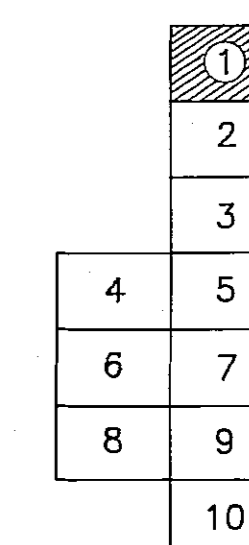


NOTES/KETERANGAN

1. Horizontal Control Point is Doppler Station No.6007/SP.5 issued by BAKOSURTANAL (National Coordination Agency for Survey and Mapping)
 - Northing : 9,903,195.537 m
 - Easting : 750,770.613 m
 (Titik Kontrol Horizontal menggunakan Titik Doppler (N.6007/SP.5) yang dikeluarkan oleh BAKOSURTANAL (Badan Koordinasi Survey dan Pemetaan Nasional))
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 - (Sistem Koordinat menggunakan Sistem Koordinat UTM dengan Ellipsoid Datum ID-74)

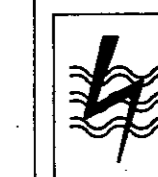
SHEET INDEX



LEGEND / LEGENDA

- | | | | |
|----------------|--|---|---|
| ○ R.5
45.00 | Titik Poligon Utama
Traverse Point | Q | Hutan Belukar
Forest (Broad Leaf Tree) |
| ○ C/S.1 | Titik Cross Section
Cross Section Point | ~ | Pasir
Sand |
| ● PB.1 | Lokasi Titik Bor
Bore Hole | ~ | Tebing
Cliff |
| □ BM.1 | Patok Beton
Benchmark | ~ | Batuan
Rock/Stone |
| · 30.50 | Titik Ketinggian
Spot Elevation | ~ | Garis Ketinggian
Contour Line |
| WL=1.00 | Muka Air Tanah
Water Level | ~ | Alur Sungai
Stream |
| | | ~ | Sungai
River |

Skala
Scale 1 : 500



P. T. PLN (PERSERO)

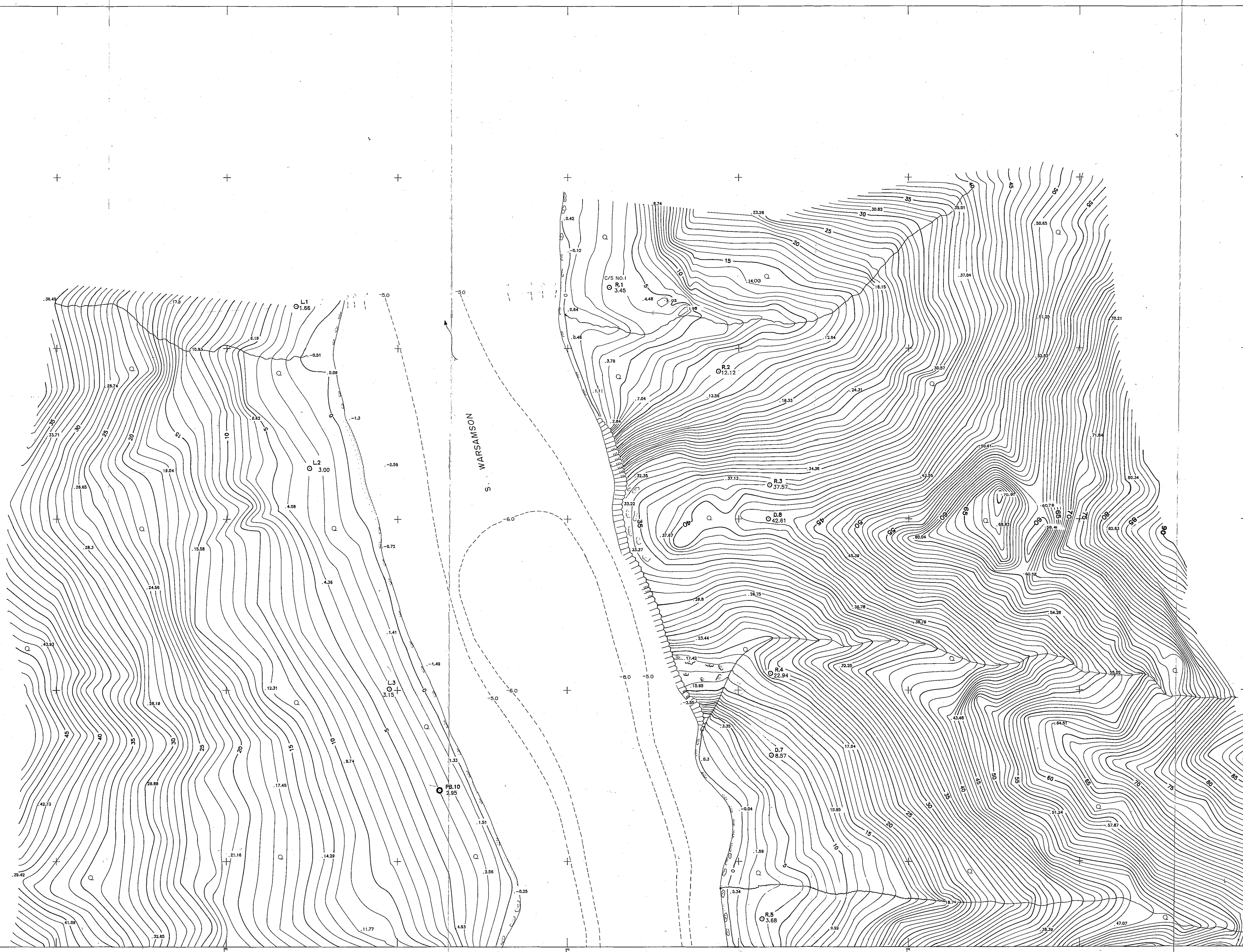
THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

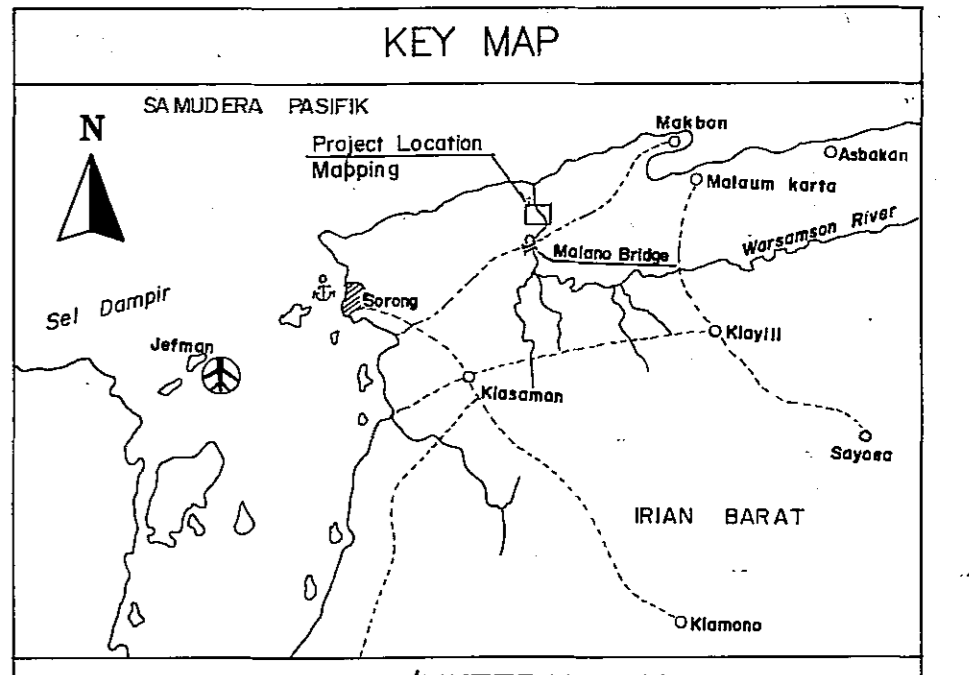
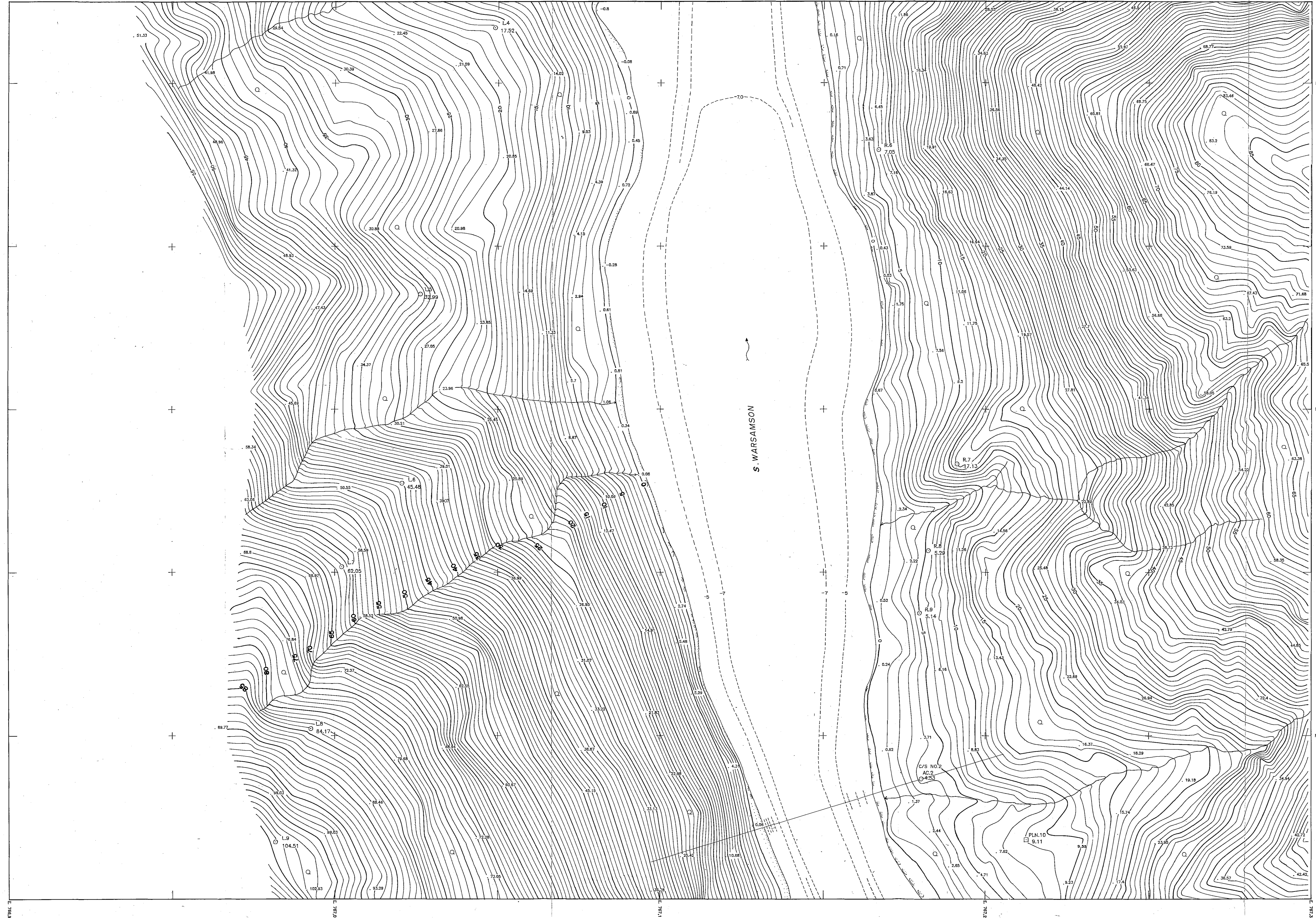
TOPOGRAPHIC MAP

CHECKED BY : SHEET NO. 1 OF 10
APPROVED BY : D.W.G DATE SEP. 1994

PT. AEROKARTO INDONESIA

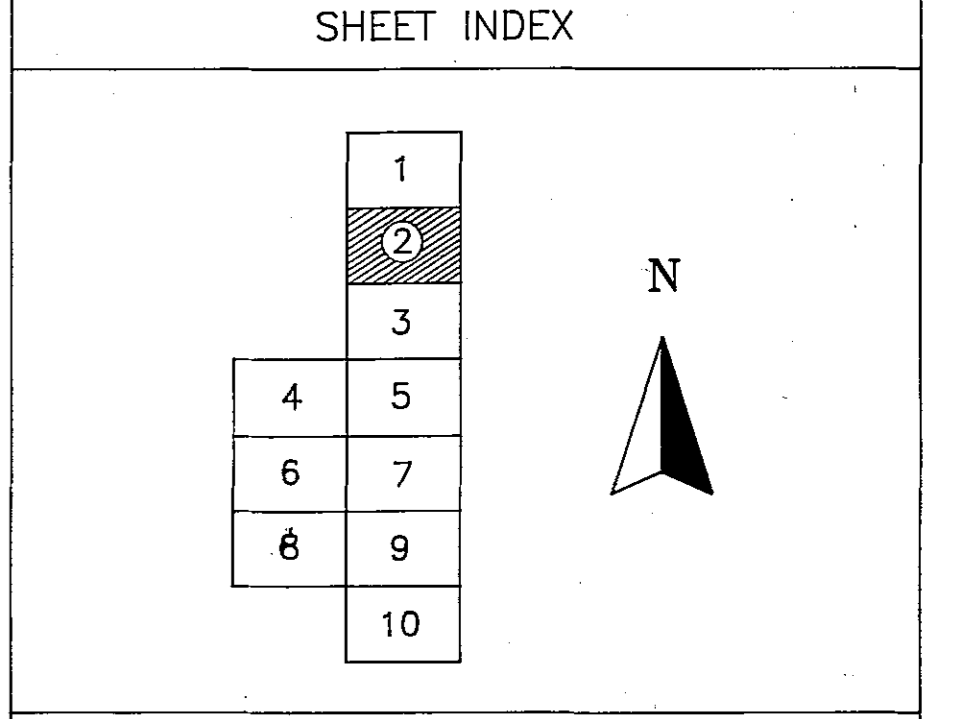
JICA JAPAN INTERNATIONAL COOPERATION AGENCY





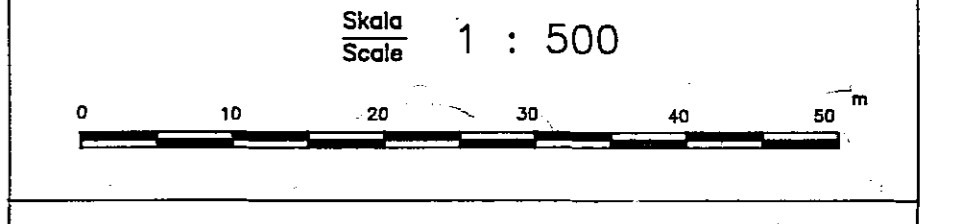
NOTES/KETERANGAN

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LEGEND / LEGENDA

○ R.5 45.00	Titik Poligon Utama Traverse Point	○ Hutun Belukar Forest (Broad Leaf Tree)
○/C/S.1	Titik Cross Section Cross Section Point	▨ Pasir Sand
● PB.1	Lokasi Titik Bor Bore Hole	⚡ Tebing Cliff
□ BM.1	Patok Beton Benchmark	⚡ Batuan Rock/Stone
30.50	Titik Ketinggian Spot Elevation	— Garis Ketinggian Contour Line
WL-1.00	Muka Air Tanah Water Level	— Alur Sungai Stream
		— Sungai River



P. T. PLN (PERSERO)

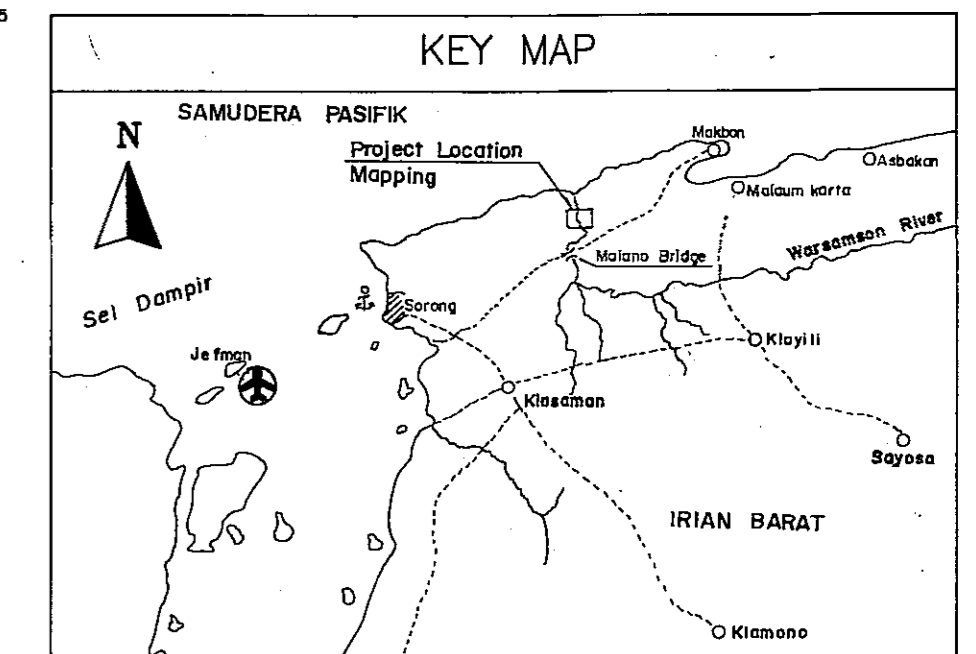
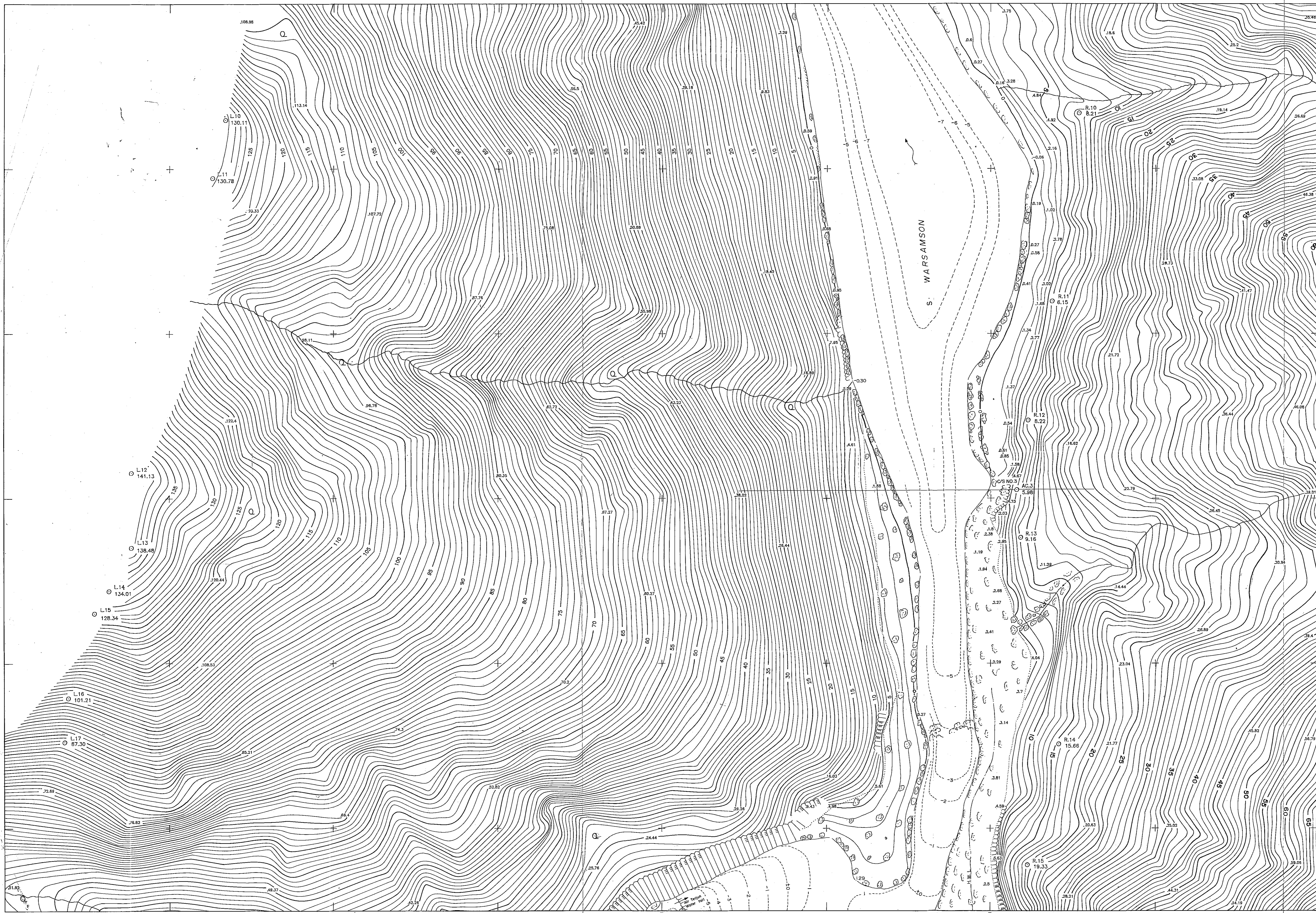
**THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA**

TOPOGRAPHIC MAP

CHECKED BY :	SHEET NO.	2 OF 10
APPROVED BY :	D.W.G DATE	SEP. 1994

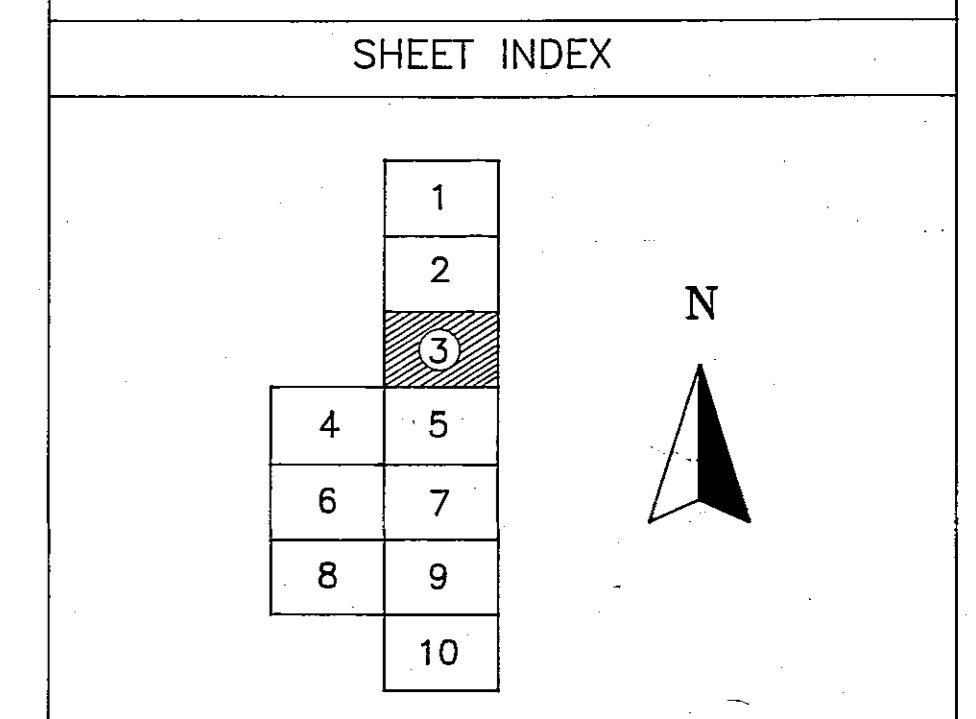
PT. AEROKARTO INDONESIA

JICA JAPAN INTERNATIONAL COOPERATION AGENCY



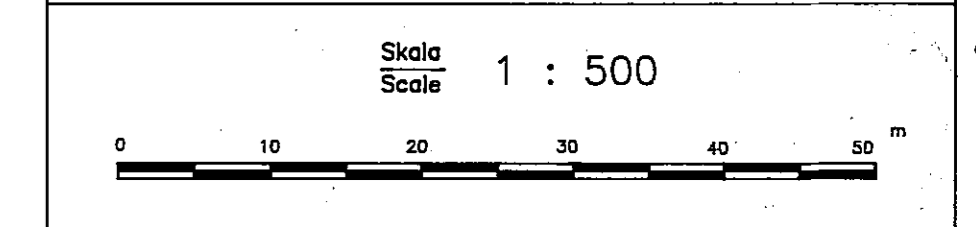
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LEGEND / LEGENDA

○ R.5 45.00	Titik Poligon Utama Traverse Point	○	Hutan Belukar Forest (Broad Leaf Tree)
○/s.1	Titik Cross Section Cross Section Point	⋄	Pasir Sand
● PB.1	Lokasi Titik Bor Bore Hole	⋄	Tebing Cliff
□ BM.1	Patok Beton Benchmark	⋄	Batuan Rock/Stone
30.50	Titik Ketinggian Spot Elevation	—	Garis Ketinggian Contour Line
WL=1.00	Muka Air Tanah Water Level	—	Alur Sungai Stream
		—	Sungai River



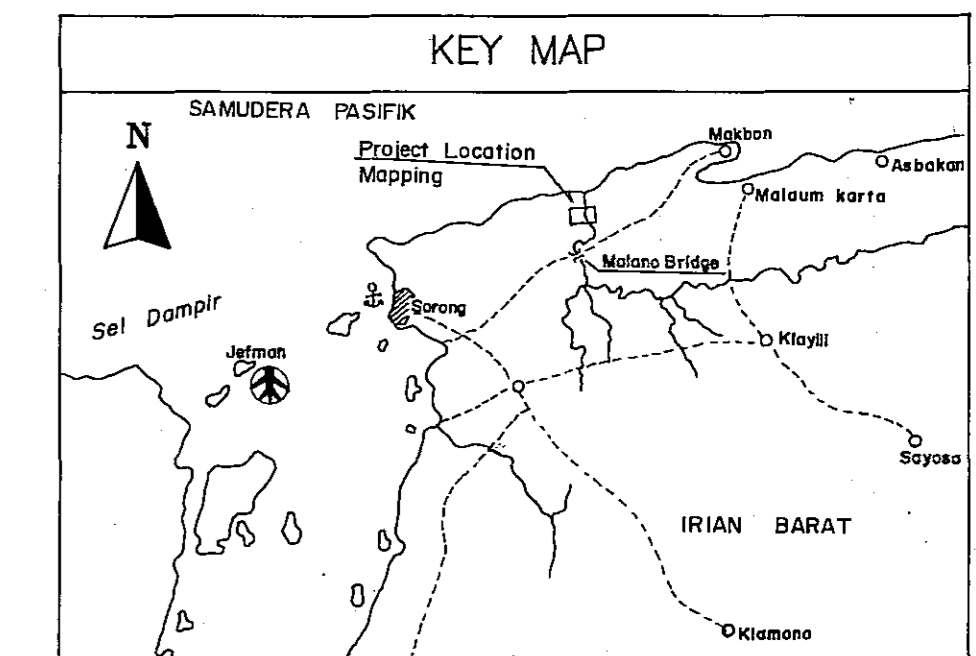
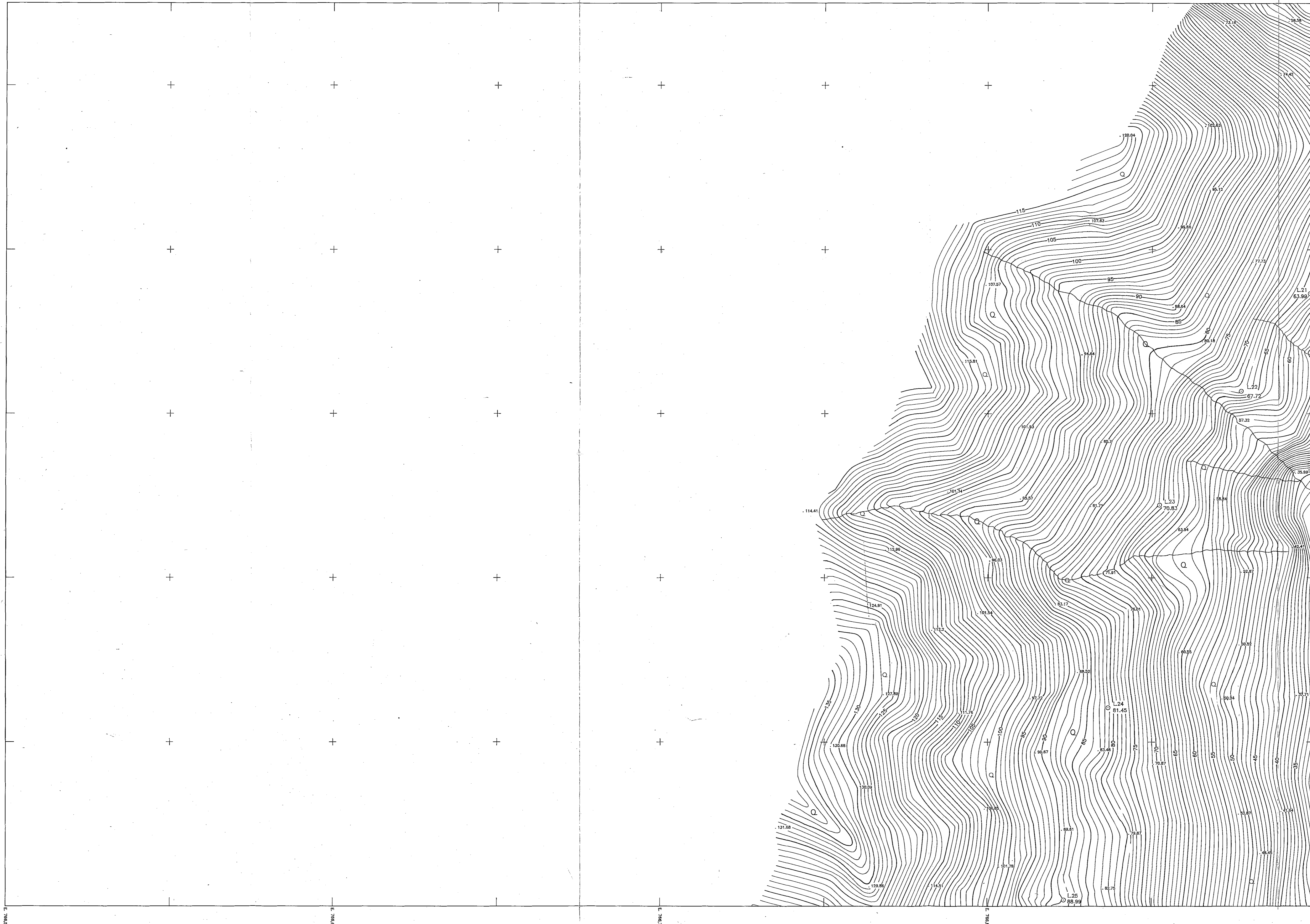
P. T. PLN (PERSERO)

**THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA**

TOPOGRAPHIC MAP

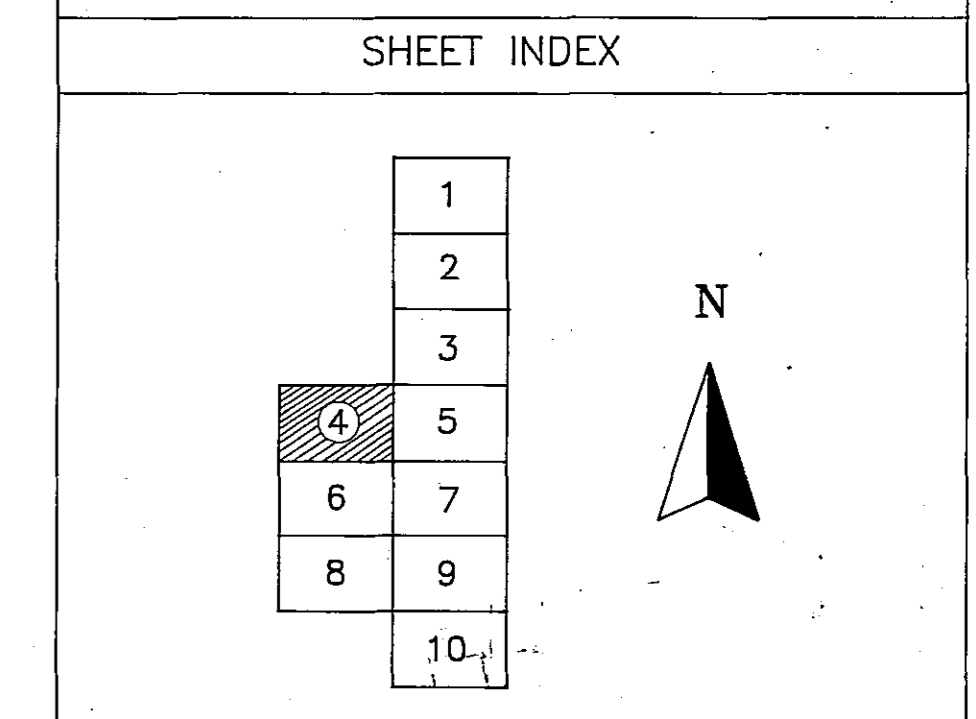
CHECKED BY : SHEET NO. 3 OF 10
APPROVED BY : D.W.G DATE SEP. 1994

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY



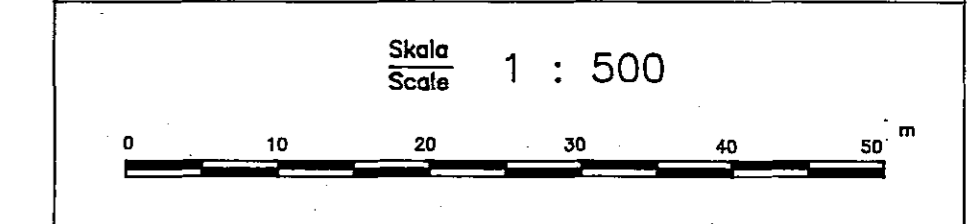
NOTES/KETERANGAN

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LEGEND / LEGENDA

R.5 Titik Poligon Utama Traverse Point	Q Hutan Belukar Forest (Broad Leaf Tree)
C/S.1 Titik Cross Section Cross Section Point	Pasir Sand
PB.1 Lokasi Titik Bor Bore Hole	Tebing Cliff
BM.1 Patok Beton Benchmark	Batu Rock/Stone
30.50 Titik Ketinggian Spot Elevation	Garis Ketinggian Contour Line
WL=1.00 Muka Air Tanah Water Level	Alur Sungai Stream
	Sungai River



P. T. PLN (PERSERO)

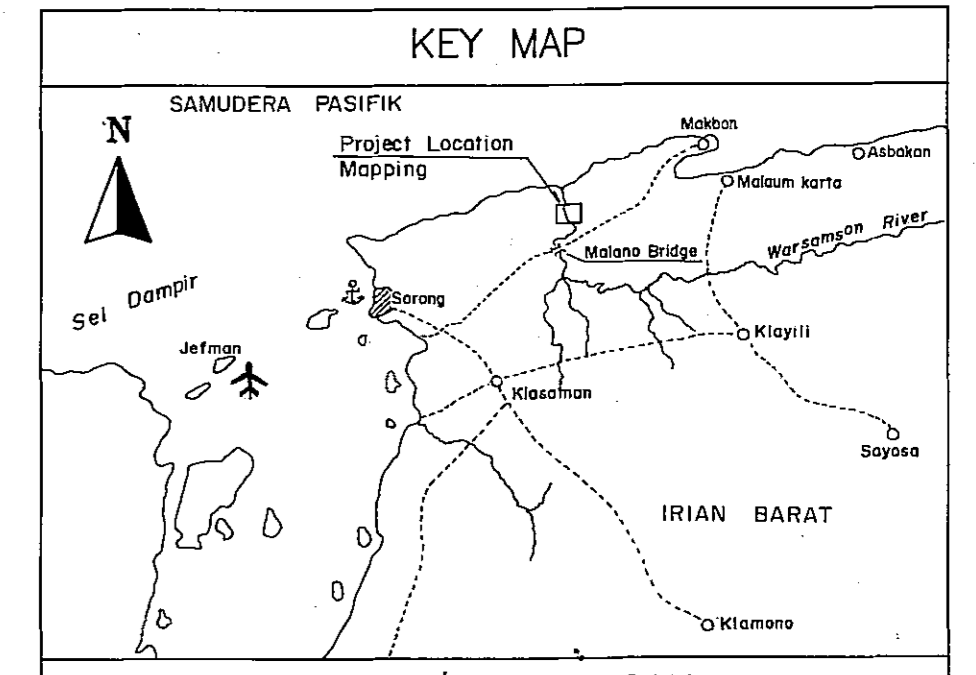
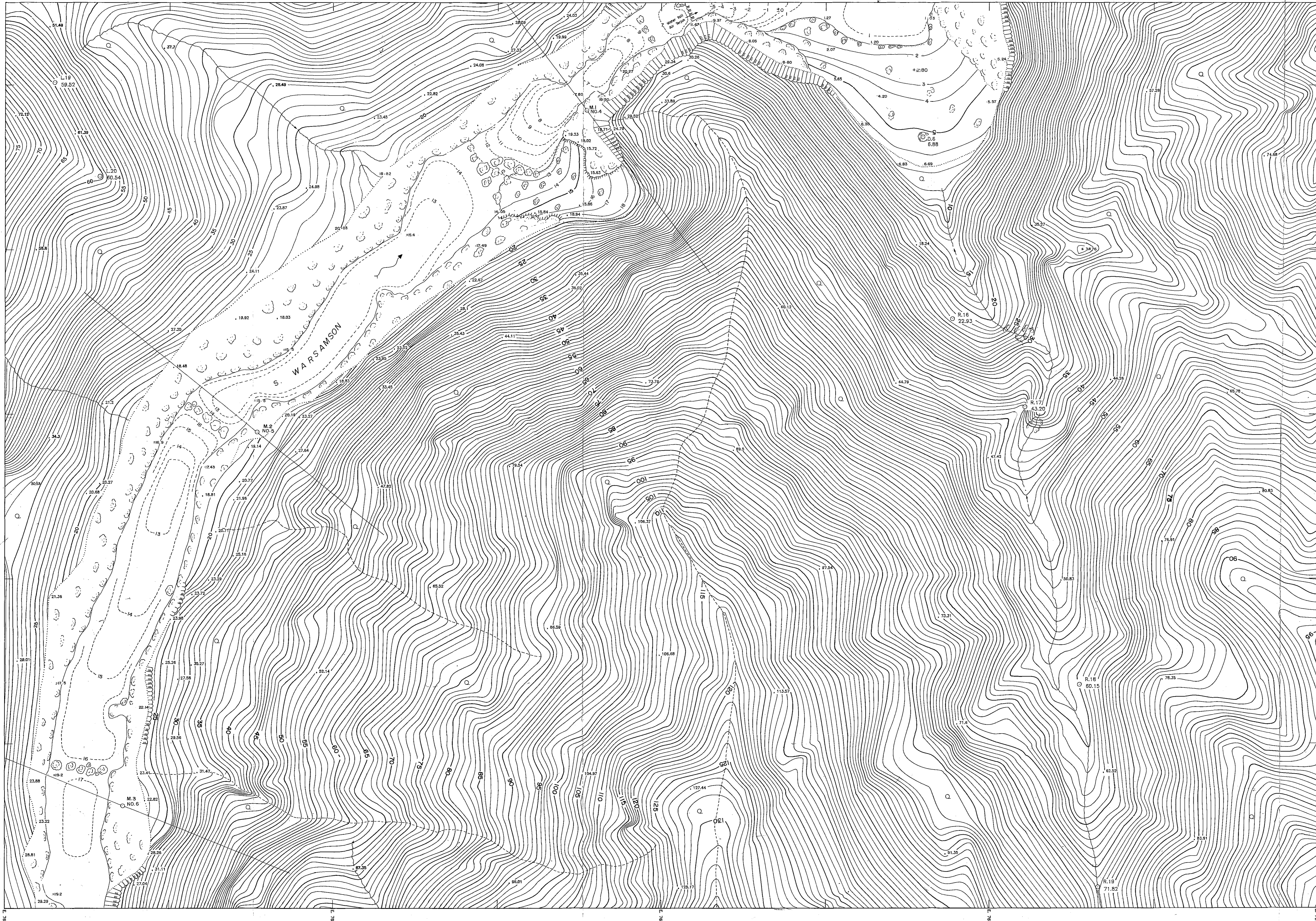
THE FEASIBILITY STUDY ON THE WARSAMSON HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SHEET NO. 4 OF 10
APPROVED BY :	D.W.G DATE SEP. 1994

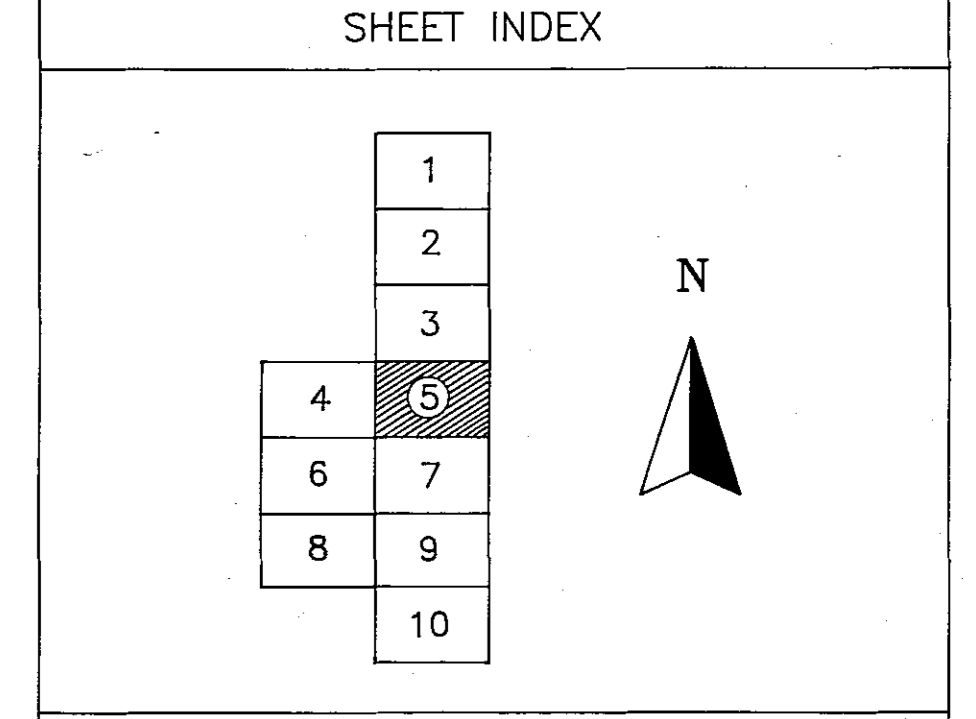
PT. AEROKARTO INDONESIA

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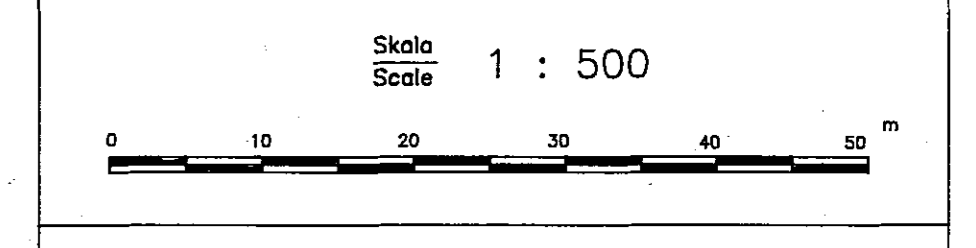
NOTES / KETERANGAN

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LEGEND / LEGENDA

R.5 45.00 Titik Poligon Utama Traverse Point	Hutun Belukar Forest (Broad Leaf Tree)
C/s.1 Titik Cross Section Cross Section Point	Pasir Sand
PB.1 Lokasi Titik Bor Bore Hole	Tebing Cliff
BM.1 Patok Beton Benchmark	Batuan Rock/Stone
30.50 Titik Ketinggian Spot Elevation	Garis Ketinggian Contour Line
WL=1.00 Muka Air Tanah Water Level	Alur Sungai Stream
Estimated EL	Sungai River



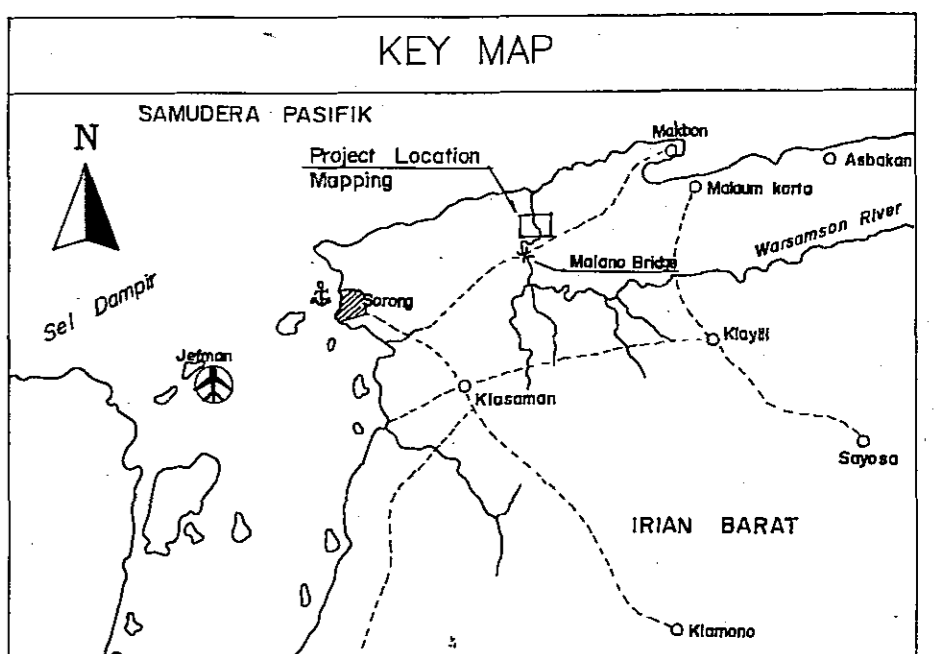
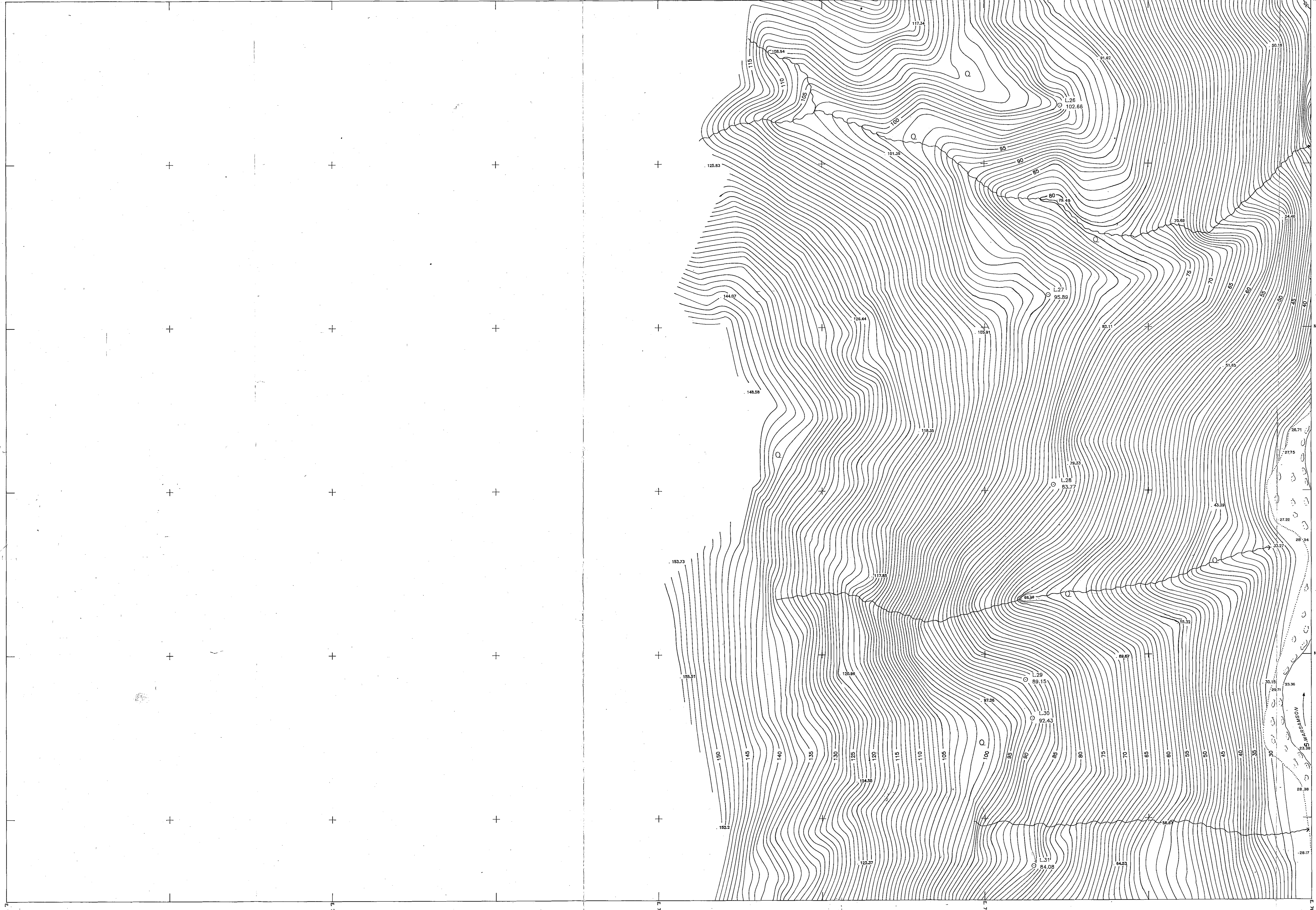
P. T. PLN (PERSERO)

**THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA**

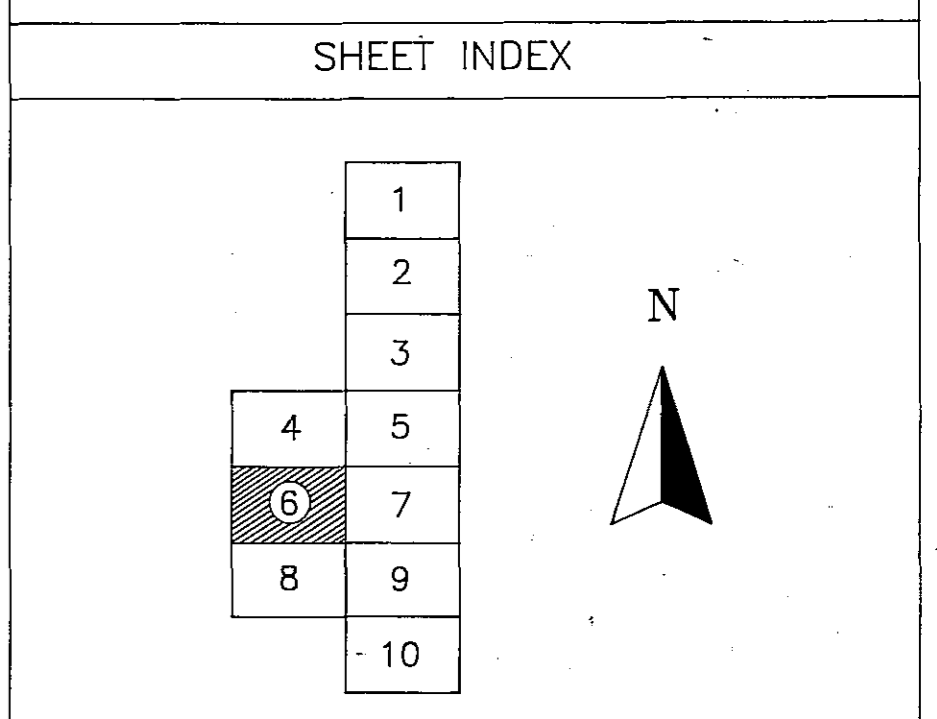
TOPOGRAPHIC MAP

CHECKED BY : SHEET NO. 5 OF 10
APPROVED BY : DWG DATE SEP. 1994

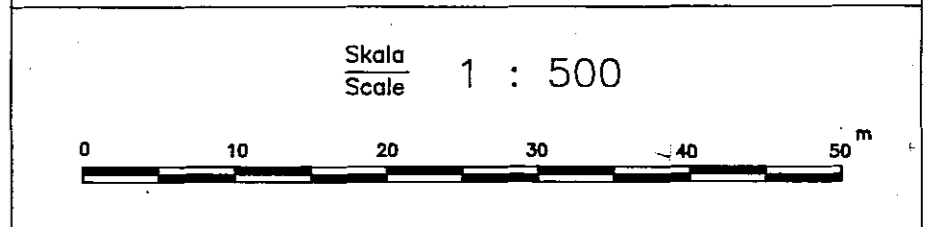
PT. AEROKARTO INDONESIA
 JICA JAPAN INTERNATIONAL COOPERATION AGENCY



- #### NOTES/KETERANGAN
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(Sistem Koordinat menggunakan Sistem Koordinat UTM dengan Ellipsoid Datum ID-74)



- #### LEGEND / LEGENDA
- | | | | |
|--------------|--|---|---|
| R.5
45.00 | Titik Poligon Utama
Traverse Point | Q | Hutan Belukar
Forest (Broad Leaf Tree) |
| C/S.1 | Titik Cross Section
Cross Section Point | ~ | Pasir
Sand |
| PB.1 | Lokasi Titik Bor
Bore Hole | ⚡ | Tebing
Cliff |
| BM.1 | Patok Beton
Benchmark | ⚡ | Batuan
Rock/Stone |
| 30.50 | Titik Ketinggian
Spot Elevation | ~ | Garis Ketinggian
Contour Line |
| WL=1.00 | Muka Air Tanah
Water Level | ~ | Alur Sungai
Stream |
| | | ~ | Sungai
River |



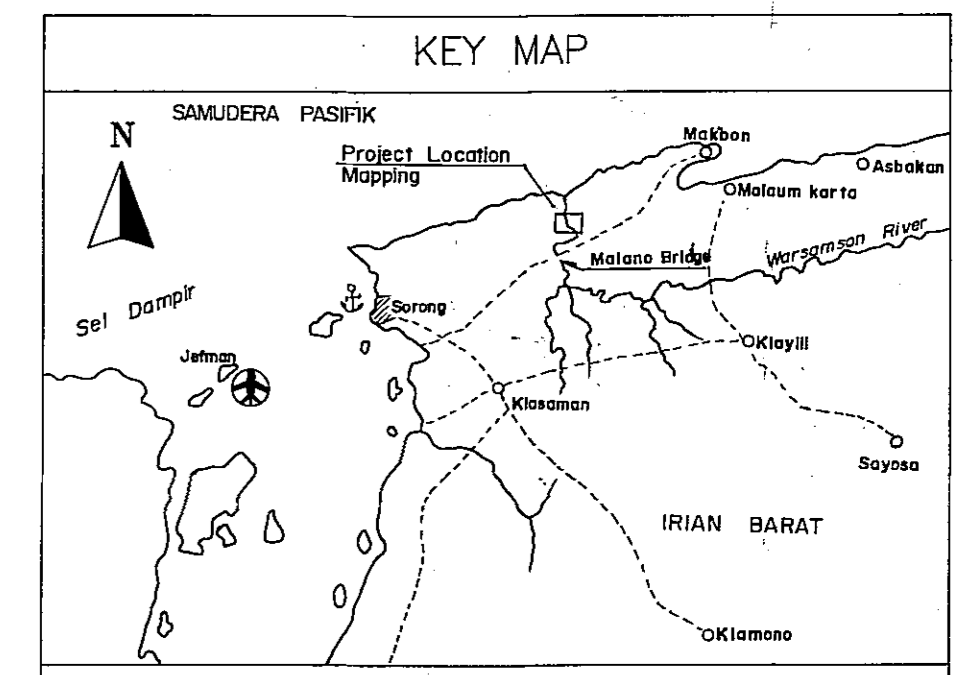
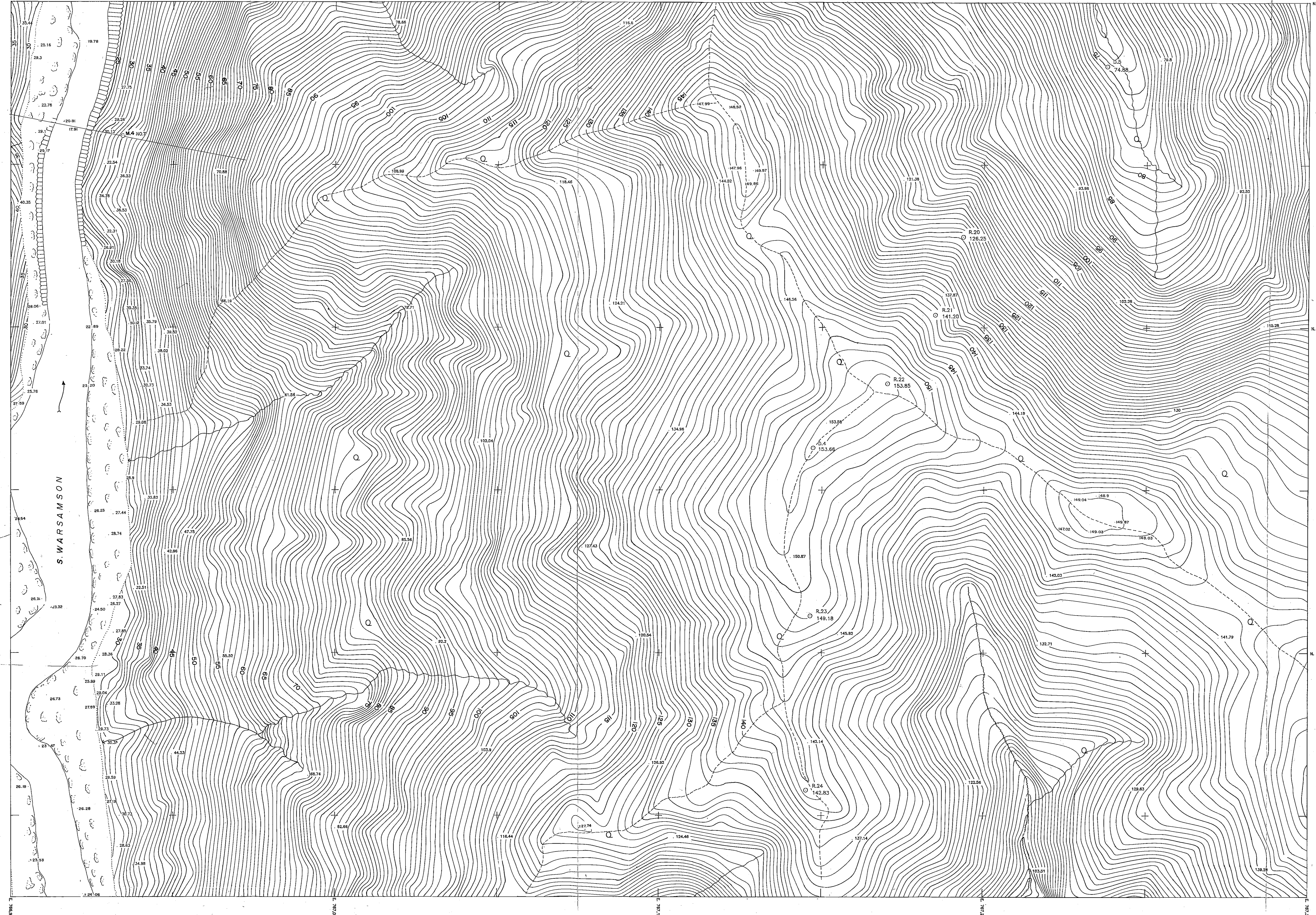
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
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IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

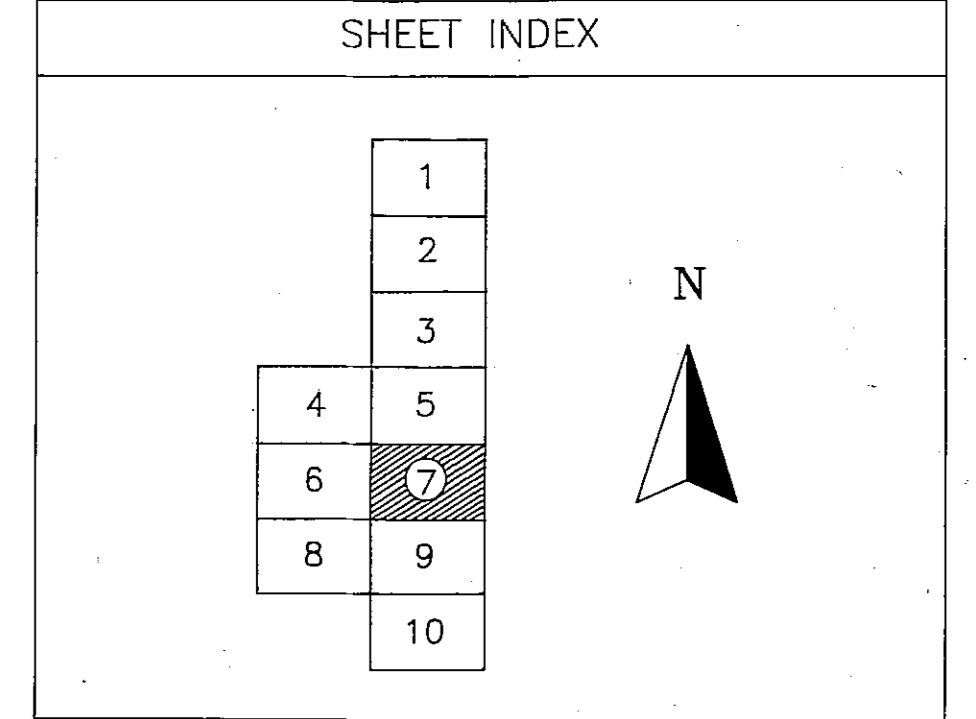
CHECKED BY :	SHEET NO.	6 OF 10
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PT. AEROKARTO INDONESIA



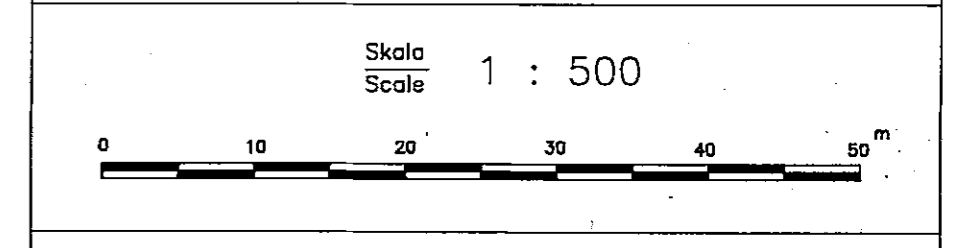
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LEGEND / LEGENDA

○ R.5 45.00 Titik Poligon Utama Traverse Point	Q Hutan Belukar Forest (Broad Leaf Tree)
○ C/S.1 Titik Cross Section Cross Section Point	▨ Pasir Sand
● PB.1 Lokasi Titik Bor Bore Hole	▧ Tabing Cliff
□ BM.1 Patok Beton Benchmark	⬮ Batuan Rock/Stone
• 30.50 Titik Ketinggian Spot Elevation	— Garis Ketinggian Contour Line
WL=1.00 Muka Air Tanah Water Level	— Alur Sungai Stream
	— Sungai River



P. T. PLN (PERSERO)

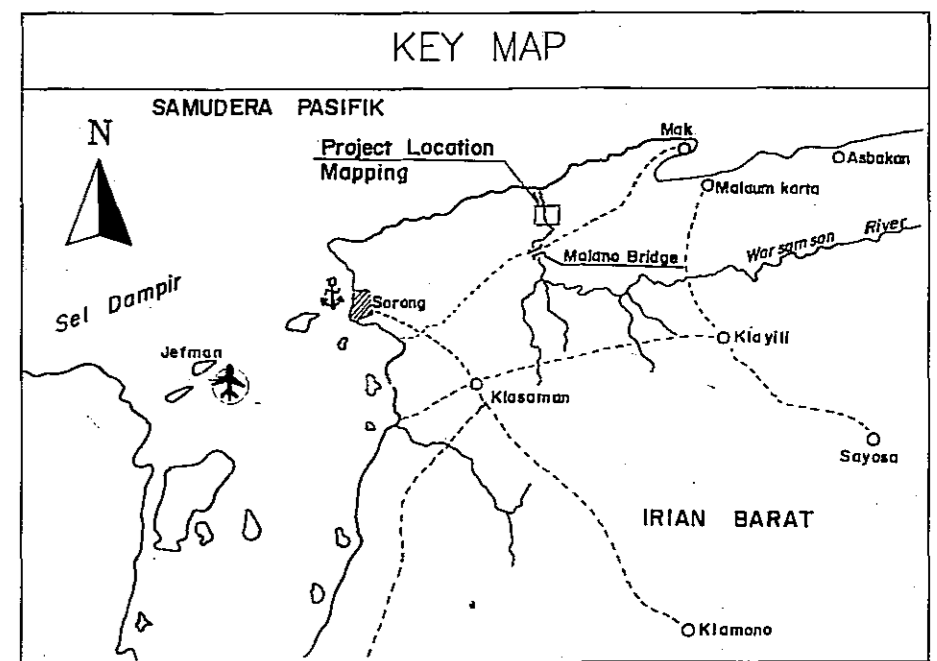
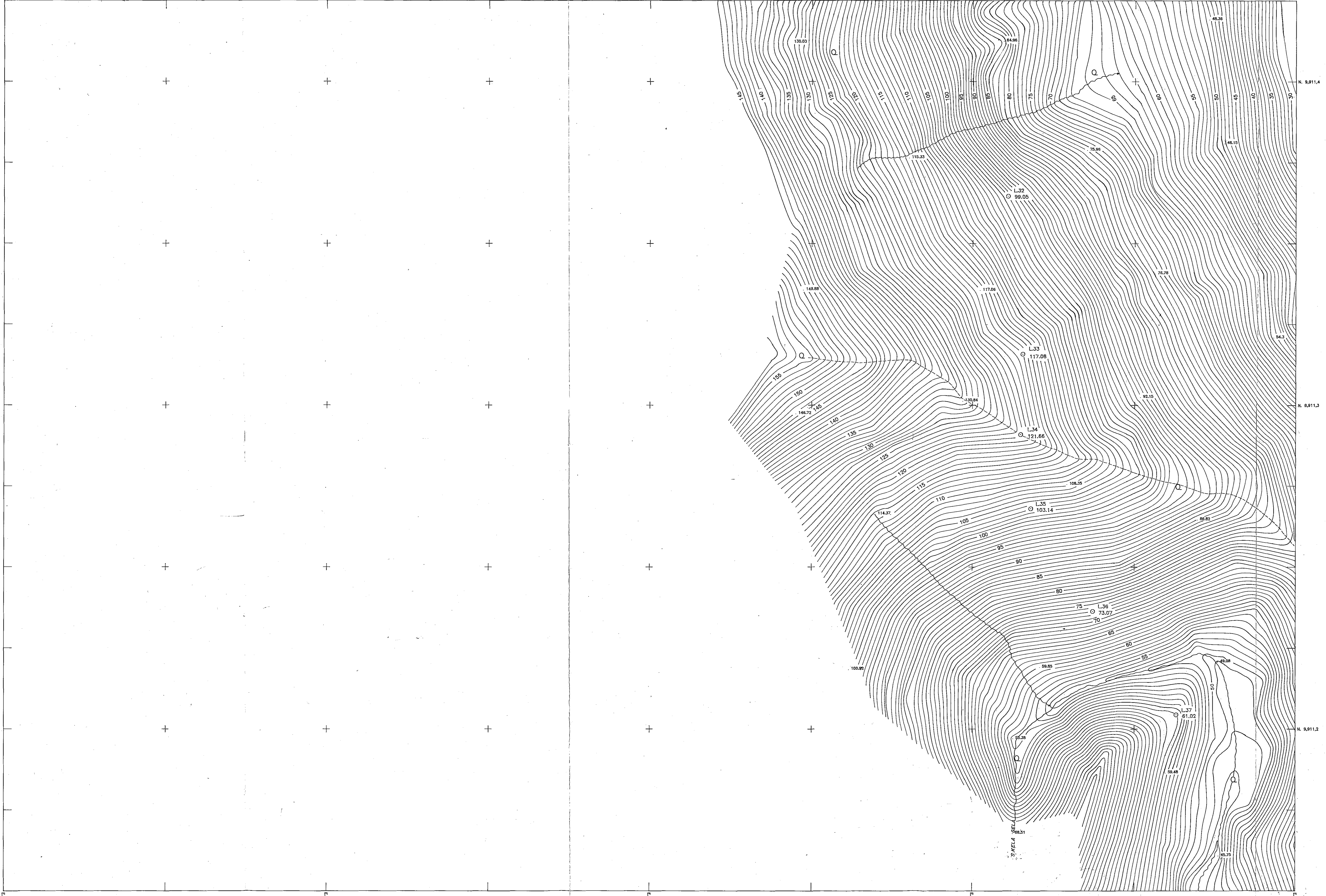
**THE-FEASIBILITY STUDY ON THE WARSAMSON
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TOPOGRAPHIC MAP

CHECKED BY :	SHEET NO. 7 OF 10
APPROVED BY :	D.W.G./DATE SEP. 1994

PT. AEROKARTO INDONESIA

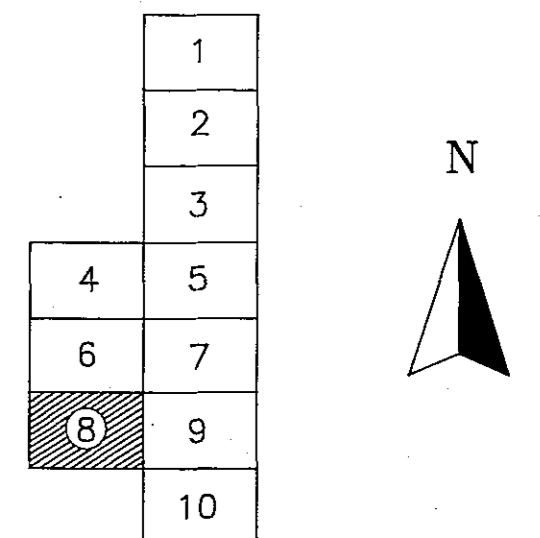
JICA JAPAN INTERNATIONAL COOPERATION AGENCY



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SHEET INDEX



LEGEND / LEGENDA

R.5 45.00 Titik Poligon Utama Traverse Point	Hutun Belukar Forest (Broad Leaf Tree)
OC/S.1 Titik Cross Section Cross Section Point	Pasir Sand
PB.1 Lokasi Titik Bor Bore Hole	Tebing Cliff
BM.1 Patok Beton Benchmark	Batuan Rock/Stone
30.50 Titik Ketinggian Spot Elevation	Garis Ketinggian Contour Line
WL=1.00 Muka Air Tanah Water Level	Alur Sungai Stream
	Sungai River

Skala Scale 1 : 500



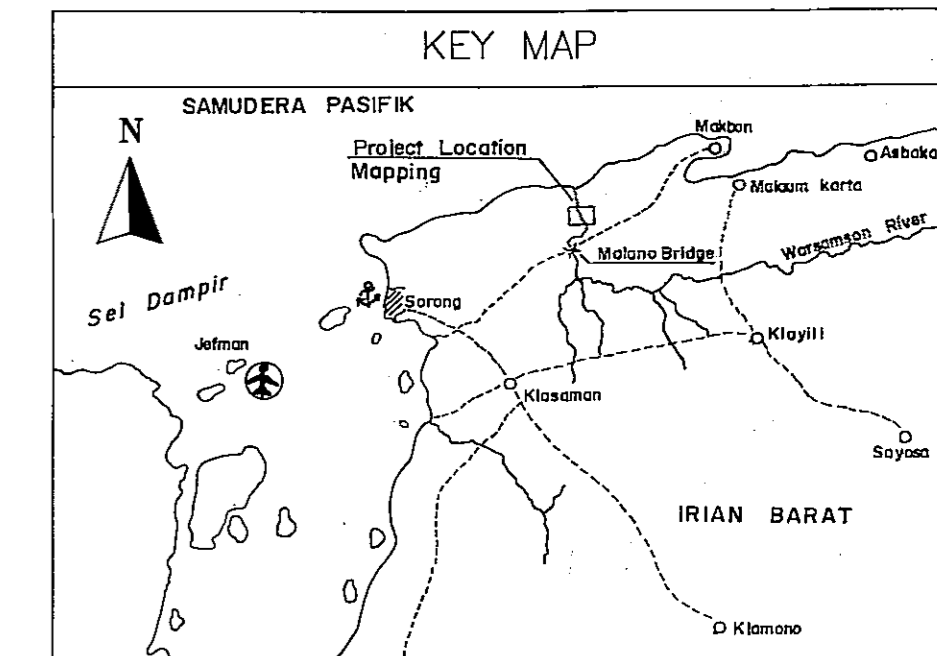
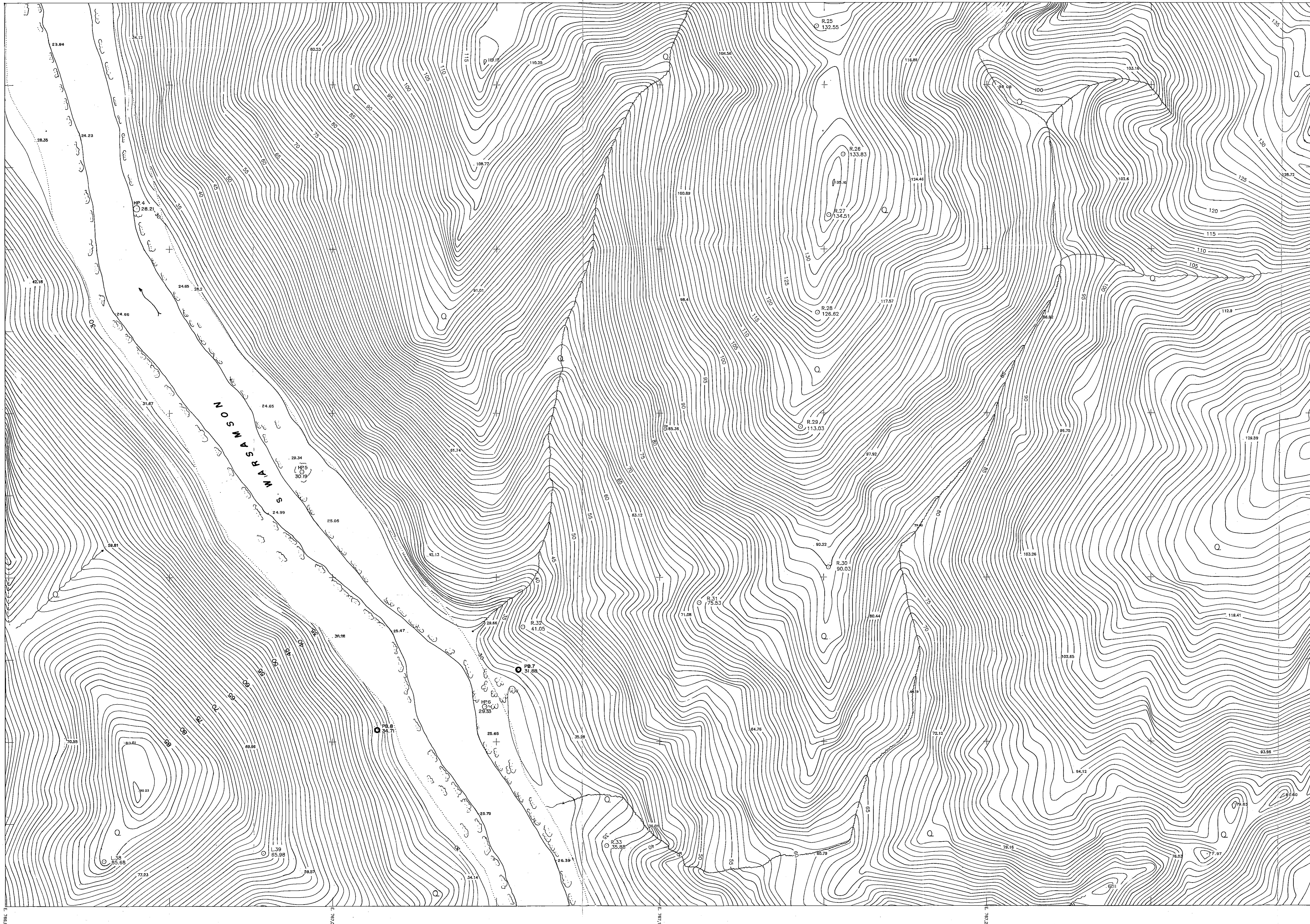
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THE FEASIBILITY STUDY ON THE WARMSAMSON HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

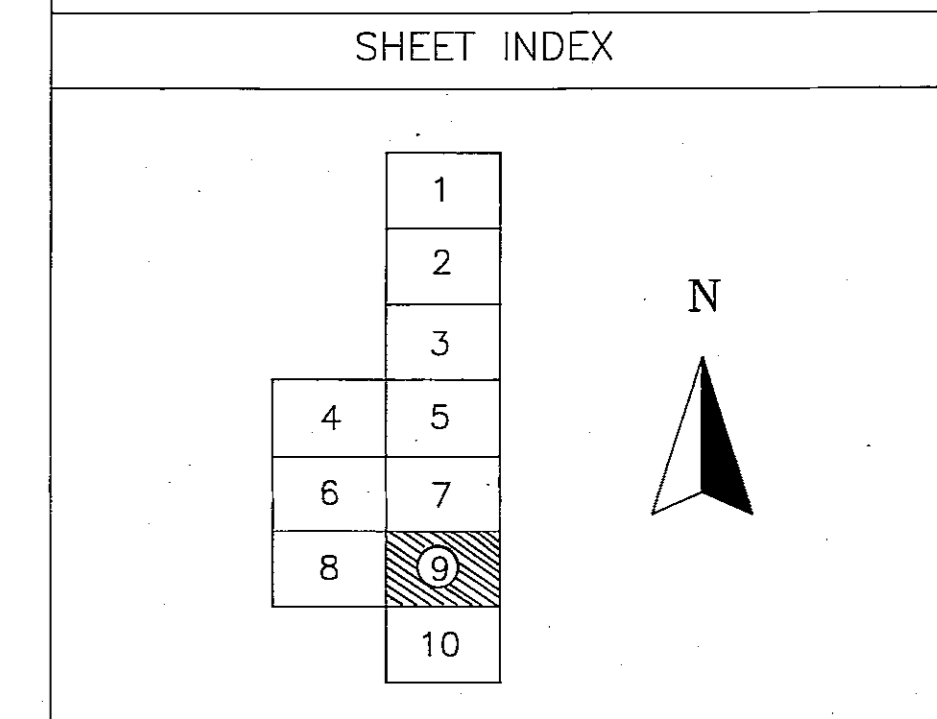
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PT. AEROKARTO INDONESIA



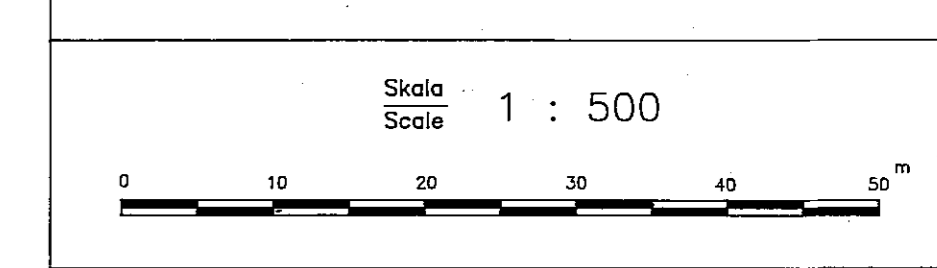
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LEGEND / LEGENDA

○ R.5 45.00	Titik Poligon Utama Traverse Point	Q	Hutan Belukar Forest (Broad Leaf Tree)
○ C/S.1	Titik Cross Section Cross Section Point	~	Pasir Sand
● PB.1	Lokasi Titik Bor Bore Hole		Tebing Cliff
□ BM.1	Patok Beton Benchmark	~	Batuan Rock/Stone
30.50	Titik Ketinggian Spot Elevation	~	Garis Ketinggian Contour Line
WL=1.00	Muka Air Tanah Water Level	~	Alur Sungai Stream
		~	Sungai River



P. T. PLN (PERSERO)

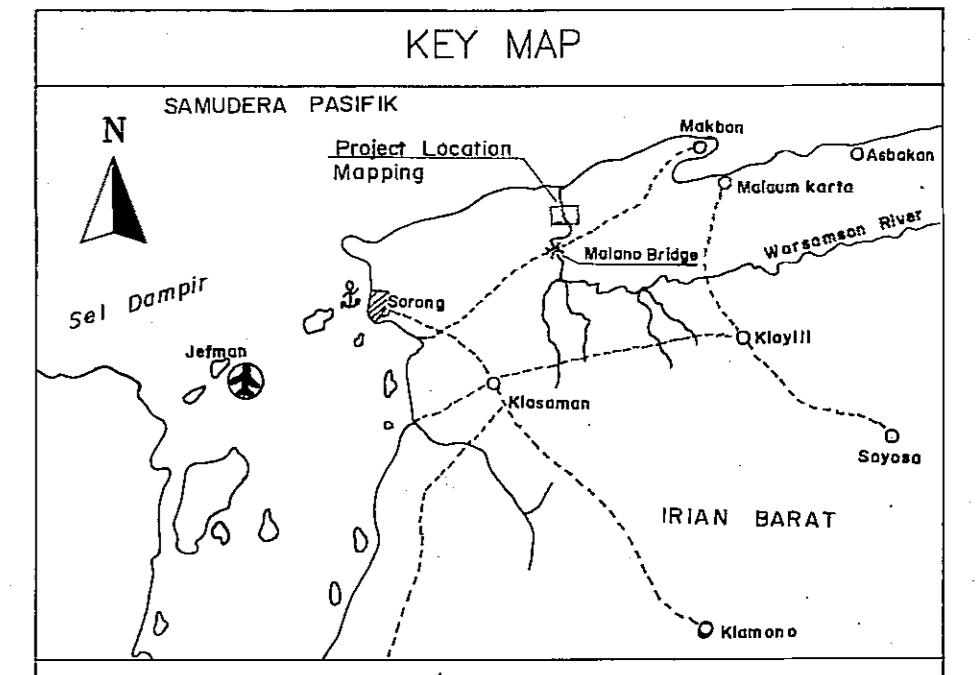
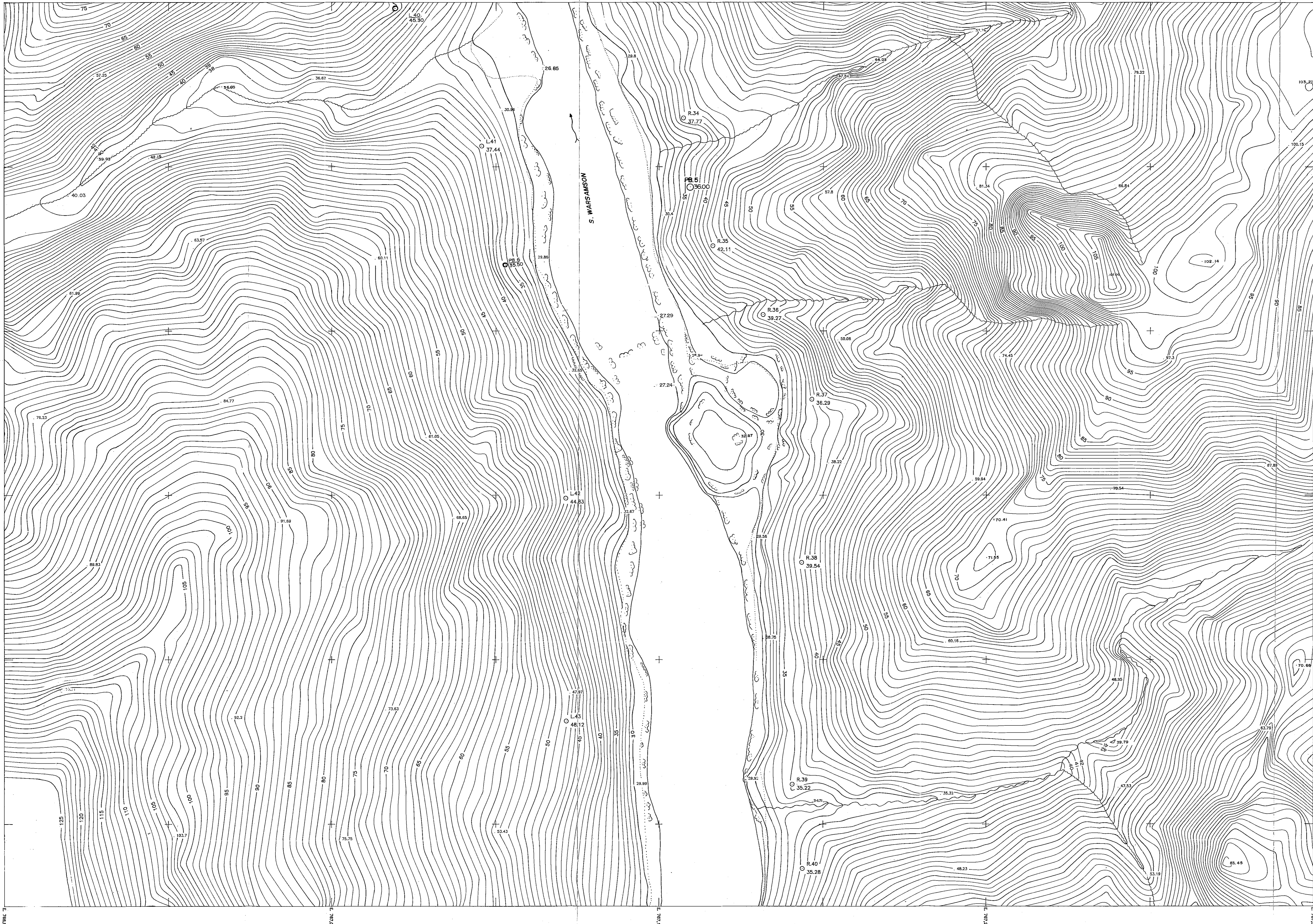
**THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA**

TOPOGRAPHIC MAP

CHECKED BY :	SHEET NO. 9 OF 10
APPROVED BY :	D.W.G DATE SEP. 1994

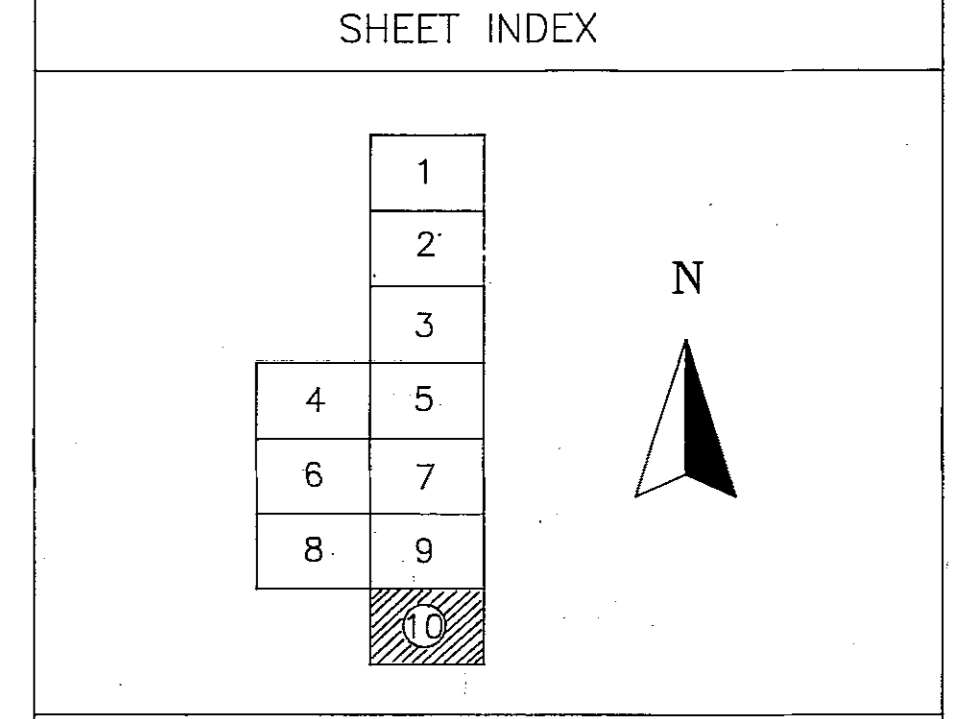
PT. AEROKARTO INDONESIA

JICA JAPAN INTERNATIONAL COOPERATION AGENCY



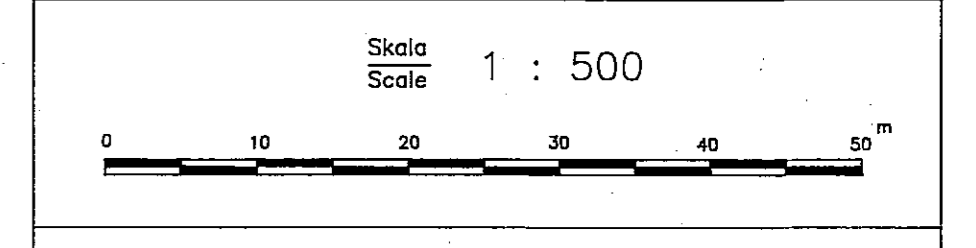
NOTES / KETERANGAN

- Horizontal Control Point is Doppler Station No.6007/SP.5 issued by BAKOSURTANAL (National Coordination Agency for Survey and Mapping)
 - Northing : 9,903,195.557 m
 - Easting : 750,770.613 m
 (Titik Kontrol Horizontal menggunakan Titik Doppler (N.6007/SP.5) yang dikeluarkan oleh BAKOSURTANAL (Badan Koordinasi Survey dan Pemetaan Nasional))
- Vertical Control Point was referred to BM. PLB and BM. KTJ which approved by Departemen Perhubungan
 - BM. PLB Elevation : 2.504 m
 - BM. KTJ Elevation : 2.490 m
 (Titik Kontrol Vertikal menggunakan patok BM. PLB dan patok BM. KTJ yang dikeluarkan oleh Departemen Perhubungan)
- Coordinate System is Universal Transverse Mercator (UTM) with Datum Ellipsoid of ID-74
 - (Sistem Koordinat menggunakan Sistem Koordinat UTM dengan Ellipsoid Datum ID-74)



LEGEND / LEGENDA

○ R.5 45.00 Titik Poligon Utama Traverse Point	○ Hutun Belukar Forest (Broad Leaf Tree)
○ C/S.1 Titik Cross Section Cross Section Point	□ Pasir Sand
● PB.1 Lokasi Titik Bor Bore Hole	▨ Tebing Cliff
□ BM.1 Patok Beton Benchmark	▨ Batuan Rock/Stone
• 30.50 Titik Ketinggian Spot Elevation	— 40— Garis Ketinggian Contour Line
— WL-1.00 Muka Air Tanah Water Level	— 40— Alur Sungai Stream
	— Sungai River



P. T. PLN (PERSERO)

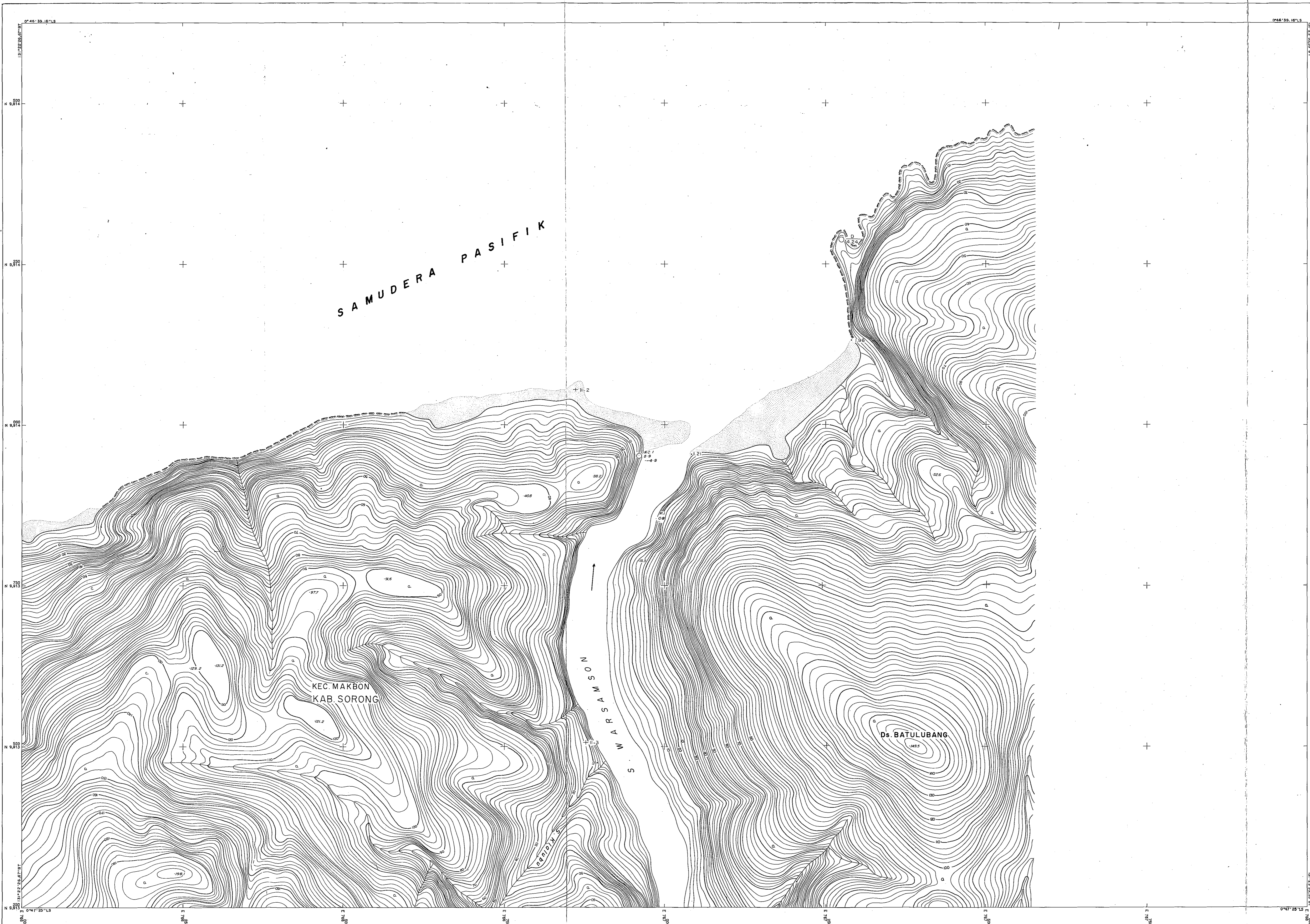
THE FEASIBILITY STUDY ON THE WARSAMSON
HYDRO-ELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SHEET NO. 10 OF 10
APPROVED BY :	D.W.G DATE SEP 1994

PT. AEROKARTO INDONESIA

JICA JAPAN INTERNATIONAL COOPERATION AGENCY



KEY MAP

NOTES

- Aerial photography was carried out in January 1984 with Aerial Camera GPS and preparation of topographic maps in October 1984.
- Horizontal reference is Doppler station : N6007 / SP.5 given by BAKOSURTANAL, with value of N: 8,803,195.577 m, E: 750,770.813 m.
- Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
- Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
- Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA SORONG PILE

BM. PLB m : 2.504
EL : 2.504
LAT : -
LON : -

BM. KTJ m : 2.490
EL : 2.490
LAT : 0-52-47.500S
LON : 131-14-43.085E

ZERO OF GAUGING STAFF
1 : 100

INDEX SHEET

LEGEND

Premark / GPS	W-03	Bush	∅
Spot GPS point	36.15	Dry Crop Field	V
Direct Levelling Point	42.57	Wet Rice Field	LL
Spot Elevation	50.1	Sand	~~~~~
Principle Point	3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	—	Quarry	
Branch Road	—	Inlex Sanfour	~~~~~
Track	—	Standard Contour	~~~~~
Hot spring	⊕	Vegetation boundary	~~~~~
Pond / Lake	⊕	River / Rivulet	~~~~~
Government Office	⊕	Waterfall	~~~~~
Forest (arnad leaf tree)	⊕		
Cocoa plantations	⊕		

SKALA SCALE 1 : 2500

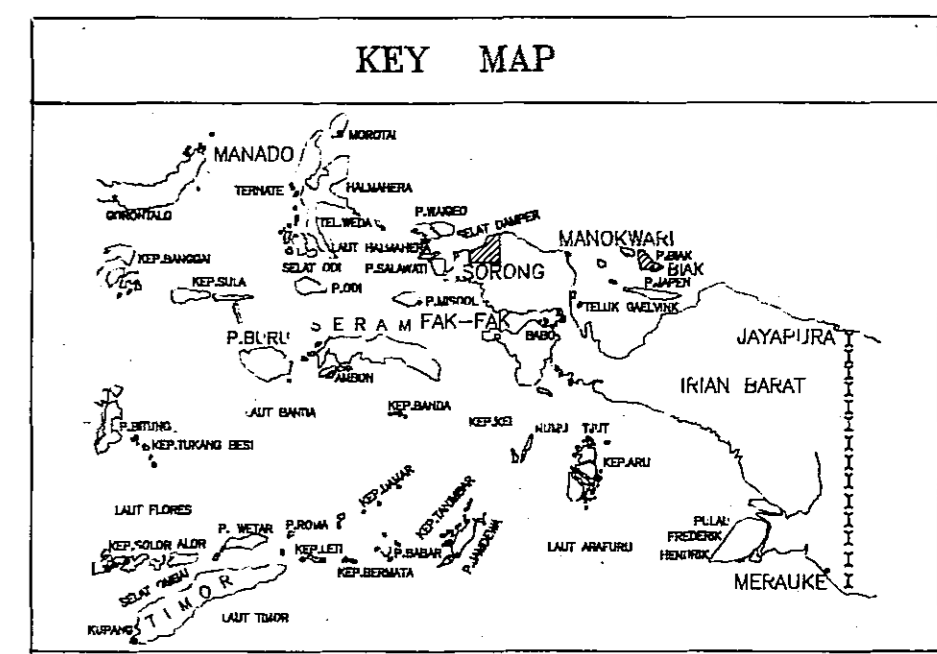
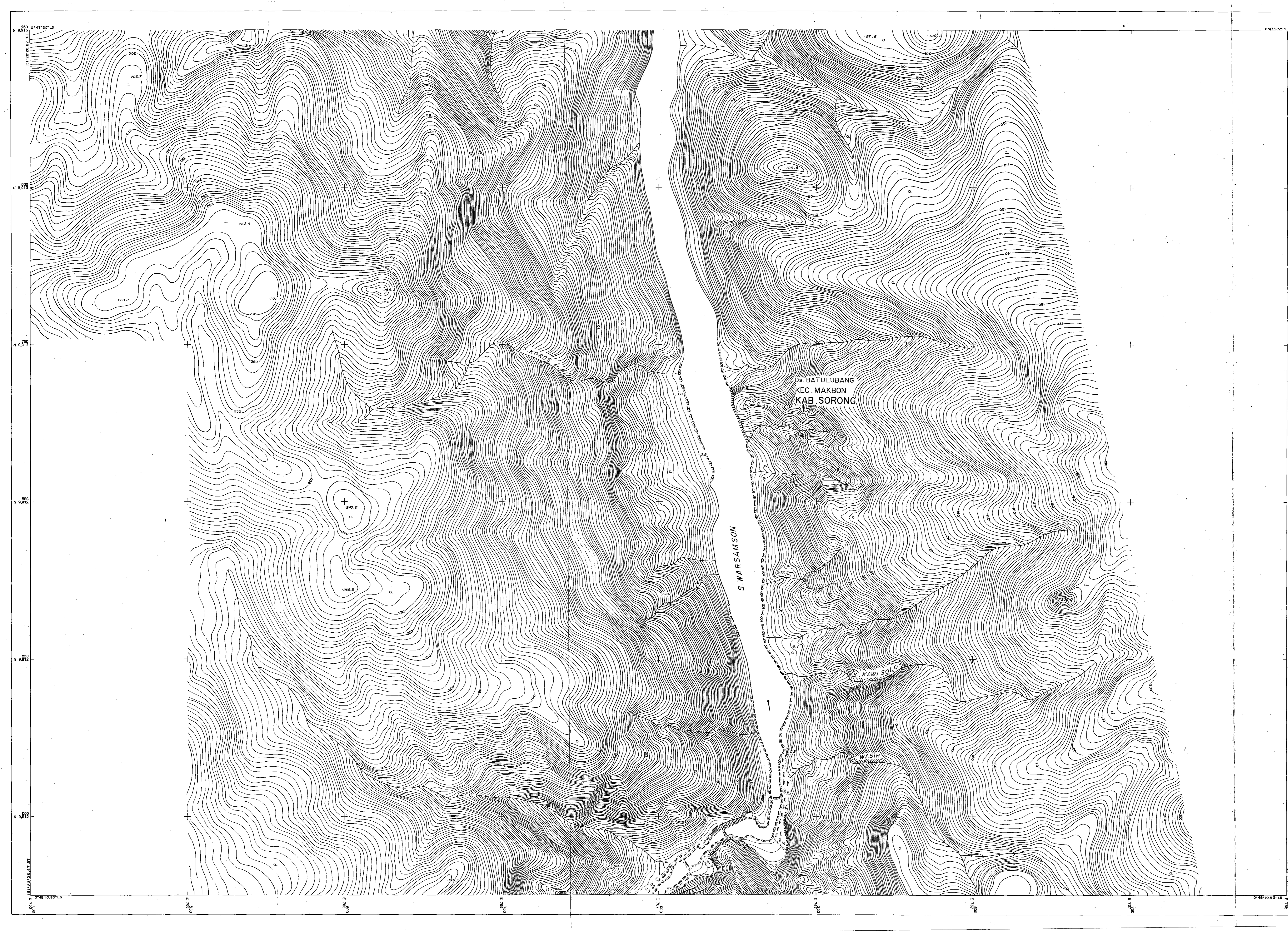
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON HYDROELECTRIC POWER DEVELOPMENT PROJECT IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 1
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

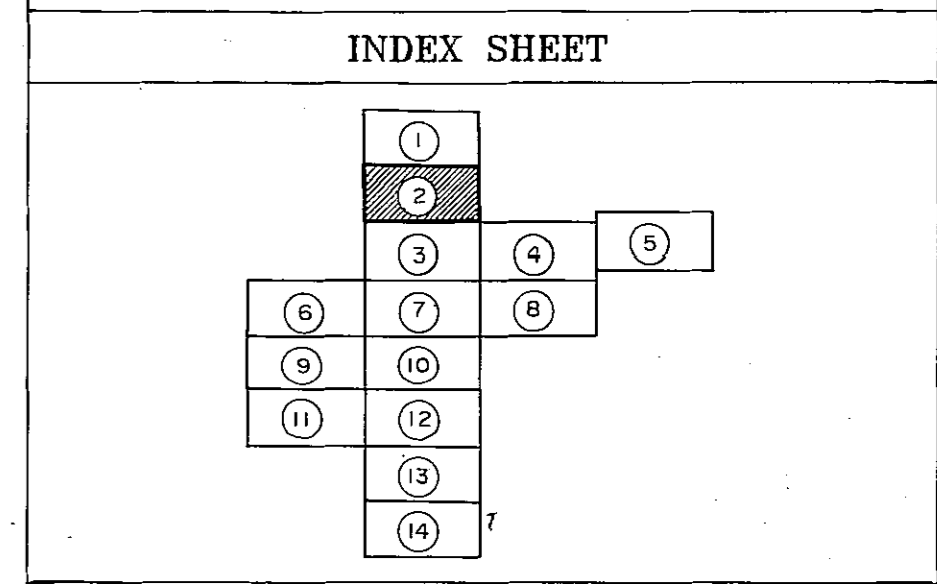
PT. AEROKARTO INDONESIA
JAPAN INTERNATIONAL COOPERATION AGENCY



- NOTES**
1. Aerial photography was carried out in January 1984 with Airborn Kinematic GPS and preparation of topographic maps in October 1984
 2. Horizontal reference is Doppler station : N6007 / SP.5 given by BAKOSURTANAL, with value of N:8,903,196.577 m, E: 750,770.613 m.
 3. Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Departmenat Pechubangan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

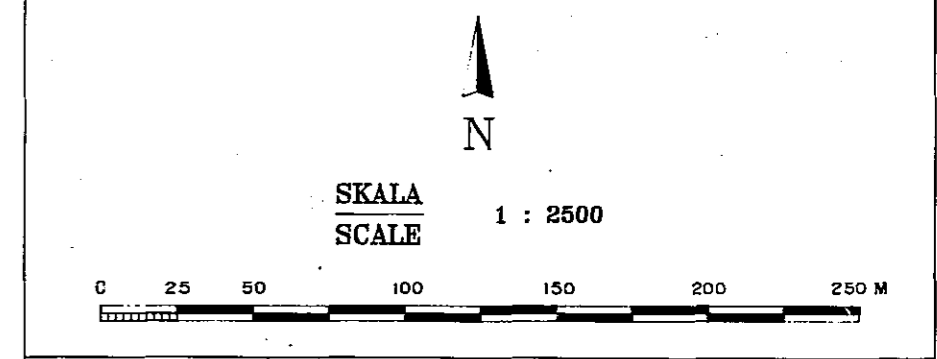
REFERENCE BM DATA
SORONG PILE

BM. PLB	2.504	3.490	BM. KTJ	2.490
E. :	2.504	3.490	EL :	2.490
LAT :	2.080	M.SL	LAT :	0-52-47.500S
LONG :	1.060	Z=100	LONG :	133-14-43.085E
D.L. (L.W.S.)				
ZERO OF GAUGING STAFF				
1 : 100				



LEGEND

Premark / GPS	W-03 36.15	Bush	△
Spot GSE point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	LL
Spot Elevation	+ 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	==	Quarry	
Branch Road	---	Index Contour	—
Trook	---	Standard Contour	—
Hot spring	⊕	Vegetation boundary	⊕
Pond / Lake	⊕	Forest (broad leaf tree)	⊕
Government Office	⊕	Coconut plantations	⊕
		Kiver/Kivulet	—
		Waterfall	—



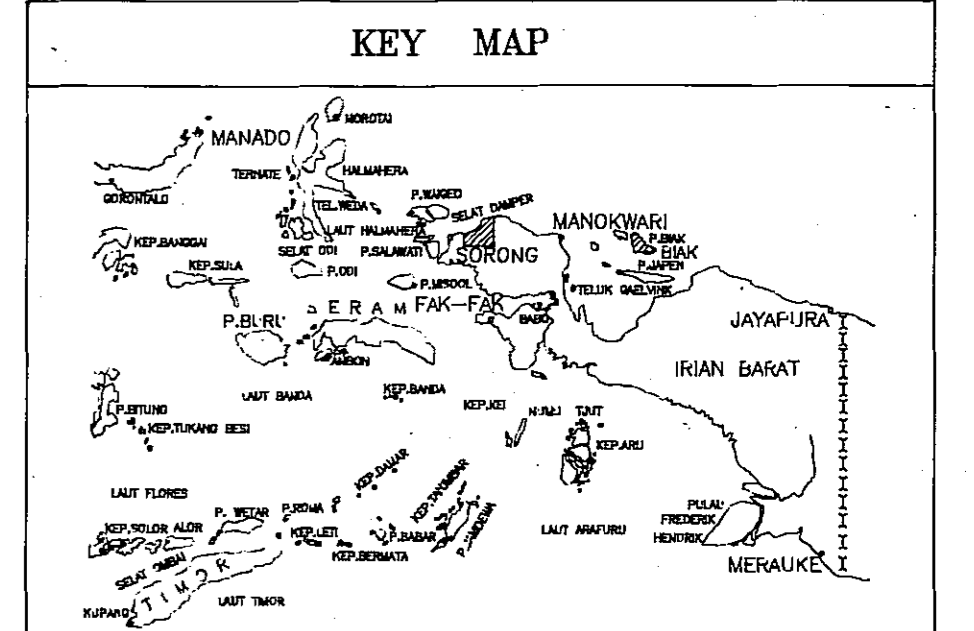
P. T. PLN (PERSERO)

**THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA**

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	2
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY

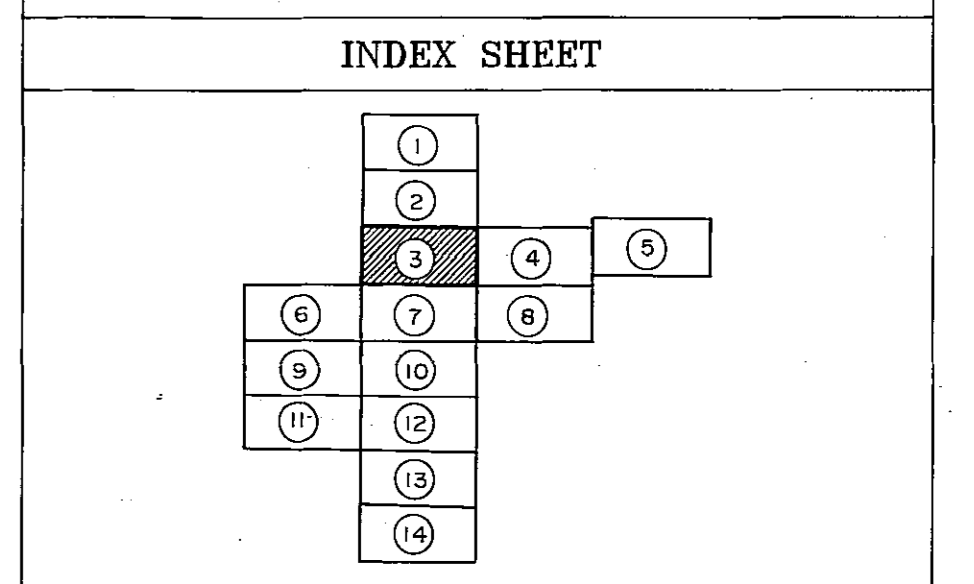


- ### NOTES
1. Aerial photography was carried out in January 1994 with Alborn Kinematic GPS and preparation of topographic maps in October 1994
 2. Horizontal reference is Doppler station : N9007 / SP.5 given by BAKOSURTANAL, with value of N:8,903,196.677 m, E: 750,770.813 m.
 3. Elevation in Sorong File was referred to BM.PLB and BM.KTU approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG FILE

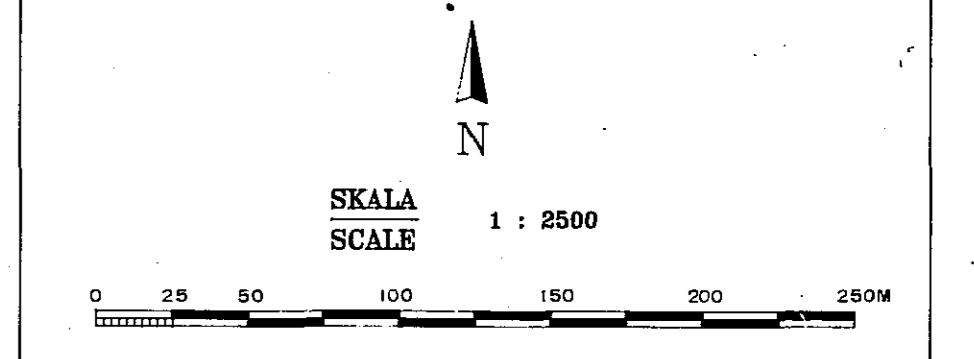
BM. PLB	4	2.504	2.490	BM. KTU	3	3.490	EL : 2.490 m
EL :	2.504			EL :	3.490		2.490 m
LAT :	-	2.060	M.S.L.	LAT :	-	0-52-47.500S	
LONG :	-	1.080	Z=100	LONG :	-	131-14-43.085E	

ZERO OF GAUGING STAFF
1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	△
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	+ 30.25	Wet Rice Field	LL
Spot Elevation	+ 50.1	Sand	
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	—	Quarry	
Branch Road	- - -	Index Contour	—
Track	—	Standard Contour	—
Hot spring	⊕	Vegetation boundary	—
Pond / Lake	⊙	River/Rivulet	—
Government Office	⚡	Waterfall	—
Forest (broad leaf tree)	⊙		
Cocoa plantations	⊙		



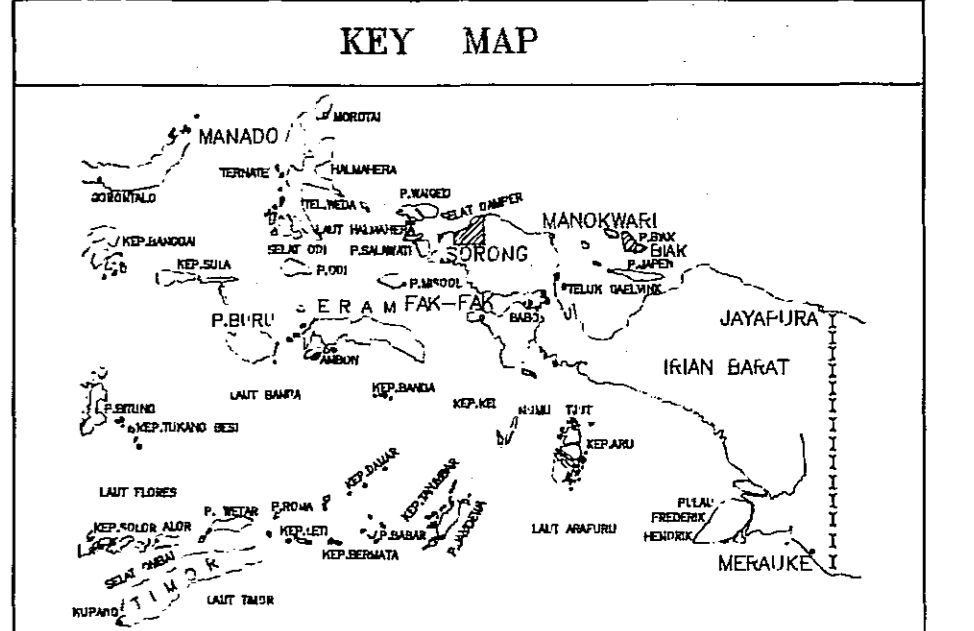
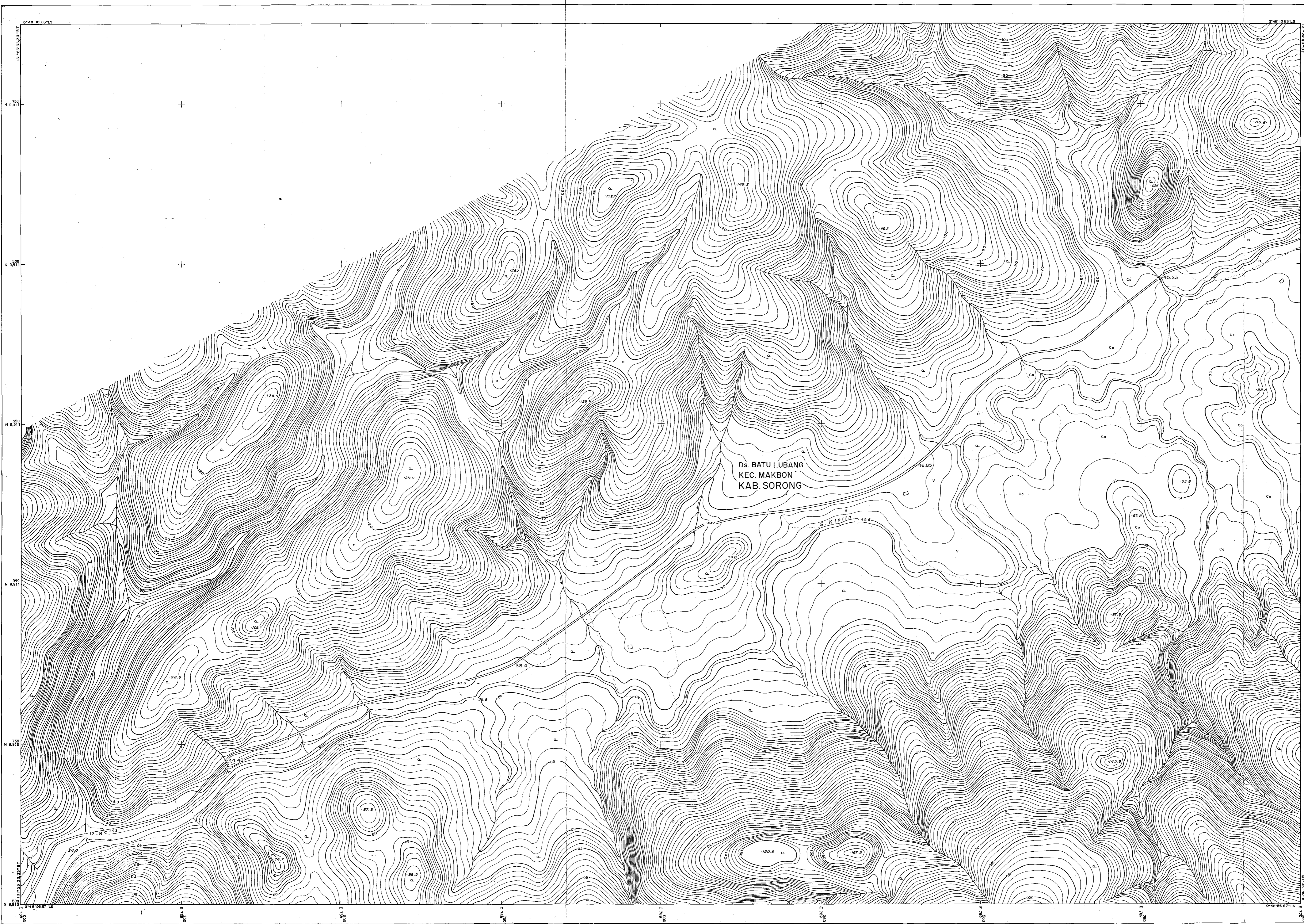
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 3
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

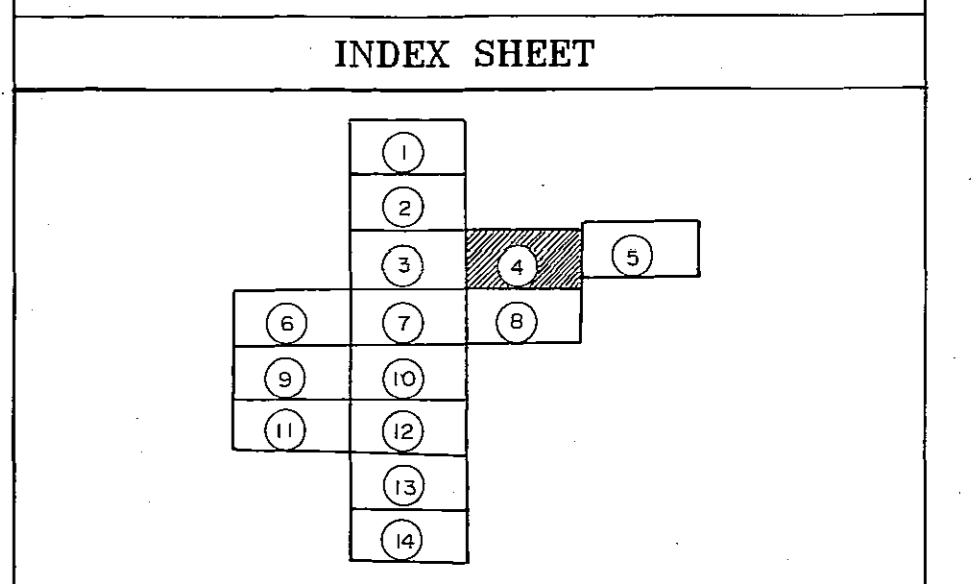
PT. AEROKARTO INDONESIA



- ### NOTES
1. Aerial photography was carried out in January 1994 with Airborn Kinematic GPS and preparation of topographic maps in October 1994.
 2. Horizontal reference is Deppel station : N8007 / SP.5 given by BAKOSURTANAL with value of N:8,003,195.577^m, E: 750,770.513^m.
 3. Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

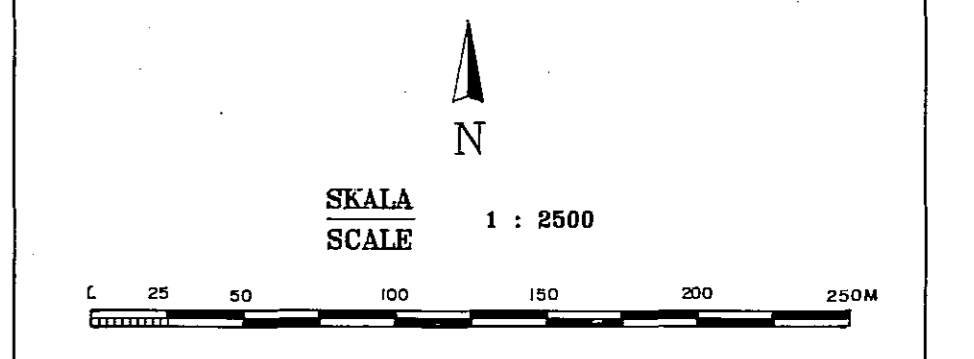
REFERENCE BM LATA
SORONG PILE

BM. PLB	4.564	3.550	BM. KTJ
EL :	2.504	2.490	EL : 2.490 ^m
LAT :	3.490		LAT : 0-52-47.500S
LN :	2.060	M.SL	LN : 131-14-43.050E
	1.060	Zo=100	D.L (L.W.S.)
	0		ZERO OF GAUGING STAFF
			1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	∅
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	ll
Spot Elevation	• 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main road	==	Quarry	
Branch Road	---	Index Contour	~~~~~
Track	---	Stander Contour	~~~~~
Hot spring	⊕	Vegetation boundary	~~~~~
Pond / Lake	⊖	River/Rivulet	~~~~~
Government Office	⚡	Waterfall	~~~~~
Forest (Broad leaf tree)	⊙		
Cocoa plantations	⊙		



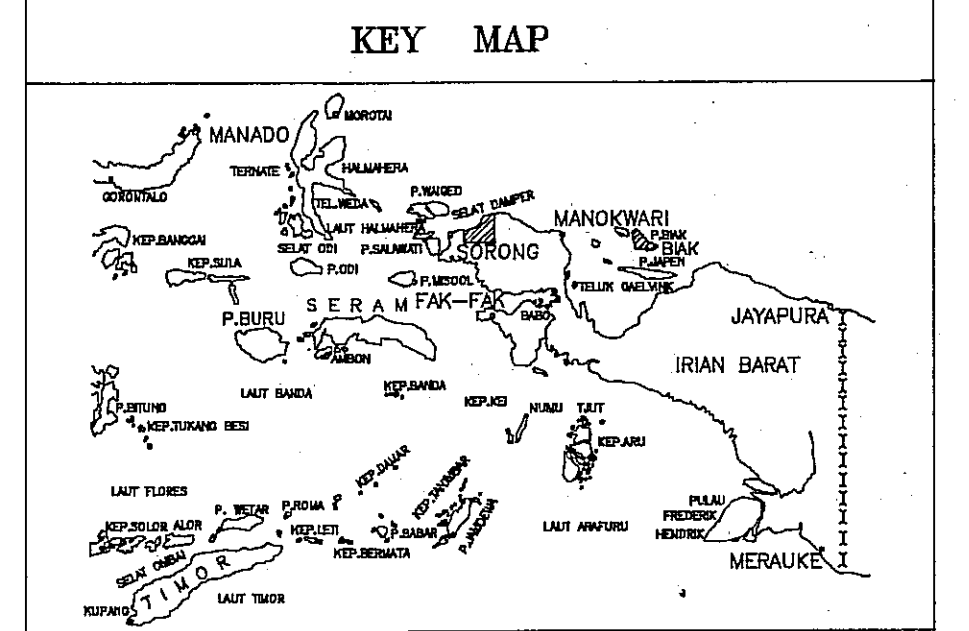
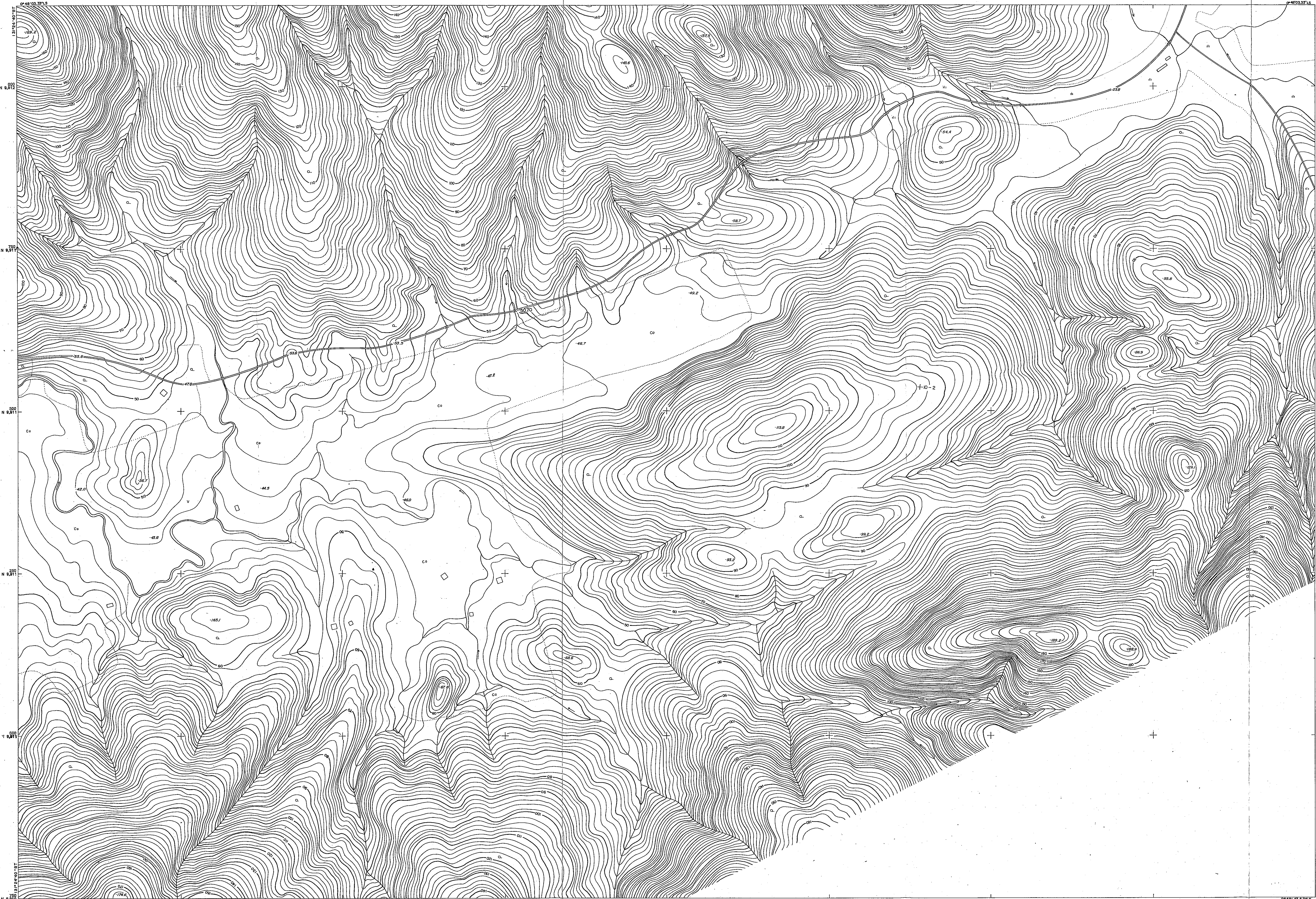
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAWSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	4
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY

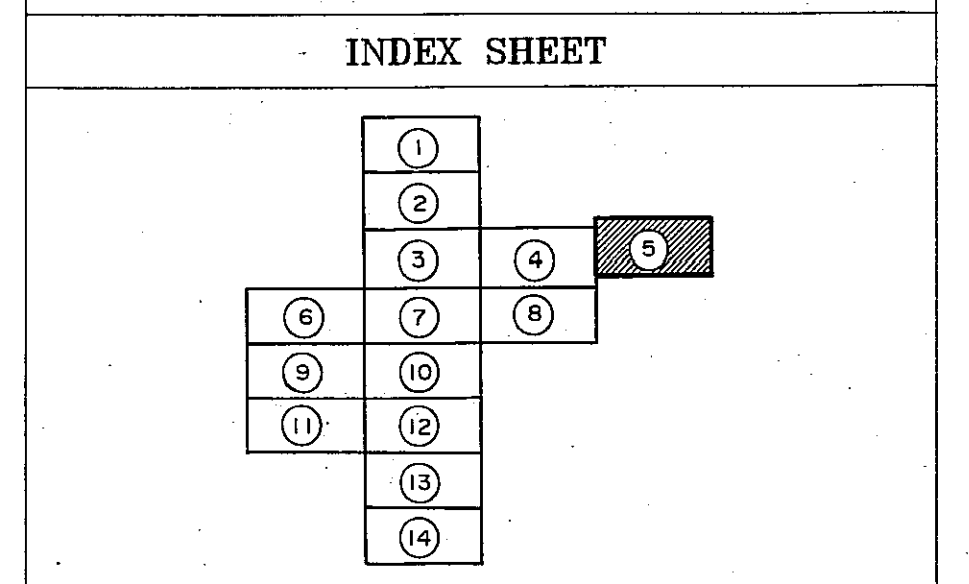


- ### NOTES
1. Aerial photography was carried out in January 1994 with Aibern Kinematic GPS and preparation of topographic maps in October 1994
 2. Horizontal reference is Doppler station : N8007 / SP.5 given by BAKOSURTANAL with value of N:8,903,195.577^m, E: 750,770.613^m.
 3. Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG PILE

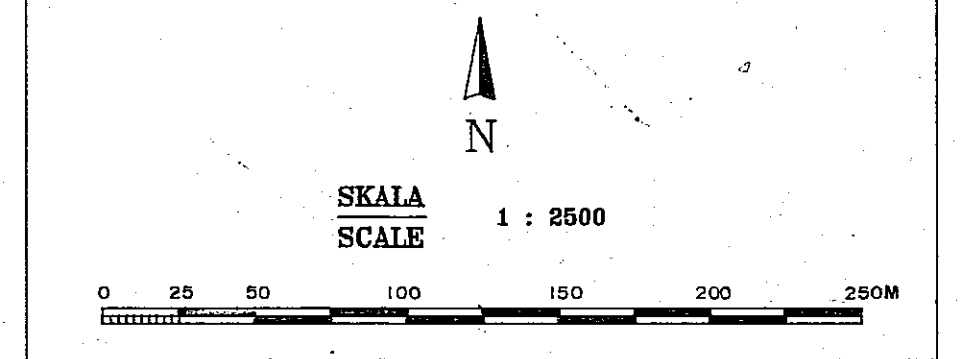
BM. PLB	4.564	4.550	BM. KTJ
EL. : 2.504	2.490	EL. : 2.490	
LAT. : -	3.480	LAT. : 0-52-47.500S	
LONG. : -	2.080	LONG. : 131-14-43.000E	
	1.080	Zo=100 D.L. (L.W.S.)	
	0	ZERO OF GAUGING STAFF	

1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	⊙
Spot GPS point	c 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	ll
Spot Elevation	+ 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	—	Quarry	
Branch Road	- - -	Index Contour	—
Track	—	Standard Contour	—
Hot spring	⊙	Vegetation boundary	⊙
Pond / Lake	⊙	River/Rivulet	—
Government Office	⊙	Waterfall	—
Forest (Broad leaf tree)	⊙		
Cocoa plantations	⊙		



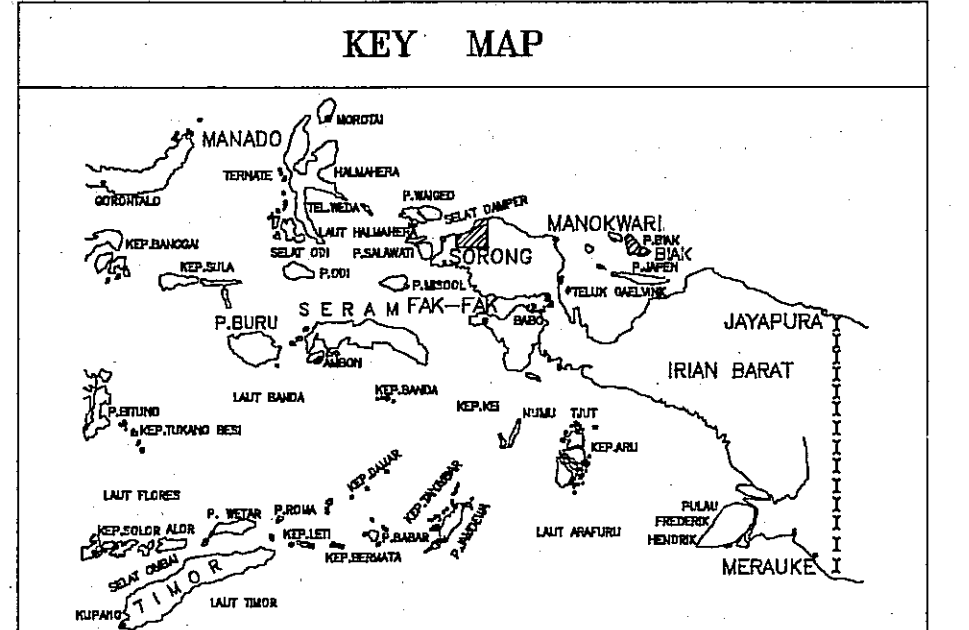
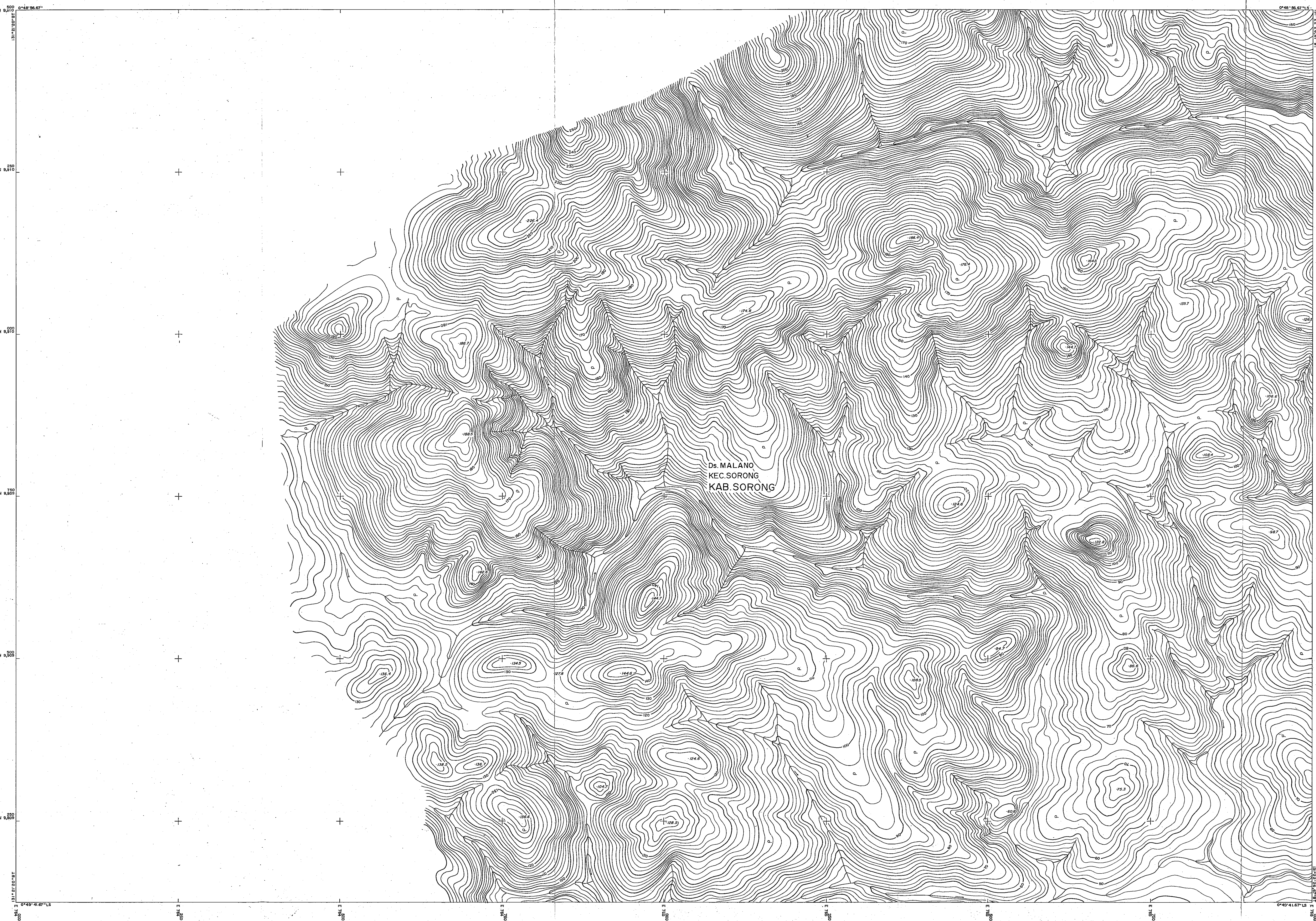
PT. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

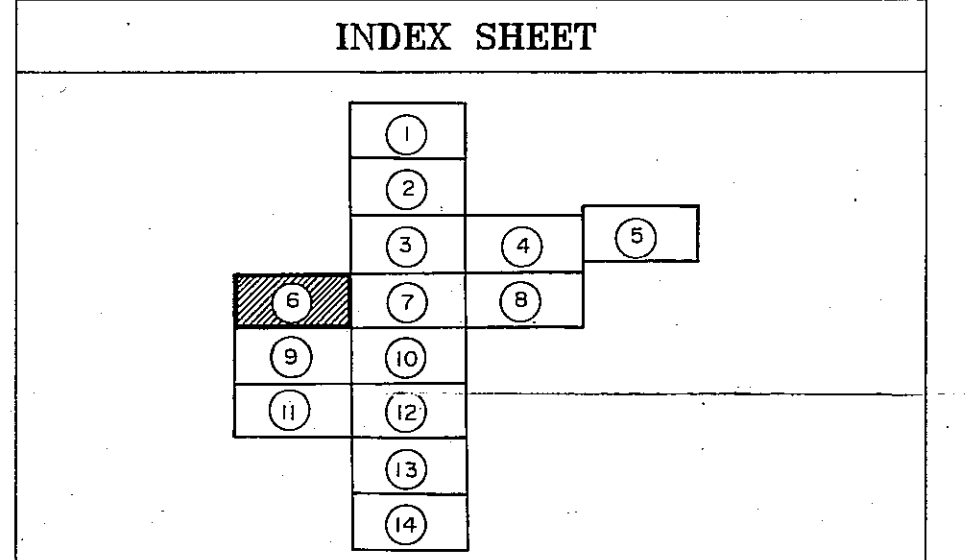
TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 5
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY

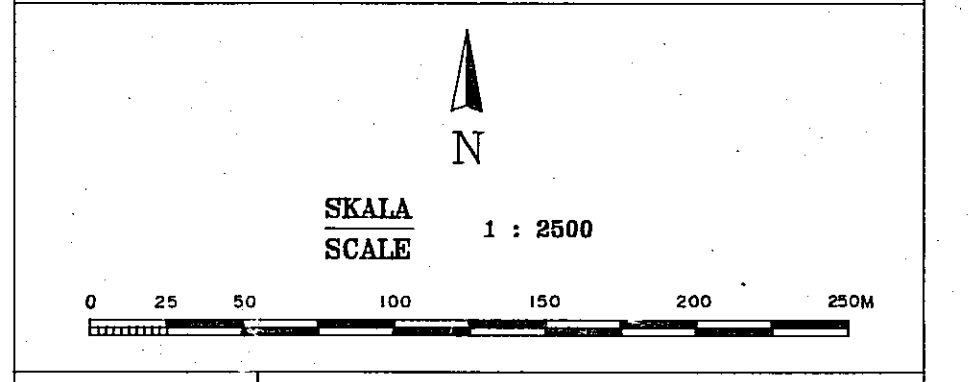


- ### NOTES
- Aerial photography was carried out in January 1984 with Albrom Klammatic GPS and preparation of topographic maps in October 1984.
 - Horizontal reference is Doppler station : N8007 / SP.5 given by BAKOSURTANAL with value of N:9,903,195.677 m, E: 750,770.619 m.
 - Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 - Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 - Projection system is UTM, with reference ellipsoid of ID74.
- | REFERENCE BM DATA | | SORONG PILE | |
|-------------------|-------|-------------|----------------|
| BM. PLB | 2.504 | BM. KTJ | 2.490 |
| EL : | 2.504 | EL : | 2.490 |
| LAT : | - | LAT : | 0-52-47.500S |
| LOK : | - | LOK : | 131-14-43.088E |
- Z=100 O.L. (L.W.S.)
ZERO OF GAUGING STAFF
1 : 100



LEGEND

Premark 7 GPS	W-03 38.15	Bush	Ω
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	LL
Spot Elevation	• 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	==	Quarry	
Branch Road	---	Index Contour	~~~~~
Track	---	Standard Contour	~~~~~
Hot spring	⊕	Vegetation boundary	⊕
Pond / Lake	⊕	River/Rivulet	~~~~~
Government Office	⊕	Waterfall	
Forest (Broad leaf tree)	⊕		
Cocoa plantations	⊕		



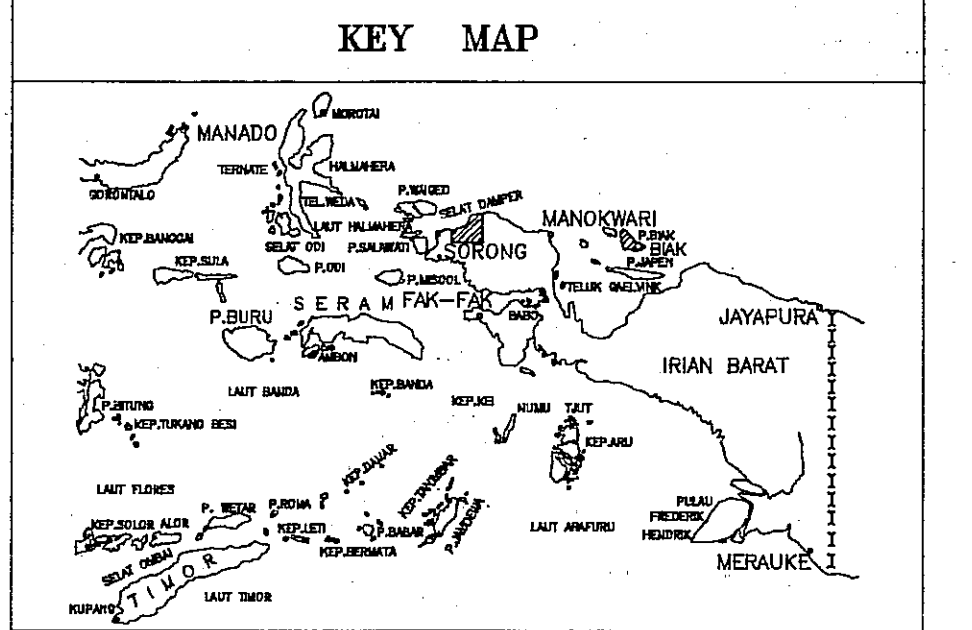
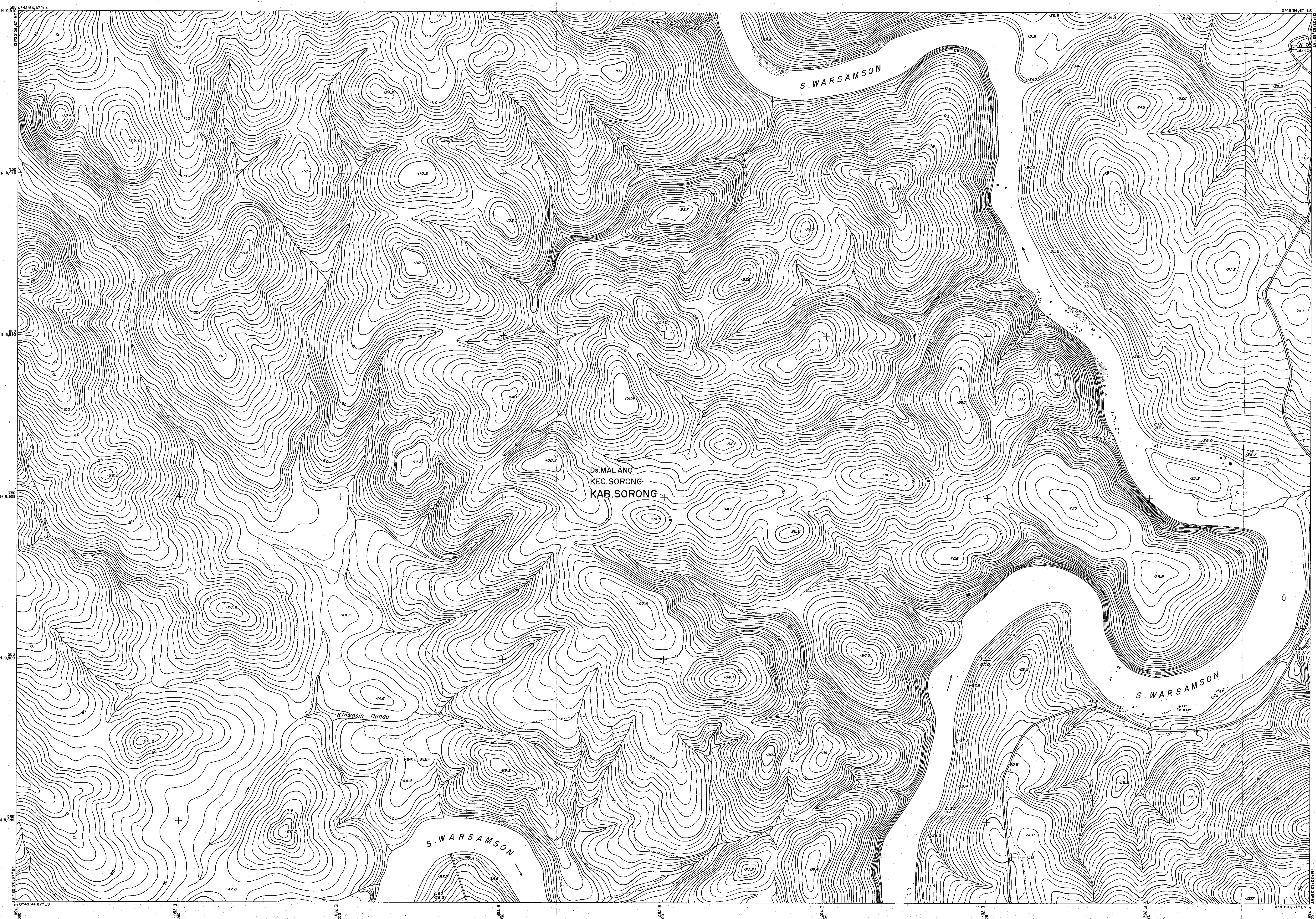
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAWSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	6
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA
JAPAN INTERNATIONAL COOPERATION AGENCY

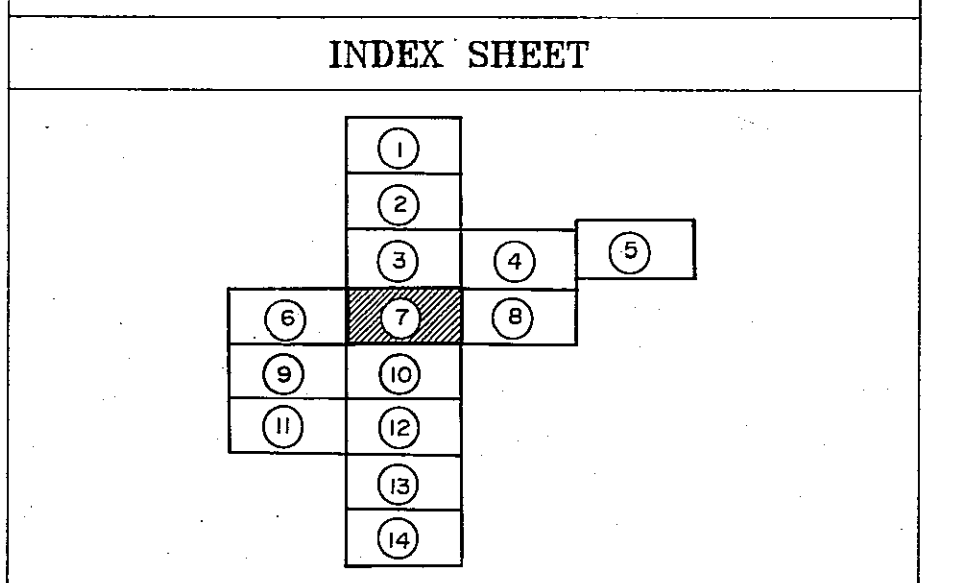


- NOTES**
1. Aerial photography was carried out in January 1994 with Aerialborn Kinematic GPS and preparation of topographic maps in October 1994
 2. Horizontal reference is Deupler station : N6607 / SP.5 given by BAKOSURTANAL with value of N: 9,903,195.577 m, E: 760,770.513 m
 3. Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG PILE

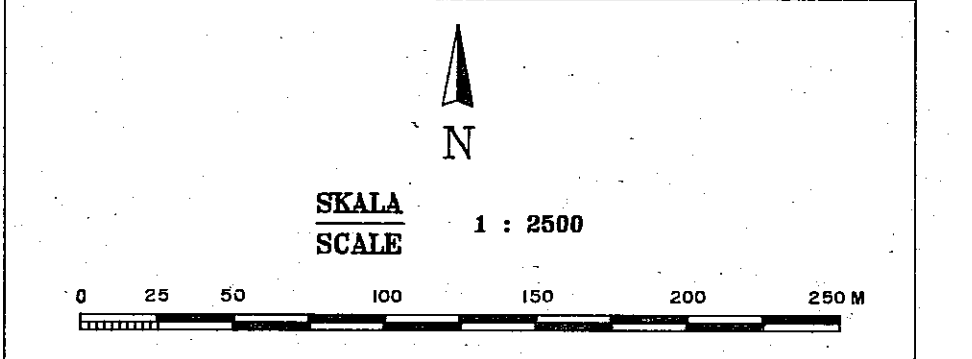
BM. PLB	4	2.504	2.490	BM. KTJ	4	2.490
EL :	2.504	3.490		EL :	2.490	
LAT :		2.080	M.SL	LAT :	0-52-47.500S	
LOK :		1.080	Zo=100	LOK :	131-14-43.080E	

ZERO OF GAUGING STAFF
1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	⊙
Spot GPS point	42.57	Dry Crop Field	V
Direct Levelling Point	30.25	Wet Rice Field	⊥
Spot Elevation	50.1	Sand	⊔
Principle Point	+ 3-11	Cliff	⊔
House / Building	⊔	Rock / Stone	⊔
Main Road	⊔	Quarry	⊔
Branch Road	⊔	Index Contour	⊔
Track	⊔	Standard Contour	⊔
Hot spring	⊔	Vegetation boundary	⊔
Pond / Lake	⊔	River/Rivulet	⊔
Government Office	⊔	Waterfall	⊔
Forest (Broad leaf tree)	⊔		
Cocoa plantations	⊔		



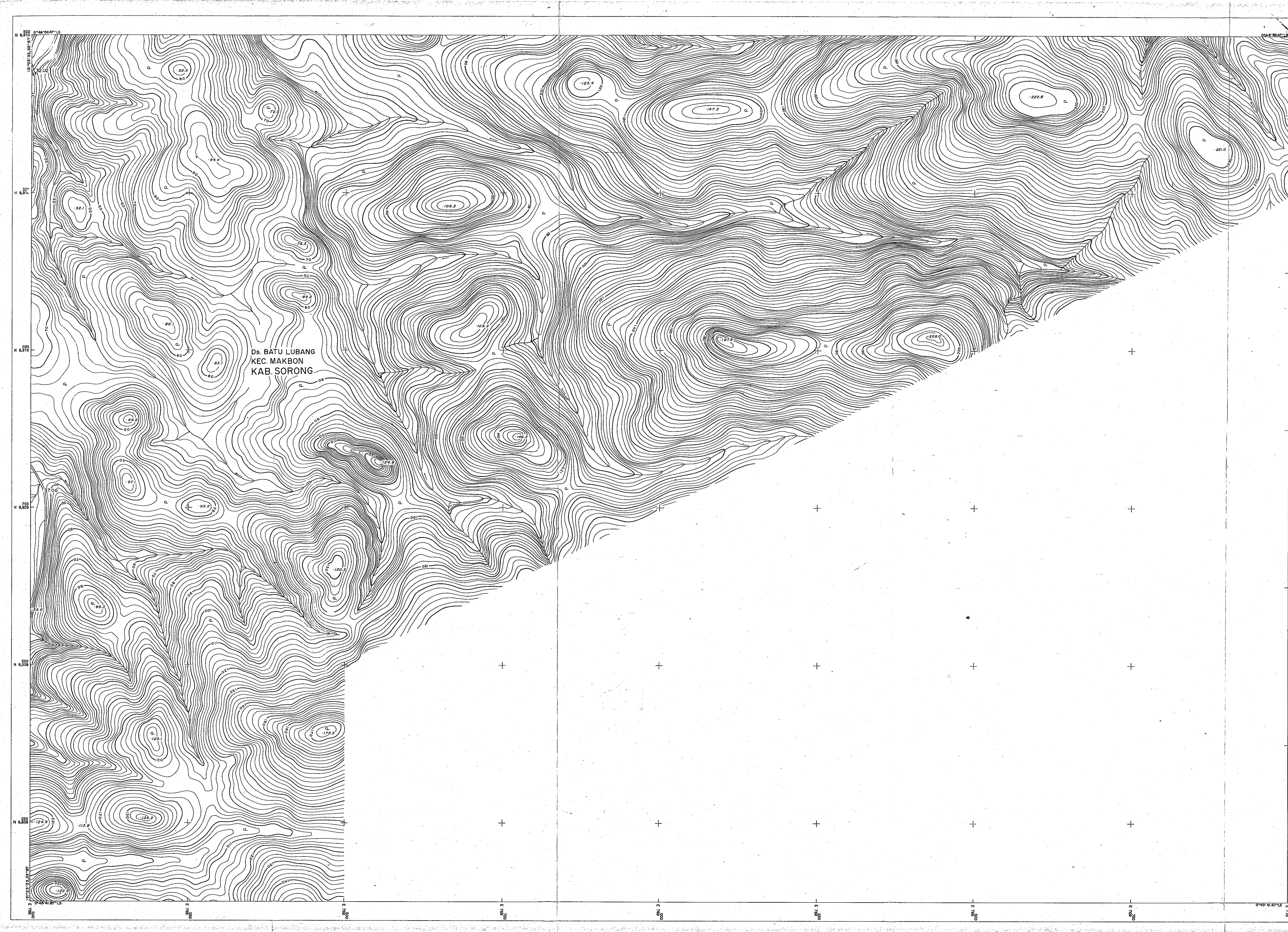
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	7
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA
JAPAN INTERNATIONAL COOPERATION AGENCY



Ds. BATU LUBANG
KEC. MAKBON
KAB. SORONG

KEY MAP

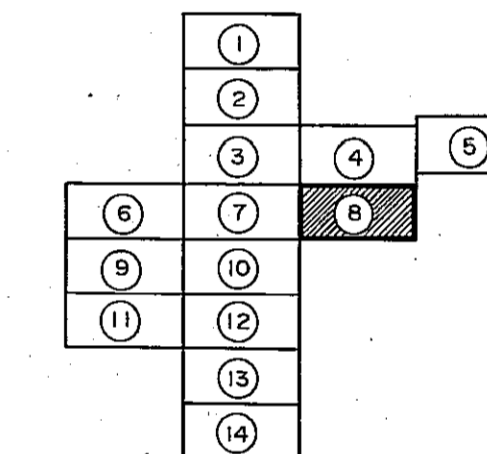


NOTES

1. Aerial photography was carried out in January 1984 with Airbern Kinematic. GPS and preparation of topographic maps in October 1984
2. Horizontal reference is Doppler station : N8607 / SP.5 given by BAKOSURTANAL, with value of N:9,903,195.577^m, E: 760,770.613^m.
3. Elevation in Sorong File was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
5. Projection system is UTM, with reference ellipsoid of ID74.

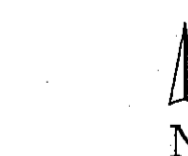
REFERENCE BM DATA SORONG FILE			
BM. PLB	4.564	4.550	4.550
EL. m	2.504	2.480	2.480
LAT. : -	3.480	3.480	3.480
LON. : -	2.080	2.080	2.080
	1.080	1.080	1.080
	0	0	0
	ZERO OF GAUGING STAFF		
	1 : 100		

INDEX SHEET

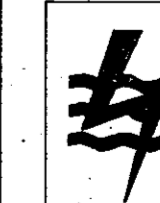
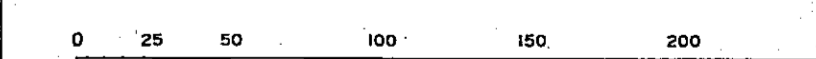


LEGEND

Premark / GPS	W-03 36.15	Bush	⊙
Spot GPS point	⊙ 42.57	Dry Crop Field	V
Direct Levelling Point	+ 30.25	Wet Rice Field	LL
Spot Elevation	+ 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	====	Quarry	
Branch Road	----	Index Contour	~~~~~
Track	----	Standard Contour	~~~~~
Hot spring	⊙	Vegetation boundary	~~~~~
Pond / Lake	⊙	Government Office	⊙
Forest (Broad leaf tree)	⊙	River/Rivulet	~~~~~
Cocoa plantations	⊙	Waterfall	~~~~~



SKALA
SCALE 1 : 2500



P. T. PLN (PERSERO)

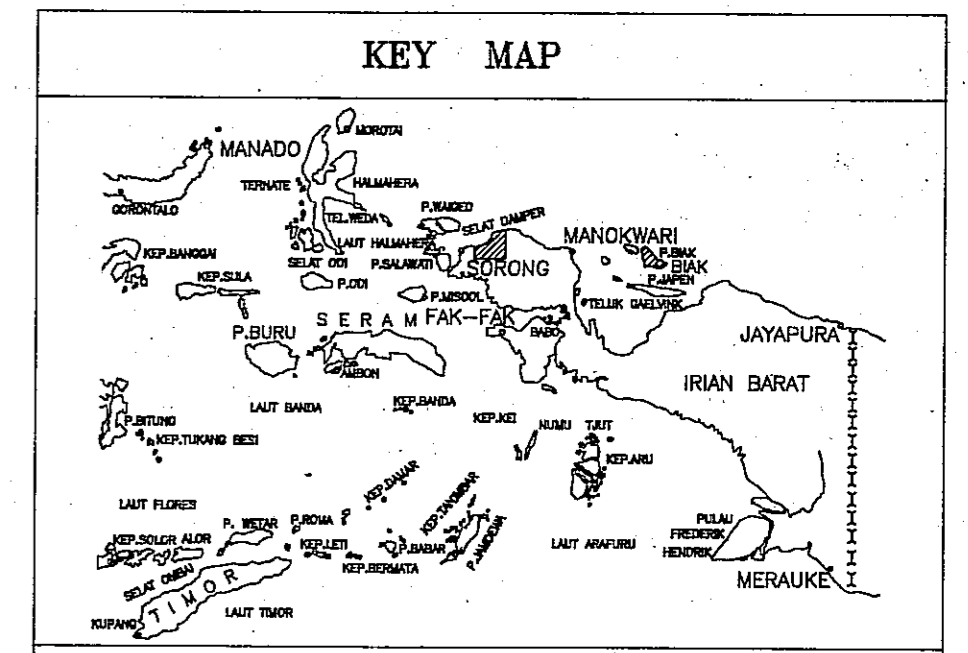
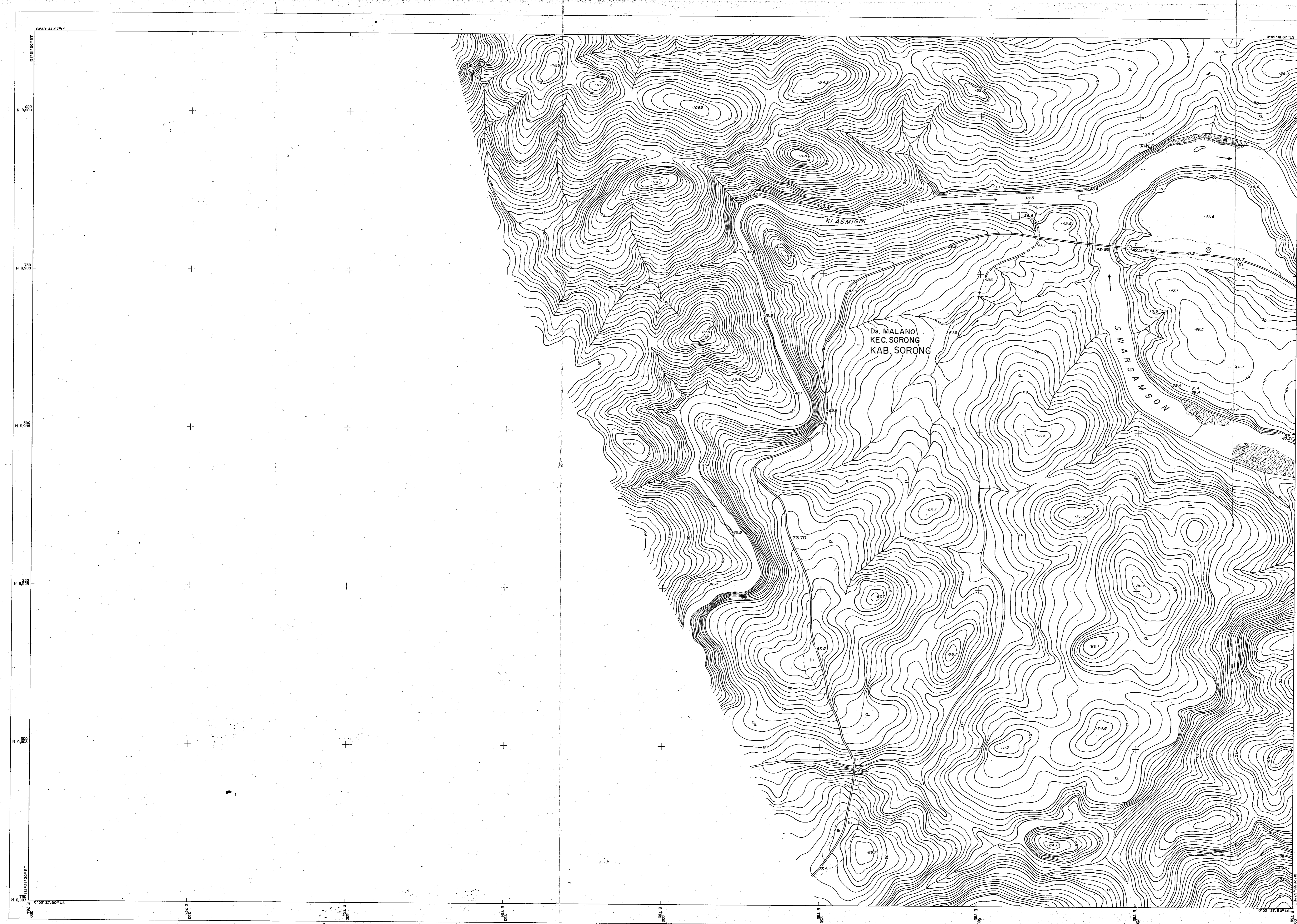
THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

PT. AEROKARTO INDONESIA

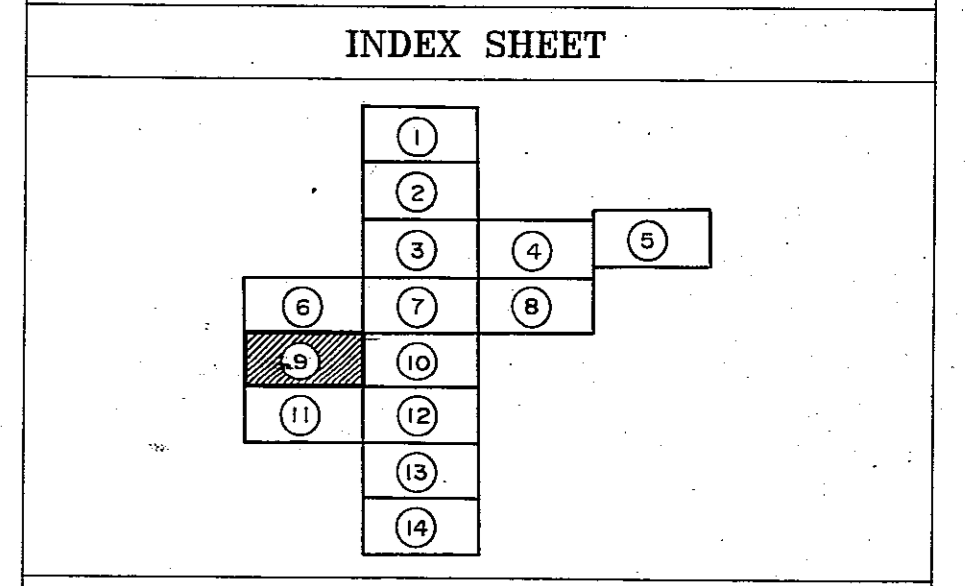
JICA JAPAN INTERNATIONAL COOPERATION AGENCY



- ### NOTES
- Aerial photography was carried out in January 1984 with Alsbem Kinematic GPS and preparation of topographic maps in October 1984
 - Horizontal reference is Doppler station : N8007 / SP.6 given by BAKOSURTANAL, with value of N:9,009,196.677^m, E: 750,770.613^m.
 - Elevation in Sorong Pile was referred to BM.FLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 - Static surveying of GPS was used for horizontal control points and direct levelling method for vertical control.
 - Projection system is UTM, with reference ellipsoid of ID74.

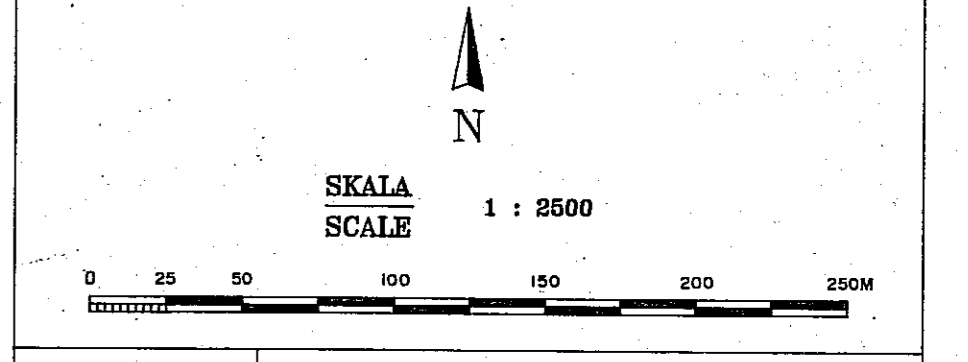
REFERENCE BM DATA SORONG PILE

BM. FLB	4.564	4.550	BM. KTJ
m	4	2.480	EL. : 2.480 ^m
EL. : 2.504	3.490		EL. : 0-52-47.5005
LAT. : -	2.080	M.S.L.	LON. : 131-14-43.085E
LON. : -	1.080	Zo=100	D.L. (L.W.S.)
	0		ZERO OF GAUGING STAFF
	1		1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	△
Spot GPS point	○ 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	ll
Spot Elevation	+ 50.1	Sand	~~~~~
Principle Point	+ 5-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	==	Quarry	
Branch Road	---	Index Contour	— — —
Track	---	Standard Contour	— — —
Hot spring	⊕	Vegetation boundary	~~~~~
Pond / Lake	⊕	River/Rivulet	~~~~~
Government Office	⊕	Waterfall	
Forest (Broad leaf tree)	⊕		
Cacao plantations	⊕		



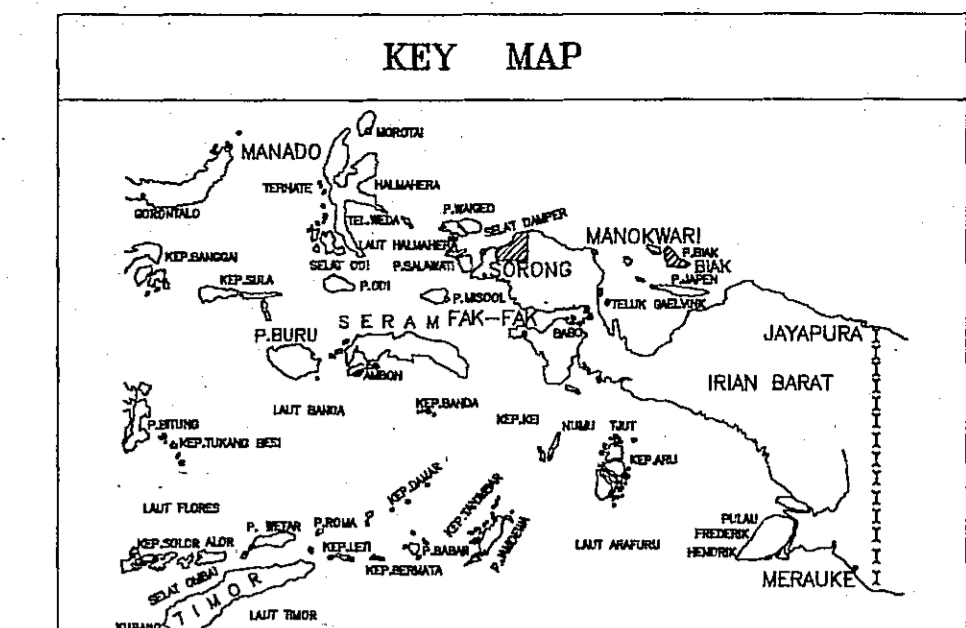
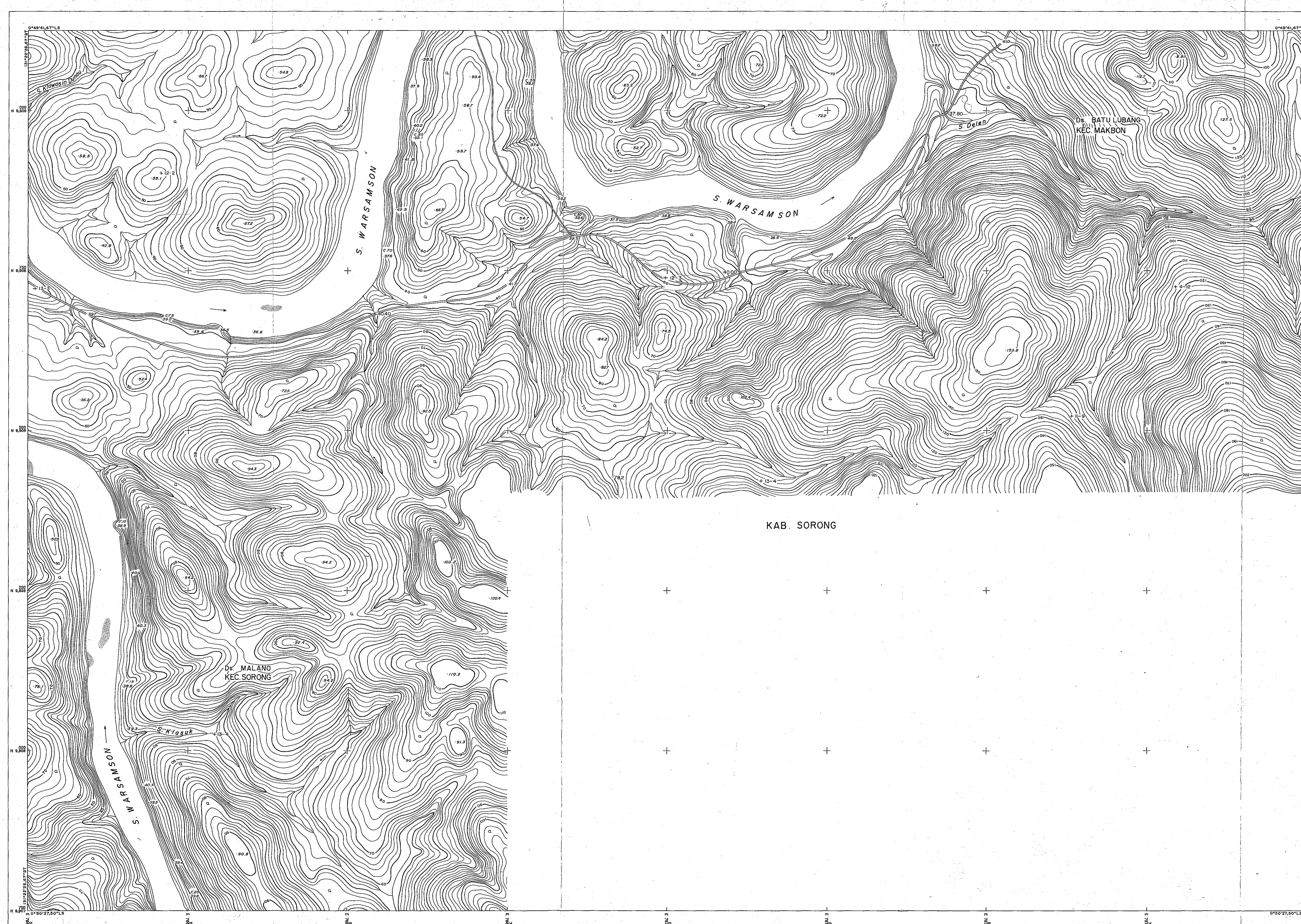
P. T. PLN. (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 9
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY

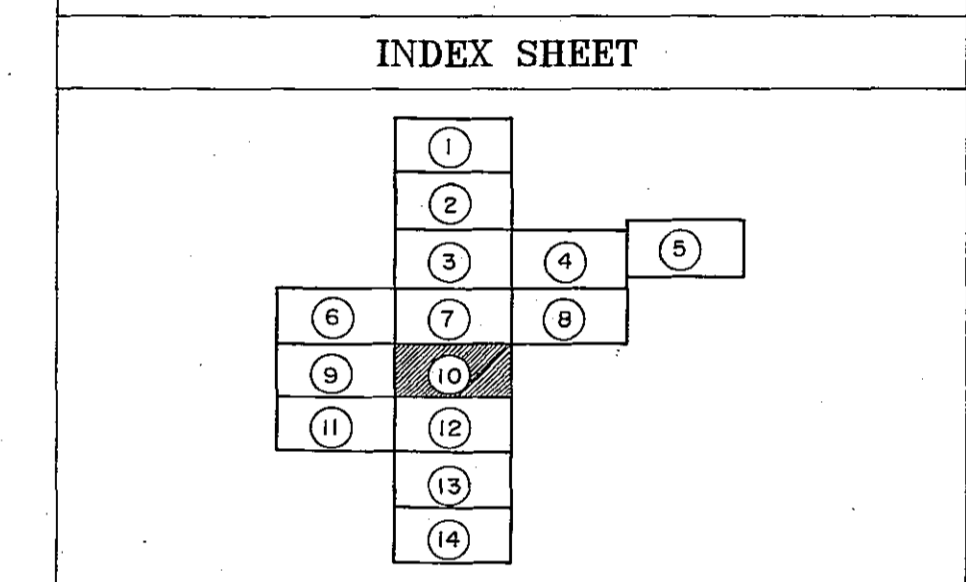


- ### NOTES
1. Aerial photography was carried out in January 1984 with Airborn Kinematic GPS and preparation of topographic maps in October 1984
 2. Horizontal reference is Doppler station : N8607 / SP.5 given by BAKOSURTANAL, with value of N:9,908,195.577^m, E: 750,770.613^m.
 3. Elevation in Sorong Pile was referred to BM.PLE and BM.KTJ approved by Department, Peshubangan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG PILE

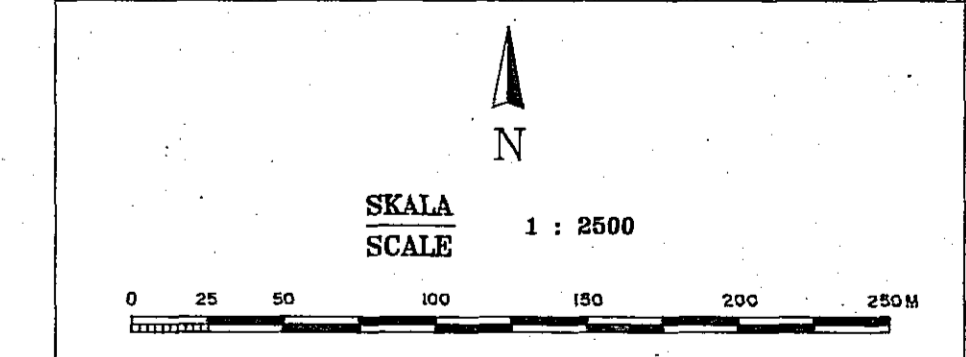
4	4.584	4.580	
3	2.504	2.480	BM. KTJ
2	3.490	EL	EL : 2.480 ^m
1	2.060	M.SL	LAT : 0-52-47.500S
0	1.080	Z=100	LONG : 131-14-43.080E

ZERO OF GAUING STAFF
1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	△
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	ll
Spot Elevation	• 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	#####
Main Road	—	Quarry	
Branch Road	- - -	Index Contour	~~~~~
Track	— · — · —	Stander Contour	~~~~~
Hot spring	⊕	Vegetation boundary	⊕
Pond / Lake	⊖	River/Rivulet	~~~~~
Government Office	⊙	Waterfall	
Forest (Broad leaf tree)	⊙		
Cocoa plantations	⊙		



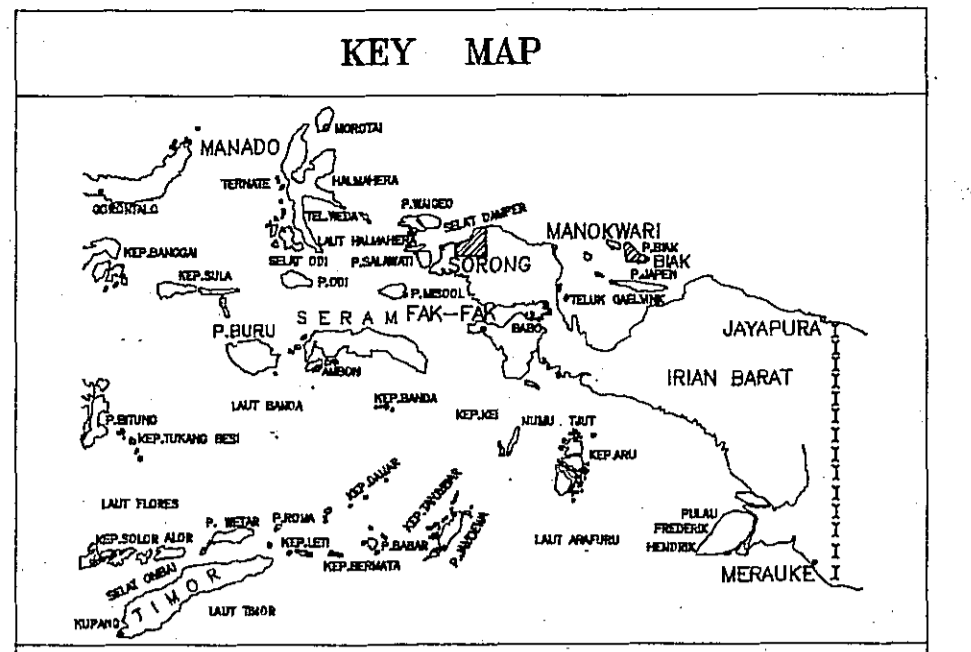
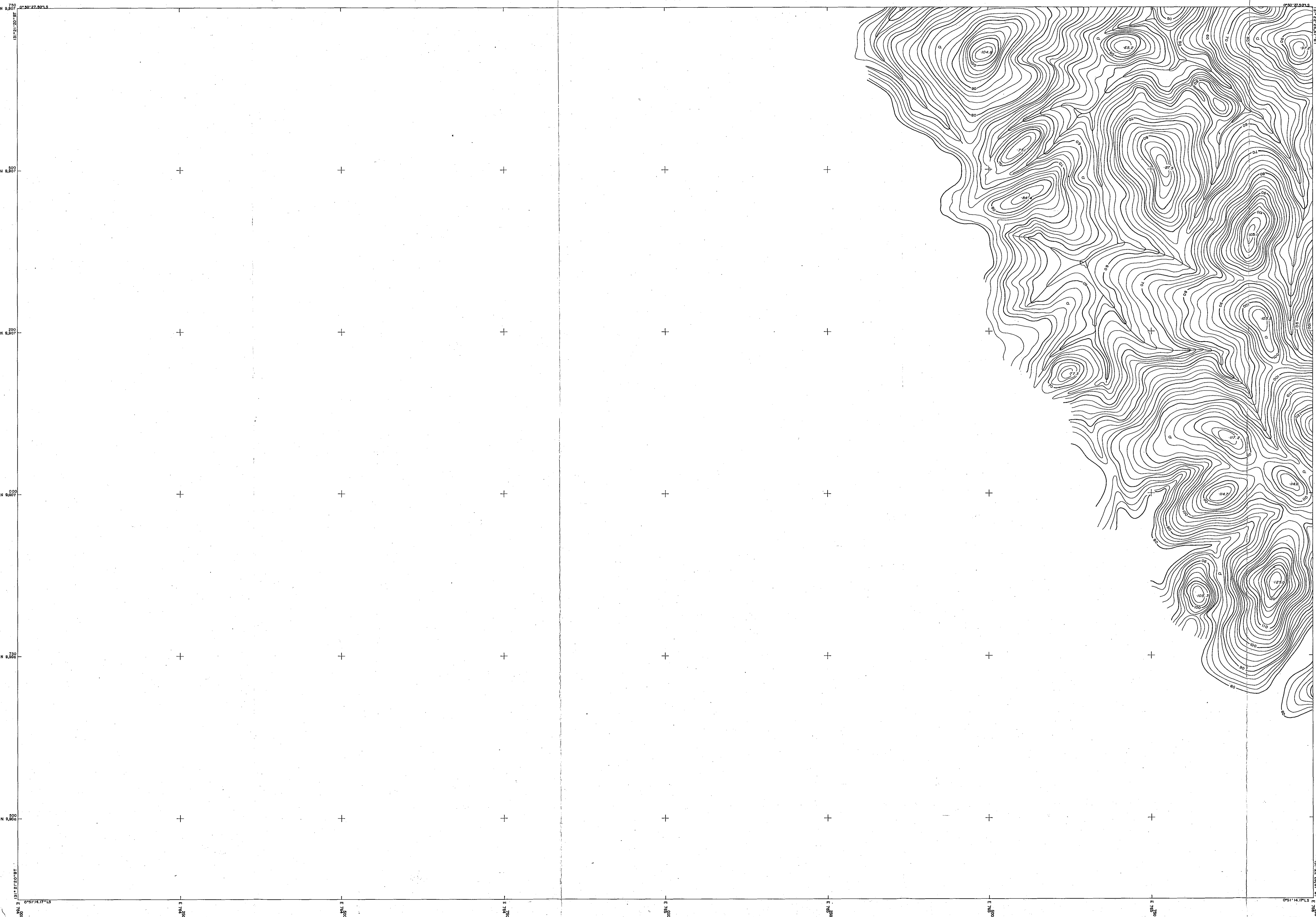
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 10
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

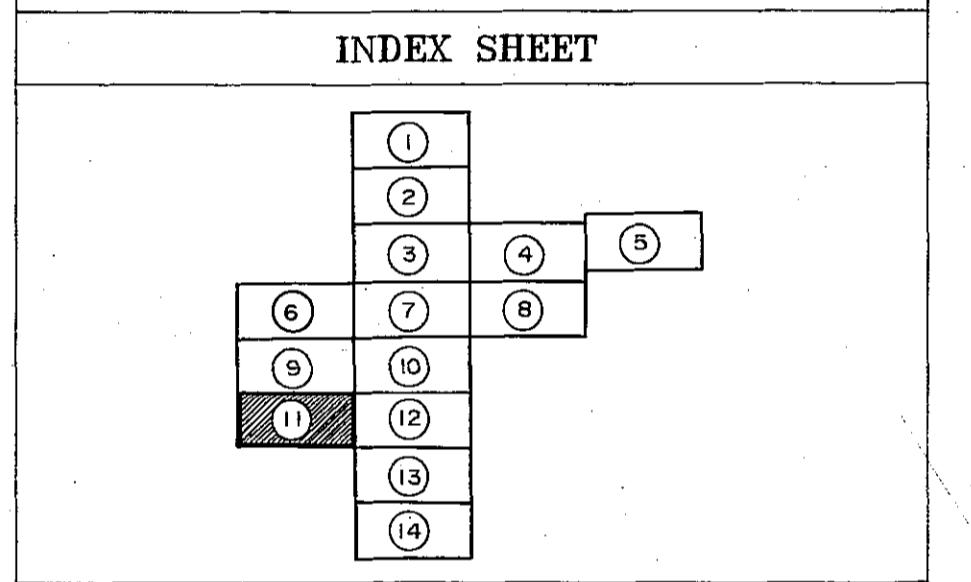
PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY



- ### NOTES
1. Aerial photography was carried out in January 1984 with Albhorn Kinematic GPS and preparation of topographic maps in October 1984
 2. Horizontal reference is Doppler station : N6607 / SP.5 given by BAKOSURTANAL with value of N:8,903,195.577 m, E: 750,770.813 m.
 3. Elevation in Sorong File was referred to BM.FIB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
 4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
 5. Projection system is UTM, with reference ellipsoid of ID74.

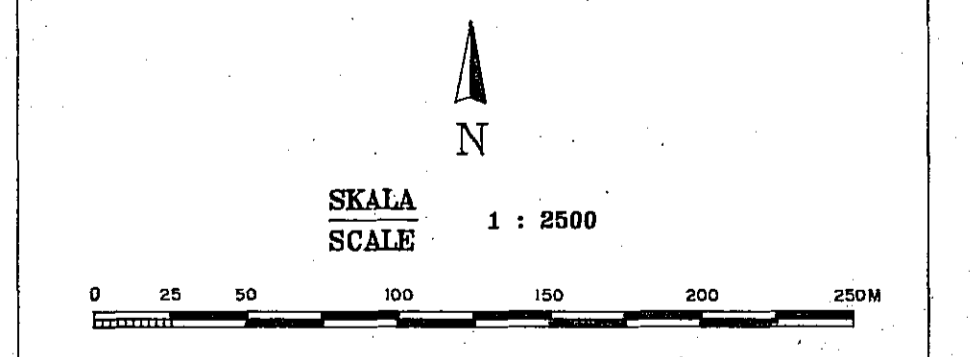
REFERENCE BM DATA
SORONG FILE

BM. FIB	4.56	4.550	BM. KTJ	2.490
EL :	2.504	3.490	EL :	2.490
LAT :	2.080	M.S.L	LAT :	0-52-47.500S
CON :	1.080	Z=100	CON :	131-14-43.05SE
				D.L. (L.W.S.)
				ZERO OF GAUGING STAFF
				1 : 100



LEGEND

Premark / GPS	W-03 36.15	Bush	⊙
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	LL
Spot Elevation	• 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	==	Quarry	
Branch Road	---	Index Contour	~
Track	---	Standard Contour	—
Hot spring	⊙	Vegetation boundary	⊙
Pond / Lake	⊙	River/Rivulet	—
Government Office	⊙	Waterfall	—
Forest (Broad leaf tree)	⊙		
Cocoa plantations	⊙		



P. T. PLN (PERSERO)

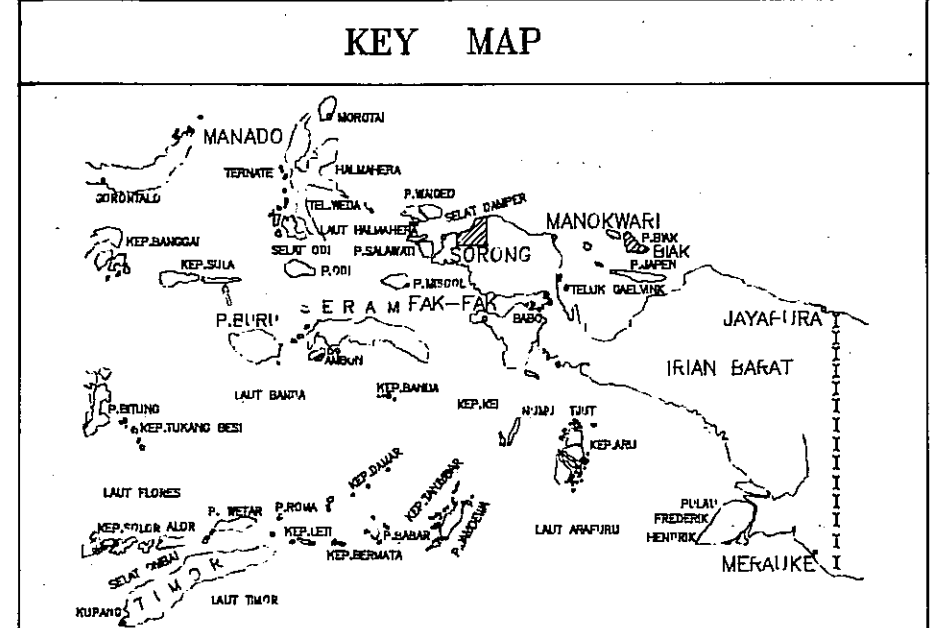
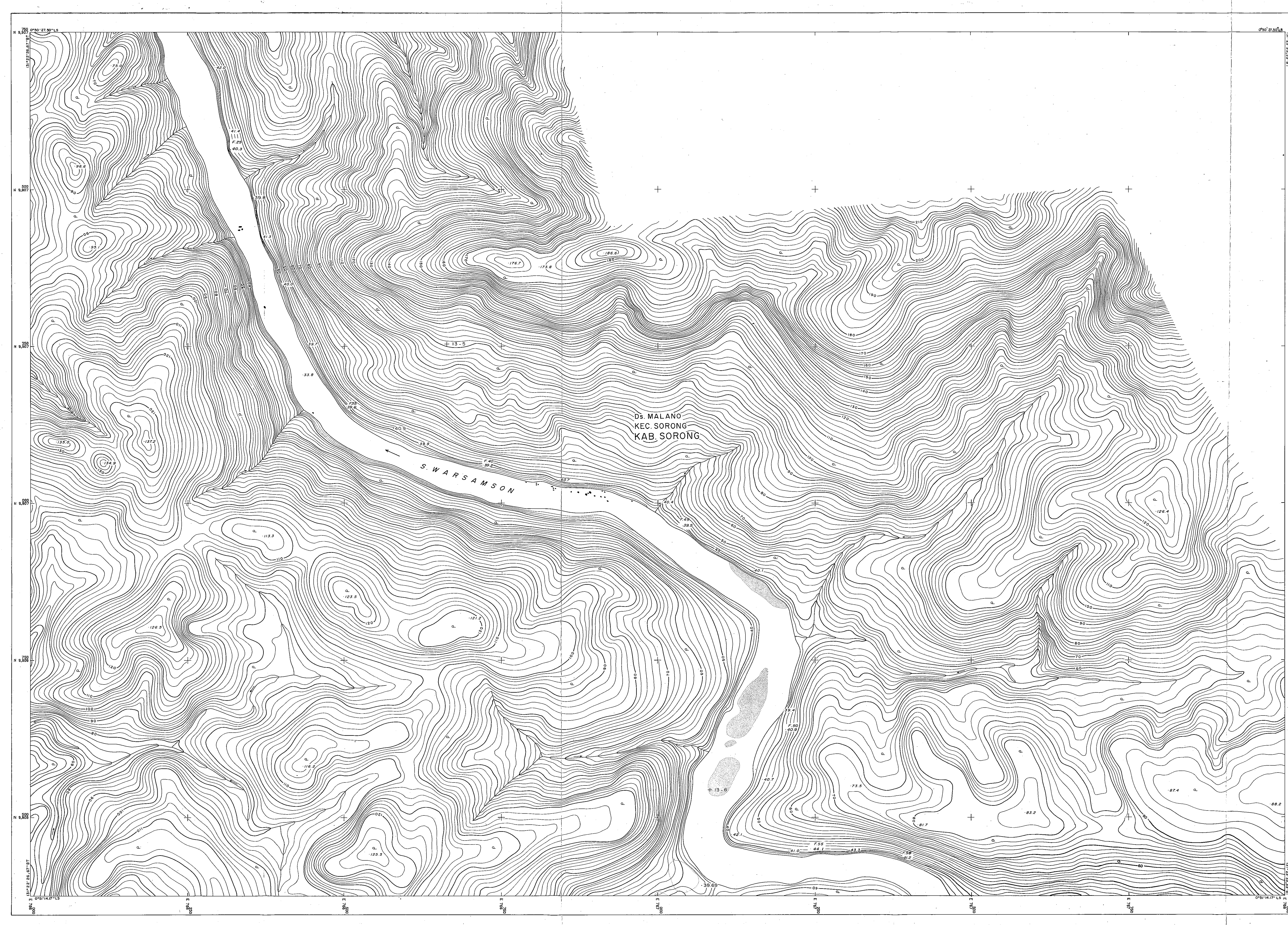
THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	11
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA

JICA JAPAN INTERNATIONAL COOPERATION AGENCY



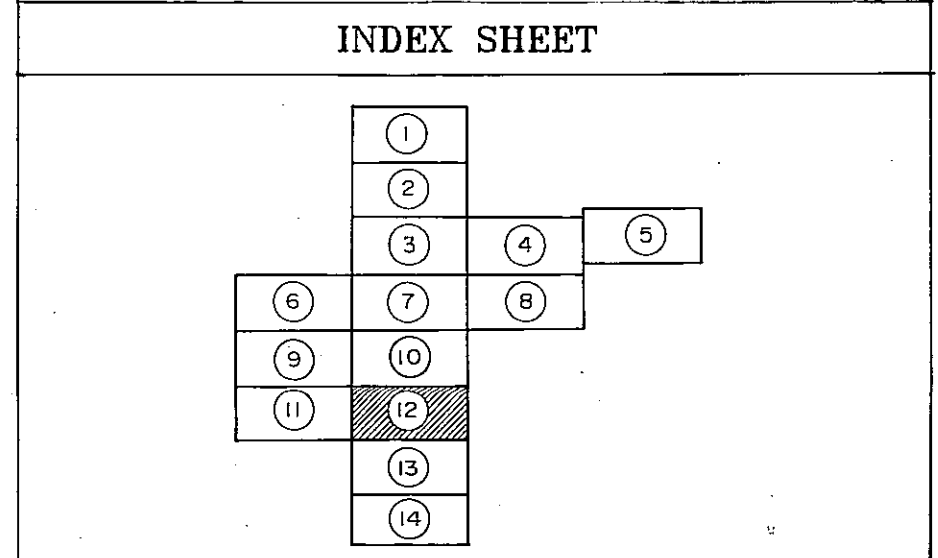
NOTES

1. Aerial photography was carried out in January 1984 with Airborn Kinematic GPS and preparation of topographic maps in October 1984
2. Horizontal reference is Doppler station : N8007 / SP.5 given by BAKOSURTANAL, with value of N: 9,903,195.577 m, E: 750,770.813 m.
3. Elevation in Sorong File was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG FILE

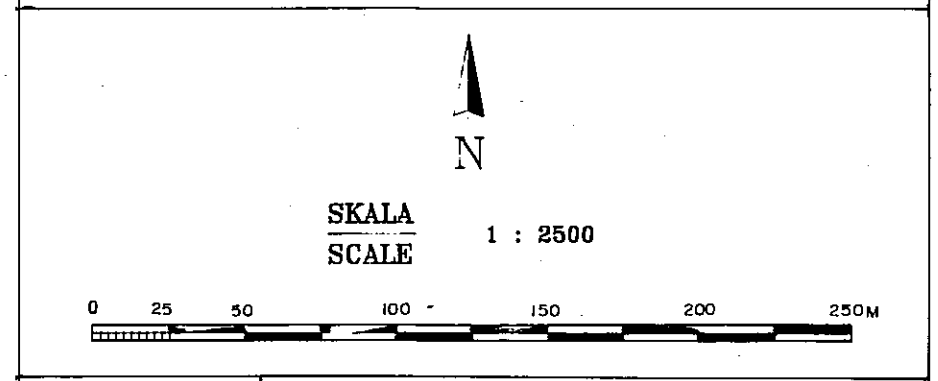
BM. PLB	4.564	3.550	2.490	BM. KTJ
EL :	2.504	3.490	2.490	EL : 2.490 m
LAT :	0-52-47.500S	0-52-47.500S	0-52-47.500S	LAT : 0-52-47.500S
LONG :	131-14-43.085E	131-14-43.085E	131-14-43.085E	LONG : 131-14-43.085E

1 : 100
ZERO OF GAUGING STAFF



LEGEND

Premark / GPS	W-03 36.15	Bush	△
Spot GPS Point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	LL
Spot Elevation	• 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	
Main Road	==	Quarry	
Branch Road	- - -	Index Contour	~~~~~
Track	- - -	Standard Contour	~~~~~
Hlt spring	⊕	Vegetation boundary
Pond / Lake	⊙	River/Rivulet	~~~~~
Government Office	⊙	Waterfall	
Forest (broad leaf tree)	⊙		
Cocoa plantations	⊙		



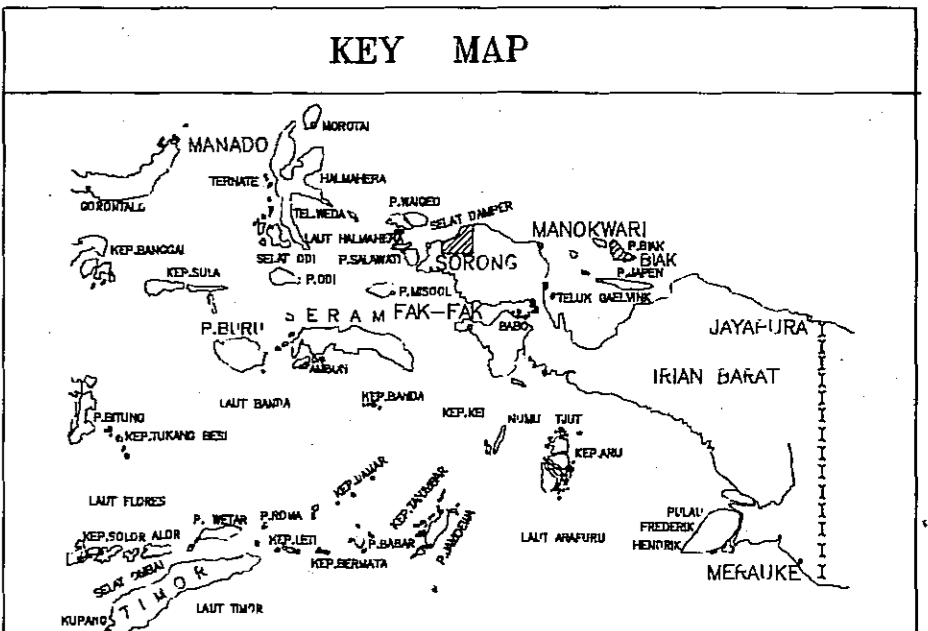
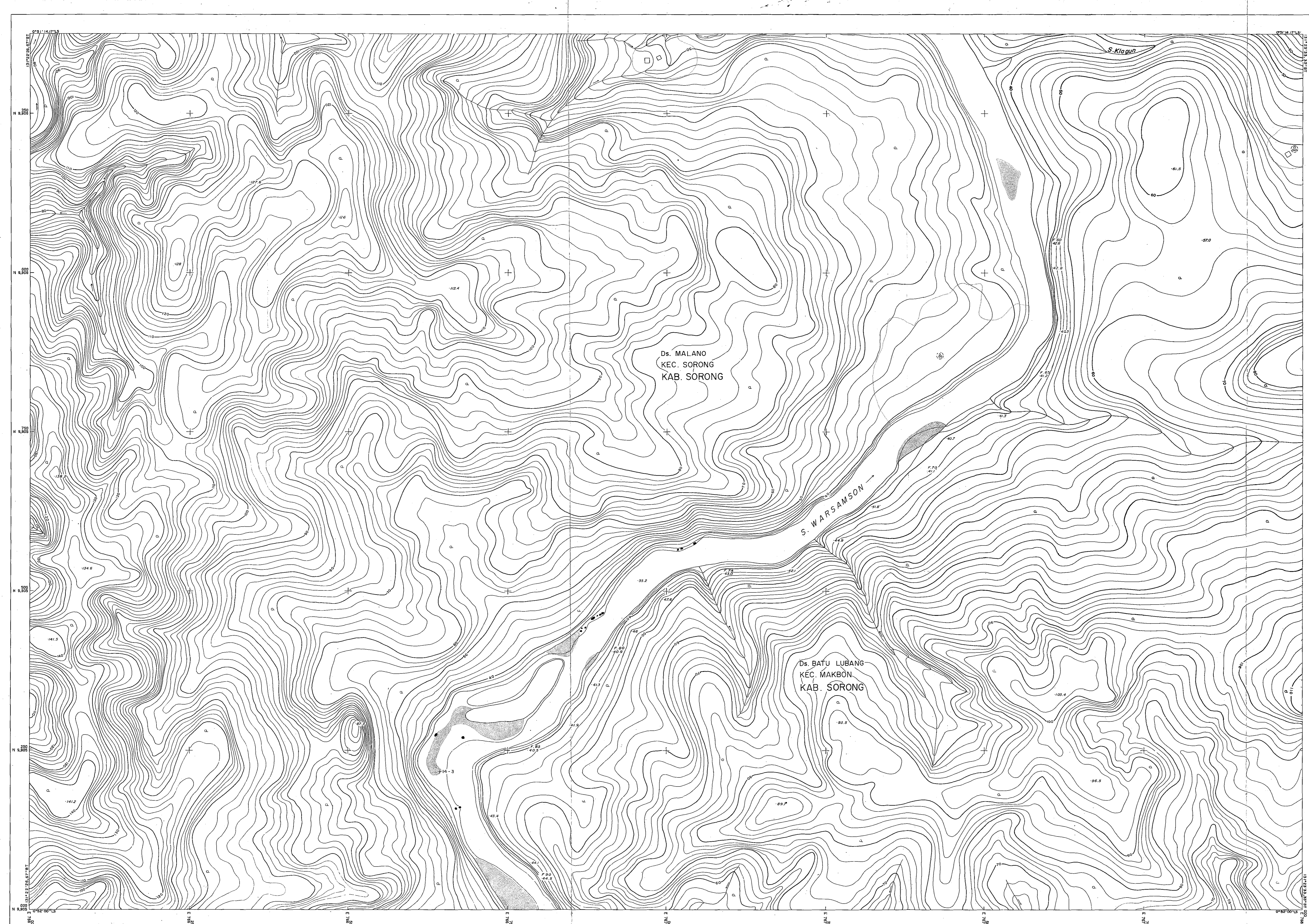
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 12
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

PT. AEROKARTO INDONESIA
JICA JAPAN INTERNATIONAL COOPERATION AGENCY



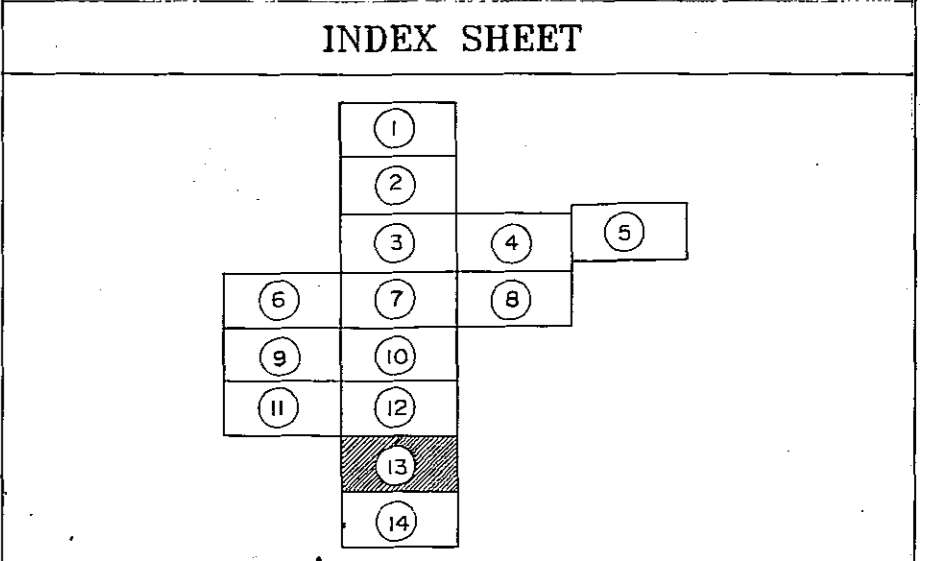
NOTES

1. Aerial photography was carried out in January 1984 with Airborn Kinematic GPS and preparation of topographic maps in October 1984.
2. Horizontal reference is Doppler station : N8007 / SP.5 given by BAKOSURTANAL, with value of N:9,993,196.577 M, E: 756,770.613 M.
3. Elevation in Sorong Pile was referred to BM.FLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG PILE

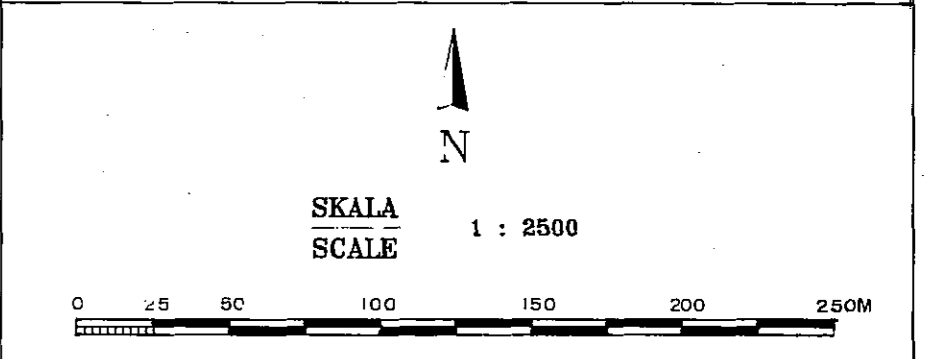
BM. FLB	4 - 2,504	BM. KTJ	3 - 3,490
EL :	2,504	EL :	2,490
LAT :	0-52-47.5005	LAT :	0-52-47.5005
LONG :	131-14-43.0686	LONG :	131-14-43.0686

1 : 100
ZERO OF GAUGING STAFF



LEGEND

Premark / GPS	W-03 36.75	Bush	⊙
Spot GPS point	C 42.57	Dry Crop Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	⊥
Spot Elevation	• 50.1	Sand	⊔
Principle Point	+ 3-11	Cliff	⚡
House / Building	⊠	rock / Stone	⚡
Main Road	—	Quarry	⚡
Branch Road	—	Hot spring	⚡
Track	—	Pond / Lake	⊙
Government Office	⚡	Forest (broad leaf tree)	⊙
Cocoa plantations	⊙	Cocoa plantations	⊙



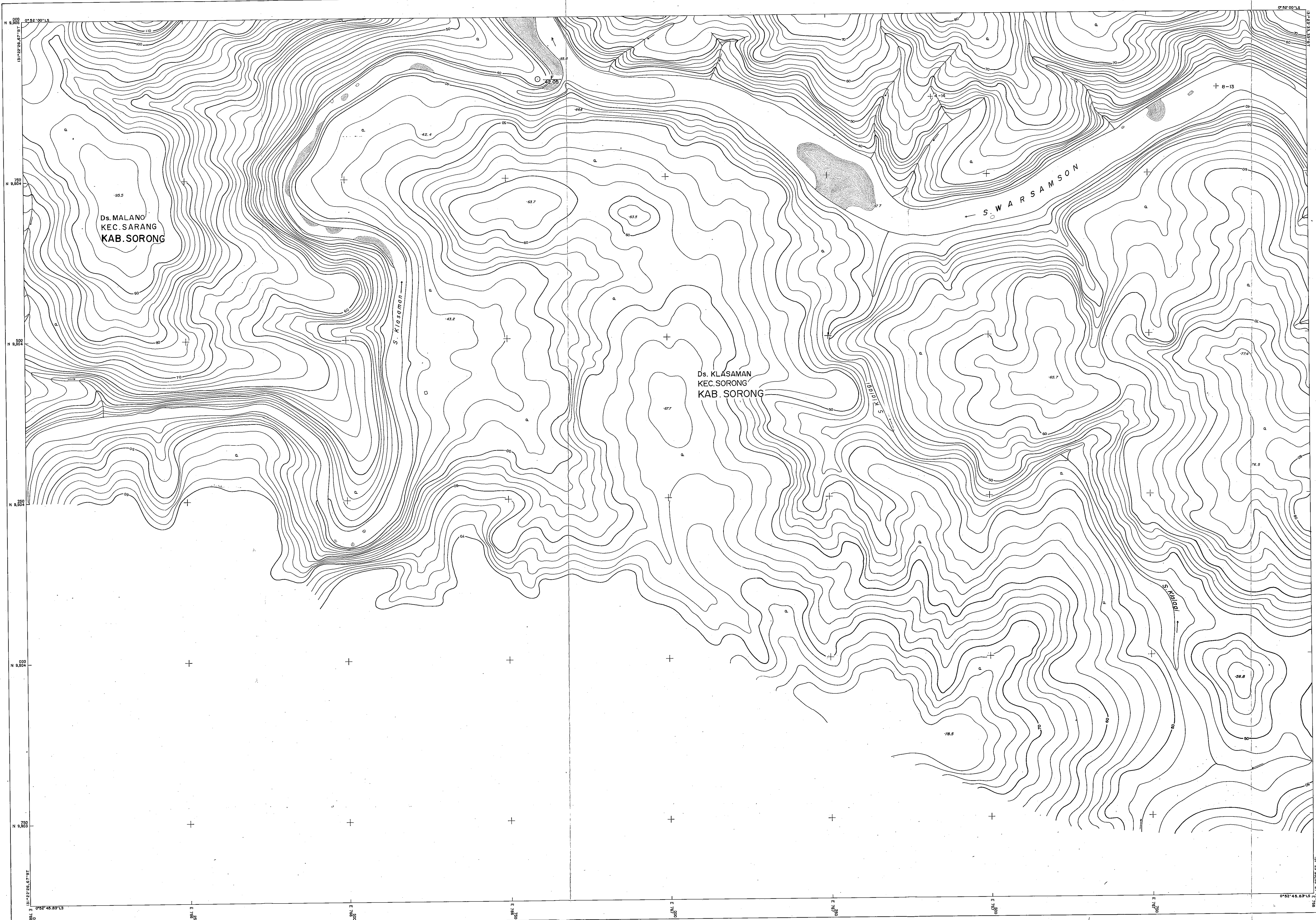
P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

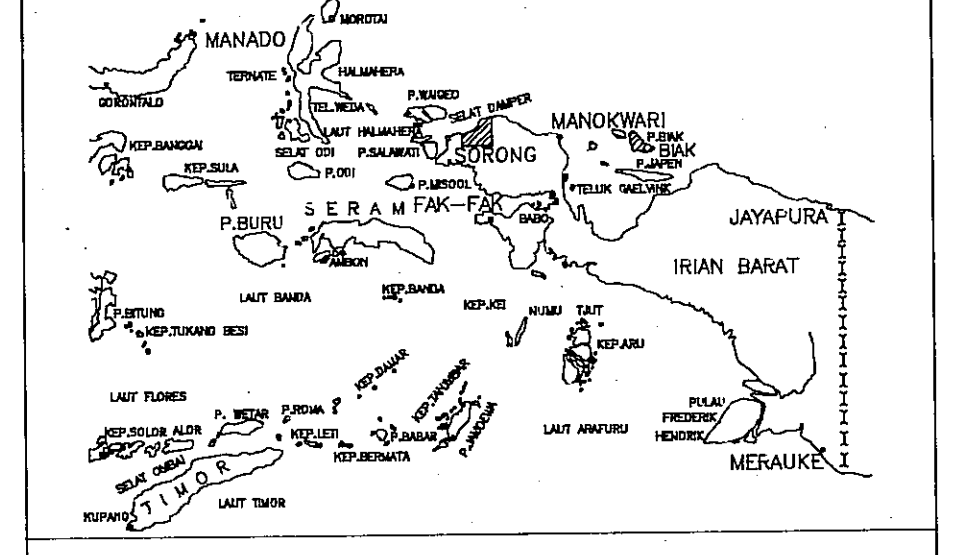
TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER :	13
APPROVED BY :	1 : 2500	TOTAL SHEETS :	14

PT. AEROKARTO INDONESIA
JAPAN INTERNATIONAL COOPERATION AGENCY



KEY MAP



NOTES

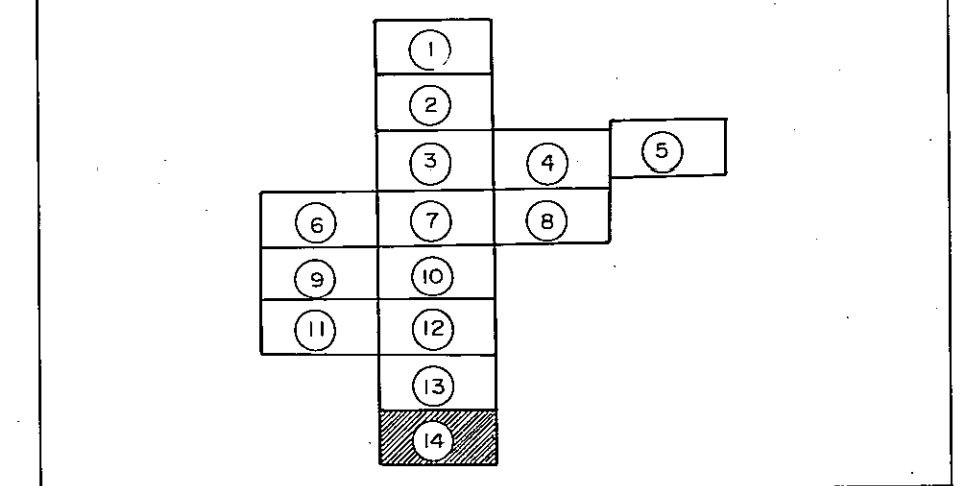
1. Aerial photography was carried out in January 1994 with Alpborn Klematic GPS and preparation of topographic maps in October 1994.
2. Horizontal reference is Doppler station : N8007 / SP.5 given by BAKOSURTANAL, with value of N:9,903,195.577^m, E: 750,770.613^m.
3. Elevation in Sorong Pile was referred to BM.PLB and BM.KTJ approved by Department Perhubungan, PT. Pelabuhan Indonesia IV Sorong as shown in below chart.
4. Static surveying of GPS was used for horizontal control points and Direct levelling method for vertical control.
5. Projection system is UTM, with reference ellipsoid of ID74.

REFERENCE BM DATA
SORONG PILE

BM. PLB	4	2.504	BM. KTJ	4	2.490
EL :	2.504	3.490	EL :	2.490	3.490
LAT :	-	2.050	LAT :	0-52-47.500S	-
LONG :	-	1.050	LONG :	131-14-43.000E	-

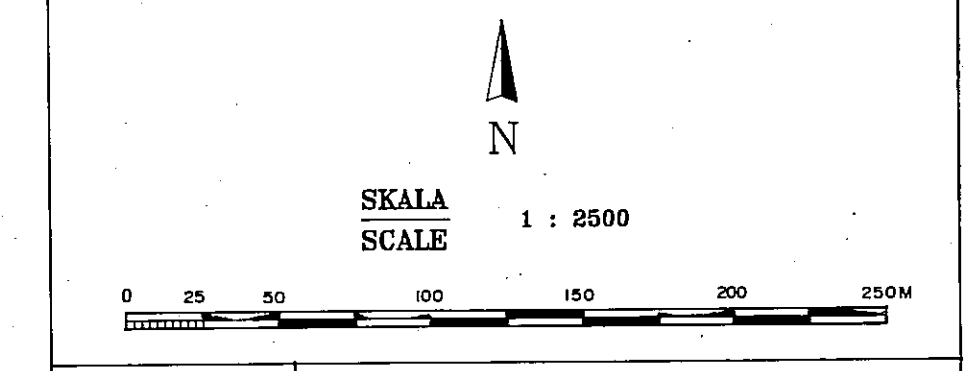
Z₀=100 D.L. (L.W.S.)
ZERO OF GAUGING STAFF
1 : 100

INDEX SHEET



LEGEND

Premark / GPS	W-03 36.15	Bush	⊙
Spot GPS point	○ 42.57	Dry Crpp Field	V
Direct Levelling Point	• 30.25	Wet Rice Field	JL
Spot Elevation	+ 50.1	Sand	~~~~~
Principle Point	+ 3-11	Cliff	
House / Building	□	Rock / Stone	⬮
Main Road	==	Quarry	⚡
Branch Road	---	Index Contour	~
Track	---	Standard Contour	~
Hot spring	⊕	Vegetation boundary	⊙
Pond / Lake	⊙	River/Rivulet	—
Government Office	⚡	Waterfall	⚡
Forest (Broad leaf tree)	⊙		
Cocoa plantations	⊙		



SKALA 1 : 2500
SCALE 1 : 2500

P. T. PLN (PERSERO)

THE FEASIBILITY STUDY ON THE WARSAMSON
HYDROELECTRIC POWER DEVELOPMENT PROJECT
IN SORONG, IRIAN JAYA

TOPOGRAPHIC MAP

CHECKED BY :	SCALE	SHEET NUMBER : 14
APPROVED BY :	1 : 2500	TOTAL SHEETS : 14

PT. AEROKARTO INDONESIA
JAPAN INTERNATIONAL COOPERATION AGENCY