

Scope of Work (S/W) 集

(1982年4月～1984年2月)

昭和59年3月

国際協力事業団
農林水産計画調査部

農計技

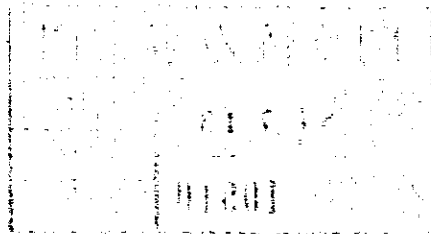
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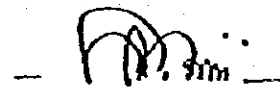
SCOPE OF WORK
FOR
THE TOPOGRAPHIC MAPPING PROJECT
OF
THE NEGARA RIVER BASIN
IN
SOUTH KALIMANTAN
IN
THE REPUBLIC OF INDONESIA

AGREED UPON BETWEEN
THE MINISTRY OF PUBLIC WORKS
OF
REPUBLIC OF INDONESIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY
AT JAKARTA --
ON APRIL 14TH, 1983

Toshitomo Kanakubo

Mr. Toshitomo KANAKUBO

Head of the Preliminary Survey
Team for the Mapping Project of
Negara River Basin, Japan Inter-
national Cooperation Agency



Ir. SARBINI RONODIBROTO

Director of the Directorate of
Planning and Programming,
Directorate General of Water
Resources Development,
Ministry of Public Works.

I. Introduction

In response to the request made by the Government of the Republic of Indonesia, the Government of Japan has decided in accordance with the relevant laws and regulations in force in Japan to conduct the topographic mapping project of the Negara River Basin, South Kalimantan, the Republic of Indonesia (hereinafter referred to as "the Project")

The Project is prerequisite for the planning of regional development, especially for the planning of water resources development mainly concerning agricultural development projects.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programmes of the Government of Japan, will undertake the Project in close cooperation with the authorities concerned of the Republic of Indonesia.

The present document sets forth the scope of work with regard to the above mentioned Project.

II. Outline of the Project

The Project will be composed of the following works:

1. The Upper Stream Area of the Negara River Basin
 - Aerial photography at the scale of 1:60,000 covering an area of approximately 10,000 km².
 - 1:50,000 scale topographic mapping (contoured at 25 meter intervals) covering an area of approximately 6,500 km².

Note: 1) Aerial photographs at the scale of 1:100,000 taken by BAKOSURTANAL will be supplementaly used.

2) Location of the Project area is shown in Appendix I.

2. The Down Stream Area of the Negara River Basin

- Black and white panchromatic aerial photography in the dry season at the scale of 1:20,000 covering the area of approximately 1,200 km² in Amuntai region.
- Black and white panchromatic aerial photography for getting information of the land situation in the rainy season at the scale of 1:20,000 covering the area of approximately 1,200 km² in Amuntai region.
- Topographic mapping in the form of 1:10,000 scale controlled mosaic photo-map, which is produced based on the aerial photographs taken in the dry season and represents the necessary land information of the rainy season, in the above area.
- Black and white panchromatic aerial photography in the dry season at the scale of 1:20,000 covering the area of approximately 5,100 km² in the region between Amuntai and Banjarmasin.

Note: The location of the Project area is shown in Appendix II and Appendix III.

III. Working Plan

The entire work shall be carried out under a three-year program starting from the fiscal year of 1983 and shall consist of the following phases :

- A. Phase 1. Aerial Photography and Ground Control Point Survey
(Satellite Geodesy, Triangulation, Traversing and Leveling.)

1-1. Aerial Photography

- 1-1-1. Aerial photographs shall be taken at the scale of approximately 1:60,000 with a super wide angle camera and at the scale of approximately 1:20,000 with a wide angle camera in the Upper Stream Area and the Down Stream Area respectively.

1-1-2. Signalization shall be done prior to the aerial Photography when necessary.

1-2. Ground Control Point Survey. (Satellite Geodesy, Triangulation, Traversing and Leveling.)

Although established ground control points will be used for the photographic control and mapping, ground control point survey will be carried out according to the accuracy requirement as specified for mapping at the required scale.

1-2-1. Satellite Geodesy.

Geodetic controls by means of the artificial satellite doppler system shall be carried out in order to supplement basic geodetic control points.

1-2-2. Triangulation and Traversing.

Supplementary map control points necessary for aerial triangulation and mapping works shall be established by triangulation or traversing.

1-2-3. Leveling

In the Upper Stream Area, second and third order and indirect leveling shall be carried out to obtain vertical controls necessary for aerial triangulation and mapping work starting from the existing bench marks.

In the Down Stream Area, fourth and minor order leveling shall be carried out to obtain vertical controls necessary for aerial triangulation and mapping work starting from the existing bench marks.

1-2-4. Monumentation

Monuments for control points and bench marks should follow the national specifications of Indonesia.

B. Phase 2. Pricking, Field Identification, Aerial Triangulation and Stereo-plotting.

2-1. Pricking.

Pricking in the field shall be done for aerial triangulation.

2-2. Field Identification.

The topographic information related to land classification, vegetation, etc. on the aerial photographs shall be verified in the field.

Administrative boundaries and geographical names to be printed on the maps shall be identified in the field by the Indonesian team.

2-3. Aerial Triangulation.

Aerial triangulation shall be carried out by an analytical method using comparators and electronic computer.

Adjustment shall be carried out by a block adjustment method.

2-4. Stereo-plotting.

In the Upper Stream Area, the plotting shall be carried out using stereo-plotting instruments at the scale of 1:50,000 with 25 meter contour interval. The sheet line shall be 15' in longitude and 15' in latitude.

Map specifications shall be in principle the same as those of the national base map (of the same scale) of Indonesia.

In the Down Stream Area, the plotting of spot heights shall be carried out based on the field survey and by the photogrammetric method, and contour line shall be represented on the photo maps at 5 meter intervals. The sheet line shall be 5' in longitude and 3' in latitude.

C. Phase 3. Field Completion, Color Separation Drafting, Printing, Preparation of Photo-Map and Reproduction.

3-1. Field Completion

Topographic features, vegetation, etc., which cannot be plotted shall be supplemented on the compiled sheet of topographical maps in the Upper Stream Area. Administrative boundaries and geographical names shall be verified and supplemented, if necessary, on the paper copy of the compiled sheet by the Indonesian team.

3-2. Color Separation Drafting in the Upper Stream Area.

Based on the compiled sheet, scribing shall be carried out on a stable polyester base for each color separation plate. Style sheet, colors and symbols shall be those of the national base map of Indonesia.

3-3. Color Proof Prints and Printing in the Upper Stream Area. Color proof prints shall be inspected and approved by the Indonesian team prior to the final printing.

Plate-making shall be carried out using 1:50,000 scribed negatives and printing shall be carried out by the offset method.

3-4. Preparation and Reproduction of Photo-Map in the Down Stream Area.

Photo-map shall be prepared by conventional rectification. On the photo-map, contour lines, spot heights and other useful information shall be presented.

Original negatives of photo-maps shall be prepared for photographic reproduction.

IV. Time Schedule.

The whole work in the Upper Stream Area and in the Down Stream Area shall be conducted in accordance with the time schedule as shown in Appendix IV and Appendix V respectively. The whole work shall be completed within three years.

The detailed work plan and the schedule of each phase will be settled by both sides before commencement of the work for each phase.

V. Reports and Final Results.

The reports will be presented to the Government of the Republic of Indonesia by JICA at the end of each phase. The materials mentioned in Appendix VI will be turned over to the Government of the Republic of Indonesia by JICA after the whole work is completed and they

shall be the property of the Government of the Republic of Indonesia.

VI. Undertaking of the Government of Indonesia.

1. To facilitate smooth implementation of the Project, the Government of Indonesia will take the following necessary measures :
 - (1) To secure the safety of the Japanese survey team.
 - (2) To exempt the Japanese survey team from the payment of local income tax for the salaries and allowance and to exempt from local security taxes, custom duties or other charges on equipment, machinery and other materials brought into Indonesia for the Project.
 - (3) To secure permission of entry into private properties and restricted areas and of felling trees for the purpose of the Project activity.
 - (4) To secure clearance of flight for aerial photography and use of airport related to the Project.
 - (5) To secure clearance for the use of communication facilities including transceiver with allocated frequency and electronic distance measuring instruments.
 - (6) To arrange for medical care when needed.
 - (7) To secure clearance for taking necessary materials, especially maps, aerial photographs and control points data, from Indonesia to Japan, subject to the security regulation of the Government of Indonesia.
2. The Government of Indonesia shall bear claims, if any arises, against the members of the Japanese survey team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Project, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese survey team.
3. The Directorate General of Water Resources Development of the Ministry of Public Works (hereinafter referred to as "DGWRD")

shall act as counterpart agency to the Japanese survey team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Project.

4. DGWRD shall, at its own expense, provide the Japanese survey team with the following items of (1) to (5) and shall arrange for or assist the Japanese survey team with the following items of (6) to (9), in cooperation with other agencies concerned, if necessary.

- (1) Available data, documents, materials and information related to the Project
- (2) Counterpart personnel
- (3) Suitable office with necessary equipment in the key towns
- (4) Credentials of identification cards
- (5) Establishment of the monuments of the control points and the bench marks in the Project area
- (6) Hiring of vehicles, boats, and other transportation facilities for field survey when necessary
- (7) Available necessary staying accommodation
- (8) Hiring of laborers as needed
- (9) Securing clearance of entering South Kalimantan, Central Kalimantan and East Kalimantan Provinces.

VII. Undertaking of the Government of Japan.

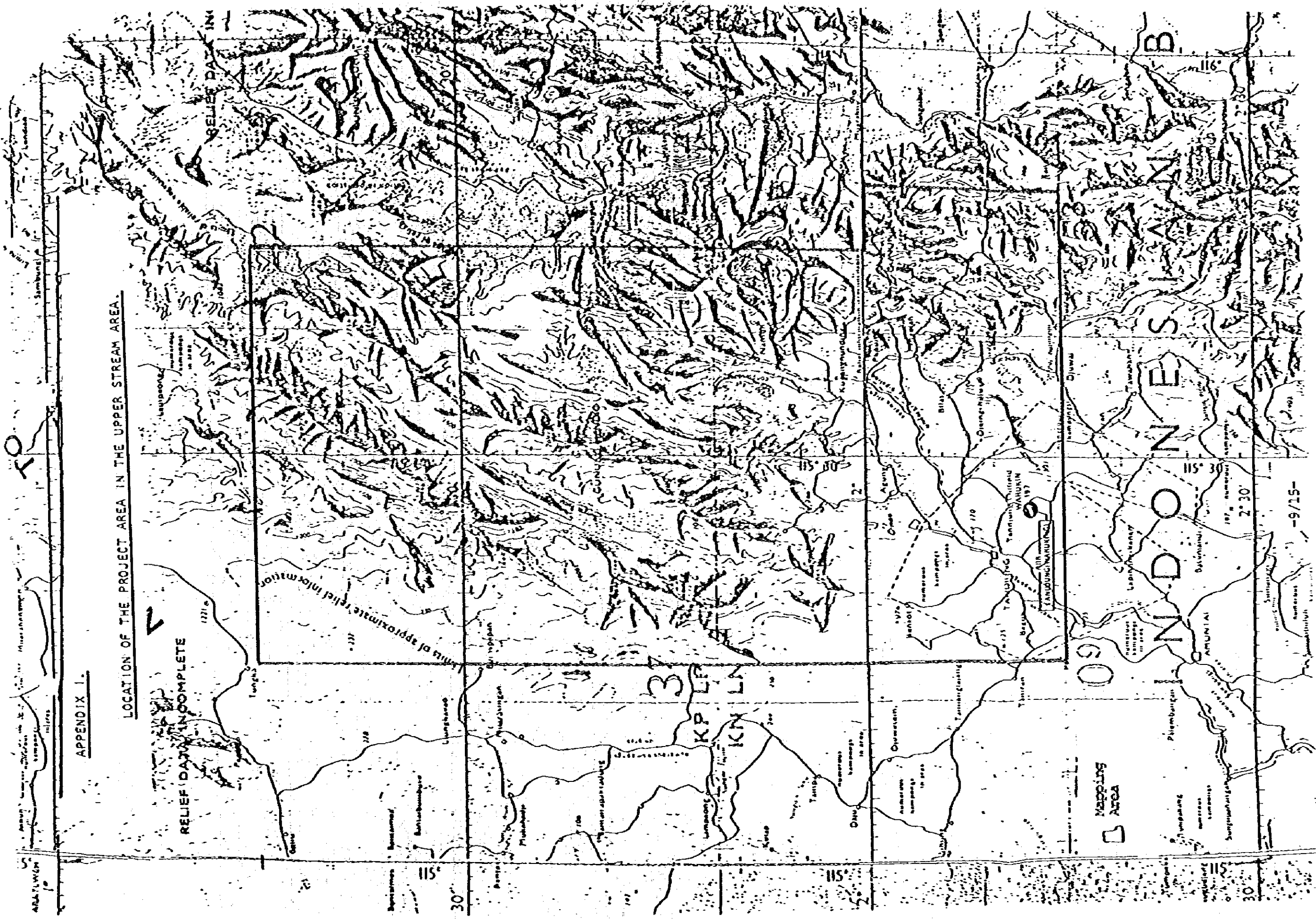
For the implementation of the Project, the Government of Japan will, in accordance with the relevant laws and regulations in force in Japan, through JICA, take necessary measures as follows :

- 1) To dispatch a Japanese survey team to carry out the Project.
- 2) To carry out necessary work in Japan.
- 3) To prepare necessary survey equipment and instruments as listed in Appendix VII and any other equipment and materials necessary for the Project.

- 4) To pursue technology transfer to the Indonesian personnel in the course of the Project.

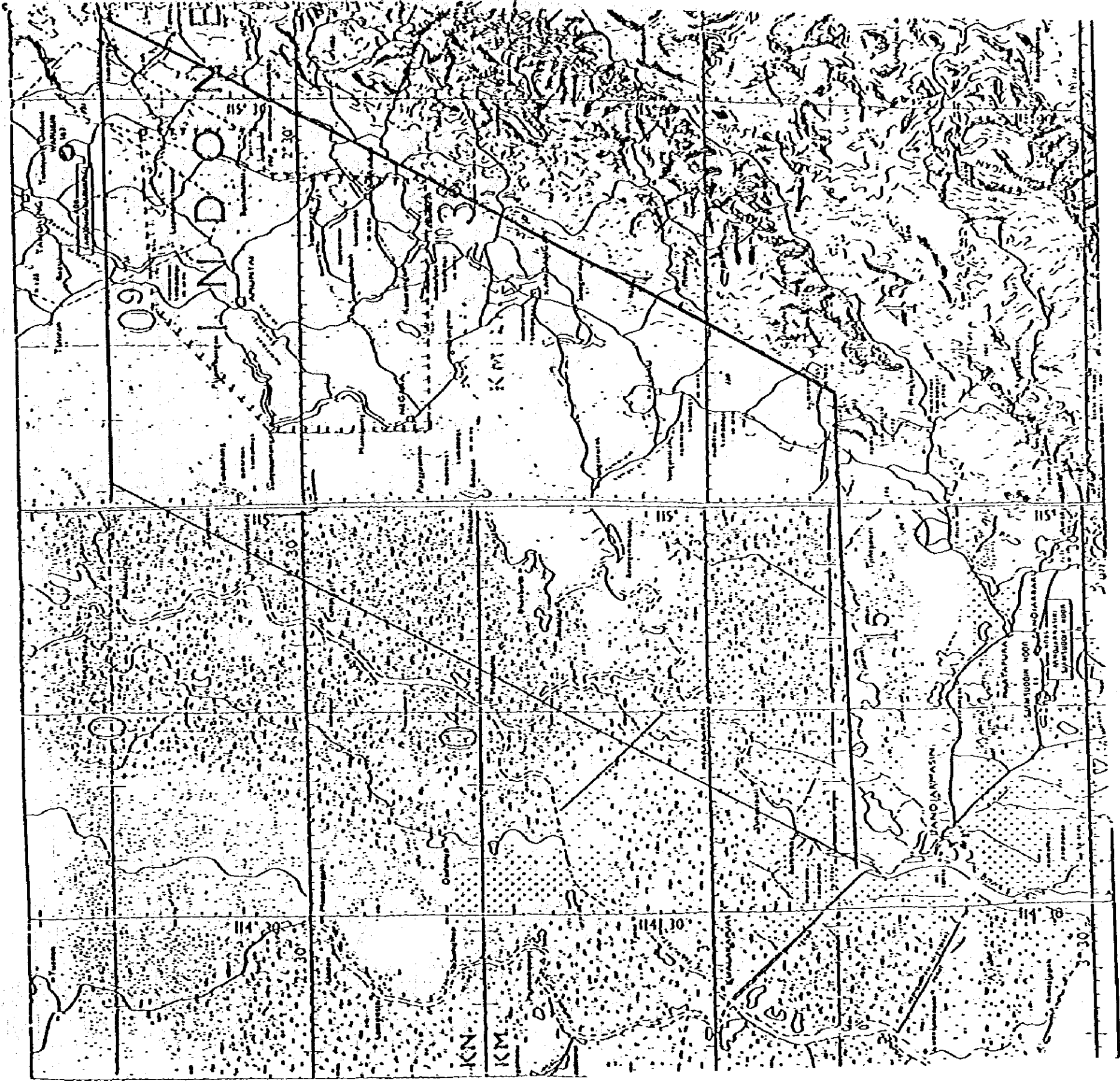
VIII. Modifications of the Scope of Work.

During the execution of the Project, changes considered useful by both sides for facilitating the implementation of the Project can be made in the text of this Scope of Work by mutual agreement.



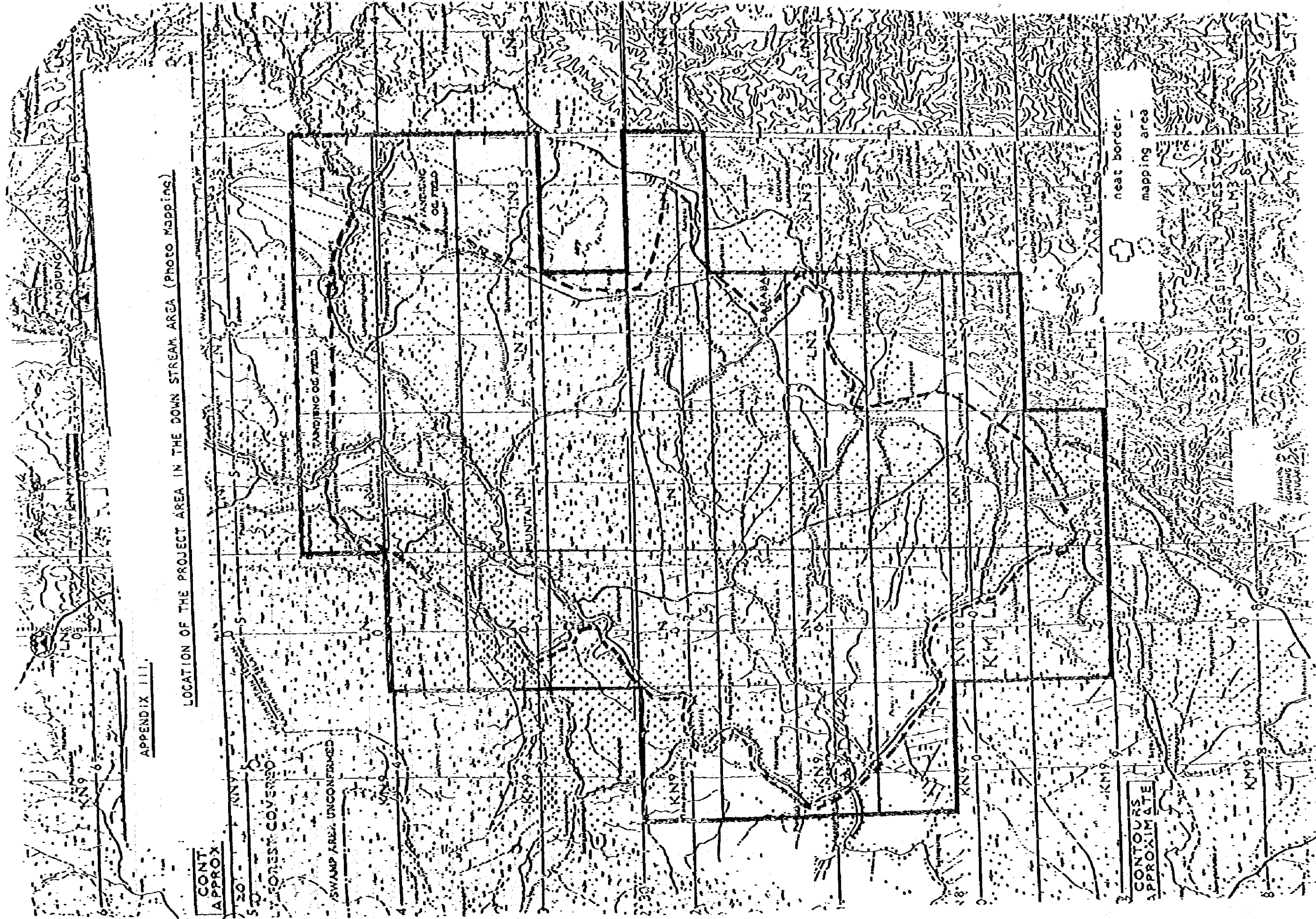
APPENDIX II.

LOCATION OF THE PROJECT AREA IN THE DOWN STREAM AREA (Aerial photography)



•• Aerial Photography in Dry Season

• Aerial photography in Dry and rainy season



APPENDIX IV

TIME SCHEDULE IN THE UPPER STREAM AREA

ITEM	1st Year	2nd Year	3rd Year
	Apr. 1983 - Mar. 1984	Apr. 1984 - Mar. 1985	Apr. 1985 - Mar. 1986
SIGNALIZATION	4 5 6 7 8 9 10 11 12 1 2 3 --	4 5 6 7 8 9 10 11 12 1 2 3	4 5 6 7 8 9 10 11 12 1 2 3
AERIAL PHOTOGRAPHY	---		
CONTROL POINT SURVEY	---		
LEVELING	---	---	
PRICKING		---	
FIELD IDENTIFICATION		---	
AERIAL TRIANGULATION		---	
STEREO PLOTTING & DRAWING			---
FIELD COMPLETION			---
PRINTING			---

Note: Time schedule mentioned above is tentative and subject to change.

APPENDIX V

TIME SCHEDULE IN THE DOWN STREAM AREA

ITEM	1st Year	2nd Year	3rd Year
	Apr. 1983 - Mar. 1984	Apr. 1984 - Mar. 1985	Apr. 1985 - Mar. 1986
SIGNALIZATION	4 5 6 7 8 9 10 11 12 1 2 3	4 5 6 7 8 9 10 11 12 1 2 3	4 5 6 7 8 9 10 11 12 1 2 3
AERIAL PHOTOGRAPHY	(dry season)	(rainy season)	
CONTROL POINT SURVEY			
LEVELING			
PRICKING			
FIELD IDENTIFICATION			
AERIAL TRIANGULATION			
SPOT HEIGHTS, RECTIFICATION, MOSAICING			
PREPARATION OF PHOTO-MAP			
REPRODUCTION			

Note: Time schedule mentioned above is tentative and subject to change.

APPENDIX VI

FINAL RESULTS

- I. Aerial Photography.
 1. Original negatives
 2. Contact paper prints (one each)
 3. Photo index sheets

- II. Geodetic Control Survey
 1. Horizontal control results
 2. Vertical control results
 3. Computation sheets
 4. Field notes
 5. Description of points

- III. Topographic Mapping in the Upper Stream Area
 1. Pricked photos and identified photos
 2. Original manuscripts
 3. Diapositives
 4. Aerial triangulation results
 5. Color separation scribed sheets
 6. 1:50,000 scale topographic maps (1,000 sets)

- IV. Photo-mapping in the Down Stream Area
 1. Pricked photos and identified photos
 2. Original manuscripts
 3. Diapositives
 4. Aerial triangulation results
 5. 1:10,000 scale photo-map (200 sets)
 6. Original negative of photo-map (1:10,000 scale)

APPENDIX VII

LIST OF EQUIPMENT TO BE USED FOR
FIELD SURVEY BY THE JAPANESE TECHNICAL MISSION

1. Theodolites
2. Electronic distance measuring equipment
3. Shortwave transmitter receivers
4. Transceivers
5. Heliotropes
6. Signal lamps
7. Doppler observation system
8. Auto-levels with staves
9. Electronic calculators
10. Camping materials
11. Generators
12. Small instruments, office equipment and consumables

Note: 1. Above list is tentative and subject to alteration.

2. Number and type of each equipment will be informed to the DGWRD prior to the implementation of the Project.

Minutes of Meeting
on
The Feasibility Study
on
The Improvement Project
of the
Operation & Maintenance
of
National Irrigation Systems
in
Republic of the Philippines

July 13, 1982 Manila

Teigo Takahashi
TEIGO TAKAHASHI
Team Leader,
The Scope of Work Team
Japan International
Cooperation Agency

Benjamin U. Bagadion
BENJAMIN U. BAGADION
Assistant Administrator
for Operations
National Irrigation
Administration

Minutes of Meeting

The scope of work team sent by the Japan International Cooperation Agency (JICA) and the staff member of the National Irrigation Administration (NIA) have discussed the Implementing Arrangement for the Feasibility Study on the improvement project of the O & M of national irrigation systems for the period from July 6 to 13, 1982. Both sides agreed on the Implementing Arrangement contained in Annex I. Attendants' list of both sides is shown in Annex II.

The main items of understanding between both sides are as follows:

1. The Feasibility Study will be undertaken by two study teams considering the limited study period of two years from 1982 to 1984; one is for UPRIIS and the other is for AMRIS and technical assistance for the study of 18 national irrigation systems.
2. New water resources development in the systems short of irrigation water and full-scaled river training in the submerged area due to the flooded water from rivers will not be included in the study.
3. On-farm development in the study will be limited to the level of farm ditch and farm drain and improvement works on the reasonably functioning ditches and drains are not included in the study.

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4. Road development will be in principle limited to the service road for O & M purposes of irrigation and drainage facilities but should take into account the effective utilization for farming operation in the area.
5. The study team for AMRIS will undertake the deep and detailed study on farmers' organization and institutional aspect.
6. If the necessary of mapping arises for the study, NIA will undertake it.
7. JICA advisory team, with the assistance of NIA, will coordinate activities of feasibility study teams with respect to the engineering standard in O & M and related activities.
8. The technical assistance by JICA for 18 national irrigation systems will be undertaken with the following conditions.
 - (1) The period of the technical assistance by JICA will be provided in accordance with the tentative work schedule in Annex I.
 - (2) JICA experts will be assigned in three fields; irrigation and drainage, hydrology and agro-economy.
 - (3) The technical assistance on structural design will be limited to such major irrigation facilities as diversion dam, settling basin, siphon, sluice way, and other important facilities.
 - (4) NIA will organize the study team and start the necessary preparation like data collection in advance of JICA team's arrival in the Philippines.

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- (5) NIA study team will be composed of Team Leader, Agronomist, Economist, Hydrologist, Irrigation Engineer, Drainage Engineer, Farmers' Institution Specialist, Design Engineer and other assistants.
- (6) JICA will suggest to NIA the content of the preparatory work shown in the tentative schedule in Annex I as soon as possible after the scope of work team returns home.



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IMPLEMENTING ARRANGEMENT ON THE TECHNICAL COOPERATION
BETWEEN JAPAN INTERNATIONAL COOPERATION AGENCY AND
NATIONAL IRRIGATION ADMINISTRATION FOR THE
FEASIBILITY STUDY ON THE IMPROVEMENT PROJECT
OF THE OPERATION & MAINTENANCE OF NATIONAL
IRRIGATION SYSTEMS

I. Introduction

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "the Government"), the Government of Japan dispatched a preliminary survey team headed by Mr. Teizo TAKAHASHI from 24th February to 13th March 1982, through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation of the Government of Japan, to carry out the preliminary survey for the feasibility study on the Improvement Project of the Operation and Maintenance (O & M) of national irrigation systems covering twenty-one (21) existing irrigation systems, in close cooperation with the Philippines Authorities concerned.

As a result of the preliminary survey, the Government of Japan has decided to undertake the feasibility study on the improvement project of operation and maintenance of the Upper Pampanga River Integrated Irrigation System (UPRIIS) and the Angat and Upper Maasim River Irrigation Systems (AMRIS) (hereinafter referred to as "the Project") and to give technical assistance to the National Irrigation Administration (NIA), which will undertake the feasibility study on the remaining eighteen (18) irrigation systems, as a part of technical cooperation program of the Government of Japan.

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II. Scope of the Technical Cooperation

The Technical cooperation of JICA and NIA be as follows:

1. Feasibility Study (A) on the improvement project of O & M of the Upper Pampanga River Integrated Irrigation System (UPRIIS).
2. Feasibility Study (B) on the improvement project of O & M of the Angat and Upper Maasim River Irrigation Systems (AMRIS).
3. Technical Assistance to the NIA feasibility study team on the remaining 18 systems (hereinafter referred to as "the Technical Assistance").

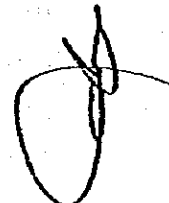
(1) Feasibility Study (A)

<u>Region</u>	<u>Irrigation System</u>	<u>Service Area (ha.)</u>
III	UPRIIS	94,501

(2) Feasibility Study (B)

<u>Region</u>	<u>Irrigation Systems</u>	<u>Service Area (ha.)</u>
III	AMRIS	31,371

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(3) Technical Assistance

<u>Region</u>	<u>Irrigation System</u>	<u>Service Area (ha.)</u>
I	1) Dumuloc RIS	1,500
III	2) Porac-Gumain RIS	5,108
	3) Colo RIS	479
	4) Sto. Tomas RIS	3,548
	5) Nayom RIS	1,217
IV	6) Cantingas RIS	259
	7) Mabacan RIS	813
	8) Malaunod RIS	229
VI	9) Panakuyan RIS	901
	10) Mambusao RIS	1,440
	11) Sibalom-Tigbauan RIS	2,322
	12) Barotac-Viejo RIS	2,124
VIII	13) Bito RIS	1,700
IX	14) Dipolo RIS	1,759
XI	15) Marbel RIS	2,515
	16) Banga RIS	2,966
	17) Siluay	1,966
XII	18) M'lang RIS	2,308
	TOTAL	<u>33,154</u>

Feasibility Study (A) and (B) ("the Study") will be conducted by the Japanese Study Team (hereinafter referred to as "the JICA Team") in cooperation with NIA. On the other hand, Feasibility Study on the improvement project of O & M of the remaining 18 systems will be undertaken by the NIA feasibility study team (hereinafter referred to as "the NIA Team") with the assistance of the JICA Team (B).

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III. Objectives of the Study and the Technical Assistance

The Objectives of the Study and the Technical Assistance are:

- 1) To formulate a plan for improving the O & M of UPRIIS and AMRIS in order to upgrade the project efficiency, and verify the technical and economic feasibility of the Project.
- 2) To take measures for strengthening the farmers' institution in order to enhance the O & M efficiency of existing systems in the proposed project.
- 3) To give guidance and advice to the NIA Team so that the feasibility study on the improvement project of O & M of the remaining 18 systems may be executed smoothly.

IV. Scope of Work

1. The Study

The Study will consist of two (2) groups:

- 1) Feasibility Study (A) on the improvement project of O & M of UPRIIS.
- 2) Feasibility Study (B) on the improvement project of O & M of AMRIS.

The JICA Team will undertake the following activities in Feasibility Study (A) and (B).

1.1 Field Work in the Philippines

The field work will cover the following items:

- 1) To collect and review the relevant data and information on the following items:
 - a. Meteorology and hydrology (A and B)
 - b. Topographic map (- do -)

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- c. Soil (A and B)
- d. Geology and geohydrology (- do-)
- e. Irrigation & drainage (- do -)
- f. Cultivation (- do -)
- g. Flood (- do -)
- h. Farmers' institution (B)
- i. Agricultural & regional economy (A and B)
- j. Previous reports available on
the Study (- do -)
- k. Others (- do -)

2) To carry out field investigation and survey on the following items:

- a. Meteorological & hydrological
survey (A and B)
- b. Topographical survey, if necessary (-do-)
- c. Soil survey, if necessary (-do-)
- d. Irrigation and drainage survey (-do-)
- e. Flood and siltation survey (-do-)
- f. Transportation survey (-do-)
- g. Agronomic survey (-do-)
- h. Agricultural and regional
economic survey (-do-)
- i. Survey on farmers' institution (B)
- j. Construction materials and
cost survey (A and B)
- k. Others (-do-)

1.2 Home Office Work in Japan

Based on the results of the field work, the home office work will be carried out for the Feasibility Study (A) and (B) on the following items:

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1/1

- 1) To formulate an overall improvement plan of the O & M of UPRIIS and AMRIS (A and B)
- 2) To make out the implementation schedule and the O & M plan of the irrigation and drainage systems in UPRIIS and AMRIS (A and B)
- 3) To estimate the costs and benefits of the Project (A and B)
- 4) To make economic evaluation for the Project (A and B)
- 5) To take measures for strengthening the farmers' institution (B)

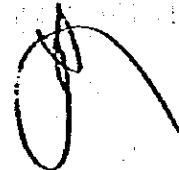
2. The Technical Assistance

The Technical Assistance will also be undertaken by the JICA Team on the Feasibility Study (B).

The Technical Assistance will consist of the following:

- 1) To carry out field investigation on the main irrigation systems.
- 2) To give technical advice and guidance to the NIA Team in carrying out of the following items:
 - a. Collection of data and information
 - b. Review of data and information
 - c. Design of structures
 - d. Analysis of meteorology, hydrology and hydraulics
 - e. Project evaluation
 - f. Making the feasibility study report

J.T.

V. Work Schedule

The work schedule of the Study and the Technical Assistance is shown in the attached Sheet.

To carry out the Study and the Technical Assistance, JICA will dispatch the JICA Team in accordance with the tentative work schedule.

VI. Reports

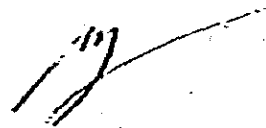
JICA will prepare and submit to NIA the following reports (in English):

1. Inception Report (20 copies)
Within two (2) months after the commencement of the Study.
2. Field Report (20 copies)
At the end of the first stage field work.
3. Interim Report (20 copies)
At the commencement of the second stage field work.
4. Draft Final Report (20 copies)
Within three (3) months after the end of the second stage field work.
5. Final Report (50 copies)
Within two (2) months after receiving the comments of NIA on Draft Final Report.

VII. Roles of JICA

For the effective implementation of the Study, JICA shall undertake the following:

J.J.



1. To dispatch the JICA Team for the Study in accordance with the schedule mutually agreed upon by both JICA and NIA.
2. To undertake on-the-job training to transfer the technology related to this project to the counterpart personnel in the course of the Study.
3. In addition to the technical training mentioned above, to receive a few Philippine counterpart personnel related to this project for training in Japan in accordance with the normal procedures under the Colombo Plan Technical Cooperation Scheme.

VIII. Roles of NIA

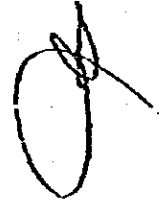
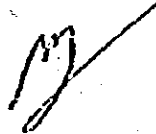
To facilitate smooth performance of the Study and the Technical Assistance, NIA shall undertake the following:

1. To organize the feasibility study team for O & M improvement project on the remaining 18 systems.
2. NIA shall provide the following:
 - 1) Sufficient number of full-time counterparts related to the Study. The number of counterpart personnel and their respective assignment periods will be decided by consultation of the Study Team with NIA prior to conducting the field survey.
 - 2) Available data and information necessary for the execution of the Study.
 - 3) Topographic maps.
 - 4) Suitable office space in Manila and at the site of UPRIIS and AMRIS.

J.J.

- 5) Appropriate number of vehicles with drivers.
 - 6) Necessary computer facilities.
3. NIA shall take necessary measures as to the following:
- 1) To secure the permission for entry into private properties in the Project Area.
 - 2) To provide medical facilities when needed, but medical expenses shall be borne by JICA.
4. NIA shall make the necessary arrangements with proper agencies concerned:
- 1) To ensure security of the Team members during their stay in the Philippines.
 - 2) To exempt the Team members from taxes, duties, fees and other charges on machinery, equipment and other materials brought into the Philippines for the Study and the Technical Assistance.
 - 3) To arrange for smooth customs clearance of the survey equipment and materials required for the field work.

J.T.



attached sheet

TENTATIVE WORK SCHEDULE

Work Items to be Undertaken by the Study Team	1982			1983			1984		
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1) Field Work in Philippines	First Stage			Second Stage					
2) Home Office Work in Japan	First Stage			Second Stage					
3) Submission of Reports	Inception Report			Field Report			Interim Report		
4) Assistance to the NIA Team	Inception Report			Field Report			Interim Report		
Work Items to be Undertaken by the NIA Team				Draft Final Report			Final Report		
1) Preparatory Works				Draft Final Report			Final Report		
2) Feasibility Study				Draft Final Report			Final Report		
3) Report Making				Draft Final Report			Final Report		

REMARK: 1) Second Stage : Supplementary Work for the First Stage.

J.J.

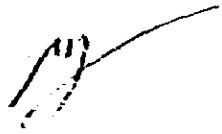
List of Attendance

NATIONAL IRRIGATION ADMINISTRATION (NIA)

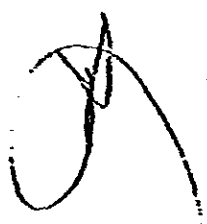
- Mr. Benjamin U. Bagadion Assistant Administrator
for Operations
- Mr. Sebastian I. Julian Department Manager, Systems
Management Department
- Mr. Jose B. del Rosario, Jr. Department Manager, Project
Development Department
- Mr. Edilberto B. Payawal Division Manager, Repair &
Improvement Division
Systems Management Department
- Mr. Federico L. Gendrano Regional Irrigation Director,
Region III
- Mr. Manuel L. Collado Acting Operations Manager,
UPRIIS
- Mr. Joji Nakagawa Advisor
for Irrigation & Drainage
- Mr. Terushi Egashira Advisor
for Water Management and
Reservoir Operation

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

- Mr. Teizo Takahashi Deputy Director,
Construction Department,
Kanto Regional Agricultural
Administration Bureau,
MAFF
- Mr. Masaru Kimura Head of Planning Division,
Kiso River Basin Integrated
Irrigation & Drainage
Project Office, MAFF
- Mr. Yukio Yoshida Officer,
JICA



J.T.



IMPLEMENTING ARRANGEMENT ON TECHNICAL COOPERATION
BETWEEN JAPAN INTERNATIONAL COOPERATION AGENCY AND
NATIONAL IRRIGATION ADMINISTRATION FOR THE FEASIBILITY
STUDY ON THE ASUE RIVER BASIN AGRICULTURAL DEVELOPMENT
PROJECT IN THE REPUBLIC OF THE PHILIPPINES

Agreed upon by:

JAPAN INTERNATIONAL COOPERATION AGENCY

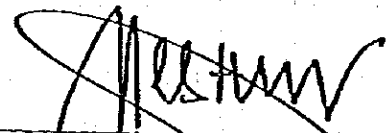
AND

NATIONAL IRRIGATION ADMINISTRATION

January 31, 1983

伊藤 正史

MR. MASAMI ITO
Leader of the Study Team
Japan International
Cooperation Agency



DR. FIORELLO R. ESTOAR
Administrator
National Irrigation
Administration

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct a feasibility study on the Asue River Basin Agricultural Development Project (hereinafter referred to as "the Study"), and exchanged the Notes Verbales with GOP concerning the implementation of the Study.

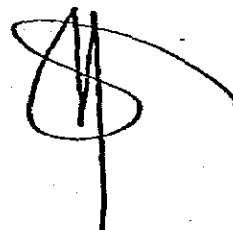
Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programmes of GOJ, will undertake the Study, in accordance with the relevant laws and regulations in force in Japan.

On the part of GOP, National Irrigation Administration (hereinafter referred to as "NIA") shall act as counterpart agency to the Japanese study teams (hereinafter referred to as "the Study Team"), and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangements between JICA and NIA under the above-mentioned Notes Verbales exchanged between the two governments.

II. IMPLEMENTATION OF THE STUDY

The Study shall be implemented in accordance with the Scope of Work attached herewith (Appendix I).



III. UNDERTAKING OF GOP

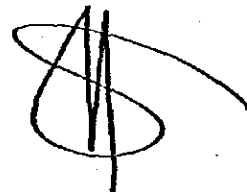
In accordance with the Notes Verbales exchanged between GOJ and GOP, GOP shall accord privileges, immunities and other benefits to the Study Team and, through the authorities concerned, take necessary measures to facilitate smooth implementation of the Study.

1. GOP shall be responsible for dealing with claims which may be brought by the third parties against the members of the Study Team and shall hold them harmless in respect of claims or liabilities arising in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from the gross negligence or willful misconduct of the above-mentioned members.

2. NIA shall, at its own expense, provide the Study Team with the following, if necessary, in cooperation with other agencies concerned:

- (1) Available data and information related to the Study.
- (2) Sufficient number of full-time counterpart personnel to assist the Study Team and participate in the various activities for the Study.
- (3) Suitable office space with necessary equipment in NIA Central Office and the Study area.
- (4) Credentials or identification cards to the members of the Study Team.
- (5) Appropriate number of vehicles with drivers.





3. NIA shall make necessary arrangements with the governmental and non-governmental organizations concerned for the following:

- (1) to secure the safety of the Study Team.
- (2) to exempt the members of the Study Team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into the Philippines for the conduct of the Study.
- (3) to exempt the members of the Study Team from income tax and charges of any kind imposed on or in connection with the allowances remitted from abroad.
- (4) to secure permission for entry into private properties or restricted area for the conduct of the Study.
- (5) to provide medical facilities as needed, however any expense will be chargeable on the members of the Study Team.
- (6) to arrange laborers as needed, however wages will be chargeable to JICA funds.
- (7) to secure permission to take all data and documents related to the Study including aerial photographs out of the Philippines to Japan by the Study Team.

4. NIA shall, at its own expense, conduct the following preparatory works before the start of the Study.

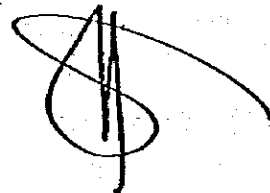
- (1) Core drilling for geological survey at the dam site and major structures.
- (2) Collection of run-off data at three points namely, Aguirre, Lanjagan and Serruco diversion dam sites, and observation of rainfall and pan-evaporation at one point in the irrigation service area.
- (3) Construction of access road to the dam site which enables transportation by four-wheel drive vehicles.

(12)

IV. UNDERTAKING OF GOJ

In accordance with the Notes Verbales exchanged between GOJ and GOP, GOJ, through JICA, will, at its own expense, take necessary measures for the implementation of the Study.

- (1) To dispatch the Study Team to the Republic of the Philippines.
- (2) To pursue technology transfer to the Philippine counterpart personnel in the course of the Study.
- (3) To provide the following equipment for the implementation of the Study, which will remain the property of GOJ unless otherwise agreed by JICA to be donated to NIA:
 - i) Seismic test equipment with accessories for geological exploration at the dam site and major structures.
 - ii) two units of automatic rain gauge to be installed in the catchment area and the irrigation service area, respectively.
- (4) To conduct aerial photography at the scale of 1:20,000 covering the Study area.
- (5) To conduct topographic mapping of the irrigation service area and reservoir area at the scale of 1:4,000.



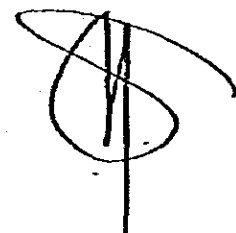
SCOPE OF WORK
FOR THE STUDY ON
THE ASUE RIVER BASIN AGRICULTURAL DEVELOPMENT PROJECT

I. Objectives of the Study

The objectives of the Study are to formulate an agricultural development project which covers approximately 6,700 ha putting emphasis on irrigation component in order to promote rural development in Asue River Basin, northeastern part of Iloilo province, Panay Island, and verify the technical and economic feasibility of the Project.

II. Scope of the Study

The Study consists of two stages. At the first stage, topographic maps of the Study area will be made as a prerequisite for the Study, and data collection and field survey for the project formulation will be carried out. At the second stage, supplementary field survey, project formulation and analysis will be conducted on the basis of results of the first stage study.



1. First Stage

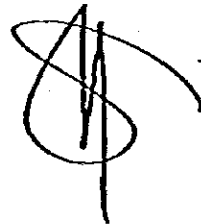
1-1. Preparation of topographic maps

- (1) To take aerial photography at the scale of 1:20,000 covering the Study area.
- (2) To conduct field survey necessary for the aerial photography and topographic mapping.
- (3) To conduct topographic mapping of the irrigation service area at the scale of 1:4,000 with one (1) m contour interval and of the reservoir area at the scale of 1:4,000 with five (5) m contour interval.

1-2. Data collection

To collect and review available data and information relevant to the Study on the following items:

- (1) Topography
- (2) Meteorology and hydrology
- (3) Geology
- (4) Soil
- (5) Irrigation and drainage
- (6) Agricultural and agro-economy
- (7) Socio-economy
- (8) Environmental aspect
- (9) Mini-hydropower generation
- (10) Others



1-3. Field Survey

To carry out field investigation and survey on the following items:

- (1) Topographical survey
- (2) Hydrological and meteorological survey
- (3) Geological survey
- (4) Soil survey
- (5) Irrigation and drainage survey
- (6) Agricultural and agro-economic survey
- (7) Construction material survey
- (8) Socio-economic and environmental survey
 - i) domestic water supply
 - ii) road networks
 - iii) mini-hydropower generation
 - iv) milling and storage facilities

1-4. Preliminary Study and Analysis

Based on the result of the above-mentioned survey, the preliminary study and analysis will be conducted in Japan.

2. Second Stage

On the basis of the results of the previous survey, the following will be carried out in order to formulate an optimum irrigation development plan through comparative studies:

2-1. Supplementary survey and additional data collection

2.2. Detailed study and analysis

- (1) Cropping patterns and farming system
- (2) Irrigation water requirements



- (3) Preliminary design for dam, tunnel, irrigation facilities and other structures
- (4) Organization for operation and maintenance of the project
- (5) Implementation schedule of the project
- (6) Estimation of total project costs and benefits
- (7) Economic and financial analysis

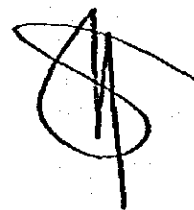
III. Study Schedule

The Study will be executed in accordance with the attached figure.

IV. Reports

The following reports in English will be submitted to NIA:

1. Inception Report (10 copies): Within one (1) month after the commencement of the Study.
2. Interim Report (20 copies): At the end of the first stage of the Study.
3. Draft Final Report (20 copies): At the end of the second stage of the Study.
4. Final Report (50 copies): Within two (2) months after receiving the comments of NIA on Draft Final Report.



LIST OF SEISMIC TESTING EQUIPMENT ACCESSORIES

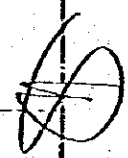
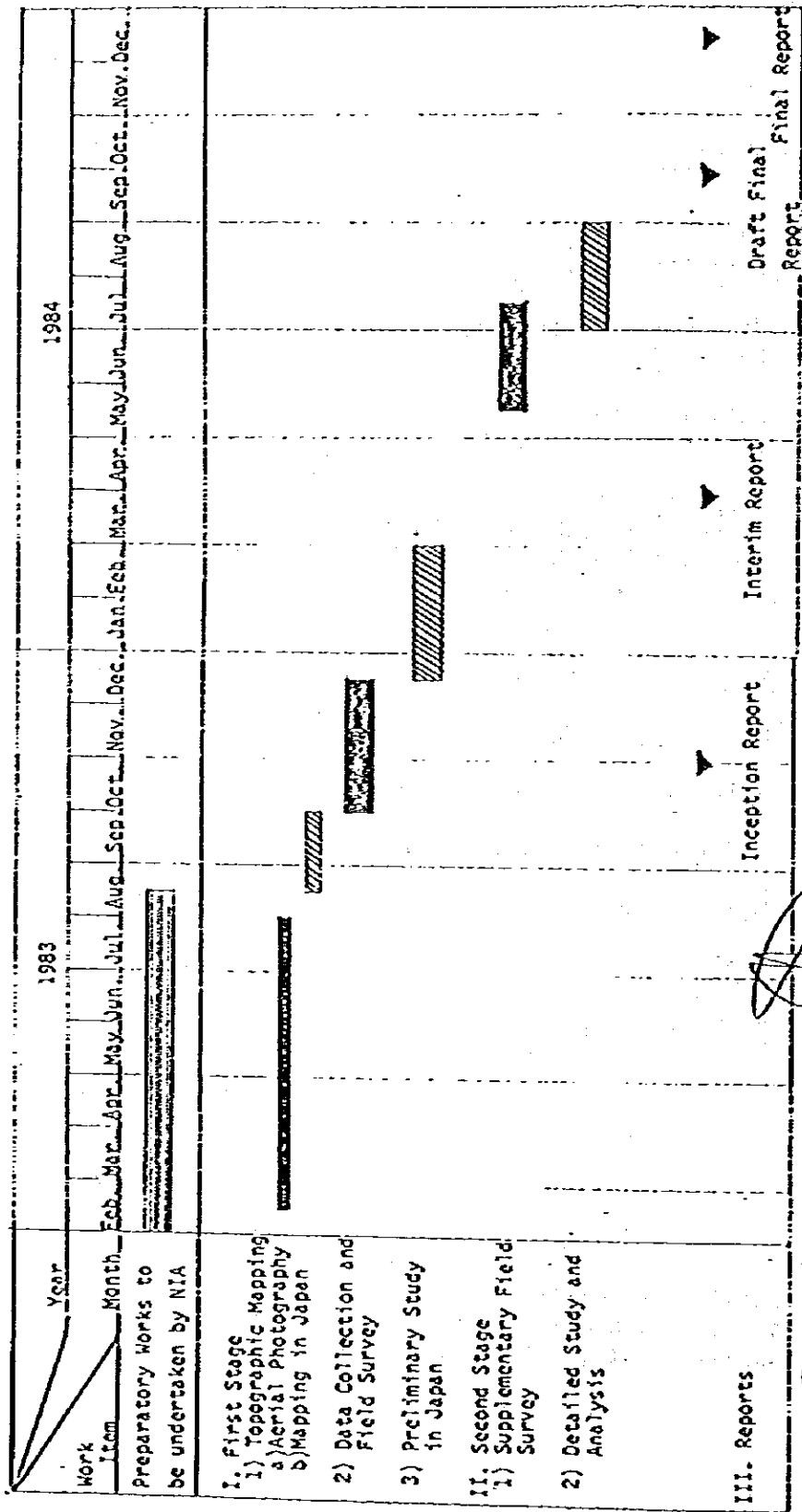
ITEMS	QUANTITY
1. 12-channel OYO-PS-10 HANDYSEIS (Oscillograph built-in, direct print)	- 1 unit
2. High voltage blasting machines (OYO Model - 1340)	- 2 units
3. Seismic Land Cable OYO Brand 12-channel OYO Model 1521, length 200M	- 2 rolls
4. Geophone Cable OYO Brand 12-channel with 5-M spacing standard 12-channel with 10-M spacing standard	- 2 rolls - 2 rolls
5. Input connecting cable	- 1 pc
6. Power connecting cable	- 1 pc
7. Geophone, 14 Hz with Morsh case	- 26 pcs
8. Telephone Cord, 1000 meter long	- 2 sets
9. Kodak Linograph 3 5/8" x 100'	- 15 boxes
10. Galvanometer	- 6 pcs
11. Tool set	- 1 set
12. Battery charger	- 1 unit

LIST OF AUTOMATIC RAINGAUGES

ITEMS	QUANTITY
Long-Term Automatic Recording Rain Gauge; Model "JMA-4" (Nakaasa Instrument C. Ltd., Tokyo, Japan)	2

Attached Figure

Tentative Study Schedule



Implementing Arrangement for Technical Cooperation
between Japan International Cooperation Agency
and National Irrigation Administration
for Feasibility Study on Gumain River Irrigation Project
in the Republic of the Philippines

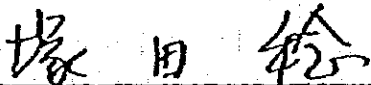
Agreed upon by

Japan International Cooperation Agency

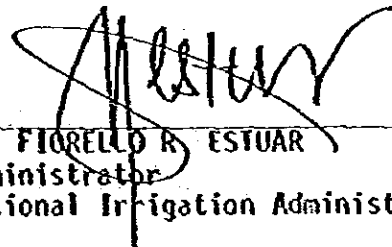
and

National Irrigation Administration

3rd February, 1983



Mr. Minoru Tsukada
Leader of the Preliminary Study
Team
Japan International Cooperation
Agency



Dr. FIORELLO R. ESTUAR
Administrator
National Irrigation Administration

Implementing Arrangement for Technical Cooperation
between Japan International Cooperation Agency and
National Irrigation Administration for Feasibility
Study on Gumain River Irrigation Project in the
Republic of the Philippines

I. Introduction

In response to the request of the Government of the Republic of the Philippines, the Government of Japan has decided to conduct a feasibility study (hereinafter referred to as "the Study") on the Gumain River Irrigation Project in the Republic of the Philippines and exchanged the Notes Verbales on the Study with the Government of the Republic of the Philippines concerning the implementation of the Study.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in accordance with the relevant laws and regulations in force in Japan.

On the part of the Government of the Republic of the Philippines, the National Irrigation Administration (hereinafter referred to as "NIA") shall act as counterpart agency to the Japanese study team (hereinafter referred to as "Study Team") and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangements between JICA and NIA under the above-mentioned Notes Verbales exchanged between the two governments.

II. Implementation of the Study

The Study shall be implemented in accordance with the Scope of Work attached herewith (Appendix I).

III. Undertakings of the Government of the Republic of the Philippines

In accordance with the Notes Verbales exchanged between the Government of Japan and the Government of the Republic of the Philippines, the Government of the Republic of the Philippines shall accord privileges, immunities and other benefits to the Study Team and through the authorities concerned, take necessary measures to facilitate smooth conduct of the Study.


1. The Government of the Republic of the Philippines shall be responsible for dealing with claims which may be brought by the third parties against the members of the Study Team and shall hold them harmless in respect of claims or liabilities arising in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from the gross negligence or willful misconduct of the above-mentioned members.

2. NIA shall, at its own expense, provide the Study Team with the following, if necessary, in cooperation with other agencies concerned.

- (1) Available data and information related to the Study
- (2) Counterpart personnel to assist the Study Team and participate in the various activities for the Study.
- (3) Suitable office space with necessary equipment in the NIA Central Office and the study area
- (4) Credentials or identification cards to the members of the study team
- (5) Appropriate number of vehicles with drivers

3. NIA shall make necessary arrangements with the governmental and non-governmental organizations concerned for the following.

- (1) To secure the safety of the Study Team



- (2) To provide the necessary facilities to the Study Team for the remittances as well as utilization of funds introduced into the Philippines from Japan in connection with the implementation of the Study.
- (3) To exempt the Study Team from taxes, duties, fees and other charges on machinery, equipment and other material brought into the Philippines for the conduct of the Study.
- (4) To allow the Study Team to take all data and documents related to the Study including aerial photographs out of the Philippines to Japan in accordance with security regulations.
- (5) To secure permission for the use of radio communication facilities if necessary.
- (6) To let the Study Team receive medical care without any hindrance as necessary however any expense shall be borne by the Study Team.

4. HIA shall, at its own expense, carry out the following,

- (1) Installation of the river water level gauge and measurements of water and sediment discharges.
- (2) Core drilling, seismic prospecting on the proposed dam and structure sites and relevant laboratory tests.

IV. Undertakings of the Government of Japan

In accordance with the Notes Verbales exchanged between the Government of Japan and the Government of the Republic of the Philippines, the Government of Japan, through JICA, will take necessary measures for the implementation of the Study.

1. JICA shall, at its own expense, dispatch the Study Team to the Republic of the Philippines.
2. JICA shall, at its own expense, pursue technological transfer to the Philippine counterpart personnel in the course of the Study.



Scope of Works
for Study on
Gumain River Irrigation Project

I. Objective of the Study

The objective of the Study is to verify technical and economic feasibility of an irrigation project having the Gumain River as a water source, located at the southwestern part of the Pampanga River Basin in Central Luzon.

II. Scope of the Study

The Study consists of two stages. In the first stage, topographic maps of the project area, a prerequisite to the Study will be prepared, and then data collection and field survey for the project formulation carried out. In the second stage, supplementary field survey, project formulation and analysis will be conducted on the basis of results of the first stage study.

III. The activities to be undertaken by JICA will be as follows.

1. First stage

1-1 (a) To conduct topographic control point survey, signalization and levelling survey necessary for the aerial photography and topographic mapping.

(b) To conduct aerial photography at the scale of 1/20,000 covering some 580 km² of the project area.



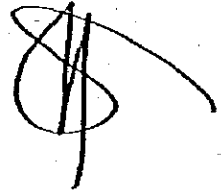
(c) To conduct topographic mapping of the irrigation service area of 237 km² at the scale of 1/4,000 with 1 m contour interval and of the reservoir area of 17 km² at the scale of 1/4,000 with 5 m contour interval.

1-2 To collect and review available data and information relevant to the Study on the following items.

- (a) Topography
- (b) Hydro-meteorology
- (c) Geology
- (d) Soil
- (e) Agriculture
- (f) Irrigation and drainage
- (g) Agro-economy
- (h) Socio-economy
- (i) Flood damage
- (j) Power generation
- (k) Others

1-3 To carry out field investigations and surveys on the following items.

- (a) Hydro-meteorological survey
- (b) Geological Survey
- (c) Topographic survey
 - Topographic survey of the Gumain Dam
 - Topographic survey of the major structures for the irrigation system



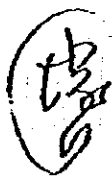
- (d) Agricultural and agro-economic survey
 - Investigation of soils, land use and land capability
 - Present farming practices including the cropping pattern and crop yields and production etc.
 - Marketing system and prices of agricultural products
 - Farm economy and agricultural supporting system
- (e) Irrigation and drainage survey
 - Inventory survey on the existing irrigation, drainage and road facilities
 - Delineation of the irrigation area
 - Preliminary route selection for main and secondary canals
- (f) Construction material survey
 - Availability and quantities of concrete aggregates, embankment materials and other construction materials

2. Second stage

2-1 To carry out supplementary field survey

2-2 To carry out the following analyses and comparative studies, and formulate an optimum irrigation development plan.

- (a) Land use planning
- (b) Proper crops and formulation of cropping patterns and irrigation farming practices
- (c) Irrigation and drainage requirements
- (d) Preliminary designs of the proposed dam, irrigation facilities and other structures



- (e) Most suitable construction method of the proposed dam and irrigation facilities and other structures
- (f) Organization for operation and maintenance of the project
- (g) Implementation schedule of the project
- (h) Cost and benefit of the project
- (i) Economic and financial analyses
- (j) Sensitivity tests of economic viability
- (k) Disbursement schedule of project cost

IV. Report

1. Inception Report

Ten (10) copies of Inception Report in English will be submitted to NIA at the commencement of the Study.

2. Twenty (20) copies of Field Report in English will be submitted to NIA at the end of first field work in the Philippines.

3. Interim Report

Twenty (20) copies of Interim Report in English will be submitted to NIA at the end of second field work in the Philippines.

4. Draft Final Report


Twenty (20) copies of Draft Final Report in English will be submitted to NIA at the end of office work in Japan.

5. Final Report

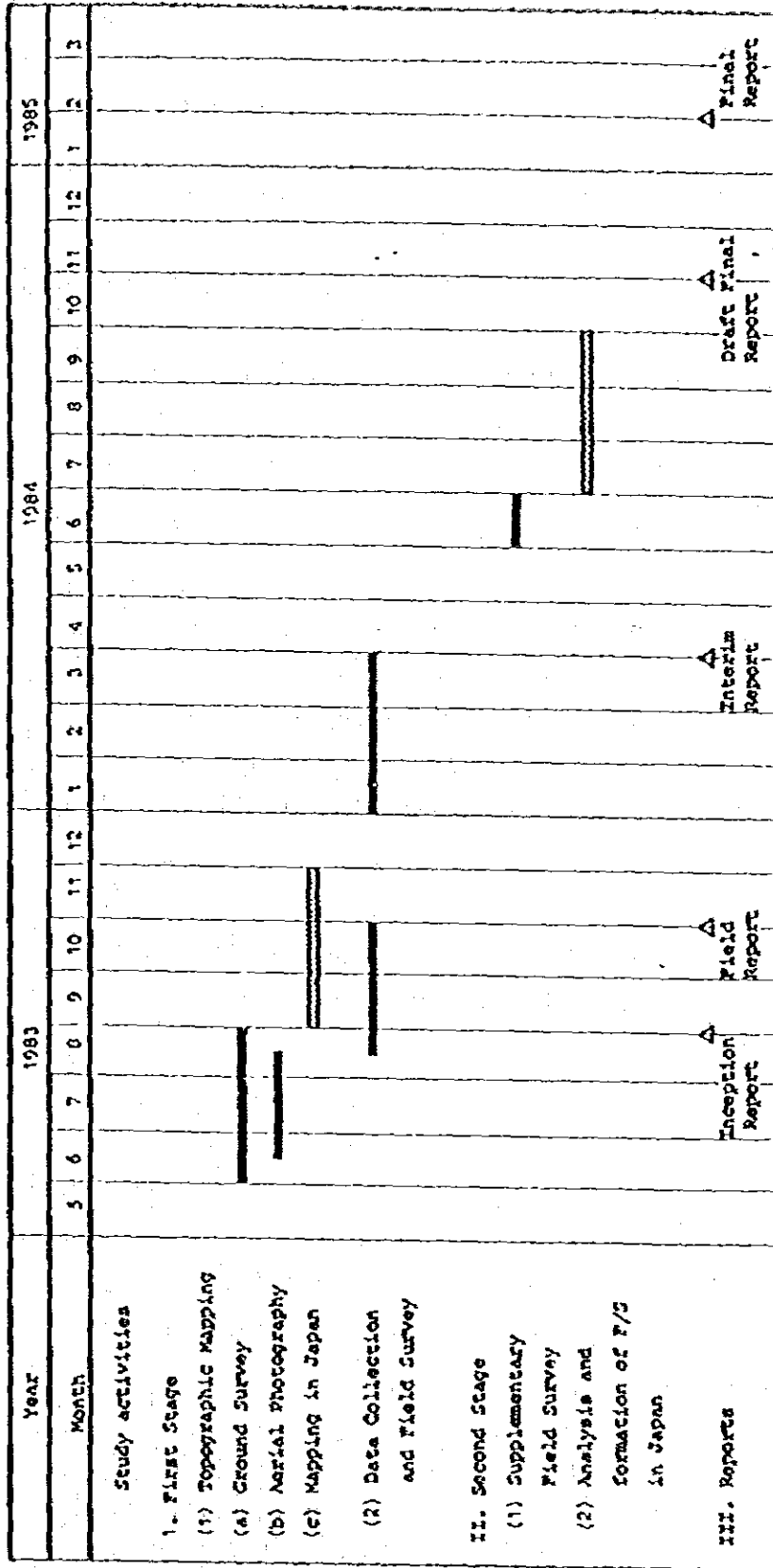
Fifty (50) copies of Final Report in English will be submitted to NIA three months after Draft Final Report has been presented.

V. Study schedule

The Study, in principle, will be carried out in accordance with the attached figure.



Tentative Study Schedule



— Activities in the Philippines

▨ Activities in Japan

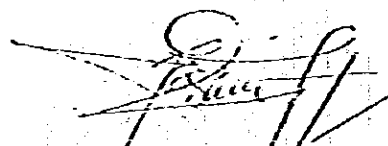
Implementing Arrangement for the Technical Cooperation
between
The Japan International Cooperation Agency
and
The National Irrigation Administration
for
The Feasibility Study on Bohol Irrigation Development Project Phase II
in
The Republic of the Philippines

Agreed upon between
The Japan International Cooperation Agency
and
The National Irrigation Administration

February 10, 1984

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MR. ISAO NAKAZANA
Leader of the Preliminary Study Team
Japan International Cooperation Agency



MR. JOSE B. DEL ROSARIO, JR.
Asst. Administrator For Project
Development & Implementation

Implementing Arrangement for the Technical Cooperation
between
The Japan International Cooperation Agency
and
The National Irrigation Administration
for
The Feasibility Study on Bohol Irrigation Development Project Phase II
in
The Republic of the Philippines

I. Introduction

In response to the request of the Government of the Republic of the Philippines, the Government of Japan has decided to conduct the feasibility study (hereinafter referred to as "the Study") on Bohol Irrigation Development Project Phase II in the Republic of the Philippines and exchanged the Note Verbal on the Study with the Government of the Republic of the Philippines concerning the implementation of the Study.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in accordance with the relevant laws and regulations in force in Japan.

On the part of the Government of the Republic of the Philippines, the National Irrigation Administration (hereinafter referred to as "NIA") shall act as counterpart agency to the Japanese study team (hereinafter referred to as "the Study Team") and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document sets forth the implementing arrangement between JICA and NIA under the above-mentioned Note Verbal exchanged between the Government of Japan and the Government of the Republic of the Philippines.

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II. Implementation of the Study

The Study shall be implemented in accordance with the Scope of Work attached herewith (Appendix).

III. Undertakings of the Government of the Republic of the Philippines

In accordance with the Note Verbal exchanged between the Government of Japan and the Government of the Republic of the Philippines, the Government of the Republic of the Philippines shall accord privileges, immunities and other benefits to the Study Team and take necessary measures to facilitate smooth conduct of the Study through the authorities concerned.

1. The Government of the Republic of the Philippines shall be responsible for dealing with claims which may be brought by the third parties against the members of the Study Team and shall hold them harmless in respect of claims or liabilities arising in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from the gross negligence or willful misconduct of the above-mentioned members.
2. NIA shall, at its own expense, provide the Study Team with the following in cooperation with other agencies concerned:
 - (1) Available data and information related to the Study, including final project planning of the Phase I project.
 - (2) Counterpart personnel to participate in the various activities for the Study.
 - (3) Suitable office space with necessary equipment in the NIA Central Office and the study area.
 - (4) Credentials or identification cards to the members of the Study Team.
 - (5) When available, appropriate number of vehicles with drivers.

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3. NIA shall make necessary arrangements with the governmental and non-governmental organizations concerned for the following:
 - (1) To secure the safety of the Study Team;
 - (2) To provide the necessary facilities to the Study Team for the remittances as well as utilization of funds introduced into the Philippines from Japan in connection with the implementation of the Study.
 - (3) To exempt the Study Team from taxes, duties, fees and other charges on machinery, equipment and other materials brought into the Philippines for the conduct of the Study.
 - (4) To allow the Study Team to take copies of all data and documents related to the Study including aerial photographs out of the Philippines to Japan subject to government security regulations.
 - (5) To secure permission for the use of radio communication facilities, if necessary.
 - (6) To assist the Study Team receive medical care without any hindrance as necessary, however any expense shall be borne by the Study Team.
 - (7) To secure permission for the entry into private properties or restricted area, if any, for the conduct of the Study.
4. NIA shall, at its own expense, carry out the following items:
 - (1) Installation of three additional river water level gauges and measurement of water and sediment discharges thereat.
 - (2) Additional core drilling, if necessary, seismic prospecting on the proposed dam and structure sites and relevant laboratory tests.
 - (3) Land classification and agro-economic survey of the study area.

IV. Undertakings of the Government of Japan

In accordance with the Note Verbal exchanged between the Government of Japan and the Government of the Republic of the Philippines, the Government of Japan, through JICA, will take necessary measures for the implementation of the Study.

1. JICA shall, at its own expense, send the Study Team to the Republic of the Philippines.
2. JICA shall pursue technology transfer to the Philippine counterpart personnel in the course of the Study.

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Scope of Work for the Feasibility Study
on
Bohol Irrigation Development Project Phase II

I. Objective of the Study

The objective of the Study is to verify technical and economic feasibility of the project and to formulate a viable irrigation development plan. The Phase II project is to irrigate the area utilizing surplus water resource which is provided by the on-going Phase I project (Wahig-Pamacalan Irrigation Development Project) including other possible sources in the northeastern part of Bohol Province.

The study area of approximately 7,000 ha. is located at the downstream of the Phase I project. It is defined as the area to be fed by the proposed Bayongan Dam.

II. Scope of the Study

The Phase II project is conducted based on premise of the final project contents of the Phase I project.

The Study consists of two stages. In the first stage, topographic maps of the project area, a prerequisite of the Study, will be prepared. In the second stage, data collection and field survey for the project formulation will be carried out, and then project analysis and formulation will be conducted on the basis of results of the above-mentioned studies.

III. Outline of the Study

The activities to be undertaken by JICA will be as follows:

I. First Stage

- (1) To conduct ground control point survey and leveling survey necessary for the topographic mapping.
- (2) To conduct topographic mapping of approximately 170 km² covering

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the irrigation service area at the scale of 1/4,000 with 1 m contour interval and of the reservoir area at the scale of 1/4,000 with five (5) m contour interval including the necessary supplementary contour lines.

2. Second Stage

(1) To collect and review available data and information relevant to the Study on the following items.

- 1) Irrigation and Drainage
- 2) Meteorology and Hydrology
- 3) Topography
- 4) Geology
- 5) Soil
- 6) Agriculture
- 7) Agro-economy
- 8) Socio-economy
- 9) Others

(2) To carry out field investigations and surveys on the following items.

- 1) Meteorology and Hydrology
- 2) Topography and Geology
 - i) Topographic and geological surveys of the Bayongan dam
 - ii) Topographic and geological surveys of the major structures for the irrigation and drainage systems
- 3) Irrigation and Drainage
 - i) Inventory survey on the existing irrigation, drainage, road and other facilities
 - ii) Delineation of the irrigation area
 - iii) Preliminary route selection for main and secondary canals

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4) Agriculture and Agro-economy

- i) Investigation of soils, land use and land capability
- ii) Present farming practices including the cropping pattern and crop yields and production, etc.
- iii) Marketing system and prices of agricultural products
- iv) Farm economy and agricultural supporting system

5) Construction material

Availability and quantities of concrete aggregates, embankment materials and other construction materials

6) Others

(3) To carry out the following analyses and comparative studies, and to formulate an optimum irrigation development plan.

- 1) Land use planning
- 2) Proper crops and formulation of cropping patterns, and irrigation farming practices
- 3) Irrigation requirement and drainage discharge
- 4) Utilizable surplus water resources provided by use of the various facilities of Phase I project
- 5) Design of the proposed dam, irrigation facilities and other structures
- 6) Most suitable construction method of the proposed dam and irrigation facilities and other structures
- 7) Organization for operation and maintenance of the project
- 8) Implementation schedule of the project
- 9) Estimation of cost and benefit of the project
- 10) Economic and financial analyses
- 11) Others

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IV. Report

1. Inception Report

Twenty (20) copies of the Inception Report in English will be submitted to NIA within one (1) month after the commencement of the Study.

2. Progress Report

Twenty (20) copies of the Progress Report in English will be submitted to NIA at the end of field work in the Philippines.

3. Draft Final Report

Twenty (20) copies of the Draft Final Report will be submitted to NIA at the end of home office work in Japan.

4. Final Report

Fifty (50) copies of the Final Report in English will be submitted to NIA within two (2) months after receiving the comments of NIA on the Draft Final Report.

V. Study Schedule

The Study, in principle, will be carried out in accordance with the attached Tentative Study Schedule.

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Tentative Study Schedule

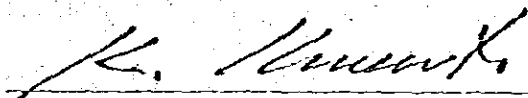
Year	1984												1985														
	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.						
Study Activities																											
	1. First Stage (Topographic Mapping)																										
	(1) Ground Survey in the Philippines																										
	(2) Mapping in Japan																										
2. Second Stage																											
	(1) Data Collection and Field Survey in the Philippines																										
	(2) Project Analysis and Formulation in Japan																										
3. Reports																											
													△ Inception Report						△ Progress Report			△ Draft Final Report			△ Final Report		

Minutes of Meeting
for the Scope of Works
for the Study
on the Agricultural Development Research Project
in Northeast Thailand

1. In pursuance to the discussions held in July 1982 between the Japanese contact mission and the Thai authorities concerned, the Government of Japan has decided to conduct a study on the Agricultural Development Research Project in Northeast Thailand with a view to formulating a research plan for the Project, and dispatched a preliminary survey team from 9 to 18 of September 1982, through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan.
2. The Japanese team, headed by Mr. K. UHENOTO, Development Cooperation Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, had a series of discussions and exchanged their views with the Thai officials concerned, headed by Dr. Thalerng THAIRONG-NAMASAWAT, Under-Secretary of State, Ministry of Agriculture and Cooperatives, on the draft Scope of Works for the Study prepared by JICA. As a result of the discussions, the Scope of Works was finalized as attached herewith.
3. In view of the prospective joint cooperation between Japan and the United States for the agricultural development in Northeast Thailand, both sides agreed that, in the conduct of the study, they should not only consult with each other closely but also keep close contact with the United States Agency for International Development (USAID).

4. Both sides expressed their hope that the study would facilitate a smooth start of the Research Project which is to be undertaken within the Framework of Cooperation between Japan and Thailand on the Agricultural Development in Northeast Thailand set forth in the Record of Discussions signed on 22 April 1982, and thus to contribute to the enhancement of cooperative efforts envisaged in the Framework.

September 16, 1982



Mr. KAZUYOSHI UEMOTO
Leader of Japanese Team
for Agricultural Development
Research Project in Northeast
Thailand



Mr. CHOTE SUVIPAKIT
Director, Foreign Agricultural
Relations Division,
Office of the Under-Secretary of
State, Ministry of Agriculture
and Cooperatives

**Scope of Works for the Study
on the Agricultural Development Research Project
in Northeast Thailand**

I. Introduction

In response to the request of the Thai Government for Japanese cooperation with regard to the Agricultural Development Research Project in Northeast Thailand (hereinafter referred to as the Project), the Government of Japan has decided to conduct a study for the purpose of formulating a research plan for the Project, within the general framework of technical cooperation between Japan and Thailand which is set forth in the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand signed on 5 November 1981. The Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan will accordingly undertake the study in accordance with the relevant laws and regulations in force in Japan.

II. Objective of the study

The objective of the study is to formulate a plan of research activities in the field of soil amelioration and promotion of crop production which are to be conducted in the Project.

III. Outline of the Study

The Study consists of field survey in Thailand and home work in Japan. The study team is to collect all data and information available on research and development activities concerning soil amelioration and promotion of crop production in Northeast Thailand, through discussions with the Thai officials concerned as well as field surveys of the area. On the basis of the result of analysis of the collected data and information, a research plan for the Project will be formulated on the following subjects, taking into consideration the views of the Thai officials concerned.

1. Assessment of Drought

Land classification with reference to drought conditions

Stochastic analysis of rainfall

Planning of land use

2. Improvement of Crop Performance

Interaction among environment, water stress and crop performance

Appropriate crops (annual and perennial) for drought soils

3. Soil Condition and its Improvement

Amelioration of soil salinity

Recycling of organic materials

Conservation of soil fertility

IV. Reports

JICA will prepare and submit to Ministry of Agriculture and Cooperatives (MOAC) the following reports in English.

1. Draft Report

Thirty (30) copies of Draft Report at the end of home office works.

2. Final Report

Thirty (30) copies of Final Report within two (2) months after the Draft Reports have been submitted.

V. Undertaking of the Government of Thailand

In accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand, the Government of Thailand shall accord privileges, immunities and other benefits to the Japanese team and, through the authorities concerned, take necessary measures to facilitate smooth conduct of the Study:

1. The Ministry of Agriculture and Cooperatives (MOAC) shall provide the following, keeping close contact and coordinating with Khon Kaen University.

- (1) Available data and information related to the Study
- (2) Counterpart personnel (Project Manager, Officials, Typists and other personnel necessary for the Study)
- (3) Suitable office space (Bangkok and Khon Kaen)
- (4) Appropriate number of vehicles with drivers

2. MOAC shall make necessary arrangements with proper agencies concerned for the following.

- (1) To ensure the safety of the study team.
- (2) To secure permission for entry into private properties and other areas necessary for the conduct of the Study.
- (3) To exempt the study team from taxes, duties, fees and other charges on machinery, equipment and other materials brought into Thailand for the conduct of the Study.
- (4) To secure permission to take all data and documents related to the Study out of Thailand to Japan by the study team.

VI. Study Schedule

The study, in principle, will be carried out in accordance with the attached figure.

Tentative Schedule

Year Month	1982			1983		
	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Study Activities						
Collection of relevant information and field survey in Thailand						
Analysis and formulation of a research plan in Japan						
Explanation of draft final report						
Reports				D.R.		^A F.R.
Remarks	D.R.: Draft Final Report			F.R.: Final Report		

Thai Participants

1. Dr. Thalerng Thamrong-Nawasawat Under-Secretary of State,
Ministry of Agriculture & Cooperatives,
YOAC.
2. Mr. Yookti Satikaphuti Deputy Under-Secretary of State,
YOAC.
3. Dr. Kawee Jutikul Dean, Faculty of Agriculture,
Khon Kaen University.
4. Dr. Tanongchit Wongsiri Deputy Director-General,
Department of Agriculture, YOAC.
5. Mr. Sanan Rimvani Deputy Director-General,
Department of Land Development, YOAC.
6. Mr. Vorasak Pakdee Director, Planning Div.,
Department of Agricultural Extension,
YOAC.
7. Mr. Chote Sovipakit Director, Foreign Agricultural
Relations Div., Office of the
Under-Secretary of State, YOAC.
8. Mr. Somphong Patanavichaiporn Department of Technical and
Economic Cooperation, (DTEC).
DTEC.
9. Mr. Sutin Susila Department of Agricultural Extension,
YOAC.
10. Mr. Anusorn Paaksarasri Department of Land Development,
YOAC.
11. Miss Pachongchit Boonrat Foreign Agricultural Relations Div.,
Office of the Under-Secretary of
State, YOAC.
12. Miss Savanee Isarankura Foreign Agricultural Relations Div.,
Office of the Under-Secretary of
State, YOAC.
13. Mrs. Nisa Shenakul Foreign Agricultural Relations Div.,
Office of the Under-Secretary of
State, YOAC.
14. Mr. Kasem Prasutsangchan Foreign Agricultural Relations Div.,
Office of the Under-Secretary of
State, YOAC.
15. Mr. Yukio Ohata Attached to the Ministry of Agriculture &
Cooperatives, (YOAC).

Japanese Participants

Japanese Team

1. Mr. Kazuyoshi UEMOTO Leader, Chief of General Affairs Section,
Development Cooperation Div.,
Economic Cooperation Bureau,
Ministry of Foreign Affairs.
2. Dr. Sadao HATTA Chief Researcher, Planning and Survey
Section, Tropical Agricultural Research
Center, Ministry of Agriculture,
Forestry & Fisheries, (MAFF).
3. Dr. Michio ARARAGI Chief of Soils & Microorganisms Section,
Second Environment Dept., Kyushu
Agriculture Experiment Station, (MAFF).
4. Mr. Shuhei SEYAMA Official, International Cooperation Div.,
International Affairs Dept.,
Economic Affairs Bureau, MAFF.
5. Mr. Kazuo SUDO Official, Technical Affairs Div.,
Agricultural, Forestry & Fisheries
Planning and Survey Dept., Japan
International Cooperation Agency.

Embassy of Japan

6. Mr. Minoru KUBOTA Counsellor
7. Mr. Hitoshi MIYAKE First Secretary

1. Minutes of Meeting

MINUTES OF MEETING
OF
SCOPE OF WORKS FOR THE FEASIBILITY STUDY
ON
THE MAE CHANG IRRIGATION PROJECT
IN THE KINGDOM OF THAILAND

1. In pursuance to the Summary Record of Discussion between the Thai and Japanese delegation in July 1982, the Government of Japan has dispatched a Preliminary Survey Team for the feasibility study on the Mae Chang Irrigation Project from 20th October to 6th November 1982, through the Japan International Cooperation Agency (JICA), the official agency responsible for the Government of Japan.
2. The Preliminary Survey Team headed by Mr.Minoru MINE, Director of Land Improvement Engineering Service Center, Ministry of Agriculture, Forestry and Fisheries, and the Thai officials concerned headed by Mr.Boonthai OTAGANONTA, Chief Civil Engineer, Royal Irrigation Department, Ministry of Agriculture and Cooperatives, had a series of discussion and exchanged their views in the field and also Bangkok office on the Scope of Works for the feasibility study prepared by JICA through collecting first-hand information survey in the project area.

As a result of the discussions, both sides agreed the Scope of Works (refer to the Attachment 1).

3. Both sides agreed to set up the resettlement programme as an item seperately from Chapter III-2-(1)&(4).
4. In additional to the Undertaking of the Government of Thailand, RID is ready to undertake following survey by the request from feasibility study team.

(1) Topographical survey

1.1 Following additional survey should be conducted by the beginning of the following feasibility study.

a. Check of the height in elevation of the maps between S.D. 23210 A.M. and Code. 18914

1.2 Additional survey by the proposed date in accordance with the necessity and finding of the feasibility study.

a. Topographical map of the alternative dam site scale of 1:1,000

b. Longitudinal survey of the alternative dam center

c. Borrow-pit area for embankment

d. Resettlement area

(2) Geological and soil mechanical survey

2.1 Additional geological and soil mechanical survey on the proposed dam site in accordance with the necessity and finding of the following feasibility study.

2.2 Sampling and laboratory investigation on the embankment-material.

2.3 Geological and soil mechanical survey on the alternative dam site concerned to the (1.2) above mentioned.

---- Number and specifications are expected as that of proposed dam site ----

(3) Land acquisition and compensation

Survey of the No. of houses, land acreage and public facilities on proposed reservoir area.

(4) Additional survey related to the project

5. Thai side eagerly requested to Japanese survey team following items at the joint meeting :

- (1) To accomodate two more counterparts in the course of Home Office Works so as to ensure the technology transference.
- (2) To provide a Dutch Cone Penetrometer (capacity 2 ton, TS-291) to carry out additional geological survey on the dam site and also borrow-pit area.

Attachment

1. Scope of Works for the Feasibility Study
2. Tentative Work Schedule
3. List of Attendants

Bangkok

4th November 1982

Minoru Mine

Mr. Minoru MINE
Leader of the Preliminary
Survey Team for the
Mae Chang Irrigation Project

Sunthorn Ruanglek

Mr. Sunthorn RUANGLEK
Director General
Royal Irrigation Department
Ministry of Agriculture and
Cooperatives

SCOPE OF WORKS FOR THE FEASIBILITY STUDY ON THE MAE CHANG
IRRIGATION PROJECT
IN THE KINGDOM OF THAILAND

I. Introduction

In response to the request of the Government, the Kingdom of Thailand (hereinafter referred to as " the Government "), the Government of Japan has decided to undertake the feasibility study on the Mae Chang Irrigation Project (hereinafter referred to as " the Study "), within the general framework of technical cooperation between Japan and Thailand which is set forth in the Agreement on Technical Cooperation between the Government of the Kingdom of Thailand signed on 5 November 1981.

Accordingly, the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation programme of the Government of Japan will undertake the study in accordance with the relevant laws and regulations in force in Japan, in cooperation with Royal Irrigation Department, Ministry of Agriculture and Cooperatives and other authorities concerned.

The Scope of Works is prepared on the basis of the results obtained from the preliminary survey for the Study, describing the items to be studied, implementation schedule, services and facilities to be provided by the Government for the smooth execution of the Study.

This indicates the outline of essential features of the feasibility study which is to be carried out in close cooperation with the Government and its authorities concerned. The area for the Study of the proposed irrigation project would be about 16,000 hectares in gross.

II. Objectives of the Study

The objectives of the study will be :

1. to formulate an irrigation project and to testify the technical and economic feasibility of the project, and
2. to transfer the technology to Thai counterpart personnel in the course of the Study.

III. Outline of the Study

The activities to be undertaken by the Team will be divided into two stages :

- (1) Field Works in Thailand
- (2) Home Office Works in Japan

1. Field Works

The field works will cover the following :

- (1) Collection and review of the relevant existing data and information including :
 - a. Topography
 - b. Meteorology
 - c. Hydrology
 - d. Geology and Geohydrology
 - e. Soil
 - f. Irrigation and Drainage
 - g. Agriculture ;
 - i. present land use
 - ii. land ownership
 - iii. present cropping pattern
 - iv. crop products

- v. farm economy
- vi. farm labour balance

- h. Agro and regional economy and institution
- i. Environmental aspect
- j. Flood control
- k. Vegetation
- l. Others

(2) Field survey in the project area including the following items :

- a. Topographical survey
- b. Meteorological survey
- c. Hydrological survey
- d. Geological and Geohydrological survey
- e. Soil and land classification survey
- f. Socio-economic survey
- h. Agricultural survey
- i. Regional economic and agro-institutional survey
- j. Flood control survey
- k. Construction material and cost survey
- l. Other survey including resettlement

(3) Selection and delineation of the project area on the basis of review of data, informations and field survey.

(4) Determination of the basic items for the project planning including :

- a. Project area
- b. Land use
- c. Cropping pattern
- d. Water requirement
- e. Type of dam
- f. Irrigation and drainage canal networks and facilities
- g. Estimation of yield

- h. Agro-institutional plan
- i. Alternative study

2. Home Office Works

Based on the results of the field works, the home office works will be carried out for the study including :

- (1) Formulation of the integrated development plan for the project
- (2) Pre-design of the major structure for the project
- (3) Preparation of the implementation schedule
- (4) Estimation of the project cost and benefit
- (5) Evaluation of the project
- (6) Operation and Maintenance

IV. Work Schedule

The Study will be executed in accordance with the attached tentative work schedule (attachment 2).

V. Reports

The following reports will be prepared and submitted to the Government :

- (1) Plan of Operation

Thirty (30) copies in English at the commencement of the field survey.

- (2) Field Report

Thirty (30) copies in English at the end of the first term field survey.

(3) Interim Report

Thirty (30) copies in English at the end of the second term field survey.

(4) Draft Report

Thirty (30) copies in English within one (1) month after the end of the home office works.

(5) Final Report and Summary Report

Hundred (100) copies in English within two (2) months after receiving the comments of the Government on Draft Report.

VI. Undertaking of the Government

In accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand, the Government of Thailand shall accord privileges, immunities and other benefits to the Japanese team and, through the authorities concerned, take necessary measures to facilitate smooth conduct of the Study

1. Royal Irrigation Department (RID) shall provide the following :

(1) Available data and information related to the Study

(2) Counterpart personnel :

- a. General Planning Engineer
- b. Irrigation and Drainage Engineer
- c. Foundation Engineer
- d. Hydrologist
- e. Soil Mechanical Engineer
- f. Soil Specialist (Agricultural Soil)
- g. Agronomist

- h. Agro-economist
- i. Agro-institutional Expert
- j. Construction Planning & Cost Engineer

The number of counterpart personnel and their respective assignment should be decided by the consultation of the team with Thai authorities concerned prior to conducting the survey.

- (3) Suitable office space (Bangkok and Lampang)
 - (4) Appropriate number of vehicles with driver in the project area
2. RID shall make necessary arrangements with proper agencies concerned for the followings :
- (1) To ensure the safety of the study team
 - (2) To secure permission for entry into private properties and other areas necessary for the conduct of the Study
 - (3) To exempt the study team from taxes, duties, fees and other charges on machinery, equipment and other materials brought into Thailand for the conduct of the Study
 - (4) To secure permission to take out all data and documents related to the Study from Thailand to Japan by the study team

VII. Undertaking of the JICA

The JICA shall, in accordance with the relevant laws and regulations in force in Japan, take the following necessary measures to conduct the cooperation :

- (1) The JICA shall, at its own expense, dispatch Japanese consultants as the study team in accordance with the attached tentative work schedule, and
- (2) The JICA shall, at its own expense, receive a Thai counterpart personnel connected with the Study for technical training in Japan

in accordance with the normal procedures under the Colombo Plan
Technical Cooperation Scheme.

Tentative Work Schedule

1. First term field survey
2. Second term field survey
 - (1) First term home office work
 - (2) Second term home office work

Items	Year	1983												1984		
	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
1. Field works			1				2									
2. Home office works						(1)				(2)						
3. Submission of reports		▲ P.O	▲ F.R ¹				▲ P.O	▲ I.R				▲ D.R				▲ F.R ²

- P.O Plan of Operation
- F.R¹.... Field Report
- I.R Interim Report
- D.R Draft Report
- F.R².... Final Report

MINUTES OF MEETING
OF
THE SCOPE OF WORKS FOR THE FEASIBILITY STUDY
ON
THE LOWER NORTHEAST MEDIUM SCALE IRRIGATION PACKAGE PROJECT
IN THE KINGDOM OF THAILAND

1. In pursurance to the Summary Record of Discussion between the Thai and Japanese delegation in July 1982, the Government of Japan has dispatched a Preliminary Survey Team for the feasibility study on the Lower Northeast Irrigation Package Project from 16th November to 3rd December 1982, through the Japan International Cooperation Agency (JICA), the official agency responsible for the Government of Japan.
2. The Preliminary Survey Team headed by Mr. Ryoichi SASAKI, Deputy Director, Construction Dept., Kanto Agricultural Administration Bureau, Ministry of Agriculture, Forestry and Fisheries, and the Thai officials concerned headed by Dr. Boonyok VADHANAPHUTI, Director, Project Planning Div., Royal Irrigation Dept., Ministry of Agriculture and Cooperatives, had a series of discussions and exchanged their views in the field and also in the Bangkok office on the Scope of Work for the feasibility study prepared by JICA through collecting first-hand information regarding the project.

As a result of the discussions, both sides agreed on the Scope of Work (refer to the Attachment 1)

3. The Japanese side presented the opinion that in selecting the first priority sub-project, it would be advantageous to accord higher priority to "small-medium" scale projects.

The Thai side responded in line with their project proposal and stressed the principle that selection should be carried out based on the findings of the overall basin study in close consultation between the both sides. Accordingly, out of 13 proposed sub-projects, the Hwai Room, the smallest, was withdrawn from the project list and the words, "with main emphasis on the small medium ones" in II-2 of the scope of work were deleted.

4. Both sides agreed on the importance of close collaboration between the study team and RID and other Thai authorities concerned throughout the Study, especially in the phase of sub-project selection.
5. Both sides agreed that a resettlement programme should play a very important role in implementing the project and appropriate attention should be paid to this facet. An item on resettlement was added in Chapter III-2.

6. The Thai side stressed the importance of the criteria/guidelines and urged that a report should be prepared on the criteria/guidelines. It was agreed that one hundred (100) copies of appendix about the criteria/guidelines should be submitted.
7. Both sides agreed that the following surveys would be carried out by Royal Irrigation Department.

(1) Topographical Survey

- 1.1 Topographical maps of the selected sub-projects with appropriate scale and contour interval. The maps should show sub-project service areas and reservoir areas.
- 1.2 The following surveys in accordance with the necessity and findings of the feasibility study.
 - a. Topographical maps of the alternative dam sites with appropriate scales
 - b. Cross sectional surveys along the alternative dam axis
 - c. Topographical maps of borrow-pit areas for embankment material

(2) Geological and soil mechanical surveys

- 2.1 Geological and soil mechanical surveys and testing of the foundation of the proposed dam sites in accordance with the necessity and findings of the feasibility study
- 2.2 Sampling and laboratory investigation of the embankment material
- 2.3 Geological and soil mechanical surveys on the alternative dam sites in accordance with the necessity in relation to (1) 1.2 in the above

(3) Land acquisition and compensation

Survey including : affected households, lands and public facilities in the proposed reservoir areas

(4) Additional survey, if necessary, related to the feasibility study

8. The Thai side strongly requested to the Japanese survey team ;

- (1) To accomodate more than two counterparts in the course of Home Office Work so as to ensure transfer of technology and concept of project formulation
- (2) To dispatch a qualified engineer to make instruction/ guidance on map compilation in connection with this project

Attachment

1. Scope of Work for the Feasibility Study
2. Tentative Working Schedule
3. List of Attendants

Done in Bangkok on the
1st December 1982

R. Sasaki

Mr. Ryoichi SASAKI
Leader of the Preliminary
Survey Team for the
Lower Northeast Irrigation
Package Project

Sunthorn Ruanglek

Mr. Sunthorn RUANGLEK
Director General
Royal Irrigation Department
Ministry of Agriculture
and Cooperatives

**Scope of Work for the Feasibility Study on the Lower
Northeast Medium Scale Irrigation Package Project
In the Kingdom of Thailand**

1. Introduction

1. Profile of the Project

In response to the request of the Government of the Kingdom of Thailand, the Government of Japan has decided to undertake the feasibility study on the Lower Northeast Medium Scale Irrigation Package Project (hereinafter referred to as "the Study"), within the general framework of technical cooperation between Japan and Thailand which is set forth in the Agreement of Technical Cooperation between the Government of Japan and the Government of the Kingdom of Thailand signed on 5th November 1981.

The Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will accordingly undertake the study in accordance with the relevant laws and regulations in force in Japan, and in close cooperation with Royal Irrigation Department, Ministry of Agriculture and Cooperatives, and other authorities concerned.

The Scope of Work is prepared on the basis of the results obtained from the preliminary survey for the Study, and describes the areas to be studied, the working schedule to be followed, services and facilities to be provided by the Thai Government, and other necessary arrangements for the smooth execution of the Study.

This is to indicate the outline of essential features of the Study which is to be carried out in close cooperation with the Thai Government and its authorities concerned.

This package project consists of about 12 sub-projects covering a total benefited area of about 26,000 ha in the two sub-basins of the Lam Plai Mat and the Lam Chi Noi, principle tributaries of the Mue river.

2. Phasing of the Study

The Study will be carried out in two phases, Study A and Study B, which are shown as follows:

Study A (A) to conduct the overall basin study of the two sub-basins

Study B (B) to conduct the feasibility study on the first priority sub-projects (hereinafter referred to as "the Package I") which will be selected through the Study (A).

II. Objectives of the Study

The objectives of the Study will be:

1. to prepare the water resources development plan for the two sub-basins, (A)
2. to identify the first priority sub-projects (Package I), (A)
3. to undertake the feasibility study of the Package I, (B)
4. to recommend the basic and processed data obtained through the Study with a view to formulating the criteria/guidelines for project preparation which will help to rationalize the feasibility study of the similar projects, especially on the Small-Medium Projects in the Northeast, (B), and
5. to undertake on-the-job training of the Thai Government's officials in the course of the study (A and B)

III. Outline of the Study

The activities to be undertaken in the Study will be carried out in two stages:

- (1) Field Work in Thailand
- (2) Home Office Work in Japan

1. Field Work

The Field work will cover the following:

- (1) Collection and review of the relevant existing data and information including (A and B):
 - a. Topography
 - b. Meteorology
 - c. Hydrology
 - d. Geology and Geohydrology
 - e. Soil

- f. Irrigation and Drainage
- g. Agriculture
- h. Agricultural and regional economy and institution
- i. Flood control
- j. Existing design criteria and procedures for irrigation projects
- k. Others

(2) Field survey in the project area including the following items:

- a. Topographical survey (A and B)
- b. Meteorological survey (A and B)
- c. Hydrological survey (A and B)
- d. Geological and geohydrological survey (A and B)
- e. Soil and land classification survey (B)
- f. Socio-economic survey (A and B)
- g. Agricultural survey (A and B)
- h. Regional economic and agro-institutional survey (A and B)
- i. Flood control survey (A and B)
- j. Construction material and cost survey (A and B)
- k. Other survey including resettlement (A and B)

(3) Selection and delineation of the project area based on the review of data and information, and the results of the field survey.
(A and B)

(4) Determination of the basic items for the project planning including:
(B)

- a. Project area
- b. Land use and cropping pattern
- c. Water requirements
- d. Dam Planning and design in view of irrigation, flood control, hydro-power development potential and other potential water uses.
- e. Irrigation and drainage canal networks and facilities
- f. Estimation of yields
- g. Agro-institutional plan
- h. Resettlement programme
- i. Social-institutional facilities
- j. Alternative study

2. Home Office Work

Based on the results of the field work, the home office work will be carried out including:

- (1) Formulation of the sub-basin development programme and identification of the first priority sub-projects (Package 1) (A)
- (2) Formulation of the overall irrigation development plan for the project area, including alternative development plans and a stage development plan (B)
- (3) Preliminary design of the major structure of the project (B)
- (4) Preparation of the implementation schedule (B)
- (5) Estimation of the project costs and benefits (A and B)
- (6) Evaluation of the project (B)
- (7) Operation and Maintenance (B)
- (8) Recommendation (A and B)

IV. Working Schedule

The Study will be executed in accordance with the attached tentative working schedule. (Attachment 2)

V. Reports

The following reports will be prepared and submitted to the Government of Thailand:

- (1) Plan of Operation (A and B)

Thirty (30) copies in English at the commencement of the field work

- (2) Interim Report (A and B)

Thirty (30) copies in English at the end of the field work

- (3) Preliminary Report (A)

Fifty (50) copies in English at the end of the Study

- (4) Draft Report (B)

Thirty (30) copies in English within six (6) weeks after the end of the home office work

(5) Final Report and Executive Summary Report (B)

One hundred (100) copies of Final Report and Executive Summary Report, and one hundred (100) copies of appendix about the criteria/guidelines in English within six (6) weeks after receiving the comments of the Government of Thailand on the Draft Report.

VI. Undertaking of the Government of Thailand

In accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of Thailand, the latter shall accord privileges, immunities and other benefits to the Japanese team and, through the authorities concerned, take necessary measures to facilitate smooth conduct of the Study.

1. Royal Irrigation Department (RID) shall provide the following:

(1) Available data and information related to the Study

(2) Counterpart personnel:

- a. General Planning Engineer
- b. Irrigation and Drainage Engineer
- c. Geologist
- d. Hydrologist
- e. Soil Mechanical Engineer
- f. Soil Scientist
- g. Agronomist
- h. Agro-economist/Agro-institutional expert
- i. Operation and Maintenance Engineer
- j. Construction Planning and Cost Engineer
- k. Dam Engineer
- l. Survey Engineer

The number of counterpart personnel and their respective assignment should be decided by RID in consultation with the study team.

(3) Suitable office space (Bangkok and Nakhon Ratchasima)

(4) Appropriate number of vehicles with drivers in the project area

2. RID shall make necessary arrangements with proper agencies concerned for the followings:

- (1) To ensure the safety of the study team
- (2) To secure permission for entry into private properties and other areas necessary for the conduct of the Study
- (3) To exempt the study team from taxes, duties, fees and other charges on machinery, equipment and other materials brought into Thailand for the conduct of the Study
- (4) To secure permission to take all data and documents related to the Study out of Thailand to Japan by the study team.

VII. Undertaking of the JICA

The JICA shall, in accordance with the relevant laws and regulations in force in Japan, take the following necessary measures to conduct the cooperation:

- (1) The JICA shall, at its own expenses, dispatch the study team in accordance with the attached tentative working schedule, and
- (2) The JICA shall, at its own expenses, receive Thai counterpart personnel connected with the Study for technical training in Japan in accordance with the normal procedures under the Colombo Plan Technical Cooperation Scheme.

Attachment 2

- 1. first term field work (A)
- 2. second term field work (B)
- (1) first term home office work (A)
- (2) second term home office work (B)

Tentative Working Schedule

Items	1983												1984							
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	
Field Work		1							2											
Home Office Work						(1)								(2)						
Submission of Reports	Δ	Δ					Δ	Δ		Δ	Δ						Δ	Δ	Δ	Δ
Remarks	P.O. I.R.		Study A				P.R. P.O.	Study B		I.R.						D.R.	F.R.			

- P.O. ----- Plan of Operation
- P.R. ----- Preliminary Report
- I.R. ----- Interim Report
- D.R. ----- Draft Report
- F.R. ----- Final Report

List of Attendants

Place : Conference Room of RID
Time : A.M. 10:00-12:00

(The Thai Side)

- | | |
|-------------------------------|--|
| 1. Mr.Damrong Jaraswathana | Director, Hydrology Division |
| 2. Dr.Boonyok Vadhanaphuti | Director, Project Planning Division |
| 3. Mr.Charnchai Klinhom | Chief, Small Scale Project Planning Section, Project Planning Division |
| 4. Mr.Monkol Kalayaruen | Planning Engineer, Project Planning Division |
| 5. Mr.Amphai Multhitacharoen | Chief, Geological Investigation Section, soil & Geology Division |
| 6. Mr.Dacha Luangpitakchumpol | Geologist, Soil & Geology Division |
| 7. Mr.Katsuhikok KIMURA | Senior Expert, Colombo Plan |
| 8. Mr.Takeshi HIYAZAKI | Expert, Colombo Plan |
| 9. Mr.Nikom Isrankura | Chief, Engineering Section, 6th Irrigation Regional Office |
| 10. Mr.Sirirat Temyanond | Programming Coord. & Budget Division |
| 11. Mr.Benchai Giathigong | O & M Division |
| 12. Mr.Suraphong Chuiglom | Engineer, Design Division |

(Preliminary Survey Team)

- | | |
|------------------------|---|
| 1. Mr.Ryoichi SASAKI | Deputy Director, Construction Dept., Kanto Agricultural Administration Bureau, Ministry of Agriculture, Forestry and Fisheries (M.A.F.F.) |
| 2. Mr.Shuhei SEYAMA | Senior Official, International Cooperation Div., International Affairs Bureau, M.A.F.F. |
| 3. Mr.Takami YAMAZAKI | Technical Advisor of Design Div., Construction Dept., Tokai Agricultural Administration Bureau, M.A.F.F. |
| 4. Mr.Yoshinori SATO | Section chief, Yoichi Agricultural Development Office, Otaru Development & Construction Dept., Hokkaido Development Bureau |
| 5. Mr.Norio SHIMADA | Section Chief of Resources Div., Planning Dept., Agricultural Structure Improvement Bureau, M.A.F.F. |
| 6. Mr.Satoshi SUGAWARA | Section Chief of Project Planning Div., Planning Dept., Agricultural Structure Improvement Bureau, M.A.F.F. |
| 7. Mr.Junji TAKAHASHI | Officer, Technical Affairs Div., Agricultural Forestry & Fisheries Planning & Survey Dept., Japan International Cooperation Agency (JICA) |

MINUTES OF THE MEETING

ON SCOPE OF WORK

FOR THE FEASIBILITY STUDY PHASE 1

ON THE COMPREHENSIVE STORAGE FACILITIES DEVELOPMENT PROJECT

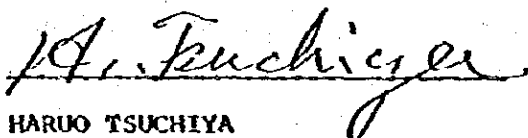
IN THE KINGDOM OF THAILAND

The Preliminary Survey Team on the Feasibility Study Phase 1 on the Comprehensive Storage Facilities Development Project headed by Mr. HARUO TSUCHIYA, Director of Agricultural Forestry & Fisheries Planning and Survey Dept., Japan International Cooperation Agency and Public Warehouse Organization discussed and exchanged their views concerning the draft of Scope of Work prepared by the Preliminary Survey Team.

Both sides agreed the Scope of Work and it was also agreed that PWO would make necessary arrangement with the concerned agencies mentioned in the Scope of Work in order to facilitate the implementation of the Study.

December 22, 1983.

Bangkok, Thailand


HARUO TSUCHIYA


SAVARAJ SACHCHANARGA

Leader Of Preliminary Survey Team Managing Director

Japan International Cooperation Agency Public Warehouse Organization

Agency

Ministry Of Commerce

SCOPE OF WORK

FOR

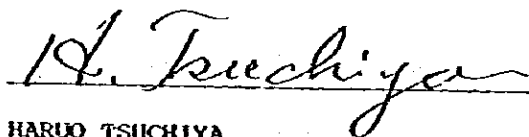
THE FEASIBILITY STUDY PHASE I

ON

THE COMPREHENSIVE STORAGE FACILITIES DEVELOPMENT PROJECT

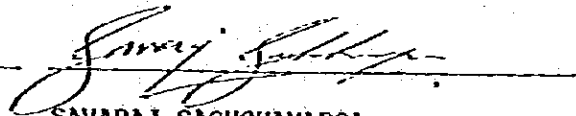
IN

THE KINGDOM OF THAILAND



HARUO TSUCHIYA

Leader of Preliminary Survey Team
Japan International Cooperation
Agency



SAVARAJ SACHCHAMARGA

Managing Director
Public Warehouse Organization
Ministry of Commerce

I. INTRODUCTION

In response to the request of the Government of Thailand (hereinafter referred to as "GOT"), the Government of Japan has decided to conduct the Phase I of the Feasibility Study on the Comprehensive Storage Facilities Development Project (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in close cooperation with the authorities of Thailand.

The Public Warehouse Organization (hereinafter referred to as "PWO") shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangements between JICA and PWO.

This scope of work covers the terms for the phase I study. The scope of work for the phase II study will be discussed between both governments based on the results of the phase I study and concluded after an agreement is reached by the both parties.

II. OBJECTIVE OF THE STUDY

The Study aims at analyzing general conditions concerning storage facilities of agricultural produce in Thailand and identifying problems therein, so that the study results can be referred to as a basis for indicating the direction of the phase II study.

III. OUTLINE OF THE STUDY

The Study will be conducted focusing on the role and function of PWO as well as such agencies concerned as the Department of Cooperatives Promotion (CPD), the Agricultural Cooperation Federation of Thailand (ACFT) the Marketing Organization for Farmers (MOF), the Bank for Agriculture and Agricultural Cooperatives (BAAC) and major non-governmental organizations which are concerned with marketing of commercial agricultural produce. The study area covers whole Thailand centering upon Bangkok. However, the extent of data collection will be limited to the provincial level.

The Study is composed of field survey in Thailand and home office work in Japan as follows.

1. Field Survey

Based on discussions with the agencies concerned, the study team will conduct data collection and survey on the marketing condition to agricultural produce. Study items are summarized as follows:

(1) Policy on Agriculture Development

- 1) Promotion of agriculture production and agro-based industry;
- 2) Price control of agricultural products and other supporting systems for farmers

(2) Progress of ongoing development plans

- 1) Production increase by region
- 2) Marketing facilities
- 3) Enhancement of agricultural supporting activities
- 4) Improvement of transportation system

(3) Agro-Economy

- 1) Socio-agro-economic condition by region
- 2) Agricultural production by region
- 3) Trend of export of agricultural products
- 4) Markets and price of agricultural products

(4) Marketing System for Agricultural Products

- 1) Role and function of P&O
- 2) Role and function of government agencies concerned
- 3) Role and function of non-governmental organizations and their relationship with government agencies
- 4) Marketing mechanism of each kind of agricultural commodities by region
- 5) Scale of facilities managed by marketing organizations and historical record on their handling
- 6) Condition of agro-based industry by region and marketing route of raw materials and processed goods
- 7) Activities of farmer's organizations including marketing cooperatives and producer's association
- 8) Agriculture credit system

2. Home Office Work

Based on the results of the field survey in Thailand, study will be conducted in Japan on the following items:

- (1) Identification and analysis of problems in production, storage and Marketing system of crops
- (2) Analysis on role and function to be borne by PWO and other government agencies
- (3) Analysis on the role and function to be borne by private organizations and their relationship with government organizations
- (4) Identification of alternative plans for the solution of problems in agricultural produce marketing system and recommendation of approaches to their implementation
- (5) Identification of scale and scope of a development plan of storage facilities to be implemented by PWO
- (6) Recommendation on further steps to be taken, including approaches to the phase II study.

IV. WORK SCHEDULE

The Study work will be proceeded according to the tentative work schedule attached.

V. REPORTS

The Study team will prepare and submit the following reports in English to GOT.

- (1) Plan of Operation
Thirty (30) copies at the commencement of the Study
- (2) Progress Report
Thirty (30) copies at the end of the field survey
- (3) Draft Final Report
Fifty (50) copies within one (1) month after the end of the home office work. GOT is requested to provide its comments on the Draft Final Report within one (1) month after the submission of the Draft Final Report.
- (4) Final Report
Fifty (50) copies within two (2) months after receiving comments on the Draft Final Report from GOT.

VI. UNDERTAKINGS OF THE GOVERNMENT OF THAILAND

In accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of Thailand, the latter shall accord privileges, immunities and other benefits to the Japanese team.

- (1) To facilitate smooth conduct of the study, the Government of the Thailand will take necessary measures
 - 1) To provide the safety of the Japanese study team.
 - 2) To permit the members of the Japanese study team to enter, leave and sojourn in the Kingdom of Thailand for the duration of their assignment therein, and exempt them from alien registration requirements and consular fees.
 - 3) To exempt the members of the Japanese study team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into the Kingdom of Thailand for the conduct of the Study.
 - 4) To exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study.
 - 5) To provide the necessary facilities to the Japanese study team for the remittances as well as utilization of funds introduced into the Kingdom of Thailand from Japan in connection with the implementation of the Study.
 - 6) To secure permission for entry into private properties or restricted area for the conduct of the Study.
 - 7) To secure permission to take all data and documents related to the Study including photographs out of the Kingdom of Thailand to Japan by the Japanese study team.
- (2) The Government of Thailand shall bear claims, if any arises, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or wilful misconduct on the part of the members of the Japanese study team.
- (3) PWO shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

(4) PWO shall, at its own expense, provide the Japanese study team with the following, in cooperation with other agencies concerned, if necessary.

- 1) available data and information related to the Study
- 2) counterpart personnel
- 3) suitable office with necessary equipment and furniture

VII. UNDERTAKINGS OF THE GOVERNMENT OF JAPAN

The Government of Japan shall, in accordance with the relevant laws and regulations in force in Japan, take the following necessary measures to conduct the cooperation:

- (1) To dispatch, at its own expenses, the study team in accordance with the attached tentative work schedule, and
- (2) To receive, at its own expenses, Thai counterpart personnel connected with the Study for technical training in Japan in accordance with the normal procedures under the Colombo Plan Technical Cooperation Scheme.

VIII. JICA and PWO will consult with each other in respect of any matter that is not agreed upon in this document and may arise from or in connection with the Study.

Tentative work schedule (PHASE 1)

Month	1	2	3	4	5	6	7	8	9
Item									
Field Survey		▬							
Home Office Work			▬	▬					
Submission of Report	△	△			△			△	
	P.O.	P.R.			D.F.R.			F.R.	

Remarks:

- P.O.: Plan of Operation
- P.R.: Progress Report
- D.F.R.: Draft Final Report
- F.R.: Final Report

中 近 東

- P R O C E S - V E R B A L -

Selon le Procès-Verbal établi par les représentants de l'Agence Japonaise de Coopération Internationale (ci-après dénommée JICA) d'une part, et du Ministère de l'Agriculture et de la Révolution Agraire (ci-après dénommée MARA) d'autre part, au mois d'Octobre 1982, et sur invitation officielle du MARA, une mission d'études préliminaires de JICA, dirigée par Monsieur SEKAI NISHINO, a séjourné en Algérie du 11 au 24 Mars 1983.

La mission Japonaise a eu des entretiens avec la partie Algérienne dans un climat d'amitié et de franchise avec Monsieur BOUZIANE Mustapha Directeur Général de la Révolution Agraire et de l'Aménagement Rural a sa tête, les entretiens ont porté sur l'exécution de l'étude de faisabilité dans la région du Lac Fetzara et les deux parties se sont mises d'accord sur les termes de référence annexés au présent procès verbal.

Après échanges de points de vue, les deux parties se sont mises d'accord sur les points suivants :

1°) Le MARA prend toute la responsabilité de la coordination relative à l'étude de faisabilité entre les Ministères concernés tels que le Ministère de l'Hydraulique ainsi que les autres parties intéressées.

2°) Le MARA fournira les photos aériennes indispensables pour la confection d'une carte topographique nécessaire à l'étude de faisabilité

Ces photos aériennes seront remises à l'équipe Japonaise dès le démarrage de l'étude prévu pour le mois de Juin 1983.

Les photos aériennes doivent être mises à la disposition de cette mission pour l'exécution technique au Japon.

3°) L'équipe Japonaise remettra au MARA les informations suivantes dans les meilleurs délais, conformément au paragraphe VI

- Durée de l'étude en mois
- Nombre d'experts par spécialité
- Durée d'intervention de chaque expert
- en Algérie
- au Japon
- Nature et nombre du matériel à importer en Algérie dans le cadre de l'étude.
- Nombre de véhicules
- Nombre d'ingénieurs Algériens
- Nombre d'employés nécessaires pour l'étude et durée
- Nombre d'interprètes et durée
- Nombre de bureaux
- Nombre de logements pour les experts Japonais.

4°) Le MARA mettra à la disposition de l'équipe Japonaise un laboratoire pour l'analyse du sol des terrains destinés à l'étude.

5°) Pour la bonne réalisation de l'étude le Ministre de l'Agriculture et de la Révolution Agraire souhaite que l'équipe japonaise ramène les véhicules nécessaires ainsi que le matériel de reproduction.

- Le MARA manifeste sa bonne volonté en voulant bien mettre à la disposition de l'équipe Japonaise des assistants Algériens pour une exécution efficace de l'étude précitée.

- La mission d'étude préliminaire donne son accord à cette proposition.

Fait à Alger, le 23 Mars 1983.

Mission Japonaise

Signé :



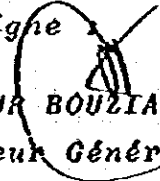
MONSIEUR SEKAI NISHINO

Chef de la mission d'étude préliminaire de l'Agence Japonaise de Coopération Internationale.

(JICA)

MINISTRE DE L'AGRICULTURE
ET DE LA REVOLUTION AGRAIRE

Signé :



MONSIEUR BOUZIANE MUSTAPHA
Directeur Général de la Révolution Agraire et de l'Aménagement Rural.

TERMES DE REFERENCE
DE
L'ETUDE DE FAISABILITE
DU
PROJET D'AMENAGEMENT AGRICOLE
DE
LA REGION PERIPHERIQUE
DU
LAC FETZARA
EN REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE

I. INTRODUCTION

Selon le procès-verbal établi entre les gouvernements japonais et algérien au mois d'Octobre 1982, le gouvernement du Japon s'est engagé à faire une Etude de Faisabilité du Projet d'Aménagement Agricole de la région périphérique du Lac Fetzara (ci-dessus dénommé le Projet), dans le cadre de la coopération technique.

L'agence gouvernementale chargée de l'exécution des programmes de coopération technique du gouvernement japonais, l'A.J.C.I. (ci-après dénommée JICA) entreprendra cette étude avec la collaboration du Ministère de l'Agriculture (MARA) et des organismes algériens concernés, conformément aux lois et règlements en vigueur au Japon.

II. OBJET DES ETUDES

L'objectif de ces études est d'étudier la faisabilité technique et économique du projet de développement agricole dans la région du Lac Fetzara (Superficie qui fait l'objet de l'Etude de Faisabilité: environ 24.000 ha) dont le but est de favoriser la politique de développement de la production agricole. Cette étude doit aussi contribuer au transfert des expériences et des technologies entre les deux pays.

III. DEMARCHES DES ETUDES

L'Etude se fera en deux étapes; l'Etude sur le terrain et les travaux à effectuer au Japon.

1. Etudes sur le terrain

La mission recueillera les informations suivantes, nécessaires à la réalisation du projet:

- (1) Topographiques et géologiques (géologie des sites des principaux ouvrages, etc.)
- (2) Météorologiques et hydrologiques (précipitations, température, débit du fleuve, eaux souterraines, Lac, etc.)
- (3) Agrologiques (degré de salinité, teneur en matières organiques)
- (4) Sur l'irrigation et le drainage (irrigation, évacuation des eaux, eaux agricoles, etc.)
- (5) Socio-économiques (économie régionale, agro-économie, circulation des produits, marchés, système foncier, etc.)

- (6) Agronomiques (système de culture, utilisation des terres, produits agricoles, établissement agricole, élevage, techniques agricoles, etc.)
- (7) Sur le programme d'établissement (système de drainage et d'irrigation, réseaux routiers, installations joints, etc.)
- (8) Sur les programmes d'exploitation agricole et d'utilisation des terres.
- (9) Sur les matériaux et matériels de construction (acquisition des matériaux, coût d'unité, etc.)
- (10) Sur l'assistance agricole et l'organisation de gestion (organisation de gestion agricole, institution financière agricole, organisation administrative, etc.)
- (11) Sur les infrastructures sociales (transports, service des eaux potables, etc.)
- (12) Divers

2. Travaux à effectuer au Japon

Un planning pour le développement du projet, basé sur les résultats fournis par les études sur le terrain, sera établi.

- (1) Etablissement des programmes d'irrigation et de drainage, d'installation, de gestion agricole, d'entretien et de gestion des installations.
- (2) Plan préliminaire des constructions principales et des autres installations.
- (3) Etablissement du programme d'exécution des travaux.
- (4) Devis des coûts et de la commodité des travaux.
- (5) Estimation économique (analyse économique, analyse financière).

IV. CALENDRIER DES TRAVAUX

L'Etude sera exécutée selon le calendrier provisoire annexé.

V. RAPPORTS

Les rapports suivants seront soumis en français à la partie algérienne.

1. Plan d'opération

Trente (30) copies de ce rapport seront soumises lors du démarrage des études sur le terrain.

2. Rapport progressif

Trente (30) copies de ce rapport seront soumises à la fin de la première étude sur le terrain.

3. Rapport intérimaire

Trente (30) copies de ce rapport seront soumises à la fin de la deuxième étude sur le terrain. -

4. Projet du Rapport Final

Trente (30) copies de ce rapport seront soumises après les travaux au Japon.

La partie algérienne soumettra ses observations sur le rapport par l'intermédiaire de l'Ambassade du Japon en Algérie, dans le mois qui suit la réception du Projet du Rapport Final .

5. Rapport Final

Cinquante (50) copies du Rapport Final seront soumises dans les deux mois qui suivent la réception des observations faites par la partie Algérienne.

VI. DISPOSITIONS A PRENDRE PAR LA PARTIE ALGERIENNE

Afin de favoriser la bonne exécution des études, la partie Algérienne s'engage selon la réglementation en vigueur en Algérie :

1. à fournir à l'équipe Japonaise et à autoriser leur communication au Japon en vue des études, toutes les données disponibles et autres données relatives à l'exécution des études
2. à arranger la visite de la mission dans les Ministères concernés, les administrations régionales et les organisations intéressées, et à assurer une collaboration étroite avec les autorités concernées.
3. à offrir les services suivants aux membres de l'équipe,
 - (1) le personnel d'encadrement algérien (l'effectif et la durée seront décidés après discussion avec les membres de l'équipe).
 - (2) un bureau équipe à ANNABA et un autre à ALGER si possible
 - (3) des interprètes (anglais, français), des employés, des véhicules (avec chauffeurs) nécessaires à l'exécution des études et des postes de radio-communication utilisés sur les terrain d'Etude.
4. à offrir les facilités suivantes aux membres de l'équipe,
 - (1) le logement des membres de l'équipe sur le terrain de l'Etude à ANNABA.
 - (2) l'embauche des ouvriers nécessaires à l'Etude.
 - (3) les soins médicaux aux membres de l'équipe.

5. à fournir aux membres de l'équipe japonaise des cartes d'identité et autres documents nécessaires à l'exécution de l'Etude.
6. à donner l'autorisation d'entrer sur les terrains soit publics, soit privés destinés à l'Etude.
7. à assurer la sécurité de l'équipe japonaise.
8. à exonérer les membres de l'équipe japonaise des taxes, des droits de douanes et autres charges imposés sur les machines, les équipements et autres matériaux nécessaires à l'exécution de l'Etude, ainsi que sur les effets personnels des membres de l'équipe japonaise, et à en faciliter le dédouanement.
9. à faciliter la remise et l'utilisation des fonds importés du Japon en Algérie pour la réalisation de l'Etude, et à exonérer les membres de l'équipe japonaise des diverses taxations sur les rémunérations versées par le gouvernement du Japon.
10. à assumer la responsabilité relative aux réclamations faites à la suite d'accidents des membres de l'équipe japonaise, survenus au cours de, ou en relation avec la réalisation de l'Etude, à l'exception de celles faites à la suite d'une négligence grave ou d'une inconduite volontaire de la part des membres.
11. à prendre en général toutes les autres mesures favorables à l'exécution des études.

VII. DISPOSITIONS A PRENDRE PAR LA PARTIE JAPONAISE

Pour atteindre les objectifs de l'Etude, la partie japonaise s'engage;

1. à envoyer une mission technique de spécialistes dans les domaines concernés pour l'exécution de l'Etude.
2. à prendre en charge les frais suivants:
 - (1) les frais de voyage de la mission jusqu'en Algérie et dans le pays même.
 - (2) les frais de logement, les frais de séjour et les frais médicaux en Algérie.
 - (3) les frais d'embauche des ouvriers nécessaires à l'Etude.
3. à transporter en Algérie des matériaux nécessaires à l'exécution de l'Etude.
4. à transférer les connaissances techniques aux experts algériens engagés dans le Projet.

議事録（仮訳）

西野世界氏を代表とする日本制事前調査団は、1982年10月に日本国際協力事業団（JICA）とアルジェリア農業農地革命省（MARA）の間で合意された議事録に基づきMARAの公式招請のもとに1983年3月11日から3月24日までアルジェリア国に滞在した。

日本制調査団は農業農地革命省局長Bouziane Mustapha氏を代表とするアルジェリア制代表団とフェツアラ湖周辺農業開発計画フィージビリティ調査の実務について討議し、双方は本議事録に添付されているT/Rについて合意した。又、一連の討議は友好的雰囲気のもとに行われた。

双方は意見交換を行った後、下記の点について合意した。

- 1) MARAはフィージビリティ調査に関する各省間及び関係機関の調整を責任をもって行う。
- 2) MARAはフィージビリティ調査に必要な不可欠な地形図作成のため航空写真を提供する。

この航空写真は1983年6月予定されている調査開始時に日本制チームに提供される。

- 3) 日本制は第M項に関連して

下記の情報をMARAにすみやかに提供する。

- ・ 調査期間
- ・ 分野別専門家の人数
- ・ アルジェリア国および日本国における作業期間
- ・ アルジェリア国に持ちこまれる調査に必要な機材の種類および数
- ・ 車両の数
- ・ アルジェリア人技術者の数
- ・ 調査に必要な誘人数と期間
- ・ 通訳の人数と期間
- ・ 事務所の数
- ・ 日本人専門家の宿泊施設の数

- 4) MARAは調査対象地域の土壌分析を行う実験室を日本制チームに提供する。

- 5) 調査を円滑にすすめるために、農業農地革命省は日本チームが調査に必要な車両および複写機を日本から持ってくることを希望する。

MARAは調査の効果的実務のために、アルジェリア人協力者を日本制チームに提供することを表明。

事前調査団は本提案に合意した。

1983年3月23日 アルジェにて

西野世界

國際協力事業團

事前調査團長

Bouziane Mustapha

農藥農地革命省局長

アルジェリア民主人民共和国フェツアラ湖周辺地域 農業開発計画F/S調査に係るT/R (仮訳)

I. はじめに

日本国政府は1982年10月両国間で合意された議事録に基づきアルジェリア民主人民共和国フェツアラ湖周辺地域農業開発計画(以下「プロジェクト」という)のフィージビリティ調査を、日本国政府の技術協力として実施することとした。

フィージビリティ調査は国際協力事業団(以下「JICA」という。)-日本国政府の技術協力計画実施のための政府機関-が実施機関となり、日本国内関連法規に従い、アルジェリア国農業省及び関係機関の密接な協力を得て、この調査を実施する。

このT/Rは実施されるべき調査の基本的枠組を示すものである。

II. 調査の目的

本件調査の目的はアルジェリア国の農業生産の振興政策に寄与すべく、アンナバ県フェツアラ湖周辺地域(対象面積:約24,000ha)における農業開発プロジェクトの技術的・経済的フィージビリティを調査することにある。

また、本件調査は両国間の経路経験の交換及び技術の移転をもめざしている。

III. 調査の概要

調査はアルジェリア国での現地調査、日本国内での国内作業の二段階からなる。

1. 現地調査

調査団は、上記目的を達成するために必要な、以下の項目について資料収集及び調査を行う。

- (1) 地形・地質(主要構造物地質等)
- (2) 気象・水文(降雨, 気温, 河川流量, 地下水, 湖水等)
- (3) 土壌(塩分濃度, 有機物含量等)
- (4) 水利(排水, 農業用水等)
- (5) 経済社会(地域経済, 農業経済, 市場, 流通, 土地所有等)
- (6) 農業(耕作体系, 土地利用, 作物生産, 農業施設, 畜産, 耕作技術等)
- (7) 施設計画(排水システム, かんがいシステム, 道路網, 関連付帯施設等)
- (8) 営農計画及び土地利用計画
- (9) 建設資材(資材調達, ユニット・コスト等)
- (10) 農業支援・運営組織(農業経営組織, 農業金融, 行政機関等)

00 社会インフラストラクチャー（交通、上水道等）

01 その他必要事項

2. 国内作業

現地調査結果に基づき、以下の項目を含む実施計画を策定し、プロジェクトの技術的・経済的フィージビリティを調査する。

- (1) 事業に含まれる、かんがい排水計画、営農計画施設の維持管理計画等の作成
- (2) 主要構造物、その他施設の予備設計
- (3) 事業実施計画の作成
- (4) 事業のコスト及び便益の見積り
- (5) 経済評価（経済分析、財務分析）

Ⅳ 作業スケジュール

調査は別添の仮工程表に従って実施される。

Ⅴ 報告書

アルジェリア国に対して下記の報告書をフランス語で提出する。

1. Plan of Operation

現地調査作業開始時に 30 部

2. Progress Report

第1次現地調査作業終了時に 30 部

3. Interim Report

第2次現地調査作業終了時に 30 部

4. Draft Final Report

国内作業終了後に 30 部

アルジェリア国に対しては、Draft Final Reportの提出があつた後1か月以内にアルジェの日本国大使館を通じて報告書についてのコメントを提出する。

5. Final Report

アルジェリア国からのコメントを受けた後、2か月以内に 50 部

Ⅵ アルジェリア国側のとるべき措置

調査の円滑な実施を図るためアルジェリア国側は現行法に従って以下の措置をとるものとする。

1. 当該調査の遂行に必要な全ての資料及び情報の提供並びに調査団の国内作業のための日

本への持帰りの許可。

2. 政府関係省庁、地方行政府、その他関係機関への調査団訪問のための手配及びこれら関係当局の密接な協力。
3. 下記事項の調査団への提供
 - (1) 調査団に協力するアルジェリア側カウンターパート（人数及び期間は調査団と協議の上決定する。）
 - (2) アンナバ もし可能ならばアルジェにおける設備付の適当な事務所
 - (3) 調査の遂行に必要な通訳（英語－フランス語）事務員、車輛（運転手を含む）及び調査対象地域において使用する無線通信機器
4. 下記の事項に関する便宜
 - (1) 調査団に対し現地調査－アンナバーにおける宿泊施設の便宜
 - (2) 調査のために必要とされる作業員の備上の手配
 - (3) 必要な場合に、アルジェリア滞在中の調査団に対する医療の手配
5. 調査団に対し身分証明等、調査実施に必要な書類の発給
6. 公有地、私有地を問わず調査対象地への立入り許可
7. 調査団の安全の確保
8. 調査実施に必要な資機材及び日本人調査団員のパーソナルエフェクツに対する諸税、通関税、その他賦課金の免除、並びにこれらの円滑な通関のための便宜
9. 調査実施のために日本からアルジェリア国に持ち込まれる諸資金の引渡及びその使用に便宜をもたらすこと。また日本政府から日本調査団員に対し支払われる報酬に対する各種課税の免除措置。
10. 日本人調査団員に対してアルジェリア国内での任務の遂行中、又は関連業務遂行中の事故について賠償請求が発生した場合は、その責任を負うこと。ただし、その様な賠償請求が日本国調査団員の故意の違法行為又は重大な過失から起つた場合はこの限りでない。
11. その他、調査実施に便宜をもたらすあらゆる措置。

Ⅵ 日本側がとるべき措置

調査の目的達成のため日本側は以下の措置をとるものとする。

1. 調査の実施のため、種々の分野からなる調査団の派遣
2. 以下の経費の負担
 - (1) 調査団のアルジェリア国への派遣旅費及びアルジェリア国内における旅費
 - (2) 調査団のアルジェリア国滞在中の宿泊費、生活費及び医療費
 - (3) 調査に必要な作業員の備上費
3. 調査実施に必要な資機材のアルジェリア国への持込み
4. 本件プロジェクトに参加するアルジェリア国技術者に対する技術の移転

Minutes of Meeting
on
Feasibility Study
on
Cold Storage Chain Development Project
in
Arab Republic of Egypt

In response to the request made by the Government of Arab Republic of Egypt, the Government of Japan dispatched the preliminary study team for the cold storage chain development project from March 21 to April 8, 1982 through Japan International Cooperation Agency, hereinafter referred to as JICA, which is an official agency responsible for executing the technical cooperation programme of the Government of Japan.

The Government of Japan has decided to have JICA carry out a feasibility study on the cold storage chain development project, hereinafter referred to as the Study, on the basis of the report of the preliminary study team.

It is understood that cold storage chain means an efficient arrangement of the distribution system of frozen foods at large involving cold stores, transportation methods and related facilities.

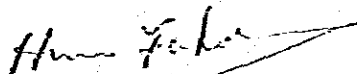
The JICA mission on scope of work for the Study, which stayed in Cairo from June 14 to June 21, 1982, had a series of discussions with the staff of Gerco Co. for Refrigeration

and Engineering, hereinafter referred to as GERCO, and then both sides agreed on the scope of work for the Study as attached hereto.

(Attachments)

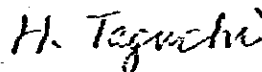
1. Scope of Work for Feasibility Study on Cold Storage Chain Development Project.
2. Items requested by the Mission.
3. List of Attendants.

June 20, 1982



Mr. Hussein Fahmy
Chairman

Gerco Co. for Refrigeration
& Engineering



Mr. Hironobu Taguchi
Leader

Mission on Scope of Work
Japan International
Cooperation Agency

SCOPE OF WORK
FOR
FEASIBILITY STUDY
ON
COLD STORAGE CHAIN DEVELOPMENT PROJECT

I. Objectives of the Study

1. To verify the feasibility of establishing the cold storage chain and formulate the project plan.
2. To transfer technology to counterparts in the course of the Study.

II. Study areas

Cairo, Alexandria, Port-Said and Suez governorates.

III. Objective foods for the Study

Meat, poultry and fish.

IV. Contents of the Study

1. To collect and review relevant data and information on the following items.
 - (a) Cold stores and meat-processing plants only for deboning, cutting and packaging.
 - (b) Ice-making plants in Alexandria.
 - (c) Unloading facilities related to frozen foods at the ports of Alexandria, Port-Said and Suez.

- (d) Transportation methods related to frozen foods.
 - (e) Demand for foods related to cold storage.
 - (f) Local production of foods related to cold storage.
 - (g) Imports of frozen foods.
 - (h) Policies on food supply.
2. To analyze and evaluate the following items.
- (a) Demand and supply trends of foods related to cold storage for until the year 2000.
 - (b) Capacity requirements of cold stores for until the year 2000.
 - (c) Capacity requirements of ice-making plants in Alexandria for until the year 2000.
3. To carry out studies on the following items.
- (a) Selection of appropriate sites and priorities of cold store construction.
 - (b) Preliminary designs of cold stores, meat-processing plants only for deboning, cutting and packaging and ice-making plants.
 - (c) Economic evaluation of the project.
 - (d) Implementation plan of the project.
 - (e) Management of cold stores.
 - (f) Training programme for management personnel of cold stores.

V. Reports

JICA will prepare and submit to GERCO the following reports in English.

1. Plan of Operation

Thirty (30) copies of Plan of Operation at the commencement of the Study.

2. Interim Report

Thirty (30) copies of Interim Report at the end of the field study.

3. Draft Report

Thirty (30) copies of Draft Report at the end of the home office works.

4. Final Report

Thirty (30) copies of Final Report within three (3) months after Draft Reports have been submitted.

VI. Undertaking of the Government of Egypt

The Government of Egypt through the Authorities concerned for the conduct of the Study, will undertake the following.

1. The Government of Egypt shall be responsible for dealing with claims which may be brought by third parties against the members of the Japanese Study Team and shall hold them harmless in respect of claims or liabilities arising in the course of or other-wise connected with the discharge of their duties in the implementation of the Study, except when such claims or liabilities arise from the gross negligence of wilful misconduct of the above-mentioned individuals.

2. The GERCO shall, at its own expense, provide the following:
 - (1) Available data and information related to the Study.
 - (2) Counterpart personnel (Project Manager, Officials, Engineers, Typists and other personnel necessary for the Study).
 - (3) Suitable office space
 - (4) Appropriate number of vehicles with drivers
3. GERCO shall make the necessary arrangements for the following:
 - (1) Securing permission for entry into private properties and other areas necessary for the conduct of the Study.
4. GERCO shall make the necessary arrangements with proper agencies concerned.
 - (1) To ensure the safety of the Study team.
 - (2) To exempt the Study team from taxes, duties, fees and other charges on machinery, equipment and other materials brought into Egypt for the conduct of the Study.
 - (3) To allow to take all data and documents related to the Study out of the Republic of Egypt to Japan by the Study team.

VII. Undertaking of the Government of Japan

The Government of Japan through JICA, for the conduct of the Study, will undertake the following:

1. JICA shall, at its own expense, dispatch Japanese experts as the Study team in accordance with the schedule mutually agreed upon by GERCO and JICA:

2. JICA shall, at its own expense, receive GERCO personnel connected to the Study for technical training in Japan in accordance with the normal procedures under the technical cooperation programme of the Government of Japan.

VIII. Study Schedule

The Study, in principle, will be carried out in accordance with the attached table.

Tentative Schedule

Year	1982						1983
	Month	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.
Study Activity							
Field Study in Egypt	↔						
Analysis and Formulation of F/S in Japan		↔					
Preparation of Comments on Draft Final Report					↔		
Reports etc.	P.O.	I.R.		H.R.		H.M.	F.R.
Remarks	P.O. : Plan of Operation D.R. : Draft Final Report R.M. : Review Meeting I.R. : Interim Report F.R. : Final Report						

(Attachment 2)

Items requested by the Mission.

All the following items should be prepared by GERCO by the end of July.

- (1) Maps at the scale of $1/25000$ of Cairo, Alexandria, Suez and Port Said showing the locations of all existing cold stores and ice-making plants with their capacities and networks of water and electricity supplies and transportation systems.
- (2) Selection of candidate construction sites for cold stores.
- (3) Geological data obtained by deep boring on the candidate sites or the places nearest to them.

(Attachement 3)

LIST OF ATTENDANTS

EGYPTIAN SIDE

(GERCO CO. FOR REFRIGERATION
& ENGINEERING)

MR. HUSSEIN FAHMY

MR. KAYAL FARAG

(MINISTRY OF SUPPLY)

MR. MOHAMED GAMAL KHAIRY

JAPANESE SIDE

(JICA S/W MISSION)

MR. HIRONOBU TAGUCHI

DR. TAKEO TANAKA

MR. KAZUO SUDO

(JICA-CAIRO OFFICE)

MR. JUNSAKU KOIZUMI

MR. HIROMI FUJITA