PD-AAU-004
4041

MONTHLY REPORT

12 July 1986 - 11 August 1986

Contract Number: 635-0203-C-00-6039-00

Project Number: 635-0203

Project Title: Gambia Cartographic Studies

Remote Sensing Institute
South Dakota State University
Brookings, South Dakota 57007-0199

August 12, 1986

Janet Gritzner, Project Coordinator

Gray Tappan, Team Leader

Gene Eulert, Rangeland Specialist, Marc Staljanssens, Soils Scientist,
Jim Wakeman, Land Surveyor.
Gambia Cartographic Services - Contract 635-0203-C-00-6039-00

Ralph L. Conley, Agricultural Development Officer

Monthly Report
12 July, 1986 - 11 August 1986

This report is submitted as the third of four monthly reports in compliance with Section F subsection 6-a of the contract agreement between the Remote Sensing Institute, South Dakota State University and the U.S. Agency for International Development. The monthly reports cover a period beginning on the 12th of every month and will be submitted as per Section F 6-a within 7 days following the end of the period being covered. This report is divided into four parts:

Summary Activities (July 12 to August 11, 1986); Accomplishments; Problems Encountered; and Recommendations

Summary of Activities

Activities in The Gambia
July 12 - July 25, 1986

The task of aerial photographic interpretation for preparation of the updated planimetric maps, the soils maps, the cropland, forestry and rangeland maps continued through the first of this reporting period. Approximately 90% of this task was complete at the time of the team's departure from The Gambia. The few remaining photos were interpreted at RSI.

Arrival of Fred Westin, Instructor of training seminar in The Gambia on 11 July 1986.

Seminar on Mapping and Remote Sensing of Natural Resources offered 14 July - 25 July, 1986 at the Management Development Institute (MDI). Schedule of events is included as Attachment 1 of this report. List of participants and their affiliation is contained in Attachment 2.

Gray Tappan, Team Leader, Gene Eulert, Rangeland Specialist, Jim Wakeman, Land Surveyor, departed The Gambia for U.S. on 21 July, 1986. Project mapping activities were resumed at RSI on 23 July.

In preparation for departure, the project equipment and materials at Abuko were packed and shipped via air freight to RSI on July 21, 1986. A number of cartographic and office supplies were left in the Abuko office for future use by other U.S. and Gambian teams. These materials were inventoried and are listed in a memorandum dated July 21, 1986. (see Attachment 3)

Marc Staljanssens, acting team leader, remained in The Gambia until July 26 to assist with the training seminar.

Mr. Staljanssens was also responsible for final close-out procedures in The Gambia, including payment of final expenses and closing the bank account.

Mr. Staljanssens and Fred Westin, seminar instructor left The Gambia for the U.S. following completion of the seminar on 25 July.

Gambian participants in training: Stanley Adams, John Fye, Lamin Nyangado, Simeon Robinson and Ousman Jallow departed The Gambia for the U.S. on 21 July. A five week program in the U.S. was anticipated.

Mr. Tom Coblentz, cartographic consultant, arrived at RSI on July 25. Mr. Coblentz brought with him all map artwork that he had prepared since his engagement with the Project in mid-May. This included completed or nearly completed scribe sheets of the twenty 1:50,000 and the four 1:125,000 scale base maps. Two scribes were prepared for each map sheet, one containing all drainage features and neatlines, the second containing all roads, towns, villages, the UTM grid and other linear features. Also prepared were lettering plates of each sheet containing all place names, grid coordinates, river names, and other textual information. Updated planimetric information including new towns, changes in place names, new roads, etc., were incorported into these artwork sheets.

The bulk of cartographic supplies needed to complete the Project maps had been ordered and delivered for RSI. A few additional orders were placed for materials needed during the last month of the Project.

29 July to 11 August, 1986
Preparation Worksheets and Final Map Production

Five cartographic assistants were hired upon return of the team from The Gambia. They have been engaged in the preparation of additional lettering plates needed for each map sheet (e.g., soils association codes appearing on the maps, legends, etc.). They are also assisting in the transferral of interpretations from the aerial photos for the base maps. As the map preparation progresses, they will become involved in peelcoat preparation, proofing, and final printing.

During this reporting period, eight worksheets containing soils boundaries for eight of the twenty 1:50,000 scale maps were completed and five worksheets containing the rangeland, forestry and cropland boundaries were completed. These were prepared through optical projections of the aerial photo interpretations onto overlays to the planimetric basemaps. Each air photo interpretation had to be carefully scaled and registered to the basemap, a slow and tedious process.

Also completed were eight scribe sheets prepared directly from the eight soils worksheets. The scribe sheets contain the final precision linework of the soils boundaries, and will be used as negatives for the final map-printing.

Forty peelcoats, or open-window negatives, were prepared from the scribe sheets of the planimetric base. These will be used in introducing tones to the final maps, particularly for shading water bodies and urban areas.

The preliminary legends developed in the Gambia for the Project maps were being finalized during this period. Final coding was developed for the lettering plates.

The writing of the final technical report was begun. This includes descriptions of each map unit on all maps, and procedures used in the map-making process.

Participant Training at RSI

Training activities at the RSI proceeded according to established schedule. The course syllabus is included as Attachment 4 of this report. Instructors in the Visiting International Scientist Program (VISP) involved in the Gambian training included Kevin Dalsted, Gray Tappan, Marc Staljanssens, Janet Gritzner, Gene Eulert, Jim Wakeman and Mary DeVries.

Accomplishments

Major accomplishments in mapping activities include completion of the interpretations for landuse/landcover, and soil themes, completion of the planimetric update and completion of artwork for base maps 1:50,000 and 1:125,000.

Participant training has progressed well. The schedule has been maintained and no major problems encountered.

Problems Encountered - Map Production

Several problems were encountered during the course of this period.

The transferral of interpretation lines from the aerial photos to the basemaps is a slow, tedious operation requiring optical projection and scaling techniques. This process has taken considerably more time than anticipated, requiring a total of about 3 weeks (one week was projected for this). This has delayed the final worksheet preparation by a minimum of two weeks.

The cost of cartographic supplies has increased by at least 10% for many items since the initial budget estimate was made. This has resulted in a major budget overrun for this line item.

Project guidelines call for the development of the rangeland overlay map in accordance with a legend for rangeland classification furnished by the Mixed Farming Project. Upon examination of the rangeland classification (legend) used by the MFP, it became apparent that the classification was the landuse and landcover classification developed by the German Forestry Project, and that a rangeland legend per se did not exist. Therefore, a legend with standard rangeland descriptors is being developed by this Project.

Attachment 1

Seminar on Mapping and Remote Sensing of Natural Resources

July 14-25, 1986 Instructor: Fred Westin

Monday - First Week

AM Maps. General reference maps, thematic maps; latitude and longitude; map scale; conformal and equal area map projections; locating points and areas on the globe and on maps; map reading; map uses.

AM Remote Sensing Basic

PM Fundamentals of Photo Interpretation.

Tuesday

AM Remote Sensing sensors.

AM Soil Fundamentals.

PM Air photo interpretation exercise.

Wednesday

AM Remote Sensing, data selection.

AM Soil morphology.

PM Air photo interpretation exercise, continued.

PM Lecture - use of Landsat for a low intensity resource survey (Pennington Co. USA).

Thursday

AM Remote Sensing, data processing.

AM Air photos and other imagery used for resource inventories.

PM Air photo interpretation exercise, continued.

Friday

AM Interpretation of imagery for resource inventories.

Preparation of thematic maps from field surveys.

Lecture - The Large Area Crop Inventory Experiment (LACIE).

Monday - Second Week

AM Climate and Geology as soil forming factors.

AM Terrain analysis. Land and soil classification.

PM Preparation of thematic maps from field surveys, continued.

PM Use of AVHRR in a remote sensing program.

Tuesday

AM Soil Formation and Classification.

AM Resource inventory and baseline study methods for developing countries.

PM Landsat exercise - comparing features on visible versus infrared channels. (Gambia scene).

PM Lecture - Crop inventory on Landsat utilizing the Image 100 system.

Wednesday

AM Terrain analysis concluded.

AM Airborne Video remote sensing.

PM Soil Geography exercise.

Thursday

AM Interpretations made for soil maps.

AM Begin exercise: Digital Images and Digital Analysis techniques.

PM Continue digital analysis exercise.

PM Lecture - The Crop Condition Assessment Program of the US Dept. of Agric.

Friday

AM Continue digital analysis exercise.

AM Geographic Information Systems for Agriculture.

Finish exercises not completed earlier. Review and discussion.

Attachment 2

List of Participants in Seminar
July 14-25, 1986

1.	Sainabou N'Gum	Draftsman, Dept. of Surveys
2.	Alhagi Sillah	Draftsman, Dept. of Surveys
3.	Mayeh Sabally	Draftsman, Dept. of Surveys
4.	Semba Krubally	Draftsman, Dept. of Surveys
5.	Karamo Bojang	Rangeland Management Assistant, Dept. of Animal Health and Production
6.	Omar N'Jai	Range Management, Dept. of Animal Health and Production
7.	Sissawo Gassama	Rangeland Conservationist, Soil and Water Management Unit
8.	Sidi Jarju	Principal Soil Conservationist, Soil and Water Management Unit
9.	Ebrima M. L. Saidy	Soil Science/Survey, Soil and Water Management Unit
10.	Babou M. Camara	Soil Science/Survey, Soil and Water Management Unit
11.	Stanley Adams	Cartographer, Dept. of Water Resources
12.	John Fye	Soil Scientist, Soil and Water Management Unit
13.	Lamin Nyangada	Forest Management, Forestry Dept.
14.	Simeon Robinson	Cartographer, Dept. of Surveys
15.	Ousman Jallow	Draftsman, Dept. of Water Resources

SOUTH DAKOTA STATE UNIVERSITY
Box 507
Brookings, South Dakota 57007-0199

REMOTE SENSING INSTITUTE
605/688-4184

Attachment 3

July 24, 1986

TO: Ralph Conley
USAID

FROM: Gray Tappan
Remote Sensing Institute

RE: Inventory of project supplies

The following is an inventory of the items left by the project at the Mixed Farming Project's officer in Abuko.

8 legal executive pads

10 comp books

1 Smith Corona portable typewriter (manual)

1 pkg. (500) sheet Dakota bond typing paper

2 bottles Brown & Saenger correction fluid

3 boxes (12) Velvet 3557 pencils (Faber Cartell)

1 box (12) China marking peel off pencils

5 Sharpie extra fine point markers

1 box (12) Spirit ball point pens

1 box pen cleaning concentrate

1 1/2 rolls K+E clear film

4 rolls Scotch Magic tape 810

8 rolls masking tape

1 box rubber bands

2 erasers

2 boxes Bostitch standard staples

1 bag (#50) razar blades

2 flash lights

8 batteries

2-20 l. jerry cans (plastic)

1 camping gas bottle (empty)

GT:pi

Attachment 4

Course Schedule for Gambian Training
at the RSI

Week of 22 to 25 July, 1986

Tuesday	Arrive in Brookings
Wednesday	Establishing housing arrangements
Thursday	Orientation to campus and community.
	Tours of RSI and SDSU
Friday	Interviews
	Development of training schedule

Week of 28 July to 1 August, 1986

Monday	Course introduction
Tuesday	Basics of remote sensing
	- The electromagnetic spectrum
	- Definitions
	- Multiconcepts: multistage, multispectral, multidate
	- Equipment
	- Sensors and platforms (ground, aerial, orbital)
Wednesday	Basics of remote sensing
	- The Landsat system
	- False color composite
	- Characteristics of satellite imagery
	- Examination of Gambian imagery at 1:500,000 and 1:250,000
Thursday	Photographic Theory for image interpretation
Friday	Photo Theory for image interpretation
	Other satellite programs: NOAA, AVHRR, SPOT, HRV, Shuttle Imagery Radar, Shuttle Large Format Camera data, HCMM, Seasat
	Data searches and acquisition
	Tour of Soil Survey and Soil Lab at Plant Science Dept.

Course Schedule for Gambian Training
(Cont'd)

Week of 4 to 8 August, 1986

Monday	Remote Sensing and natural resources analysis
	Scale considerations
	Land cover/land use classification
Tuesday	Legend construction
	Elements of aerial photographic interpretation
	Expercise: Fundaments of aerial photographic Interpretation (Color Infrared)
Wednesday	Finish exercise and review results
	Stereometers
	Land cover classification for The Gambia
	Exercise: aerial photographic interpretation for in The Gambia
Thursday	Finish exercise and review results
	Transferring aerial photographic interpretations to a base map
	Using the Zoom Transfer Scope
	Cartographic exericse
Friday	Resource survey of Mauritania
	Tour of Eros Data Center
Saturday	Field tour of crops and soils of Sioux Falls vicinity

Week of 11 to 15 August, 1986

Monday	Remote sensing applications to hydrology
	Land degradation studies
	Cartographic exercise
	Stereometer exercise

Course Schedule for Gambian Training
(Cont'd)

Week of 11 to 15 August, 1986 (Cont'd)

Tuesday	Review stereometer exercise
	Multidate image composites
	Remote sensing applications to soil survey
	Cartography exercise
Wednesday	Remote sensing applications to agriculture
	Remote sensing applications to vegetation
	Exercise: Multispectral analysis of Gambian Landsat MSS data
Thursday	Review exercise
	Remote sensing applications to geology
	Remote sensing applications to cultural resources
	Cartographic exercise
Friday	Thermal infrared remote sensing
	Radar remote sensing
	Exercise: Multistage analysis of Gambia land cover (TM and aerial photos)

Week of 18 to 22 August, 1986

Monday	Introduction to Geographic Information Systems
	GIS Case Study: The Kaffrine area of Senegal
Tuesday	Evaluation of participants' understanding of course materials
	Exercise: Comparing land cover and soil maps to 1986 TM data
Wednesday	Analysis of saline soil with color infrared photography and thermal imagery
	Remote sensing and international development
	Cartography exercise

Course schedule for Gambian Training
(Cont'd)

Week of 18 to 22 August, 1986 (Cont'd)

Thursday	Poster session: case studies of remote sensing research
	Cartography exercise
Friday	Special projects.