oxygen, temperature, PH, salinity, suspended solids, biological oxygen demand (5-day BOD), and nutrients;
(b) The fish populations, including types, sizes, and migration patterns;
(c) The approximate number and types of algae and othe acquatic plants;
(d) The approximate number and types of plankton;
(e) Crustacean and mollusk populations, with an emphasis on shrimp, including types, sizes and migration patterns.

(2) It can be expected that the barrage will affect the existing ecological patterns in the river. After the collection of

the above baseline data, the impacts of the barrage shall be projected. Additionally, the impacts of pesticides and fertilizer that will be associated with the potential irrigation projects should be analyzed. To expand the usefulness of the impact analysis it should be expressed in both ecological and economic terms. These analyses will compose the second requirement of the river resources survey. The analysis of impacts will require interaction with the socio-economic study team and the contract will clearly indicate this.

(3) Once the baseline data are developed and the impact analyses have been finalized, the survey team shall recommend mitigative measures to reduce adverse effects which may be associated with the construction and operation of the barrage and the irrigation projects.

(4) The preliminary evaluation of the impacts on the river ecology that might be caused by the Kekreti project will use the baseline data for the area that was collected under item (1) and also the information available from the feasibility studies of the project at the time of the evaluation.

(5) The impact of the salinity barrage on marine fishries must also be projected. Other studies of salinity barrages have indicated that disruption of brackish spawning grounds may have a severe impact on marine fish. The contractor will evaluate this impact with a regional viewpoint in view of other projects of a similiar nature on the West African coast.

c. Personnel

The team selected to carry out the river resources survey could include personnel with the following specialties: fisheries biology, aquatic biology, marine biology, aquatic ecology, aquatic vegetation, water resources, and water quality. A team could be organized but may not be limited as follows:

1. Fisheries Biologist/Project Manager, who will have overall responsibility for the survey project.
2. Ichthyologist/Aquatic Biologist, who will be in charge of fish identification.
3. Aquatic Vegetation/Aquatic ecologist who will be in charge of plankton (including algae) analysis and aquatic vegetation.
4. Water Chemist/Limnologist, who will be in charge of physical and chemical analysis of the river.
5. Marine Biologist, who will be in charge of the crustacean and mollusk sampling and analysis, and marine fish.
6. Fishery Biologist/Aquatic Biologist, who will have primary responsibility for river resources survey in Senegal Oriental.
7. Fisheries Economist, who will determine economic impacts.

This team shall be supported and assisted by other personnel

as may be required. The team will reside in Banjul.

2. Public Health Impact Survey

a. Background for the Study Activities

Situation in The Gambia. Due to the environmental conditions that exist in the proposed barrage area, water-related human diseases are already endemic. The two principal water-related diseases are malaria and schistosomiasis (bilharzia). It can be expected that, with the proposed impounded fresh water behind the barrage and the proposed irrigation using water from the reservoir, the incidence of malaria and schistosomiasis in the human population will increase. Because of the seriousness of these two diseases, it is important that the impact of the proposed projects on human health be projected. While it seems reasonable to expect the incidence severity of malaria and schistosomiasis to be adversely affected by dam construction, the possibility that transmission of other diseases may also be enhanced must be considered. Consequently, as part of the environmental study a public health impact study will be carried out.

Situation in Senegal. Personnel of the Ministry of Public Health in Senegal describe the major disease and public health concerns as onchoceriasis, schistosomiasis, and nutrition, with a strong emphasis on the problem of oncho. Onchoceriasis is the major health problem in Senegal Oriental with a very high rate of infection in about 40 square kilometers within the Niokolo Koba area. This area is said to have the highest rate of infection in West Africa, with 60-80 percent of the population being infected and a 15 percent rate of blindness. Ministry personnel have stressed the need to determine if water control projects could be useful in combatting the disease. They also recognize the possible increase in the prevalence of schistosomiasis when water resource projects are developed.

Many studies on these public health problems in Senegal have been carried out by Senegalese and international health organizations. These include: Department of Parasitology, University of Dakar; Pasteur Institute of Dakar; World Health Organization; and others. These organizations should be contacted, the results of their studies given full consideration, and their active participation in development of regional and national aspects of the OMVG project encouraged.

b. Scope of Work

A review of existing data will allow the contractor to determine specific information requirements which will enable public health impacts to be projected. The gathering of new field data should be kept to a minimum. The contractor will consult with national Health Ministeries and medical research organizations in The Gambia and Senegal. If survey work is necessary it should focus

on malaria, schistomiasis, nutrition and such other diseases as may be determined to be appropriate. The socio-economic and environmental teams must interact with the public health team in order to exchange information.

The four components of this study are:

1. Review existing medical data and determine information requirements specific to determining the impact of the proposed development and related changes of the environment on public health.
2. Gather necessary field data.
3. Project the impacts on public health related to the development activities.
4. Recommend mitigative measures, monitoring programs, and organizational requirements to succeed in planning and implementing measures. Special emphasis should be placed on environmental management. Recommendations will be made as to how the national health services may best help to monitor health impacts associated with pesticide use. Recommendations are also to be made concerning support for development of basic health services for people living in the affected areas.

c. Personnel Requirements

The study will be staffed with a full time public health specialist knowledgeable in environmental management. This specialist should have short-term expertise available to provide inputs in epidemiology, medical entomology, malacology, parasitology, health services planning, etc. Local hire personnel would be employed for data collection.

The Gambia

1 house at Farafenni/Mansakonko with movable caravan at Bansang

Senegal

Tambacounda with
1 movable caravan at Kedougou
Short duration facilities available at the Niokolo-Koba or Simenti hotels

3. Wildlife - Vegetation Survey

a. Background for the Study Activities

The construction of the Yelitenda Salinity Barrage, the Kekreti Dam, and the related development of up to 30,000 ha. of land for irrigated agriculture can be expected to have a significant impact on wildlife and natural vegetation. AID will fund a study of the current wildlife and natural vegetation which includes an analysis of the probable impacts and the development, testing and recommendations

for mitigative measures. The objective of the wildlife and natural vegetation component is the strengthening of the capacity of agencies planning the development of the Basin to optimize the effective development of the Basin's resources.

b. The Gambian Situation

Commercialized agriculture and the expansion of animal raising in The Gambia, especially during the last quarter-century, has resulted in a dramatic increase in the use of uplands and wetlands for farming and grazing with a resulting dramatic change in the habitats of most of the wild animals and natural vegetation of The Gambia. Expanding population, the introduction of animal-draft farm equipment and increasing monetization of the rural economy have all been interrelated factors in the expansion of the total amount of land in use and the shortening or elimination of fallow cycles. The use of less land in the past allowed a much larger portion of the land to be virtually undisturbed to support climax forest vegetation and climax wetland swamp vegetation. There are estimates that more than 40 percent of The Gambia's forests alone were eliminated between the late 1940's and the late 1960's.

The changes in habitat in The Gambia have highlighted the potential for competition between human extractive activities, such as farming, and the continued existence, often in productive relationships with human activities, of wildlife and natural vegetation. For example, recent studies indicate that where primary and secondary forest resources are still available to local populations, leaves, roots, fruits, and other forest resources are gathered by the local populations and constitute important constituents of those populations' diets. In areas where there are little or no forest resources conveniently available to a local population, those resources formerly gathered are either not replaced or are replaced calorically by food produced at much higher labor expenditure (e.g., tidal swamp rice) or by food purchased at high cost relative to income gained from the production of a cash crop (e.g., peanuts).

Another example of negative tradeoffs between the expansion of agricultural activities in relation to natural habitats concerns the weaver bird. The bird primarily is sustained by seeds of a wide variety of plants, and has always been an important "pest" for farmers growing grains. Its major predator is a type of hawk which lives in climax vegetative conditions. The loss of its habitat appears to have greatly reduced the number of this predatory hawk species while, at the same time, the agriculturally-provided food base for the weaver bird has been expanding . The result is an increasing loss of food grains to an expanding population of weaver birds.

A third example concerns the hippopotamus. The hippo's habitat has traditionally been the Gambia River and streams feeding it, as well as the marshy wetlands along the water courses. The

expansion of tidal-swamp (natural flood) rice production during the period since World War II has greatly diminished the hippo's natural habitat. The hippos have tended to graze in rice fields in order to acquire food, and the rice farming communities have diminished the number of hippos by shooting them in order to decrease their crop losses.

The barrage and its related irrigation works have the potential of increasing the destruction and changing of the habitats of these animals and plants as well as of others not yet identified. As the examples indicate, such changes can have important economic consequences. Thus, in the planning of the barrage aspect of the development of the Basin, it is important that the present impacts of human activities on wild animal and plant life be understood, the future potential impacts of the interventions be identified, and mitigation measures be designated and tested.

c. Purpose

The basic purpose of the wildlife and natural vegetation component of the environmental study is to create the basis for the inclusion of wildlife considerations in the planning process for the barrage and its related facilities and to optimize the relationship between expanded agricultural activity and the natural resources of the Basin. This purpose can be achieved by two principal activities:

1. Descriptive Activity

(a) Describe the characteristics of the major existing wild animal and natural plant populations in the zones local to the proposed development projects.

(b) Describe the relationship between existing human uses and alteration of the natural resources in the development zones.

(c) Identify important species (plant and animal), specifically those: (1) endangered or threatened; (2) commercially or economically important - describe wildlife as a protein source for the population, its role in tourism, and as a natural hertiage of The Gambia and (3) critical to structure and function of the ecosystems in question or to the species identified in (1) or (2) above.

2. Planning Activity

(a) Identify the probable impacts of the Yelitenda and Kekreti projects and related irrigation works on the natural fauna and flora.

(b) Identify feasible mitigative measures concerning the impact of the water resource and irrigation works on the natural fauna and flora.

d. Activities

The contractor shall:

1. Review and synthesize data from the current literature on the wild animal (including river wildlife such as crocodile, manatee,

and hippopotamus) and natural plant resources of the basin in the development zones. Special studies should be made concerning any endangered species found.

2. Acquire supplemental data, where necessary, through field inspection of the natural fauna and flora.

3. Project the impacts on the natural fauna and flora including the socio-economic consequences wherever possible.

4. Identify and test the feasibility, where practicable, of measures to mitigate the impact on the wild animals and natural plants and on their natural habitats, and identify the positive economic roles they play in relation to human extractive activities (agriculture).

5. Deliver a report describing and analyzing the current wild fauna and flora in the basin, their habitats, and a general overview of their current interrelationships amongst themselves and with human extraction systems (especially agriculture). The report shall include the identification of the probable impacts on natural fauna and flora of the zone. The report shall also include identified mitigation measures and the results and recommendations from any feasibility tests performed by the contractor.

d. Personnel

The contractor will organize a team such that the following specialties are addressed: mammalogy,ornithology, ecology, forestry, range management and wildlife biology, It is expected that three specialists are required for six months each over a twelve month period. An illustrative team would include an animal ecologist (herpetology, mammalogy, ornithology), a plant ecologist (with experience in tropical eco-systems), and a wildlife biologist/range management specialist. A fourth member will serve as a team leader and will be present during the entire twelve month period and will be responsible for preparation of the final report.

As regards accomodation for field operating personnel, the following locations are suggested:

1 house in Sapu
Hotel or caravan accomodation in Niokolo-Koba or Simenti

Implementation Plan to the Environmental Study

A single contractor will be given the responsibility for the entire socio-economic environmental study. The contract scope of work should have provisions such that minor changes which are justified based on initial study findings can be made. The technical assistance environmentalist will routinely monitor the progress of the project and serve as a liaison between the contractor and the OMVG.

The contractor should work closely with the appropriate ministeries of the national governments, the OMVG and representatives of international organizations. A special travel fund of $30,000 will be established to allow for international travel for these consultations. The contractor should use existing data whenever possible and minimize the amount of field work.

The environmental team will work closely with the socio-economic team. The socio-economic team is charged with the responsibility of analyzing and describing the socio-economic consequences associated with development-related environmental impacts. The technical assistance personnel will be responsible to the contractor to assist in the exchange of information between the OMVG and the contractor.

The Contractor chosen for this scope of work should be given the flexibility to staff the project with specialists whose capabilities are complementary.

C. The Socio-Economic Study Component

1. A socio-economic study and the strengthening of the OMVG and member national agencies in their capacities to acquire and synthesize socio-economic data are the two purposes of the socio-economic components of the project.

AID will fund a three-element socio-economic study of the Basin to be carried out under the overall managerial direction of a contractor provided by AID and resulting in a report at the conclusion of each element.

Elements of the study are as follows:

a. A study of land/water farming systems strategies of the rural population in the entire Basin. Primary data would only be collected if secondary sources were found to be non-existent, invalid or incompatible for synthesis. All data from primary and secondary sources will be integrated into a report covering all socio-economic data of the existing land and water use systems (farming systems) throughout The Gambia River Basin.

b. Impact Survey will address the socio-economic impact of proposed development (the Yelitenda Salinity Barrage and the Kekreti Dam) and their related irrigated agricultural development projects. Recommendations will be made for mitigation.

c. Socio-economic/Environmental Assessment. The Socio-economic data collected(in elements 1 and 2 above) will be integrated with environmental research in a final document to be presented to the OMVG.

The socio-economic study will entail 3 months of review of secondary sources in-country, 15 months of field data collection and a final 6 months to complete data processing and analysis.

It should be noted that the inclusion of institutionalization aspects in any data collection effort may increase both the time and the costs necessary to complete the study and present additonal managerial difficulties for the contractor.

This time frame will include 1½ months prior to the start of the new crop year and a similar period at the end of the agricultural cycle. Because this study will be operating under both resource and time constraints, evaluation of the study should indicate the degree to which local organizations were actively involved in the study.

The complete socio-economic study will provide basis for the identification of 1) socio-economic processes and farming systems and how they will affect and will be affected by the irrigation and upland agricultural projects in the Basin, 2) processes and systems which in relation to projects in the Basin, could constitute obstacles to successful implementation of projects and 3) subsequent analysis which specifies mitigation strategies.

2. An outcome of this study will be the strengthening of the capacity of the OMVG to coordinate and support member state future socio-economic processes in the Basin in order to provide data and the analytical base for development policy recommendations and options by both the OMVG and the agencies of member states. The strengthening of this capacity will be accomplished in the context of the socio-economic study through the following AID-supported activities:

a. The provision to the office of OMVG Technical Services of technical expertise in the form of one natural resource economist and one rural sociologist for 3 years each.

b. Provision of Master's level training for two member-state nationals (attached to OMVG for the duration of the project) in natural resource economics and rural sociology and the non-formal training of these staff members through participation , under the supervision of the AID-provided technical personnel, for one year in the developmental and field research phases of the socio-economic study. During the field year, data relevant to the needs of OMVG and to the writing of a Master's thesis would be gathered. Further non-formal training would be provided to the same individuals by the AID long-term technical specialists to the OMVG during the last 6 months of the project through joint participation in OMVG activities.

c. Provision of one year of formal training in survey statistics to one member-state national in 1981 and the participation by the individual in the socio-economic study.

d. Provision of six months of both formal and on-the-job training in the U.S. for two member-state nationals in data processing. These two nationals will then return to the OMVG staff to participate in the processing of the data resulting from the socio-economic study and thereby gaining applied training.

e. Implementation of the socio-economic study by an AID-selected contractor involving the close coordination and participation of the relevant state agencies of The Gambia and Senegal within an ad-hoc Socio-economic Study Committee under the aegis of the OMVG. (This Socio-economic Committee will be headed by Technical Assistants and their counterparts in the OMVG planning unit.) The national agencies most directly concerned with the gathering and processing of socio-economic data in the Basin are the Program Planning and Management Unit of the Ministry of Agriculture, the Ministry of Economic Planning, and the Gambia Produce Marketing Board in The Gambia and SOMIVAC, SODEFITEX and SODEVA - the parastatal regional development organizations in Senegal. The Socio-economic Study Committee will be an advisory group to the contractor with regard to the specifics of research design, research instruments, training of enumerators and other important elements of the study. Each agency will be encouraged to designate personnel to participate in all phases of the study in order to gain training benefits from the study and to facilitate study implementation in each agency's geographical area of concern.

f. Provision by the study contractor of technical assistance in the form of programmers and systems analysts for six person-months during the socio-economic study. This technical assistance will provide support and further training to the member-state nationals in data processing.

g. Provision by the study contractor of technical assistance in the form of survey statisticians and mathematical statisticians for fourteen person-months. This technical assistance will provide support and further on-the-job training to the member state national statistician in the conduct of the socio-economic study.

3. Description Of The Socio-Economic Study

A. Descriptive Function

The Socio-economic Study will provide information of a quantitative and qualitative nature describing and analyzing the existing farming systems in two large areas of the Basin with the purpose of providing:

(1) Information that will authoritatively delineate the characteristics of the various farming systems and the constraints on participants in those farming systems. From this information it will be possible to develop relevant research priorities for national agencies of member states of the OMVG as well as research coordination and support priorities for the OMVG.

(2) Information relevant to the specific needs of the technical assistance personnel and of participating agencies of member states in formulation of development policy recommendations.

b. Testing Function

(1) The socio-economic study is also intended to provide information to support an objective judgment of the impact of the proposed dams; the proposed irrigated agricultural interventions; and, the interventions in other aspects of rural production systems.

(2) The socio-economic study as a whole will provide the basis for testing at the field level particular methodologies and approaches to socio-economic data acquisition in order to assess their relevancy to local farming systems. Methodologies for socio-economic data gathering and processing will be refined and modified in relation to the expressed data needs of the member-state agencies and the OMVG. Testing is thus intended to create an institutional foundation for the long-term monitoring of socio-economic processes in the Basin by member-state agencies and the OMVG.

4. Training and Institutionalization

The socio-economic study has two goals: (1) providing information to the target institution in an effort to foster improved planning and decision-making and (2) institutionalizing within the relevant organization(s) capabilities, identifying and defining data needs, carrying out data collection, and processing, analyzing, and using the resultant data. In a very real sense, these goals are mutually supportive, but there are trade-offs which much be considered in planning such research efforts. The actual process of data collection and analysis represents the best and most relevant learning experience for the organizations involved. The issues addressed, the social/cultural context, the logistical problems and the data processing constraints are those likely to be faced in the future. Further, the greater the involvement of the target institutions in the specification of the information needs, the greater the likelihood that they will utilize the results of the survey. Effective management by member-state agencies and the OMVG requires that they incorporate information on farming systems and the socio-economic feasibility studies into their program planning and project design processes. This information is critical to planning for the Yelitenda and Kekreti barrages and their related irrigated agricultural development programs. Moreover, the specific plans for those facilities and for upland agricultural interventions are more likely to succeed if local agricultural systems are productively maintained and/or modified by new technology formulated with full knowledge and understanding of how the existing systems function and what can realistically be modified within them. In addition, information on the farming systems in the Basin as a whole and particularly in the two zones behind the proposed barrages with regard to the socio-eocnomic impacts of the barrages and programs for mitigating the more adverse impacts are considered to be essential to: (1) successful negotiation by the OMVG of timely and reasonable funding by external donors for the facilities, (2) creation of an effective monitoring system for development programs

related to those facilities, and (3) assessment of the financial soundness of those facilities - e.g., their capacity to repay development costs from water charges associated with irrigation projects behind the barrages.

The socio-economic study will be focused on farming systems. A farming system is the end result of a complex interaction between a number of interdependent factors. It is the end product of the allocation by individual farmers of certain factors of production using the knowledge the farmer has in order to optimize the attainment of the objectives toward which the farmer is striving. The farmer has access to certain specified quantities and qualities of the four factors of production: land, labor, capital and management. The farmer allocates them to three processes: crop, livestock, and off-farm enterprises in an optimal manner in relation to the objectives of the farmer. The technical element determines the types and physical potential of livestock and crop enterprises. The technical element is a reflection of what the potential farming system can be and therefore provides the necessary condition for its presence. The technical element is made up of physical and biological factors which have been modified to some extent by human action, often as a result of technological change and the use of new technologies as a part of new human adaptation. However, the technical element only defines the potential for a farming system; the farming system that actually evolves is a subset of that potentiality. The determinant of the actual farming system is the human element, which in effect provides the sufficient condition for the presence of a particular farming system. The human element can be subdivided into:

a. Exogenous Factors

This includes the social environment and other factors that are largely outside the control of the individual farmer but will influence what the farmer will and/or is able to do in simplistic terms, these can be thought of as four broad groups: community structures, norms and beliefs; local institutions operating independently of external influences; external institutions, including those usually supported directly or indirectly by developmental agencies - e.g., input distribution systems, credit programs; and miscellaneous influences, such as population density, village size and location, and the like.

b. Endogenous Factors

These include the individual decision-maker and those other factors that are under the decision-maker's control. The farmer is the person who ultimately decides on the farming system that will be found, being influenced by and sometimes constrained by technical elements and exogenous factors.

5. The Gambia River Basin and The Farming Systems Approach

There is no question that there is genuine strong commitment on the part of the member states of the OMVG to the development of the Gambia River Basin. Uncertainty develops, however, with respect to unknowns within the operative farming systems of the Basin. These unknowns may be summarized as follows:

a. Little is known about the relationships among existing forms of technology, land use systems, amount and periodicity of demand for human labor, the division of labor, fertilizer and seed inputs, capital and amounts and sources of credit as inputs into various cropping and livestock input strategies in the Basin as a whole.

b. Little is known about the relationships between input combinations and the interrelationships among various outputs including cropping yields, dairy and other livestock, dairy products, cropping and livestock income, off-farm income, etc.

Knowledge of the various sets of relationships among input factors and among outputs and the relationships between sets of inputs and outputs would provide the basis for defining an understanding of the farming systems of the Basin.

The complexity of these problems is further emphasized by the following problems:

It is now assumed that labor as a factor of production is in short supply in most or all of the farming systems of the Basin. Moreover, Colvin's recent study (1979) suggests that the causes of the reported general labor shortage are primarily rural-urban and non-agricultural rural-rural migration, especially on the part of the large majority of the male labor force between 16 and 30 years of age. Rational planning requires answers to such questions as: Is there a general labor shortage in the Basin for the existing farming systems? Is there a periodic labor shortage for some and not for others? Is the use of labor outside the agricultural/livestock enterprises a part of the optimizing/management strategy of any or all of the farming systems? An objective basis for answering these kinds of questions does not now exist. Answers to these questions are needed in two areas of planning policy. In simplistic terms, they are: (1) What types of technological interventions would most efficiently utilize the labor available in the rural sector and dampen existing incentives to rural people to move out of agricultural pursuits and rural areas? (2) What types and combination of technologies should be utilized in the irrigable areas behind the barrages to optimize production, available labor inputs, and the creation of effective rural demand/markets? The farming systems approach is thus to be used to provide an effective data base for assessing planned irrigated agricultural interventions and recommending refinements/modifications in order to optimize the socio-economic impact of the interventions.

Farming systems in the Basin are, for planning purposes, usually now viewed in a monolithic manner or, at best, as being of two basic types: those based primarily on cultivated agriculture and those based primarily on livestock rearing, especially cattle. There is evidence from the localized case studies mentioned above that there are a wider variety of farming systems than either view takes into consideration. Moreover, even the monolithic or bipolar views tend not to see the systems as managerial systems which contain a multiplicity of strategies which are more or less interrelated. Those managerial systems constitute a resource which, if taken into account in the design of development interventions, can be built upon to increase the likelihood of the success of those interventions, increase participation in the interventions, and thereby increase rural benefits from participation. The use of specific knowledge about the farming system resources of a given area/population offers the constructive possibility of making effective planning decisions about the inclusion or exclusion of a given farming system or the modification of a given intervention to make it effective. Lastly, the assumption that existing farming systems of the Basin are of one or two general types creates the danger that intervention decisions will be made which do not take into account opportunity costs for participation in the interventions. The farming systems approach does provide data on this, and such data is essential if planning interventions are to result in true benefits for participants as well as a national society as a whole.

6. Socio-Economic Study Activities and Their Implementation

Key outputs of the study will be the creation of an ongoing capacity in the agencies of member states which send representatives to participate in the study, the creation of an ongoing socio-economic capacity in the OMVG through the participation in the study by two counterpart long-term staff members of the Technical Services Division of the OMVG, and reports on baseline socio-economic conditions in two zones of the Basin, the likely socio-economic impacts of the two barrages and the operation of related irrigated agriculture programs, and recommended mitigation measures concerning those impacts

a. Contractor for Socio-Economic Component

(1) A contractor shall be given overall responsibility for the management of the socio-economic (and environmental) study, execution of the socio-economic study, and completion of an integrated report of the results of the socio-economic with the environmental study.

(2) The contractor shall be responsible for supporting the institutionalization/training functions of the project through the carrying out of the collaborative role with the Ad-Hoc Socio-economic Committee and its member state agency participants in the socio-economic study.

(3) The contractor shall, at the contractor's option, utilize the contractor's own data processing, statistical, and

training resources or those of other organizations to be provided by subcontract.

(4) The contractor shall provide the on-the-job training for the natural resource economist and the rural sociologist counterparts of the long-term technical assistance members. This will include supervision of each of their training research activities while each is present during the field research period of the socio-economic study.

b. Personnel: Socio-Economic Study

(1) Senior Staff from Contractor

An American agricultural economist and a rural sociologist should be recruited and retained for the whole 24-month study period. Two reasons for advocating this are:

(a) The study goals of providing a socio-economic baseline and analyses of impacts and of mitigation strategies and of training are to be accomplished in an intensive, relatively short period of time.

(b) The farming system approach advocated in the study as a whole necessitates an on-going full-time role for the two social scientists. This role would be jeopardized if representatives of both disciplines were not present. Moreover, while the two long-term OMVG technical assistance social scientists will be involved in a consultative role in the socio-economic study, they will have several other, time-consuming duties as part of their activities in the support and coordination activities of the OMVG.

(2) Socio-economic Study Contract: Illustrative Senior Staff Job Descriptions

a. Agricultural Economist

(1) Required: Ph.D. in Agricultural Economics. Must be thoroughly familiar with farm management survey methodology and the current literature and practice on farming systems analyses as applied in the international context: language competency French to FSI 3/3 level.

(2) Preferred: Experience in rural West Africa; fluency in one or more of local languages (Mandinka, Fufulde, or Wolof).

b. Rural Sociologist

(1) Required: Ph.D. in Rural Sociology or Social Anthropology. Must be thoroughly familiar with socio-economic theory and methodology, socio-economic statistical methods, and the computer manipulation of socio-economic data; language competency in French to FSI 3/3 level.

(2) Preferred: Experience in rural West Africa; fluency in one or more of local languages (Mandinka, Fufulde, or Wolof).

(3) Job Responsibilities

(a) Management and overall guidance of the Socio-economic Study component of the Project. Contractor shall designate one of two senior staff members as "Team Leader".

(b) Analysis of Study data and preparation of an analytical report on (1) socio-economic conditions in the Basin as a whole, based on the results of the farming systems case study; (2) analysis of the socio-economic impacts of the Yelitenda and Kekreti Barrages and their related irrigation agricultural interventions with recommendations for the mitigation of the adverse socio-economic impacts of the barrages and their related interventions.

(c) Integration of components (1) and (2) with environmental survey data. All reports shall be delivered to AID and OMVG with 50 copies in English and 50 copies in French.

(d) Supervision of Masters-level degree training for two OMVG Technical Services counterpart staff members in Agricultural Economics and in Rural Sociology, respectively.

(e) Collaboration with the Ad-Hoc Socio-economic Study Committee in order to optimize the utility of the Study in the future planning and monitoring of development in the Gambia River Basin.

(f) Supervision of all other training aspects connected with the administration of the socio-economic study, including training of field supervisors, field enumerators, statisticians, data processors, and data coders/editors.

As regards accomodation for field operating personnel, the following locations are suggested

1 house in Sapu/Mansakonko or Farafenni

1 house in Tambacounda

1 caravan in Kedougou

Hotel accomodation in Niokolo-Koba or Simenti

1) Enumerators and Supervisors

If the capacity to monitor socio-economic processes in the Basin and to assess development initiatives in relation to data on those processes is to be institutionalized, the member-state agencies and the OMVG need an available core pool of enumerators and supervisors experienced in socio-economic data acquisition to draw upon as their own responsibilities in these areas increase with the intensification of development activities in the Basin. The enumerators and supervisors should have a minimum educational requirement of Secondary Modern Level or its member-state equivalent. It is difficult to estimate the number of enumerators and supervisors required, but approximately 36 enumerators and 6 field supervisors are suggested.

2) Local coders/editors (4)

3) Local key disc operators (4)

4) Graduate student study participants (5)

c. Study Implementation Strategy

In even the most straight forward data collection activity, the definition of the role of the organization involved and its information needs is often the most difficult aspect of the effort. Even within narrowly focussed and long-standing organizations, these issues have seldom been dealt with explicitly and effectively.

Unfortunately, the multiplicity of organizations involved in the Gambia River Basin and the substantial uncertainties concerning their roles and responsibilities compounds this problem. There are aspects of this problem which impact very directly on (1) the specification of information needs, (2) the organization of the data collection effort, (3) the strategy for processing the data and (4) the strategy for analyzing the data.

(1) Specification of Information Needs

To the extent that the purpose of the project emphasizes the support of improved development planning and project implementation in the Basin, a minimum of seven organizations have been identified as potential recipients of assistance.

Within the Gambia portion of the Basin, a single organization, the Ministry of Agriculture's Program Planning and Management Unit, has both planning and operational responsibility for the agriculture sector. The Ministry of Economic Planning also plays a major role in Gambian development planning and must be included. The Gambia Produce Marketing Board also plays a broad development role. Within Senegal the situation is rather more complex. While an organization similar to the Gambian Ministry of Agriculture PPMU does exist, its actual authority is limited at the local level.

In a real sense, development planning and implementation responsibility have been decentralized in Senegal, and the bulk of the authority resides in regional parastatals. These are quasi-governmenal organizations which have overall responsibility for development in their assigned regional areas and operate with a high degree of autonomy. Three such parastatals, SODEFITEX in Senegal Oriental, SODEVA in Sine Saloum, and SOMIVAC in the Casamance, have areas for which they are responsible in the Senegalese portion of the Basin. Any effort aimed at supporting development in the Basin must involve and provide support to these organizations.

With respect to the involvement of the concerned local organizations in the specification of data needs at a general level and socio-economic study content at a more specific level, the establishment of an informal committee (the ad hoc Socio-economic Study Committee) composed of the senior planners from the organizations cited above, plus the OMVG natural resource and rural sociologist counterparts, appears to be the most viable strategy. This committee would work with the long-term study contract agricultural economist and rural sociologist as well as short-term statistical advisors to initially refine the goals of the Socio-economic Study outlined in this project paper and at key points during the life of the project review the actual translation of these goals into the study design and its implementation. This committee would also form the core of potential users of the results of the socio-economic study.

(2) Data Collection Strategy

The organizational issues associated with the actual implementation of the data collection effort are similar to those outlined for the specification of the data collection goals. Again the role of OMVG vis-a-vis the six other organizations in future data collection (as opposed to use) is unclear. As a result, it is difficult to target the institutionalization of data collection expertise on OMVG alone. In order to spread the benefits of participating in the execution of the study as broadly as possible and still meet the deadline for the start of data collection, the one junior level statistician would be hired by the OMVG for 3 years, the initial year of which would be for training in statistical data collection with a focus in agriculture. This statistician would then return to be the senior local professional involved in the data collection effort. The other six participating agencies would, at their option, each provide a full-time junior statistician/statistical trainee (a total of five) for two years to participate in and learn from the data collection effort. The actual supervisors and enumerators used in the study would be hired through the OMVG by the contractor responsible for the study.

(3) Data Processing Strategy

With respect to local data processing, three issues are associated with the strategy recommended in support of the study: (1) selection of a computer, (2) training and institutionalization, and (3) general system programming approach to be used. Local data processing should be used if at all feasible at the discretion of the contractor for the socio-economic study. These issues are described below:

(a) Hardware Selection

A key question is where the data can be processed once the programming system is developed. Any selection of a data processing site must be preceded by an examination of existing hardware. Most of the existing computer facilities in Dakar and two planned sites for computer installations in Banjul are described below:

1) Senegal:

a) Ministry of Finance: (Dakar) 2 IBM 370/145 computers. (Only the site described below was visited, but the second is only slightly smaller in size and is similar in other respects.)

Hardware:

1 IBM 370/145, 766 K bytes core memory
8 tape drives (4 model 3420-3, 4 model 3420-7)
3 disk drives (2 IBM 3340, 1 IBM 3344)
3 printers (2 IBM 3203, 1 IBM 1100)
2 card readers (2501)

Data entry

About 20 key-to-diskette machines

Software

OS-VS1 Operating system
COBOL
FORTRAN
Standard IBM utilities
ICEMAN
ASSEMBLER
LEDA
COCENTS
TPL

Staff (approximate)

15 engineer/analysts
20 programmer analysts
9 console operators

20 keypunchers

Planned center changes

8 terminals (IBM 3278)were to be installed in January 1981. Upgrading of the entire system is in the specification-writing stage.

The office provides data processing support to other government agencies, a service done at no charge to government agencies in the past, but to be bought in the future. Three types of time are currently available: (1) batch, over the counter, (2) "improved" batch and (3) assisted runs in machine room with an operator. The planned installation of terminals, in January 1981, will permit a fourth method of entering jobs. The center operates in three shifts, Monday through Saturday noon. Day-shift hours are from 0800 - 1200 and 1430 - 1800. Use is more restricted between the 10th and 20th of the month due to security needed for the running of payroll. Some users reported occasional difficulties such as a job being cancelled, not run or even lost, but said control of jobs seemed to be improving. More detailed information of operations can be requested officially by the OMVG.

(b) SENELEC - The Senegal Electric Company (Dakar)

Hardware

1 H2Ø4Ø with core capacity of 96K
3 tape drives
4 disk drives of 35 megabytes each
1 line printer (Honeywell 222)
1 card reader
1 optical scanner

Data Entry

5 keypunches
3 verifiers

Software

OS 2000 operating system, release 4
COBOL
EASYCODER
standard utilities

Although SENELEC seems to run a very efficient computer center, the machine is used near maximum capacity and time is not currently available to outside users.

(c) SENI-Senegal Informatique (Dakar)

Hardware

1 CIL HB 66/40 with 128 K
2 tape drives
2 disk drives
1 line printer
1 card leader

Data entry equipment

10 key-to-diskette (IBM)

Software

Operating System: GCOS, release 4J
COBOL 74
FORTRAN
RPG
SORT/MERGE

Staff

Director - Mr. Cornery
Technical Manager - Mr. Robert
6 console operators
1 systems engineer
1 systems programmer
14 programmer/analysts
12 keypunch operators

Planned center changes

They plan to upgrade to 512 K memory, 4 disk drives, 2 tape drives, 12 terminals and 2 printers. Among machines considered are IBM 4331 and Burroughs 1985 B-processor. They hope to purchase a statistical package called PACHA.

This is a private service company which contracts mainly for design, programming and running of accounting servies, but which is open to requests for time or other types of service. In the past, they have given the IBM course in programming basics. They are associated with the French service company SOPRA. Current charges are by wall-time length of a job. All paper and tapes are supplied in that cost. Block time can be made available.

(2) In The Gambia (Banjul)

(a) AGRHYMET - A Project Under the Ministry of Agriculture

Hardware

1 PDP 11/34 Central processor to be installe in September 1980

Software

FORTRAN
SPSS

Staff

engineers and scientists
4 operators to be trained
2 system engineers to be trained

The system is to be used solely for scientific data collection by its staff of scientists and engineers for transmittal to AGRHMET in Niamey, Niger. Time would be available, but expertise in other applications and peripheral equipment would not.

(b) Central Statistics Bureau (Ministry of Economic Planning and Industrial Development)

Hardware

Planning to purchase an IBM system 34 with 64 K of memory and 128 K of fixed disk storage, but plans are held up by lack of guaranteed funds for replacement parts. Maintenance could be another problem since high cost of sending an IBM rep from Dakar to Banjul is forcing them to train their own maintenance people

(c) Other Planned Purchases

Both the R.D.P. (Rural Development Project) and the Mixed Farming Project have plans to purchase micro-computers.

(3) Recommendations

The following recommendations are made with respect to the selection of a computer facility.

The idea of OMVG having its own computer has a certain appeal in solving logistical problems between Kaolack and Dakar, but in actuality it would introduce more problems than it would solve. The special construction of a place to house the computer, the cost of the computer and peripherals, the training of operators and technicians, the cost and headaches of maintenance and repairs, all seem unnecessary to the OMVG at this juncture.

For development of the programs in the Socio-Economic Study, the data processors should work with counterpart computer specialists in the U.S., where the speed of development can be ensured by faster turn-around time. However, processing the survey in

the U.S., while appealing because of the processing experience and facilities available, involves extensive relocation of forms and complicates the system by distancing the computer processing from the location of the data collection and manual editing. It also deprives the participating countries of any technical involvement and therefore of an opportunity to learn skills and techniques which will be useful in processing data in the future. Because of the absence of institutionalization, processing in the U.S. is recommended only if all local options prove non-viable. Since the proposed purchase of a computer at Central Statistics in The Gambia has yet to be finalized, processing at Central Statistics is not being considered as a possibility. The AGRHYMET installation, while promising to have plenty of available time, is small and limited, and would require much additional peripheral equipment, core and software to be used for the Socio-Economic Study.

Of the possibilities, one of the computer centers of the Senegal Ministry of Finance in Dakar is the most practical choice because of its large capacity, its proximity to service, the backup provided by the two identical systems, the variety of software available, as well as the desirability of using government computers.

As soon as the project agreement is signed, an official request for access would have to be made by the OMVG to insure cooperation. Rental of an extra terminal for Socio-Economic Study use would greatly facilitate the submission of jobs. Block time would have to be bought for installation of the Socio-Economic Study programming system. For operations, batch jobs would be run. If turn-around time proved adequate for processing, provision of an operator to use the computer from 12:00 to 14:30, on Sundays, might be necessary. Adequate computer time would have to made available in order to ensure the successful processing of the Socio-Economic Study. The OMVG could make a contractual agreement with the Senegalese Ministry of Finance to secure at least 15 hours of machine time a week. At least some of the time should be prime time. The services of an operator could be provided for as part of the contract. If problems arise which could not be solved, the system could best be installed at SENI, where keying, computer time, and the services of an operator might be bought. A more detailed study of the facility is needed to determine whether any enhancement would be required to ensure the securing of adequate computer time. A programmer/analyst could be designated from the Ministry of Finance staff to assist the Socio-Economic Study programmers in running the system at that installation. This would greatly facilitate the processing of the study data.

(4) Training and Institutionalization

A shortage of skilled data processing technicians exists in Senegal and The Gambia. To ensure access to the skills which will be required to support the Socio-Economic Study, OMVG and the member-state agencies must take an active role in their development. Due to a strong possibility of turnover in programmers,

a minimum of two people must be selected for training, preferably one from The Gambia and one from Senegal. Their preparation should include formal training in fundamentals of programming and COBOL or equivalent programming. Equally important will be on-the-job training in the context of the development of a system for the Socio-Economic Study.

There is currently no on-going computer science program in Dakar or Banjul, so the possibilities of selecting people with training in computer sciences will be limited. Most programmers working in Dakar receive training abroad, and often the higher salaries in private companies draw them away from government services. Before September 1982, two people must be identified who have some work experience and who show aptitude in programming. They should have at least a high school education and a knowledge of basic algebra, and preferably have a university education, with a background in mathematics or statistics. Advertising for the positions, interviewing, and administering the IBM aptitude-for-programming test will help in identifying people. IBM or SENI could administer this test and analyze the results. Since the formal training will be given in English and the actual work might be carried out in a Francophone environment, it would be preferable if both candidates were bilingual (French/English).

The candidates identified will need to be given training in the basics of data processing and programming before working on the socio-economic study. In-house training programs are not currently available at the Ministry of Finance Computer Center, so basic training will have to be acquired in a more academic setting. The program must include COBOL programming, flow-charting and actual experience in running jobs on the computer as well as general background information on the processing of surveys and case studies. The U.S. Bureau of the Census ISPC training school offers one such introductory program which might be applicable. However, if any training is included in the contract for the Socio-economic Study, the means of training should be at the contractor's discretion. Training for these technicians should begin in approximately January 1982 and last three to four months.

After formal training the candidates would be given a 3-week informal class in writing tabulations using CENTS or its equivalent. They would begin a 3- to 4-month on-the-job training program, working with counterparts in the United States. As soon as the questionnaires are finalized, which is scheduled for May 1982, the two programmers and their U.S. counterparts will begin planning and writing computer programs for the Socio-economic Study. This will give them the opportunity to gain some familiarity with the design of a system and practice in the use of written specifications, flow-charting, structured programming, system documenting and the running of a system. Every effort should be made to involve the programmers in as many aspects of the work as possible, given their experience and capabilities. The U.S. programmers will contribute whatever is necessary to complete the design and programming.

(5) General Programs Development Strategy

The specifics of the programs required have not been developed as yet, but the general strategy would be as follows:

Programmers should become involved early in collaboration on the design of the questionnaire to ensure that its form facilitates data processing. This could be accomplished by the U.S. specialists. Source coding, i.e., a unique code designed for each question, permitting the keeping of a code, then an entry, would be the most practical format. These codes should be printed on the questionnaire and will simplify the data entry by providing a uniform keying pattern instead of various card types. Since the questions asked will depend on the time of year, large parts of the questionnaire on any one week may be blank. Source coding allows use of a single questionnaire with skip patterns; blank sections may be ignored in keying.

Once the data is keyed and verified, it will be processed through several steps. First, the source coded entries will be translated into one long record for each questionnaire. Then a completeness check will be made for the presence of all of the selected compounds. A report will be made of those missing. Next, an edit for valid values and internally consistent data will be made. Invalid responses will be corrected automatically where deemed appropriate by the contractor specialists responsible for the content of the Socio-economic Study. A report of these and uncorrectable errors will be made for review by knowledgeable people. Corrections to the data file will be made and the edit repeated until there are no unacceptable errors. An update program will permit changes in data from past weeks. In this event the edit will be rerun. Simple tabulations of the data will be made to allow specialists to ensure that definitions are being properly applied and that data being collected is as desired. At the end of the year of data collection, the clean data base will be available for analysis using advanced statistical methods.

The development of any computer programs for the Socio-economic Study must be done under the supervision of the contract social scientists by the two selected programmers during the 3-month on-the-job training with U.S. specialists, as described earlier. Specialists from the U.S. will assist in the installation and testing of the programs at the Ministry of Finance or such other location as selected by the contractor. At this time the programmer/analyst assigned from the Ministry of Finance to aid in the Socio-economic Study work will be acquainted with the programs in the system. U.S. specialists will trouble-shoot any problems. The use of the computer will be required from April or May of 1982, depending on the starting date of the collection of data, through at least May or June of 1983. Batches of data will be entered in weekly installments, machine edited, reviewed and corrected. Data will be stored on tape. A courier service will be required between the OMVG office and the computer

site. Socio-economic Study programmers will require work space at the computer site.

Given the enhancements necessary for possible use of the computer installation at the Ministry of Finance, a more in-depth review of hardware, peripheral equipment, software, availability of computer time, work space, and programming assistance is necessary an must be performed by the contractor's representative before any plans are finalized for leasing of equipment, buying of computer time or otherwise locking the contractor into any rigid data processing arran ment.

(6) Supplies recommended

A terminal (IBM 3278) would be needed at the Ministr of Finance to insure access to running jobs. Two key-to-diskette data entry devices could be rented and 16 tapes purchased for storage of data. The latest version of the CENTS tabulation software or its equivalent could be installed on the system (and possibly a class giv in its use in June or July of 1983). The Ministry of Finance could supply paper under the current charging algorithm which includes a count of printed lines. A new algorithm, Johnsons Systems, Inc's "Job Accounting Report System,"if adopted, could be reviewed for this requirement. Basic supplies of paper, pencils, and erasers would be purchased for programmers.

(7) Data Analysis Strategy

The strategy for carrying out the analysis of the Socio-economic Study data and for encouraging its use has three components: (a) the analysis performed by the contract rural sociologist and agriculture economist culminating in a formal report, (b) the analysis carried out by the local counterpart agricultural economist and rural sociologist in fulfillment of their thesis requirements for Master's Degree, and (c) in-country efforts by the Technical Assistance specialists assigned to the OMVG in the fields o Natural Resource Economics and Rural Sociology to support the use of the Socio-economic Study data by the organizations represented on the *ad hoc* Socio-economic Study Committee.

(d) The contractor will be ultimately responsible for the production of the final Socio-economic Study report. Upon completion of the data collection phase, the contract rural sociologist and agriculture economist will return to the U.S. to carry out this analysis. They will have a computer tape of all Socio-economic Study data files, and the data will have been extensively edited if the local data processing option has been adopted by the contractor.

It is envisioned that the analysis and the completion of the final report will take six to nine months to produce. It will subsequently be distributed to the organizations involved in the Socio-economic Study and other concerned organizations in Senegal and The Gambia.

(e) The local counterpart rural sociologist and natural resource economist will return to the U.S. to complete their Masters Thesis requirements in their respective fields. It is envisioned that each will write a thesis using the data from the Socio-economic Study. The contract advisors will work closely with their counterpart students in this process and direct the research into useful and policy relevant areas.

(f) A cleaned study data tape will be retained in OMVG. The long-term technical assistance specialists in Natural Resource Economics and Sociology attached to the OMVG will work closely with the members of the Study Coordinating Committee to encourage the specification of analyses of interest to their organizations. The long-term specialists will also work with the local data processing staff to specify and produce the tabulations required for the proposed analysis and with the Coordinating Committee members (and other staff from their institution) in carrying out the analyses.

This will be a critical phase of the project. If the host country institutions can be encouraged to start framing their policy development concerns and issues more concretely and if they can be supported in the analysis of the data to answer these questions, then the process the project component seeks to foster will be underway. Further, it will be largely in local hands.

(8) Activities

The proposed time frame for the activities under the Socio-economic Study Component of the AID project is found in the implementation plan. As has been stressed earlier, the field study activities will be structured so as to maximize the coordination of the field study in the various areas of the Basin in which the agencies of member states have long-term socio-economic data-gathering responsibilities and specific development project implementation responsibilities. This can be done through the *ad hoc* Socio-economic Study Committee under the auspices of the OMVG.

Some preliminary thoughts concerning each of the activities are given in the following section:

Farming Systems Case Study

The farming systems case study will be undertaken in 9182 and 1983. The study will be built around an in-depth survey of farming systems which, in addition to its descriptive function, will contain the testing and training functions described above. The survey will be a frequent interview survey throughout one economic farm year, *i.e.*, late spring to late spring of the next year. Sample farming units, termed here "compounds," will be surveyed once each week throughout the farming economic year.

The major purpose of the survey will be to obtain an in-depth understanding of the main farming systems of the Gambia River Basin.

The study of farming systems will necessitate the inclusion of accurately-measured data on technical, economic, and social processes. This will involve, among other things, collecting data on:

1. The social organization of the production units, including their composition, their relationship to absentee members (especially labor migrants), other kin and neighbors in terms of capital inputs (reciprocity, remittances and labor).

2. Role of village leadership; the control over decisions in the local residential unit, perceptions of leadership patterns, customary law, authority and relationship to government agencies.

3. The systems of land tenure; including maps of all gardens controlled (whether in use or not) by members of the area, assessment of water rights, the implication of population trends, and of systems of inheritance and rights as they relate to resource availability.

4. The systems of land and water usage, including agriculture, livestock management and fishing.

5. Labor profiles (including division of labor between males and females in the production unit) and labor availability.

6. The economics of production, as well as information to be obtained in a recording of income and expenditures. As with social organization, a special effort should be made to include resources, such as remittances, brought into the community from the outside. Study of income and expenditures should be combined with a study of food consumption within the production unit. While consumption surveys provide useful information on nutrition, we also need to provide a realistic mechanism for identifying the range of food stuffs available and for tracking distribution and use of goods from within and from outside the community. Special attention should also be paid to the extent to which women benefit or do not benefit from the increased demand on their labor.

7. The storage and processing of local produce.

8. The price structure in reference to actual cash crops (specifically cotton and groundnuts) including the relationship of this structure to other options (such as labor migration to urban centers).

9. The marketing system within the community, the Gambia River Basin, and adjacent areas as it relates to local produce and possible export.

10. The comparative advantages and disadvantages of local systems of production to relevant host government irrigation projects.

11. The interaction between rainfed and irrigated agriculture.

12. The economic unit for the two operating in concert in particular in the rainy season when both upland and irrigated crops are under production.

13. Coordination of the two as far as management and supply of inputs (e.g., credit) are concerned.

The farming system emphasis in the socio-economic study thus addresses those concerns raised in the UNDP Draft Action Plan and the OMVG terms of reference for studies approved by the OMVG Council of Ministers which diffuses socio-economic concerns under several different study-headings. The nature of the survey which involves intensive data collection throughout an economic farming year will provide an effective indicative set of models of the full operation of different farming systems which will be affected in somewhat or dramatically different ways by the building of the two barrages (Yelitenda and Kekreti), the development initiatives pursuant to the use of their water resources, and by various upland development initiatives in the Basin. The value of the farming systems approach to the creation of a socio-economic baseline for the Basin lies in the fact that one of the criteria that has to be met in terms of expecting farmers to adopt and benefit from an innovation is that it should be generally compatible with the farming system used by the intended beneficiary population of farmers. Through the socio-economic baseline survey, which would involve collecting data on the whole farming system, the possibility of the building-in of compatibility to the most-appropriate farming system which will meet planning goals is made possible and would significantly increase the chances for the successful introduction of the innovation.

Two final points that should be considered in implementing the Socio-economic Study component of the AID Project:

(1) It is essential to have quick turn-around time in terms of making the results available for analysis in both the short term and the long term. Processing of the data should begin no later than the second month of the study so that enumerator errors and the administration of the study can be modified to maximize the quality of the study results.

(2) All sampling design and survey instruments must be determined by the contractor in consultation with the potential users of the data. Thus the Socio-economic Study Committee in the context of the OMVG must be seen by the contractor as the point for collaboration with potential users. The purpose of the socio-economic study will not be achieved if it is only of primary utility to the donors.

ANNEX G

3. TECHNICAL ASSISTANCE/JOB DESCRIPTIONS

3. Technical Assistance/Job Descriptions

Technical Assistance to OMVG

Long and short-term technical assistance specialists will be provided by the project, as well as training for OMVG technicians. The training will include academic training and on-the-job experience. Much of the on-the-job training will be accomplished by working with the contractors for the studies that are a part of this project: aerial photography and mapping, environmental and socio-economic studies.

Purpose

The purpose of this component is to improve the institutional capability of the OMVG, especially that of the High Commission and the planning unit within the OMVG, so that it can more effectively perform its role in assisting the member states to develop the resources of the Gambia River Basin.

Activities

Three types of activities are included in this component to improve the institutional capability of OMVG. They are: providing long-term technical assistance specialists, providing short-term technical assistance specialists and providing training to host country technicians. The training activity is further divided into academic, technical and on-the-job training. All of these activities are discussed separately.

The Action Plan of OMVG (dated April, 1980) has identified long-term technical assistance needs in the following areas:

- one Chief of the Division of Irrigated Agriculture	36 man/months
- one Chief of the Division of Agronomy	36 " "
- one Chief of the Division of Infrastructure	60 " "
- one Chief of the Division of Planning	60 " "
- one Environmental Specialist	24 " "
- one Socio-economic Specialist	36 " "
- one Chief of the Division of the Financing of programs and projects	48 " "
- one Topography - Cartography Specialist	24 " "

The Action Plan further points out the need for flexibility in meeting specific OMVG needs over the 1981 - 1986 period.

AID is focusing its attention on the planning and mapping phases of river basin development. Experience in river basin planning in the U.S. and elsewhere has demonstrated the need for a number of basin specialists including those suggested in the Action Plan.

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Therefore, AID long-term technical assistance will be provided as follows:

- -- civil engineer/river basin planner in support of the Chief of the Planning Division.
- -- environmental specialist.
- -- rural sociologist.
- -- natural resource economist with background in policy analysis.

The long-term technical assistance will be provided by four specialists whose responsibilities and qualifications are described briefly below. For effective interaction with officials from the member states the language requirement (in addition to English) for these specialists should be an FSI or equivalent rating in French S3 and R3. If the specialist does not already have this proficiency, intensive language training should be provided. All long term specialists will be employed by AID under personal services contracts beginning in FY 1982 and extending through FY 1985. Despite the fact that the long-term specialists will sign contracts with AID, they will be assigned to work for the OMVG and consequently will be under the authority of the OMVG.

The responsibilities of the technical assistants will be:

1. to support OMVG in appropriate planning and development activities.

2. to provide guidance and on-the-job training to their locally assigned counterparts.

3. with OMVG, under the Director of Technical Services, prepare, as part of an overall river basin study plan of work a PERT chart or similar study scheduling device.

4. prepare a bibliography of data and reports completed and underway and which are relevant to the overall basin study program.

5. assist the OMVG in writing the terms of reference for the environmental and socio-economic studies and for any other studies which prudent and efficient planning requires.

Activities 3,4 and 5 noted above should begin as soon as the technical assistants are assigned to OMVG and be completed as soon as possible.

Qualification for Long-Term Technical Assistance

Civil Engineer/River Basin Planner

Duties: This specialist will advise and assist OMVG Technical Services Planning Division Staff with respect to the engineering

aspects of river basin development. His primary responsibility will be to provide guidance to the Technical Services of the High Commission and to agencies of the member states in procedures for formulating development plans, at both the basin and project levels. He will also assist in other civil engineering aspects of basin planning, such as mapping and preparation of preliminary designs and cost estimates of project facilities. He will provide liaison among the contractors for the aerial photography and mapping studies, the local counterpart on the OMVG staff, the short-term technical advisors assigned to the studies. Through this means he will provide on-the-job training to host country technicians.

Qualifications: As indicated by the title, this specialist should be a graduate civil engineer with broad experience in river basin and water resource project planning. He should have enough familiarity with other aspects of project planning (such as hydrology, economics, land classification, and environmental and social studies) that he can integrate the work of specialists in these fields into the formulation of a comprehensive river basin or project plan. He should also be able to prepare very preliminary designs and cost estimates of project facilities adequate for use in early plan formulation studies.

The civil engineer/river basin planner will be assigned to OMVG during the first year of the project and remain through December, 1984. He will be assigned to the headquarters of the OMVG.

Natural Resource Economist

Duties: This specialist will advise and assist the OMVG Technical Services Planning Division Staff with respect to economic aspects of river basin planning. He should be knowledgeable in the development and analysis of public and private costs and returns associated with resource management and development. He should have a strong background in the field of public choice as related to natural resources issues.

Qualifications: The natural resource economist should have academic training at least to the M.S. level in natural resource economics. His academic training and subsequent experience should have definite emphasis on the policy aspects of resources planning. He should have had prior work experience in an actual river basin planning and development agency. It is strongly recommended that the person selected for this post have had prior overseas experience, preferably in Africa. This specialist should have a strong command of economic terminology in French to function effectively in this position.

The natural resource economist will be assigned to OMVG during the first year of the project and will remain through December, 1984. He will be assigned to the headquarters of the OMVG.

Environmental Specialist

Duties: This person will advise and assist OMVG Technical Services Planning Division Staff with respect to all environmental aspects of river basin development. These aspects include fishery and wildlife resource, human resource, natural vegetation, water quality, archeological resources, and other conditions and concerns of both the natural and human environment. He will be concerned with current conditions of the environment, future conditions without river development projects, the impacts of river development projects on the natural and human environment, and potential means of mitigating adverse impacts. He will work closely with the rural sociologist with regard to these aspects of the human environment. The environmental specialist will also provide liaison among the contractors for the several environmental studies, his local counterpart on the OMVG staff, and national agency personnel assigned to the studies. Through this means he will provide on-the-job training for the host country technicians.

Qualifications: The environmental specialist should have formal graduate education and an advanced degree either in a specialized field of ecology or in general environmental studies. He should be a generalist, knowledgeable and experienced in a wide range of environmental disciplines. He may be an expert by education and experience in one speciality, but the broad range of knowledge is the prime qualification.

The environmental specialist will be assigned to OMVG during the first year and remain through December, 1984. He will be assigned to work in Kaolack.

Rural Sociologist

Duties: This specialist will act as the sociological coordinator for OMVG Technical Services Planning Division. He will synthesize secondary data on the socio-economic processes in the Gambia River Basin, prepare analysis of the development policy implications of the data, and identify subjects for further primary research in relation to the development priorities of OMVG and its member states. He will act as liaison among OMVG Technical Services, his local counterpart in that organization, other national agency personnel, and the contractor for the socio-economic studies, to monitor scheduling and to represent OMVG priorities in the goals of the studies.

Qualifications: The rural sociologist should have formal graduate education and an advanced degree in one of the following: Rural Sociology, Social Anthropology, or Applied Anthropology. He should have had several years experience in his field and shall show proven quantitative and qualitative skills in his discipline. Preference will be given to applicants with research experience in West Africa or problems related to economic development policies and interventions.

The rural sociologist will be assigned to OMVG during the first year of the project and will remain through December 1984. He will be assigned to OMVG headquarters.

SHORT-TERM TECHNICAL ASSISTANCE SPECIALISTS. The project will furnish several short-term technical assistance specialists for various lengths of assignments. A listing of these specialists and a brief description of their activities follow.

The Geodetic Advisor will spend 8 months in the field monitoring the geodetic and ground control survey work of the mapping contractor. In cooperation with the Civil Engineer/River Basin Planner, he will also provide on-the-job training for host country technicians.

The Cartographic Advisor will spend about 3 months in the field monitoring the aerial photography activities of the mapping contractor and about 3 months in the contractor's plant monitoring preparation of the photomaps and inspecting materials before their delivery. He will also assist in providing on-the-job training for host country technicians.

Two instructors will spend one month each in Senegambia, advising host country technicians on methods and procedures for using and interpreting photographic materials.

TRAINING

Academic Training will be provided for the four local counterparts to the American long-term technical assistance specialists on the OMVG Technical Services staff. It is expected that each counterpart will have the equivalent of a bachelor's degree in his specialty before his assignment to the OMVG staff. Each counterpart will spend one year in master's level course work in his specialty at an American university and then return to Senegambia to assist with current studies. The environmental specialist will assist specifically with the environmental studies and the rural sociologist and the natural resources economist will assist with the socio-economic study. The civil engineer/river basin planner will work on either specific or general studies that may be in progress. After one year of such work each counterpart will return to the U.S. to write a Master's thesis based on his work in the Basin studies and then return to permanent assignment with OMVG.

One year of academic training will also be provided for a junior statistician from OMVG or one of the national agencies, in the field of data collection and statistics. Costs for this training include funds to permit travel and visits to agencies or firms experienced in data collection and statistical processing.

Technical Training will include training two persons from OMVG or national agencies in data processing for six months each at a site to be selected by the contractor for the socio-economic study.

Four qualified students will be selected for observation and orientation in mapping procedures and care and use of photographic materials. This training will be for one month in the fall of 1982 and will be given at appropriate U.S. Government agencies and at the mapping contractor's plant.

On-the-job training will take several forms. The local counterpart environmental specialist will receive one year of training by working with the contractors for the several environmental studies. Similarly, the local counterpart civil engineer/river basin planner will receive on-the-job training by working with the technical assistance specialist from the U.S. in performing his responsibilities.

As mentioned above, the local counterpart rural sociologist, natural resource economist will spend about one year each as full-time participants in the socio-economic study, which will be very beneficial on-the-job training. Because this will be full-time participation, however, they may not have any significant amount of time during the course of this project to work with the American technical assistance rural sociologist and agricultural economist on their other duties in addition to liaison work in connection with the socio-economic study contract.

It is expected that the Ministries of the member states will assign personnel to work with OMVG and the contractors of the several studies. In doing this work they will receive on-the-job training under the guidance of the American technical assistance specialists or of the contractors' staffs.

LOGISTIC SUPPORT

This support to OMVG includes both specifically identified and unidentified purchases of equipment and supplies. The major item is purchase of vehicles for use by the American technical specialists during their assignments to OMVG. Operation and maintenance costs for these vehicles are also covered.

Funds are included in each of the first four fiscal years (FY 1981, 82,83, and 84) for general use by OMVG and for purchase of miscellaneous equipment and supplies. The specific items are not identified at this time; they can be selected at the option of OMVG staff in consultation with the four American technical assistance specialists. One option mentioned earlier is employment of a management consultant to advise on the role and structure of OMVG. Another option is purchase of equipment, such as microfiche reproduction and storage files, as a basis for establishing a documentation center. Miscellaneous office equipment, such as copying machines, typewriters, and desk calculators, could also be purchased.

Documentation Center

The OMVG may wish to use some of the discretionary funds for a documentation center; if so, the following discussion and tentative budget should be useful in implementing the plan.

A. Background. A major focus of the Gambia River Basin Development Project has been on studies designed to provide new information in support of Basin development, planning and implementation efforts. Yet, equally important is making use of existing data and research in support of improved decision-making.

In reality, there has been considerable research, although isolated in many instances, on development issues in the Gambia River Basin. Unfortunately, the results of these efforts have not been consolidated in a way which makes them readily available to decision-makers.

B. Strategy. In response to the need to consolidate existing research outlined above, it is proposed that a documentation center be created within the OMVG. The development of this center would include three components:

1. Efforts to obtain the relevant source materials, primarily within Senegal and The Gambia, but also in Great Britain, France, and the United States, would be supported. Some of these materials could be obtained by correspondence, but this would produce a far from adequate response. Someone will have to take responsibility for reviewing relevant bibliographies, actually visiting organizations concerned with development in Senegal and The Gambia and reviewing their holdings, obtaining the documents and copying them where necessary, and transporting them back to the documentation center. An effective approach would be to assign a bilingual Peace Corps volunteer to OMVG to carry out this task in FY 1982 and 1983.

Resources Required:

USAID Funded

Peace Corps Volunteer (2 years)	no cost
Travel costs	$ 3,000
Copying costs (off site)	5,000
Acquisition costs	15,000

Local Funding

desk and office space for PCV

2. The organization of the Documentation Center itself will be a major factor in determining its usefulness. The OMVG itself has no expertise in Library Science and without the infusion of such skills the effective cataloging, storage and control of the documentations and periodicals are unlikely to occur. If an individual were assigned to OMVG for two years (FY 1982 and 1983) to develop these

systems, OMVG would have to assign a counterpart (trainee). Without such a counterpart, efforts at organizing the Documentation Center might fall by the wayside once the individual left. Specialized storage equipment would also be needed. While the documentation center will provide for document storage and reproduction facilities, discussions between Technical Assistance personnel and the OMVG concerning installation of micro-filming facilities themselves may also be undertaken in due course.

Resource Requirements: (Illustrative)

USAID Funding

Peace Corps volunteer (2 years)	no cost
Xerox machine (funded under catalog card file)	$1,000
Miscellaneous supplies	

Local Funding:

Desk and office space for PCV
Office space for Library (including 3 tables and 12 chairs)
Bookshelves 12 (3 ft. x 7 ft.x 12 in.)

3. One additional problem encountered by many such documentation centers is document loss. In order to forestall this inevitable difficulty, hard-to-obtain and irreplaceable documents should be microfilmed. The original documents can then be stored in a secured area. The microfilming itself will be done by local contract as the technology involved is too complex to develop within OMVG.

The OMVG will require special storage equipment for the microfilm, 2 microfiche readers, and 1 microfilm reader/printer to insure adequate access.

Where feasible, the documents will be obtained in microfilm rather than hard copy to diminish storage requirements.

Resource Requirements: (Illustrative)

USAID Funded

Microfiche storage cabinet	$ 1,500
Microfiche reader	500
Microfiche reader/printer	2,000
Microfiche production (200,000 pages)	12,000

4. Budget Summary

USAID Funded

PCV's (2 years)	no cost
Travel	3,000
Copying (off site)	5,000

Microfiche production	12,000
Acquisitions	15,000
Catalog Card File	1,000
Microfiche storage cabinet	1,500
Microfiche readers	500
Microfiche reader/printer	2,000
Miscellaneous supplies	1,000
Total	$41,000

Local Funding

Office space
Desks (2)
Tables (3)
Chairs (12)
Book shelves (12)
Counterpart (2 years)

Where possible, local procurement of equipment is recommended, due to the inherent delays and service problems in U.S. procurement.

Position: AID Project Manager, OMVG Project

The purpose of this position is to provide for monitoring, guidance and management of AID inputs to the project. The incumbent will be the U.S. manager for the project. He will take the appropriate actions to cause U.S. contributions to be made in harmony with those of the host entity and of other donors on a timely and effective basis.

1. Controls over work

Reports to the AID Representative/Banjul or Mission Director/Dakar and keeps him, as well as others who may be designated, informed of the exact status of the project on a day to day basis.

2. Qualifications

The incumbent should have acquired, through a combination of training and practice.

i. Broad technical knowledge of the socio-economic and environmental sectors, holding a professional degree in one of the academic disciplines pertinent to the major development thrusts in the project.

ii. Capability of managing a complex program through indirect lines of authority.

iii. Knowledge of project monitoring procedures.

iv. Qualities of leadership and representation that tend to attract support for objectives both within the managers' legal

authority and without.

v. Language: French S-3, R-3

3. Specifically, the Manager:

a. Serves as the project focal point representing the U.S. AID side on project matters in contacts and liaison with host government, PSC technical assistants and other interested officials.

b. Drafts and advances program documents and communications bearing on project funding and implementation including PIO's and IFB inputs.

c. Monitors the implementation of the project, including liaison with the teams. Determines if there is conformity with project agreement requirements, and reports on progress toward project goals.

d. Arranges and participates with AID and host government officials in periodic evaluations of the project based on timeliness.

e. Identifies and takes appropriate action on problems either personally or by timely proposals for action by host government or by AID supervisors.

f. Assures integration of socio-economic and environmental studies through liaison with contractor.

g. Facilitates activities of the dual coordinating committee until relocation of OMVG High Commission headquarters is completed.

ANNEX H: IMPLEMENTATION PLAN FOR THE PROJECT

ANNEX H

IMPLEMENTATION PLAN FOR THE PROJECT

A detailed schedule of implementation activities for the life of the project is contained in this annex. The schedule sets forth the sequence of events for approval and implementation of the project.

February, 1981

AID produces final draft of Project Paper and receives final feedback from OMVG.

April, 1981

The project is reviewed by committee and authorized by AID/Administrator in Washington, D.C.

May, 1981

Project Agreement Negotiations are initiated in Kaolack with the assistance of the Regional Legal Advisor from REDSO/Abidjan.

June, 1981

Final Project Agreement is drafted and approved by AID, the OMVG High Commissioner, the OMVG Council of Ministers and Heads of Member States.

July, 1981

AID finalizes the terms of reference for the socio-economic and environmental study component and the aerial photogrpahy and mapping contract #1.

Final job descriptions for the four technical assistance positions are finalized and recruitment begins.

August, 1981

Aerial photography and mapping contract #1 and socio-economic/environmental contractors solicited by announcement in CBD.

October, 1981

Receipt of proposals from potential contractors for aerial photography contract #1 and selection.

Receipt of proposals from potential contractors for socio-economic/ environmental study.

November, 1981

Aerial photography contract #1 work begins.

December, 1981

OMVG completes selection process and assigns counterparts for each of the four positions and the statistician.

January, 1982

A contractor is selected for socio-economic and environmental study contract. Counterparts and statistician leave for course work training at U.S. universities.

February, 1982

Socio-economic and environmental study contract signed. Four technical assistants complete language training and are assigned to the OMVG.

March, 1982

Core staff for socio-economic study arrive on site.

April, 1982

Announcement for aerial photography contract #2 published in CBD.

May, 1982

Full environmental and socio-economic study teams arrive on site.

June, 1982

Aerial photography contract #1 is completed. Data Collection for socio-economic and environmental studies begins.

August, 1982

Aerial photography contract #2 is awarded.

January, 1983

Counterparts complete 1 year Master's course work and return to undertake research with socio-economic and environmental study teams.

June, 1983

Data collection for environmental study completed and preliminary findings presented to OMVG for review.

July, 1983

Data collection for socio-economic study completed and preliminary findings presented to OMVG for review.

November, 1983

Environmental study analysis completed and integrated into socio-economic study. Aerial photography contract #2 completed and final products presented.

January, 1984

Final, fully integrated socio-economic and environmental study report completed. Counterparts return to U.S. to complete their Master's degree thesis.

July, 1984

Counterparts complete their studies and return home to positions within OMVG.

December, 1984

Four long term technical assistants depart.

ANNEX I: PROJECT FINANCIAL PLAN

ANNEX I-1 : PROJECT FINANCIAL PLAN

BUDGET BREAKDOWN BY COMPONENTS OF PROJECT

TABLE I

PROJECT COMPONENTS	FISCAL YEAR					
	1981	1982	1983	1984	1985	Total
I. Aerial photography & mapping						
A. Contract 1	3,531,130					3,531,130
B. Contract 2		1,438,910				1,438,910
II. Environmental Study						
A. River Resources Study		720,000	890,000			1,610,000
B. Public Health Study		279,000	298,000			577,000
C. Wildlife Study		315,000	213,000			528,000
D. Consulting travel			15,000	15,000		30,000
III. Socio-economic Study		800,000	652,250			1,452,250
IV. Long-Term Technical Assistance						
A. Environmentalist		55,000	110,000	110,000	55,000	330,000
B. Civil Engineer/River Basin Planner		55,000	110,000	110,000	55,000	330,000
C. Rural Sociologist		55,000	110,000	110,000	55,000	330,000
D. Natural Resource Economist		55,000	110,000	110,000	55,000	330,000
E. Vehicle purchase operation & maintenance	106,000	12,000	12,000	12,000	6,000	148,000
F. Language training	18,000					18,000
G. Logistics/Equipment for OMVG	50,000	35,000	35,000	30,000		150,000
H. Evaluation		30,000	60,000	60,000		150,000
I. Counterpart Training	136,000					136,000
Contingency & 10%	384,113	384,991	260,525	55,700	22,600	1,108,929
Inflation @ 15%		635,235	431,516	91,905	37,290	1,195,946
TOTALS	4,225,243	4,870,136	3,308,291	704,605	285,890	13,394,165

TABLE 2

SUMMARY OF DIRECT COSTS BY FUNCTIONAL CATEGORY

FUNCTIONAL CATEGORY	FISCAL YEAR					
	1981	1982	1983	1984	1985	TOTAL
1. Long-term technical assistance	18,000	220,000	440,000	440,000	220,000	1,338,000
2. Technical services supplied under contract	3,531,130	3,552,910	2,068,250	15,000		9,167,290
3. Direct training of host country technicians	136,000					136,000
4. Equipment, supplies, vehicles	150,000	35,000	35,000	30,000		250,000
5. Vehicle operating costs	6,000	12,000	12,000	12,000	6,000	48,000
6. Evaluation		30,000	60,000	60,000		150,000
TOTAL DIRECT COSTS	3,841,130	3,849,910	2,615,250	557,000	226,000	11,089,290
				Contingencies		1,108,929
				Inflation		1,195,946
				GRAND TOTAL		13,394,165

TABLE 3

BREAKDOWN OF PROJECT COSTS BY FUNCTIONAL CATEGORY AND FINANCIAL CLASSIFICATION

FUNCTIONAL CATEGORY	Foreign Exchange (US Sources)	Local Costs	Local Cost Shelf Item	Code 935	Total
1. Technical assistance (long term)	1,338,000	0	0	0	1,338,000
2. Technical services supplied under contract	9,167,290	0	0	0	9,167,290
3. Participant training	136,000	0	0	0	136,000
4. Equipment, supplies, vehicles	215,000	0	35,000	0	250,000
5. Vehicle operating costs	0	0	48,000	0	48,000
6. Evaluation	150,000	0	0	0	150,000
TOTAL	11,006,290	0	83,000	0	11,089,290
			Contingencies		1,108,929
			Inflation		1,195,946
			TOTAL		13,394,165

TABLE 4 PROJECT COMPONENT BREAKDOWNS

I. BUDGET FOR AERIAL PHOTOGRAPHY AND MAPPING COMPONENT

For 1:50,000 Scale Panchromatic and Color IR Photography and 1:25,000 scale mapping control

First Contract

Ground control surveys

Doppler stations 20 @ $20,000 each		$400,000

Autosurveyor control points (130)

Mobilization	$ 17,000	
First 10 days @ 3,150	31,500	
Next 40 days @ $4,250	170,000	
Air freight	6,000	
Air fare for crew (2)	4,000	
Per diem for crew 2 @ $100/day x 50 days	10,000	
Vehicle rental 2 @ $1,500/mo. x 1-2/3 mo.	5,000	
Vehicle fuel	8,000	
Vehicle repairs	2,000	
Miscellaneous	21,500	
Subtotal		275,000

Vertical control points by altimetry (250)

Salary - 2 @ $2,000/mo. x 2 mo.	8,000	
Air fare for observer (2)	4,000	
Per diem for observer 2 @ $100/day x 60 days	12,000	
Vehicle rental 2 @ $1,500/mo. x 2 mo.	6,000	
Vehicle fuel	4,000	

Altimeter rental (6) 6 @ $2/day x 6 days		700	
Miscellaneous equipment		2,000	
Data reduction		2,000	
Miscellaneous		4,300	
	Subtotal	43,000	43,000
Reobservations and contingencies		10,000	
	Subtotal	53,000	53,000
Plus 10% for Guinea			72,000
			$800,000

Aerial photography (based on prop ject type aircraft)

Mobilization and Demobilization

Ferry aircraft		25,000	
Per diem, 5 men x $100/day x 30 days		15,000	
Fare, 3 men x $2,000 round trip		6,000	
Auto rental, 1 x $1,500/mo. x 1 mo.		1,500	
Air freight		5,000	
Lab set-up		5,000	
Salaries		2,400	
	Subtotal	$59,000	$ 59,000

Standby

Pilot, $100/day x 90 days	9,000
Coplilot, $83/day x 90 days	7,470
Cameraman, $72/day x 90 days	6,480
Mechanic, $72/day x 90 days	6,480
Labman, $72/day x 90 days	6,480
Plane, fixed costs, $1,200/day x 90 days	108,000

Car rental, $1,500/mo. x 3 mo.	4,500	
Air freignt, $2,000/mo. x 3 mo.	6,000	
Per diem, $100 x 5 men x 90 days	45,000	
Office & Lab rental, $5,000/mo. x 3 mo.	15,000	
Miscellaneous $2,000/mo. x 3 mo.	6,000	
Subtotal	$220,410	$220,410
Flying cost		
80 hours x $500/hour		40,000
Materials		
Film, pan, 23 rolls $188	4,324	
Film, color, 23 rolls x $556	12,788	
Processing film	10,000	
Subtotal	27,112	27,112
Photo Indexes (no color)		
11 indexes x 88/hour x 30 hours	2,640	
Materials	900	
Subtotal	4,040	4,040
Subtotal		$350,562
Plus 10% for Guinea		35,438
Subtotal		386,000
Subtotal		$1,186,000
Overhead and contingencies, 100%		1,186,000
Subtotal		$2,372,000

Materials to be delivered

Data on ground control surveys
(included in costs shown above)

Panchromatic photo products

Contact prints 10 each x 2400 = 24,000 prints x $1.50	36,000

Photo Indexes			
20 each x 11 = 330		2,000	
Duplicate aerial negatives			
23 rolls x 200 ft. x 44		18,400	
Duplicate photo index negatives			
3 each x 11 = 33		500	
Color photo products			
Contract prints,			
6 ea. x 2400 x $6		85,000	
Transparencies,			
3 ea. x 2400 x $6		43,200	
Duplicate aerial postitives			
23 rolls x 200 ft. x $7		32,200	
	Subtotals	218,300	218,300
Plus 10% for Guinea			22,700
	Subtotal		241,000
	Subtotal		$2,613,000
Profit, 10% ±			271,000
	Subtotal		$2,884,000
Advisors			
Geodetic advisor			
$10,000/mo. x 8 mo.		80,000	
Cartographic advisor			
$10,000/mo. x 3 mo.			
$ 6,000/mo. x 1 mo.		36,000	
	Subtotal	116,000	116,000
Total cost for 1:50,000 Scale mapping & Color Photography Under First Contract			3,000,000
Total cost for 1:10,000 scale mapping			531,130
Total First Contract (FY 81)			$3,531,130

Second Contract

For 1:25,000 Scale Mapping

Map preparation

Aerotriangulation	
2400 photos x $65/photo	156,000

Photomaps			
Rectification, 2/hr. x 3 hr. x $8		48	
Preparation and completion, 60/hr. x $8/hr.		480	
Mosaic, 8 hr. x $8/hr.		64	
Materials: baseboard, photos, overlays, film		100	
	Cost per sheet	$ 692	
400 sheets x 692			276,800
	Subtotal		$432,800
Plus 10% for Guinea			43,200
	Subtotal		$476,000
Overhead and contingencies, 100%			476,000
	Subtotal		$952,000
Material to be delivered			
Photomaps			
50 sets x 400 sheets = 20,000 sheets		80,000	
Duplicate map negatives			
3 sets x 400 sheets = 1,200 negatives		9,100	
		89,100	89,100
Plus 10% for Guinea			8,900
	Subtotal		98,000
	Subtotal		$1,050,000
Profit, ± 106,000			106,000
Contract cost for 1:25,000 Scale Mapping Second Contract			$1,156,000
Cost for 1:10,000 Scale Mapping			

Map preparation		
Aerotriangulation		15,000
Orthophotomaps		
Assuming 25 sheets		100,000
		115,000
Overhead & contingencies 100%		115,000
	Subtotal	$230,000
Materials to be Delivered		
Orthophotomaps		
50 each x 25 sheets x $6		7,500
Duplicate Map Negatives		
3 each x 25 sheets x $8		600
	Subtotal	8,100
Profit 10%		810
		8,910

Total Cost for 1:10,000 Scale Mapping Under Second Contract:

$238,910

Advisor	
Cartographic advisor $6,000/mo. x 2 mo.	12,000
Instructors in the use of photographic materials	
2 persons x $10,000/mo. x 1 mo.	20,000
Training	
4 students in U.S. for 1 month	
4 persons x $3,000/mo. x 1 mo.	12,000
Total Cost for Work Under Second Contract (FY (82)	$1,438,910

II. ENVIRONMENT STUDIES COMPONENT BUDGET

A. River Resources Study Budget

The estimated costs for the river resources are shown by fiscal

in the following tabulation:

	FY 82	FY 83
	($1,000)	($1,000)
6 technical experts, including overhead, travel, per diem @ $12,000/month for 15 months	432	648
1 Fisheries Economist @ 12,000/month for 2 months		24
5 technicians, including overhead, travel, per diem @ $4,000/month for 12 months	120	120
1 lab boat, rental, operation and transport to Gambia @ $10,000 per month	60	60
Chemical analysis equipment and supplies	25	
Fish survey equipment and supplies	10	
3 Boston whalers @ $5,000 each plus $200/ month per boat for operation and maintenance	19	4
2 vehicles (4-wheel drive) purchase plus operation and fuel @ $300/month per vehicle	44	4
Other supplies and equipment	10	5
Data processing an analysis		10
Report translations and printing		15
	720	890

B. HEALTH SURVEY BUDGET

1. Personnel Requirements

This survey require as a minimum a full-time public health specialist to manage the study. He should be able to call upon specialists in various fields related to water-borne disease, such as parasitology and epidemiology, for short-term assistance. Local personnel would be employed for data collection. Actual allocation of technical staff will be decided by the contractor.

2. Estimated Budget

The estimated cost of this survey is as follows:

	FY 82 ($1,000)	FY 83 $1,000)
1 Public health specialist, including overhead travel, perdiem 18 months @ $12,000/month	72	144
Short-term specialist assistance 20 months @ $12,000/mo. including overhead, travel, per diem	120	120
Local personnel	20	20
1 vehicle (4 wheel drive) purchase plus $300/mo. operation and maintenance	22	4
Laboratory and miscellaneous equipment and supplies	10	
Report translation and printing		5
1 movable caravan	35	5
Total	279	298

C. WILDLIFE STUDY

	FY 82 ($1,000	FY 83 ($1,000)
3 technical experts, including overhead, travel, per diem, etc. @ $12,000/month for 6 months	108	108
1 team leader including overhead, travel, per diem @$12,000/month for 12 months	72	72
2 technicians including overhead, travel, per diem @ $4,000/month for 8 months	48	16
2 vehicles (4-wheel drive) purchase plus $300/month per vehicle for operation and maintenance	44	4
Other supplies and equipment	8	3
Report translation and reproduction	-	5
1 movable caravan	35	5
Total	315	213

III. SOCIO-ECONOMIC STUDY COMPONENT BUDGET

Expenditures obligated in FY 1982	Line Total
A. Six months each @ $19,000/year	
Mapping procedures and use photo material	$ 19,000
4 persons x 1 month x $3,000/month	12,000
B. Contractor-hired personnel	
1. Agricultural economist and rural sociologist	
Each 24 months in the field @ $157,000/year (including estimated 75% contractor's overhead) and 7 months in the United States @ $70,000/year (including estimated 75% contractor's overhead). Assume base salaries of $40,000/year/person.	805,000
2. Short-term professional consultants to be determined by the contractor.	
Eight person-months @ $10,000/month	80,000
3. Contractor-supplied graduate student assistance	
Estimated at five graduate assistants for two months, each in the field @ $6,000/month and seven months, each in the United States @ $1,500/month.	112,500

4. Local field supervisors		
Six persons for 17 months each @ $400/month and two additional trainees for one month each @ month	$	41,600
5. Local field enumerators		
Thirty-six persons for 16 months each @ $200/month, and 14 additional trainees for one month each @ $200/month	$	118,000
6. Local coders/editors and keydisc operators		
Eight persons for 15 months each @ $400/month	$	48,000
C. Equipment and Supplies		
1. Two 4-wheel drive vehicles @ $25,000/each plus operating/maintenance expenses for each vehicle @ $375/month of operation in the filed	$	72,500
2. Six motorbikes for field supervisors @ $1,000/each, plus operating expenses @ $150/month of operation	$	21,300
3. Thirty-six bicycles for field enumerators @ $150/each, plus maintenance @ $1,000	$	6,400
4. Study office equipment: tables, chairs, typewriters, photocopiers, meimeograph machine, etc.	$	10,000
5. Two dual-station data entry devices, computer tapes, discetees, etc.	$	15,000
6. Questionnaire and manual assembly and printing	$	15,000
7. Miscellaneous field supplies and expenses	$	16,950
8. Data processing costs	$	35,000
D. 3 reports preparation, translation and printing	$	24,000
Grand total for study	$	1,452,250

IV. TECHNICAL, TRAINING, EVALUATION AND LOGISTICAL SUPPORT BUDGETS

Financial Plan

The estimated costs of the technical assistance and training activities are as follows:

1. Long-term technical assistance specialists

Environmental specialist	
3 years @ $110,000/year	330,000
Civil engineer/river basin planner	
3 years @ $110,000/year	330,000
Rural sociologist	
3 years @ $110,000	330,000
Economist	
3 years @ $110,000/year	330,000
Language training	18,000
Subtotal	1,338,000

2. Short-term technical assistance specialists

Geodetic advisor	
8 months @ $10,000/mo.	(80,000)1/
Cartographic advisor	
3 months @ $10,000/mo.	
3 months @ $ 6,000/mo.	(48,000)1/
Instructors in use of photographic materials	
2 & 1 month @ $10,000/mo.	(20,000)1/
Subtotal	(148,000)1/

3. Training

Academic	
Counterpart environmental specialist	
1 1/2 yr. X $19,000/yr.	28,500
Counterpart civil engineer/river basin planner	
1 1/2 yr. x $19,000/yr.	28,500
Counterpart rural sociologist	
1 1/2 yr x $19,000 yr.	28,500
Counterpart natural resource economist	
1 1/2 yr. x $19,000 yr.	28,500
Data collection and statistics	
1 person x 1 yr. x $19,000/yr. plus $3,00 for travel	22,000
Subtotal	136,000

1/ Covered under budget for Aerial Photography and Mapping Study

Technical		
Data processing		
2 persons x 6 mo. each x $19,000/yr.		$(19,000) 2/
Mapping procedures and use of photographic materials		
4 persons x 1 mo. each x $3,000/mo.		(12,000) 2/
	Subtotal	$(31,000) 1,2/

4. Logistic Support

Vehicle purchase		
4 X $25,000 each		100,000
Vehicle operation and maintenance		
4 X 4yr. X $3,000/yr.		48,000
Miscellaneous equipment and supplies		150,000
	Subtotal	298,000

5. Evaluation

FY 82		30,000
FY 83		60,000
FY 84		60,000
		150,000
	Total	1,922,000

1/ Covered under budget for Aerial Photography and Mapping Study

2/ Covered under budget for Socio-economic Study

ANNEX J

COMPLETED INITIAL ENVIRONMENTAL EXAMINATION

INITIAL ENVIRONMENTAL EXAMINATION

GAMBIA RIVER DEVELOPMENT PROJECT PAPER

PROJECT LOCATION : Gambia River Basin (The Gambia and Senegal, West Africa).

PROJECT TITLE : Gambia River Basin Development Project (625-0012).

FUNDING : $ 15,200,000 in FY 1981-1984.

LIFE OF PROJECT : Four years.

IEE Prepared by : Kenneth Mittelholtz, Environmentalist/Project Design Team.

ENVIRONMENTAL ACTION RECOMMENDED : Negative determination.

I. EXAMINATION OF NATURE, SCOPE AND MAGNITUDE OF ENVIRONMENTAL IMPACTS

A. Description of the Project

1. Geographic and Social Setting of the Project

The Gambia River, rising from its source in the Fouta Djallon Mountains of northeastern Guinea, flows a distance of 1,184 kilometers through Senegal and The Gambia to the Atlantic Ocean at Banjul. The Gambia River Basin comprises essentially the entire land surface of The Gambia; small areas of the Senegalese provinces of Casamance and Sine Saloum; the majority of the province of Senegal Oriental; and the northernmost area of Guinea. The Basin drainage area is defined on the maps accompanying the Section II of the project paper, along with Table 1 which shows the major physio-climatic units of the Basin.

The total Basin Drainage area is 77,850 square kilometers and is apportioned among the three riparian states in the following manner:

Riparian State	National Land Area as % of the Total Basin	National Basin Area as % of Total National Land
Guinea	9	3
Senegal	77	30
The Gambia	14	99

The Gambia River Basin is one of three adjacent river basins in the Sudano-Sahelian zone of West Africa. All three basins - i.e. the Senegal, Gambia, and Casamance - are composed of tidal estuaries and inland fresh water sources. The Gambia Basin is relatively flat except for the eastern part of Senegal and Guinea where elevations in the Fouta Djallon Mountains reach 1,150 meters above sea level. The lower reach of the Gambia River from Gouloumbo, Senegal to Banjul, The Gambia is about one-half the length of the river and is under tidal influence. The river and its tributaries provide a plentiful but highly seasonal supply of surface water to the Basin. Optimal utilization of these seasonal surface flows is possible if necessary infrastructure is provided for proper year-round water management. In this regard, there are several sites in the Basin at which dams and storage reservoirs could be built. Ground-water resources in the Basin are known to be significant and may offer an alternative source of water in some areas.

The salient features of the land surface are that it is typical semi-tropical, savanna-type climatic zone. The climax vegetation has long since disappeared in almost all areas of the Basin. The land is used primarily for extensive agricultural cropping, fallow, livestock grazing, and limited forestry. Rainfall patters are unimodal over the entire area and rainfall averages from 650 to 1200 millimeters per year depending on location in the Basin.

The Basin human population is estimated to be approximately 1.15 million persons in 1980 and is projected to grow to minimum of 2 million persons by 2000. The estimated rate of human population growth is 2.8% per annum but recent studies of natural population increase and migration flows into the Basin seem to indicate that this commonly-agreed-to rate of population growth is too low and that flows due to in-migration may increase dramatically if projects initiated in the Basin serve as magnets to attract both skilled and unskilled agricultural labor.

The other salient feature of human population statistics is that human distribution throughout the Basin is highly variable. The mean density for the Basin is 13.2 persons per square kilometer but area densities in The Gambia easily exceed 75 persons per square kilometer. Overall, The Gambia, with only 14% of the total surface area of the Basin in its national territory, contains about one-half of the human population.

Agriculture accounts for over two-thirds of the Basin area's gross domestic product, with over 60% attributable to the area's main cash crop -- i.e. groundnuts. Food crop production combines compound vegetable gardening with subsistence-level production of upland and swamp rice, millet, sorghum and maize. Livestock of all species are well-integrated into the indigenous farming systems and provide a number of important products to the compound agricultural production units.

From the viewpoint of technical agriculture, the single biggest constraint upon the existing agriculture of the Basin is its almost total dependence upon annual rainfall. The existing cropping patterns are a clear reflection of the desire of local farmers to avoid the risks and

uncertainties inherent in a rainfall regime that is highly variable in both spatial and temporal terms. It is for this reason that the development of water control structures on the Gambia River and the subsequent development of irrigated agriculture behind those structures are such high priority development issues with the member states of the Basin.

2. The Project

The actual project described elsewhere in this project paper is an institutional development effort with the Organization pour le Mise en Valeur du Fleuve Gambie (OMVG), which is the designated river basin planning agency for the member states of the Gambia River Basin. The specific components of the proposed project are as follows:

1. Aerial photography and mapping of the entire Gambia River Basin.
2. Specific elements of a comprehensive baseline environmental study for the entire Gambia River Basin as proposed by the OMVG.
3. A socio-economic study focussed on the existing farming systems in the Basin and the likely impacts of planning and unplanned activities upon them, individually and collectively.
4. American technical assistance personnel to support the OMVG's Technical Services branch.
5. Trainings of OMVG and host country technical and administrative personnel.
6. Certain logistical and material support for the OMVG, primarily in the area of information storage and retrieval capacity in a documentation center.

The principal outputs of the project are the transmission of technical skills to local technicians through a combination of formal and non-formal training programs; delivery of the three technical studies listed above; and the creation of a documentation center for the OMVG.

There are no construction activities of any kind included in the project. There is a considerable amount of fieldwork both on the Gambia River and on the land bordering it, particularly with regard to the baseline data gathering activities under the Environmental Study.

II. CHECKLIST FOR IMPACT IDENTIFICATION AND EVALUATION

Impact Areas and Sub Areas

		Impact Incidence
A.	Land Use	
	1. Changing the character of the land through:	
	a. Increasing the population	N
	b. Extracting natural resources	N
	c. Land clearing	N
	d. Changing soil character	N
	2. Altering natural defenses	N
	3. Foreclosing important uses	N
	4. Jeopardizing man or his works	N
	5. Other factors	N
B.	Water Quality	
	1. Physical state of water	N
	2. Chemical and biological states	N
	3. Ecological balance	N
	4. Other factors	N
C.	Atmospheric	
	1. Air pollution	N
	2. Air additives	N
	3. Noise pollution	N
	4. Other factors	n

Symbol Explanation: N = No environmental impact
L = Little environmental impact
M = Moderate environmental impact
H = High environmental impact
U - Unknown environmental impact

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 N

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

III. DISCUSSION OF THE IMPACTS

This project is not designed to result in any activities that will have a significant adverse impact on the natural or human

environment of the Gambia River Basin. All activities under the project are, in fact, directed at giving local technicians the information and the skills to better understand their environment and to take critical environmental issues into account in general river basin planning and the design of specific projects with an overall basin development plan.

The main environmental impact associated with the aerial photography and cartography work will be temporary and limited air pollution emissions caused by airplanes and ground vehicles used in execution of the aerial photography and the ground control activities. This impact will not lead to any measurable deterioration of the air quality of the Basin.

The institutional strengthening of the OMVG will not have any direct environmental impact as no office space of staff housing is to be funded for construction by this project.

While the environmental surveys -- i.e. the river, wildlife, livestock and public health -- may require some sampling of animal and plant populations for purposes of baseline data collection and impact analyses, this sampling will have no adverse impact on the ecology of the Gambia River Basin.

IV. RECOMMENDATION FOR ENVIRONMENTAL ACTION

In view of the facts that this project will provide technical assistance and training which coupled with other inputs will provide better management and planning skills for the general development of the Gambia River Basin, it is felt that a Negative Determination is appropriate and that the project will not require an Environmental Assessment.

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ANNEX K: BIBLIOGRAPHY

ANNEX K

BIBLIOGRAPHY

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