

**TOPOGRAPHIC MAPPING PROJECT
FOR
UPPER STREAM AREA OF NEGARA RIVER BASIN
SOUTH KALIMANTAN, REPUBLIC OF INDONESIA**

GENERAL REPORT

JANUARY 1986

JAPAN INTERNATIONAL COOPERATION AGENCY

SDF

JR

86-002

**TOPOGRAPHIC MAPPING PROJECT
FOR
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SOUTH KALIMANTAN, REPUBLIC OF INDONESIA**

GENERAL REPORT

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JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to the request of the Government of the Republic of Indonesia, the Japanese Government decided to conduct a survey on the topographic mapping of the upper stream area of the Negara River Basin, South Kalimantan (coverage: approximately 6,500 km²) and entrusted the survey to the Japan International Cooperation Agency.

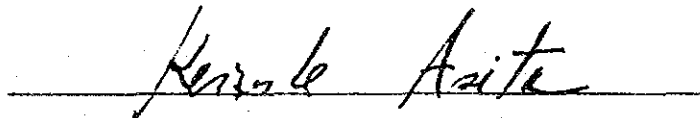
JICA sent several survey teams to Indonesia during the period from July 1983 to September 1984 and conducted the field survey including aerial photography.

Following the field survey, aerial triangulation, stereo plotting, scribing, printing, etc. were carried out in Japan and the present final report has been prepared together with the 1: 50,000 topographic maps (9 sheets).

I hope that this report and the topographic maps will be useful as a basic reference for development of the project area and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Indonesia, particularly Directorate General of Water Resources, for their close cooperation extended to the teams.

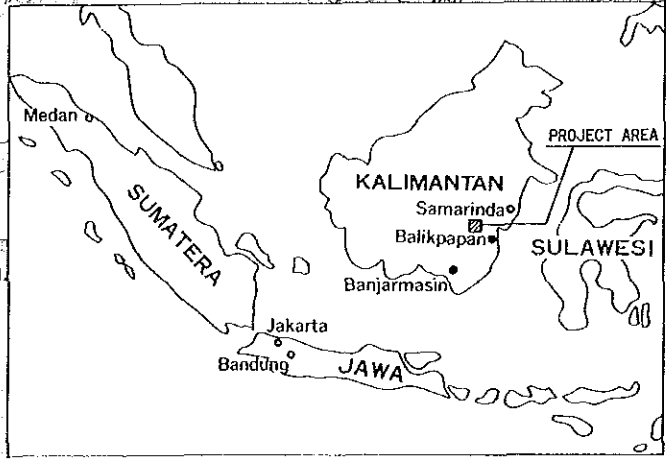
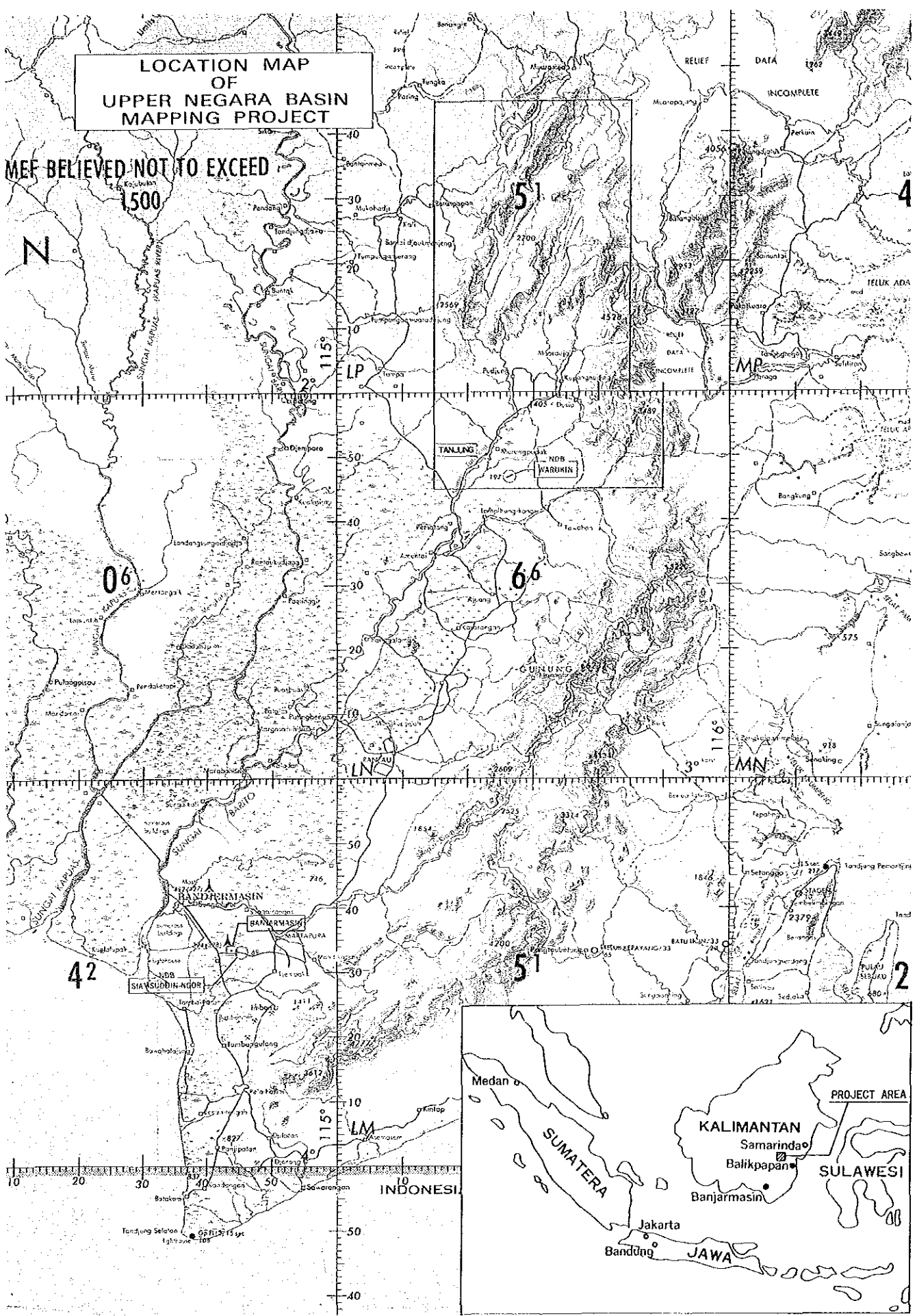
January, 1986



Keisuke Arita
President
Japan International Cooperation Agency

**LOCATION MAP
OF
UPPER NEGARA BASIN
MAPPING PROJECT**

MEF BELIEVED NOT TO EXCEED



Meetings with the Indonesian side



Meeting at DPU

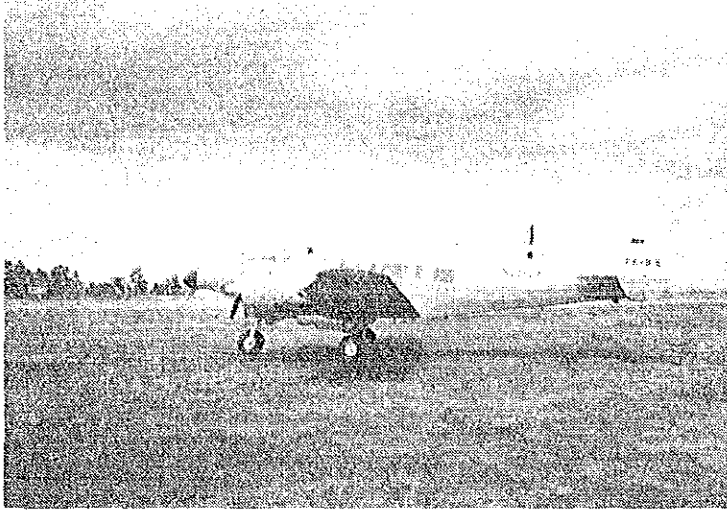
Meeting at BAKOSURTANAL on map symbol specifications



Confirmation of administrative boundaries, administrative names, etc. at the field completion (Office of Kabupaten Tabalong)



Aerial photography & photo processing



— Aircraft for aerial photography
at Banjarmasin Airport
(Beechcraft Super H-18)



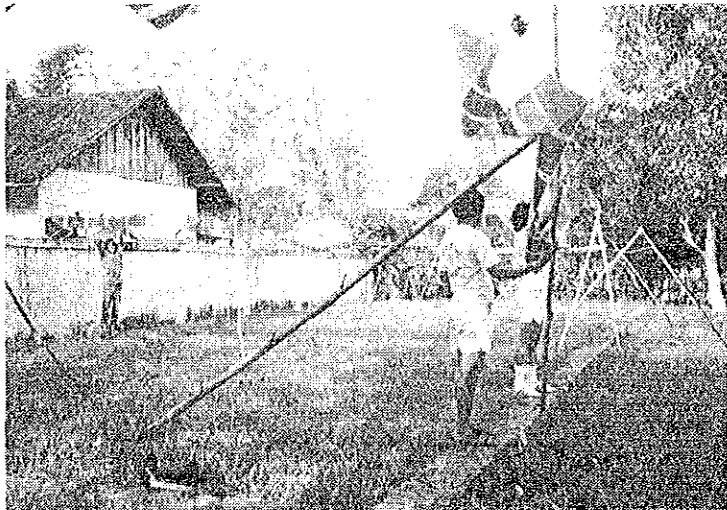
Inside of the aircraft and
camera (Zeiss/Jena MRB-A)



Temporary check and
photo orientation



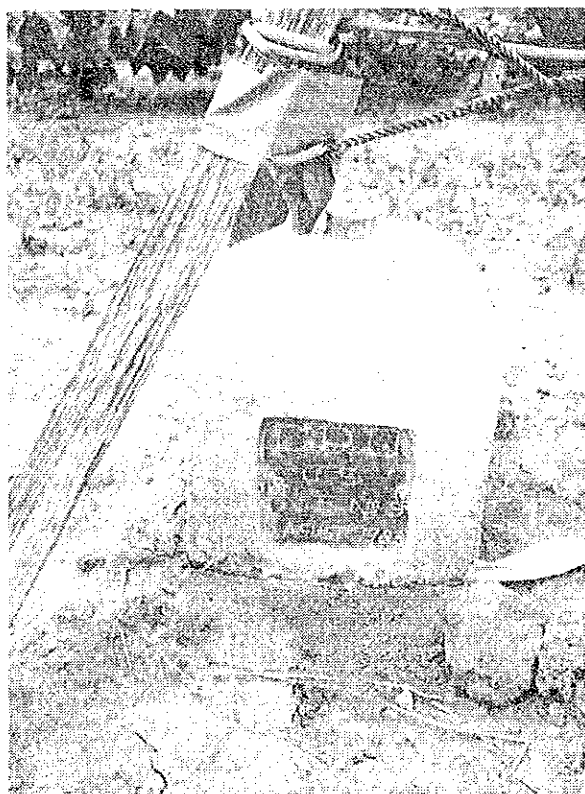
— Drying films



Field work



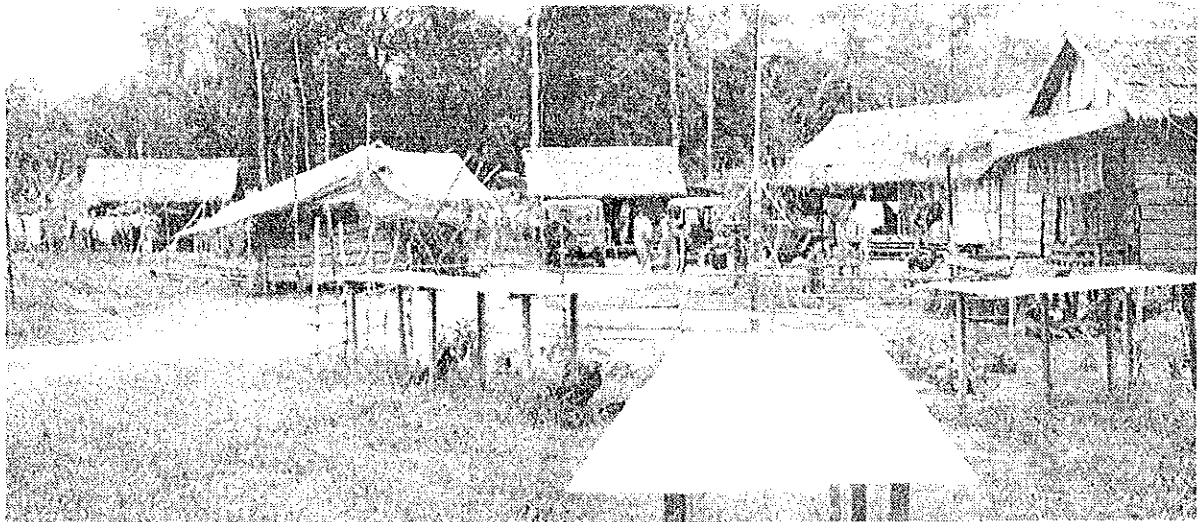
Existing bench mark (PUTL BM-18) in Tanjung,
monumented by Indonesian side



Monument
installed by Indonesian
side at the first year
work

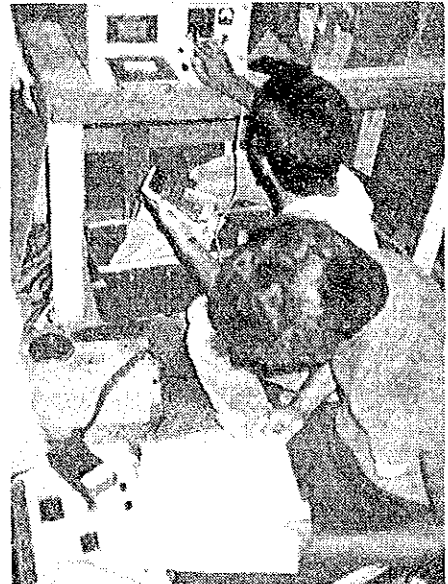


Bench mark monumented
by Indonesian side at
the first year work



D-A 609 (Doppler observation point No.9)
 Aerial signal and antenna are seen.
 Observation was made in the hut in the
 center of background of photo.

Doppler observation in the hut —



Third order levelling
 on Company road section



Second order levelling
 on the flat section of
 the route
 (mostly undulated)

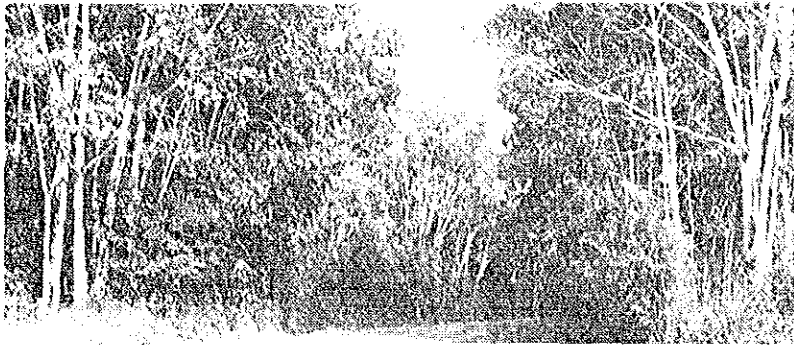


Pricking work

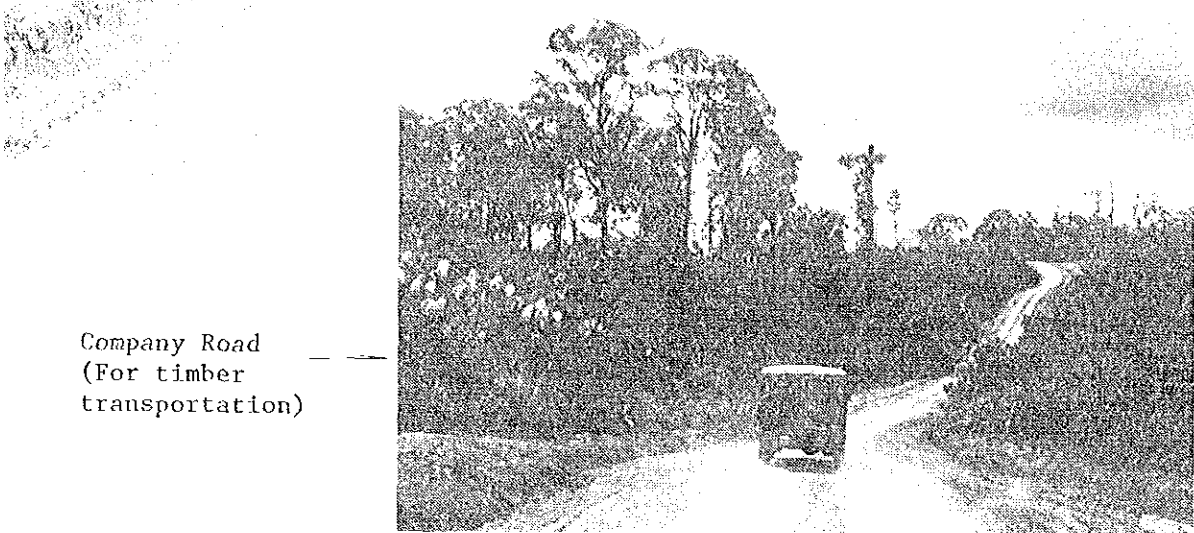


Field Completion
(Plane table survey on newly constructed highway connecting Tanjung and Murungpudak)

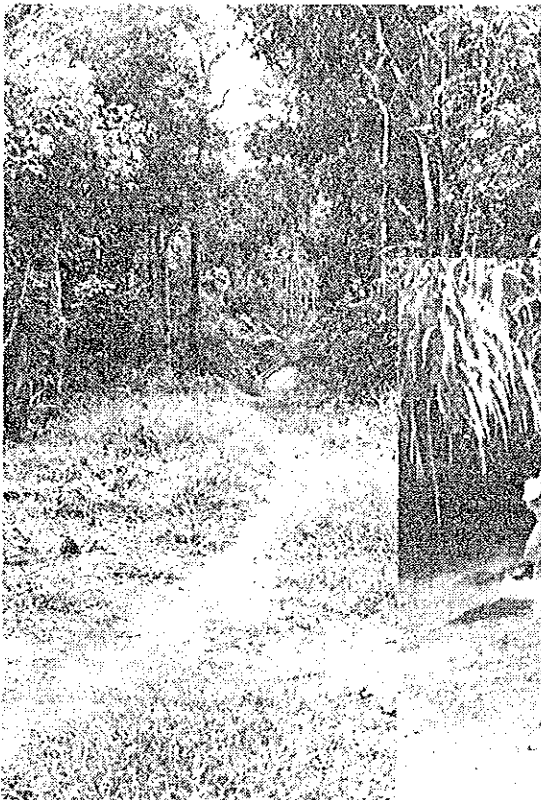




← National Highway



Company Road
(For timber
transportation)



Foot Paths





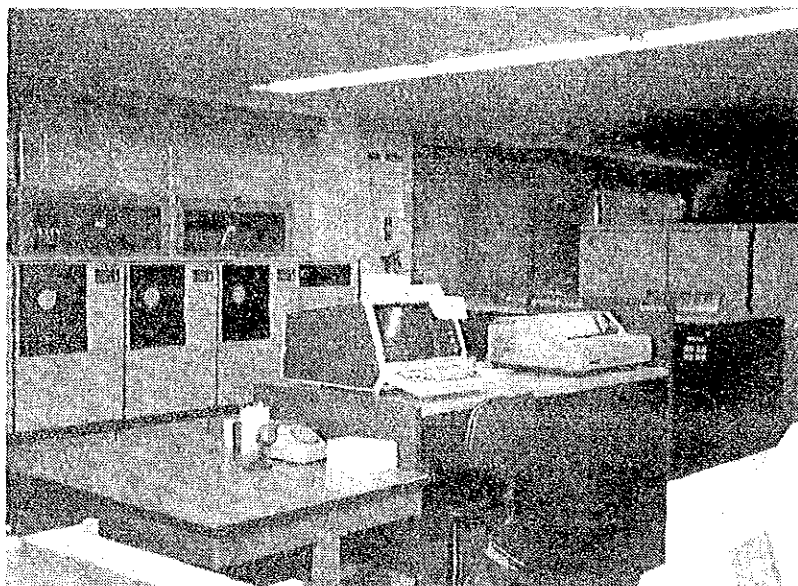
Field Identification
(Company road)



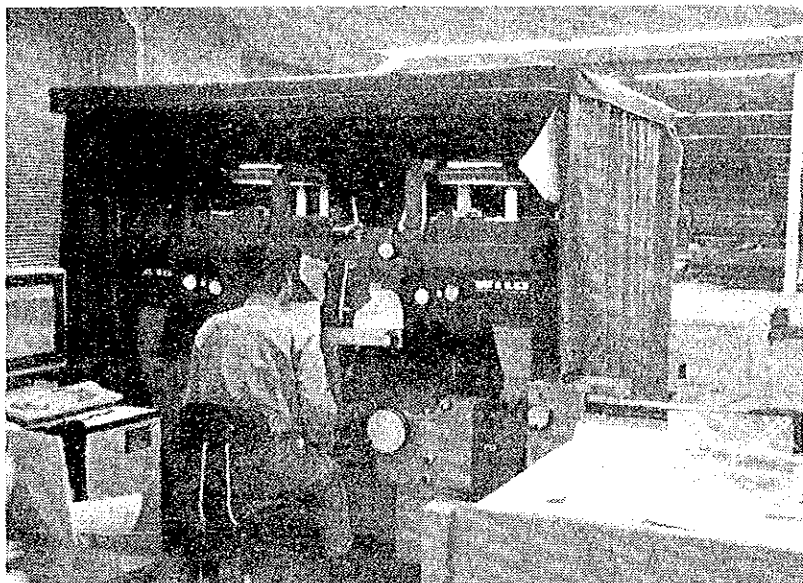
Field Completion
(Checking temporal
houses)



In-door work

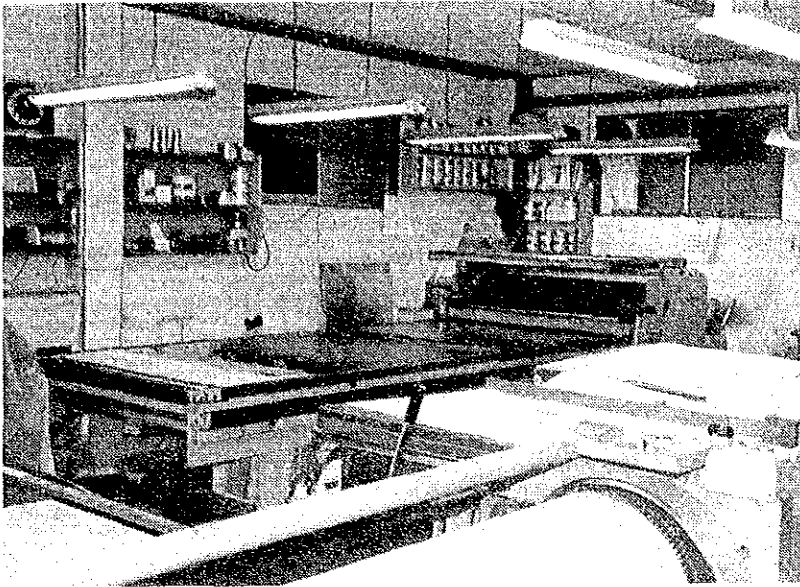


Aerial Triangulation Computer

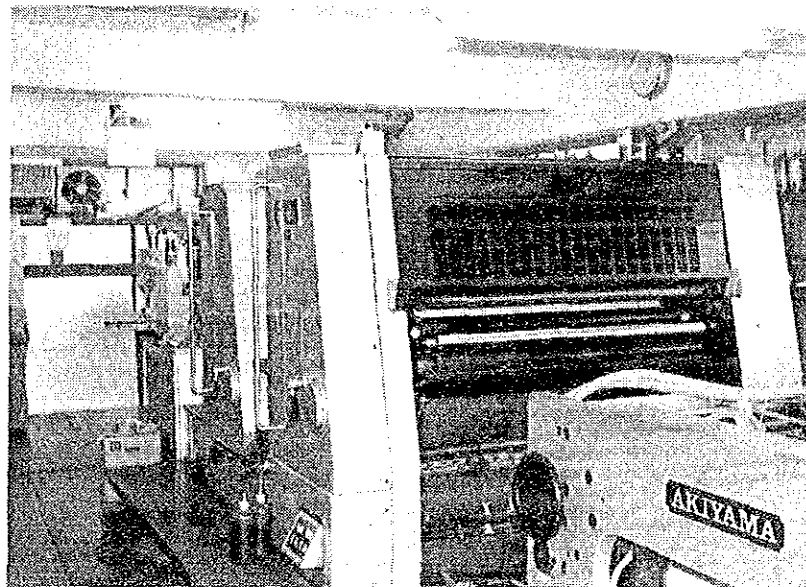


Stereo Plotter A-10

Printing



Automatic Proof Press



2-Color Offset Printing Machine



Proof Reading



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1. Introduction

The 1:50,000 topographic mapping project for the upper Negara River basin, implemented by the Japan International Cooperation Agency (JICA) in response to the request of the Government of Indonesia was commenced in July 1983 under the 3-year programme and completed in January 1986.

Kalimantan, where the project area situates is as large as or even surpasses Jawa and Sumatera, and the great part of its area has been left almost without any new development until now. Negara River is a tributary of the Barito River flowing through the central plain of Kalimantan, and its upperstream basin is mostly mountainous area covered by forest, while the central and downstream basins are low marshy land. These areas together with the downstream basin of Barito River form the largest marshy area in Kalimantan. Between the mountainous area extending in the eastern part of the Negara River basin and this marshy land, a hilly plateau has been well developed, forming grass land mixed with shrubs and other miscellaneous trees. In some parts of this plateau, regional development with a transmigration plan as the master plan has already been in the process of implementation by the Indonesian Government, indicating extremely high potentiality for developments including agricultural development in the marshy land, and water resources development in the upperstream area of the Negara River basin. In some parts, the project area overlaps in the southern part of the area covered by the 1:50,000 topographic map of the Barito River basin completed in 1974 also by Japanese technical cooperation. It is hoped that the new topographic map and the results of the survey will serve as the basic data contributing to the future development of this area.

2. Outline of Project

2-1 History of Project

2-1-1 Background of request for technical cooperation

A survey of the Barito River basin in the South Kalimantan province in Indonesia for the purpose of the comprehensive development was executed in 1970 by the Japanese Government through its technical cooperation. This survey pointed out that this low marshy area will have a high potentiality for agricultural development if irrigation and drainage facilities are provided. By utilizing the previously completed topographic maps of the Barito River basin, reclamation projects primarily for rice production have been implemented. On the other hand, such development project has been scarcely implemented in the Negara River basin.

In order to reclaim the low land area in the Negara River basin and to promote agricultural development in this area, it is essential to prepare topographic maps which are prerequisite for those development plannings.

With regard to the upperstream basin of Negara River, particularly for water resources development which is likely to affect irrigation in the downstream basin, a topographic map is also required.

With such background, at the sixth annual meeting on Japan-Indonesia technical cooperation held in February 1982, the Indonesian side submitted a request for "Topographic mapping of the Negara River basin by aerial photogrammetry."

2-1-2 Outline of the request

Outline of the terms of reference submitted in January 1981 by Indonesia prior to the annual meeting for the above project was as follows:

(1) Name of project

- Topographic mapping project for the Negara River basin by photogrammetry -

1) Aerial photography - 12,500 km²

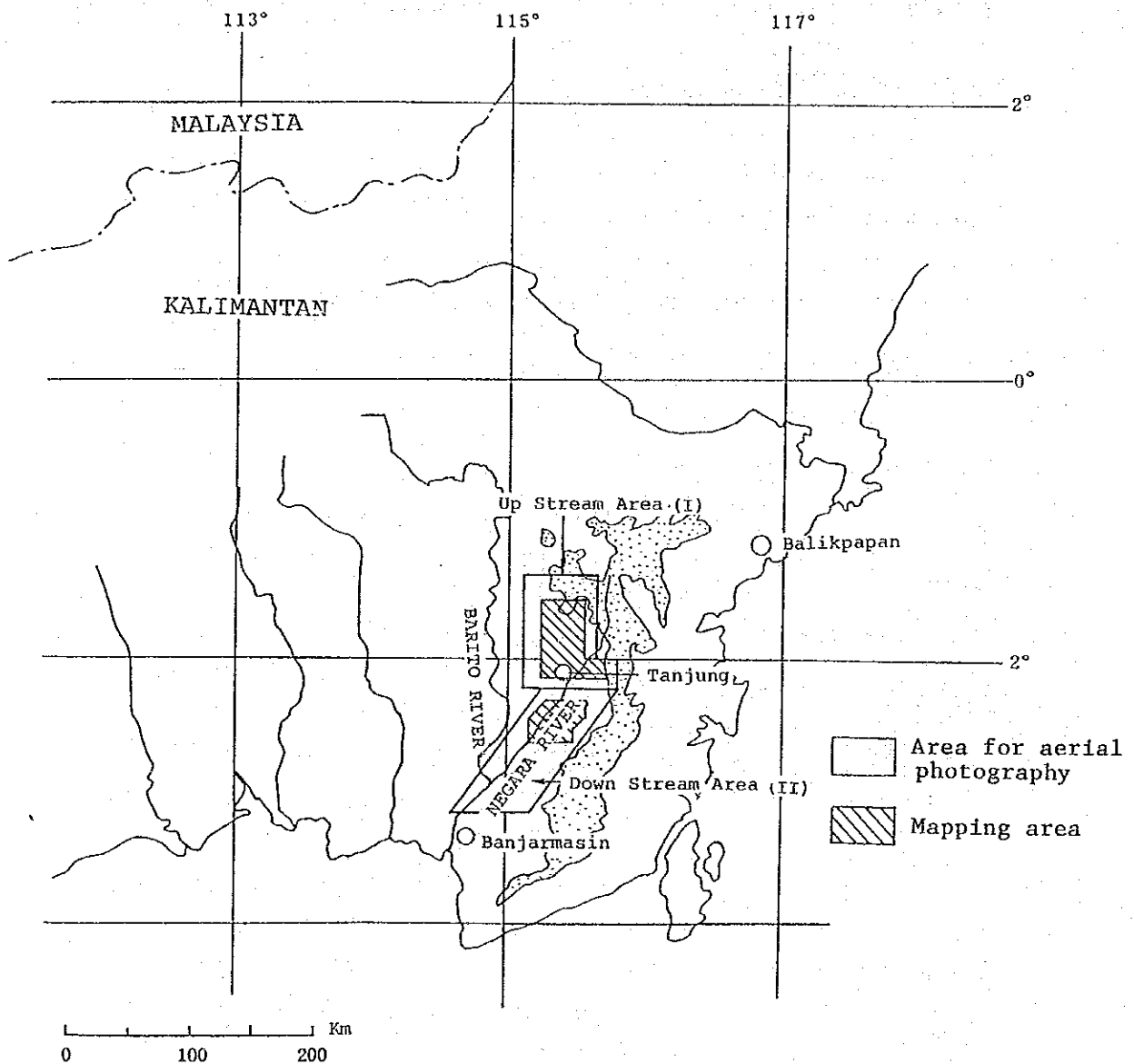
2) Production of topographic map

I. Production of 1:50,000 topographic map - 5,000 km²

II. Production of 1:5,000 topographic map - 7,500 km²

(See Fig.-1 for the project area.)

Fig.-1 Location map of topographic mapping projects for upper stream and down stream areas of Negara River basin in South Kalimantan Province, Indonesia



(2) Organization

For the topographic mapping, the Water Resources Development Project (P3SA), Directorate General of Water Resources Development (DGWRD), Ministry of Public Works (DPU) of Indonesia will be in charge.

(3) Request to foreign government and contribution to be assumed by Indonesia

1) Request to foreign government

- Request for a foreign expert team for technology transfer of the ground control point survey which will become an important element in this project.

Organization of foreign experts

I. Survey engineers: 8 for 6 months

II. Survey engineers: 8 for 4 months

- Assistance in aerial photography and mapping.

2) Work to be assumed by the Indonesian Government

- Dispatching counterparts and providing facilities.

(4) Outline of mapping project by photogrammetry

	(I)	(II)	Total
<u>Aerial photography</u>			
Area	5,000 km ²	7,500 km ²	12,500 km ²
Scale	1:50,000	1:20,000	
Air photo signal	10 points	15 points	25 points
<u>Ground control point</u>			
Satellite observation	10 points	15 points	25 points
Levelling	100 km	400 km	500 km
Traversing	-	400 km	400 km
<u>Mapping</u>			
Scale	1:50,000	1:5,000	
Area	5,000 km ²	7,500 km ²	12,500 km ²
Analytical aerial triangulation	210 models	1,950 models	2,160 models
Plotting drawing	5,000 km ²	7,500 km ²	12,500 km ²

(5) Work plan

The entire work will be implemented over a two year period.

2-1-3 Preliminary survey team

(1) Contact mission

The Japanese Government dispatched a contact mission to Indonesia in December 1982 for discussion with the Indonesian side on the topographic mapping project for the Negara River basin requested by the Indonesian Government.

The contact mission held discussions with DGWRD regarding the scope, kinds and scale of the required maps for the upperstream and downstream areas of Negara River basin, and the following was agreed on with respect to the mapping scale and othe items.

1) Mapping scale

- For upperstream mapping: scale 1:50,000

- For downstream mapping: scale 1:10,000

- 2) The 1:50,000 topographic map is under the control of National Geographical Survey Institute of Indonesia (BAKOSURTANAL), and DPU will be assigned to implement the work.

(2) Preliminary survey

In accordance with the survey report of the contact mission, a survey team was dispatched to Indonesia from February to April in 1983 for the purpose of preliminary survey and finalization of the scope of work. The survey team held meetings with DPU-DGWRD, BAKOSURTANAL, and the South Kalimantan DPU, and the items agreed on the upperstream area are as follows:

- 1) The specifications for 1:50,000 topographic map will be in accordance with the national basic map of Indonesia.
- 2) Although topographic mapping was initially proposed for 5,000 km², the area will be 6,500 km² in consideration of the future arrangement of basic map and the compatibility with the existing map.
- 3) Only 20 percent of 1:100,000 aerial photographs taken by BAKOSURTANAL for the project area are acceptable due to the cloud cover.

Therefore, new aerial photographs will be taken for a total of 10,000 km² of the project area at a standard scale of 1:60,000.

- 4) Since no control point is available in the project area, new control points will be installed. In this case, Doppler observation system by artificial satellite will be used in consideration of the forest zone.

With the above as the basic elements of the upstream mapping project, and at the same time, with respect to the downstream area, a project plan was prepared with aerial photographing of 6,300 km², and preparation of 1:10,000 photo map of 1,200 km² as the main project item.

2-1-4 History of project

Outline of the entire history of the upper stream mapping project is shown as follows:

Table-1 History of the project

Time	Item	Description
January 1976	Request	Request for technical cooperation for mapping project by the Indonesian Government to the Japanese Government
December 2 - 27, 1982	Preliminary survey	Contact mission for collecting information
February 22 to April 15, 1983	Preliminary survey	Discussion on draft S/W, field survey
July 19 to October 22, 1984	1st year work	Meeting for execution of 1st year work. Field work (aerial photo signal, aerial photographing and control point)
January 24 to March 7, 1984	Mr. Bedy Juwadi visited Japan	Project training (aerial photogrammetry)
June 18 to September 4, 1984	2nd year work	Field work (aerial photography, pricking and field survey)
Mid-August to Mid-December 1984	2nd year work	In-door work (aerial triangulation, detail plotting and compilation)
November 1 to December 10, 1984	Mr. Baban Ali Syabana visited Japan	Project training (aerial photogrammetry)

Mid-June to mid-December 1985	3rd year work	Project training (scribing and printing)
July 23 to August 21, 1985	M/s. Bebas Purnawan and Mohamad Rusfal Nurdin visited Japan	Project training (aerial photogrammetry)
August 14 to August 23, 1985	Mr. Mohamad Sidharta visited Japan	Project training (printing of the topographic map)
Late November to early December 1985	Printing	Printing and checking
November 1985 to January 1986	Report	Preparation of general report

2-2 Content of the Project

The content of the project agreed upon between the Japanese survey team and Indonesia are as follows:

(See Fig.-2)

1. Aerial photography
 - Scale: 1:60,000
 - Area: 10,000 km² including the mapping project area covering control points.
2. Control point
 - Doppler satellite observation point: 10 points
 - Direct levelling (second order): 70 km
 - " (third order) : 80 km
 - Indirect levelling: 70 km
3. Topographic mapping: 6,500 km²
15' x 15' Net 8.3 sheets
4. Printing: 4-color printing, each 1,000 copies

However, monuments of the level points (about 5 km interval) and the Doppler satellite observation points will be installed by the Indonesian side.

Fig.-2 Plan of control point distribution and aerial photography for upper stream area of Negara River basin

