

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.

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

Sarbini Ronodibroto

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.

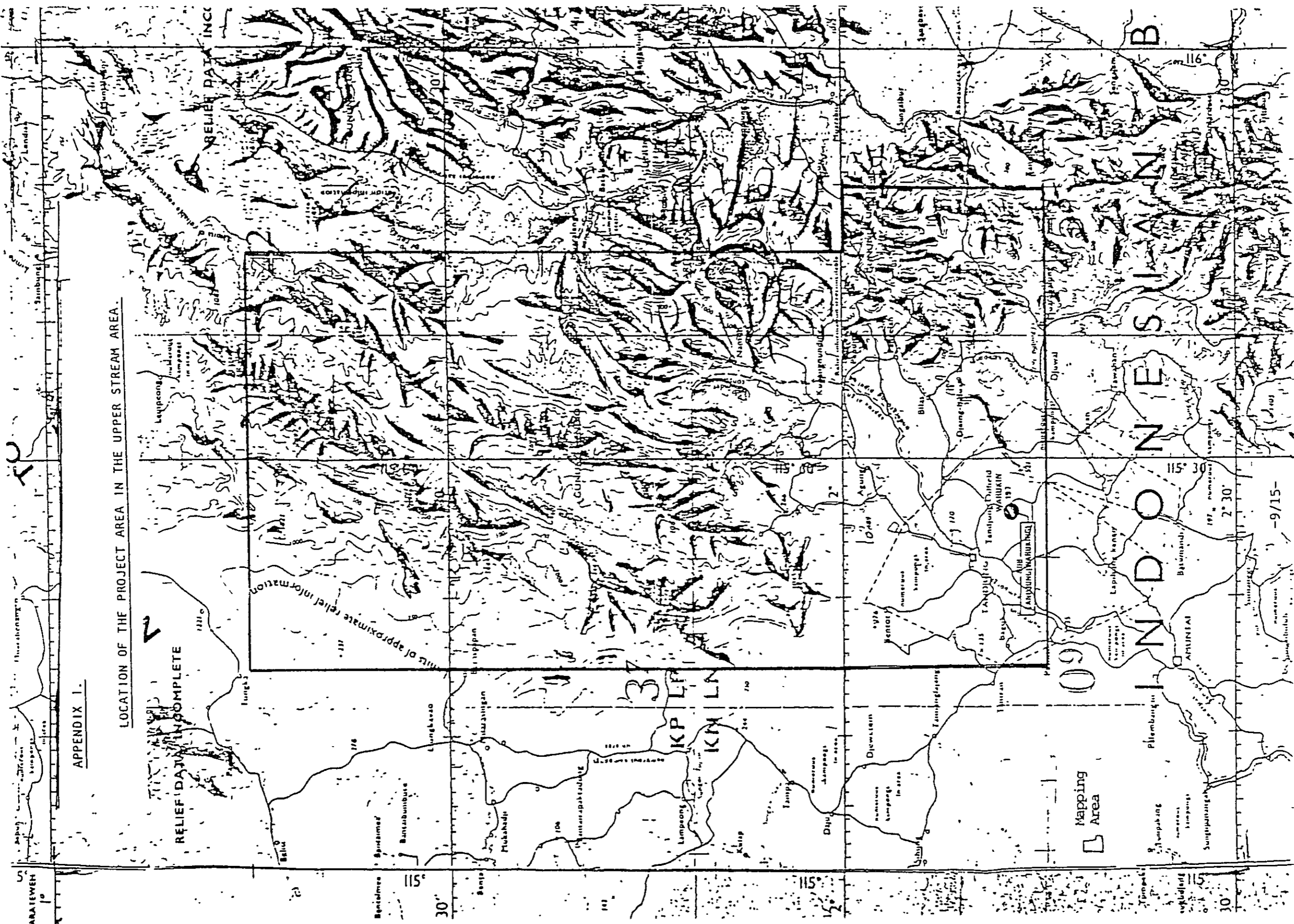
For the implementation of the Project, the Government of Japan will, in accordance with the relevant laws and regulations in force in Japan, through JICA, take necessary measures as follows :

- 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 I.

LOCATION OF THE PROJECT AREA IN THE UPPER STREAM AREA.

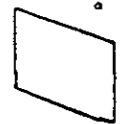
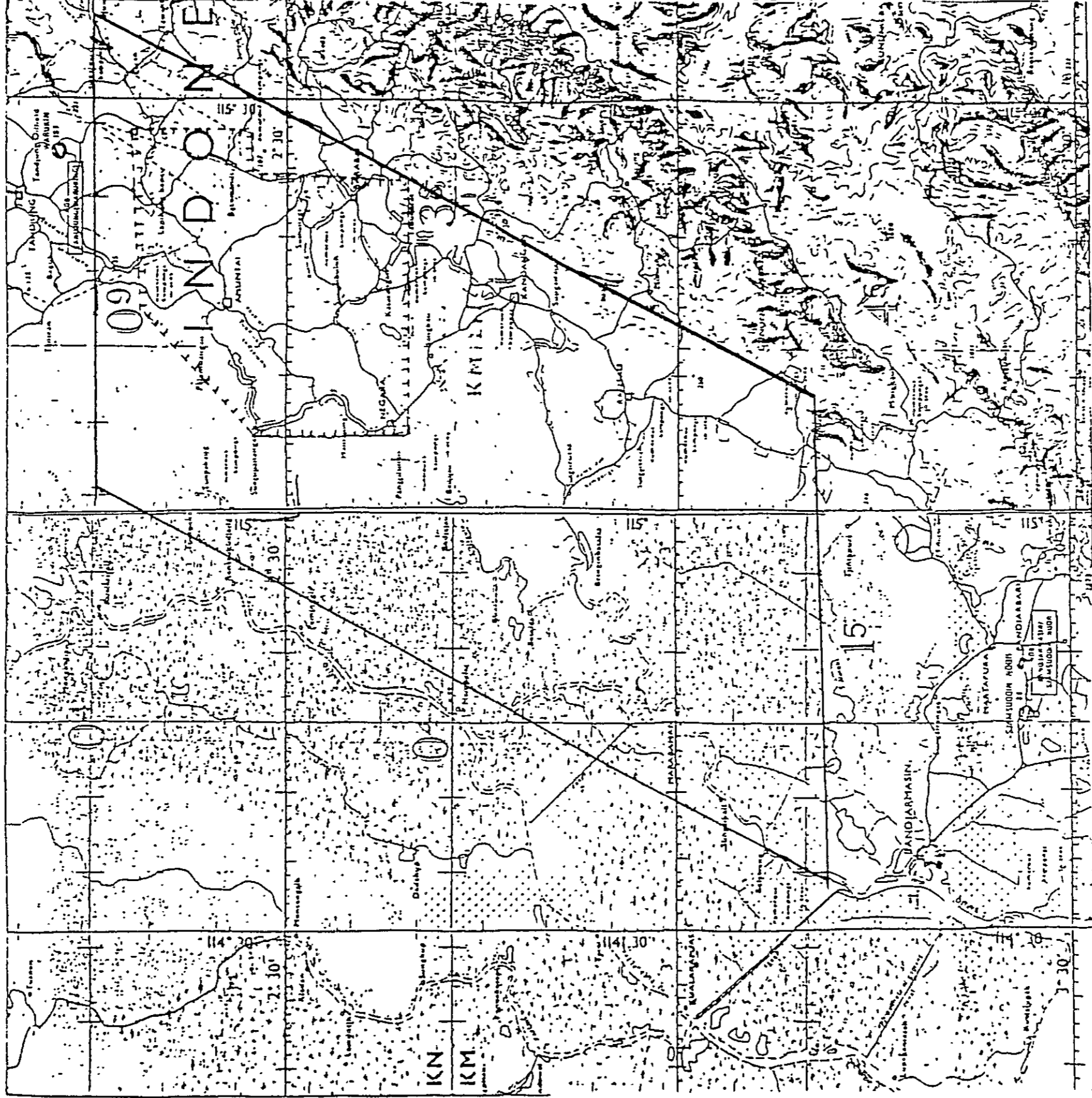
RELIEF DATA INCOMPLETE

RELIEF DATA INCOMPLETE

Mapping Area

APPENDIX II.

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

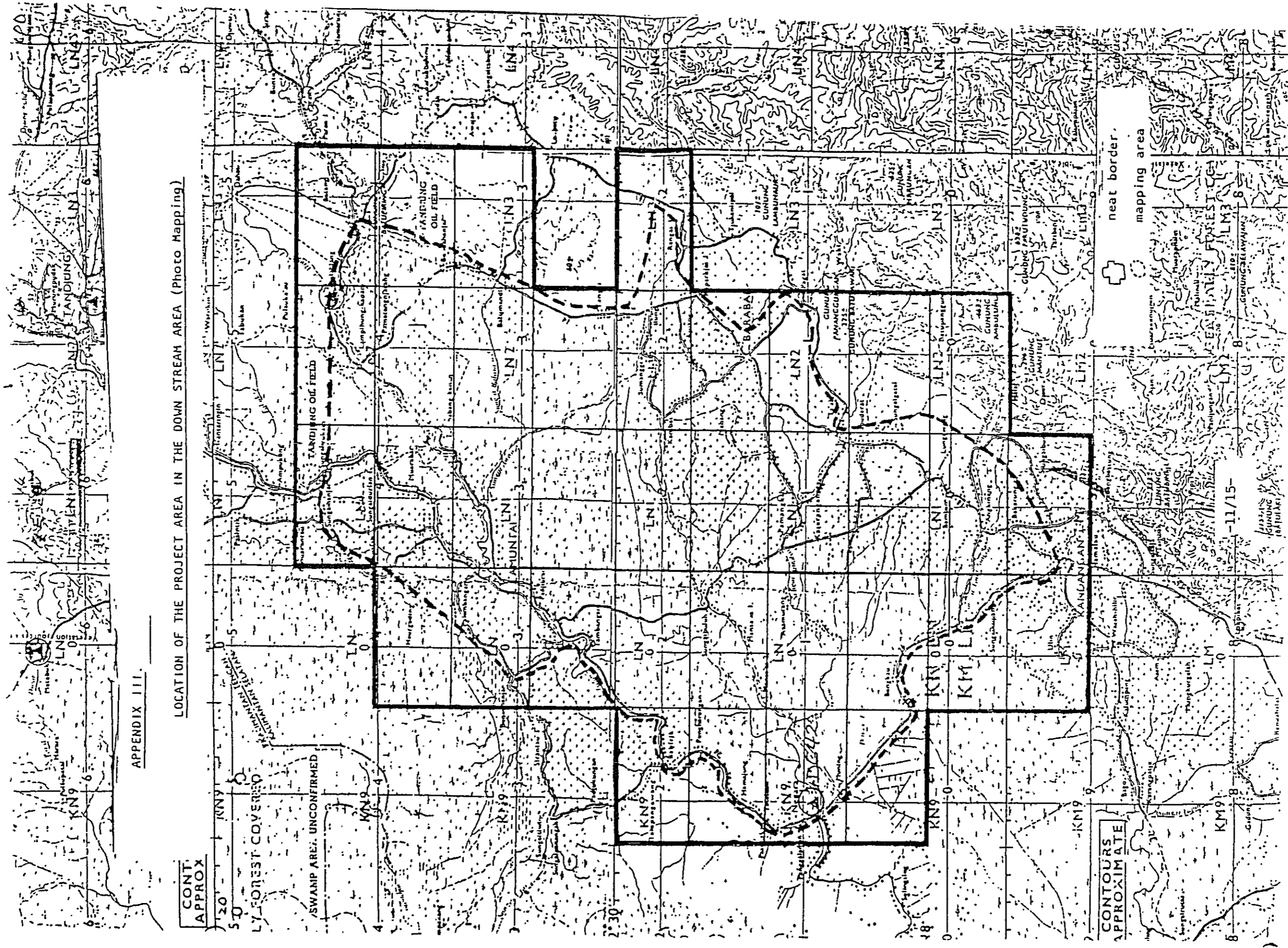


• Aerial Photography in Dry Season



• Aerial photography in Dry and rainy season

-10/15-



APPENDIX III.

LOCATION OF THE PROJECT AREA IN THE DOWN STREAM AREA (Photo Mapping)

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
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	F		
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.

付5 資機材・生活関連資材等資料 (1983.3 現在)

1) 車輛借上げ

種 類	期間	条 件	地 名
乗 用 車	1 日	運転手付, 食事代, ガソリン代は別 基本料金 15,000RP + 1時間当り 3,000~4,000RP	ジャカルタ
ジ ー プ	月	50万RP~60万RP 運転手付, 食事代ガソリン別	バンジャルマシン
オ ー ト バ イ	1 日	5,000RP~6,000RP #	カンパント

燃料消費量は 1ℓ 当り 5~6 Km.....ジープ
トラックはタンジュンにて借上げ可能

2) 家.....年契約が条件であるが交渉次第では割高であるが借上げ可能
月当り借上げ料は参考

種 類	期間	条 件	地 名
1 軒 家 3 ベッドルーム	月	80,000RP	ネ ガ ラ
1 軒 家 2 ベッドルーム	#	100,000RP	カンダガニン ベリキタイ アムンタイ
1 軒 家 2~3 ベッドルーム	年	家具付 300万RP	タンジュン
1 軒 家	月	室のみ 60,000~10万RP 家具リースあり	#
1 軒 家 4 ベッドルーム	月	メイド室, バス, トイレ付, ガードマン付 500,000~600,000RP	バンジャルマシン
1 軒 家 2 ベッドルーム	月	60,000RP 電力 400 KW 以上使用出来ず	バラバイ

3) 舟.....借上げは運転手付が原則

種 類	期間	条 件	地 名
大 型	1 日	エンジン付 20人~30人乗り 食事, 燃料別 燃料 1ℓ = 150RP 80,000RP	ネ ガ ラ バラバイ
中 型	1 日	エンジン付 5人~10人乗り 全て含む 1日/8時間 10,000RP	ネガラ, バランイ アラビオ
モーターボート		12人乗り バンジャルマシン~ムラテウエ往復 全て含む 650,000RP 3社アリ	バンジャルマシン
"	数日	1日/60,000RP 燃料, 食事代, ホテル代別 燃料 20ℓ/10,000RP~15,000RP	バンジャルマシン
カヌー	1 日	2000~3,000RP	地域内同じ

4) 備入費

種類	期間	条件	地名
人夫頭	月	400,000RP 1日=10,000RP	1982年 ジャカルタ
人夫	1日	2,000RP～3,000RP	ネガラ バラバイ
#	#	1,500RP～2,000RP	タンジュン
#		2,000RP～2,500RP	バンジャルマシン

人夫については食事代含まず，測量用人夫は4,000～5,000RP

ドライバー	月	60,000RP 食事代 ホテル代含まず	バンジャルマシン
#	日	2,000RP #	バラバイ
#	#	5,000RP #	ジャカルタ

5) ホテル………内容に応じて750RP～7,000RP

種類	所在地
ホテル	カンダガン(1) バラバイ(3) アムンタイ(2) タンジュン(3)
ロスマン	カンダガン(2) バラギン(1) クアロ(1)

ロスマン：旅館(簡単な朝食付)

6) バンジャルマシンからのアクセス

種類	経路その他	金額
飛行機	ブルタミナの子会社……別紙のとおり	
#	DAS Air way 毎日 9:00 出発 バンジャルマシン→ムラテウエ 3時間50分	1983.3月 40,900RP
バス(小型)	バンジャルマシン→ネガラ 4～5時間 毎日	2500RP
#	バンジャルマシンから各都市に多数のバス路線が走っている	—
舟	毎日 4社 バンジャルマシン→ブントック 16時間 # →ムラテウエ 36時間	15,000RP 18,000RP
	月,火,土 月,金,日 3社 バンジャルマシン → ネガラ 18時間 ← 15時間	800RP
借上バス	10人乗りアムンタイ→ブントック 4～5時間	60,000RP
バス	バンジャルマシンよりバリクパパンに定期バスあり	—

地方のバス路線は天候状態により道路(主に橋)が流失する事もあるので利用する時は調査が必要。

SCHEDULE FLIGHT PAS (PELITA). タンジュン飛行場

Pelita Air Service

HARI	TYPE	FLT. NO.	DARI	KE	KETERANGAN
月 SENIN	CASA	EP-065	BPN.	BPN	0900-0930
火 SELASA	DASH-7	EP-045	JKT/SUB	BPN/SUB	1200-1300
	CASA	EP-065	BPN	BPN	1300-1400
水 RABU	CASA	EP-065	BPN	BPN	1300-1400
木 KAMIS	DASH-7	EP-045	SUB/BPN	SUB/JKT	1200-1300
	CASA	EP-065	BPN	BPN	1300-1400
金 JUM'AT	CASA	EP-065	BPN	BPN	1200-1330
	DASH-7	EP-045	JKT/SUB/BP	SUB	1500-1600
土 SABTU	CASA	EP-065	BPN	BPN	ON REQUEST.
日 MINGGU	DASH-7	EP-045	SUB	BPN/SUB	1000-1100

JKT = JAKARTA

他にバンジャルマシン→バリクパパン

SUB = SURABAYA

航空会社 3社あり

BPN = BALIKPAPAN

ALL TIME IN LOCAL TIME (WIT). -

22 Maret 1983

TG. WARUKIN AIRPORT.

7) オフィス アワー

D ジャカルタ	P U	月~木 金 土	8:00 ~ 14:00 8:00 ~ 12:00
D バンジャルマシン	P U	月~木 金	8:30 ~ 14:30 土 8:30 ~ 12:00 8:30 ~ 11:00 (カンダガン, パラバイ, タンジュン, アラビオ, アムンタイ 同じ)
パコスルターナル		月~金	8:00 ~ 16:00
銀行(東銀) ジャカルタ		月~金 土	8:30 ~ 14:00 8:30 ~ 12:00
銀行 バンジャルマシン		月~金 土 月~木	8:00 ~ 12:30 13:30 ~ 14:30 土 8:00 ~ 11:30 払い戻 月~木 10:30迄 金土 9:30迄
電信電話 バンジャルマシン		月~土	8:00 ~ 18:00 日 9:00 ~ 12:00
郵便局 ジャカルタ		月~木 土	8:30 ~ 14:30 金 8:30 ~ 11:30 8:30 ~ 13:30
# バンジャルマシン			同 上

ガルーダ航空 バンジャルマシン	月~木 金	7:00 ~ 16:00 7:00 ~ 12:00	土 7:00 ~ 13:00 日・祭 9:00 ~ 12:00 14:00 ~ 16:00	パラバイに支店あり
--------------------	----------	------------------------------	--	-----------

8) 電報料金

種類	内 容
国内	1語普通 10RP 至急 20RP パンジャルマシンより
国際	パンジャルマシン→日本 1語 290RP

9) TELEX パンジャルマシンより日本迄

時間	3分	6分	9分	12分	インドネシア国内	
料金	27語迄 8540RP	16,580RP	24,620RP	32,660RP	電報と同じ	

10) 電話料金

経路	料 金				
パンジャルマシン ～ジャカルタ	3分 11,000RP	1分増 2,000RP	ステーションコール	6,600RP	
パンジャルマシン ～カンダガン	3分 2,160RP	1分増 720RP			
パンジャルマシン ～日本	3分 15,573RP	1分増 3,115RP	手数料	1,500RP	

11) 郵便料金

パンジャル マシンより	
国内	普通：20g迄 110RP 100g～200g 550RP 至急：20g迄 275RP 100g～250g 775RP
国外	普通：20g 220RP 100g～250g 1,850RP 1,000g～2,000g 3,800RP 至急：普通+500RP
船便	20g 190RP 100g～250g 810RP インドネシア～日本 約1ヶ月

ジャカルタ よ	葉書 日本迄 175RP 至急+500RP
日本	20g迄 375RP 100g 925RP 300g 2,700RP 500g 4,100RP 1,000g 8,000RP 1,080g 9,060RP 至急+500RP

12) 雑 貨

品 目	価 格
コ ピ ー	B-4 @30~50RP(バ) 110RP~300RP(ジ) コピー用紙A-4 500枚 5,000RP(バ)
ガ ソ リ ン	公営スタンド 1ℓ=320RP 民営スタンド 350~375RP 舟用 1ℓ=500RP(バ) 750RP(ム) ケロシン 1ℓ=135RP
コンクリート 材	砂: m ³ /5,000RP 砂利 m ³ /6,000RP セメント 40Kg/4,000RP
木 材	タルキ @ 1,000RP ~ 1,500RP 歩板 @ 2,000 ~ 4,000RP
フ イ ル ム	24枚・36枚ロール@ 1,650RP~1,950RP(バ) 2,500RP(ホテル, 飛行場)
	現像1ロール200RP プリントサービス板100RP(バ)
便 箋	航空便用1冊 200~400RP(バ) ノート @ 200 ~ 500RP
ペ ン	ボールペン @ 250RP カラーサインペン 12色 650RP(バ)
タ バ コ	現地産 200~500RP 輸入品 650~900RP
電気使用料	0~450 KW 56RP/1 KW
市 バイクタクシー	バンジャルマシン内(スベダモーター) 200~400RP……ミゼット型同じ(ベチャ)
そ の 他	タマゴ1個 80RP ビーチサンダル 900RP ガムテープ1本 880RP ジープ 10,000~15,000RP

13) そ の 他

- 1) 地方都市には銀行があるが、T/Cから現金には交換できない。交換はバンジャルマシンのみである。ホテル内での交換は割高である。
- 2) 地方都市(バンジャルマシン, バンジャルバルー, マルタブラ以外)は全てジーゼル発電であり、供給時間は18:00~6:00頃迄で日中は使用出来ない。
- 3) 金曜日は主要な町の店は12:00以降閉まっている事が多いので注意を要する。
- 4) DPUタンジュン支所にて無線機を使用してバンジャルマシンと交信をしている。 100 Km
(KENWOOD - 2 m FM, TR - 2500 RATING 84VDC TONO 2 m ~ 50 W)
バンジャルマシンにて購入したとの事 500,000RP 1981年

JICA

LIBRARY