

675-0201

GUINEA

Ag. Production + Training

ASSESSMENT Reports

FY 75-81

GUINEA AGRICULTURAL PRODUCTION
CAPACITY AND TRAINING PROJECT
(675-0201)

REPORT BY
AID ASSESSMENT TEAM

May 7, 1981

UNCLASSIFIED

SECURITY CLASSIFICATION

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

RECORD OF CONVERSATION

TELEPHONE CONVERSATION

CONFERENCE

INTERVIEW

DATE OF CONVERSATION: June 4, 1981

SUBJECT: Guinea Agricultural Project - 675-0201

PARTICIPANTS: M. Speers, G. Evans, R. Payette

COPIES TO: W. Sherwin, AAO/Conakry; G. Evans, REDSO/WA; R. Payette, REDSO/WA; N. Cohen, AFR/DR; L. DeSoto, GC/AFR; R. Perkins, GC/ENF, L. Bond, AFR/DR/CCWAP, M. Gould, AFR/DR/ENGR

With messrs. Cohen and Bond's concurrence I initiated a call to Abidjan this morning in order to apprise REDSO of recent events regarding this project. I informed Evans and Payette that Parametric and SER/CM had been contacted by a U.S. firm of attorneys representing SATOM, the French construction contractor. This firm had in turn retained services of an electrical engineer and was requesting permission for this engineer to review project plans and specifications in possession of Parametric. Mr. Payette and I agreed that the course of action should be to instruct Parametric not to release any information to any outside entity unless so instructed in writing by AID/W. It was further agreed that the CCG should initiate any such request if it so desired and that REDSO should then make the decision as to whether to accede to any such request. In any event AID/W would not move on this matter unless so instructed by REDSO.

I also spoke to Payette regarding the continuing failure by Parametric to meet certain procurement deadlines previously agreed to and in particular the failure by Parametric to transmit the French translation of bill of materials. We also spoke of various impending procurement matters and also in regards to the recruitment of a third field engineer by Parametric. This information I subsequently relayed to Gould for action.

DRAFTING OFFICER: AFR/DR/CCWAP, M. Speers

DATE OF PREPARATION: June 4, 1981

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GUINEA AGRICULTURAL PRODUCTION CAPACITY

AND TRAINING PROJECT (675-0201)

EXECUTIVE SUMMARY OF AID ASSESSMENT TEAM REPORT

The Guinea Agricultural Production Capacity and Training Project was intended to enhance the agricultural capability of the small farmer in Guinea by a transfer of learning and technology through training, adaptive research and field extension. As originally approved, the Project contained funds for long and short-term experts, training, and laboratory equipment, as well as for construction. Due to an extravagant architectural design and engineering overdesign of Project facilities, improperly prepared IFB's and eventual substantial cost overruns, the Project funding recently increased from \$7.4 million to \$14.4 million, the bulk being allocated to carry out the construction phase of the Project. Even at this late date in implementation there are four cost uncertainties: (1) an incomplete bill of materials for construction commodities; (2) attrition of commodities through damage and loss; (3) need for work change orders; and (4) a growing number of construction contractor claims.

The amount of funds remaining for technical assistance has been drastically reduced; yet, without technical assistance, the construction of the teaching, adaptive research and related extension facilities will be of no use. Clearly, substantial additional funds will be needed to finance inceptive technical assistance in a

five to ten year timeframe. It is believed that beyond a minimum amount of funds set aside for essential transitional technical assistance, this may best be done through a new project which specifically identifies technical assistance as its objective, thereby utilizing the facilities constructed and fulfilling the original and primary purpose of the Project.

Before the construction work can be completed, certain key actions and events need to occur. High on the priority list is preparation of a complete bill of materials of commodities already purchased, commodities currently being bought and commodities still to be purchased to complete construction. Such an inventory has never been drawn up; yet without it, a schedule of total funding needs will not be known. This inventory is presently being prepared by Parametric and is expected to be available by May 15, 1981.

The construction contractor, SATOM, may make additional claims for delays caused by the GOG/AID. These claims will probably not be resolved until after the end of construction. A possible claim may be filed also by NMG, the original A&E firm. Further, remaining commodity procurement by AAPC needs to be closely monitored to insure against any more procurement and shipping delays. This must be done from Washington by AFR/DR with Parametric collaboration. Until commodity and final construction costs are known, AID will not know exactly what funds will remain available in the project to support further activities. A minimum reserve for contractor claims

has been provided for in the revised Project budget. However, it cannot now be determined whether it will be sufficient to cover all future claims.

The Assessment Team concludes that to complete the construction element within the \$14.4 million funding available and to initiate the technical assistance phase, the following actions need to be taken:

- (1) An accurate bill of materials, in French, must be completed by Parametric and agreed to by SATOM. USAID/Conakry and REDSO/WA will request SER/COM to amend existing PIO/Cs authorizing AAPC to procure the balance of construction commodities;
- (2) pending a receipt of such bill of materials and a subsequent determination of funding availability to complete the Project, all funding for technical assistance components should be deferred beyond a lower limit of \$250,000, which will permit the early placement of a farm manager at Tindo and limited short-term consultants as needed at all three sites. Options will be studied by the Chief Engineer, REDSO/WA, for eliminating, deferring or shifting to local costs any construction items which are not essential for start up of the technical assistance phase.

- (3) the SATOM contract should be reviewed by the RLA and Chief Engineer, REDSO/WA, to clarify the contractor's responsibilities for installation of lab equipment and drilling of water wells;
- (4) a final Parametric budget must be approved by AFR/DR and SER/CM and subsequent contract signed;
- (5) a resolution of termination costs with NMG must be reached by SER/CM;
- (6) DR and Parametric must make regular visits to AAPC's office to review procurement actions and resolve any procurement problems;
- (7) a fortnightly report must be required by AFR/DR of AAPC showing procurement and shipping actions;
- (8) the GOG must continually be urged by AAO/Conakry to provide timely and adequate logistical support in protecting commodities off-loaded, in providing transportation and fuel in moving the goods to Project sites, and in providing support facilities for the A&E field personnel;
- (9) regular monthly reporting by AID/field to AID/W and vice versa must be strengthened;
- (10) a third engineer under the Parametric contract is needed for the Foulaya site and, within the next

90 days, consideration also should be given by AID/W, REDSO/WA and AAO/Conakry to a further strengthening of both the Parametric engineering field staff and the possibility of assigning an AID engineer under the USAID project manager; and

- (11) in respect to the technical assistance element of the Project, an early placement of the farm manager and scheduling of key short-term consultants should be considered to be of the highest priority. In addition, USAID/Conakry and REDSO/WA are planning the fielding of a PID team in the summer of 1981 with tentative guidelines to prepare a five year technical assistance project substantially augmenting the technical assistance component in the original Project.

AID Assessment Team

Norman Cohen, AFR/DR
Gordon Evans, REDSO/WA
Walter Sherwin, AID/Conakry
Michael Speers, AFR/DR
Lisa DeSoto, GC/AFR
Samuel Lubin, Contractor & Engineer

Other Staff Advisors

Robert Payette, Engineer/REDSO/WA
David Delgado, AID/Conakry

I. Purpose of Assessment Team

The purpose of the Assessment Team was to reach a common understanding on the current status of the Project and assess what is required to ensure timely completion of construction in a manner acceptable to the GOG and AID. In addition, the Team considered the best approach to implement technical assistance.

II. Descriptive Background

Phased to include an A&E design, construction and a final technical assistance component, this Project was initiated in February, 1976. The Project purpose was, and remains, to assist the GOG to increase food production through (1) development of the research, education and extension complex at the National Faculty Research Institute of Agronomy at Foulaya and the Regional Faculty of Agronomy at Faranah, and (2) establishment of an agro-pastoral demonstration farm and research center on the Niger River flood plain near the Faranah facility. This was to be accomplished through construction of facilities, resident technical assistance, participant training, provision of equipment and supplies and A&E consultant services.

Project funding requirements have risen from \$7.4 million to a current obligation of \$14.4 million. This is primarily due to overdesign and improper cost estimates which include: (1) high mobilization costs of expatriate firms operating in Guinea (there are no local construction firms); (2) lack of local skilled labor,

requiring an unusually high amount of expatriate labor; (3) a "risk" factor which expatriate firms attach to doing business in Guinea; (4) removing the supply of commodities from the responsibility of the construction contractor; and (5) lack of a precise bill of materials and specifications for commodities to be supplied by the A&E and ensuing errors and delays in procurement.

III. Assessment of Project

A. Status of Construction as of April 25, 1981

<u>Location</u>	<u>Paid*</u>	<u>% under Construction</u>	<u>Progress Status as Planned in 6/80</u>
Foulaya	22%	22%	99.8%
Faranah Inst.	15%	18%	57%
Faranah Farm	14%	17%	0%
Tindo	16%	21%	40%

* As of Progress Payment 10 (April 1981).

1. Foulaya

a. Laboratory Building

- (1) Foundation (100%); 1st Floor columns and beams (100%); 1st Floor exterior walls - CMU (100%); 1st Floor stairs (40%); 2nd Floor slab forms (to be removed);
- (2) Covered walkways - concrete slab (100%)
walkway columns need to be modified for

erection - walkway roof frames - on site but many damaged due to poor packaging;

(3) Septic tank - Excavation (80%)

b. Water Main

(1) Trench - 60% completed;

(2) Water pipe, valve, firehydrants - on site;

(3) Tees and fittings - some on site and some in the warehouse in Faranah and will have to be relocated.

c. Water Tank

(1) Columns (100%),

(2) Tank - Floor is formed but cannot be poured until waterstop from U.S. arrives (an omission on plans and being procured by Ray of Parametric for air freighting).

d. Pump House

(1) Foundation 100%

(2) Slab 100%

(3) Steel - on site.

2. Faranah Institute

a. Infirmary

(1) Foundation 100%

(2) Steel 95%

(3) Exterior walls 90%

- (4) Roof 85%
- (5) Interior walls 5%
- (6) Foundation backfill corrected 100%
- (7) Exterior fill 60%

b. Dormitories

- (1) Foundation 100%
- (2) Steel 95%
- (3) Exterior walls (material in place)
- (4) Roof 30%
- (5) Interior walls 0%
- (6) Foundation backfill (to be corrected)
- (7) Exterior fill (not yet started).

c. Classroom

- (1) Foundation 100%
- (2) 1st Floor columns 100%
- (3) 1st Floor beams 0%.

d. Well, Pump House, Library and Storage Tank
not started.

e. Laundry

- (1) Piers 100%
- (2) Steel 60%

3. Faranah Farm

a. Pig House

- (1) Site 100%
- (2) Piers 100%

b. Cattle Barn

(1) Site 100%

(2) Piers 100%

c. Chicken Buildings (3)

(1) Site 100%

(2) Piers 50%

d. Warehouse

(1) Site 100%

(2) Piers 100%

e. Shop/Warehouse

-- Site 100%

f. Well, Pumphouse and Tank - not started.

4. Tindo

a. Dike

(1) Survey 98%

(2) Borrow pits (2) - opened and operating.

(3) Excavation 100%

(4) Fill - started (2000 m³)

(5) Anticipated placement of backfill -
1500 M³

(6) Soils lab - operating and required tests
being performed.

(7) Problems with dike - solved

(8) Inspection - by Parametric on a
regular, normal routine.

b. Technician's Quarters (10)

- (1) Foundations 100%
- (2) Exterior walls 100%
- (3) Roof Trusses 85%
- (4) Roofing 0%
- (5) Access road - Clearing and grubbing only
- (6) Foundation backfill - 15% (most houses still need backfill to be removed and properly replaced).

c. Training Center

- (1) Access roads - clearing and grubbing 100% - rough grading 100%
- (2) Foundations excavation 90%
- (3) Site preparation 85% (erosion control of fills has to be designed and placed).

d. Livestock Center - survey in process.

e. Laborers Quarters - survey in process.

B. Financial Analysis

The most recent Project budget proposed by REDSO as of 3/31/81 is the only basis available for an analysis of this Project's financial status. This budget forecast is attached hereto as Attachment A. The base from which this analysis must depart is the authorized LOP funding as of the 3/25/80 PROAG amendment totalling \$14.4 million.

What emerges is a projection that construction commodities and shipping costs (a major component) are estimated to have increased by 57% over the 3/25/80 authorized LOP amount. Unfortunately, the accuracy of this figure is in doubt because:

AAPC has been dilatory in providing accurate and timely data on financial status;

of the continued escalation of U.S. procurement costs and most particularly, the cost of ocean and air shipment of goods to Conakry; and

AID has not received a field inventory of those goods which have been received at the GOG port in Conakry and the warehouses at Foulaya and Faranah, for comparison with those goods shipped from the U.S.

Taking the March, 1980 estimated Project costs as a percentage of the authorized LOP of \$14.4 million and comparing it with the March 1981 estimates in the REDSO budget, the results are:

TABLE I

	<u>% 3/80</u>	<u>3/81 budget as % of 3/80 estimate</u>
A&E	9.7	12.8
Participants	2.6	3.6
T/A	11.0	11.0
Const. Commodities	31.3	49.1
Lot. Equip. & Vehicles	12.8	12.8
SATOM	25.3	30.2
Misc. & Contingency	<u>7.3</u>	<u>--</u>
Total	100.00	119.5

1. The most important of the Project costs increases

are:

a. Construction Commodities

A projected increase from \$4.5 million to \$7.075 million, equal to an increase from 31.3% of the authorized LOP budget to 49.1%. The causes of this increase are inflation, the necessity of expensive air versus sea shipment to meet delivery deadlines, and the necessity of ordering additional items omitted from original quantity take-offs. Unfortunately, the field has not been able to determine transport losses to date, nor has the bill of materials been completed by Parametric and certified by SATOM, as required. Until such an inventory is completed and SATOM's comments received, we must consider this an open-ended category subject to possible increases.

b. SATOM

A projected increase from \$3.645 million to \$4.32 million, equal to an increase from 25.3% of authorized LOP to 30%. The increase of \$675,000 represents possible contractor claims and the cost of corrective action. SATOM, according to USAID, has already tabled claims aggregating \$250,000. Unfortunately, the actual extent of such claims, and the GOG's potential liability, cannot be ascertained until the end of the Project. The \$675,000 contingency allowance shown is deemed by the field to be a prudent figure. Nonetheless, it is possible this allowance may prove insufficient if the materials' inventory and SATOM's requirements list show discrepancies, or if commodity procurement delays continue.

c. A&E

A projected increase from the original LOP budget of \$1.4 million to \$1.845 million, equal to an increase from 9.7% to 12.8% of authorized LOP budget. This increase is attributed to the costs associated with the termination of the NMG contract and those connected with hiring a replacement (Parametric). Furthermore, additional costs of the Parametric contract reflect the de facto extension of the Project completion date and the newly identified requirement of a third engineer at the Foulaya site. Until a firm budget is submitted and a contract signed with Parametric, this cost category cannot be fixed.

d. Participants

An increase from \$368,000 to \$515,000 reflecting an increased level for training and inflation.

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e. Lab Equipment and Vehicles

\$1,865 million, or 12.8% of LOP. No increase is shown as only \$565,000 of this total has been ordered, with the balance yet to be costed. The unobligated balance of \$1.303 million has been shifted to cover overruns in construction commodities to maintain the existing LOP budget integrity. AID field management has recently determined that the SATOM contract makes no provision for the installation of lab equipment already on order. At the present time, there is no plan to rectify this oversight and, until such a plan is agreed to, it is not possible to estimate installation costs.

2. It is uncertain whether construction can be completed within the authorized level without adjustments to the physical facilities and deferment of the TA component beyond a lower limit of \$250,000. It will not be known until the materials inventory is completed, routine NMG termination costs arrived at and costs associated with the installation of lab equipment are pinned down.

3. Contingencies built into the construction and A&E contracts, as well as the amount shown for construction commodities, may be available for reprogramming when the following are accomplished:

- a. Completion of the materials inventory and agreement with SATOM as to materials required;
- b. firm orders for all items of construction commodities placed including any additional items identified in a, above;

- c. receipt of a final Parametric budget and settlement of termination costs with NMG; and
- d. an agreed-upon estimate of SATOM claims.

The March 31, 1981 revised Project budget, as prepared by AAO/Conakry and REDSO/WA and given to the Team at the initial Abidjan briefing, is the basis of all of the numbers used in this analysis. The starting point is the Project budget attached to the Project Grant Agreement reflecting the March, 1980 amendment to the authorization, which raised the authorized LOP from \$7,400,000 to \$14,400,000. This is set forth in Column 1, page 1 of the REDSO budget. Based on the Acting Assistant Administrator's instruction that the authorized LOP limit shall not be exceeded for the construction phase, any comparison of budget versus actual requirements must balance to \$14,400,000. Therefore, the comparison must be between the March 1980 authorized LOP and the estimates on page 2, Column 1 of the REDSO March, 1981 budget. Categories II and III on page 2 of that budget were reduced to those levels shown on Column 2 of page 1 as already sub-obligated.

The unsub-obligated and contingency allowances of page 1 (combined) were reduced to that level (\$281,000) which would permit the balancing of the total to \$14,400,000.

with these adjustments the comparison shows the following:

TABLE II

<u>Category</u>	<u>Authorized 3/80</u>	<u>\$(000) Required to Complete Ref. Budget 3/81</u>	<u>Col. 2-1 Difference</u>
A&E	\$ 1,400.0	\$ 1,845.0	+445.0
Participants	368.8	254.0*	(114.8)
T/A	1,578.0	16.6*	(1,561.4)
Const. Com.	4,500.0	7,075.0	+2,575.0
Lab Equip.	1,865.0	562.0*	(1,303.0)
SATOM	3,645.0	4,320.0	+675.0
Misc.	46.4	46.4	--
Cont.			
Unsub-obligated	<u>996.8</u>	<u>281.0</u>	<u>(715.8)</u>
Total -	\$14,400.0	\$14,400.0	- 0 -

* Shown as obligated

According to the notes accompanying the AAO/REDSO March, 1981 budget revisions, the following contingencies have been built into the budget for the A&E expense, construction commodity procurement and the SATOM construction work:

TABLE III

A&E Contingency	1,845	(130)
Construction Commodities Contingency	7,075	(575)
SATOM Contract Contingency	1/320	(675)
Sub-total		<u>(1,380)</u>
Unsub-obligated & unallocated contingencies		<u>(281)</u>
Total		(1,661)

A&E: We should be able to determine final NMG costs and the final Parametric contract costs within the next 30 days. Beyond those costs lies that as yet unknown cost which will occur if construction is delayed beyond June 1982, thus requiring an extension of Parametric services.

Construction Commodities: We should be able to firm these cost estimates within 90 days. A \$75,000 to \$100,000 contingency must be kept in reserve until near the close of the Project to meet any unexpected requirements and to make up losses.

SATOM: There is no way at this time to determine the final extent to which AID may be burdened with claims under this contract. The contingency of \$675,000 is deemed a reasonable estimate, but may well be exceeded. We will not know the extent of our potential liability until the Project is physically complete; thus it would not be prudent to consider re-allocating these contingency funds for any other purpose.

Based on the above analysis, the Assessment Team also agreed as to the very high priority of making some provision for an initial tranche of technical assistance. In the Team's judgment, this priority is high enough to warrant an immediate allocation of \$250,000 from the unallocated contingency of \$281,000 for interim technical assistance. This would leave the Project with an unallocated contingency of \$31,000 in addition to the allocated

contingencies shown on Table III aggregating \$1,380,000. Such a move, while supported by the Team, should nonetheless be recognized as a gamble. If further Project delays should occur, cost increases beyond those provided for in the allocated contingencies for the A&E and SATOM contract could require funds in addition to those authorized.

To minimize such risks, the Team will work to tie down the final construction commodity cost element as well as costs associated with NMG and Parametric contracts. At that time, further re-allocations for both technical assistance and unallocated contingencies may be possible. Such allocation will be considered at a proposed AID/W - field budget review later this summer. In addition, to further offset the degree of risk discussed above, an immediate review will commence in the field in order to identify any possible savings which might be made by deferring, terminating or shifting to local costs certain ongoing construction components. Again, it is hoped such a study could be available for discussion at the time of the proposed budget review.

Therefore, pending the budget review, the present Project budget is:

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TABLE V

	<u>\$ (000)</u>
A&E	1,845.0
Participants	254.0 ^{1/}
T/A	266.6 ^{2/}
Construction Commodities	7,075.0
Lab Equipment	565.0
SATOM	4,320.0
Misc.	46.4
Unallocated Contingency	<u>31.0</u>
Total	14,400.0

^{1/} Already obligated

^{2/} Includes \$16,600 already obligated and disbursed.

C. Commodities

Commodities were separated from the construction contract early in the design phase of this contract. The result of this is that USAID/AID/NMG/AAPC are responsible for the procurement and shipping process. GOG participates in the commodity process as soon as materials arrive on the dock and is responsible for receiving, warehousing, transport and security of materials up-country until issued to the contractor. This complicated arrangement has resulted in a very slow and unresponsive pipeline.

Once the commodities arrive in Guinea the GOG receives the material, checks it against the bill of lading and arranges for

temporary storage in the port. Handling in the port is rough. Packing not containerized is often broken into and occasionally items have been stolen. Poor packaging and lack of containerization have also contributed to this problem. To date most losses have occurred prior to arrival in Guinea (rebar and cement) and have been covered by AID-financed insurance. The biggest in-country loss due to handling and pilferage is the loss of about five pallets of wall tile.

In-country transportation is arranged through the Ministry of Transportation, which serves all transportation needs within the country. Consequently, Project commodities compete with all others for transport. There is a constant problem in obtaining enough trucks when needed. However, when considering all transport needs in Guinea, this project has had reasonably high priority. The critical fuel shortage throughout Guinea has further complicated the transport problem. Recently, six loaded trucks sat at the gas pumps for five days before obtaining fuel. Truck tire shortages have also exacerbated the transport problem. When a ship arrives, the materials are classified based on up-country needs, and the most urgently needed commodities are moved first.

GOG has established two warehouses up-country, one at Foulaya, and the other at the Faranah Institute. The latter services all construction needs at Faranah and Tindo. Once material in the warehouse is issued to SATOM the contractor is responsible for all losses.

GOG has established a control and inventory system at each warehouse. All items are checked in and placed on a control card. As commodities are released from the warehouse, the inventory is reduced and a running total is maintained. The inventory in each warehouse has not yet been checked against the bills of lading in order to establish specific losses. However, spot checks of a few areas have not indicated significant losses. The quality of GOG personnel assigned to the warehouses is low. They are willing, conscientious and so far have proven trustworthy, but they are also inexperienced, have minimum education, no familiarity with American construction commodities, and lack leadership and direction. The field engineers work, as time permits, to provide guidance and direction; however, there are also many other demands on their time. There is no qualified or experienced supervision available in the GOG chain of command that can improve on the present system. The GOG Project Director is trying to obtain experienced warehouse supervisors for each warehouse, but so far has been unsuccessful.

While there are acknowledged in-country problems in the commodity chain, by far the greatest problem has been timely arrival of commodities in Conakry. Incomplete procurement specifications by the A&E has been a major problem, and is still a problem. The failure of AAPC to ensure that requested due dates are met is still a problem. For example, laboratory equipment (PIO/C 90102) was ordered in August, 1980 with a delivery due date of 3/31/81. Current projections are that these items will be delivered on September, 1981, six months late.

A recent fire in a warehouse in the port area resulted in a loss of critically needed commodities, although the financial loss was modest. Fires are not common in the port area and this is the first one in years. We understand that the government carries insurance on all commodities until they leave the port. A claim for this loss is being prepared by the GOG. We do not know if the coverage is in Syllis or hard currency.

C. Contractor Performance

1. Navy, Marshall & Gordon, P.C. (NMG)

(a) The two-man team fielded in April 1980 by NMG proved to be hard-working and effective in dealing with their SATOM and GOG counterparts while operating under very difficult and trying circumstances.

(b) NMG had the basic responsibility for designing the physical aspect of the Project and from these basic plans developing the general specifications, bill of materials and procurement specifications, and coordinating procurement to the extent necessary to ensure timely acquisition of commodities, proper packaging and shipping by AAPC. All of NMG's work was based on the Project Paper as written in 1976 and amended in 1977.

(c) It has now been determined that NMG's technical work in the above areas was deficient in the following respects:

(i) The bill of materials and procurement lists were not provided at the time of contract negotiations with SATOM

or at the time the contract with SATOM was signed on March 18, 1980. Accordingly, it has become necessary for Parametric to prepare a revised bill of materials. This work is now in progress;

(ii) the original bill of materials of May 15, 1980 was not translated into French by NMG and the quantities were found to be in error and incomplete. When the Parametric revision of the bill of materials is complete, it will be accompanied by a French translation;

(iii) the structures are overdesigned, too lavish, and contain features inappropriate for the Project's objectives (e.g, tile sills, quarried marble floors in houses, and stair nosings where not essential);

(iv) errors exist in the topographic surveys. At the Faranah Farm, an average error of 1.25 meters was found throughout. At the Tindo Center, errors, the extent to which are still being determined, are also evident at the location of the laborers' quarters and the livestock center; and

(v) detail drawings are missing and dimensions are ambiguous. This has resulted in errors in construction and has required SATOM to rework certain items. NMG did not supply the construction contractor with installation instruction as required.

(d) The above deficiencies, while not necessarily inclusive, have contributed to construction and procurement delays, confusion, and increased costs.

(e) NMG was responsible for the design of the physical facilities and preparation of the bid documents. In choosing the A&E for this task, AID should have been able to determine from the firm's proposal whether it had the necessary experience with overseas projects of this size and a proper appreciation of the political, economic and social environment. It seems clear that the A&E firm selected was not aware of the host country's limitations to absorb a too sophisticated and over-extended group of facilities. At the same time the indications are that the A&E lacked the financial and human resources to develop and manage a project of this magnitude. If the contractor was selected for reasons other than its technical capability to design the project and carry it to completion, the decision was unfair to the contractor, to the Project, and to the host country.

Not only were there too many and too sophisticated components included in the design, but each component was over-engineered. Foundations, columns, trusses, reinforcing steel, and concrete were specified many times beyond the standard needed for the building requirements. Excessive refinements in interior finish were specified. Not only did these add to construction cost overruns, but they will prove to be unsuitable to the environment and will deteriorate in a short time. Certain construction elements, such as roof trusses and covered walkway supports, were ordered assembled in the U.S. and shipped in this form. The high cost of

labor in the U.S. for assembly of specially designed units and the high cost of shipping was entirely unwarranted, and the damage caused during shipping added further to the contract cost when the construction contractor was ordered to make the necessary repairs. How AID approved this design and the subsequent bid documents is difficult to understand.

2. Parametric, Inc.

(a) As subcontractor to NMG, the firm prepared quantity take-offs for NMG and provided one construction supervisor.

(b) On December 24, 1980, Parametric replaced NMG under an AID contract to provide engineering advice to the GOG on construction supervision. They retained the same two field personnel in order to maintain continuity. Parametric is in the process of making quantity take-offs from the construction plans to prepare the final bill of materials, and translating it into French. Parametric's contract provides for technical liaison, as required, with AAPC to expedite procurement and verify that packaging and shipping will meet commodity delivery dates. Parametric is also providing engineering design and specifications for the water well pumps and accessories, and the low head pumps at the Tindo farm, designs not previously completed by NMG, and other needed engineering design work.

(c) Current Performance - Under unusually difficult conditions, Parametric is making every effort to alleviate the problems in quantities, procurement, packaging, and shipping of

commodities. Although many problems still exist, improvements have been made and progress is anticipated soon.

(d) Past Performance - Evidence available in the files indicates that work performed under NMG subcontract resulted in quantity take-offs from early designs and incomplete drawings, which later had to be revised. We understand questions submitted by Parametric to NMG regarding adequacy of design, completeness of drawings and appropriateness of material went unanswered.

3. SATOM is an experienced French contractor operating in West Africa. They built the American Embassy in Dakar and recently completed a similar project in Mali. Because of delays in the arrival of construction equipment, mobilization was slow and construction actually began in September during the last month of the rainy season; progress during September and October was hindered by rain. Full mobilization was completed in November and an increased rate of construction was obvious in December, 1980 and January, 1981. Sporadic and delayed arrival of commodities has had a decidedly negative effect on construction progress. The contractor revised the original work plan in December and this was approved by REDSO/GOG/USAID, but in February this plan could not be implemented due to delays in receipt of commodities.

SATOM has documented delays, non-delivery of materials, and submitted claims for damages since December.

SATOM has one sub-contractor, Jean LeFebvre, a well-known, experienced French contractor specializing in civil works

(roads, dikes, earthmoving and airports). The performance of this contractor has been thoroughly professional to date.

4. AAPC does not have a contract with AID and the only contractual relationship exists through individual PIO/Cs. AAPC has been handling procurement for the Project since its inception.

This contractor receives "shopping lists" and funding through PIO/Cs issued by SER/CM upon direction of the field. These lists are simply a generic description of items required. The actual specifications are furnished directly by the A&E contractor to AAPC, usually without prior AID technical review. These specifications are then used to solicit bids from suppliers. AAPC receives bids, makes awards, issues purchase orders and, through its freight forwarder, makes arrangements for ocean/air shipment and insurance.

Under the unusual management configurations of this project, AAPC works in tandem with the A&E to provide construction materials for SATOM. As SATOM has not received certain materials in accordance with its construction schedule, it has filed, to date, four damage claims. Under the contract SATOM is required to make all possible efforts to mitigate the consequences caused by delays in procurement, although that obligation does not reduce AID responsibilities with respect to procurement or potential claims that may arise due to delay caused by negligence. Accordingly, timely and accurate procurement becomes one of the most vital project activities and the performance of AAPC becomes especially important. Unfortunately, construction delays have already occurred and claims arising therefrom already received.

AAPC, when queried as to why procurement and shipment delays have occurred, has consistently maintained that there are three principal causes for these delays:

(a) The A&E was tardy in supplying technical specifications, and those supplied have often proved defective, resulting in time-consuming conferences with suppliers;

(b) there is a paucity of shipping from the U.S. to Conakry and departures are infrequent and uncertain; and

(c) standard AID procurement regulations often impose delays in the procurement process.

AID/W officials have, over the past year, been drawn into the role of expeditors. With thousands of items being procured, it was clearly impossible for AID to monitor procurement in detail. AID had to depend primarily on procurement status reports by AAPC which contained no financial information as to actual expenditures and were generally 60-90 days out-of-date.

It was not until goods failed to arrive in Conakry on schedule, triggering vigorous field cables, that AID/W was made aware of slippages. To help correct this and to obtain a better fix on the financial status of procurement DR, in October, 1980, requested by letter that AAPC commence fortnightly reporting. After several further letters and phone calls, an abbreviated fortnightly report began to be furnished. By this time, the major portion of procurement actions was well advanced and further delays were

forecast. More recently, these fortnightly reports were unilaterally discontinued by AAPC with the excuse given that they sometimes contained inaccurate information which tended to confuse AID.

In retrospect, it is clear that the routine availability of timely and informative procurement status reporting would have minimized the impact of those delays which were outside the control of AAPC, and would have permitted an opportunity by AID to adjust its Project budget instead of being surprised by cost overruns in individual PIO/Cs.

AAPC's problems with reputedly defective specifications delivered in an untimely manner by the A&E is difficult to assess. It is certain that, to some extent, these problems existed. It is not possible to determine after the fact whether this problem was as severe and limiting as claimed by AAPC. Nevertheless, AAPC did not formally advise AID/W of this problem until confronted with the accumulating complaints from the field as to delays in procurement. If the defects and delays were so severe as subsequently claimed, AAPC was remiss in not formally bringing it to the attention of AID as a factor limiting its ability to perform in a satisfactory manner.

It is acknowledged that AID procurement regulations are often a restricting factor. However, AAPC rarely sought AID waiver action to alleviate bottlenecks in timely procurement and delivery. When AID/W became aware of problems, it often initiated waiver actions in order to assist AAPC. For example, a waiver of the 50/50 shipping requirement was granted to overcome the paucity

of U.S. shipping available. What emerges from the record is the impression that unless pressed, AAPC proceeded with its work without any particular sense of urgency and without advising AID in a timely manner if waiver action was required.

The unusual arrangement whereby the construction contractor was not required to procure what he needed directly, has clearly emerged as the single largest factor responsible for delays and higher than anticipated project costs. The significance of AAPC's role has perhaps not been fully understood until now. In retrospect, we expected more technical competence and a sense of responsibility to AID and project concerns than AAPC was able or perhaps willing to provide. It would appear that, in the future, AID should not seek AAPC's services unless it can satisfactorily respond to AID concerns with regard to its capabilities and performance. It was AAPC's responsibility to "call for help" once the problems in effecting timely procurement action became apparent; failure to recognize or accept the existence of such problems and advise AID reflects seriously on AAPC's capacity to continue as a procurement contractor for AID for future projects.

What also emerges is AAPC's failure to take full responsibility for the actions of its subcontractor, the freight forwarder. A recent example of this was the failure to follow USAID's instructions to have all possible items containerized. When the ship arrived, many items were found to have been damaged because they had not been properly packaged. In addition, the field has repeatedly

complained that bills of lading were not received in a timely manner, thus delaying the port clearance process. This was due to a failure of the freight forwarder to airmail copies of bills of lading despite repeated AID requests for such copies.

E. GOG Role/Performance

1. Overall Role: The overall GOG role includes implementation and direction of the Project with AID assistance in providing legal, engineering and financial advice.
2. Specific roles to provide:
 - a. Personnel: The GOG is to provide adequate numbers of trained staff to implement the project. There has been difficulty in recruiting adequate personnel for field positions, but the situation has improved. Continuity by the GOG Project Director has been valuable. AID is satisfied with the working relationship with GOG counterparts. Performance is consistent with the limited human resources available.
 - b. Funding: GOG provides the Sylis portion of Project costs from PL 480 generated funds.
 - c. Supply management: GOG is responsible for the handling of commodities at the port, their transportation to the sites and storage in warehouses. Performance varies. Improvements in warehousing have been evident, but transportation continues to be a problem due to lack of tires, fuel and trucks.
 - d. Participants: The GOG role is to identify and assign participants. Six of the seven participants have returned. They

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have very good technical background, but have not been properly utilized since facilities and equipment are not in place.

e. Logistical support for TA: Provision of housing and utilities. Again, performance varies. The GOG cannot support this function for a large TA component.

F. AID Management Role/Status

1. Field

Essentially, AID field management is split between AID Conakry and REDSO/WA in Abidjan. Primary responsibility lies with the AAO/Conakry who supervises an AID direct-hire project manager (a non-technical generalist with experience in managing agricultural projects). As Conakry lacks technical staff, REDSO/WA has, since March of 1979, provided regular TDY assistance by a Project Officer, a senior civil engineer and a lawyer. In addition, other specialized support has been made available as required.

The REDSO RLA and chief engineer were actively involved in the bidding for, negotiation and approval of the SATOM construction contract. Of those most involved at that early stage of the Project, only the incumbent RLA and the AAO are still assigned to REDSO and Conakry, respectively.

Regular Project supervision is provided by the Conakry project manager and the REDSO chief engineer. As the three Project construction sites are several hours drive from Conakry and are

themselves widely separated, such supervision requires very considerable amounts of up-country travel by AID staff. Communication between construction sites and Conakry is limited to radio. The REDSO engineer is directly involved in monitoring the two man staff provided by the A&E as well as in negotiations and other contacts with SATOM and the GOG. The project manager acts as liaison officer with the GOG and assists in procurement-related matters, such as expediting port clearance and shipment of AID commodities.

Issuance of PIO/Cs and PIO/Ts is initiated by Conakry which must request REDSO to provide the necessary funding citations. These are relayed to AID/W where such documentation is actually issued. Payment of vouchers submitted by SATOM is handled through the GOG and does not involve AID/W. Vouchers submitted by the A&E are administratively approved by Conakry and reviewed and paid directly by REDSO.

AID field management has been hampered at times by the following factors:

- a. The necessity of dealing with and achieving coordination with both REDSO and AID/W on implementation matters;
- b. the difficulties inherent in the lack of communication and remoteness of the three construction sites from Conakry, gasoline and electric power shortages and the general difficulty of doing anything in Guinea.

c. the fact that the AID project managers to date have not been engineers has necessitated the REDSO engineer to spend about half of his field time in Guinea since his arrival in Abidjan in August, 1980.

2. AID/Washington Management

DR responsibility for management and backstopping of this Project was transferred from the Sahel Project Division to CCWAP in mid-April 1980. Since that date, a senior Project Officer has been assigned to the Project and has spent at least 50% of his time in backstopping the Project. Since January, 1981, a DR engineer has also been assigned half-time to the Project and has primarily concerned himself with technical liaison with the Washington office of the A&E and with expediting the procurement activities of AAPC.

A formal use of the Project Committee system has been instituted to assure closer liaison and input by the various concerned offices. The Guinea desk, GC, the Project Officer and DR engineer make up this group which clears all outgoing messages. In addition, SER/COM and SES/CM are regularly called upon to assist in technical questions relating to their responsibilities.

The extent of AID/W staff time committed to this Project probably exceeds that for any single project for which DR now has responsibility. Despite this fact, AID/W backstopping has not resulted in any noticeable alleviation of procurement and contracting

problems in the U.S. In retrospect, AID/W management effectiveness has been retarded by the following:

a. An initial slowness in responding to field requests for priority and emergency procurement. This problem has been corrected with the assignment of additional DR personnel to the Project;

b. an absence of a first-hand knowledge of the principal Project sites and the principal field staff involved. More frequent trips to and from the field in the future is recommended;

c. an absence of an updated construction schedule with an accompanying PERT showing the relationships between the construction schedule and the required arrival date of commodities. This has not been possible to date because of constant changes required in the schedule to accommodate delays in arrival of commodities;

d. an absence of systematic field reporting on status, pending actions and problems. A monthly report from the field will assist AID/W in responding with a similar monthly status report of its own. Both such reports should commence immediately; and

e. AID/W has had continued difficulty in dealing with AAPC, especially in the absence of timely status reporting from this procurement agent. What has become clear is the necessity for fortnightly or monthly visits to the AAPC offices in company with officials from Parametric. Such visits have been prevented by the dearth of travel funds, but should now be prefunded by AID/W at least through the end of the fiscal year, by which time substantially all

of the critical construction procurement will have been completed. Gould and Speers should accompany Glover or Ray of Parametric, and a report on such meetings should be prepared.

3. Reporting System (Requirements):

<u>Report</u>	<u>Regularity</u>	<u>Prepared By</u>
Log Book and Construction report	daily	Parametric field staff
Financial reports	monthly	REDSO/WAAC
Legal trip reports	as needed	REDSO/RLA
Engineering trip reports	as needed	REDSO/WA/ENGR
Minutes of meetings	as needed	SATOM/GOG/AAO
Commodity status	bi-weekly	AAPC, checked by AFR/DR and Parametric
Construction progress	monthly	Parametric field staff
Claims submissions	as presented	AAO/Conakry
PIO/C recap	as needed	AAO/Conakry
Project status	monthly	AAO/Conakry
Status report	monthly	AID/W

G. Technical Assistance Related to Post-Construction Phase

The objective of this Project, as proposed in 1976, was to train agricultural researchers, extensionists and administrators, and to improve the depth and size of agricultural research and production techniques. To do this, the Project was to finance 20

person-years of U.S. resident technician services, 12 person-years of U.S. participant training, funding for equipment and supplies, construction of research, demonstration and training facilities, and provision of U.S. consultancies over a five-year period. However, inadequate design and substantial cost overruns forced a major focus on the construction of facilities and diminished the amount of funds remaining for the highly important TA activities. Even though the Project authorization amount has dramatically increased, all new funding has been for construction, except for \$250,000 which has been set aside for interim technical assistance,

Therefore, in order to assure that the original intent of the Project is carried out, it is clear that new funding will have to be sought for long-term TA through a new project which specifically identifies TA as its objective. The AAO/Conakry and REDSO/WA are now considering a 5-10 year new project with funding at approximately \$2.0 million annually. This proposal will be more fully described and discussed in a PID to be prepared by an AID field team. The PID could be completed before the end of FY 1981.

As part of the design of the TA project, a U.S. agricultural educator should study the practical and ideological considerations of agricultural training, research and extension and determine whether the TA project can be implemented within the FAPA framework. This will provide the foundation for discussions with the GOG to determine the GOG's flexibility in accepting and utilizing agro-technical inputs outside the collectivized farm structures (FAPA) that have been instituted by the GOG.

H. Design Changes and Options

At this point there appear to be no design changes which could be made to reduce Project costs. Procurement and construction planning have gone too far to allow for the redesign of some of the over-engineered standards or of the superfluous architectural embellishments. There are, however, some facilities which could be deferred or possibly eliminated.

The short time available to the Team allowed only for a superficial inspection of the construction elements. Therefore, the following list represents an initial suggestion of what may be deferred or cancelled, and it should be reviewed for its practical feasibility and the savings to be gained:

1. Additional work on the covered walkway between the three laboratory buildings at Foulaya can be cancelled (See Attachment B);
2. the work on the dike at Tindo may possibly be deferred after the clay base has been completed (See Attachment B, V.2 for a discussion of the issues); and
3. the construction of the following buildings, which are at an early stage (See Sec. III A. of this report for status details) could be deferred to a later date without seriously jeopardizing the early start of TA activities:

Faranah Institute:

- Dormitories. The interior work on these has not been started. The walls and roof should

be completed, and doors and windows installed. No interior work should be done at present. The buildings could be used temporarily as material warehouses.

- Classrooms
- Well, pump house, library and storage tank
- Laundry

Faranah Farm:

- Pig house
- Cattle barn
- Three chicken buildings
- Warehouse
- Shop warehouse
- Well, pump house and tank

Tindo

- Technicians' quarters access road, complete the grading; later construction could transfer asphalt procurement from FX to LC
- Training Center
- Livestock Center
- Laborers' Quarters

Of course, the final list of construction changes would have to be negotiated with the GOG and with SATOM.

I. Political/Social Considerations

This Project is the first new AID initiative after the semi-freeze in political relations during the Sixties and early Seventies. Development of the Project coincided with a turn to the West by the GOG based on dissatisfaction with Soviet Bloc assistance. The Project has high priority in the eyes of the President, Prime Minister and Minister of Higher Education and Scientific Research, as reaffirmed recently in meetings with the Ambassador. The GOG has consistently expressed concern over Project delays--first, in negotiating the construction contract, now in obtaining construction commodities. The GOG has shown its commitment to the Project through assignment of a capable and dedicated Project Director who has provided continuity since 1976.

The GOG expects the Project to be completed as planned and spelled out in the Project Grant Agreements. This included construction, training, equipment and technical assistance. Training of an initial group of seven participants has been satisfactorily completed. Any failure to complete the other three elements, or any extensive hiatus in providing equipment and technical assistance, will be seen by the GOG as failure of the USG to come through as planned. A long hiatus also has serious managerial implications in terms of risk of under-, non-, or mis-utilization of ex-participants, facilities and equipment already in place.

Cost overruns and responsibility for paying claims could become a bone of contention. The Project Grant Agreement provides

that all funds, in addition to the grant to carry out the Project, will be provided by the GOG. Persuading the GOG to cover cost overruns will be difficult since (a) much of the reason for overruns is slow delivery of construction commodities which GOG cannot control until arrival in-country, and (b) the GOG has a severe shortage of foreign exchange.

A major issue for future implementation is the context in which the TA will be provided. We should discuss implementation with the GOG to ensure that the small farmer, the intended recipient of the proposed TA phase, reaps the benefits of the Project. The GOG sees these benefits flowing through the FAPAS, the major focus of GOG agricultural policy and investment. However, experience and analysis indicate a need for direct access to small farmers, with the FAPAS perhaps playing a supportive role.

IV. Conclusion

The Assessment Team believes that the construction phase of the Project is now progressing. It appears that procurement difficulties have been resolved: major commodities are arriving or are scheduled to arrive within the next few months. Whether the Project facilities can be completed, as designed, within the present \$14.4 million funding level cannot be conclusively determined until (a) there is a complete bill of materials; (2) SATOM's contract is clarified regarding its responsibilities for installation of lab equipment and drilling of water wells; (3) a contract is signed with Parametric; (4) a resolution is reached on termination costs with NMG; and (5) possible SATOM claims are assessed and agreed to.

Pending resolution of these issues, and to ensure satisfactory completion of the facilities deemed most essential to start-up of the TA phase, consideration should be given to which construction elements should be deferred, cancelled, or shifted to local currency costs. Furthermore, except for a minimum \$250,000 for transitional TA, we recommend that all TA components be deferred. These actions, taken now, should permit the construction phase to stay within the \$14.4 million authorized level, and set the stage for concentrating on the TA phase.

The Team has concluded that effective Project management requires a third engineer under the Parametric contract for the Foulaya site. In order to strengthen AAO/Conakry's monitoring capability, consideration also should be given to assigning an AID engineer to assist the project manager. On the Washington side, better management requires closer supervision of AAPC, and to this end, regular visits to AAPC's New York office by AID/W staff and Parametric is recommended. The first of these has already taken place.

In conclusion, the Team believes that if the recommended actions are taken, construction relevant to the Guinea Agricultural Production Capacity and Training Project can be completed within the existing funding levels.

BUDGET ANALYSIS as of 03/31/81

GUINEA AGRICULTURAL PRODUCTION CAPACITY AND TRAINING PROJECT 675-0201

ATTACHMENT A

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Category	(1) Authorized LOP Amount Thru FY 82 Per Project Budget 3/28/80	(2) Obligated as of 03/31/81	(3) Sub- obligated as of 03/31/81	(4) Expended as of 03/31/81	(5) Unexpended Balance	(6) Unsub- obligated Balance
I A&E	<u>1,400</u>	<u>1,315.2</u>	<u>1,315.2</u>	<u>1,043.0</u>	<u>272.2</u>	-
NMG	<u>1,115</u>	<u>1,115.2</u>	<u>1,115.2</u>	<u>1,043.0</u>	<u>72.2</u>	-
Parametrics	<u>285</u>	<u>200</u>	<u>200</u>	-	<u>200</u>	-
II PARTICIPANTS	<u>368.8</u>	<u>254.3</u>	<u>254.3</u>	<u>254.3</u>	-	-
III TECHNICAL ASSISTANCE	<u>1,578</u>	<u>16.6</u>	<u>16.6</u>	<u>16.6</u>	-	-
IV CONSTRUCTION COMMODITIES	<u>4,500</u>	<u>6,361.5</u>	<u>6,361.5</u>	<u>2,716.4</u>	<u>3,645.1</u>	-
89151			<u>461.5</u> a/	<u>461.5</u>	-	-
89152			<u>871.5</u>	<u>865.4</u>	<u>6.1</u>	-
99151 b/			<u>868.5</u>	<u>868.5</u>	-	-
90100			<u>1,860.0</u>	<u>521.0</u>	<u>1,339.0</u>	-
10001			<u>1,000</u>	-	<u>1,000</u>	-
10002			<u>1,300</u>	-	<u>1,300</u>	-
V EQUIPMENT/VEHICLES	<u>1,865</u>	<u>562.3</u>	<u>562.3</u>	<u>41.2</u>	<u>521.1</u>	-
80501			<u>40.3</u>	<u>40.3</u>	-	-
90101			<u>252</u>	<u>0.9</u>	<u>251.1</u> c/	-
90102			<u>270</u>	-	<u>270</u> c/	-
VI CONSTRUCTION CONTRACT	<u>3,645</u>	<u>3,645</u>	<u>3,645</u>	<u>651.3</u>	<u>2,993.7</u>	-
VII MISCELLANEOUS	<u>46.4</u>	<u>46.4</u>	<u>46.4</u>	<u>42.6</u>	<u>3.8</u>	-
VIII CONTINGENCY/INFLATION	<u>400.1</u> d/	-	-	-	-	-
IX NOT SUBOBLIGATED	<u>596.7</u>	<u>596.7</u>	-	-	-	<u>596.7</u>
TOTAL	<u>14,400</u>	<u>12,798.0</u>	<u>12,201.3</u>	<u>4,765.4</u>	<u>7,435.9</u>	<u>596.7</u>

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Category	Total Requirement 03/31/81	Less Amount Sub- Obligated (Col. 3)	Balance To Be Funded	Col. 6 Funds Distributed	Remainder of Authorized Level		Shortfall
					FY 81	FY 82	
I A&E	<u>1,845</u>	<u>1,315.2</u>	<u>529.8</u>	-	<u>280.7</u>	<u>249.1</u>	-
NMG	<u>1,165 a/</u>	<u>1,115.2</u>	<u>49.8</u>	-	<u>49.8</u>	-	-
Parametrics	<u>.680 b/</u>	<u>200</u>	<u>480</u>	-	<u>230.9</u>	<u>249.1</u>	-
II Participants	<u>515</u>	<u>254.3</u>	<u>260.7</u>	-	-	<u>100 f/</u>	<u>160.7</u>
III Technical Asst.	<u>1,578</u>	<u>16.6</u>	<u>1,561.4</u>	-	<u>100</u>	- g/	<u>1,461.4</u>
IV Construction Commodities	<u>7,075.6 c/</u>	<u>6,361.5</u>	<u>714.1</u>	<u>596.7</u>	<u>117.4</u>	-	-
V Equipment/Vehicles	<u>1,865</u>	<u>562.3</u>	<u>1,302.7</u>	-	<u>1.9</u>	<u>77.9</u>	<u>1,222.9</u>
VI Construction Contract	<u>4,320 d/</u>	<u>3,645</u>	<u>675</u>	-	-	<u>675</u>	-
VII Miscellaneous	<u>46.4</u>	<u>46.4</u>	-	-	-	-	-
VIII Contingency .. Inflation e/							
TOTAL:	<u>17,245</u>	<u>12,201.3</u>	<u>5,043.7</u>	<u>596.7</u>	<u>500</u>	<u>1,102</u>	<u>2,845</u>

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Budget Analysis as of 3/31/81 - Guinea Ag. Project -- Page 3

<u>Category</u>	<u>Minimum Requirement</u>	<u>Less Amount Sub-obligated</u>	<u>Balance to be Funded</u>	<u>Contingency Min. vs Total Requirement</u>
I A&E	<u>1,715.2</u>	<u>1,315.2</u>	<u>400.0</u>	<u>129.8</u>
NMG	<u>1,115.2</u>	<u>1,115.2</u>	-	<u>49.8</u>
Parametrics	<u>600.0</u>	<u>200.0</u>	<u>400.0</u>	<u>80.0</u>
II Participants	<u>254.3</u>	<u>254.3</u>	-	<u>260.7</u>
III Technical Asst.	<u>16.6</u>	<u>16.6</u>	-	<u>1,561.4</u>
IV Construction Commodities	<u>6,857.5</u>	<u>6,361.5</u>	<u>496.0</u>	<u>218.1</u>
V Equipment/Vehicle	<u>1,865.0</u>	<u>562.3</u>	<u>1,302.7</u>	<u>77</u>
VI Construction Contract	<u>3,645.0</u>	<u>3,645.0</u>	-	<u>675.0</u>
VII Miscellaneous	<u>46.4</u>	<u>46.4</u>	-	-
Sub Total	<u>14,400.0</u> a/	<u>12,201.3</u>	<u>2,198.7</u>	<u>2,845.0</u>
VIII Contingency Inflation	<u>2,845.0</u> b/	-	<u>2,845.0</u>	<u>(2,845.0)</u>
TOTAL:	<u>17,245.0</u>	<u>12,201.3</u>	<u>5,043.70</u>	-

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Footnotes for page 1

- a/ Difference of 9.5 between amount shown as subobligated and P10/C total 471 is balance that was un-subobligated at close of P10/C plus a refund on our insurance claim. The 6.6 refund expected in April will be recorded under "not subobligated" when received.
- b/ Continuation of 89152 with Fy 79 funding.
- c/ AAPC reports balance but purchasing incomplete (ref STATE 044088).
- d/ Distributed in column 3 for commodities.

Footnotes for page 2

- a/ Includes 50 for estimated final NMG costs.
- b/ Includes 26 for pre-contract costs 12/23/80 - 2/13/81, plus 80 for third field man.
- c/ Includes following:-
 - Priorities A, B and C; Ryerson claim and underbilling (58.7)6,500
 - 5 pumps and well equipment, subject to Parametric costing)
 - 90 tons of reinforcement steel, subject to Parametric verification)
 - of need 500
 - replacement of missing items as may be identified during course of)
 - construction)
 - commodities needed for corrective work (due to faulty design) 75,6
- d/ Includes 500 for possible claims and 175 for SATOM costs of possible corrective work such as faulty design, straightening or repair of items bent in shipment, etc.
- e/ Already covered within the above categories.
- f/ Reducible if construction costs exceed estimates.
- g/ Expandable if construction costs fall below estimates.

Footnotes for page 3

- a/ It is anticipated that the remainder of the construction phase of the project can be accomplished for \$14,400.
- b/ The \$2,845 contingency and inflation will be needed to fund the original technical assistance assuming there will be no follow on phase to the project.

Attachment B

**Engineering Report to the Assessment Team
for the Guinea Agricultural Production
and Training Project**

Reporter: Samuel Lubin, Consulting Engineer

Introduction

Under provisions of Work Order No. 10, IQC Contract No. AID/SOD/PDC-C-0219, Experience, Inc. provided for my technical services in the field of engineering as part of the Assessment Team which is charged with drafting a report on the status of the project. The Work Order provides for 18 days of work beginning on April 22, 1981 and ending o/a May 20, 1981.

After being notified, by telephone on April 17, 1981 by Mr. Norman Cohen of the team's travel schedule and similarly on April 21, 1981 by Experience, Inc. of the issuance of the Work Order, I proceeded on April 22, 1981 from Beersheba, Israel to Tel Aviv to obtain an Ivory Coast visa and airline ticket; to Paris on April 24, 1981 to join the team in Abidjan and continue with it on its subsequent travel schedule. In the course of a team meeting in Conakry on April 29, 1981 it was agreed that, to utilize my services to the best effect, I would submit an engineering report to the team which could extract and incorporate such parts of it as the team may require in the body of its report. The full engineering report would be added as an appendix to the main team report. This engineering report follows, in general, the outline drawn up by the team for the draft report.

Summary and Conclusions

Because of the late addition of my services to the team there was no opportunity for me to inspect or review any project documentation prior to the site visits. During the report preparation period there was occasion only for a cursory and superficial review of some project and construction contract documents. A reasoned and well documented engineering report would have required a thorough study of the project design objectives, the proposals of the selected A&E firms, the construction IFB, contractor selection criteria and contract drawings and specifications. However, the faults of commission and omission in implementing the construction of the project facilities are so glaring and obvious that certain general comments are possible and general conclusions can be stated even on the basis of my sketchy review and superficial site visits.

The construction phase of the project is intended to provide facilities to permit the provision to and utilization by the GOG of technical assistance and training to further the project's objectives. This engineering report addresses itself solely to the construction of these facilities.

Every imaginable departure from good construction project management was made in the course of implementing this construction phase. To cite the most obvious and important of these errors:

1. The A&E firm who designed the facilities was selected without regard to its past experience in a similar project, its familiarity with overseas and especially African conditions or, in general, with its competence and resources to manage a large and complex project in a difficult environment.
2. The A&E design was inadequately reviewed by AID prior to its approval to assure that it not only met the minimum needs of the project, but that it did so within the needs and capabilities of the GOG to utilize these facilities and that it did so within the authorized funds.
3. The IFB for the construction contract was not detailed enough to allow for reasonable contract bids or to permit an intelligent review of the bids to determine whether these were responsive and reasonable in price. The award of a fixed price construction contract for a project of this type without reasonably accurate quantity estimates and unit prices in a controlling Bill of Quantities violated every sound principle of contract award and construction management.
4. The decision to relieve the contractor of the responsibility of procuring the commodities to be imported from the United States and shifting this responsibility to the GOG immediately opened the door to contractor claims for time extensions and damages when material failed to arrive in time. The very inclusion in the contract of a clause requiring the contractor to minimize work stoppages when materials were delayed provided only another possibility for disputes.

5. AID's acceptance of the responsibility of acting as the GOG's agent through AAPC in procuring these commodities was another occasion for confusion and delay. No apparent attempt was made to assure that the A&E provided AID with a fully documented Bill of Materials for the commodities so that it could incorporate complete specifications in the PIO/C's it sent on to AAPC. AAPC, as the procuring agency, does not appear to be able to judge the inadequacy of the information supplied in the PIO/C and reacts only when requests for clarification are received from suppliers. At this point frantic activity takes place among AAPC, the A&E, AID/W, REDSO/WA, USAID/Conakry, the GOG, and the contractor to try and obtain the information needed by the suppliers.
6. The parties to the construction supervision contract are, surprisingly, AID and the A&E instead of the usual arrangement where the A&E is employed to represent the owner of the work (the GOG) on site in supervising the contractor's performance. In the present instance the A&E is only an advisor to the GOG with whom it has no contractual relationship. Because of this peculiar arrangement the engineer's actions on the construction site may have legal and political implications for AID in its relationship with the GOG. This has led to the need for an excessive amount of review and approval requirements by REDSO/WA and AID/W with the need for an extensive exchange of messages among the three responsible offices. Neither REDSO nor USAID/Conakry have the manpower resources to efficiently handle this complication. The consequent delays have been and will continue to be a major problem.
7. The GOG is responsible for transporting the U.S.-imported materials from the port in Conakry to two central warehouses, stocking the material, maintaining an inventory, and issuing commodities, as required, to the Contractor. It is also charged with supplying POL to the contractor and the A&E and support services to the latter. It's inability to supply transportation and POL as required is a major cause of long work stoppages and contractor claims.

The conclusions I draw from this admittedly superficial review are:

1. Practically all the cost overruns of this project are attributable to the failure to follow the normal, accepted, and recognized practices in selecting a qualified design engineer; in instructing the A&E in the project objectives and budget restraints; in reviewing plans and specifications to assure that they meet these requirements; in the preparation of contract documents which would permit obtaining and intelligently evaluating bids; in retaining intact the responsibility for construction and material supply by one contractor; and in the delegation of sufficient authority to the supervising engineer.
2. I estimate that the failure to follow accepted practices has added, roughly, between \$5,000,000 and \$8,000,000 to the construction cost. A well managed project could, therefore, have been completed within approximately the original budget.
3. It is highly doubtful that the presently planned construction phase can be completed within the 24 months scheduled in the contract. Given the continuing delaying factors and the fact that the project is now 30% - 40% behind schedule; no reasonable estimate of a completion date is possible.
4. There may be items in the planned facilities which could still be cancelled or deferred to permit the construction phase to be completed within available funds and possibly even free some money to begin the technical assistance phase which is, after all, the project objective. A detailed review of the planned facilities may uncover such items and allow a decision as to whether their elimination or deferral can be ordered to produce a present cost saving without jeopardizing project objectives. In making such decisions one should weigh any later cost increases for the deferred facilities against the advantages to be gained from present savings which could benefit project objectives.
5. No improvement in the present system of project management to minimize the continual delays and growing contractor claims is possible without a willingness by the parties (AID and the GOG) to make some drastic changes. Such suggestions have been resisted in the past on the grounds that the proposed changes would result in delays in project execution and, in some instances would be economically or politically unpalatable. I do not sense that any new proposals of a similar nature would be received with any enthusiasm. The very least which could be done and which should have been done at the very beginning of this complex project is to provide USAID/Conakry with a field engineering project manager who will be responsible to oversee project implementation.

At the very least this engineer could ensure AID that the A&E field engineer's actions were consistent with AID's responsibilities and in accord with AID regulations; that procurement instructions from the field were in accord with the construction requirements and properly coordinated with the contractor; and that requests from the field were complete in the technical details needed by AAPC to obtain accurate quotations from suppliers. AID/W also needs to provide, either through the mechanism of its contract with the A&E or through some other means, for a full time technical expeditor who can assist AAPC in the technical evaluation of quotations and in any clarification requested by suppliers without having to resort to a long chain of communication.

Project Assessment

I. Background

An estimate of the rate of progress of construction reveals that it is far behind the construction contract schedule. To understand the reasons for the delay, a review is in order of the peculiarities of the contracting procedures, the management responsibilities of the various parties involved, and the implementation procedures which vary from standard engineering construction practice and depart from good construction management.

Initially, AID contracted with the architect firm of Navy, Marshall & Gordon (NMG) to design the project facilities; prepare contract drawings, specifications, and related documents; provide advisory services to the GOG during the contract award phase and engineering supervision during construction. NMG entered into a subcontract with Parametrics to provide it with engineering assistance in preparing Bills of Material for commodity procurement by means of take-offs from the construction drawings. At some point in the construction phase NMG was replaced as the construction supervisor by Parametrics, its former subcontractor.

This entire arrangement created an anomalous situation. Although the parties to the construction contract are the GOG and SATOM, the parties to the supervision contract are AID and the A&E (first NMG, now Parametrics). The latter does not represent SATOM's employer (the GOG) as it should and so cannot exercise any authority over the contractor. It can only act as an advisor to the GOG Project Manager who is not an engineer and not present on the site. To further complicate the situation SATOM is relieved, under the terms of the construction contract, from the responsibility of providing all the imported construction material scheduled to be imported from the U.S. AID agreed to supply the material and be responsible for its delivery to Conakry where the GOG takes title to it and becomes responsible for its delivery to two central warehouses: one at Foulaya and the other at Faranah. It retains responsibility for warehousing and inventory control until material is delivered to the contractor in accordance with prearranged schedules designed to meet the construction schedule. AID implements its supply responsibility by issuing PIO/C's to MAPC acting, then, as the GOG's purchasing agent. The latter issues purchase orders, receives delivery, and arranges for shipping and insurance to Conakry. The GOG provides POL to the contractor and the A&E as well as support to the latter.

A more complex and confused mixture of responsibilities could hardly be imagined:

- AID, not a party to the construction contract, employs a site engineer to supervise the construction.
- The engineer, not an employee of the GOG which is the contract party, is required to instruct the contractor, interpret drawings and specifications, order and approve changes in the works, and allow extensions in contract time. All this he has to do through the GOG Project Manager who is not an engineer and who is not present at the two construction sites.
- The GOG, which is responsible for supplying U.S. source construction material has to rely on the A&E, an employee of AID, for bills of material which will be used to procure the material. These bills of material were not available at the time the construction contract was signed, but are being prepared concurrently with the construction from drawings, sometimes inadequately detailed. The GOG is not competent to check these for accuracy and completeness before they go to AID/W for action and must rely on the agreement between the site engineer and SATOM that they meet the project requirements.
- AID Conakry has no engineer to check the material requests against the drawings and REDSO/WA cannot always spare the engineering staff to provide this service on a continuing basis. AID/W which passes on the procurement requests to AAPC by means of PIO/C's has no mechanism or data to review the request for accuracy or completeness.
- It is evident from experience to date on this project that AAPC, the final actor in this scenario, lacks the competence and basic data needed to judge the adequacy of the PIO/C's it receives. It's quotation requests almost invariably come back from suppliers with demands for further clarification or the supplier quotes for the wrong material. In either case a delay results in obtaining information through a long channel of communication, material arrives late, the contractor is forced to slow or suspend work and an opportunity is given him to claim damages. More seriously, project completion is further delayed.
- The GOG which is responsible for supplying the contractor with POL and transport of commodities to the central warehouses cannot live up to the required supply schedule. Foreign currency restraints and the lack of transport hamper it and, again, work is delayed and suspended with further cost increases.

The consequences of this division of responsibilities could and should have been evident to anyone familiar with a construction project and the whole concept rejected from the very start.

II. Physical Status of the Project

The REDSO/WA engineer estimates, on the basis of a point system for each construction component, that overall the project is about 17% complete although individual components may be further along and others further behind. The required rate of completion by May, 1981 is approximately 40% - 50% in accordance with the contract schedule. There is no question that the final date of May, 1982 cannot be met. At this time, with the uncertainties in the supply of construction materials from the U.S. and transport and POL by the GOG it is impossible to estimate a reasonably accurate completion date.

No complete Bill of Materials for U.S. supplied commodities exists. One is now in preparation in Washington by Parametrics. To ensure that it meets the requirements of the construction drawings the final list of materials to be procured must be approved by SATOM and to obtain this approval it must, after preparation in English, be translated in accurate technical language into French. How long this exercise will take is still unknown.

A cause for delay in the past and one which will continue in the future is the lack of detailed construction (working) drawings. The failure by the A&E to provide these in time, as construction proceeds, has led in the past and will lead in future, to repeated requests from the contractor for interpretations of the construction drawings. The A&E does not have the resources to produce working drawings nor does his contract with AID provide funding for this activity. A properly executed construction supervision contract would have included funds for a drafting office and equipment in the field or in Conakry to reproduce detail drawings for the contractor's use. Where the contractor has, in this project, misunderstood the basic drawings because he is not familiar with U.S. standards or specific materials and lacked the informative detail drawings, it was necessary in some cases to rework some construction or component installations with consequent loss of time and increases in cost. I can foresee no improvement in this situation in the future, especially with the limited staff which Parametrics has in the field.

III. Funding Status of the Project

As stated above there is no clear picture at this time of the quantity of commodities to be purchased and, therefore, no accurate estimates of the funds needed for this purpose. Not being able to foresee the future delays resulting from lack of materials, POL, and transport, makes it impossible to estimate with any degree of certainty what the contractor will claim in damages and how much the final settlement will be. There is also no certainty that essential items have not been omitted from the plans. For example, it was discovered during our site visit that there is no provision for the installation of sophisticated laboratory equipment, some of which has already been delivered and some of which is on order and scheduled for delivery. The installation of this equipment is outside the area of competence of the contractor and beyond the capability of the GOG. Provision must be made for a competent U.S.

contractor (the supplier or a laboratory constructor) to perform this task while laboratory construction is underway. Failure to do so within a reasonably short time will lead to deterioration and total destruction of expensive equipment.

A careful examination of project components may lead to the discovery of additional omissions for which added funding will be needed.

Based on estimations from REDSO/WA and USAID/Conakry future requirements for project funds are:

Remainder for NMG & Parametrics contracts	\$ 272,200
PIO/C's issued for equipment not yet paid	521,100
PIO/C's issued for materials not yet paid	3,040,100
Remainder for construction contract as signed	<u>2,993,700</u>
Subtotal	6,827,100
Expenditures to 3/31/81	<u>4,765,400</u>
Estimated project cost to date	\$ 11,592,400

This leaves an estimated \$2,807,600 available from the authorized \$14.4 million to cover additional construction commodities, contractor's claims, and any essential omitted item such as the installation of laboratory equipment.

REDSO/WA and USAID/Conakry estimate that the settlement of contractor's claims will not exceed \$700,000. This is based on an estimate that his present claims come to about \$300,000 and can be settled for about 60% and that the same will apply in future. Holding this \$700,000 in reserve probably will not leave enough for purchase of the construction commodities still needed to complete the project and to cover essential omitted items. My own opinion is that the \$700,000 estimate is highly optimistic. It seems to be based on a hoped-for completion of construction by the target date of May, 1982 or, at least, not much later. If the present estimate of 17% completion is correct and future progress is accelerated by a factor of even 5 over past progress, construction will not be complete before May, 1983. I see no possibility under the best of conditions for such a speed-up. The contractor's damage claims could, therefore, be far in excess of the estimated \$700,000.

IV. Performance of Contractors

1. NMG

This contractor was responsible for the design of the project and preparation of the bid documents. In choosing the A&E for this task AID should have been able to determine from the firm's proposal whether it had the necessary experience with overseas projects of this size and a proper appreciation of the political, economic and social environment. It seems clear that the A&E firm selected was not aware of the host country's limitations to absorb a too sophisticated and over-extended group of facilities. At the same time the indications are that the A&E lacked the financial and human resources to develop and manage a project of this magnitude. If the contractor was selected for reasons

other than his technical capability to design the project and carry it to completion the decision was unfair to the contractor, to the project, and to the host country. The present situation is to a large extent the failure of AID to use the standards normally adopted in choosing a design and supervising engineering firm.

Not only were there too many and too sophisticated components included in the design, but each component was over-engineered. Foundations, columns, trusses, reinforcing steel, concrete were specified to many times the standards needed for the building requirements. Excessive refinements in interior finish were specified. Not only did these add to construction cost overruns but they will prove to be unsuitable to the environment and will deteriorate in a short time. Certain construction elements such as roof trusses and covered walkway supports were ordered assembled in the U.S. and shipped in this form. The high cost of labor in the U.S. for assembly of specially designed units and the high cost of shipping was entirely unwarranted and the damage caused during shipping added further to the contract cost when the construction contractor was ordered to make the necessary repairs. How AID approved this design and the subsequent bid documents is difficult to understand.

2. Parametrics

I had no opportunity to assess the performance of this contractor either in preparing bills of material for U.S. source material or for performance in construction supervision. However, as stated above the contractor does not have the necessary resources in the field to supply SATOM with complete detail drawings nor does Parametrics' contract with AID provide funding for such work.

3. SATOM and its Subcontractors

The very superficial view during our site visits indicated that the work of this contractor and his earthworks subcontractor were of high quality. REDSO/WA feels that SATOM is too quick in claiming damages and time-extensions for delays due to non-arrival of commodities and POL in time. In my opinion SATOM is acting no different than any contractor to protect itself and establish a base for claims negotiations when the work is completed. It was also stated that SATOM's unfamiliarity with U.S. construction standards resulted in errors of assembly of some components and in excessive arguments on interpretation of construction drawings. Having selected a French oriented contractor such a claim by AID is unfair. In any case, the provision by the A&E of sufficient detail drawings would have obviated the errors and misunderstandings.

4. AAPC

The role of AAPC is to act as purchasing agent for the GOG in procuring U.S. source commodities and shipping them to Conakry. In this project, however, the GOG has no direct contact with AAPC. The A&E prepares bills of material by means of take-offs from the construction drawings. USAID/Conakry or the A&E sends requests to AID/W to procure the commodities based on a schedule of requirements which SATOM has prepared for the GOG. Except when checked by a REDSO/WA engineer, neither USAID/Conakry nor the AID/W office responsible for issuing PIO/C's to AAPC have the competence to review the A&E's bill of material for accuracy, compatibility with the drawings, or for completeness of specification. The same statement applies to AAPC who accepts the PIO/C as received and passes on requests for quotations to suppliers. Long delays have resulted when the suppliers request further clarification and these requests through channels before the problem is resolved. If the supplier misunderstands the specification not only is there a delay in replacing the wrong shipment but an additional cost to aggravate the project cost overrun. Furthermore, AAPC has no mechanism for checking shipments against procurement specifications for accuracy, condition and quantity, prior to loading on board ship. Where shipments are received short in the warehouse in Guinea there is no way to check whether the shortage was in delivery or in pilferage in the port and no claim for insurance can be substantiated.

5. Claims

This report addresses itself solely to claims by SATOM since I have no information on the problems relating to the termination of the NMG contract.

Because of the uncertainties described earlier in the supply of commodities, the lack of working drawings by the contractor and work delays and stoppages due to failure by the GOG to supply POL no estimate of ultimate claims by SATOM can be made at present. REDSO/WA estimates that claims already filed by SATOM amount to about \$300,000 and can reach \$1,000,000 and be settled for about \$700,000. They have, therefore budgetted this sum as a reserve for claims. As stated earlier in this report, I believe the REDSO estimate to be overoptimistic. It appears to rest on the assumption that the contract work will be completed not much later than the scheduled 24 months and that delays will continue to be at about the same pace as in the past year. As I have already noted, even a miraculous speed up in construction progress cannot hope to bring construction to completion before mid-1983. The amount of claims may, therefore, be several times the \$1,000,000 REDSO estimate. It should be noted that no contractor expects to achieve a 100% settlement. Except in exceptional cases the contractor will be happy with a 40% - 50% settlement of his claims.

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6. GOG Role and Performance

The GOG's role includes project direction; the transport of commodities from the port to the central warehouses at Foulaya and Faranah, responsibility for their safe storage and inventory control until the material is issued to SATOM; the supply of POL to SATOM and Parametrics; and support facilities for Parametrics.

The first part of this role, project direction, is carried out by an energetic GOG employee who is able, through his contacts in government circles, to break down many of the barriers which cause delay and frustration. His relationship with USAID and REDSO is excellent. I had no chance to observe and evaluate his relationship with SATOM and Parametrics. Unfortunately, he is not an engineer and is located in Conakry, visiting the sites only occasionally. The GOG does not appear to have engineering supervision staff of its own on the sites and so has to rely completely on Parametrics. As already pointed out, Parametrics does not have enough engineering staff to adequately supervise the widely scattered project components on either site let alone checking the sites at Farane and Foulaya, 350 km apart. They are further hampered by the inability to obtain sufficient fuel for their vehicles to travel between sites and for required travel to Conakry.

With respect to the balance of the GOG's responsibilities, it can be stated that they do not measure up to the requirements. The AID project agreement has placed on them burdens they cannot meet. Foreign currency, political, and economic problems make it impossible for them to meet the POL and transport needs of the project. They have been unable or unwilling to supply the Parametrics staff with adequate housing or the minimum of office equipment, supplies, or staff.

7. AID's Management Role and Status

1. General

Because of the peculiarities of this project's structure AID's role differs radically from the norm. Having assumed certain responsibilities, whether formally or informally there are certain implications which it must face and tasks it must assume. Whether or not these implications are legal or not is open to question. It is my opinion that the project management structure has legal implications for AID beyond those of the project agreement. This is, obviously, only an engineer's opinion but the matter is irrelevant; there are, certainly, moral and political implications which require that AID take certain minimum actions during the rest of the construction period.

2. Field

USAID/Conakry has no engineer on its staff who could serve as AID's Project Officer for the project during its construction phase. A construction project of this complexity, even if its cost did not exceed the original budget figure could and still should warrant the assignment of a full time qualified engineering manager. REDSO/WA's engineering staff does not have the manpower for this and even frequent visits from Abidjan cannot handle the day to day problems. The assignment of a full time engineering manager in Conakry who will have the transportation resources to visit the sites frequently will minimize tremendously the overburden of communication among Conakry, Abidjan, and Washington. It will also help to solve some of the difficulties with AAPC's handling of commodity procurement.

3. AID/W

Once AID/W is convinced that the field is adequately staffed and has the capability to manage the project it can relax some of its present routine overseeing burden and concentrate on assisting the field in the major problems and broader aspects of the project. A well-planned and not burdensome system of reporting by USAID/Conakry and REDSO to AID/W and a willingness by each office to read without delay, and act quickly on requests and problems in the reports should do wonders in accelerating the rate of progress and avoiding future pitfalls.

V. Design Changes and Options

Since the project costs are now approaching the limit of the \$14.4 million authorization and there is considerable doubt that the remaining funds will cover the construction costs it is natural to look for items which could possibly be eliminated or deferred without placing any restraint on the project or interfering with its objectives. To determine whether there are such items, a detailed review of the construction components needs to be undertaken to see whether there are some not yet started or others which can be left unfinished. Also, whether there are commodities, primarily pieces of equipment, which have not been ordered or whose orders may be cancelled without penalty.

In deciding whether an item should be deferred the economic and political costs need to be assessed. The savings in some cases may be too small to be significant. In others the future costs of resuming construction may be too high due to inflation or interim damage or deterioration of the unfinished structure. However, the deferral of an item should not be rejected merely because later resumption of work will be costly. The present savings which would allow a better utilization of funds for more urgent items may outweigh the future cost increase. Two examples of possible savings were noted during the site visit:

1. The plans call for a covered walkway joining three laboratory buildings at Foulaya. There are no other covered walkways at the Foulaya site. The roofing steel structures were specially designed by the A&E to many times the strength needed to support the roofing materials. The structures were fabricated and shipped completely assembled from the U.S. As could be expected, they arrived in damaged condition. SATOM has been given a change order to repair these prior to installation but repair work has not yet started. The columns to hold the roof structure have not yet been erected. The entire walkway can be cancelled, including the work order to SATOM for the repairs without in any way jeopardizing the project. There appears to be considerable field reluctance to do this although the component is not only non-essential but is, actually, a useless extravagance. The material on site for construction of the walkway can be left to the GOG who could complete the construction with their own workmen at some later date.

2. The Dike at Tindou

This dike, about 1500 meters long, will form part of the perimeter of an experimental farm of about 135 hectares. Its purpose is, in part, to protect the area from flooding from the Niger River; but in the main, its objective is to allow experiments in various types of irrigation and irrigated crops. These would serve as models for irrigated farming to be taught to farmers in the area as a replacement for the inefficient flood recession agriculture they now practice. However, the project does not provide for any irrigation structures, irrigation ditches or equipment aside from three cast iron pipes which penetrate the dike and three portable pumps.

The dike clay base (foundation) is now being completed by SATOM's subcontractor and a suggestion was made to defer the construction of the dike proper until a later date, perhaps as part of an ongoing TA project. The suggestion has been vigorously opposed by the field on the following grounds:

- a) resumption of work later will result in much higher costs due to remobilization and inflation;
- b) certain farming experiments will not be able to be carried out;
- c) there will be flooding from the Niger River of experimental plots;
- d) there are severe political hazards.

The first objection should be examined in the light of my statement above on the relative merits of present savings as against future costs. The other three objectives need to be investigated more thoroughly to check their validity and impact on the project objectives.

- Page 36. There is a suggestion at the bottom of the page that we pre-fund visits to AAPC through the end of the fiscal year. I agree -- we will figure out some way to do it.
 - Page 39. This is a discussion of facilities which could be deferred or eliminated. As suggested earlier, I think these options should be reduced to a plan immediately.
 - Page 41. At the bottom of the page, it is suggested that cost overruns and responsibilities for paying claims could become a bone of contention. I am sure they will, and we should be aware of that possibility now.
 - Page 42. The first full paragraph refers to a potential issue concerning implementation of technical assistance. I am glad that this point has been highlighted. We should begin to lay the basis for dealing with it now.
 - Pages 42 and 43. In the conclusion section, I would probably have been a bit more cautious and opined that it appears that procurement difficulties are on their way to being resolved and that construction relevant to the project can probably be completed within the existing funding levels.
4. I have not discussed these comments with the Team as a whole and have not distributed copies of this memorandum to others.

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File 0011

Best Available Document

Brought-Area Domestic Water Situation

and

Observations on Water Resources

in Northern Guinea

By

William D. Borja, Consultant (USAID)

December, 1974

Best Available Document

Summary:

The past wet-season has been good and the problems are generally relieved. However the water facilities of the towns and villages of northern Guinea are, at best, minimal so that critical conditions could occur at any time due to the breakdown of equipment or other causes. It is to be expected that some communities and localities will experience water shortages again, late in the current dry season, because it takes several normal or wet years to replenish the soil moisture and ground-water deficiencies resulting from several years of drought. The total problem goes far beyond a matter of assuring the current supplies, it also involves the health of the people. Little if any of the current supplies can really be considered as "potable water," it is all contaminated. There is also a serious danger of epidemics when the people and animals must congregate where water is available.

It would be a vast undertaking to provide a reasonable and potable water supply for all of the towns and villages of the northern zone of Guinea, even considering the low level of water consumption that is traditional in the area. To a significant degree the water needs for livestock is as much of a problem as the domestic supplies. Because of the magnitude of the needs, any contemplated A.I.D. program must be selective of a portion and of a solution that will fit the available funds and objectives. The writer is unable to make a specific recommendation as to either the magnitude or approach that should be adopted. This report appraises the situation and suggests several alternative approaches. A.I.D. must decide what it can afford to do and what it wants to undertake.

The simplest form of assistance would be to supply several water-tank trucks to augment those now in use. This could be as small a number as six trucks for the District headquarters towns. It might also be several times that number in order to provide such service to the more hamlet villages in each District, especially those close to the northern border where the drought was most severe. Motor-pump units should also be supplied to fill the trucks. Since the villages do not now have such services, they would also need storage tanks where the water could be delivered. These might be galvanized stock-water tanks such as used by many U.S. farmers and stockmen. The advantages to this approach are that it is the easiest for the U.S. to do, and it fits into a firmly established operation. The disadvantages ^{are} that, in the long-run it is a very expensive method of water supply and is exposed to the problems of fuel and maintenance.

The best form of improvement of the domestic and stock water facilities would be to establish a well drilling program. Drilled wells would not only provide a continual supply of water, it would also provide safe drinking water. This approach would require importing water-well drilling rigs with all necessary auxiliary equipment, pipe for casings and pumps. It would also require the training of crews to operate the drill rigs and install the pumps. For villages without electricity and for isolated stock water wells, windmills would be desirable. These should be equipped for hand operation when there is not sufficient wind. For some locations hand pumps having pistons down in the well would be adequate. For the larger towns, deep-well electrical powered pumps would be desirable to provide

the larger quantity of water required. These should have their own motor generator unit, unless the power situation improves in the towns.

The advantages of this approach are safe drinking water, assured supply, and the ability to provide these to all villages eventually. In the long run it would be far less expensive than tank-truck operation and probably less for the larger towns than pipelines delivering contaminated surface water. The disadvantages are maintenance problems and a higher initial cost to start the program.

It would be possible to substitute pipelines for the tank trucks in the towns. The operational costs would be far less than the trucks. This would require importing pipe, valves/or hydrants, and pumps and making arrangements for the installation. In some cases this type of system has been considered and rejected as "too expensive." They had contemplated the use of the military type of "invasion" pipe or galvanized sprinkler irrigation pipe, which has a ball type joint and a quick coupling device. This is the easy to install but very expensive compared with conventional water lines. I have some doubts that the pipelines could be installed unless someone supervised the installation, and I have no idea who in Guinea might do the work. Should this alternative be considered by A.I.D., someone should make a more precise estimate of the needs, but for the moment I would guess that about 25 kilometers of 4 to 6 inch pipe, about 8 pumps and two dozen valves or hydrants would be required for Kouandara, Mali, Tongue and Diraguiraye. A ditch digging machine or tractor with back-hoe shovel and a truck probably would be needed. This approach would ^{do} be no thing for the smaller villages.

Some improvement in the situation could be effected by a technical

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assistance type of effort to deepen the current type of dug well. The well depths are controlled by the problem of cave-ins of water bearing strata. Linings or caissons could permit these wells to go deeper, with greater assurance against going dry. An energetic and imaginative technical advisor and a moderate amount of materials and a truck or two could have a significant impact, provided good cooperation was obtained from the Government, and district and local people. This approach seems more suited to the Peace Corps, than to AID, although AID has done this in the past.

The chronic problems of fuel and maintenance inhibit enthusiasm for the approaches that involve mechanical equipment. They indicate that the equipment selection should favor the simplest designs. Also, an ample supply of spare parts should be supplied for each piece of equipment.

Although I dislike the tank truck operation because of its high operational cost, it seems to offer the fewest problems and greatest flexibility of funding level. It is an expedient measure that fits into the current methods of the area. It does not, however, offer any longrange improvement in the quality of the water supply. Of significant importance, however, the Ambassador says that the President has stated that he does not want to perpetuate the use of the tank trucks and wants to use wells, pipelines, or ditches.

Geology

The geologic picture of any place is essential to any analysis of the water problems. This is doubly so when small towns and villages have significant shortage problems.

Western Guinea is generally sedimentary containing sandstones, limestones, shales (or clays) and other types. Thus it can safely be assumed that there is ground water somewhere below any given point. The question

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is one of quantity and how to get it. The towns of Labe, ^{Koulikoro} Mali and Timbuktu lie in this area, as do all the areas between them. In all localities visited in this zone the ^{soil} soil is very absorptive and the rainfall is fairly heavy. Thus dug-wells are common. However, in most places the wells dry out during the drier drought seasons. The conditions of these four District headquarters are probably typical of the area.

The mountainous center section is composed of crystalline rocks (granites, etc.). The valleys are filled with decomposed rock and alluvial materials. Most of the water for the towns comes from dug wells, springs and streams. Only Dianguiraye, of the places visited, lies within this zone. The soils are somewhat sandy and are generally very porous although there are some localized areas of clays.

The eastern part of the country is generally composed of mica schists with alluvial valleys along the rivers. The soils are generally a sand and clay mixture with a consequent lower permeability. Water goes into the soil rather slowly and the wells refill slowly. The rivers carry considerable sand and many sandbars are noticeable in the rivers. At Koulikoro it was reported that the river bed is rising at a rate of about 4 inches (10 cm) per year. This sand aggravates the floods and adds to a significant flood problem in the wet season.

Efforts to obtain detailed geologic maps, for the areas around the towns visited, were unsuccessful. The only geologic map found was one about 3 feet by 4 feet covering the whole of Guinea.

General Water Situation

In general, the past wet season has been relatively good. In fact some places experienced floods with some property loss and some crop damage.

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Despite the good rains, it is likely that some localities will suffer water shortages before the end of the dry season (by May, if not before). After a prolonged drought it usually takes several years to fully replace the soil moisture and recharge the ground water.

Relatively, the drought conditions were progressively worse toward the north, with the worst conditions in the villages along the northern boundary in Guinea. Despite the drought conditions of the past dry-season, inquiry reveals that there were no epidemics due to people concentrating where there was water. During the extreme low water period, many people suffered from diarrhea and stomach cramps, "uncomfortable but no fatalities." Losses of crops and cattle were quite extensive.

At best, the water supplies of the towns visited are minimal and very precarious. Problems could develop instantly due to the breakdown of a tank truck or a pump or due to unusual contamination of the source of supply. Even the fuel shortage becomes a water supply problem of significant magnitude. For most of the towns at least part of the supply cannot be classed as "potable water." Many of the streams spread with bilharzia and some have the river blindness disease prevalent upstream. Practically all water was unpleasant looking and many of the wells and pools were well populated by frogs. In one case, it was reported necessary to clear the wells annually, during the dry season to remove old shoes and other trash in order to get water from the bottom of the well.

Most of the towns had in earlier times, a better water system (often piped in) that has been allowed to deteriorate, usually to the point of non-function. Non-functioning and deteriorating plumbing is outspoken

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evidence of the decline of the water level in most of the towns.

Labe

The town is in rolling terrain. The geology is sedimentary and the surface is very absorptive. The town has a dam (about 10 meters high), reservoir and pumping plant, about one kilometer away. The pumping plant is equipped with an electrically driven pump. There is a small diesel power pump as a standby unit. The outlet pipe is about 3 inches in diameter (inside). Running water is common in the town. By late in the dry season the reservoir is essentially empty but there has been no shortage. A second reservoir upstream or wells could add security against drought. The existing dam was built under a "self-help" program. It was damaged by floods but is being repaired and improved by local initiative. The water (and power) situation in Labe was by far the best of the towns visited.

The main drought problem in this district is the cattle. The soil is too porous to depend on inexpensive stockwater ponds as frequently used in the United States. These would be dry long before they were really needed, toward the end of the dry season. A better solution would be wells with wind-mills (or even a hand-pump) and a galvanized stock-water tank.

Koundara

The town (about 12,000 population) is in the northwest corner of Guinea very close to the Senegal border. The terrain is very flat, generally, and the geology is sedimentary. Water is obtained from wells and by truck haul from a ^{small} ~~small~~ spring fed stream about 12 km away, to the north. At this point they have a gasoline powered motor-pump and a short line of invasion pipe to the truck loading point. This stream never dries up completely. They have considered assembling a pipeline to pump the water to town, but decided

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it was too expensive. They intended to use galvanized pipe of the military "invasion" pipe type, which is expensive. They also intended to use small motor-pumps and would need several to relay the water that far. There is a larger river about 11 km on the other side of town but the water carries several diseases including "river blindness," and is not useable. Several of the town wells are evidently in an old stream channel and never dry up. Depths are about 10 meters. More water could be obtained by deepening, according to ^{local} a well digger, but this is difficult due to cave-ins unless the well is lined or cased. The major problem in the area is stock water during the dry season. They have built wells and drinking troughs. Water is lifted by bucket, or pump when available. These, however, are not sufficient.

This area is almost certain to have ground water below any point. The depth to useable water is uncertain because of a lack of knowledge of the geologic strata. Drilled wells should go deep enough to avoid interfering with the present wells. This depth should also assure that the water is not contaminated. Such wells would, however, require pumps and a power source not now available. Stock water wells away from town might not need to go so deep, but could go deeper than the present dug-wells.

Mali

The town of Mali sits on top of a hill, at an elevation of about 1,500 meters. Originally there were many trees and several live streams. These streams are now dry and no channel is visible in the town. Along the main course through the town there are a chain of wells having water at 10 to 12 meters. They do not dry up. The town has one water truck and hauls water about 11 kilometers to serve buildings of the District and some

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homes. In colonial times several springs, located about 250 feet (guess) below the town, were used and the water was "hand carried." The drought was noticeable in the town but caused no problems.

Improvements in the water system are not easy or inexpensive. The best solution would be a deep borewell (or tubewell). The depth to ample water is uncertain because of the hilltop location. Water may be encountered at higher levels, but it is relatively certain that water can be obtained by a well, about 500 feet deep with a pump. However, a power source would have to be provided. There is electricity but the "power lines" are evidence that it could not handle a ^{PUMP} pump. A deep well of this type probably would not ruin the current wells since clay strata are common in the area. However, it might destroy them.

The real problem is not the town of Mali but the string of villages north of it along the Senegal border. These are in the "rain shadow" of the higher mountains of Guinea, and have less rainfall and a natural tendency toward greater variability. They have suffered badly. Concern was expressed in Mali of the probabilities of disease epidemics when the people gather at water locations later in the dry season (April and May). They were not visited. Since they are generally in sedimentary areas, wells should help.

Tougue

The town (9,000 population) is in rolling terrain among the mountains. The local geology appeared to be the same general sedimentary types, extending eastward to the vicinity of the Bafing River. They say that the richest bauxite deposit in Guinea is under the town and that it will be mined when a railroad is constructed into the area. The water situation is better this year but not yet "ideal." They had some floods during past wet seasons and 153 houses were destroyed but no lives lost even though the flood occurred at night without warning. They have one spring at edge of town that has

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never dried. The stream below it dried up last year but normally flows throughout the dry season. Their tank truck fills from this spring. They have no pump so the truck must be filled by bucket. Now even the truck is out of service so all water must be carried by the people. I suggested that as an emergency supply, they dig a well beside this stream near the road below the stream to a depth considerably lower than the stream. It is evident that there is considerable water moving in the gravels underlying the spring and stream. There is one other very small spring in town that has never dried. It was formed by a spring into a crack in the rock by about 1 1/2 feet (a little less than 1/2 meter). The wells throughout the town are about 10 to 15 meters deep and usually are dry by May. Two or three will collect a little water during the night during the dry season but are soon emptied.

The conditions in the outlying villages are not too bad except that the cattle losses are heavy. Most people in the District live along the stream so that it is no more than one kilometer to water. There have not been any epidemics when the villages congregate where there is water.

The town of Tourne is somewhat inconvenienced by the lack of its tank truck and the absence of a ^{being} well to fill it. But the town has always had water, and can gain security by the extra well suggested. However, if bauxite mining is started considerably more water will be required. The current sources will not be sufficient. Drilled wells (perhaps 200 feet deep) should provide a good supply. The mining operation would assure a power supply for the pumps. Also the needs of a mining community, and the available mechanical equipment, probably could justify a dam on the larger

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dam and power plant. A pipeline could be installed from the existing pumping station. The station would need to be rehabilitated. They are also thinking of an "off channel" reservoir with a feeder canal from a stream

Kouroussa

This town was ^{on} the list of villages suggested by A.I.D./W but not among those listed by the GOG. Therefore information from casual observations is listed here, but the usual inquiry was not made. The town is on the bank of the Niger River which assures an adequate water supply. Previously the town had piped water and plumbing in some buildings. Three elevated tanks were noticed, two appeared to be usable, the other might need repairs. A great deal of invasion pipe is lying around and a line ran to one of the tanks. Now water is trucked in to the usual gasoline drums around town and carried to the houses and buildings by buckets. A number of wells were observed throughout the town. The area is on alluvium deposits. Wells should be easy, as well as the river supply could be developed. Power would be needed for either.

Siquiri

The district (253,000 population) is in the eastern northeastern corner of Guinea. The town (18,000 population) is on the edge of the flood plain of the Niger River and in rolling terrain. The valley floor is typically alluvial. The town is somewhat divided into two sections, the low part and the higher part. The low area gets water from wells in the flood plain area. The high area gets water from the Niger River by means of motor pumps and a pipeline that discharges into twelve "basins" (concrete boxes above ground). These are supplemented by a large number of gasoline drums. The pipeline is not reliable as it leaks. It is said to be very old. Some sections are

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galvanized iron, some stainless steel and some lead. Water is also trucked to these points and to a few other locations in town, with two trucks which are filled by a motor pump. The water contains bilharzia disease. The Nkisso River upstream some distance has "river blindness" and ^{is in} ~~is in~~ the village above the point where the town gets its water. The Hungarians put down a well to 80 meters (260 feet). However it is very hard water (soap will not lather) and is used only for cattle. Also it was found to be dry in March, when the IIRD team was here. In total there are eight wells in the flood plain that are too hard, ^{and} would require treatment (water softening) for use. During the dry season "everything goes wrong": pumps break down, trucks break down and the pipe leaks. They feel they need more "containers" to store the water. Their plan includes an elevated water tank but they "haven't gotten to it."

The outlying villages in the District divide into two groups, those along river and those on higher ground. Those along the river have no problems, the women carry the water from there. The higher villages must depend on wells and springs and have problems in the dry season, and especially in droughts. This becomes progressively worse northward, especially near the border with Mali. The depth of wells is generally limited by cave-ins of sand near the water line. In the vicinity of Coko wells go to a depth of 15 meters and get good water. In the northwestern hills the rock is schist and wells can go deeper.

It appears that for the town of Siguiri the best action would be the improvement of the existing facilities. Deep wells are questionable due to the extreme "hardness" of the water encountered at 80 meters. Equally deep wells located further from the river (north of town) probably would

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...water table...
...wells...
...health hazard...
...villages toward the north...
...wells or tank trucks, plus storage facilities...
...might be some localities where the wells would contain sufficient...
...storage ponds, but generally the wells are...
...storage to the end of the dry season...
...sandy with some clay content (semi-permeable) with areas of clay here and there.

Ken Ken

This town (100,000 population) is the northernmost town on the list to be visited. It is the headquarters of the National District, the next government echelon above the District. The town is on a flat alluvial plain beside the ^{River} Miso RIVER. It has a water system built by the French for a population of 10,000. This overloaded system is further hampered by an overloaded and fuel short power system. They start the electrically driven pumps about 10:00 p.m. after the near ⁺ lightning demand is over, and pump water until about 6:00 a.m. when the elevated tank capacity is full. This water is gone by about 9:00 or 10:00 a.m. The generators are not operated during the day to conserve fuel, so water cannot be pumped until the next night. This piped water system is supplemented by wells, 75% of which are dry before the end of the dry season. The deepest well is about 11 meters deep and has never gone dry. A concrete casing was used to dig to this depth. A well in this area has a relatively short life (in some cases 10 years). The soil contains much clay, some of which is evidently colloidal ("dissolved

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ing was the best.

The situation in the
... according to the ...
... years.

An Italian organization (SADELMA) is improving and adding to the water system. They are laying an additional 13 kilometers of pipelines, which (at least in part) contain lined cast-iron pipe. Therefore, there is no H.P. input needed.

In this area the flooding during the wet season is a major problem and is getting steadily worse, mainly because the river has been filling with sand at a rate of about 4 inches per day.

Regional Situation

The Regional Minister stated that there were floods every seven years and the intervening six years are dry. He said that last year a 300 hectare farm did not get even one kilo of rice. This year they expect drought and planted early, only to have the crop destroyed by floods. He said that at present they are at the mercy of nature and that he hopes that those who have beaten nature can help here.

The local head of the National Enterprise for Distribution of Water said that the dryness was getting worse every year, especially in the vicinity of Kan Kan. Although there was a lot of rain, the river dropped very rapidly this year. Agriculture is in pretty bad shape now. He is worried as to whether there will be enough water to drink. He feels that it is a good time to discuss the problem, before people die in the streets. He mentioned that the water problem was mainly a problem of electricity and stated that it was not only a matter of fuel but also lubricants and

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...one hand, and generally...
...used for the few feet...
...encountered last...
...of covering of the water bearing...
...a little deeper by using a "thin" mass of aluminum or clay
such material. In a few instances masonry lining was not used but the
workmanship was poor and it is likely that there was not much gain in depth.

It would be possible to institute a program to assist the villages in
deepening their dug wells, by the use of caissons or liners. This would
primarily be a technical assistance approach, with a small amount of imported
materials. In its simplest form, it would require upon their part effort
by prefabricating bands of galvanized sheet metal with heavier straps to give
strength. These could be transported flat and bent into a circular shape
site, then collapsed into a smaller ^{circle} ~~circle~~ and lowered into the well.
When in place, the circles could be expanded into place and held by pins
or bolts through the straps.

In the U.S. a common form of caisson for wells is a precast concrete
ring 2 1/2 to 3 feet high. This is placed at the well site and the hole dug
slightly larger than the outside of the ring so that the concrete ring
slides down as the hole is deepened. Additional rings are added on top as
needed. By this method, wells can go quite deep. However, this might encounter
some problems if used with existing wells, due to holes in the wall that
might allow the rings to tilt and bind in the hole. This needed again

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...ally technical measurements... out, ... (1955 or 1956) and ...
... will have to be ...
... the overall magnitude of the need for potable water and water
... the best solution would be to institute a well drilling program
... program could provide good water for the hundreds of villages and
... in the area, and throughout Guinea. It also could provide water for
... at intermediate points between villages. It would, however, require
... investment in equipment and supplies. Well drill rigs and
... equipment including a tank truck for each well could be used.
Well casings, pumps, and power sources would be necessary. The relatively
simple percussion drill rig would be best suited for the area as it is
simple to operate and maintain and can be used in any type of material. Wind-
mills would be desirable for the village wells and for stockwatering. These
should be fitted for hand operation as well as wind power, as there may be periods
without wind. A galvanized stockwatering tank should be provided for each
windmill. In the villages it would serve as a place for the people to fill
their containers. Locally made concrete tanks could be used, but most now
in use do not seem to be very good. For the towns a "down the hole"
electric pump probably would be best. In most cases an electric generator
set would have to be provided as the local power source is too small and unde-
pendable. Fuel powered turbine pumps could be used, but require special
maintenance. An organization to periodically service and maintain the
pumps (including windmills) would have to be organized. Fuel would be
necessary to provide the electricity, and fuel is currently the major water
problem in some of the towns. Under the current situation of poor maintenance

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of equipment and certain fuel supplies, the idea of a well drilling program does not appear very attractive.

If a well drilling program were to be started, it seems inevitable that it will ultimately lead to the use of well water for irrigation. This would be desirable in some localities as it would permit more flexible development than necessary for large diversion projects and would involve far less capital investment. However, technical studies should be made before much irrigation is undertaken from wells. The groundwater supply in some areas may not be adequate for this purpose.

Well-drilling Equipment

As far as can be determined there is no equipment in Guinea for drilling water wells.

However, a geologist working near Mali has a Russian sugar-drilling rig for exploratory drilling. He says there are a number of such units in use in the country. In an emergency these could be used to make deeper wells than it is possible to dig by hand. In some areas such holes would last for some time without casings but in some places a pipe should be put in the hole to keep it open. It would be necessary to fabricate bits of small diameter (and maybe extra length) of metal or even the usual old truck inner tubes. These would have to be weighted to sink them into the water in the small well.

Dams and Reservoirs

The construction of dams and reservoirs does not appear practical for the towns visited and even less so for most of the smaller villages. In general, the soils of the area are much too porous. Small reservoirs would leak so badly that it is questionable that many of the reservoirs would still

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have water by the time it is really needed at the end of the dry season. In some localities such structures might be effective, but the time available for the evaluation did not permit an extensive search. Clay is rather common throughout the area and dolomite (massive limestone) is present in some localities so that some areas might be found that are suitable for small structures. The ^{Town} ~~town~~ of Ince is currently using a reservoir for its supply, quite successfully. For most of the towns visited, reservoirs would have to be at levels below the towns so that pumps, pipes and storage facilities would be necessary. This also raises a problem of maintenance and fuel.

Tank Trucks

The tank ^{truck} ~~trac~~ is a vital part of the present water supply system of the towns (District headquarters) that we visited. They haul water from streams or springs and dump it into containers throughout the towns. These containers are usually old gasoline drums but occasionally they were concrete tanks. The trucks are filled by a motor driven pump. ~~if~~ ^{if} it is working. If not it is loaded by buckets. At Koundara they stated that 9,000 people were supplied by one truck. If it fails, ^{some} ~~some~~ people may have to go as much as eleven kilometers to get water. Dingiraye indicated that one truck was not enough for 10,000 people.

Hauling water by truck in this manner is very expensive. Pumps and pipelines would be much more economical in the long run, but it would require a higher capital investment. Wells would generally be the least expensive system, provided enough wells were drilled to spread the costs of the well drill-rigs and auxiliary equipment over many wells.

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Tank trucks are an expedient measure that requires a relatively low initial investment. Since they have been employed for a long time, the system of utilization is well developed and understood. Therefore, consideration must be given to their continued use.

Beside the matter of high operation and maintenance costs, the tank truck system does not seem to offer much hope for the villages and the livestock. Theoretically, additional tank trucks could be provided to haul water to the smaller villages, perhaps with one truck serving several villages. If these were ^{done} ~~can~~ the cost of water per person served would be much higher than for the towns because of greater distances driven, poorer roads and the problems of servicing the trucks in isolated locations. Also it seems rather unlikely that the trucks would actually be used for the benefit of the villages. They probably would be used to increase the supply available in the headquarters towns of the District.

Equipment Maintenance

The maintenance of equipment and facilities must be considered in any analysis of the water situation and methods of improvement. This picture is not at all encouraging toward any consideration of improvements that involve mechanical equipment. It even creates doubts as to the practicability of water pipes.

Everywhere one cannot help but notice equipment that is repairable but unused and deteriorating. This is very noticeable around the government installations. The usual answer is "no parts" if questions are asked. It seems more likely that no one feels responsible for rehabilitating the unit. *The writer noticed that the Governors would spend time on minor details of visitor entertainment, lodging and gasoline, since no one else was available to assume these responsibilities.*

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Equally evident was the need for repairs to buildings and their furnishings. Roads and bridges are in bad shape for the lack of repair. In fact it is quite interesting to compare the actual road conditions with those indicated on the Michelin road map. Roads shown on the map as "improved" are often worse than those indicated as "dirt roads" or "unmarked tracks" "suitable for cross-country vehicles." Many small bridges are unusable because of a need for minor repairs. At ^{Dingiraye} Sigiri a fine pumping station, including filters, was built just before independence but has never been used due to a lack of a pipeline to town. No effort has been made to protect it, in fact it was not even locked up to prevent entry and some vandalism has occurred.

By contrast with ^{such} ~~such~~ neglect of public facilities and equipment, the ability of people to keep old motor vehicles running over the bad roads, under extreme overloads. It is surprising that very few of such vehicles were observed broken down along the road. The GOG landrover developed engine trouble so that repairs were necessary at Kenroussa. A private garage made a repair part and had the car on the road in a few hours, running better than at the start of the trip.

This contrast between the maintenance of private property and public property is significant to any consideration of assistance involving mechanical equipment. Unless the current maintenance problems can be curbed, it seems likely that any equipment that is supplied ^{may provide} ~~may supply~~ a temporary benefit of rather short duration. While Guinea has the skills to keep such facilities operating, it seems to be plagued with problems of replacement parts and a lack of responsibility on the part of those who should look after the equipment.

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If the U.S. supplies mechanical equipment, it should also supply an initial stock of spare parts amounting to not less than 25% of the purchase price of the equipment. It should also get an agreement from the GOG that it will purchase parts to maintain this stock, as soon as enough units are consumed to constitute a reasonable order to the supplier. The 25% level of spare parts is generally the normal for such remote locations. It may be too low for the existing situation in Guinea, where the procurement of such parts is difficult and ^{slow} ~~slow~~. A higher level might be prudent.

Power Problems

In all areas visited, electrical power was obviously a problem. The towns have grown appreciably since the installations were made so that the facilities are overloaded and most are subject to breakdowns. Since most of the generators are powered by diesel engines, fuel shortages frequently result in no power at all. This tends to discourage the use of electrical pumps to supply water. For example, at Siguiré the U.S. constructed a power line to the site of the pumping plant on the Niger River for an electrical pump, but it is not in place. Instead the typical small fuel powered motor pump is used to send water to the town through a pipeline. This type of pump is less efficient, less effective, and more subject to breakdown than an electric powered pump. However, it can be operated even when the electric plant is out of service due to the lack of fuel.

At Kan Kan, the power system is both overloaded and plagued by fuel shortages. It is not operated during the day to conserve fuel. Water is pumped at night to fill elevated water tanks. During the hours of small electric usage. The tanks were constructed by the French when the town had 10,000 population, whereas the town now has about 100,000 people. The result is that there is no water after about 9:00 or 10:00 a.m.

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Irrigation Potential

Guinea's potentials for irrigation and hydroelectric power seem almost endless. Its mountains ^{form} ~~form~~ the headwaters of the Niger, Senegal and Gambia Rivers as well as a half dozen rivers that flow westward into the Atlantic. It also should have a liberal supply of groundwater in the sedimentary formations of western Guinea and the alluvial plains of the Niger River. The rivers coupled with the mountainous center of the country could produce large amounts of hydroelectric power, but to date the development has been relatively minor. The climate of Guinea would permit as much as three crops with irrigation, the major constriation being the heavy rains of the intense wet-season. In driving approximately ~~2500~~ ²⁷⁰⁰ kilometers, one is impressed with the great areas of tall grass both in the mountain valleys and the river plains. In some areas, ~~of~~ the soils would undoubtedly be poor, but in many areas the soil should be good. Some of the land seems to be useable despite a rather hard crusting, provided it was broken up by heavy machinery first. The "desert varnish" type of crusting would be difficult to break by hand, and power or light farm tractors but would be rather easily ripped and turned by crawler tractors.

Much of the land now cultivated during and immediately after the rains could benefit greatly by irrigation in some areas, such as the Niger River bottoms at Siguiri ^{which} ~~now~~ receive some irrigation early in the dry season from local ponding. This augmentation of the residual soil moisture from the wet season yields a much better crop than the same land can produce without it. Such developments could generally produce a second crop if river water or ground water were supplied,

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At Siguiri the French developed an irrigation system to serve 25,000 hectares with supplemental water. This has small concrete dams on local streams to impound water for use later in the crop season. Floods in 1967 damaged the system. The man in charge of public works for the District has, in the past three years restored the facilities for 4,000 hectares and will continue until the entire system is back in use. It would be relatively easy to pump water from the Niger River and the Tinkisso river (a tributary of the Niger) into the existing canals. Simple motor-pumps could do the job. This would permit a crop in the late dry season. It was reported that both the Chinese and Rumanians have studied this project and IBRD personnel have visited the locality.

The District has plans to develop the Fie River, further south. This would have a dam 3 km long and 26 meters high which would store 12 million cubic meters of water. It would irrigate 18,000 hectares (45,000 acres) including two State farms totaling 6,500 hectares. It appears that A.I.D. may have studied this project years ago.

The IBRD and the FAO have shown some interest in potential development of the Tinkisso River about 75 km west of Siguiri (in an area having ^{River-} [water-] blindness problems). The Chinese are developing projects for irrigation and hydroelectric power, higher in the Niger River basin.

Conclusions

The past wet season had good rains so that the current situation is good. However it seems likely that the prolonged period of drought will have left the soil moisture and ground water so badly depleted that the one good year will not replenish it fully. This possibility is somewhat evidenced by

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the fact that the Milo River flows dropped unusually fast after the floods. Therefore, there is a strong likelihood that some communities will be forced by a drought situation before the end of the dry season. (May or earlier.)

Although the people of Guinea seem to have come through the recent long drought with little more than inconvenience, they were precariously close to trouble. The minimal water facilities would not be sufficient if there is a failure of the only tank truck or, in some cases, the pump. Livestock and crops suffered much more than the people and there were appreciable losses.

Not only are the present water supplies minimal, they also are polluted and dirty. Bilharzia is common and "river blindness" exists in many areas. Other water born diseases are probably present but go unnoticed. Unpleasant but non-fatal diarrhea and stomach cramps are common during the low-water period. It is hard to classify untreated water from streams and shallow wells in towns and villages as potable water. Clearly, improvements in the domestic water systems are needed, and would be appreciated by the people. However, the task of providing a reasonably adequate quantity of safe domestic water to the towns and villages would be a major undertaking.

The problems of maintenance of equipment, unavailability of needed parts, ^{fuel} ~~fuel~~ and lubricant shortages and other such problems, present a very discouraging picture. They tend to mitigate against the use of mechanical equipment. Non-mechanical solutions also do not appear to be very practical. The porous soils of most areas and the long dry season, make small dams and reservoirs very questionable for most locations that were observed.

In total, the need is evident but the solutions are difficult and there must be an uncertainty as to the length of service of any improvements that are made.

A number of alternatives have been discussed along with their advantages and disadvantages. A final decision will need to be made in the light of the funds available and the immediate objectives that are wanted.

If it were not for the constraints of money, time, maintenance, power, etc., I would recommend strongly in favor of a well drilling program. It would provide a long-term improvement of benefit to the comfort and health of the people and would afford a means of curbing livestock losses. It would also create in Guinea a facility for the continued development of ground water for people, livestock and irrigation.

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Guinea Food Prod.

- May: to have Proj
Committee when
he returns

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REPORT OF PROJECT IDENTIFICATION
SURVEY TEAM, GUINEA
November 12-30, 1974

L. Stanley Peek
Senior Agr. Development Officer, AFR/CWR

Myron Golden
Guinea Desk Officer, AFR/CWR

General Statement

1. AID objectives and relevance to Guinea program

The assistance programs administered by the AID Africa Bureau, Central-West Africa Regional Office (AFR/CWR) affect 14 countries with a combined population of nearly 50 million. This includes Cameroon, the Central African Republic, Chad, Dahomey, Gabon, the Gambia, Guinea, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo and Upper Volta. Guinea Bissau, which recently obtained its independence, may be added to this group. Three basic features predominate: scarcity of resources in relation to need, magnitude of need, and diversity in characteristics - economic, cultural, ethnic and ecological.

An agency policy determination on the "Relatively Less Developed Countries (RLDC)," issued on January 12, 1973, noted that these countries represent less than ten percent of the total population of the developing countries, but that there was a compelling justification for special measures for such countries. The justification was based on humanitarian and economic considerations and cited the countries' poverty, the critical nature of the problems faced and the fact that such countries had not been able to benefit from existing programs and were, therefore, falling further behind. The major AID constraint to providing effective assistance was that most of our existing knowledge of agriculture, disease, transportation, education, and other sector technologies is based upon research and investigation of physical, economic and social conditions different from those faced by the least developed. Of the 25 countries identified as "relatively less developed," 16 are in Africa and 9 (including Guinea) are in the Central-West Africa Regional Program area.

Until recently, the countries included in the AFR/CWR program were not designated "bilateral emphasis countries," and AID programs in French-speaking West Africa were largely of a technical assistance nature and designed primarily to support development of regional organizations. The new emphasis toward more innovative and longer term development programs in Africa is due primarily to two factors: (1) Congressional appropriation of funds in FYs 74 and 75 for emergency and medium-term programs to alleviate the effects of the drought in the Sahel and other affected areas of Africa, and (2) the Congressional mandate that AID move away from macroeconomic criteria and capital transfers and move toward a concern for the quality of life for the poor majority and for technical problem solving. The underlying assumption of the mandate is that there is a global underutilization of the world resource base - land, water and people. There is a further assumption that this base, if properly managed, could provide substantial additional food and provide a higher quality of life for the vast majority of people.

Guinea, a West African country of approximately five million people and a land area total of ninety-five thousand square miles, is bordered by six countries (Guinea Bissau, Senegal, Mali, Ivory Coast, Liberia, Sierra Leone) and the North Atlantic Ocean. Approximately eighty-three percent of the labor force is involved in agriculture with the major export commodity being alumina (66% of 1970-72 exports), with bauxite and iron ore coming to the fore. In terms of natural resource endowment, the country is among the richest in Africa with enormous areas of arable land and large deposits of bauxite.

Since its independence in 1958, Guinea's economic development has been less than anticipated, and the country is among the least developed in Africa and the world. The primary factors for this retarded economic growth are: (1) the priority objective of socio-political infrastructural development with economic development being a secondary objective, (2) the country's early independence and related loss of support from the French economic community, and (3) Guinea's relative political isolation and ^{lack of} economic interaction from and with many of its African neighbors and the international community.

Recently, the Government of Guinea has demonstrated inclinations to focus more on its economic policies and move toward realization of the country's development potential. The majority of international developmental assistance is from "Eastern Bloc" nations, but developmental assistance from Western donors and commercial firms is increasingly being sought. The United States, although we have not had a bilateral AID program in Guinea since 1966, has provided PL 480 sales assistance to Guinea in recent years, and has responded to food and to livestock disease emergency drought assistance requests this year. U.S. commercial firms have \$350 million invested in the bauxite industry.

As a result of serious food shortages in Guinea, the GOG's present emphasis on agricultural development, and the recognized U.S. expertise in agricultural technology, the U.S. and the GOG have agreed to explore possibilities of cooperation in the area of food production. An AID team has travelled over most of the country in an attempt to identify potential areas of assistance in the agricultural sector.

2. Project survey trip ^{1/}

The AID Project Identification Team arrived in Conakry the afternoon of November 12, 1974.

During the day of November 13, the Team engaged in a series of orientation and planning conferences conducted by the American Embassy staff. We were also briefed by Ambassador Todman.

Orientation conferences were conducted by the following ministries:

- (1) Ministry of Livestock and Fisheries
- (2) Ministry of Development
- (3) Ministry of Agriculture

For a summary of these meetings refer to Attachment A.

We began the day of November 14 with a brief meeting at the offices of the Guinea State Committee responsible for external assistance to review the proposed travel itinerary for our field visit. The rest of the day was occupied with conferences at the several Agricultural Ministries, reference Attachment B.

Late in the evening of November 14 we were requested to meet President Sekou Touré. Our reception was most cordial. The thrust of the President's remarks was that he wanted U.S. technicians to assist Guinea to make the transition to modern agriculture, not overnight, but at a pace at which the Guinea farmer could assimilate the change - from daba (short-handled hoe) to oxen drawn plow and then to partial conversion to tractors as economic and practical. He said, show us how to farm better to produce more.

Field travel covered the period from November 15 to November 30, 1974. We were accompanied by the Guinea Delegation listed in Attachment B. The chief of the Delegation was a representative from the

^{1/} For information on Guinea Project Identification Team itinerary refer to Attachment B

PRESIDENTIAL OFFICE who effectively handled protocol matters with the various Federation Governors. The technical members were most cooperative and professional.

3. General observations

a. Agricultural potential

During the course of its field travel, the Team visited numerous major towns or cities, inspecting a total of 13 project sites, some of which were near, others as distant as 60 kilometers from these main stops. See Attachment C for exact locations of proposed projects.

Of approximately 7,000,000 hectares of arable land in Guinea, GOG officials estimate one fifth, or 1,400,000 hectares, is now in cultivation. Without doubt the most fertile areas lie in the coastal lowlands and in the river plains of Upper (Haute) Guinea. The team observed thousands of hectares of these areas from the Guinea Air Force helicopter in which we travelled. Numerous stops were made at proposed project sites.

We were impressed, very impressed, at the quality and quantity of land available to be put into cultivation. A major need for economic development of the two most productive areas is simply development and control of the abundant water resources. Our cursory estimate is that development costs would be moderate to low on a per-hectare basis.

Rice is the primary food crop grown in Guinea. For a listing of major crops refer to Attachment D. Mineral fertilizers are not generally economic or available at the present time. Guinea's better soils give fair to good yields if managed properly with rotations including legume crops.

Livestock production is general over most of the country. We

saw few cattle, goats, or sheep in the Cote Bas, the coastal lowlands. Poultry appeared to thrive everywhere. Ministry of Livestock spokesmen estimate they have 1,000,000 head of sheep and goats. The number of cattle, mostly N'Dama - a tsetse resistant breed, is reported to be 1,500,000. The herds observed were in excellent condition after a normal rainy season and good grazing. The livestock technician of the Guinea Delegation told us they would be thin and gaunt by the end of the dry season owing to lack of adequate forage.

b. Economic factors

Economic factors were noted and attempts to get basic information in this area were only partially successful. We tried to identify basic economic incentives for farmers to produce above subsistence levels. They appeared to be mostly lacking in the "closed" Guinea economy with its "soft" currency.

Under favorable economic conditions Guinea agriculture could offer great opportunity for capital development investment. Usually the GOG showed us large tracts of several thousand hectares which they wished to develop for rice and other crops grown in rotation. It was conveyed to them that these were capital development proposals which we were in no position to consider with our limited budget. We advised them to make overtures to IBRD, IMF or other capital financing sources, e.g., agro-business.

The current economic situation does not permit us to consider a direct production program at the present time. It is difficult to identify economic incentives to farmers. A favorable cost/benefit ratio would be even more difficult to establish.

c. Agricultural training, extension and research

Our Team had the opportunity to observe two agricultural education institutions: the Faranah Regional Agricultural School on November 15 and the National Faculty of Agriculture at Foulaya on November 25, 1974.

The Faranah School is one of four which train "controllers" of agriculture in each of the major regions of the country. It is a three-year school which trains students at approximately the 11th, 12th and 13th years of the school cycle. The Faculty of Agriculture is a university level institution with a three-year curriculum covering the 14th through the 16th year as in the French system.

It is apparent that Guinea is placing major emphasis on its agricultural education program, but it is also evident that they are working with very limited resources which militates against effective training. The Faculty of Agriculture is not nearly as well equipped as an American or European agricultural high school. The Faranah Agricultural School had relatively nothing, as they were recently moved from Foulaya to make way for the National Faculty of Agriculture which moved on presidential order. We were told President Touré had said of the Faculty that they were only theoreticians as long as they remained in Conakry and that he needed practical agriculturists.

Our discussions with GOG officials led us to believe that they have adopted and are using the triangle system of research, training and extension to the extent of their present capabilities which, we repeat, are being restricted by inadequate laboratory and classroom equipment and supplies. Also, a modest amount of building is required to meet the expansion of the Faculty in their inherited quarters.

The U.S.-trained Director of the Faculty of Agriculture, Mr. Manzano Nongeh, in our opinion has done an outstanding job in the year since his school was transferred to Foulaya. Refer to Attachment D (Lateef Report).

Finishing our field tour we have concluded that limited U.S. resources over a three-year period can best be used to assist the Guinea Government to initiate a long-term upgrading of research, training and extension at the Faculty of Agriculture, Foulaya, and at Faranah in Upper Guinea. We believe the direct and indirect results of such a U.S. effort could profoundly affect the direction of Guinea agriculture and overall agricultural production in the long term.

4. CBPP activity

While engaged in the project identification survey, the Team was made aware of and confirmed the existence of a contagious bovine pleuro-pneumonia (CBPP) outbreak. Reports indicate the disease was transmitted by cattle migrating from the Sahel. AID/W and field posts were asked to provide information and assistance to help the GOG carry out a control campaign. The response was prompt and positive. Within a matter of days this program with commodities, vaccines and vaccination equipment (\$25,000) will get underway.

Project title: Development of Guinea Food Production Program

Project number: To be determined

Life of project: Begins FY 76; ends FY 79

Date of submission to Bureau: December 10, 1974

Project Development Team:

- A. L. Stanley Peek, Senior Agricultural Development Officer, AFR/CWR
- B. Myron Golden, Desk Officer (Guinea), AFR/CWR
- C. Samuel Litzemberger, Chief-Crops Production Division, TA/AGR
- D. Victor Lateef, Agronomy Sector Officer, ADO/Dakar/CWR

Grantee: Government of Guinea (Ministry of Education, Ministry of Agriculture)

I. Summary description of recommended project

This is a project to improve and develop the food production capability of Guinea. It includes assistance in the areas of: (1) applied and adaptive research; (2) agricultural education at two levels, i.e., (a) training of agricultural technicians/assistants just below the Bachelor of Science/Engineer Agronome level, and (b) training at the university level (Faculty of Agriculture); and (3) development of an extension demonstration unit that would concentrate on introduction of improved agricultural practices including expanded use of animal traction and limited use of tractor drawn equipment. (4) We would also provide assistance to a small research unit (sub-station of the Faculty of Agriculture) to be established at Paranah. This unit is referred to in Guinea's Five-Year Plan as a research institute. It would engage in adaptive research required to advance agriculture in the region.

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The Guinea Government and the AID Team place first priority in this proposal on development of the agronomic-animal husbandry demonstration farm.

Requirements for technical assistance personnel are quite limited for the proposed project. We are recommending use of short-term consultants to assist the Faculty of Agriculture at Foulaya. It has been determined that research technicians are needed in the following areas: ^{2/}

1. Nematology
2. Pathology
3. International research linkages
4. Agricultural equipment and laboratory equipment installation and training

At the proposed Faramah Agricultural Education, Research and Demonstration Complex we anticipate the need for four technicians under an International Voluntary Service type contract:

1. Agronomist (team leader)
2. Agricultural Engineer-Irrigation
3. Livestock Production Specialist
4. Heavy Equipment Operator

It is proposed that Guinean-owned PL 480 currencies be used for construction. Although buildings at the new site of the Faculty of Agriculture are good, there are not enough of them. The Regional School of Agriculture, the proposed Research Institute

^{2/} Attachment E, p. 4

and Demonstration Farm will have to be built. The Regional School of Agriculture is making do in some old abandoned building built by the former French colonial government.

Substantial commodity inputs are to be provided for Foulaya and the Faranah complex. A modest number of graduate level participant training grants would be made.

There are close linkages between the Faculty of Agriculture and the units of the proposed Faranah complex which this project would strengthen. A detailed explanation of these linkages will be given in AID's subsequent Project Review Paper.

Project outputs would result in higher yields from food crops and livestock, providing a model extension/demonstration unit at the Faranah Federation (province) level to move research to practical application by farmers.

A. Project rationale:

As stated earlier in this report, AID has agreed to explore possibilities for cooperation in the area of domestic food production. In this exploration process the Project Identification Team has had an opportunity to observe agriculture in most of the country. We found abundant good land and agricultural water but a lagging production in agriculture. When Guinea has the land and water resources to produce most of the rice needed by West Africa, then why does it have a rice deficit of 60,000 MT annually? The answers to this question will, in our opinion, largely provide the justification for the project we have proposed.

Causes of deficit production and an overall somewhat stagnant economy are the following:

1. Soft currency (official rate - \$1.00 to 20 sylis; unofficial rate - \$1.00 to 200 sylis);
2. Dearth of trade goods, particularly in rural areas
3. Lack of economic incentive to farmers (official price of rice is 9 sylis/kg for paddy; 15 sylis for milled rice, but 60 sylis blackmarket);
4. An ineffective extension system. Most agents ("controllers") have no transportation and little to extend in the way of improved practices in a "production package" even if transport were available;
5. A struggling but potentially viable agricultural education system;
6. An underdeveloped national research system;
7. Lack of agricultural investment (development capital).

As we have stated under "B. Economic Factors," page 6, these factors preclude serious consideration at the present time of AID assistance to major direct production projects. We have concluded such projects cannot be justified economically at the present time. Our Embassy in Conakry believes, however, that the economic situation is improving with rather significant extractive projects (bauxite and iron) in the country.

Noting that we have opted for nonconsideration of direct production projects, we believe that by directing AID inputs

into selected agricultural institutions needed to develop a modern agriculture, we can assist the GOG to get its agriculture moving as the country's economy improves. By a transfer of AID resources, we can effectively influence the quantity and quality of agriculture cadres trained, we can improve the quality of research and assist Guinea in making international and African regional research linkages now lacking. A few Bulgarian and People's Republic of China technicians are now aiding the GOG. We saw no improved high yielding varieties being grown nor were we told of any being multiplied. The Chinese are reputedly doing some rice research at Kankan. It is believed that some improved rice varieties could be adapted and more than double yields.

The proposed Extension/Demonstration Farm would concentrate on improved agricultural practices through the "package approach." An approach combining animal traction and tractor cultivation would be used.

This farm would serve as the practical training unit for the Regional Agriculture School. Agricultural work brigades would be brought in from villages in the Federation (province) to observe and learn from the crop and livestock production demonstrations. A most important function of the Farm is development of a modern 20 hectare irrigation unit with levees to control water in the rainy season and supplemental pumps for all seasons. This unit is intended

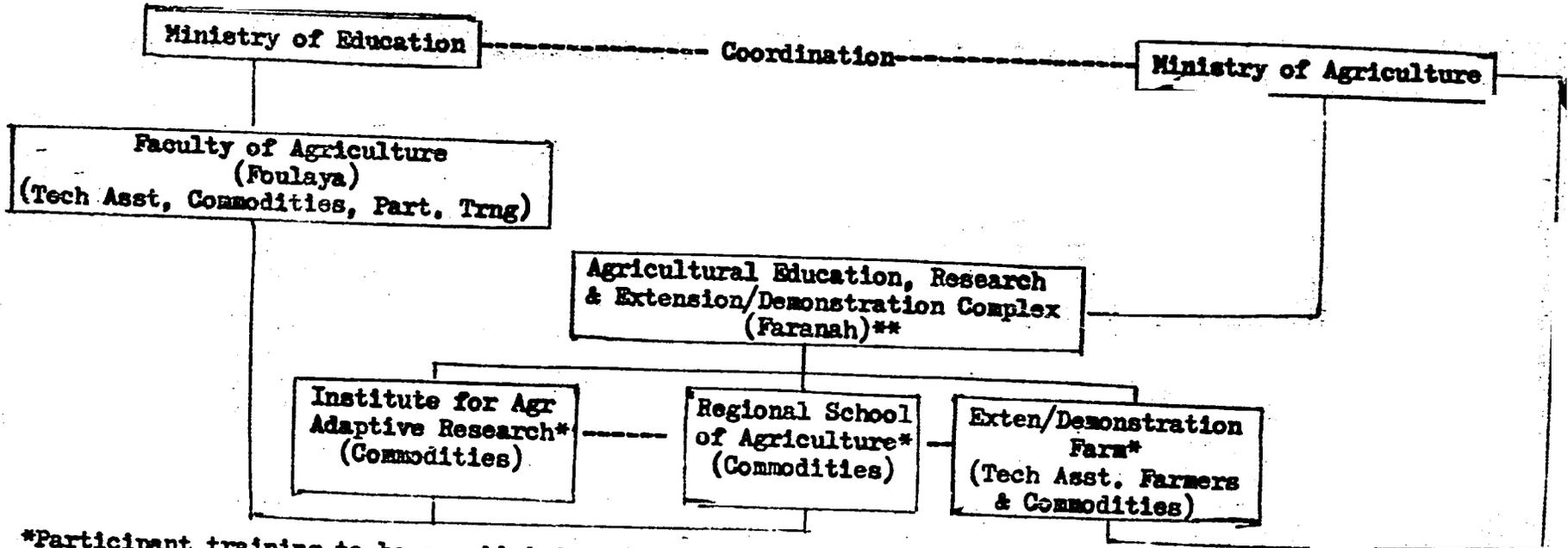
as a pilot for widespread application in the Haute Guinea flood plains. A cropping system for this unit is to be developed as part of the project.

II. Outline of project design

A. Elements of project:

1. Proposed Agricultural Education, Research and Extension/Demonstration Complex - Faranah. Interrelated components of this complex include (a) an Institute for Adaptive Research, (b) a Regional School of Agriculture, and (c) an Extension Demonstration Farm. For information concerning the "Suggested Development Plan for the Extension/Demonstration Farm" refer to Attachment E.
2. Faculty of Agriculture - Foulaya

PROJECT
DEVELOPMENT OF GUINEA FOOD PRODUCTION CAPABILITY



*Participant training to be provided for each of the three units of the complex

**Complex Coordinator (suggest GOG appoint Coordinator for three units in complex)

---Integration and cooperation

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II. (Continued)

B. Project development schedule:

1974

Complete Project Identification Paper - December 15

1975

Complete Project Review Paper - January 30

Start project design - March 1

Complete project design - April 30

AID reviews and Project Paper - Approval completed - June 15

AID Project Manager on board (Conakry) - July 15

Obligation of project funds - August 15

Negotiation of university consultant contract - completed -
October 30

Negotiation of IVS contract - September 30

1976

Technicians on board - March 1

C. Other donors - UNDP:

The survey team met with Mr. Divjak, Acting Resident Representative, UNDP/Guinea, and Mr. Belou, Agricultural Adviser, UNDP, on November 23, 1974. The UNDP has projected a five-year program in Guinea from 1974-78 totaling \$24,000,000. Eight million dollars is budgeted over the entire program period for the rural development sector which consists primarily of agricultural projects. Two million dollars is budgeted for agricultural education. Some of the projects planned in the five-year programs follow:

1. A seed production project at Koba
2. Manioc and corn cultivation improvement at Dalaka
3. Palm oil project at Boko
4. A forest inventory
5. Agronomic research assistance at Foulaya
6. A soil classification survey
7. A food protection project
8. A small hydrolique/agricultural project in drought affected areas (Kankan, Siguiri, Labé), small dams and wells using traditional techniques
9. Sanitary protection of livestock project
10. Selection and multiplication of N'dama cattle species
11. Project to study possibilities of feed concentrates for livestock and poultry
12. Project for development of bee culture
13. Fisheries project (sea fishing and fresh water)
14. Training in commercial fishing
15. A factory for conversion of manure and human excretion to fertilizer

Most of this ambitious program is in the planning stage. Two of the projects are scheduled to begin soon (first two listed above). The UNDP personnel stated that program coordination with AID would be desirable for implementation of their projects, and they were prepared to cooperate with us with our program(s) in Guinea if this seemed desirable (they mentioned in particular that UNDP technicians were less expensive than U.S. technicians).

The officials stated that the primary problem with increasing food production in Guinea is closely tied in with the purchasing power of Guinean currency (syllis). The incentive factor to produce has been minimized.

D. Financial plan:

1. Project budget

Estimated cost of the project for the three years contemplated "life of project" FY 76 to FY 79 is as follows:

United State..	<u>\$1,765,000</u>
Government of Guinea (local currency equivalent)	\$8,220,000
(U.S. \$1.00 = 20 syllis)	
Total	<u>\$9,985,000</u>

TABLE I

Estimated U.S. Costs by Functional Segment

<u>Segment</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>
Faculty of Agriculture	\$320,000	\$320,000	\$320,000
Faranah Agr.	<u>390,000</u>	<u>210,000</u>	<u>205,000</u>
	\$710,000	\$530,000	\$525,000

TABLE II

Scheduled U.S. Expenditures by Fiscal Year
Segment and Category
(U.S. Dollars)

	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>
<u>Faculty of Agriculture</u>			
Technicians - short-term consultants (20 mm)	\$100,000	\$100,000	\$100,000
Participant training (2/yr)	20,000	20,000	20,000
Buildings (hardware)	50,000	50,000	50,000
Commodities			
Agr. equipment	50,000	50,000	50,000
Laboratory equipment	50,000	50,000	50,000
Classroom equipment	50,000	50,000	50,000
Sub-total	\$320,000	\$320,000	\$320,000
<u>Faranah Agr. Complex</u>			
Technicians (4) (IVS contract)	\$ 60,000	\$ 60,000	\$ 60,000
Participant training (3/yr)	30,000	30,000	30,000
Buildings (hardware)	50,000	50,000	50,000
Commodities			
Agr. equipment	100,000	50,000	50,000
Lab equipment	50,000	10,000	5,000
Classroom equipment	100,000	10,000	10,000
Sub-total	\$390,000	\$210,000	\$205,000
Grand total	<u>\$710,000</u>	<u>\$530,000</u>	<u>\$525,000</u>

TABLE III

Major Elements
Guinea Expenditures by
Fiscal Year, Segment & Category
(U.S. Dollar Equivalent)

	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>
<u>Faculty of Agriculture</u>			
Institutional support.	\$ 500,000	\$ 500,000	\$ 500,000
Buildings	1,000,000	1,000,000	1,000,000
Local currency costs, U.S. technicians (20 mm) (Cost of living supplement)	40,000	40,000	40,000
Sub-total	<u>\$1,540,000</u>	<u>\$1,540,000</u>	<u>\$1,540,000</u>
<u>Faranah Agr. Complex</u>			
Institutional support	120,000	120,000	120,000
Buildings	1,000,000	1,000,000	1,000,000
Local currency costs - U.S. technicians (housing & Cost of living supplement)	80,000	80,000	80,000
Sub-total	<u>\$1,200,000</u>	<u>\$1,200,000</u>	<u>\$1,200,000</u>
Grand total	<u>\$2,740,000</u>	<u>\$2,740,000</u>	<u>\$2,740,000</u>

*It is proposed that local currency (syllis) costs be funded from PL 480 Guinea-owned syllis, of which there appears to be an accumulated total as of June 30, 1974, equivalent to U.S. \$18,389,000

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UNITED STATES GOVERNMENT

Memorandum

TO : The Ambassador

DATE: November 22, 1974

FROM : DCM - John W. MacDonald

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SUBJECT: Notes on AID Mission So Far

Briefing by Dr. Kekoura Camara, Minister of Livestock

Dr. Camara opened with a long exposé of Guinea's plans for agricultural and livestock development with which we are generally familiar. He then explained the structure of the Domain of Rural Development and specific tasks of each of the three ministries making it up.

Turning to livestock, he said that Guinea had enormous possibilities but the present situation was destroying the native breed of cattle the endama breed, known throughout Africa. The breed originates in Guinea. Both FAO and UNDP are interested in developing the breed. If the US participates, it will have importance throughout Africa.

Guinea has great potential for growing feed for livestock. It is the water shed of West Africa. Most of the great rivers have their source here -- the Niger, the Senegal and the Gambia. Therefore, there are vast plans for grazing.

The human factor is also important. The Foulani people have a vocati for livestock. Thus, the basis for further development exists.

This is the potential, but the reality is otherwise. There are now only about 1 1/2 million head of cattle in Guinea. There are several reasons for this. First, there are endemic diseases, some of which have been overcome by anti-vaccines developed at the Pastoria Institute.

A second factor is the absence of range management in Guinea. Guinea practices extensive rather than intensive grazing; thus, there is no way to watch animals for diseases, etc.

A third factor is the size of the breed. One animal will supply only 80-100 kilos of meat. One cow produces only one to two liters of milk a day, instead of sometimes 15-20 liters which other breeds supply.

Guinea is doing some experimentation with cross-breeding from cattle imported from the USSR. The results have been good under laboratory conditions, but the process falls down when moved from the laboratory to the range. Guinea's immediate ambitions are to create one or two ranch/farms for applied research and for diversification of livestock production (including pork and poultry.)



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Dr. Camara hoped U.S. assistance could help in various ways. In the immediate, he requested supply of vaccine against diseases of pleuro-pneumonia, which is serious problem in Haute Guinea but as yet has not spread to Moyen Guinea. Guinea needs 400,000 doses of vaccine and logistical means to deliver them.

He also asked for assistance in breed improvement, possibly in bringing in some U.S. breeds. He mentioned also multiplication of the breed, possibly through artificial insemination and also by regrouping the herds.

Briefing by Minister of Amenagements (Halvo)

The Minister outlined the goals and organization of his Ministry, which is still in development stage since it is less than a year old. All problems of steer supply and forest development come under his domain, specifically reforestation and Ministry of Water Resources. He is responsible for means of combatting the drought.

One of his principal goals is the creation of reserves of water for animals during the dry season. This would prevent migration and would avoid social problems.

His ministry also seeks the means to keep peasants productively occupied in a six-month "dead season." They could be mobilized to build dams, dig wells and in reforestation projects.

(COMMENT: This seems to me to be an excellent field for a PL-480 Title II Food for Work Program.)

The Minister outlined to separate types of capital development (amenagement) that the GOG is pursuing. These are:

A. Relatively small development projects of 100-500 hectares. It is possible to double or even quadruple agricultural production in these areas. The Government will set up special production brigades, including technicians to help the PRL's to develop these small plots for increased grain production. The Minister said that these small development projects could^{or} even better than larger capital development projects.

B. Another type is that the Minister called Grand Projets. These are the responsibility of the State in cooperation with foreign partners. He has in mind very large areas 3,000-20,000 hectares, producing products such as cotton and tobacco for export, as well as local production.

The Minister devoted a large part of his presentation to the Fie Plain. Several organizations have studied development here, including FAO, UNDP and the World Bank. But, Guinea has not yet received a concrete proposal from any source. The Fie Plain would be devoted to rice production in the rainy season and cotton in the dry season.

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Briefing by Minister of Agriculture Alpha Bakt Barry

Prior to the arrival of Minister Barry, the Director General of Agriculture outlined various specific projects which the Ministry hopes to develop. These are omitted here, since many of these projects were visited on the spot during our tour.

When Minister Barry arrived, he spoke mainly in general terms of his own philosophy regarding agricultural development -- primarily that this development should proceed in stages, without too quick a concentration on mechanized agriculture, but rather gradual introduction of improved tools, improved feed, and use of animal traction, in order to keep development within the means of the peasants to follow.

Brief Summary of Visits to Various Regions

A. Faranah -- At Faranah the discussion centered on two plains along the Niger River which the Government wishes to develop. We visited both of these sites. The two plains are Tindou, 11 kilometers from Faranah and Balandou, 30 kilometers away. Both are "flood plains" as were in fact almost all of the plains that we visited on our trip, that is, the plains are flooded during the rainy season and dry the rest of the year. The primary purpose in developing all of these plains is rice cultivation in the rainy season. Other cultivations, including fodder and grazing, would be undertaken during the dry season.

In my opinion, Faranah on balance offers the best possibilities for a US agricultural project. Transportation is good and quick to Conakry. Both plains especially Tindou are accessible. Some infrastructure exists nearby. The National Agriculture School (a vocational school) has been moved this year from Foulaya to Faranah. Dr. Mamare Nougoh reportedly has a plan to establish a center for applied research, primarily in rice production at Faranah. This would be an offshoot of the basic research center at Foulaya. (The Governor told us this; the Ministry of Agriculture Representative was not yet fully aware of these plans. We should pursue this further during the Foulaya visit.)

What the Guineans basically have in mind as explained to us at Faranah, is the development of one or more "agro-pastoral complexes." This is ESSENTIALLY also what the AID technicians have in mind. The basic difference between the Guineans and ourselves is in the size of such a complex. The Guineans are thinking of complexes of up to 1000 hectares. We are thinking of a complex of no more than 100 hectares to start out, of which about 20-25 hectares would be for intensive rice cultivation. The Guineans also want a livestock component including cattle and pork, as well as a poultry component. This is acceptable to AID; regarding livestock they only want to keep the component relatively small.

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At Faranah the immediate problem is water control. This, in fact, is the call of all of the plains that we visited. This means first of all building dikes along the river to control flooding. At Faranah, the plains are submerged during the height of the rainy season to a depth of sometimes 2 1/2 meters of water. This permits the cultivation of only one variety of rice ("floating rice"), which is okay except that yields are never more than two tons per hectare under the best conditions. With other varieties of rice, yields can be expected as high as 6-10 tons per hectare. During the dry season, other crops would be grown, such as corn or sorghum. The flood plains would also be used for grazing livestock during this season.

The basic capital development would also include some irrigation before and after the rainy season to permit early planting and late maturing of crops, especially rice.

Another possible basic difference in the Guinean and US approach is regarding mechanized agriculture. Though Minister Barry favors gradual development, especially animal traction, the Director General of Agriculture (Bernard Koundiano) puts much more emphasis on immediate mechanization. This is probably also the view of others in Guinean Government. We believe that both should be undertaken, perhaps at the same time on the same project.

Faranah seems the best location to me (personally) because it would permit the research and on-the-spot training component that AID thinks is desirable. From a logistical point of view, because of its accessibility to the city of Faranah, setting up a project including housing of US experts would also be much easier.

We have many more details on the Faranah Plains, as well as the other plains visit, which we can discuss with you and which will also form part of the AID Mission's report.

I took some additional notes on related matters during the Faranah visit. We verified the prevalence of pleuro-pneumonia by talking to some of the peasants. The need for the vaccine is extremely. Dr. Peck told the Guineans he would send a telegram immediately to find out where the vaccine is most easily available.

To increase production substantially, fertilizers are needed. AID has an area program carried out by TVA for a geological surveyor in West Africa to locate the sources of mineral fertilizer. Quite apart from this program, Guinea could participate in this survey. This matter must be pursued in Conakry.

Litzenberger and Peck in visiting the Agricultural School asked them for a list of their needs in infrastructure and teaching materials to get the school going again after its move from Foulayah. This probably raised some hopes for US assistance, but in subsequent discussions all three AID people were really interested in helping out the school. If the project is located in Faranah this could

We verified again in Dinguiraye the prevalence of pleuro-pneumonia. There has been a high mortality rate of cattle. They have already lost several hundred and thousands more are threatened. Local officials asked for a vaccination campaign similar to the previous rinderpest campaign.

The basic development of the plain is less difficult and probably less costly than in any other areas. Access to Dinguiraye is good but in Dinguiraye there is virtually nothing. Again, I believe it is an excellent area for future development but less favorable than Faranah for our present project.

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These are only the briefest sort of summary notes. We have much more detailed information on all sites which can be developed during discussions and will be included in the AID final report.

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B. Visit to Kankan -- My initial presentation on other cities visited will be much shorter since many of these same conditions apply. In Kankan we visited two plains -- Bafele and Koba. Of the two the Bafele Plain was the best. The soil was obviously extremely fertile. The plain is not at all developed or cultivated, primarily because of the prevalence of river blindness. Approximately 10% of the population are totally or partially blind. Development of this plain would therefore require first a program of eradication of this disease. Both of the plains visited at Kankan were virtually inaccessible. Bafele is about 100 kilometers from Kankan, Koba about 36 kilometers. Roads were very bad. From a purely agricultural viewpoint, both plains were more promising than those at Faranah, but for our purposes, I personally believe we should not consider them for AID development at this time. What is basically needed here is a high development loan for capital development and then exploitation.

C. Visit to Kouroussa -- The principal plain visited was the Linkeni Plain about 100 kilometers from Kouroussa. This is another flood plain. The soil is very fertile. The plain has an area of about 1200 hectares. Water supply is assured during the dry season because two small tributaries cross the plain. The plain is very little cultivated now. This plain would be ideal, except that it is virtually inaccessible. It would require construction of a bridge over one of the rivers of some 60 meters. This also seems to me a development for the future but not suitable for our present project.

D. Visit to Siguiri -- The visit to Siguiri was primarily to inspect the Fié Plain. According to our AID experts, everything we have heard about this plain is true. Again it is a flood plain which would require considerable management again, however, the problem is accessibility. The Guineans have several projects in mind, but none are fully firmed up. We were told that the current thinking is to establish a large state farm of some 4000 hectares for alternate rice production and cotton cultivation. This again is an enormous project. The plain itself is much larger than 4,000 hectares, so a smaller agro-pastoral complex would also be possible. I think that Stanley Peck is more impressed by the Fié Plain than by any of the other sites visited. Considering funds available to us now, it seems to me somewhat unrealistic unless there can be pretty close cooperation with other donors.

E. Visit to Dinguiraye -- Once again we visited a very promising flood plain suitable for an agro-pastoral complex. Dinguiraye, however, is part of the drought area and the local officials are primarily concerned with developing the water supply. Ground water sources are in the area and they specifically asked about a well-digging program.

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PROGRAMME DE SEJOUR DE
LA DELEGATION AMERICAINE US-AID

Date d'arrivée: 12 Novembre 1974 - Départ:

Composition de la délégation:

1. Norman SCHDONOVER, Chef délégation américaine
2. Dr. Samuel LITZENBERGER
3. Stanley PEEK
4. Martin BILLINGS
5. Myron GOLDEN
6. Fonctionnaire de l'Ambassade des U.S.A. en Guinée

Délégation guinéenne

1.DIQUBARI DOUMBOUYA....., chef de la mission
2. Bernard KOUNDIANO, Directeur Général Agriculture
3. Phons KEMTA, Directeur Général Adjoint Aménagement Rural
4. Alpha Dumer BARRY (Bureau d'Etudes Elevage - Pêche)

Mercredi 13 NOVEMBRE 1974

12 H 00 Visite du Président du Comité D'Etat Amériques Ministre
du Domaine Intérieur et Justice

Jeudi 14 NOVEMBRE 1974

- 10 H 00 Audience du Ministre de l'Elevage et Pêche et ses
collaborateurs
- 11 H 00 Audience du Ministre des Grands Aménagements et ses
collaborateurs
- 12 H 00 Audience du Ministre de l'Agriculture et des Brigades
de production
- 13 H 00 Audience du Ministre du Domaine du Développement Rural
et ses collaborateurs
- 14 H 00 REPAS ET REPOS

Vendredi 15 NOVEMBRE 1974

8 H 00 Départ de la Mission à travers le Pays

I - AXE CONAKRY - FARANAH - KANKAN - SIGUIRI - KOUROUSSA -DINGUIRAYE ET RETOUR

<u>FARANAH:</u>	15 au 16 Novembre 1974
<u>KANKAN:</u>	17 au 18 Novembre 1974
<u>SIGUIRI:</u>	19 au 20 Novembre 1974
<u>KOUROUSSA:</u>	21 Novembre 1974
<u>DINGUIRAYE:</u>	22 Novembre 1974

- OBJET:** - Création de complexe agro-pastoral (fermes) destiné à promouvoir: élevage des boeufs de boucherie par la multiplication et l'amélioration de l'espèce N'Dama recherchée par tous les Etats-Africains.
- élevage de volaille pour production et revitaillement en oeuf
 - Vultures maraîchères et fruitières, sélection et production de grains de céréales en vue vulgarisation des semences au niveau des paysans.
 - Ces complexes seront au même temps des centres de stage de formation d'étudiants agronomes et de conducteurs d'élevage
 - Recherches nappes souterraines en vue organisation de l'hydraulique agricole et pastorale dans les zones appropriées.
 - Aménagements de la plaine de la Fié (Siquiri-Kankan) de 6.000 ha en vue de la production rizicole et cotonnière.

Lundi 25 Novembre 1974

6 H 00 - Départ de la Mission

II - AXE CONAKRY - BOKE - KOUNDARA - LABE - MAMOUKINDIA - GOYAH ET RETOUR

<u>BOKE:</u>	25 AU 26 NOVEMBRE 1974
<u>KOUNDARA:</u>	27 AU 28 NOVEMBRE 1974
<u>LABE:</u>	29 NOVEMBRE 1974
<u>MAMOU</u> et <u>KINDIA</u>	} 29 et 30 November 1974
<u>GOYAH</u>	

Objet: - Creation a Goyah (extension pilotage) d'un complexe agro-pastoral (cultures maraîchères et volaille) en vue revitaillement de la ville de Conakry..

KINDIA: possibilites d'extension et aménagement des fermes de l'I.N.R.A.F. et de la Faculté d'Agronomie.

KINDIA: possibilités d'extension et aménagement des fermes de l'I.N.R.A.F. et de la Faculté d'Agronomie.

MAMOU: possibilités de création des ranchs d'embouche à Linsan et Tolo.

BOKE: Action agricole de Kolaboui.

KOUNDARA: Hydraulique pastorale (forages, aménagements des points d'eau.

Dimanche 1er Decembre 1974

Journée libre.

Lundi 2 Decembre 1974

Compte-rendu de mission au Comité d'Etat

Discussions générales (leçons à tirer)

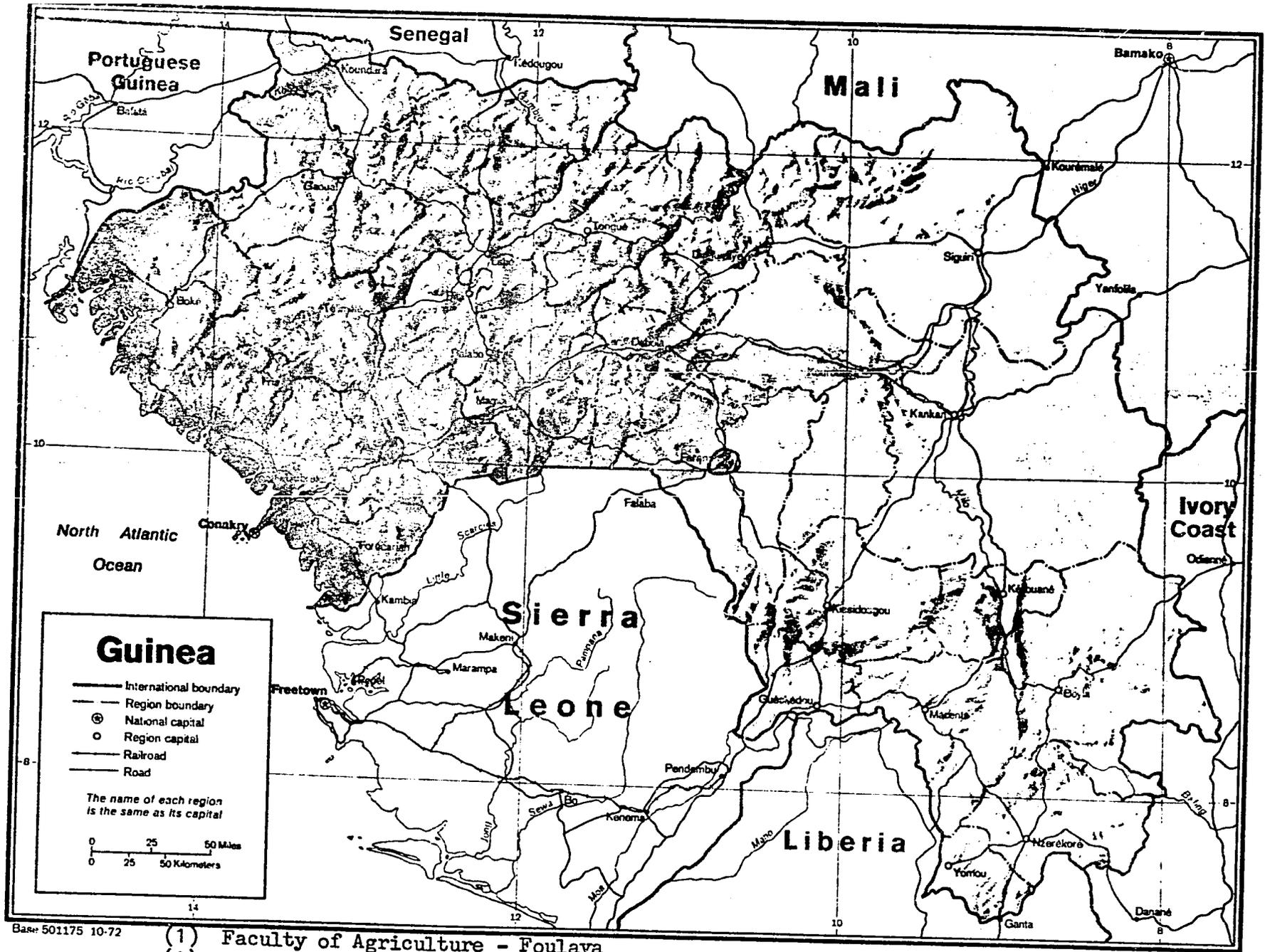
FIN DE PROGRAMME

PRET POUR LA REVOLUTION.

CONAKRY, le 12 Novembre 1974

LE SECRETAIRE ADMINISTRATIF.

SEKOU CAMARA



- (1) Faculty of Agriculture - Foulaya
- (2) Proposed Agr. Educ., Research, Extn/Demonstration Complex - Faranah

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THE INSTITUTE OF AGRICULTURE RESEARCH
AND
COLLEGE OF AGRICULTURE

Kindia, Guinea

INTRODUCTION

Both the National Institute of Agriculture Research and the campus of the College of Agriculture of the University of Guinea are located at Kindia, a town of 60,000 inhabitants and about 24 miles northeast of Conakry. The site is lush green in a tropical climate with a mean average temperature of 78°F, reaching a maximum of 95°F in April and dropping to 42°F in December. The evergreen forested countryside is dense with different species of acacias, mango, palm, coconut, neem, guava, papaya, banana, pineapple, citrus, grapefruit and shrubbery of a wide range of hues and colors. Cassava, corn, rice, sorghum and vegetables are also cultivated in the area.

The soils are predominantly sandy loam, rich in humus with good to fair till. Spontaneous cover crops sprouting in this 2,500 to 3,000 millimeter rainfall zone (50 to 60 inches) have kept soil erosion in the lowlands to a minimum. Consequently, the herds of goats, N'Dama cattle and sheep freely graze in the forest grounds. Considerable numbers of these animals are sold on the Conakry market and elsewhere in the country.

The drafting officer saw the herd of one husbandry man with 400 heads of N'Dama cattle and some sheep and goats in their forest pens. All the animals were reported vaccinated and had no tse-tse fly problems. The Director General of Research stated that the Holstein, Jersey, Guernsey and Ayrshire cattle breeds at the Foulaya station have not shown any signs of infection by that fly and all the stock appeared to be well.

THE DEAN AND DIRECTOR GENERAL OF RESEARCH

Mr. Manzare Nongoh is both Dean of the Faculty of Agriculture and Director General of the Guinean National Institute of Agricultural Research. He is a graduate of the University of California, College of Agriculture, Davis Campus, where he had received his Master of Science degree in soil science in 1965 followed by eighteen months of post-graduate

agricultural training at the University of Puerto Rico. In addition, he is a National Deputy Delegate in the Guinean parliament.

He appears to be a dedicated community leader who was one of ten recipients of the "Medaille d'Honneur du Travail" in his country last year. He showed me the University farms and experiment station far into the night under the moonlight and even when we departed, close to midnight, he had faculty members and students waiting for us to discuss our problems. He said, he stated that he had a great deal of work to do, but he would like to give him time to attend to policy matters.

CAMPUS AND RESEARCH FACILITIES

The campus of the College of Agriculture of the University of Guinea, which was transferred in 1974 from Conakry to its present location about five miles west of Kindia, has an area of 5,000 hectares divided into ten farms of varying sizes, including the 800 hectare experiment station which is subdivided into smaller tracts.

The college has an enrollment of 400 students with a five year curriculum leading to the Bachelor of Science degree level. The last year is devoted to field and practical work. The college has a faculty of 120 members and a production area of 5,000 hectares. The college has a total of some 200 students in its agricultural extension program.

The college has the following departments of studies: Botany, Zoology, Agronomy, Agricultural Engineering, Fisheries and Forestry. It will add a department of veterinary medicine next year.

Students are fully supported for their tuition, dormitory and other expenses by the SOG. Those who attain a scholastic average of 80% or over, received an added incentive of 1,000 sylvan per month (one million sylvan equals one dollar).

Some Guinean students are on scholarships in the United States and other countries at present to pursue their agricultural studies at the graduate level.

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The college has a faculty of thirty-nine professors and instructors aided by twelve Bulgarian instructors.

The research institute has eleven laboratories with the following personnel:

- Soil Laboratory (2 Guinean research workers and 1 Bulgarian)
- Agro Chemistry (3 Guineans and 2 Bulgarians)
- Physiology (1 Guinean)
- Cytogenetics (3 Guineans)
- Entomology (1 Guinean)
- Radio Isotopes (1 Guinean)
- Phytopathology (1 Guinean)
- Insecticides and Herbicides (3 Guineans)
- Agro Meteorology (2 Guineans)
- Fruit Technology (2 Guineans)
- Photo Laboratory (1 Guinean)

All these laboratories were established since independence with the exception of the Physiology, Entomology, Phytopathology and Fruit Technology Laboratories which were started by the French prior to Guinean independence.

The Animal Husbandry Research Department includes the following:

- Veterinary Medicine (4 Guinean research workers and 1 Bulgarian)
- Poultry Science (4 Guineans and 1 Bulgarian)

A Bulgarian electrical engineer is attached to this department and assists with all electrical appliance problems on the campus. Also another Bulgarian corn research worker is attached to the research institute and which brings the total listed Bulgarian research staff workers to seven.

The crossing of various poultry breeds by Guinean and Bulgarian poultry research workers has been going on for the last four years in order to produce an adapted ideal bird. This program envisages the production of 6 million broilers and 60 million eggs by the end of the 1975 five year plan (1974-1978). Already 27 million are reported to have been spent on this program.

In the Veterinary Medicine Department some 5 million capsules for livestock vaccination were reported produced annually. These include rinderpest, poultry castle disease vaccination and other antibiotics for disease problems prevalent in Guinea.

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THE UNIVERSITY FARMS

The College of Agriculture farms employ 800 workers and maintain 37 diesel motor pumps to pump water from the river on the farm to the sprinkler system attachments. The pumps are of Rudolph Bauer manufacture in Austria and Bulgaria. They are reported kept busy with sprinkler irrigation personnel irrigating from the latter part of the day until the early hours of the morning to minimize evapotranspiration.

Four tracts of land, 6, 12, 20, and 30 hectares each, planted in pineapples were observed. They were cultivated as applied research/production tests with different planting and maturity dates and fertilizer applications. Also large tracts planted in banana plants, corn and cassava were observed. All are under the sprinkler system of irrigation with no trace of salinity problems.

The proceeds from the sale of these crops, of which pineapples alone are expected to bring in 15 million syllis, are to be reinvested in the operational costs of the college and research programs.

POSSIBILITIES FOR TECHNICAL ASSISTANCE

1. Serious infestation of various species of nematodes are reported in the soils of the university farm. Mr. Nongob expressed interest in the service of a nematodist expert to research and alleviate this problem.
2. The tropical climate in this area encourages a wide range of plant diseases attacking the banana, pineapples, cassava, corn and vegetable crops; therefore, the services of a plant pathologist to research, identify and help control these diseases is desired.
3. Because Guinea has not been receiving international and regional research organization findings during the last few years there is need for renewed liaison to introduce and test the new research findings of IITA in cassava, rice and corn varieties and their management. Also IRAT and ICRISAT sorghum and millet varieties should be tested under local soil and climate conditions.
4. Limited and selected vegetable seeds of tomatoes, eggplants, onions, peppers, cabbage, lettuce and carrots (large size) were requested for testing by the research department.

5. Livestock milking equipment and hammer mills were requested. The possibility of obtaining a livestock technician to operate this equipment, as the Bulgarians are doing with their poultry equipment, was suggested.
6. Soil analysis equipment for research and agriculture machinery work shop equipment were requested, but a list of specifications was to be forwarded to the American Embassy, Conakry when that is prepared.
7. Equipment for the Physiology and Radio Isotope Laboratories with specifications to be prepared by the Research Institute and forwarded soon to the American Embassy, Conakry.
8. Agriculture scientific books covering all fields of agricultural science with emphasis on scientific methodology and post-graduate levels to be prepared and forwarded to the American Embassy, Conakry.

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**Suggested Development Plan For
Extension/Demonstration Farms***

	Short-Term				Long-Term (ha)	Total (ha)
	1st (ha)	2nd (ha)	3rd (ha)	Sub-Total (ha)		
Irrigated (River Bank)						
Dry Season						
Cropping - Cereals, Grain Legumes Vegetables	3	4-1/2	4-1/2	12	60	72
Forage - Forage grasses	<u>-2</u>	<u>3</u>	<u>3</u>	<u>8</u>	<u>20</u>	<u>28</u>
Sub-Total	5	7-1/2	7-1/2	20	80	100
Non-Irrigated (Uplands)						
Livestock	15	22-1/2	30	67-1/2	807-1/2	675
Cropping - Grain	<u>5</u>	<u>7-1/2</u>	<u>10</u>	<u>22-1/2</u>	<u>202-1/2</u>	<u>225</u>
Sub-total	20	30	40	90	810	900
Total						1,000

*Cultivated Area to be 3/4 mechanized and 1/4 animal traction

**All lands submerged by flooding, the deeper areas up to 2 meters being sown to floating varieties. Some of the area will be utilized for dry season grazing with irrigation.



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E.O. 11652: N/A

SUBJECT: PRELIMINARY REPORT TO GUINEAN GOVERNMENT ON RESULTS OF AID MISSION

1. AID AGRICULTURAL MISSION, ACCOMPANIED BY AMBASSADOR AND RDO SCHOONOVER, MADE BRIEF REPORT TO STATE COMMITTEE CHAIRMAN MOUSSA DIAKITE ON DEC 3 REGARDING PRELIMINARY FINDINGS AND RECOMMENDATIONS OF MISSION SENT TO IDENTIFY POSSIBLE USG PROGRAM IN FOOD PRODUCTION. BECAUSE OF PARTICIPATION OF ALL HIGH RANKING GUINEAN OFFICIALS IN EXTENDED NATIONAL ECONOMIC CONFERENCE, AND NEED FOR TEAM MEMBERS TO LEAVE GUINEA ON ONLY AVAILABLE FLIGHT FOR NEXT TWO DAYS, MEETING WAS FOR BRIEFER THAT HE WOULD HAVE WISHED. PROPOSED PROJECT COULD ONLY BE PRESENTED TO GUINEANS IN OUTLINE FORM AND THERE WAS VIRTUALLY NO TIME FOR DETAILED EXCHANGE OF VIEWS ON ASPECTS OF PROGRAM.
2. DR. STANLOY PEEK OPENED PRESENTATION BY EXPLANATION OF EXTREMELY FAVORABLE IMPRESSIONS TEAM HAD GAINED OF GUINEAN AGRICULTURAL POTENTIAL, ITS RICH SOIL AND ENORMOUS WATER RESOURCES. HE CAUTIONED, HOWEVER, THAT BECAUSE OF AID BUDGETAR LIMITATIONS, USG COULD NOT AT THIS TIME UNDERTAKE EXTENSIVE AGRICULTURAL PROGRAM NECESSARY TO ACHIEVE ALL OF THIS POTENTIAL
3. ESSENTIALLY, PEEK TENTATIVELY PROPOSED CREATION OF SMALL

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PAGE 02 CONAKR 01026 041002Z

MODEL FARM (AGRO-PASTORAL COMPLEX) ON NIGER RIVER FLOOD PLAIN NEAR FARANAH) SOME ASSISTANCE TO GUINEAN NATIONAL SCHOOL OF AGRICULTURE (A MEDIUM LEVEL VOCATIONAL SCHOOL WHICH HAS BEEN JUST LOCATED AT FARANAH AFTER MOVING THIS YEAR FROM FOULAYA); AND ASSISTANCE, BOTH IN EQUIPMENT AND TRAINING, TO THE NATIONAL INSTITUTE OF AGRONOMICAL RESEARCH AT FOULAYA AND ITS PLANNED BRANCE STATION FOR APPLIED RESEARCH AT FARANAH. PEEK STRESSED ADVANTAGES OF RELATIONSHIP BETWEEN MODEL FARM, VOCATIONAL SCHOOL, AND APPLIED RESEARCH INSTITUTE.

4. RESPONDING TO PEEK'S QUESTION, MINISTER DIAKITE SAID INITIAL REACTION OF GUINEANS TO PROPOSED PROJECT IS ONE OF DISAPPOINTMENT. HE ADDED THAT GUINEANS WILL WISH TO OBTAIN MORE PRECISE INFORMATION ON EXTENT OF US ASSISTANCE BEFORE GIVING FINAL REACTION. (COMMENT: DISAPPOINTMENT PROBABLY DUE IN PART TO BRIEFNESS OF PRESENTATION -- USAID TEAM FIRST EXPLAINED AID LIMITATIONS AT SOME LENGTH AND HAD VERY LITTLE TIME LEFT FOR POSITIVE ASPECTS OF WHAT IN FACT USG HOPES TO ACCOMPLISH.) DIAKITE SAID GUINEAN GOVERNMENT HAD HOPED US WOULD ESTABLISH AGRO-PASTORAL COMPLEXES NOT ONLY AT FARANAH BUT ALSO ON OTHER EVEN MORE PROMISING RIVER PLAINS IN HAUTE-GUINEE.

5. DIAKITE THEN REFERRED TO USAID ASSISTANCE WITH OTHER NEIGHBORING COUNTRIES REGARDING LIVESTOCK PRODUCTION. GUINEANS HOPED THAT USG COULD ASSIST GUINFANS IN THIS FIELD AS WELL. HE POINTED OUT THAT VIRTUALLY ALL AFRICAN COUNTRIES HAVE AGREED FOR BREEDING STOCK OF NIDAMA CATTLE. THESE COUNTRIES INCLUDE EVEN IVORY COAST, WITH THOM GUINEA HAS NO DIPLOMATIC RELATIONS. DIAKITE SAID THAT GUINEANS FEEL THEY CANNOT REFUSE THESE REQUESTS. AT SAME TIME THEY NATURALLY WISH TO DEVELOP THE BREED TO MEET GUINEAN NEEDS AS WELL AS THOSE OF GUINEA'S NEIGHBORS.

6. AMBASSADOR CLOSED BRIEF MEETING BY STRESSING THAT US WISHES TO START COOPERATION WITH GUINEA ON RELATIVELY SMALL MANAGEABLE SCALE, WHICH, IF SUCCESSFUL, COULD PROVIDE BASIS FOR FURTHER EXPANSION. STRESSED FURTHER THAT US GOVERNMENT HAS WILL TO ASSIST. IF US AND GUINEA WORK WELL TOGETHER ON THIS PROJECT, THEN HOPEFULLY FIELD OF COOPERATION CAN BE WIDENED. WITH CONCURRENCE OF TEAM, AMBASSADOR PROMISED PROVIDE DIAKITE WITH

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WRITTEN ACCOUNT OF PEEKS' PRESENTATION AND TO HAVE FOLLOW-UP
DISCUSSIONS AT DIAKITE'S CONVENIENCE.
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PAGE 01 STATE 242683

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ORIGIN AID-26

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 TAB/A:SLITZENBERGER
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E.O. 11652:N/A

TAGS:

SUBJECT: GUINEAN FOOD PRODUCTION PROGRAM

REF: (A) STATE 181821 (B) CONAKRY 1156 (C) CONAKRY 1176
 (D) DAKAR 5912

ABIDJAN (REDSO)

1. AS SUGGESTED REPTELS, A THREE MAN TEAM FROM AID/W
 SCHEDULED TO ARRIVE IN CONAKRY WEEK OF NOV. 11 FOR APPROX.
 3 WEEKS TO CONDUCT A MORE DETAILED FOLLOW-UP TO THE JULY
 LITZENBERGER SURVEY OF PROSPECTS FOR US-GOG COOPERATION IN
 THE AREA OF AGRICULTURE. TEAM WILL CONSIST OF DR. SAMUEL
 LITZENBERGER, CHIEF, CROPS PRODUCTION DIVISION, TECHNICAL

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ASSISTANCE BUREAU; DR. STANLEY PEEK, SENIOR AGRICULTURE DEVELOPMENT OFFICER, AFR/CWR; AND MYRON GOLDEN, AFR/CWR; GUINEA DESK OFFICER, REQUEST EMBASSY CONCURRENCE TEAM VISIT.

2. FOR DAKAR: WELCOME INPUTS FROM DAP TEAM MEMBER, BILLINGS, AND CONCUR WITH RDO DAKAR PLAN TO VISIT GUINEA WEEK OF NOV. 11. ALSO SUGGEST THAT VICTOR LATEEF, REGIONAL AGRONOMIST, VISIT GUINEA AND PARTICIPATE IN PROJECT IDENTIFICATION PROCESS TO EXTENT THAT HE IS AVAILABLE. RDO

PARTICIPATION AND INPUTS EXTREMELY IMPORTANT AT EARLY STAGES IN THAT PROPOSED PROJECT WILL BE BACKSTOPPED AND MONITORED FROM DAKAR AND WILL REQUIRE INPUTS OF RDO AGRICULTURE EXPERTISE FROM ITS INCEPTION.

3. FOR CONAKRY: REQUEST FOLLOWING: ACCOMMODATIONS, CONSULTATIONS EMBASSY/GOG OFFICIALS AND COORDINATION OF FIELD SITE VISITS, AND INTERPRETER FOR LENGTH OF TEAM VISIT.

4. FRAME OF REFERENCE FOR THE PROJECT IDENTIFICATION EFFORT: (A) FOCUS MUST BE ON FOOD PRODUCTION ACTIVITIES WITH PARTICULAR EMPHASIS IN SUBSISTENCE FARMING AREAS (B) ACTIVITIES CONSIDERED SHOULD NECESSITATE A MINIMUM INPUT OF OTHER THAN GUINEAN PERSONNEL; AND (C) ACTIVITIES CONSIDERED SHOULD BE IN CONTEXT OF MAXIMUM COOPERATION WITH OTHER DONORS. PROGRAM SHOULD INCLUDE A RESEARCH COMPONENT AND AS ENVISAGED AT THIS TIME WOULD PROVIDE: (1) TECHNICAL ASSISTANCE IN AGRONOMY, SEED MULTIPLICATION AND RELATED MANAGEMENT, (2) PARTICIPANT TRAINING AND (3) A SMALL AMOUNT OF COMMODITIES.

5. WILL ADVISE TEAM ETA'S WHEN FIRM. INGERSOLL

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