

Data II.1.1.1 POWER MARKET OF PLN WILAYAH II, NORTH SUMATERA

	1974	1975	1976	1977	1978
1. Peak Load, MW	25	27	31	40	53
2. Generated Energy, MWH	115,926	133,617	158,415	197,771	257,048
3. Sold Energy, MWH					
1) Residential	48,697	53,979	61,619	72,003	98,385
2) Commercial	29,113	31,341	34,584	39,257	45,878
3) Public	7,822	8,608	9,845	12,933	12,605
4) Industrial	10,276	11,947	11,341	15,805	23,620
Total	95,908	105,875	117,389	139,998	180,488
4. Number of Customers					
1) Residential	48,543	49,880	53,585	66,840	94,152
2) Commercial	11,716	11,566	12,131	12,836	15,148
3) Public	731	781	887	1,133	1,591
4) Industrial	408	395	383	390	461
Total	61,398	62,622	66,986	81,199	111,352
5. Consumption per Customer, kWh					
1) Residential	1,003	1,082	1,150	1,077	1,045
2) Commercial	2,485	2,710	2,851	3,058	3,029
3) Public	10,700	11,022	11,100	11,415	7,923
4) Industrial	25,186	30,246	25,611	40,526	51,236
Average	1,562	1,691	1,752	1,724	1,621
6. Annual Load Factor, %	51.3	53.1	59.0	55.8	55.1
7. Sold Energy/Generated Energy, %	82.73	79.24	74.10	70.79	70.21

Source: Annual Records of PLN Wilayah II (State General Electricity Enterprise)

Data II.1.1.2 POWER MARKET OF THE PROJECT AREA

	1974	1975	1976	1977	1978
1. Peak Load, MW	22	26	29	37	50
2. Generated Energy, MWH	107,083	120,705	148,709	185,594	240,072
3. Sold Energy, MWH					
1) Residential	46,185	50,149	58,360	72,855	94,035
2) Commercial	30,785	31,634	35,232	42,249	45,989
3) Public	6,590	9,457	9,071	11,070	11,799
4) Industrial	12,249	12,356	12,818	18,972	24,215
Total	95,809	103,596	115,481	145,146	176,038
4. Number of Customers					
1) Residential	42,449	44,037	46,751	58,822	80,367
2) Commercial	9,993	10,213	10,545	11,115	12,482
3) Public	646	672	742	962	1,311
4) Industrial	430	374	376	387	456
Total	53,518	55,296	58,414	71,286	94,616
5. Consumption per Customer, kWh					
1) Residential	1,088	1,139	1,248	1,239	1,170
2) Commercial	3,081	3,097	3,341	3,801	3,684
3) Public	10,201	14,073	12,225	11,507	9,000
4) Industrial	28,486	33,037	34,090	49,023	53,103
Average	1,790	1,873	1,977	2,036	1,861
6. Annual load factor, %	55.6	53.0	58.5	57.3	54.8
7. Sold Energy/Generated Energy, %	89.5	85.8	77.7	78.2	73.3

Remarks: Annual Records of PLN Wilayah II (State General Electricity Enterprise)
 It is not always applied the same terms as the data of whole North Sumatera.

Data II.1.3.a ANNUAL ENERGY DEMAND

System Medan (Medan, Binjai, Belawan)

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Deman						
Sold energy (MWh)	29,191	30,198	32,238	42,608	58,497	38,547
Growth rate (%)	-	3.4	6.8	32.2	37.3	19.9
Commercial & Public Demand						
Sold energy (MWh)	29,380	33,918	36,260	43,211	47,082	37,970
Growth rate (%)	-	15.4	6.9	19.2	8.9	12.6
Ratio to residential Demand (%)	100.6	112.3	112.5	101.4	80.5	98.5
Industrial Demand						
Sold energy (MWh)	11,491	11,542	11,783	17,454	22,622	14,978
Growth rate (%)	-	0.4	2.1	48.1	29.6	20.1
Ratio to residential Demand (%)	39.4	38.2	36.6	40.9	38.7	38.9

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.3.b ANNUAL ENERGY DEMAND

Brastagi & Kabanjahe

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Demand						
Sold energy (MWh)	1,648	1,762	1,849	1,887	2,022	1,834
Growth rate (%)	-	6.9	4.9	2.1	7.2	5.3
Commercial & Public Demand						
Sold energy (MWh)	1,366	1,461	1,499	1,628	1,880	(1,567)
Growth rate (%)	-	7.0	2.6	8.6	15.5	8.4
Ratio to residential demand	82.9	82.9	81.1	86.3	93.0	85.4
Industrial Demand						
Sold energy (MWh)	33	49	39	44	50	(43)
Growth rate (%)	-	48.5	-20.4	12.8	13.6	10.6
Ratio to residential demand (%)	2.0	2.8	2.1	2.3	2.5	2.3

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.3.c ANNUAL ENERGY DEMAND

T. Tinggi

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Demand						
Sold energy (MWh)	1,653	2,165	2,469	2,621	2,992	2,380
Growth rate (%)	-	31.0	14.0	6.2	14.2	16.4
Commercial & Public Demand						
Sold energy (NWh)	1,316	1,099	1,189	1,455	1,608	1,333
Growth rate (%)	-	-16.5	8.2	22.4	10.5	6.2
Ratio to residential demand (%)	79.6	50.8	48.2	55.5	53.7	56.2
Industrial Demand						
Sold energy (MWh)	46	76	147	176	322	152
Growth rate (%)	-	85.4	93.4	19.7	83.0	70.4
Ratio to residential demand (%)	2.5	3.5	6.0	6.7	10.8	6.4

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.3.d ANNUAL ENERGY DEMAND

P. Siantar & Parapat

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Demand						
Sold energy (MWh)	2,465	3,625	3,963	5,562	5,856	4,294
Growth rate (%)	-	47.1	9.3	40.3	5.3	25.5
Commercial & Public Demand						
Sold energy (MWh)	2,932	2,477	2,963	4,352	4,348	3,414
Growth rate (%)	-	-15.5	19.6	46.9	-0.09	12.7
Ratio to residential demand (%)	118.9	68.3	74.8	78.2	74.2	79.5
Industrial Demand						
Sold energy (MWh)	401	353	420	876	843	579
Growth rate (%)	-	-11.9	18.9	108.6	-3.8	28.0
Ratio to residential demand (%)	16.3	9.7	10.6	15.7	14.4	13.5

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.3.e ANNUAL ENERGY DEMAND

Kisaran & Tg. Balai

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Demand						
Sold energy (MWh)	2,681	3,255	3,479	3,804	4,537	3,551
Growth rate (%)	-	21.4	6.9	9.3	19.3	14.2
Commercial & Public Demand						
Sold energy (MWh)	1,999	1,805	2,058	2,322	2,463	2,129
Growth rate (%)	-	-9.7	14.0	12.8	5.8	5.8
Ratio to residential demand (%)	74.6	55.5	59.2	61.0	54.3	60.0
Industrial Demand						
Sold energy (MWh)	8	13	17	39	52	26
Growth rate (%)	-	62.5	30.8	129.4	33.3	64.0
Ratio to residential demand (%)	0.3	0.4	0.5	1.0	1.1	0.7

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.3.f ANNUAL ENERGY DEMAND

Balige & Porsea

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Ave.</u>
Residential Demand						
Sold energy (MWh)	901	926	902	1,012	1,132	975
Growth rate (%)	-	2.8	-2.6	12.2	11.9	6.1
Commercial & Public Demand						
Sold energy (MWh)	382	331	334	351	407	361
Growth rate (%)	-	-13.4	0.9	5.1	16.0	2.2
Ratio to residential demand (%)	42.4	35.7	37.0	38.9	36.0	38.0
Industrial Demand						
Sold energy (MWh)	275	323	412	383	326	344
Growth rate (%)	-	17.5	27.6	-7.0	-14.9	5.8
Ratio to residential demand (%)	30.5	34.9	45.7	37.8	28.9	35.6

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.4 ELECTRIFICATION RATIOS (%)

<u>Year</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Medan	16.5	16.6	17.1	22.3	29.6
Belawan	9.1	9.8	9.5	9.6	13.1
Binjai	16.0	18.5	14.7	20.5	30.6
Tebing Tinggi	41.2	40.6	40.6	43.1	54.0
Brastagi	24.7	24.9	24.8	25.0	29.5
P. Siantar	19.4	20.0	21.0	23.7	33.9
Tanjung Balai	30.9	32.5	34.0	35.4	39.3
Kisaran	9.6	9.7	9.5	9.9	14.3
Parapat	20.3	20.2	19.6	24.0	32.9
Porsea	7.5	7.3	7.3	7.7	10.0
Balige	16.9	16.5	16.1	18.9	24.1
Whole North Sumatra	4.1	4.1	4.2	5.2	7.1

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.5 UNIT ENERGY CONSUMPTION PER RESIDENTIAL
CUSTOMER (kWh/YEAR)

<u>Year</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Medan	1,295	1,300	1,458	1,378	1,378
Belawan	1,139	1,117	1,150	1,066	937
Binjai	829	895	891	1,202	721
Tebing Tinggi	819	1,055	1,172	1,138	1,007
Brastagi	900	928	950	936	927
P. Siantar	516	716	729	451	631
Tanjung Balai	698	867	897	901	928
Kisaran	833	882	881	911	754
Parapat	586	825	848	792	696
Porsea	703	823	823	711	610
Balige	816	803	961	728	618
Whole North Sumatra	1,003	1,082	1,150	1,077	1,045

Source: Annual Records of PLN Wilayah II
(State General Electricity Enterprise)

Data II.1.6 EXTENTION PROGRAM OF POWER GENERATING FACILITIES

<u>Year</u>	<u>Power Plant</u>	<u>Installed Capacity (MW)</u>	<u>Accumulated Total insulation (MW)</u>
1979	Existing Plant	168	168
1980	Indrapura (D/G)	0.5 MW x 1	
	Kabanjahe (D/G)	0.5 MW x 2	
	Brastagi (D/G)	0.5 MW x 1	
	Kisaran (D/G)	0.5 MW x 1	
	Porsea (D/G)	0.25 MW x 1	
	Tebing Tinggi (D/G)	0.75 MW x 1	
	<u>Sub-total</u>	<u>3.5</u>	
	Medan System ^{/1}		
	- Glugur (G/G)	-4.0 MW x 1 -4.142 MW x 1	
	<u>Sub-total</u>	<u>-8.142</u>	164
1981	-	-	164
1982	-	-	164
1983	Asahan Hydro-power Medan System (D/G) ^{/2}	25 MW -10 MW	
	<u>Sub-total</u>	<u>15</u>	179
1984	Asahan Hydro Belawan Thermal System Medan (G/G) ^{/3}	10 MW 65 MW -20 MW	
	<u>Sub-total</u>	<u>55</u>	234
1985	Asahan Hydro Belawan Thermal	10 MW 65 MW	
	<u>Sub-total</u>	<u>75</u>	309
1986	Asahan Hydro	5 MW	314
1987	-	-	314
1988	-	-	314

<u>Year</u>	<u>Power Plant</u>	<u>Installed Capacity (MW)</u>	<u>Accumulated Total insulation (MW)</u>
1989	-	-	314
1990	-	-	314

/1: Removal of one unit to Aceh and another to Bali.

/2: Removal to Isolated Area in North Sumatera or to be scrapped.

/3: Removal to Isolated Area in North Sumatera.

Remarks: D/G - Diesel Generator
G/G - Gas Generator

Source: Power Development Scheme in North Sumatera (1980/81 - 1990/91)

DATA II.I.7.a EXTENSION OF TRANSMISSION LINES AND SUBSTATIONS IN THE PROJECT AREA

(1979 - 1984)

TRANSMISSION LINES

NO.	LINE SECTION	KV	KM	NOS. OF CIRCUIT	CONDUCTOR	REMARKS
1.	Paya Pasir - PLTU Sicanang	150	6.2	2	ACSR 468.4 mm ²	Execution during 1978/1981
2.	Paya Pasir - Sei Rotan (East Medan)	150	23.7	1	ACSR 346.4 mm ²	Execution during 1978/1981
3.	Sei Rotan (East Medan) - Titi Kuning	150	17.4	1	ACSR 346.4 mm ²	Execution during 1978/1981
4.	Sei Rotan (East Medan) - T. Tinggi	150	85	1	ACSR	
5.	Kuala Tanjung - Tebing Tinggi	150	35	1	ACSR	
6.	P. Siantar - Tebing Tinggi	150	50	1	ACSR	
7.	Titi Kuning - Brastagi	150	50	1	ACSR	
8.	Kuala Tanjung - Kisaran	150	40	1	ACSR	
	Total		307.3			

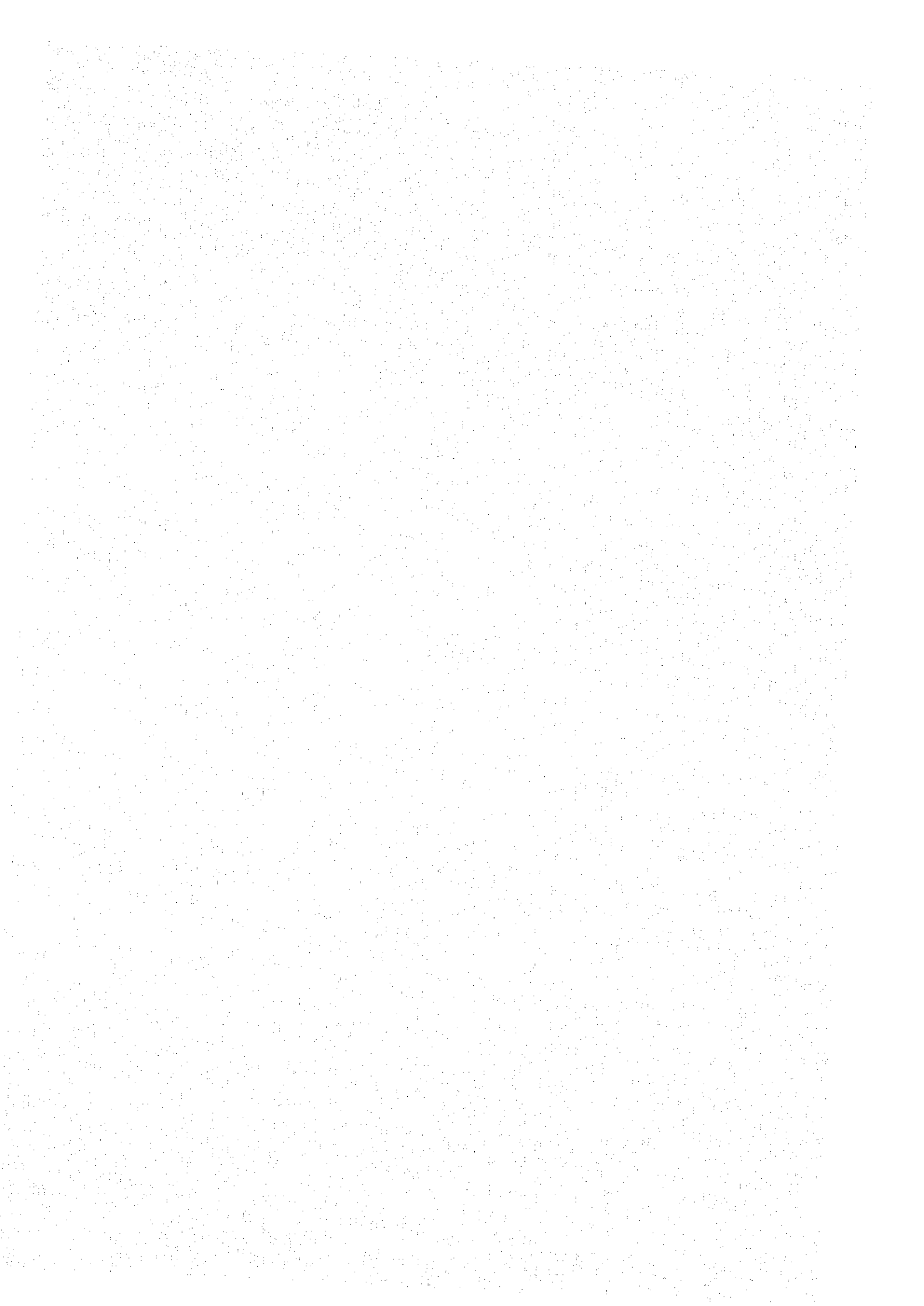
Source: Power Development Scheme in North Sumatera (1979/80-1984/85)

DATA II.1.1.7.b EXTENSION OF TRANSMISSION LINES AND SUBSTATIONS IN THE PROJECT AREA
(1979 - 1984)

SUBSTATIONS

NO.	LOCATION	KV	NO. OF BAY	TRANSFORMER KV	MVA	START	EXECUTION COMPLETION	REMARKS
1.	Paya Pasir	150	4	150/20	1 x 30	1979	1982	Ext. 1 x 30 MVA
2.	Titi Kuning	150	4	150/20	1 x 30	1979	1983	Ext. 1 x 30 MVA
3.	Paya Geli (West Medan)	150	1	150/20	1 x 30	1983	1984	Ext. 1 x 30 MVA
4.	Sei Rotan (East Medan)	150	6	150/20	1 x 30	1979	1984	-
5.	Belawan	150	3	150/20	1 x 30	1980	1984	-
6.	Lubuk Pakam	150	3	150/20	1 x 10	1980	1983	-
7.	Tebing Tinggi	150	8	150/20	1 x 10	1980	1983	-
8.	Kuala Tanjung	150	7	150/20	2 x 30	1980	1983	-
9.	P. Siantar	150	5	150/20	2 x 10	1980	1983	-
10.	Brastagi	150	4	150/20	1 x 10	1980	1984	-
	Total		45		260			

Source: Power Development Scheme in North Sumatera (1979/80 - 1984/85)



DATA II.1.8 EXTENSION OF DISTRIBUTION LINES DURING THE 3RD FIVE YEAR DEVELOPMENT PLAN

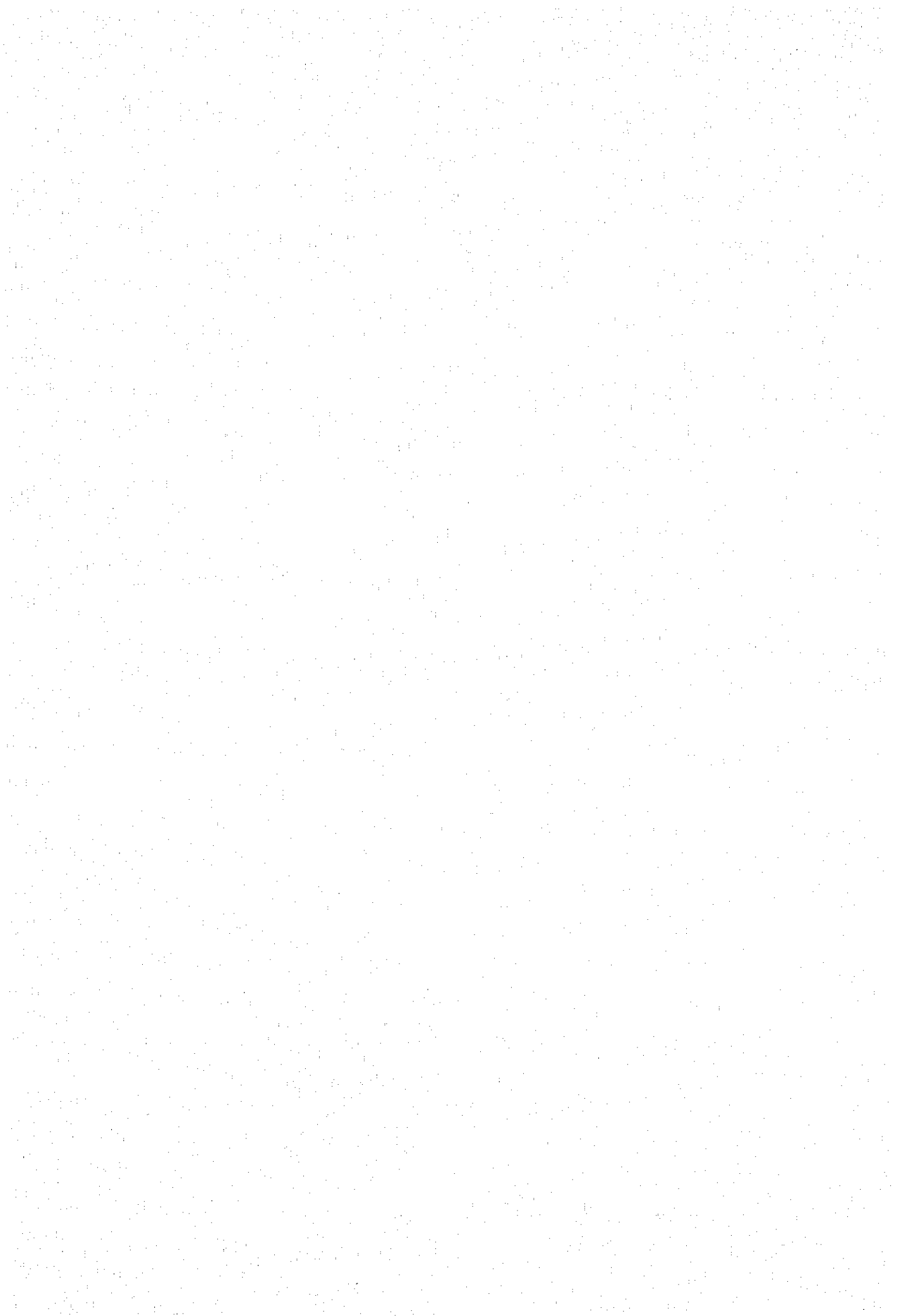
Project Location	1979/80			1980/81			1981/82			1982/83			1983/84		
	HV	LV	CPT	HV	LV	CPT	HV	LV	CPT	HV	LV	CPT	HV	LV	CPT
Medan System	174.98	209.97	17.15	184.15	220.98	18.05	197.36	236.83	19.35	213.73	256.47	20.95	211.28	253.54	20.71
Brastagi/Kabanjahe	3.06	3.68	0.30	3.32	3.99	0.33	3.51	4.21	0.34	3.34	4.01	0.33	3.80	4.55	0.37
Tebing Tinggi	4.70	5.63	0.46	5.62	6.03	0.49	5.43	6.52	0.53	6.41	7.70	0.63	6.75	8.10	0.66
Siantar	8.29	9.95	0.81	8.91	10.69	0.87	9.72	10.46	0.85	10.01	12.01	0.98	9.95	11.94	0.98
Parapat	1.12	1.34	0.11	1.24	1.49	0.13	1.33	1.59	0.12	1.27	1.53	0.12	1.21	1.45	0.12
Kisaran	2.69	3.23	0.26	2.91	3.49	0.29	3.06	3.67	0.30	2.90	3.48	0.28	3.28	3.94	0.32
Tanjung Balai	3.32	3.98	0.33	3.59	4.31	0.35	3.54	4.25	0.35	4.08	4.89	0.40	4.70	5.64	0.46
Balige	1.07	1.29	0.11	1.27	1.52	0.12	1.09	1.31	0.11	1.23	1.48	0.12	1.40	1.68	0.14
Porsea	0.24	0.28	0.02	0.28	0.34	0.03	0.29	0.35	0.03	0.27	0.33	0.03	0.31	0.37	0.03
Total	199.47	239.35	19.55	211.29	252.84	20.66	224.00	269.19	21.98	243.23	291.90	23.84	242.68	291.21	23.79

Remarks: HV: High voltage line (JIM) in Km (Circuit Length)

LV: Low voltage line (JTR) in Km (Circuit Length)

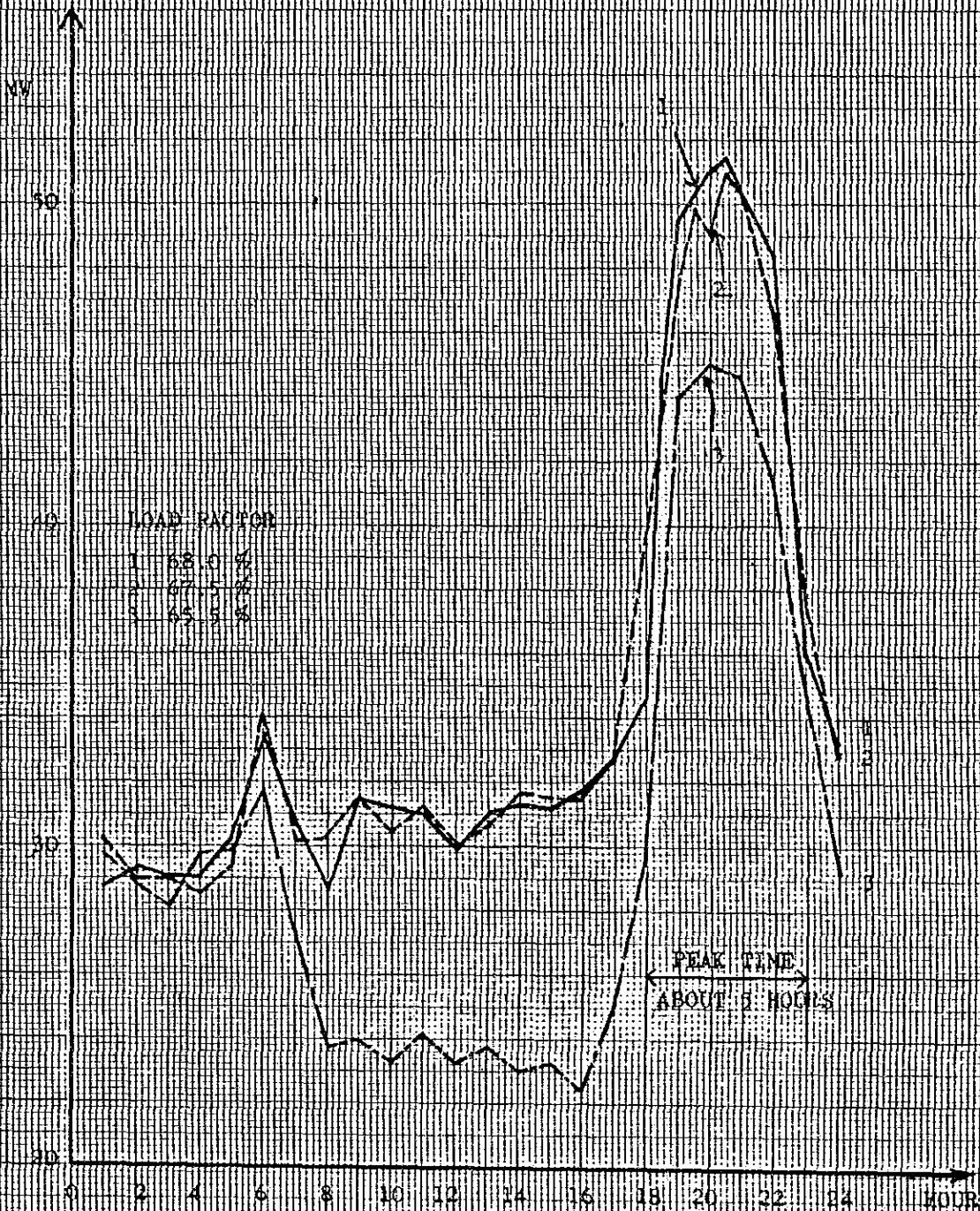
CPT: Capacity of pole transformer in MVA

Source: Power Extension Program on The 3rd Year Development Plan in PLN Wilayah II (State General Electricity Enterprise)



Date: 11.19.80

TYPICAL DAILY CURVE IN MEDAN SYSTEM

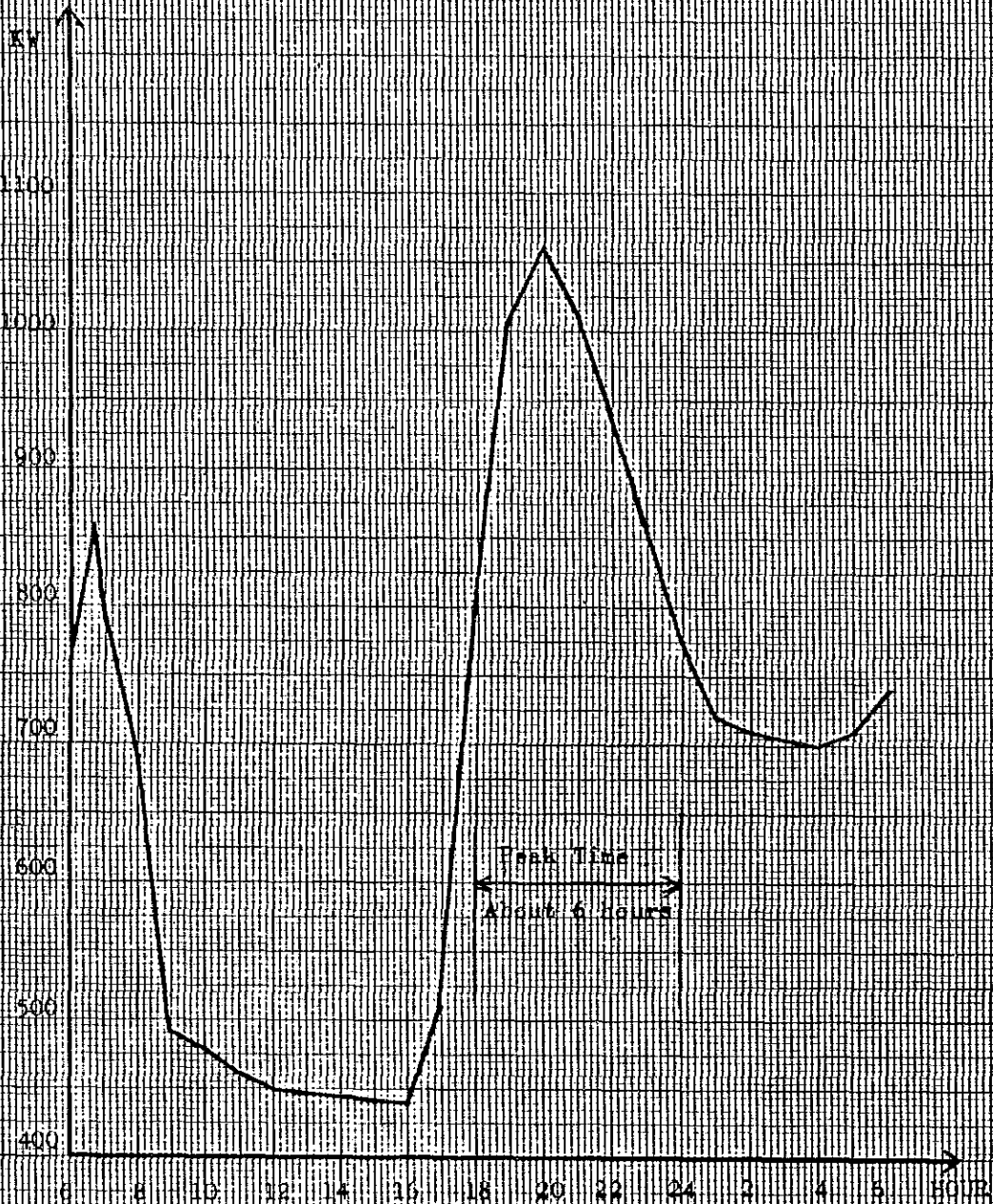


- 1 PEAK LOAD JANUARY 9, 1980 (Wednesday)
- 2 PEAK LOAD DECEMBER 19, 1979 (Wednesday)
- 3 PEAK LOAD DECEMBER 9, 1979 (Sunday)

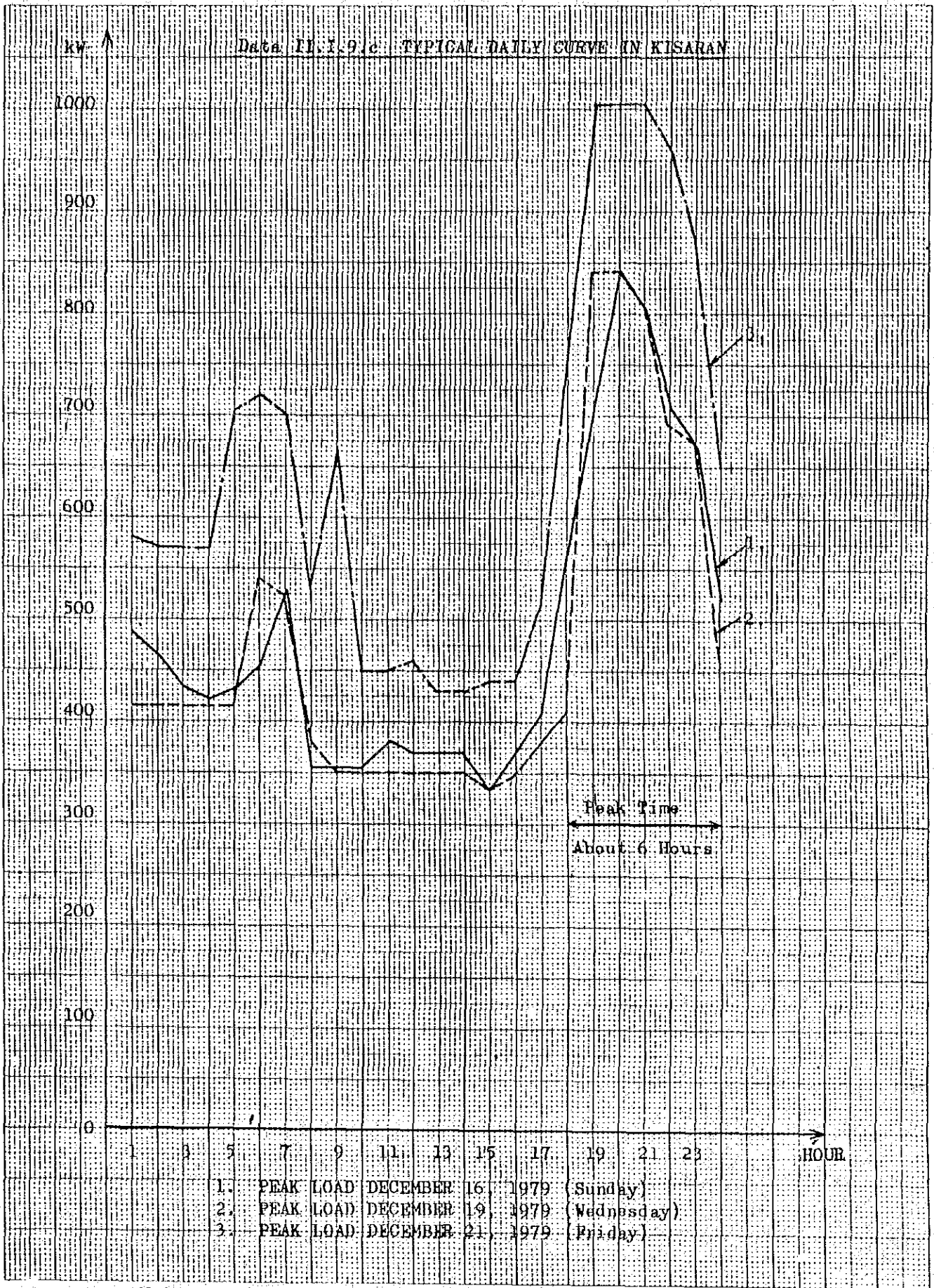
Note: Observed and Summed up at Medan System, PLN Wilayah III Sumatera Utara

Date: 11.11.97

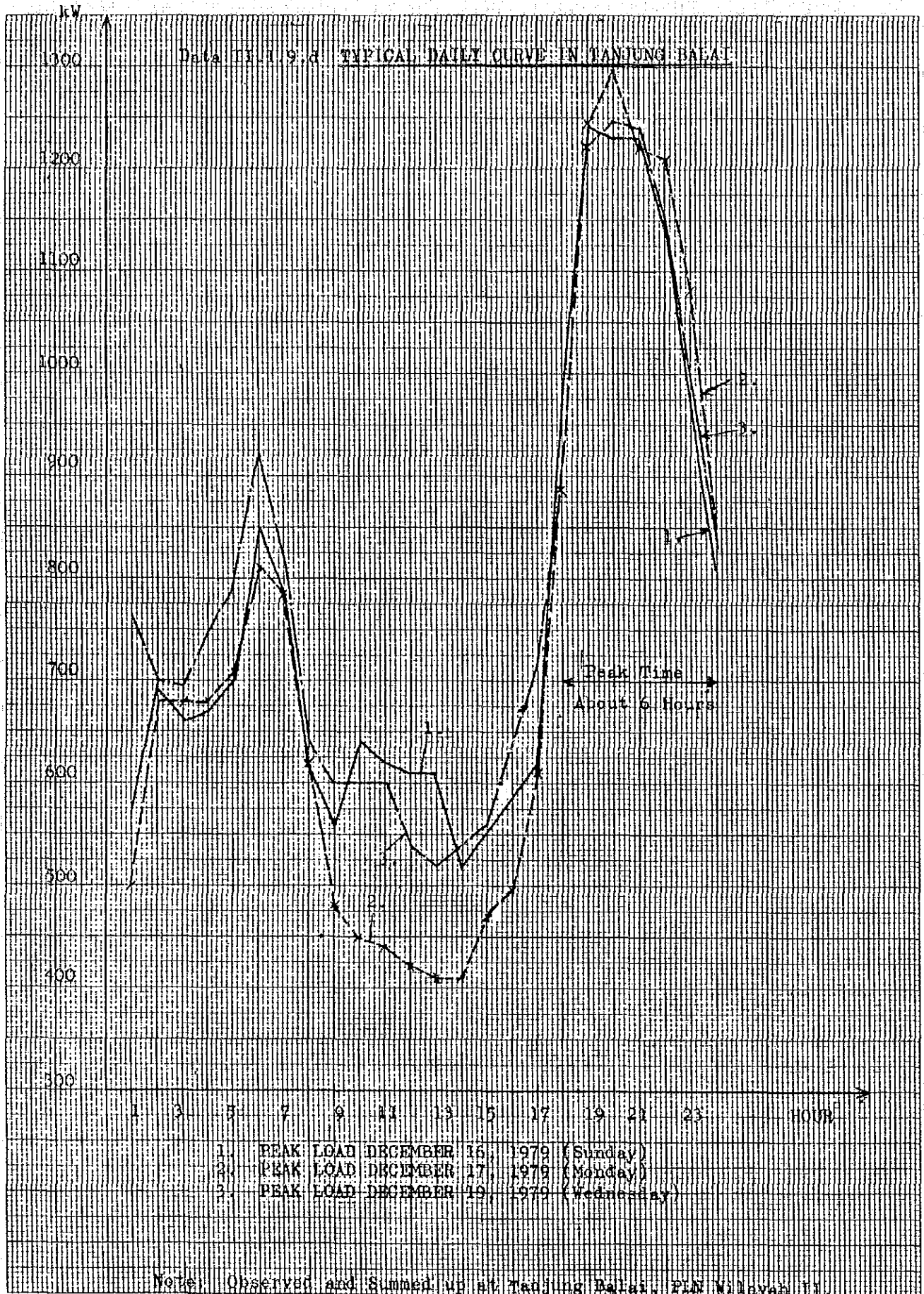
TYPICAL DAILY CURVE IN BRASTAGI, CABANG BINJAI



Note: Observed and Summed up at Panting Brastagi, Cabang Binjai, PLO
Wilayah II, Sumatera Utara



Note: Observed and Summed up at Kisaran, PLN Wilayah II, Sumatera Utara









APPENDIX - II.2

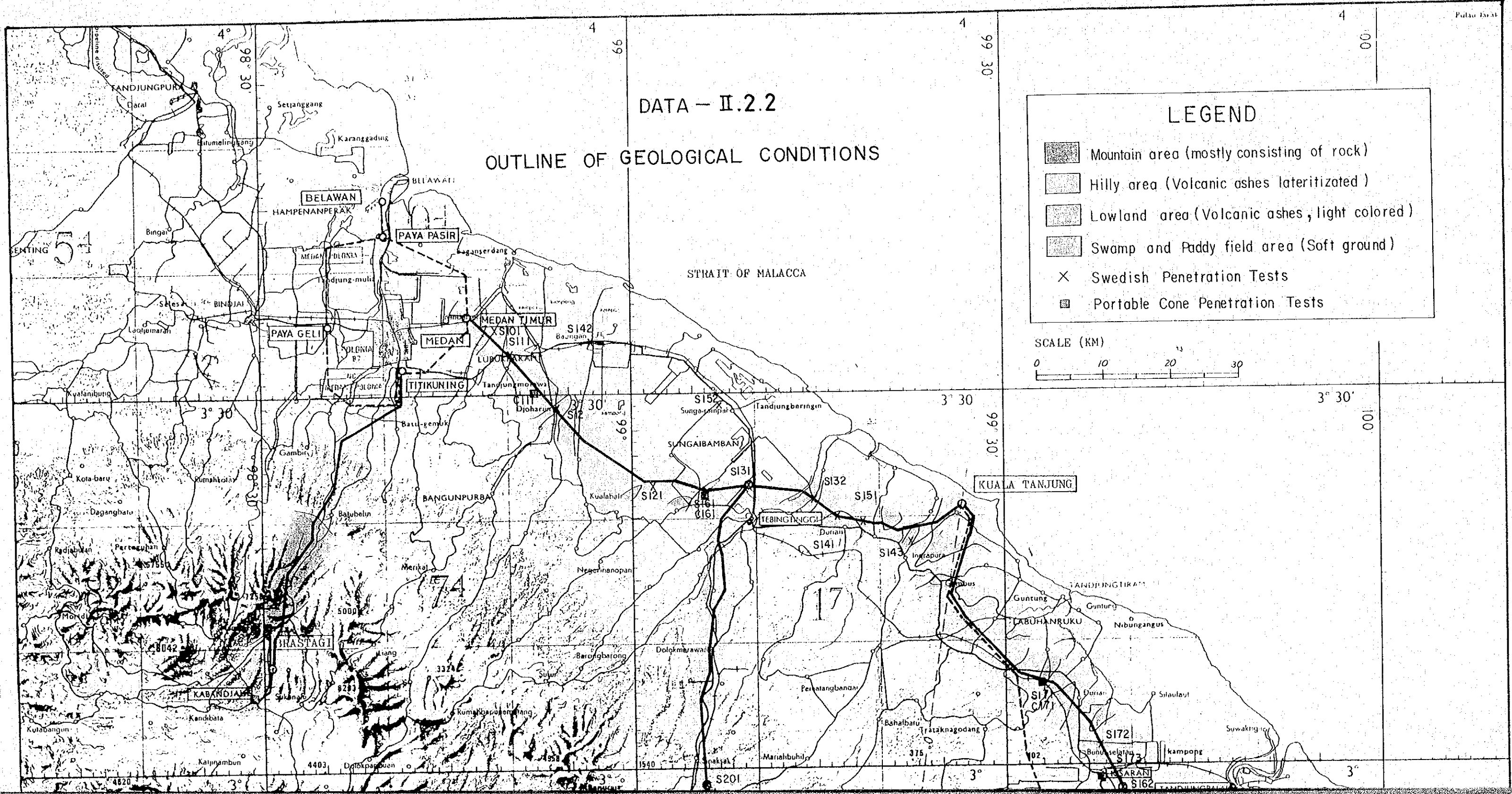
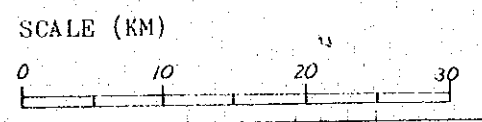
GEOLOGICAL DATA

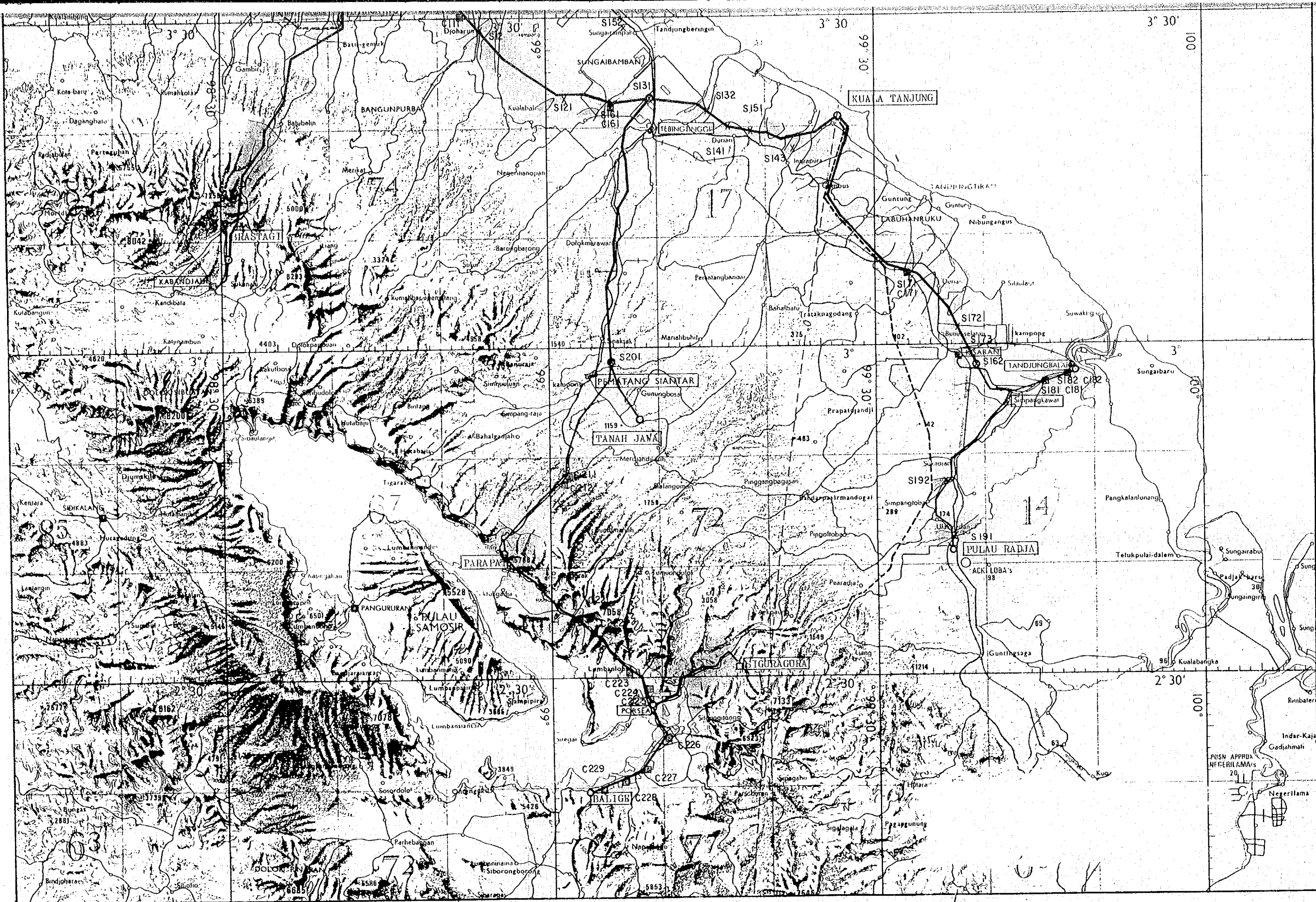
DATA - II.2.2

OUTLINE OF GEOLOGICAL CONDITIONS

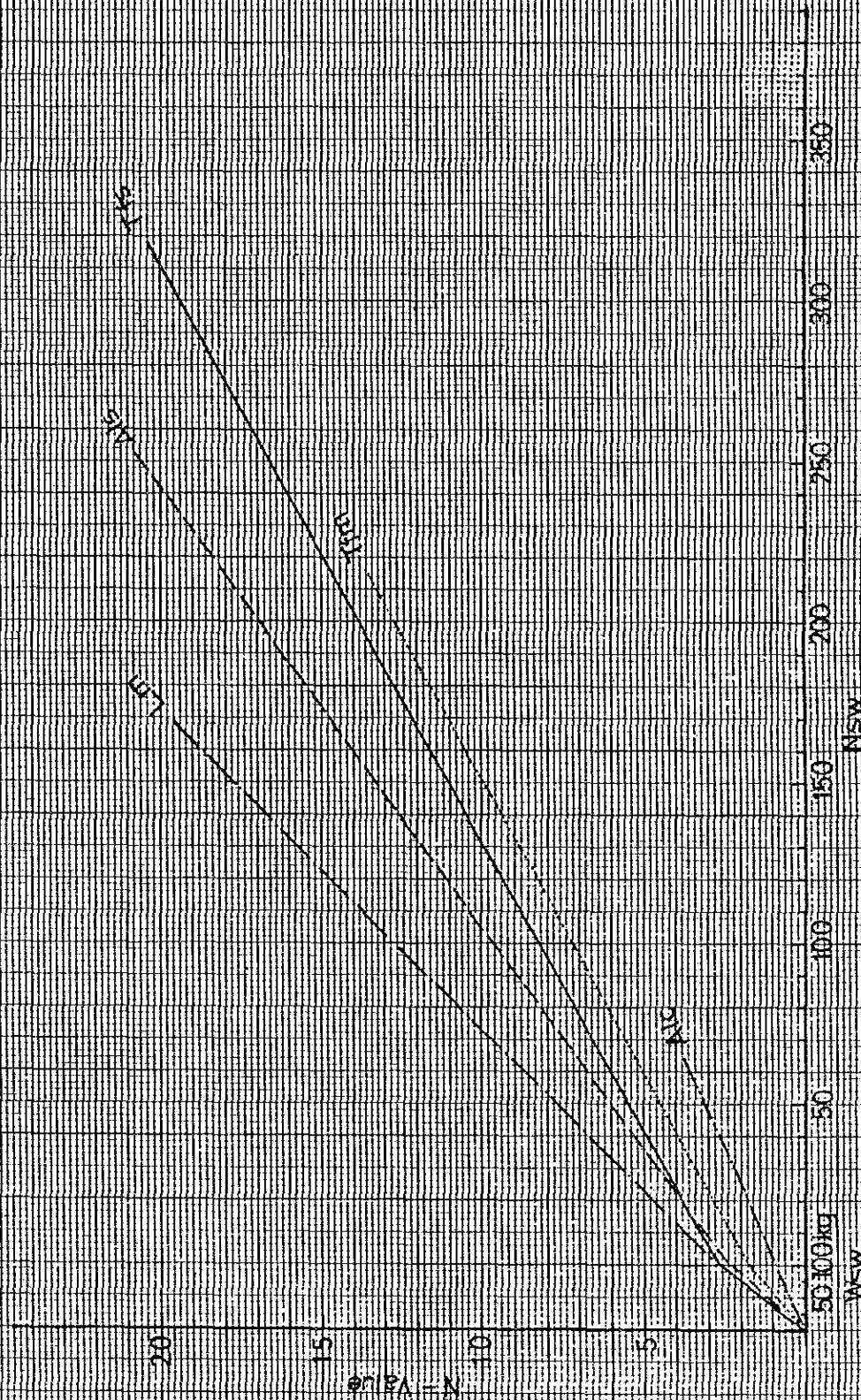
LEGEND

-  Mountain area (mostly consisting of rock)
-  Hilly area (Volcanic ashes lateritized)
-  Lowland area (Volcanic ashes, light colored)
-  Swamp and Paddy field area (Soft ground)
-  Swedish Penetration Tests
-  Portable Cone Penetration Tests





DATA II 21
 Relationship of N and Nsw Values

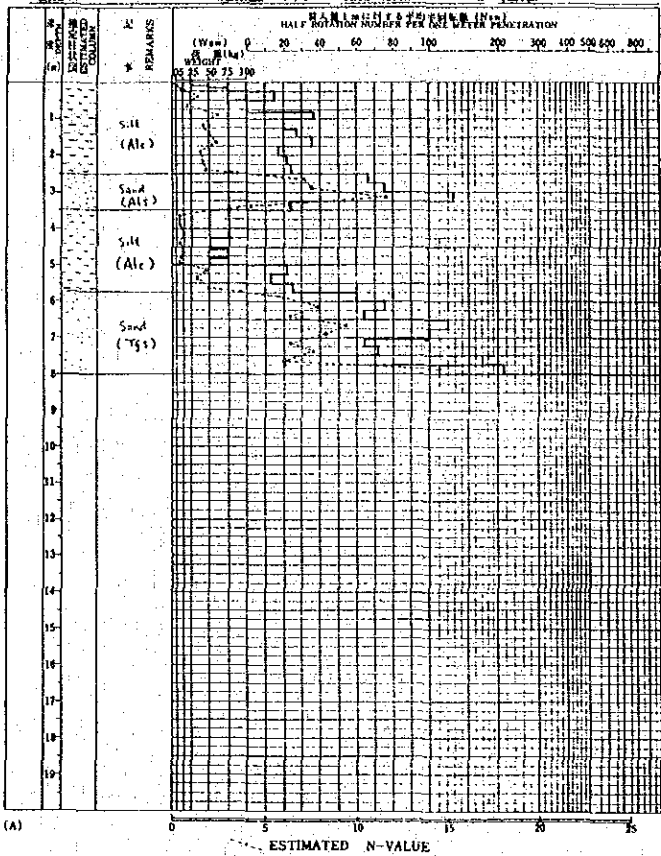


RESULT OF SWEDISH PENETRATION TESTS (1)

スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

№ S101

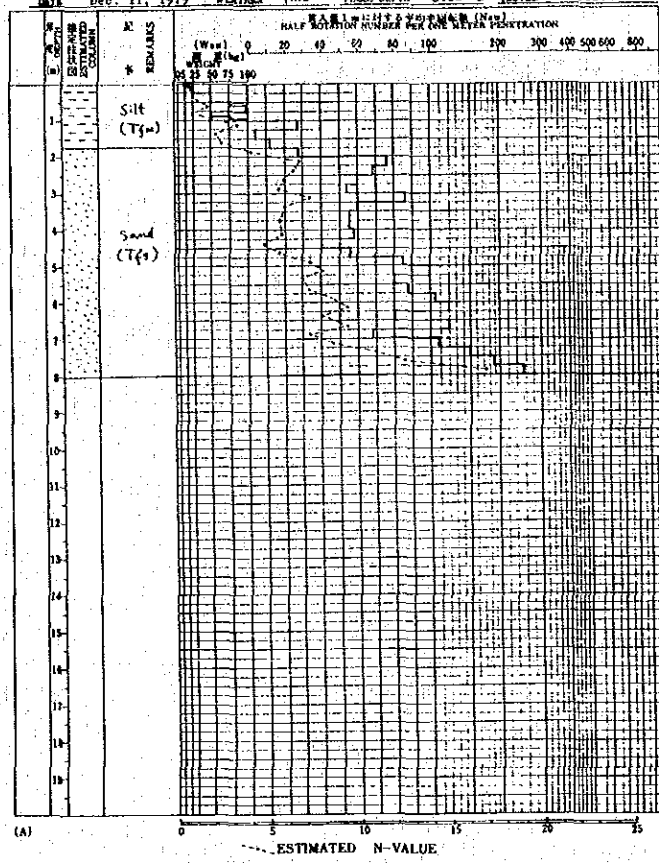
Project: North Sumatra T/L
 Location: Tobin Tinggi - Medan Timur
 Date: Dec. 10, 1979
 Weather: fine
 Water Depth: 2.50
 Final Depth: 8.00
 Checked: NAKANISHI
 Tested: UDIBOWO



スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

№ S111

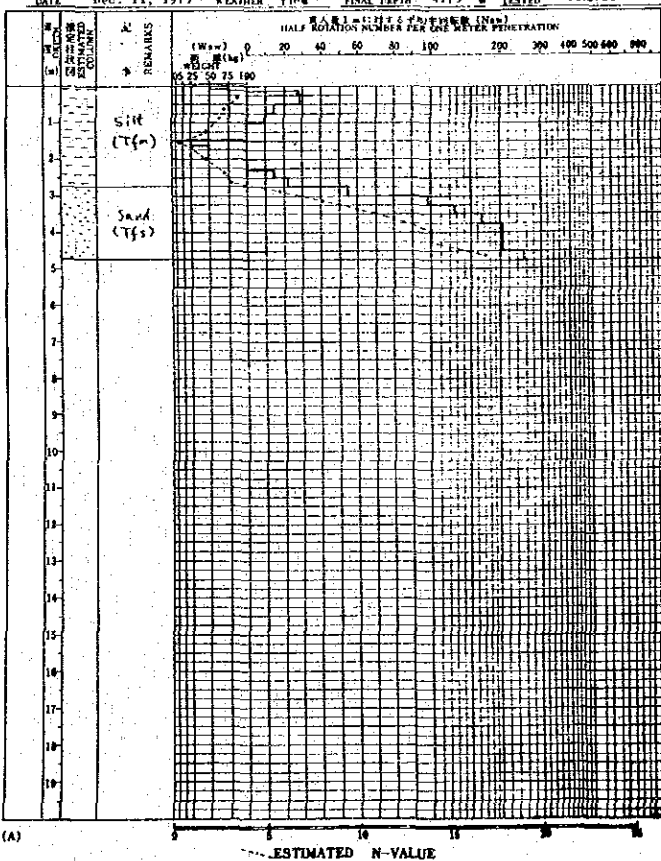
Project: North Sumatra T/L
 Location: Tobin Tinggi - Medan Timur
 Date: Dec. 11, 1979
 Weather: fine
 Water Depth: 1.25
 Final Depth: 8.00
 Checked: NAKANISHI
 Tested: UDIBOWO



スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

№ S112

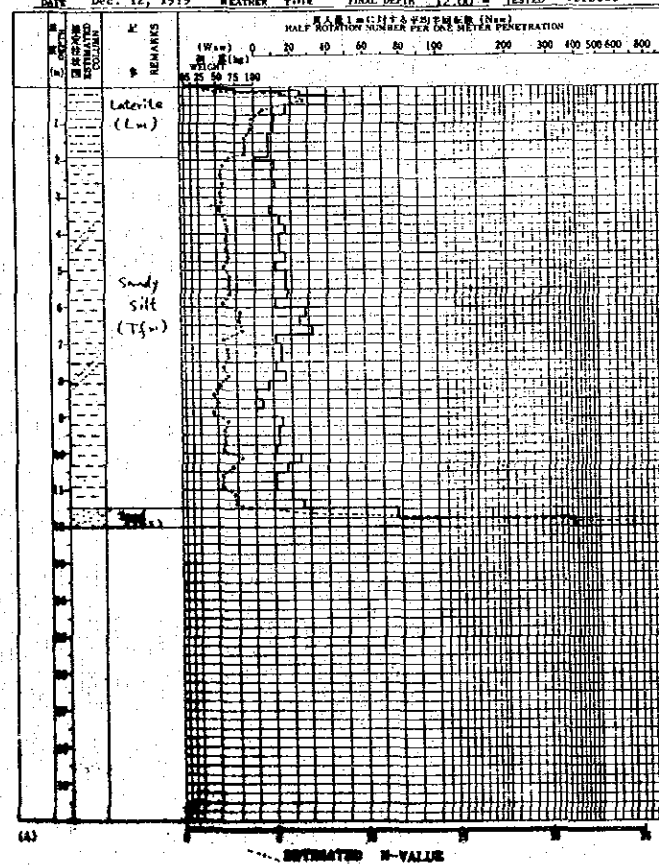
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 Water Depth: 5
 Final Depth: 4.75
 Checked: NAKANISHI
 Tested: UDIBOWO



スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

№ S121

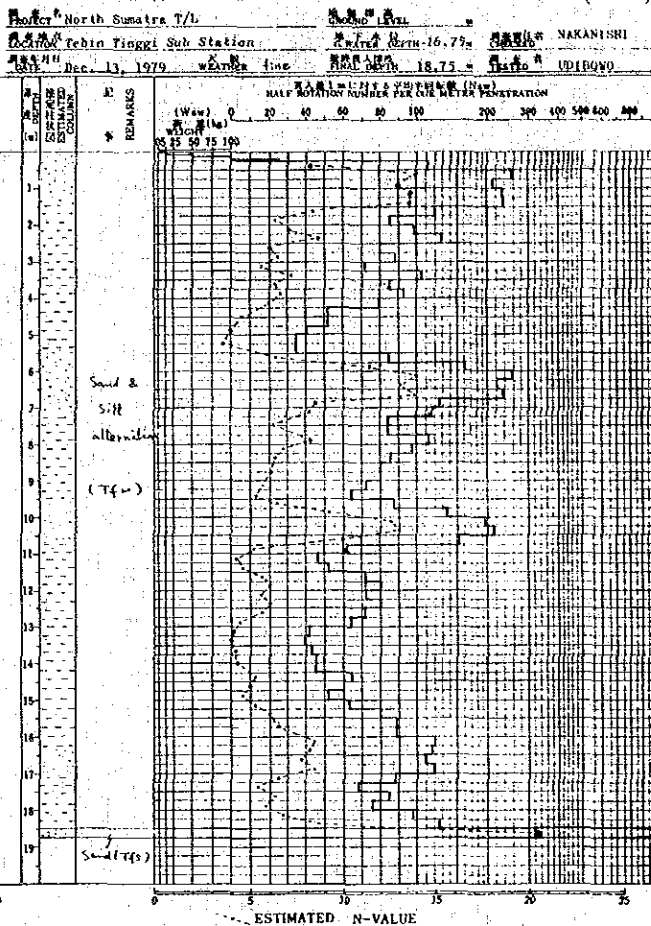
Project: North Sumatra T/L
 Location: Tobin Tinggi - Medan Timur
 Date: Dec. 12, 1979
 Weather: fine
 Water Depth: 5
 Final Depth: 12.00
 Checked: NAKANISHI
 Tested: UDIBOWO



RESULT OF SWEDISH PENETRATION TESTS (2)

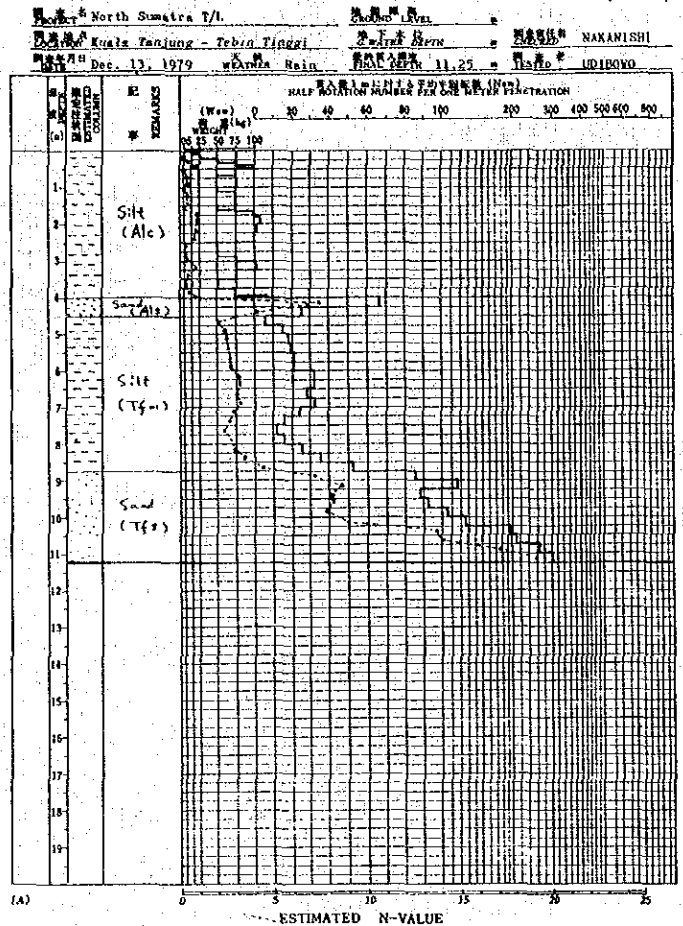
スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

AG S131



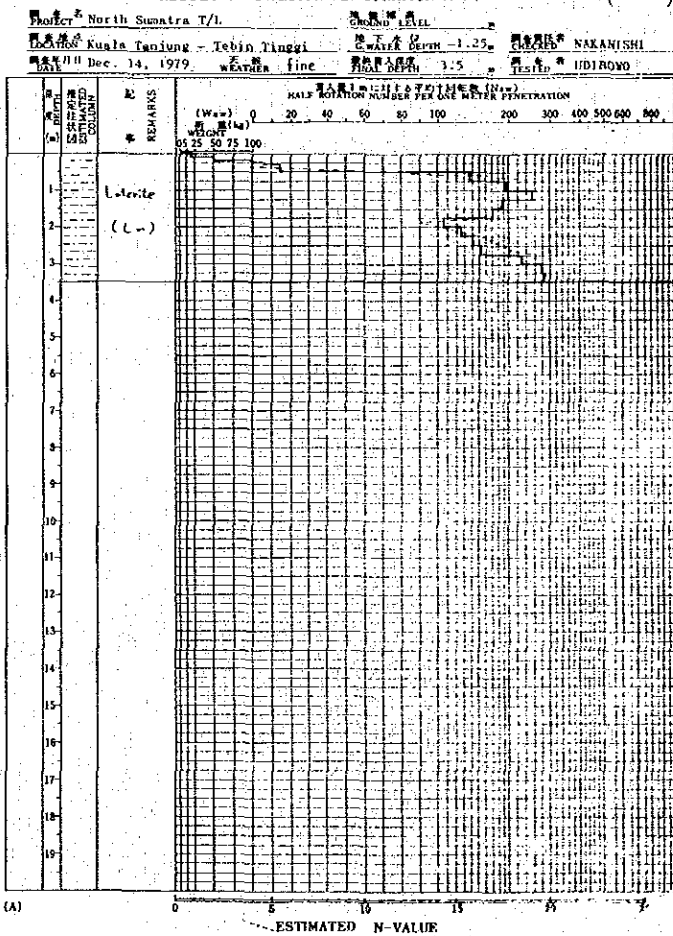
スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

AG S132



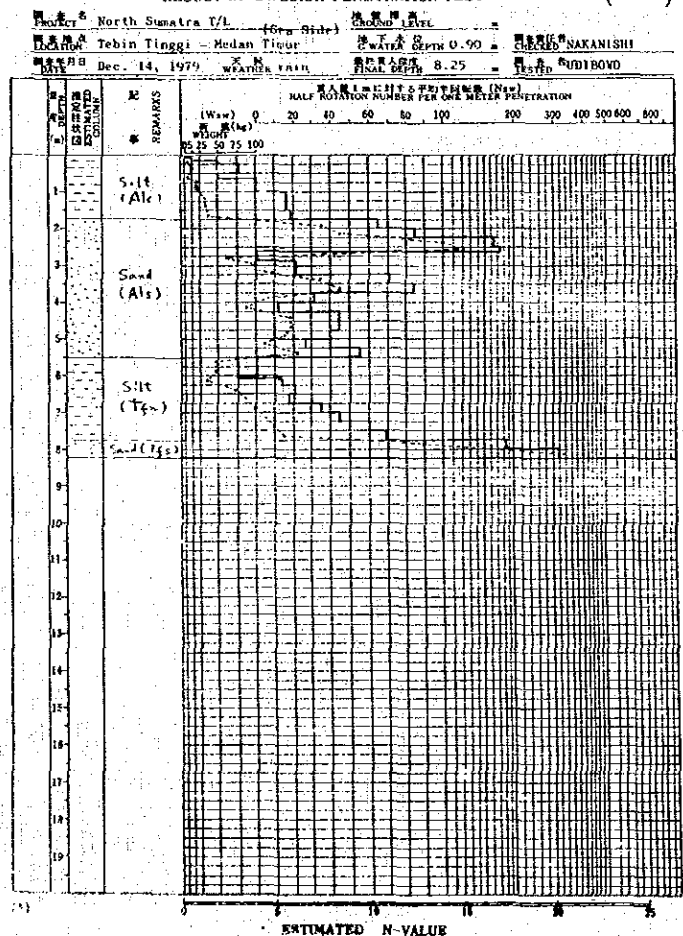
スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

AG S141



スウェーデン式サウンディング試験結果
RESULT OF SWEDISH PENETRATION TEST

AG S142



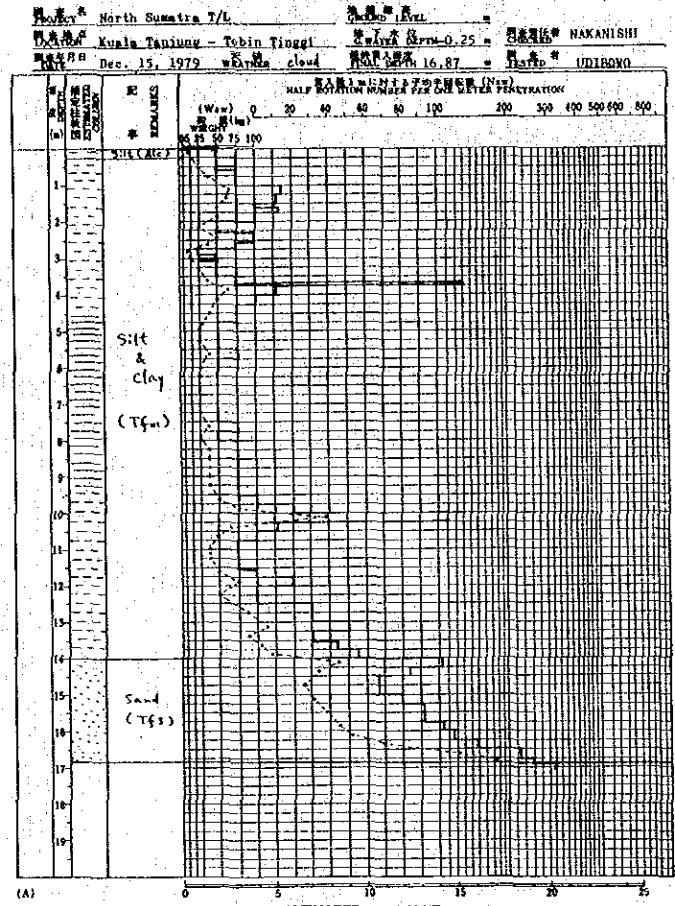
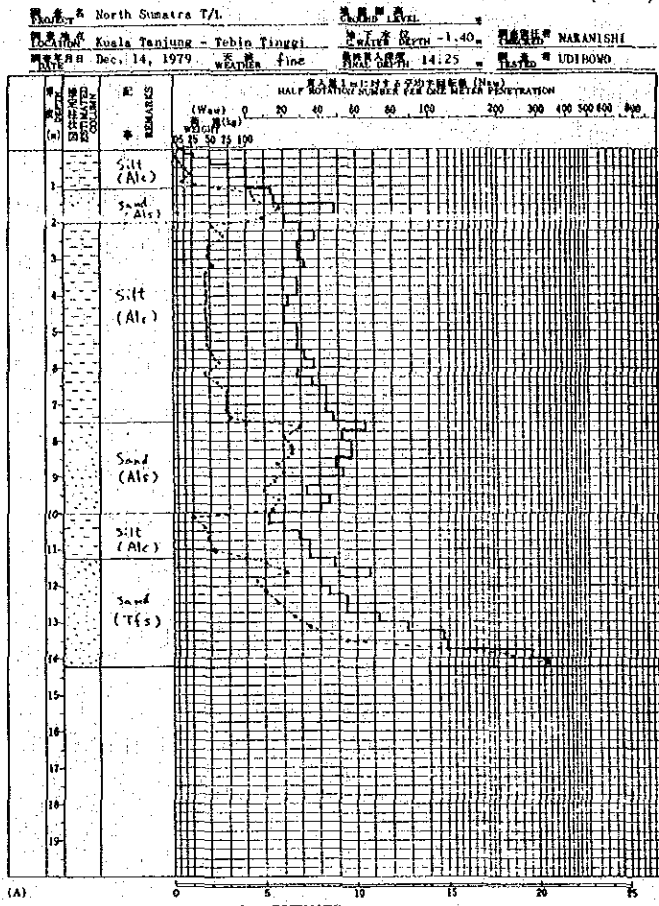
RESULT OF SWEDISH PENETRATION TESTS(3)

スウェーデン式サウンディング試験結果 № 8143

スウェーデン式サウンディング試験結果 № 8151

RESULT OF SWEDISH PENETRATION TEST

RESULT OF SWEDISH PENETRATION TEST

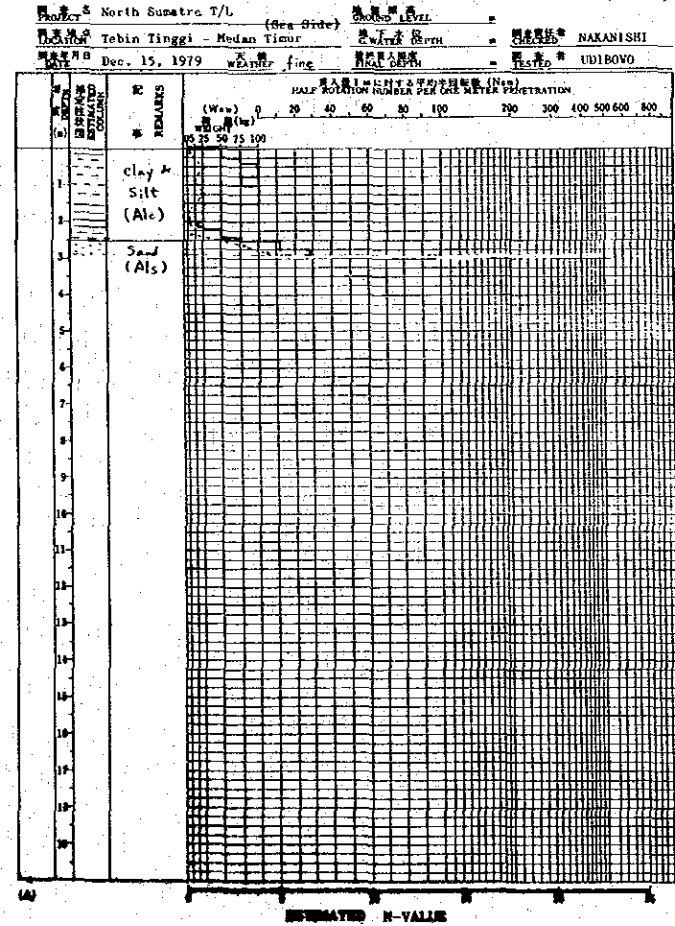
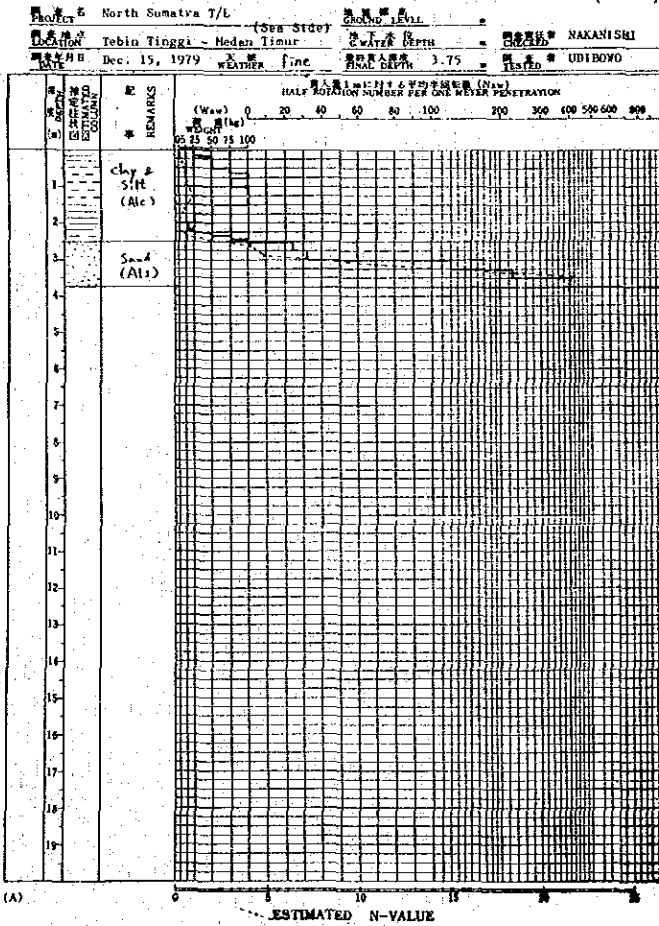


スウェーデン式サウンディング試験結果 № 8152

スウェーデン式サウンディング試験結果 № 8152

RESULT OF SWEDISH PENETRATION TEST

RESULT OF SWEDISH PENETRATION TEST



RESULT OF SWEDISH PENETRATION TESTS (4)

スウェーデン式サウンディング試験結果

№ 5161

スウェーデン式サウンディング試験結果

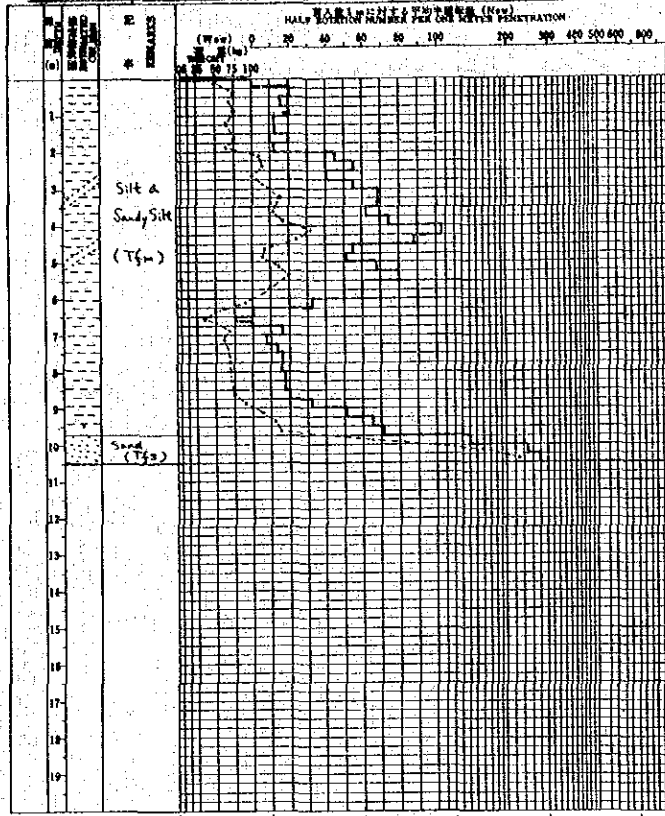
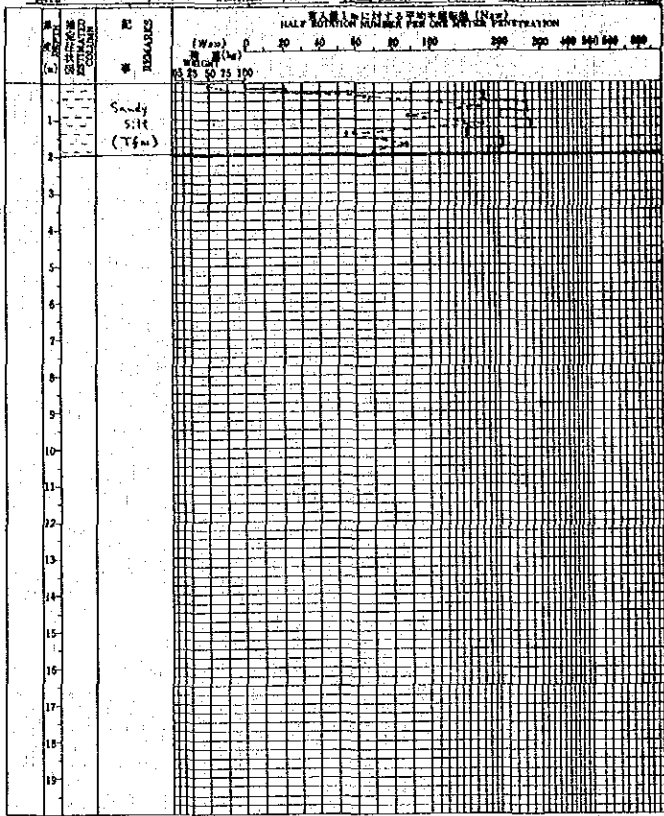
№ 5162

RESULT OF SWEDISH PENETRATION TEST

RESULT OF SWEDISH PENETRATION TEST

Project: North Sumatra T/L
 Location: Tobin Tinggi - Medan Timur
 Date: Dec. 16, 1947
 Water Depth: 1.95 m
 Checked: NAKANISHI
 Tested: UDIBOWO

Project: North Sumatra T/L
 Location: Kisaran Sub Station
 Date: Dec. 16, 1979
 Water Depth: -3.10 m
 Checked: NAKANISHI
 Tested: UDIBOWO



(A) ESTIMATED N-VALUE

(A) ESTIMATED N-VALUE

スウェーデン式サウンディング試験結果

№ 5171

RESULT OF SWEDISH PENETRATION TEST

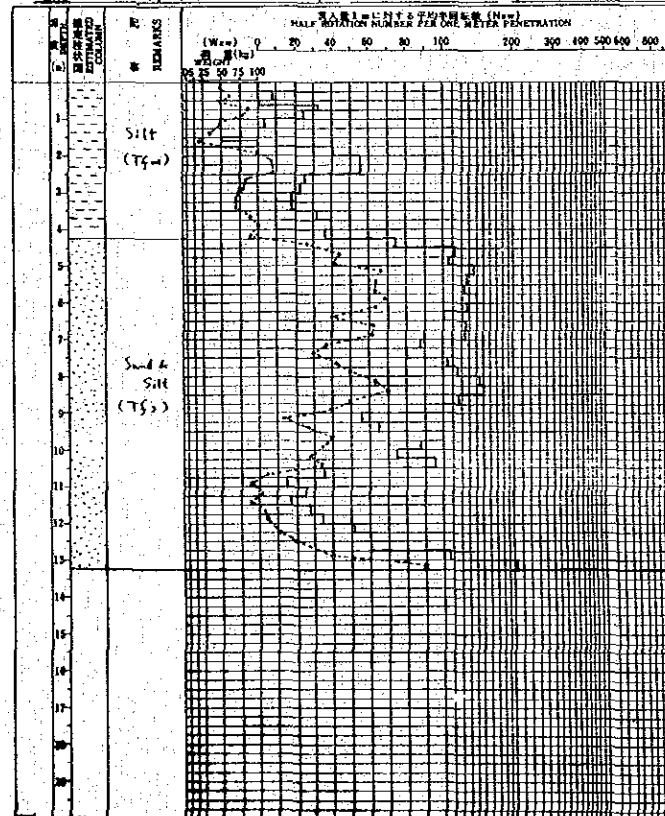
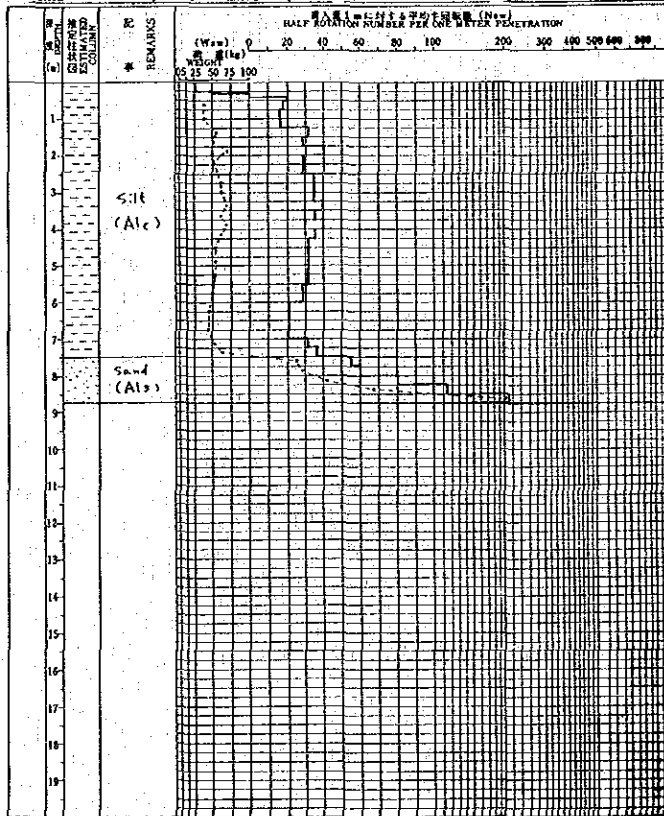
スウェーデン式サウンディング試験結果

№ 5172

RESULT OF SWEDISH PENETRATION TEST

Project: North Sumatra T/L
 Location: Kuala Tanjung - Kisaran
 Date: Dec. 17, 1979
 Water Depth: -0.20 m
 Checked: NAKANISHI
 Tested: UDIBOWO

Project: North Sumatra T/L
 Location: Kuala Tanjung - Kisaran
 Date: Dec. 17, 1979
 Water Depth: -12.25 m
 Checked: NAKANISHI
 Tested: UDIBOWO



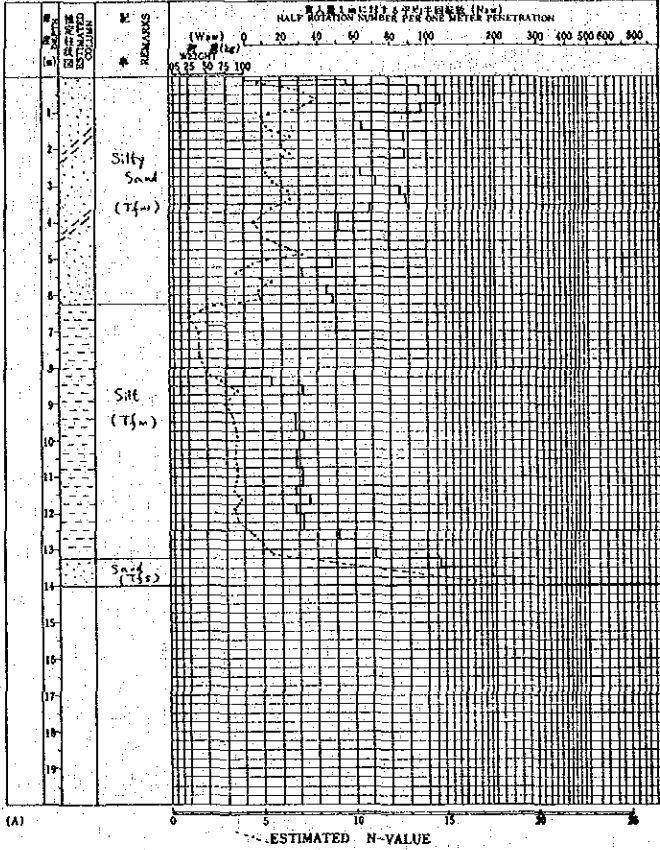
(A) ESTIMATED N-VALUE

(A) ESTIMATED N-VALUE

RESULT OF SWEDISH PENETRATION TESTS (5)

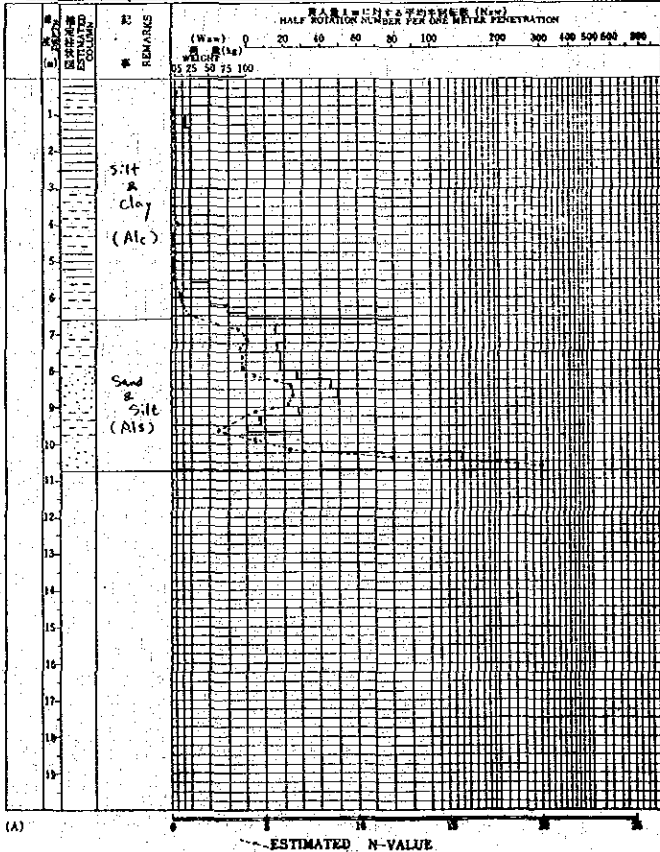
スウェーデン式サウンディング試験結果 No. S173
 RESULT OF SWEDISH PENETRATION TEST

Project: North Sumatra T/L
 Location: Kuala Tanjung - Kisaran
 Date: Dec. 17, 1979
 Water: 1.50 m
 Penetration: 14.00 m
 Tester: NAKANISHI
 Recorder: UDIROVO



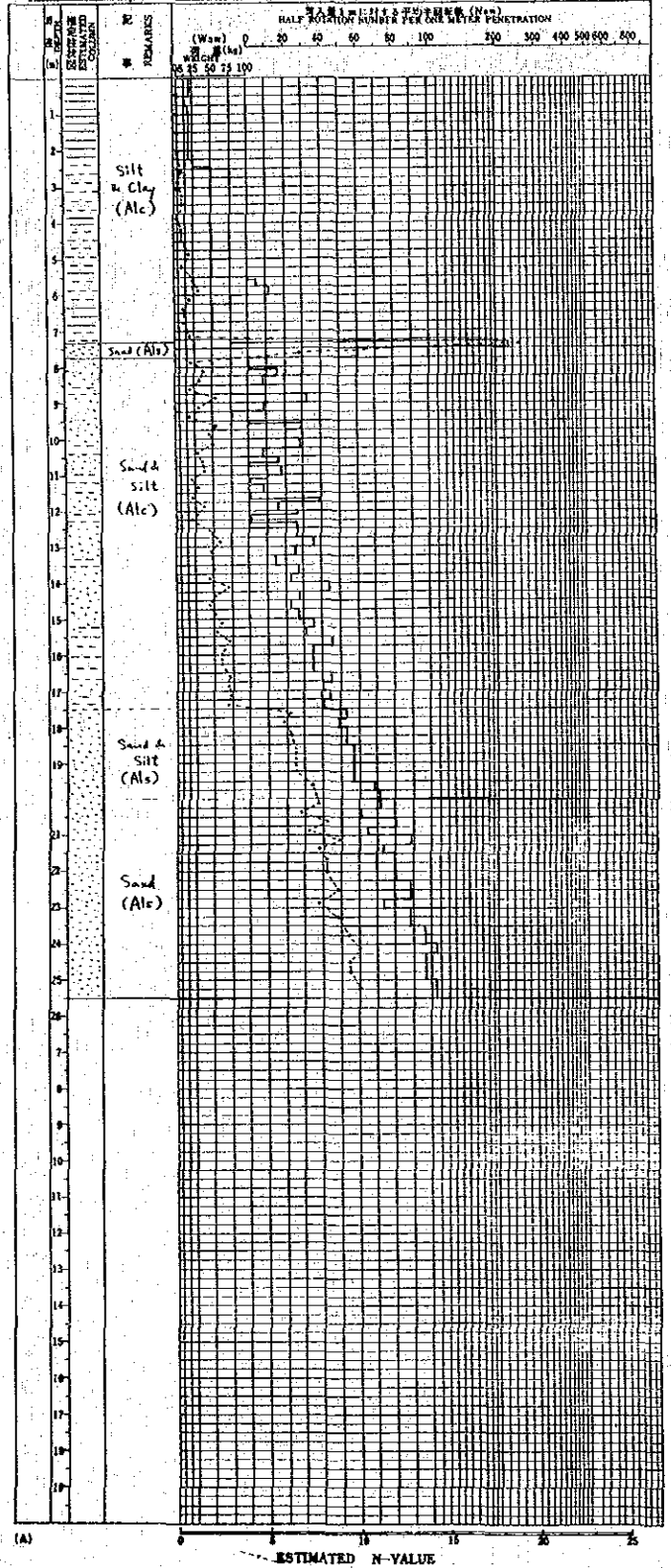
スウェーデン式サウンディング試験結果 No. S181
 RESULT OF SWEDISH PENETRATION TEST

Project: North Sumatra T/L
 Location: Kisaran - Tanjung Balai
 Date: Dec. 18, 1979
 Water: 0.15 m
 Penetration: 10.75 m
 Tester: NAKANISHI
 Recorder: UDIROVO



スウェーデン式サウンディング試験結果 No. S182
 RESULT OF SWEDISH PENETRATION TEST

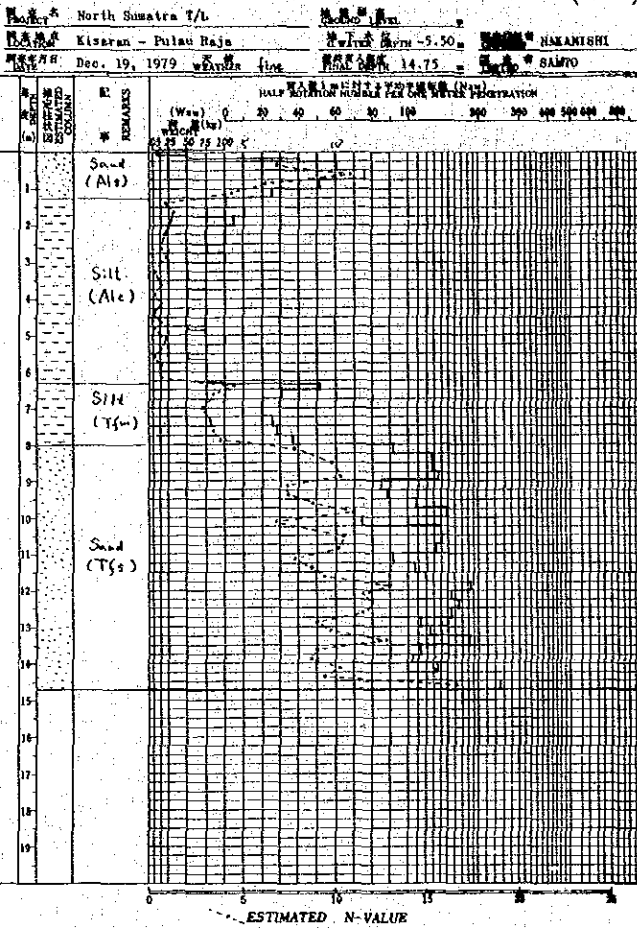
Project: North Sumatra T/L
 Location: Kisaran - Tanjung Balai
 Date: Dec. 18, 1979
 Water: 8.10 m
 Penetration: 25.50 m
 Tester: NAKANISHI
 Recorder: UDIROVO



RESULT OF SWEDISH PENETRATION TESTS (6)

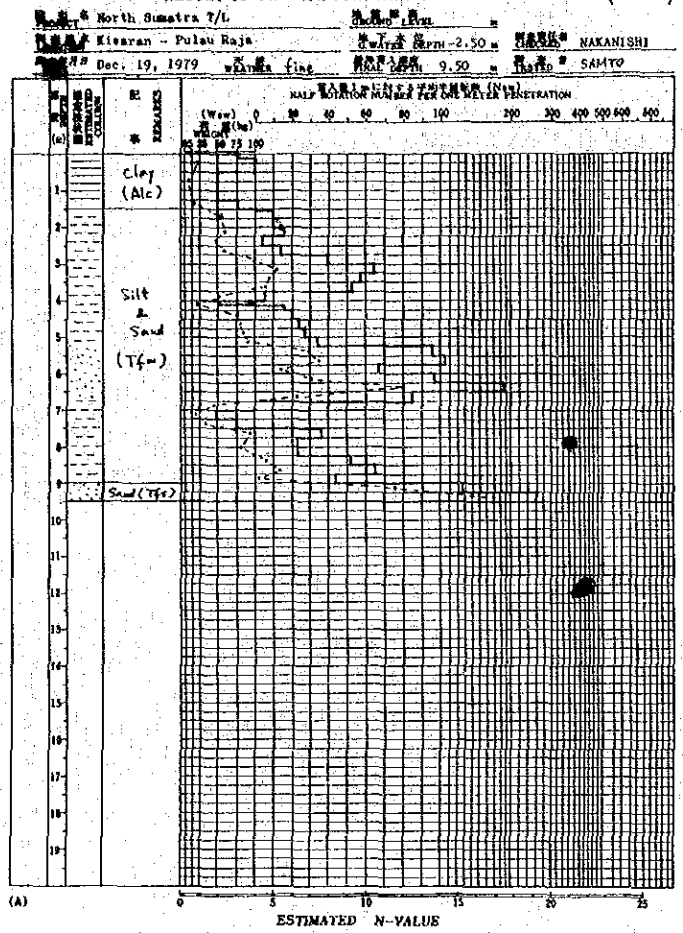
スウェーデン式サウンディング試験結果 № 8191

RESULT OF SWEDISH PENETRATION TEST



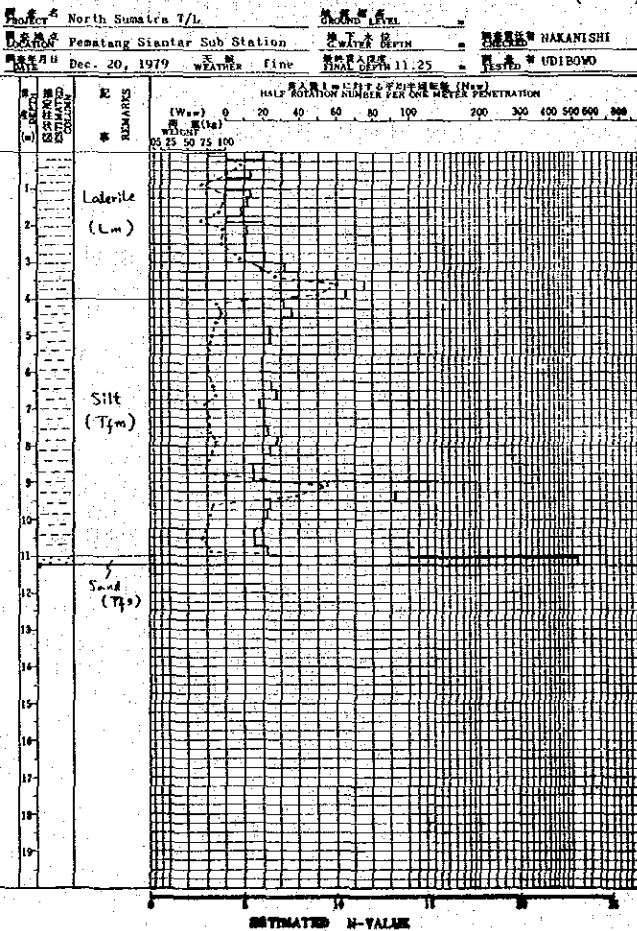
スウェーデン式サウンディング試験結果 № 8192

RESULT OF SWEDISH PENETRATION TEST



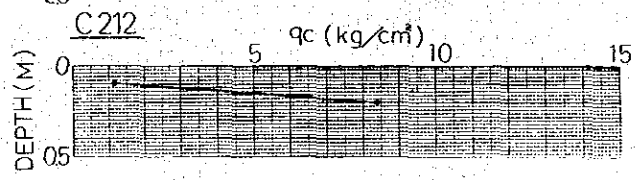
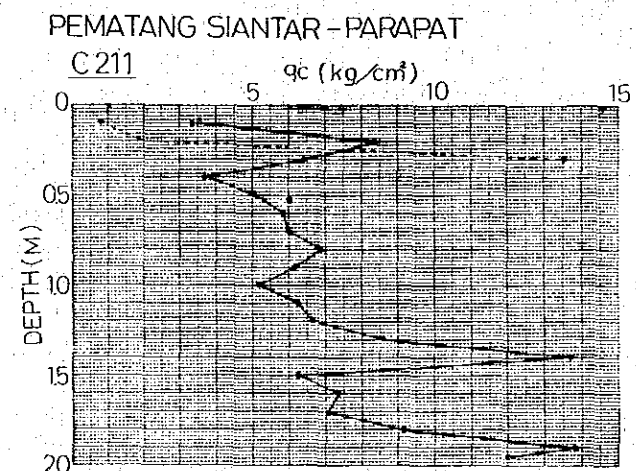
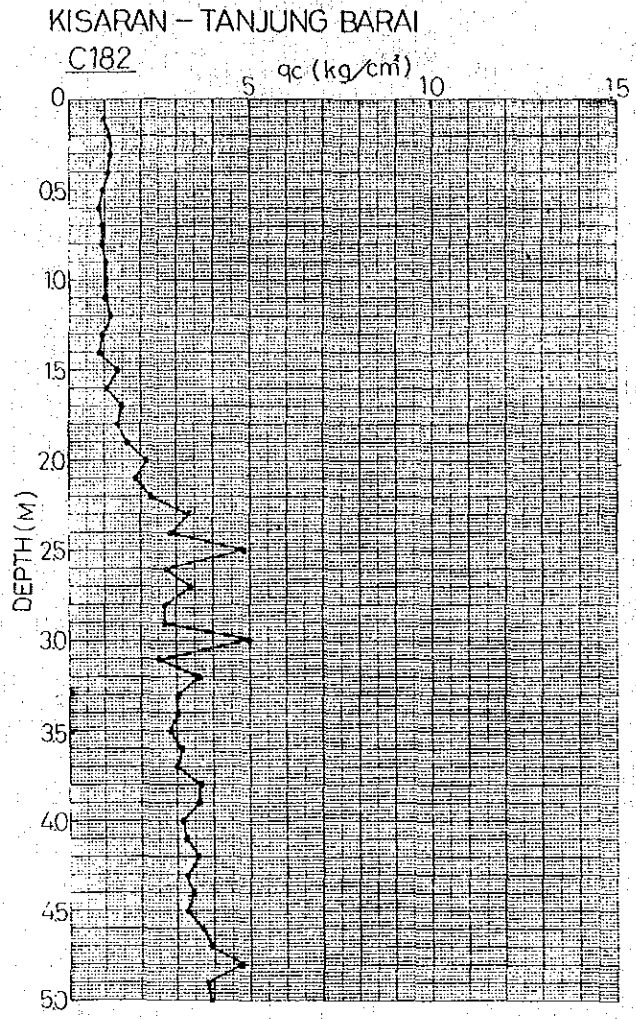
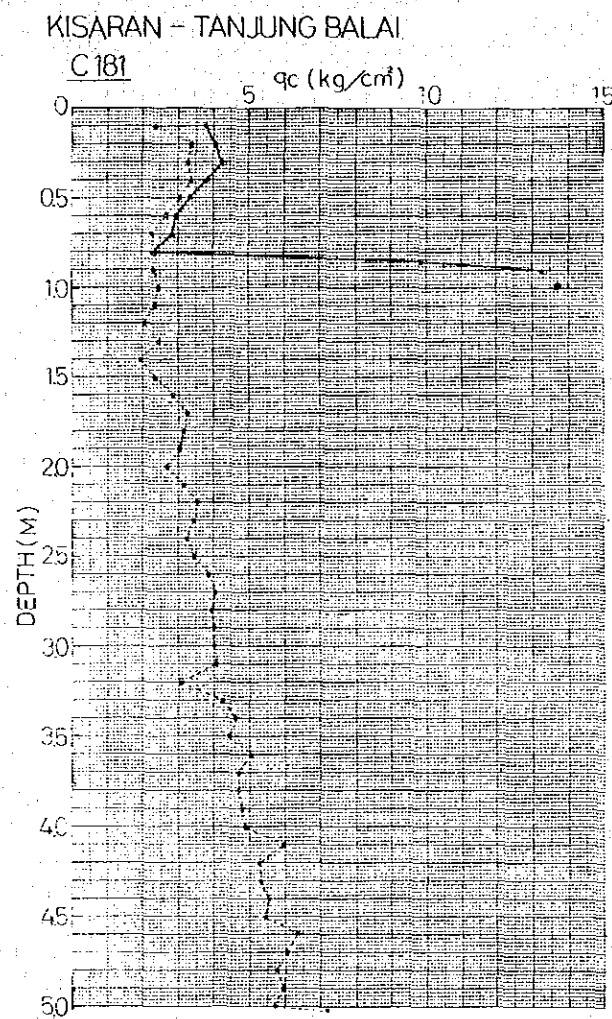
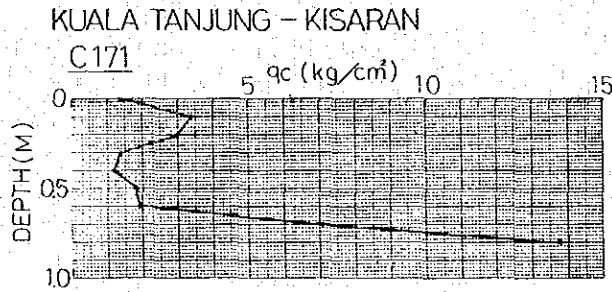
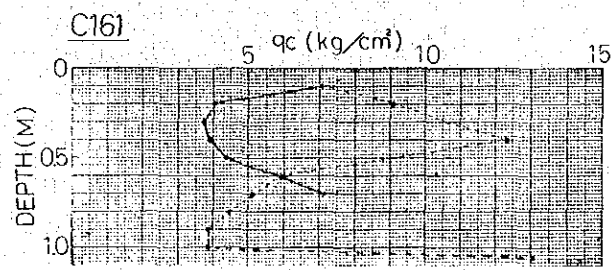
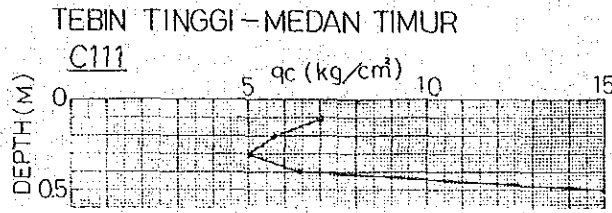
スウェーデン式サウンディング試験結果 № S201

RESULT OF SWEDISH PENETRATION TEST



DATA II.2.3.a

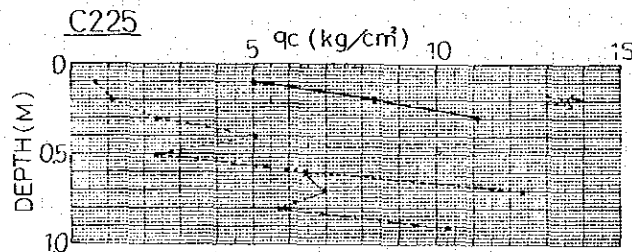
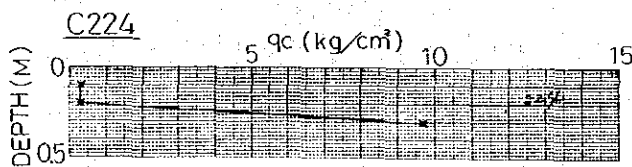
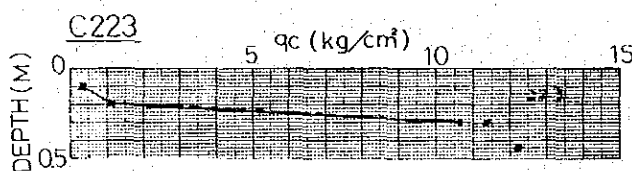
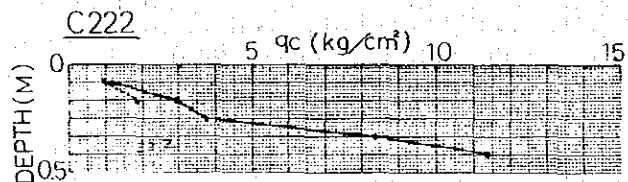
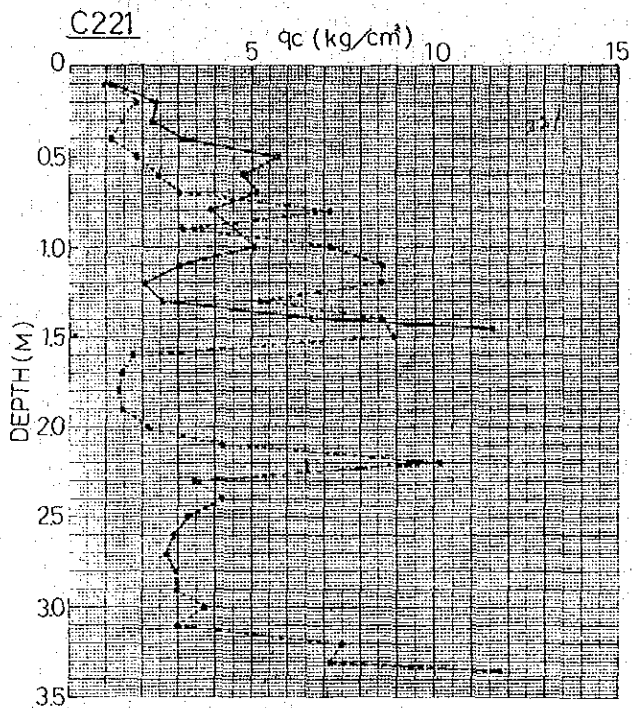
RESULT OF PORTABLE CONE PENETRATION TESTS (1)



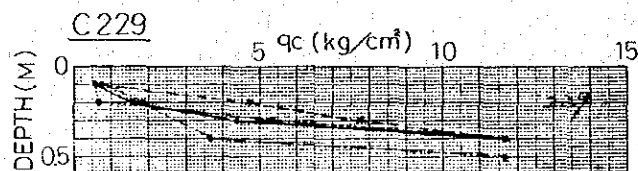
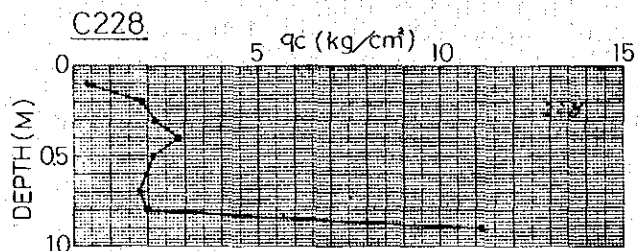
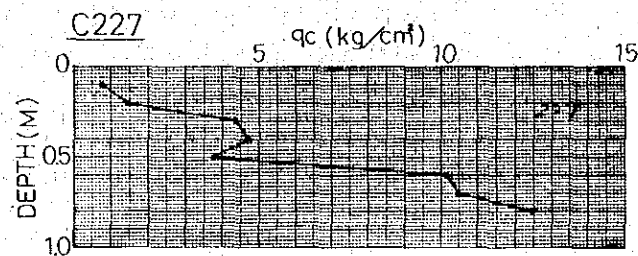
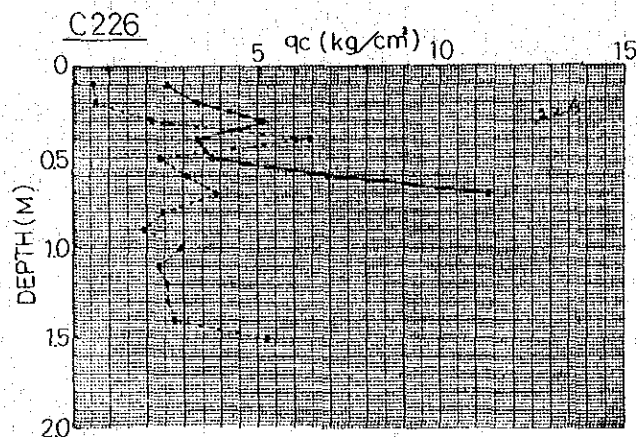
DATA II.2.3.b

RESULT OF PORTABLE CONE PENETRATION TESTS (2)

PARAPAT - PORSEA

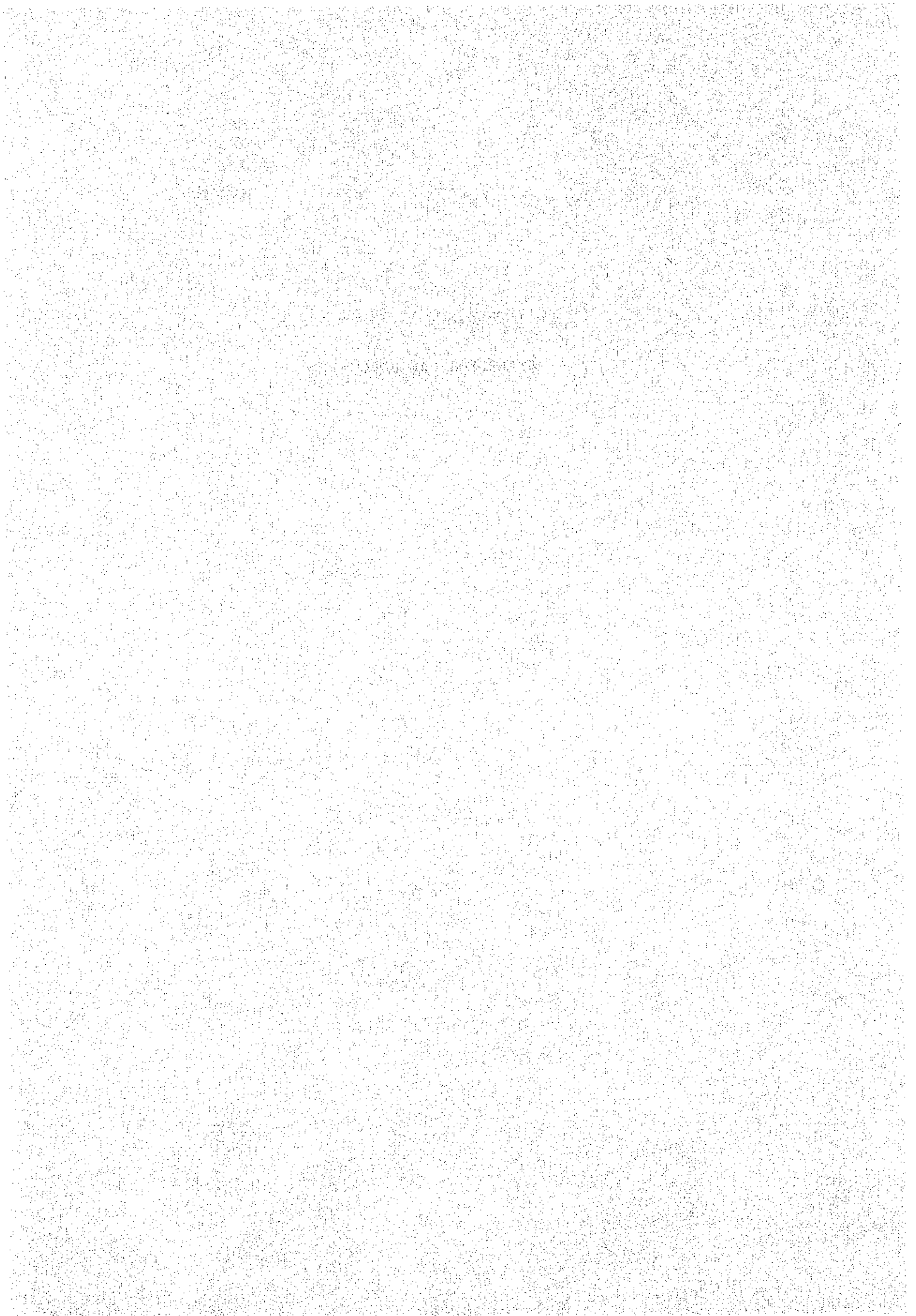


PORSEA - BALIGE



APPENDIX - II.3

METEOROLOGICAL DATA



Data II.3.1.a. RECORDS OF MAXIMUM, MINIMUM AND AVERAGE TEMPERATURE (°C)
IN MEDAN (POLONIA), 1975-1979

Year	<u>Maximum Temperature</u>												<u>Extreme</u>
	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	
1975	31.4	31.2	31.9	31.9	-	32.3	31.4	32.4	30.9	31.9	32.2	29.6	32.3
1976	29.8	31.2	32.3	32.6	32.6	-	32.0	-	-	-	30.7	30.6	32.6
1977	33.5	32.4	33.2	35.0	-	-	-	-	-	-	-	-	35.0
1978	-	-	-	33.4	35.3	33.7	32.5	34.1	33.1	32.9	31.9	31.8	35.3
1979	32.5	33.2	35.0	33.9	33.9	35.6	35.2	35.0	34.4	34.4	-	-	35.6

Year	<u>Minimum Temperature</u>												<u>Extreme</u>
	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	
1975	21.8	22.3	-	-	-	22.2	21.6	22.0	22.2	22.5	22.0	22.0	21.6
1976	21.2	21.3	21.9	22.3	22.8	22.3	22.3	22.2	22.7	22.4	22.0	22.0	21.2
1977	21.0	20.6	21.0	20.8	19.9	21.0	20.3	20.7	21.2	21.3	20.5	20.5	19.9
1978	19.6	19.0	21.5	21.4	21.7	21.2	21.0	20.5	21.1	21.0	21.0	21.0	19.0
1979	19.6	20.0	18.7	20.8	20.6	21.3	21.0	21.0	21.0	20.5	-	-	18.7

Year	<u>Average Temperature</u>												<u>Average</u>
	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	
1975	25.8	26.0	26.2	26.8	26.7	26.6	25.7	26.6	25.9	26.2	25.6	25.1	26.1
1976	24.8	25.5	26.0	26.5	26.7	26.3	26.6	26.3	26.0	25.9	25.9	25.8	26.0
1977	25.9	25.3	26.1	27.1	27.0	26.7	27.2	26.0	26.5	25.9	25.8	26.0	26.3
1978	25.9	26.8	26.8	26.8	27.3	26.8	26.1	26.6	26.3	25.8	25.8	25.7	26.4
1979	25.9	26.3	26.7	26.7	27.1	27.0	26.5	26.6	26.4	26.3	-	-	26.6
Mean	25.7	26.0	26.4	26.8	27.0	26.7	26.4	26.4	26.2	26.0	25.8	25.7	26.3

Data II.3.1.1.b RECORDS OF MAXIMUM, MINIMUM AND AVERAGE TEMPERATURE (°C)

IN P. SIANTAR (MARHAT RS), 1975 - 1979

Maximum Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Extreme</u>
1975	30.6	30.2	30.2	30.5	30.3	30.9	29.8	30.8	29.5	30.5	29.8	29.7	30.9
1976	29.1	30.2	30.2	30.4	30.9	31.1	30.1	30.2	30.1	30.4	30.7	30.8	31.1
1977	30.4	30.2	30.3	30.1	30.2	31.1	31.3	30.8	31.3	30.4	30.6	30.8	31.3
1978	30.7	30.8	31.0	31.5	31.7	31.0	30.9	31.6	30.9	30.6	30.5	30.3	31.7
1979	30.1	31.2	31.8	31.7	32.0	31.5	31.1	31.5	30.5	30.7	-	-	32.0

Minimum Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Extreme</u>
1975	-	-	-	-	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	19.4	19.2	20.2	20.2	19.8	20.4	20.0	19.2
1978	19.8	20.7	20.3	20.0	20.2	19.6	19.5	19.8	19.7	19.6	20.0	20.2	19.5
1979	20.3	20.2	20.1	20.9	20.3	20.8	20.0	20.1	20.1	20.4	-	-	20.0

Average Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Average</u>
1975	24.1	24.4	24.3	24.9	24.7	24.6	23.7	24.4	24.0	24.4	24.1	24.0	24.3
1976	23.6	24.2	24.3	24.5	24.8	24.1	24.0	24.2	24.2	24.4	24.5	24.5	24.3
1977	24.4	24.1	24.5	24.3	24.2	24.9	24.8	24.4	24.5	24.1	24.1	24.5	24.4
1978	24.3	24.8	24.8	24.6	25.0	24.9	24.6	25.0	24.1	24.5	24.4	24.5	24.6
1979	24.5	24.7	25.0	24.8	25.1	25.1	24.5	24.8	24.2	24.6	-	-	24.7
Mean	24.2	24.4	24.6	24.6	24.8	24.8	24.3	24.7	24.2	24.4	24.3	24.4	24.5

Data II.3.1.1.c RECORDS OF MAXIMUM, MINIMUM AND AVERAGE TEMPERATURE (°C)
IN KISARAN (SUNGAI DADAP), 1975-1979

Maximum Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Extreme</u>
1975	32.0	32.5	32.5	33.0	32.5	33.2	32.0	32.0	31.5	32.0	31.5	31.5	33.2
1976	31.3	30.2	32.4	33.4	33.1	32.2	-	31.3	32.5	32.2	32.0	31.6	33.4
1977	32.2	31.5	32.5	32.0	33.4	32.5	33.3	32.5	32.7	31.2	31.8	32.2	33.4
1978	32.0	33.0	33.0	33.1	33.0	33.0	32.2	33.0	32.0	32.1	31.8	32.1	33.0
1979	32.0	32.5	33.4	32.5	33.2	33.1	32.1	32.7	32.0	32.1	-	-	33.4

Minimum Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Extreme</u>
1975	22.0	22.3	22.0	23.0	23.0	22.5	22.5	23.0	22.0	22.5	22.0	23.0	22.0
1976	21.4	20.1	22.0	22.0	22.0	22.4	-	22.1	22.3	22.6	22.4	22.4	20.1
1977	21.5	21.5	22.0	22.8	22.8	22.5	22.4	22.6	23.0	22.9	22.8	23.0	21.5
1978	22.5	22.2	23.0	22.6	23.5	23.0	22.4	22.8	22.5	22.8	22.8	21.7	21.7
1979	22.2	22.3	22.2	23.0	23.1	23.1	22.8	22.5	23.0	23.0	-	-	22.2

Average Temperature

<u>Year</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>Jun.</u>	<u>Jul.</u>	<u>Aug.</u>	<u>Sep.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Average</u>
1975	26.4	26.4	26.2	26.4	26.6	26.4	27.4	26.0	26.8	26.4	26.2	26.2	26.5
1976	25.4	25.9	26.2	26.6	26.4	26.2	-	26.2	26.2	26.6	26.2	26.2	26.3
1977	26.0	25.8	26.0	27.1	27.0	26.8	27.0	26.2	26.8	26.0	26.0	26.0	26.4
1978	26.2	26.2	26.7	26.8	27.4	27.1	26.1	26.9	26.2	26.1	26.0	26.0	26.5
1979	26.1	26.2	26.5	26.6	26.9	26.9	26.4	26.6	26.2	26.2	-	-	26.5
Mean	26.0	26.1	26.3	26.7	26.9	26.7	26.7	26.5	26.4	26.3	26.1	26.1	26.4