

### 付録 III 一般資料 (図・表)

- A-1 マラウイ国の一般事情
- A-2 NRDP農業開発計画位置図
- A-3 完了した地方重力式水道計画
- A-4 地方重力式水道計画位置図
- A-5 マラウイ国地質図
- A-6 村落毎の人口及び井戸建設計画
- A-7 気象データ
- A-8  $\rho - a$  曲線 (電気探査)



## A-1 マラウイ国の一般事情

国名の正式名称	マラウイ共和国 (the Republic of Malawi)
国土面積	118.5千km <sup>2</sup>
首都	リロンゲ (Lilongwe)
人口 (1985推定)	706万人
人口増加率	2.9%
人種	チュワ族, ニャンジャ族, ロンウェ族, ウンゴニ族
言語	英語 (公用語), チチュワ語
通貨	マラウイ・クワチャ(MK): 交換レート MK:1.00=US\$ 0.437=¥65.79(1987.7)
GDP (1985)	862.4百万クワチャ (5.04億米ドル)
GNP (1984)	1,695.3百万クワチャ (9.91億米ドル): 1当たりの GNP=210ドル
独立年, 旧宗主国	1964年, 英国
政体, 元首	大統領制, バング終身大統領
歳出, 歳入(1985)	542.3百万クワチャ, 382.6百万クワチャ
輸出額, 輸入額 (1985)	455.4百万クワチャ, 438.1百万クワチャ



A - 3 完了した地方重力式水道計画

(AS ON JUNE 1986)

PROJECT	DISTRICT	REGION	POPULATION INVOLVED	LENGTH OF PIPING ( KM )	NUMBER OF TAPS	COST OF MATERIALS ( K )	YEAR COMPLETED
1	Chingale	South	5 000	40	60	6 000	1969
2	Chambe	South	30 000	96	180	64 000	1970
3	Migowi	South	6 000	24	45	12 000	1971
4	Chilinga	South	2 000	10	14	4 000	1972
5	Ng'onga	North	2 000	17	20	6 000	1972
6	Muhuju	North	1 000	19	21	7 000	1973
7	Chinkwezulu	South	700	2	9	1 000	1974
8	Ighembe	North	4 000	17	36	7 000	1974
9	Mulanje West	South	90 000	237	460	170 000	1975
10	Luzi	North	8 000	59	44	24 000	1975
11	Chinunka	North	4 000	25	51	12 000	1975
12	Chilumba	North	4 000	17	29	8 000	1975
13	Chilobwe	Central	1 200	6	14	2 000	1975
14	Dedza	Central	1 400	8	10	5 000	1976
15	Mchinji	Central	20 000	136	215	52 000	1976
16	Chagwa	South	7 000	80	110	15 000	1976
17	Phalombe	South	140 000	400	660	500 000	1977
18	Kalitsilo	Central	1 000	6	13	3 000	1977
19	Lifani	South	20 000	100	152	72 000	1977
20	Hewe	North	8 000	42	42	30 000	1977
21	Nkhamanga	North	12 000	75	120	134 000	1978
22	Lizulu	Central	6 000	24	34	20 000	1978
23	Namitarbo	South	60 000	290	360	480 000	1979
24	Sombani	South	40 000	184	300	240 000	1979
25	Ntonda	Central	25 000	120	194	120 000	1980

(Continued)

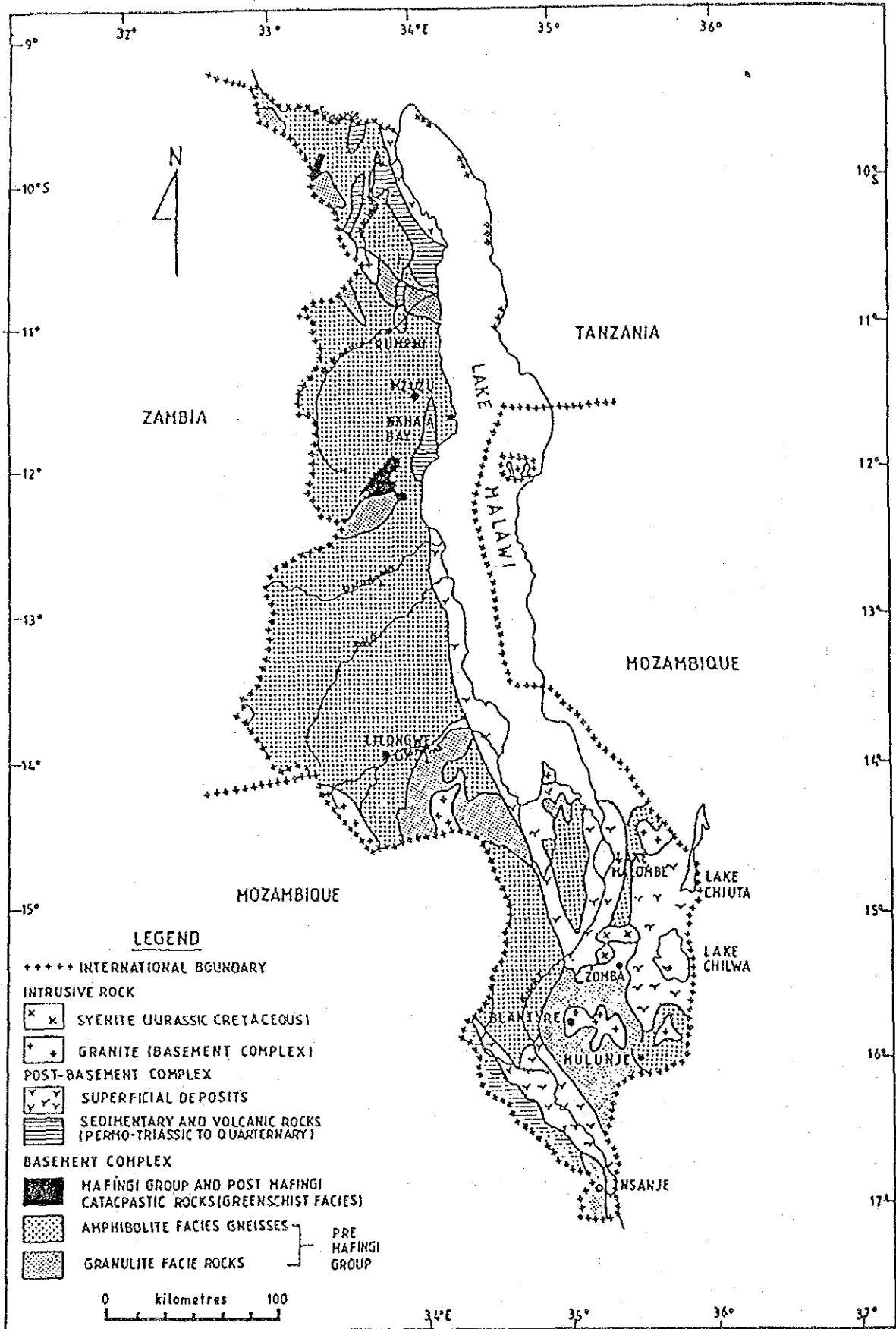
Note: Cost pertains to the year when the project was completed.

Source: National Water Resources Master Plan, 1986,  
Department of Water/UNDP

(AS ON JUNE 1986)

PROJECT	DISTRICT	REGION	POPULATION INVOLVED	LENGTH OF PIPING ( KM )	NUMBER OF TAPS	COST OF MATERIALS ( K )	YEAR COMPLETED
26	Nalipiri	South	9 000	27	55	40 000	1980
27	Muloza East	South	32 000	150	180	120 000	1980
28	Lingamasa	South	12 000	43	118	50 000	1981
29	Zomba (Domasi)	South	100 000	448	813	711 000	1981
30	Luwazi	North	8 000	80	54	79 400	1981
31	Luchunya	South	46 000	168	270	180 000	1982
32	Karonga	North	30 000	195	250	290 300	1983
33	Kawinga	South	70 000	571	450	926 600	1983
34	Nthalire	North	3 000	21	46	66 500	1983
35	Liwonde	South	23 000	110	130	198 000	1983
36	Kasinje	Central	14 000	32	95	60 000	1983
37	Nanyungu	Central	20 000	53	131	150 000	1983
38	Iponga	North	5 600	24	35	40 000	1983
39	Muloza Crater	South	8 000	22	45	40 000	1983
40	Dombole	Central	22 000	107	140	286 700	1984
41	Champhira/ North	North	24 000	167	154	236 000	1984
42	Mwansambo/ Kasakula	Central	25 000	60	145	157 300	1984
43	Misuku	North	3 700	17	70	40 900	1984
44	Sumulu	South	23 500	80	100	261 000	1984
45	Livingstonia	North	3 000	15	21	9 600	1984
46	Mirala	South	13 000	56	81	108 000	1985
47	Kakwawa	South	16 000	68	101	93 000	1985
			1 009 100	4 548	6 677	6 138 300	







A-6 (I) 村番毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan			
	No.	Section Name		M	F	Total		New	Rehab.	Total	First Year
8		KWILASYA	Mitomoni Ntopa	53 76	72 130	125 206	180 290	1 1		1 1	
			Total	129	202	331	470	2	0	2	0
MAG-8 Total			(2)	129	202	331	470	2	0	2	0

A - 6 (2) 村落毎の人口及び井戸建設計画

MAG	E.X.T. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan				
	No	Section Name		M	F	Total		New	Rehab.	Total	First Year	
9	160	UMBWA	Chiwaro	139	165	304	470	2		2	1	
			Umbwa	212	245	457	640	2		2	1	
			Nyanje	122	121	243	340	1		1	1	
			Mkambili	206	271	477	660	2		2	1	
			Mtimpu	21	28	49	70	1		1	1	
			Magwede	211	285	496	700	2		2	1	
			Thom	159	198	357	500	2		2	1	
			Phunyu	129	132	261	390	2		2	1	
			Kaidi	250	337	587	830	3		3	2	
			Chigwaja	53	60	113	160					
			Mapalio	12	24	36	50					
			Malungwa	117	139	256	360	1		1	1	
			Mwandima									
			Total	(12)	1,531	1,899	3,430	4,830	16	0	16	9
161	KAPOLOMA	Nselema	175	236	411	580	1	1	2			
		Mwitiya	77	109	186	260	1		1			
		Mbambaya	65	87	152	210	1		1			
		Lim	20	33	53	75						
		Kapoloma (A)	181	202	383	540	1	1	2			
		Kapoloma (B)	113	164	277	390	1		1			
		Mofolo	37	55	94	130						
		Nangwale	37	51	88	120	1		1			
		Salima	26	41	67	100						
		Makata	133	202	335	470	1		1	1		
		Rafaelo	117	146	263	370	1		1			
		Mweya	47	60	107	150	1		1			
		Mota	4	6	10	15						
		Chiwalolo	9	11	20	28						
Paulo Patasi	43	45	88	120	1		1					
Total	(15)	1,127	1,502	2,629	3,690	11	3	14	1			

A-6(3) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan				
	No	Section Name		M	F	Total		New	Rehab.	Total	First Year	
9	162	NKAPA	Mapwanga	3	2	5	10	3		3	2	
			Mkanje	285	372	657	930	3		3	2	
			Majaja	213	287	500	710					
			Chimombo	17	22	39	60					
			Nkapa	293	341	634	890		2			
			Mlung	156	185	341	480					
			Makoka	117	149	266	390					
			Chimala Estate	45	66	111	150					
			Dlongwe	44	55	99	130					
			Mtenjela	315	337	652	880					
			Mkanje	35	51	86	120					
			Malango	79	75	154	220					
			Mitmoni									
			Total (13)	1,497	1,817	3,314	4,690	15	2	17	7	
	163	NYAMBI	Puluma	45	55	100	140	1		1	1	
			Mchimbo (A)	129	180	309	430					
			Mchimbo (B)	118	126	244	300					
			Mlamba	114	168	282	400					
			Likoswe	201	284	485	680					
			Nyambi	77	142	219	310					
			Mtopola	67	87	154	200					
			Chisisa	170	178	348	490					
			Chitaganya	196	165	361	500					
			Xankuta	76	105	181	260					
			Chikojo	76	105	181	260					
			Mtapa	135	171	306	430					
			Mchaka	191	233	424	590					
Pasakele	89	73	162	230								
Nikwakwa	35	44	79	110								
Nansole	187	227	414	560								
Nansola	180	220	400	560								

A-6(4) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan			
	No	Section Name		M	F	Total		New	Rehab.	Total	First Year
9	163		Sombo	228	267	495	700	2		2	1
			Total (18)	2,243	2,751	4,994	7000	26	0	26	11
9	164	MKWEPELE	Yaya	47	50	97	140	1		1	
			Juma	13	22	35	50				
			Kanene	246	296	542	760	3		3	2
			Mkwepele	202	211	413	580	2	1	2	1
			Namanjonjori	166	170	336	470	1		1	
			Mwabwa	45	47	92	130				
			Msapila	22	35	57	80				
			Mwinjilani	47	67	114	160	1		1	
			Mkumbeni	66	42	108	150		1	1	1
			Mbalwe	225	243	468	660	2		2	
			Total (10)	1,079	1,183	2,262	3,180	11	2	13	4
	9	165	NTALI	Kalambo	14	23	37	50	1		1
			Chamba	40	75	115	160				
			Sawanje-meso	38	34	72	100	2		2	1
			Mlima	189	125	314	440	1		1	
			Ntali	96	42	138	270				
			Mlanda	36	49	85	110				
			Bakali	91	94	185	260	1		1	
			Mlawa	15	13	28	40				
			Mkwinda	256	282	538	760	3		3	2
			Mlenje	81	101	182	260	1		1	1
			Maisi	140	195	335	470	2		2	
			Mole pingo	27	30	57	80				
		Mlanje	106	106	212	300	2		2	2	
		Mthiniwa	331	376	707	1000	4		4		
		Jelasi	14	16	30	40					
		Mongola	93	126	219	310		1	1		

A - 6 (5) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan			
	No	Section Name		M	F	Total		New	Rehab.	Total	First Year
9	165		Mphipha	33	36	69	100			1	
			Msamala	29	38	67	100				
			Total (18)	1,629	1,809	3,438	4,850	18	1	19	6
166	MWITIYA		Ngalama	42	65	107	150			1	
			Mlonda	112	102	214	300			2	
			Mwitiya	152	133	285	400			2	1
			Mkoman Khani Estate No II	1	3	4	10				
			Mlinda Estate	45	23	68	100				
			Khama Estate	85	25	110	160				
			Nawanga	42	60	102	140			1	
			Mkwepu	38	33	71	100				
			Limamu Sinja	0	14	14	20				
			Puluma II	6	13	19	30				
			Kalimele	90	108	198	280			1	
			Chalawe	121	97	218	310			1	
		Total (12)	734	676	1,410	2,000	8	0	8	1	
167	CHIMBILA		Chimbila	96	132	228	320			1	
			Salanje	88	97	185	250				
			Katulo	34	43	77	110				
			Mkwetemba	27	29	56	80			1	
			Mataka	3	2	5	10				
			Chinyenye	18	28	46	70				
		Total (6)	226	331	597	850	3	0	3	1	
MGA-9 Total			(104)	10,106	11,968	22,074	31,090	108	8	116	40

A-6(6) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan			
	No	Section Name		M	F	Total		New	Rehab.	Total	First Year
10	168	Mwepeta	M'njete	31	45	76	110				
			Ntoko	72	29	101	140				
			Mtungwi	102	115	217	310			1	2
			Mwepetha	37	42	79	110				
			Kungwa	112	134	246	356			1	1
			Bitiya	66	81	147	210				
			Total (6)	496	446	866	1,230	5	0	5	1
	169	BAKALI	Chilonga	52	132	228	320				
			Chamba	39	65	117	170			1	1
			Mteuka	39	83	142	200			1	1
Mpinda			39	45	84	120					
Lipuputa			49	60	109	150			1	1	
Chimanda			96	87	183	260					
		Total (6)	391	472	863	1,220	5	0	5	1	
170	MUWAWA	Mchiwa	183	229	412	580					
		Muwawa	205	259	464	650			2	2	1
		Naituli	149	174	323	460			2	2	1
		Sulumba	114	165	279	400					
		Mkhowa	111	258	369	550					
		Mpakaka	98	98	196	280			2	2	
		Nankondwa	130	130	260	400					
		M'meta	86	130	208	290			1	1	1
		Peheliya	44	116	160	220					
		Mponda	42	61	103	150			1	1	1
		Nachanje	320	319	639	980			1	3	1
		Mbaso	326	372	698	980			1	3	2
		Makuku	22	27	49	70					
Tukuta	33	43	76	110			1	1	1		
		Sinja (Dawa)									

A-6(7) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan						
	No.	Section Name		M	F	Total		New	Rehab.	Total	First Year			
10	170		Mtenjela	14	28	42	60							
			Total (16)	1,358	1,681	3,039	4,290	16	0	16	5			
171		CHIKUNBA	Nkhokwe	133	164	297	420	2		2	1			
			Makenjila	70	117	187	260	1		1	1			
			Mwala	50	87	137	190	1	1	1	1			
			Mlungu	63	80	143	200							
			Namajja	7	14	21	30							
			Mwikawa	25	24	49	70							
			Total (6)	348	486	834	1,170	4	1	5	1			
			172		MAKANALIA	Machina	242	277	519	730	3		3	2
						Muhatele	16	19	35	50				
						Makuteya	58	70	128	180	1		1	
Selemani	54	69				123	170							
Mbisa	66	96				162	230							
Kokoti	57	88				145	210							
Mwegawa	52	50				102	140		1	1				
Likoitoma	41	66				107	150							
Makuche	21	30				51	70							
Total (9)	607	765				1,372	1,930	7	1	8	2			
173		KONDONI	Nyama	61	82	143	200	1		1	1			
			Maonga	116	137	253	360	2		2				
			Mchingama	20	88	108	240							
			Ungwe	29	29	58	80							
			Kambwiri	58	67	125	180							
			Welenwela	86	83	169	240							
Total (6)	31	330	361	500										

A-6 (8) 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan				
	No.	Section Name		M	F	Total		New	Rehab.	Total	First Year	
10	173		Tupula	14	19	33	50					
			Matipa	29	48	77	110					
			Makawa	31	67	98	100					
			Nsangula	19	19	38	50	1	1	2		
			Mapanje	97	144	241	340					
Katolokosu	44	84	128	170								
Makacha	21	29	50									
			Total (14)	696	831	1,527	2,170	8	1	9	1	
174	CHISAWA		Chisawa	177	228	405	570	2		2	1	
			Ngaiawango	119	108	227	320	1		1	1	
			Isa	127	178	305	430	2		2	1	
			Mowe	275	338	613	860	2	1	3	1	
			Mosiya	93	121	214	300	1		1	1	
			Nambuta	45	61	106	150	1		1	1	
			Niches	177	147	324	570	1		1	1	
			Mwanuthu	150	68	218	370	2		2	1	
			Mbeje	197	240	437	620	1		1	1	
			Total (9)	1,200	1,484	2,684	3,790	14	1	15	5	
175	NTAJA		Phwiti	403	510	913	1,290	5		5	2	
			Chiganga	121	163	284	400	2		2	1	
			Total (2)	524	673	1,197	1,690	7	0	7	3	
176	CHIKWEO		Salanje	22	22	44	60					
			Saito	67	82	149	210	1		1	1	
			Lulanga	103	124	227	320	2		2	1	
			Manja	50	51	101	140	1		1	1	
			Mtepa	124	144	268	380	1		1	1	
			Kwisanjala	110	126	236	330		1	1	1	





A-600 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan				
	No.	Section Name		M	F	Total		New	Rehab.	Total	First Year	
11	179	LIKHOHO	Mpili-Mission	42	58	100	140	1		1	1	
			Mpili.T.C.	35	36	71	100	2		2		
			Chikumba	166	232	398	560		1			
			Likhomo	199	101	300	280					
			Mahuta	150	163	313	440					
			Chipala	107	151	258	360					
			Lipende	102	124	226	320					
			Jon Makoka	181	262	443	630					
			Njenjema	249	64	313	150					
			Mpunga	190	297	487	690					
			Nsamu	205	281	486	690					
			Nachuma	117	108	225	320					
			Muhipele	180	226	406	570					
					Total (13)	1,623	2,103	3,726	5,260	19	2	21
180	CHIUJA	Makome	82	133	215	300						
		Jidi	37	64	101	140						
		Mulakala	128	194	322	450						
		Kaumbwe	43	58	101	140						
		M'meta	83	117	200	280						
		Kachere	42	70	112	160						
		Kasambwe	65	69	134	190						
		Namwini	238	323	561	790						
		Nanganga	202	288	490	690						
		Mlemba	30	34	64	90						
		Chiuja	441	604	1,045	1,470						
		Nchokola	117	187	304	430						
				Total (12)	1,509	2,141	3,650	5,130	20	0	20	7
		181	NYENJE	Nyenje	203	258	461	650				
Nyenje(B)	84			109	193	270						

A-600 村落毎の人口及び井戸建設計画

MAG	EXT. Section		Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan				
	No.	Section Name		M	F	Total		New	Rehab.	Total	First Year	
11	181		Chipili	65	79	144	200	1		1	1	
			Mtembo	157	160	317	450	1		1	1	
			Total (4)	509	606	1,115	1,570	6	0	6	2	
	182	CHINDAMBA	Msume	37	64	101	140	1		1	1	
			Mkomela	110	140	250	350	1		1	1	
			Mbosongwe	172	122	194	270	1		1	1	
			Mmalisye	6	12	18	30					
			Chipowo	140	169	309	440	2		2	2	1
			Total (5)	365	507	872	1,230	5	0	5	2	
MAG-11 Total			(34)	4,006	5,357	9,363	13,190	50	2	52	18	

A-602 村落毎の人口及び井戸建設計画

MAG	EXT. Section		N <sup>o</sup> of Village	CENSUS (1977)			Estimated Population (1990)	Construction Plan			
	No.	No. of Section		M	F	Total		New	Rehab.	Total	First Year
8		1	2	129	202	331	470	2	0	2	0
9		8	104	10,106	11,968	22,074	31,090	108	8	116	40
10		9	83	6,683	8,311	14,944	21,190	79	6	85	22
11		4	34	4,006	5,357	9,363	13,190	50	2	52	18
Total		22	223	20,924	25,838	46,762	65,940	239	16	255	80

A-7 気象データ

1. Monthly Rainfall (unit: mm)

Station Name: Ntaja

Height: 731 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1975							124.7	243.3	86.6	46.5	1.8	1.3	
1975/76	10.2	1.0	0.5	62.5	58.2	69.1	204.0	293.1	196.1	125.2	16.3	8.4	1044.6
1976/77	5.6	0.0	0.0	14.7	7.6	166.4	269.2	74.4	155.4	5.1	0.0	0.0	698.4
1977/78	0.0	0.0	0.0	5.1	61.0	197.6	378.2	165.4	478.5	57.9	3.8	0.0	1347.5
1978/79	11.7	0.0	0.0	16.8	47.8	256.3	174.2	170.9	230.6	26.9	0.0	7.6	942.8
1979/80	0.0	0.0	1.3	1.3	146.6	212.6	64.0	308.4	37.6	84.1	0.0	3.0	858.9
1980/81	1.4	10.4	0.0	29.8	2.8	421.6	79.3	226.7	83.3	22.8	14.0	1.4	893.5
1981/82	0.0	0.0	1.6	39.2	36.2	41.9	297.5	222.5	74.6	71.5	4.8	0.0	789.8
1982/83	13.6	6.8	0.0	66.4	121.4	135.3	202.1	112.9	134.0	82.5	2.1	5.5	882.6
1983/84	20.5	1.1	0.0	5.9	63.1	100.9	162.0	241.2	182.2	8.8	3.8	1.7	791.2
1984/85	0.0	0.0	1.5	1.6	62.8	185.0	265.0	165.9	119.6	49.8	2.3	3.8	857.3
1985/86	0.0	7.7	1.1	7.0	111.8	326.1	250.7	180.8	162.1	42.2	2.6	0.3	1092.4

Station Name: Chikweo

Height: 717 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1982							164.7	317.7	44.1	47.1	17.5	0.5	
1982/83	14.0	16.9	2.6	34.0	99.0	244.4	128.8	116.7	111.7	36.1	1.6	0.6	806.4
1983/84	17.7	0.0	0.0	3.4	74.5	163.0	110.0	339.8	194.2	15.7	2.9	3.8	924.9
1984/85	0.3	0.0	9.6	0.4	74.4	168.2	268.7	154.5	243.4	67.4	0.8	2.2	989.9
1985/86	0.1	1.6	10.7	3.9	74.7	338.0	261.8	214.5	171.5	40.4	2.2	2.2	1121.6

Station Name: Nyambi

Height: 853 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1975							228.6	269.0	120.1	88.1	4.6	4.1	
1975/76	4.1	0.0	0.0	25.9	55.9	259.8	256.3	317.2	469.1	282.4	26.9	16.5	1714.1
1976/77	5.8	0.0	0.0	19.6	10.2	260.6	326.9	121.2	227.8	5.1	0.0	0.0	977.2
1977/78	4.3	0.0	2.3	0.0	90.7	179.3	294.1	144.5	234.4	8.9	4.3	7.4	970.2
1978/79	19.1	0.0	0.0	30.0	56.6	456.9	294.1	144.5	234.4	8.9	0.0	7.4	1251.9
1979/80	14.2	0.0	1.0	4.6	94.2	277.9	139.4	137.7	102.9	103.6	15.0	3.0	893.5
1980/81	38.1	0.0	0.0	64.7	6.3	458.3	142.3	292.4	101.6	38.3	20.3	1.4	1163.7
1981/82	3.5	0.0	0.0	11.8	30.3	67.9	182.2	281.2	99.9	108.0	6.7	0.0	791.5
1982/83	27.7	19.6	1.3	43.5	75.2	206.1	169.4	156.7	137.0	42.2	0.8	0.4	879.9
1983/84	23.2	0.0	0.0	4.3	25.0	160.7	114.6	250.3	224.0	31.1	6.5	3.2	842.9
1984/85	6.2	0.0	0.0	39.5	73.5	194.2	241.2	131.1	256.5	108.1	5.0	6.8	1062.1
1985/86	0.6	2.1	5.4	10.8	57.6	222.5	374.9	284.1	347.9	48.7	40.2	7.6	1402.4

Station Name: Nkhokwe

Height: 655 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1975							118.6	193.8	84.1	75.7	0.0	0.0	
1975/76	0.0	0.0	0.0	41.9	60.5	237.0	195.3	238.8	354.3	232.2	10.9	3.6	1374.5
1976/77	3.6	0.0	10.7	31.5	5.1	219.7	379.2	64.8	226.6	16.3	0.0	0.0	957.5
1977/78	1.8	0.0	10.7	0.0	84.8	178.3	400.3	269.5	400.8	113.0	0.0	1.8	1461.0
1978/79	3.0	0.0	0.0	53.3	29.0	258.6	114.8	122.7	218.4	27.9	0.0	17.5	845.2
1979/80	10.2	0.0	0.0	6.6	141.2	209.3	77.2	140.2	93.2	94.5	0.0	0.0	772.4
1980/81													
1981/82					28.0	100.0	215.6	280.3	46.8		14.0	0.0	
1982/83	14.0	3.0	1.0	48.0	151.2	180.0	125.2	184.2	116.9	38.8	0.0	2.0	864.3
1983/84	10.5	0.0	0.0	11.3	49.0	157.5	235.3	131.5	164.6	15.0	1.3	5.2	781.2
1984/85	3.8	0.0	4.2	2.0	111.2	164.5	241.2	131.8	198.9	40.1	0.0	0.9	898.6
1985/86	1.2	2.3	0.1	1.1	92.3	345.4	298.6	93.1	143.7	69.1	0.0	0.4	1047.3

Station Name: Nsanama

Height: 675 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1983							224.6	287.4	50.5	47.3	38.0	0.0	
1983/84	0.0	0.0	0.0	6.9	41.8	159.7	164.2	86.3	136.5	7.3	2.0	0.2	604.9
1984/85	0.0	0.0	1.0	0.0	51.1	183.3	303.2	203.7	133.5	35.0	0.1	2.3	913.2
1985/86	0.0	3.1	0.0	10.8	140.7	305.1	308.7	213.2	234.5	16.6	0.0	2.4	1235.1

Station Name: Kankhomba

Height: 640 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1975							87.4	205.5	106.2	49.5	0.0	4.6	
1975/76	13.2	2.0	1.3	8.6	54.1	131.8	243.6	154.7	176.0	98.8	13.0	4.1	899.2
1976/77	9.1	0.0	0.0	0.0	4.3	270.8	332.7	103.6	155.4	15.0	0.0	0.0	890.9
1977/78	1.3	0.0	5.6	0.0	84.1	278.9	392.7	186.9	352.8	56.6	6.9	3.0	1368.8
1978/79	13.5	0.0	0.0	58.4	38.9	120.7	126.7	258.3	181.4	42.9	0.0	9.9	850.7
1979/80	1.3	2.3	2.0	7.9	138.4	243.6	169.2	173.0	75.7	139.2	2.0	1.0	955.6
1980/81	0.0	22.7	0.0	65.0	6.0	148.0	123.1	87.9	86.8	17.6	26.3	0.0	583.4
1981/82	4.7	0.0	0.0	46.0	38.0	146.0	323.5	203.7	76.0	124.5	4.7	0.0	967.1
1982/83	12.4	6.0	0.0	36.2	87.6	243.2	217.3	185.4	121.0	70.5	3.7	0.0	983.3
1983/84	40.8	0.0	0.0	18.0	30.1	94.5	189.0	230.9	220.5	5.0	2.0	0.1	830.9
1984/85	2.5	0.0	13.0	23.0	67.0	168.5	177.8	189.2	180.7	41.2	3.0	5.0	870.9
1985/86	0.0	2.1	10.0	5.7	85.5	247.5	204.0	225.0	171.7	15.4	1.3	0.9	969.1

Station Name: Masuku

Height: 838 metres

Years	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Total
1975							134.9	273.1	75.2	106.7	2.8	1.3	
1975/76	0.0	0.0	0.0	50.0	70.4	252.5	456.4	299.0	264.7	174.2	7.4	3.0	1577.6
1976/77	1.3	0.0	0.0	11.2	1.3	207.0	282.2	93.2	198.4	6.1	0.0	0.0	800.7
1977/78	0.5	0.0	7.4	0.0	99.8	92.7	437.9	284.0	301.8	71.6	0.0	1.3	1297.0
1978/79	6.1	0.0	0.0	18.5	59.2	215.1	177.3	204.5	413.0	68.6	10.7	0.0	1173.0
1979/80	0.0	0.0	0.0	11.9	259.6	241.8	127.8	81.8	99.6	186.2	0.0	0.0	1008.7
1980/81	0.0	5.2	0.0	127.8	31.7	553.2	151.3	307.8	101.0	66.5	12.7	0.0	1357.2
1981/82	0.0	0.0	0.0	93.9	89.2	49.9	184.1	277.1	45.9	137.1	5.8	0.0	883.0
1982/83	3.6	0.0	0.0	55.5	120.3	161.4	203.5	255.2	210.6	25.0	0.0	0.0	1035.1
1983/84	0.0	0.0	0.0	7.1	44.3	201.7	89.7	302.4	332.8	15.6	10.5	9.2	1013.3
1984/85	0.0	0.0	6.8	1.1	82.3	287.9	223.8	127.8	308.2	62.9	0.4	1.8	1103.0
1985/86	0.0	1.3	0.5	3.2	116.9	355.1	428.0	230.3	326.3	21.4	0.0	8.6	1491.6

2. Monthly and Annual Total of Rainy Days

Station Name: Ntaja

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Total
1974	29	24	24	12	9	4	1	0	0	0	8	14	125
1975	11	15	10	6	3	1	3	1	0	0	4	21	75
1976	17	21	15	11	7	4	1	1	1	3	8	13	102
1977	12	8	15	2	0	0	1	0	0	5	1	14	58
1978	22	13	23	7	1	0	0	0	0	1	6	12	85
1979	13	12	17	5	0	0	1	0	0	2	7	20	76
1980	8	15	5	7	0	1	0	0	0	5	1	22	64
1981	17	14	8	3	1	0	2	2	0	2	7	9	65
1982	17	14	5	7	3	0	2	1	0	3	6	10	68
1983	15	8	9	3	2	1	4	1	0	2	6	14	65
1984	10	16	21	5	3	4	0	0	1	1	11	18	90

Station Name: Chikwewo

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Total
1981	20	15	5	9	3	3	4	2	2	3	7	14	87
1982	19	19	21	11	0	0	0	1	0	1	10	19	101
1983	15	9	13	7	2	1	0	0	0	1	0	0	48
1984	18	20	15	8	3	0	0	0	0	0	10	20	94

Station Name: Nyambi

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Total
1974	23	22	20	9	9	4	1	0	0	1	7	18	114
1975	17	18	11	7	2	2	5	1	1	1	7	16	88
1976	17	18	16	14	8	6	1	0	0	6	5	18	109
1977	18	8	15	3	0	0	2	0	0	4	4	16	70
1978	11	11	17	2	0	3	1	0	1	0	13	19	78
1979	22	21	26	13	1	5	3	0	1	2	4	22	120
1980	12	11	13	10	1	1	0	0	1	2	12	12	75
1981	8	18	13	5	2	3	2	0	0	4	1	21	77

Station Name: Kankhomba

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Total
1974	9	11	8	6	0	3	0	0	1	1	3	12	54
1975	17	19	17	7	8	3	1	1	1	4	5	15	98
1976	16	13	16	10	4	3	0	0	0	0	1	12	75
1977	21	8	14	4	0	0	2	0	4	0	8	12	73
1978	25	22	25	12	2	4	1	1	1	2	10	11	116
1979	11	12	7	12	1	1	0	0	1	3	11	20	79
1980	8	13	14	2									

Station Name: Mbonechela

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Total
1974	19	17	18	9	7	3	0	0	0	0	7	11	91
1975	10	13	6	3	1	0	0	0	0	0	2	17	52
1976	14	16	13	7	2	2	1	0	0	3	5	13	76
1977	16	7	11	1	0	0	0	0	0	2	2	16	55
1978	19	14	23	9	0	0	1	0	0	0	8	15	89

### 3. Mean Monthly and Annual Daily Temperature and Relative Humidity

Station Name: Chikkieo

#### 1) Temperature (°C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean annual
1984								21.7	24.3	26.4	24.9	24.3	
1985	24.2	23.5	23.7	22.1	20.6	18.6	19.2	20.3	23.8	24.1	24.2	23.7	22.3
1986	24.0	23.5	23.4	23.1	21.0	18.4	18.6	20.9	24.1	25.2	24.7	23.9	22.6
1987	24.0	24.7	24.7	23.0	21.8	18.3							

Station Name: Nsanama

#### 1) Temperature (°C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean Annual
1983									22.4	23.2	27.1	24.3	
1984	23.9		22.1	21.0	18.2	18.4	23.8						
1985					20.1	18.2	18.4	19.2	22.9	24.5	24.0	23.5	
1986	23.5	23.4	24.0	22.3	21.4	19.7	18.8	19.5	22.3	24.3	24.0	23.7	22.2
1978	23.6	24.8	25.0	22.9	21.1								

#### 2) Humidity (%)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean Annual
1983									60	62	57	78	
1984	81		78	76	77	79	61						
1985					81	74	75	71	59	60	70	85	
1986	87	86	83	79	74	71	70	69	60	66	72	80	74.8
1987	83	80	77	79	75								

Station Name: Masuku

#### 1) Temperatures (°C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean Annual
1983									21.5	22.7	25.6	23.2	
1984	23.2	22.6	21.7	21.5	19.9	17.5	17.5	17.7	21.2	23.4	22.7	22.5	21.0
1985	22.8	22.3	22.0	21.4	19.4	16.7	17.4	18.9	21.5	23.1	22.3	22.8	20.9
1986	22.2	22.9	22.9	21.8	20.7	17.4	17.4	18.5	20.9	23.3	22.6	22.8	21.1
1987	22.6	23.3	23.5	21.9	21.2								

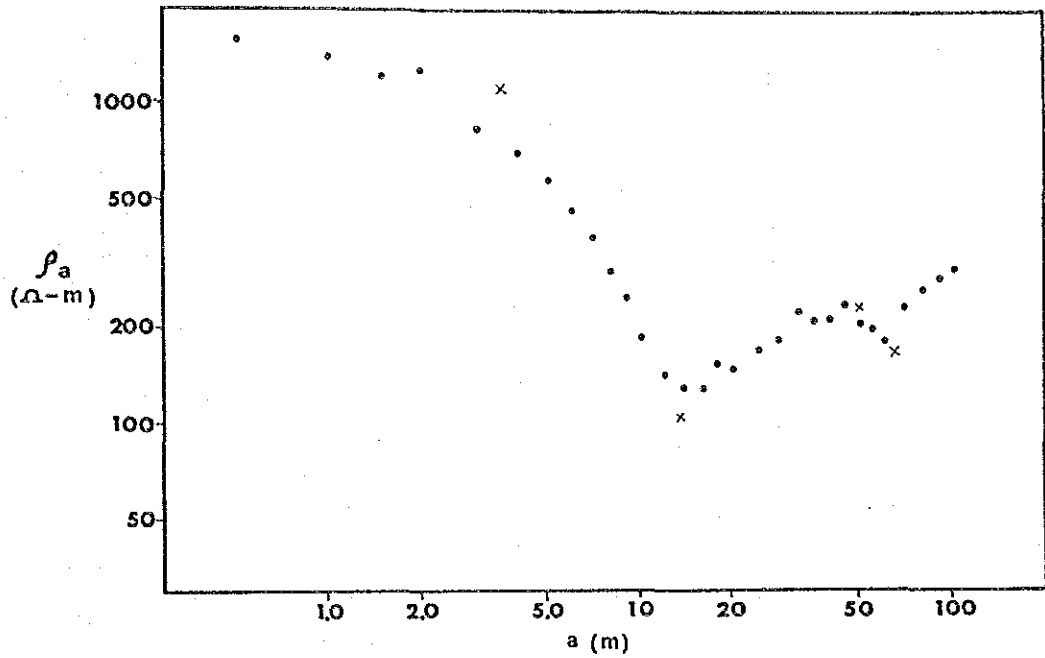
#### 2) Humidity (%)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Mean Annual
1983									58	61	59	78	
1984	81	81	85	75	80	77	77	70	60	59	75	95	76.3
1985	83	83	87	78	75	77	72	71	63	61	75	88	76.1
1986	87	80	80	84	70	73	76	69	60	64	77	82	75.2
1987	84	83	80	76	75								



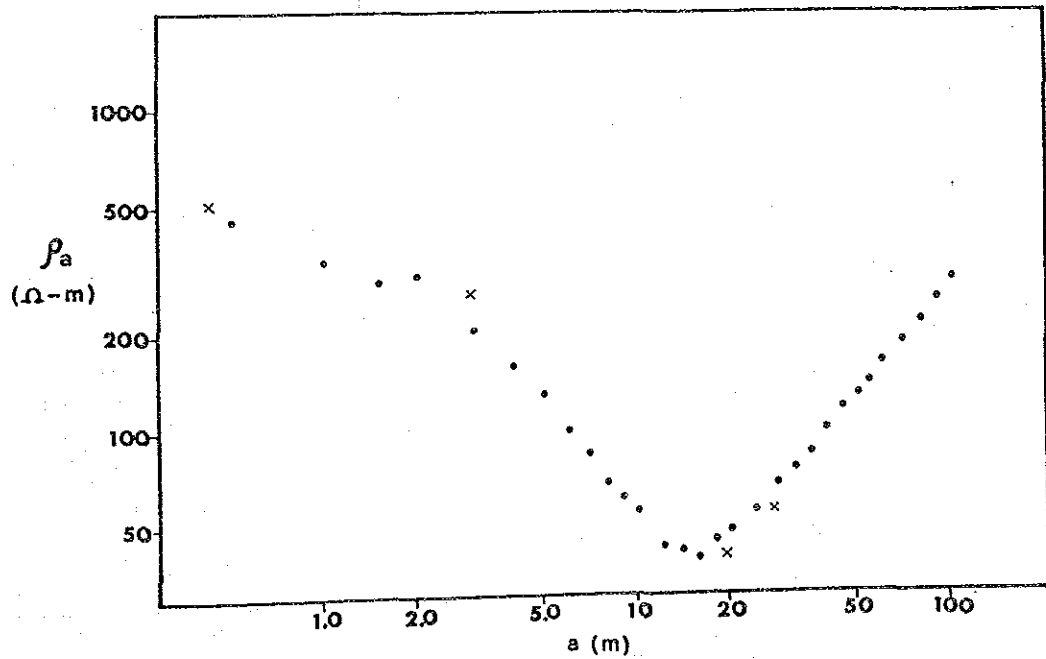
NYAMBI

No. 1



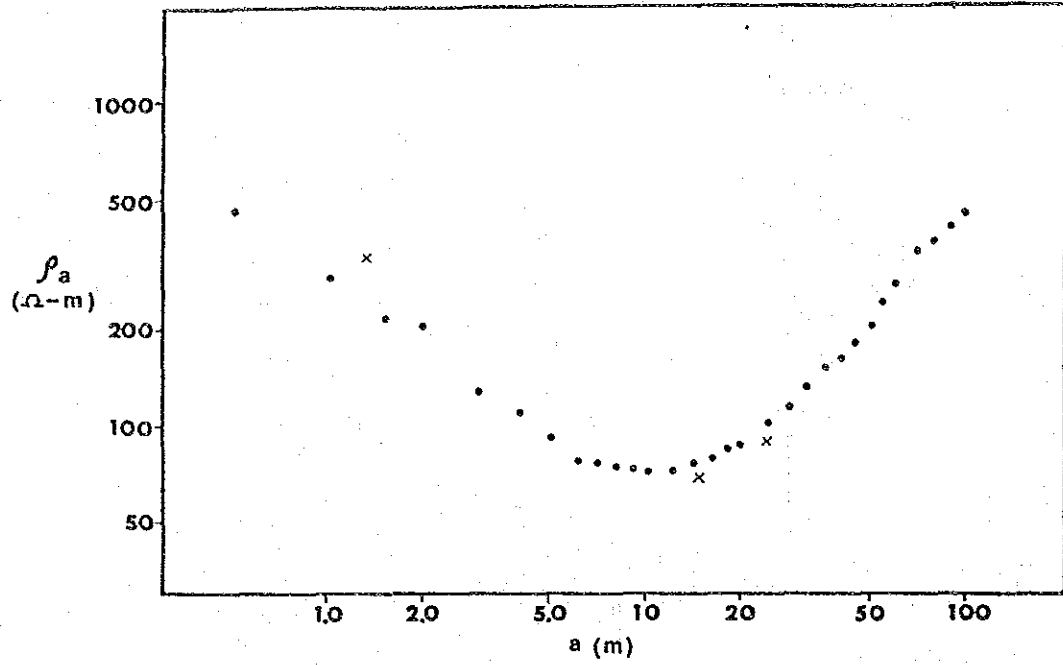
1150	77	420	92	1750
------	----	-----	----	------

No. 2



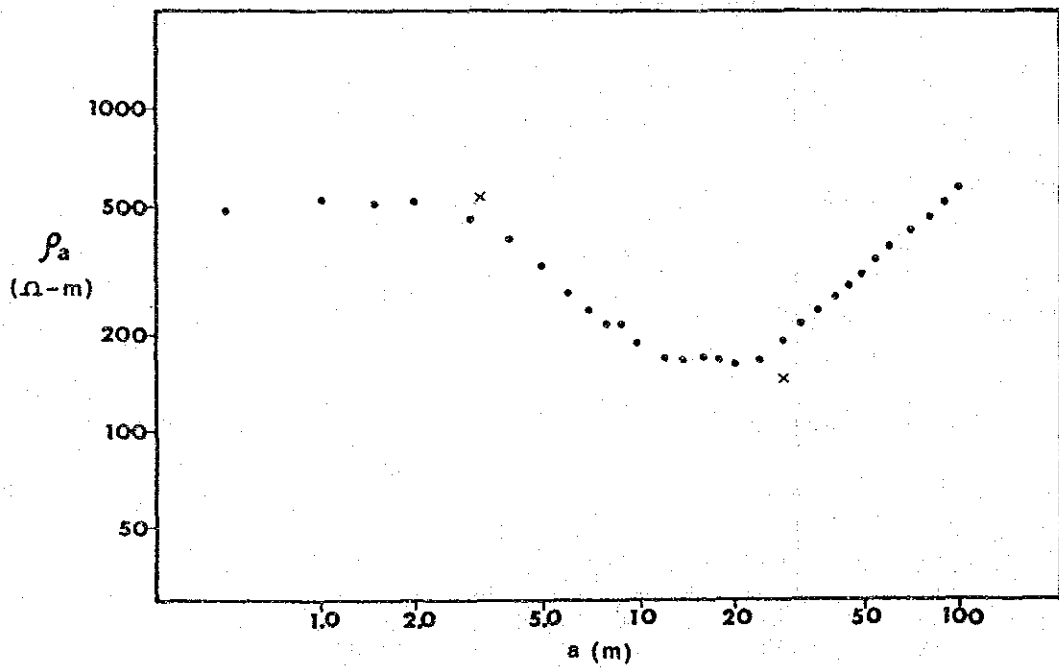
500	250	35	200	3000 <
-----	-----	----	-----	--------

No. 3



340	68	175	4500
-----	----	-----	------

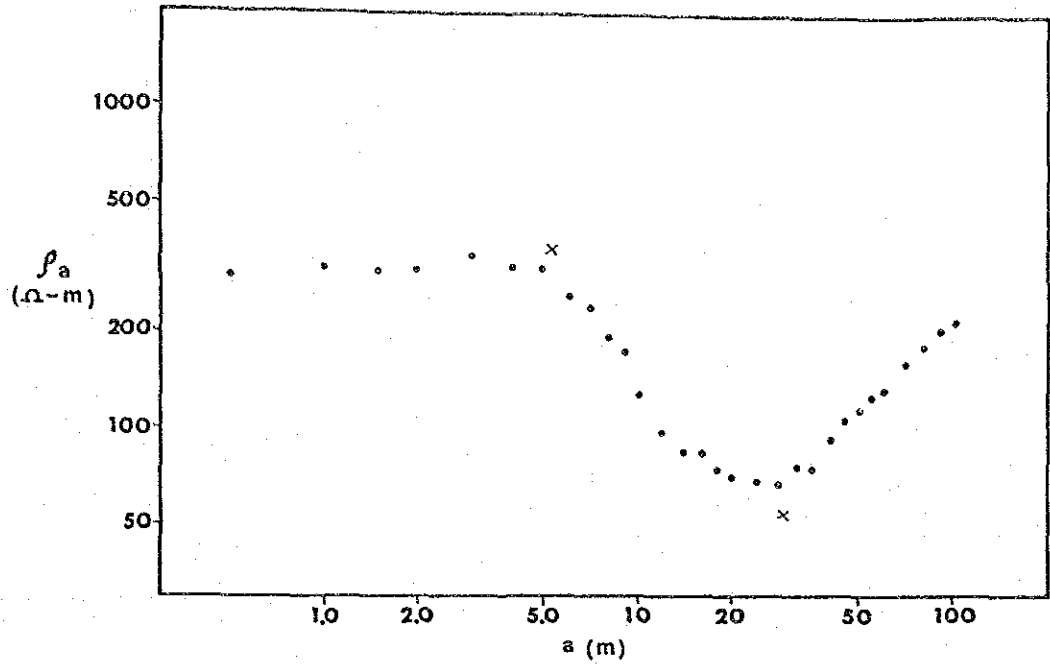
No. 4



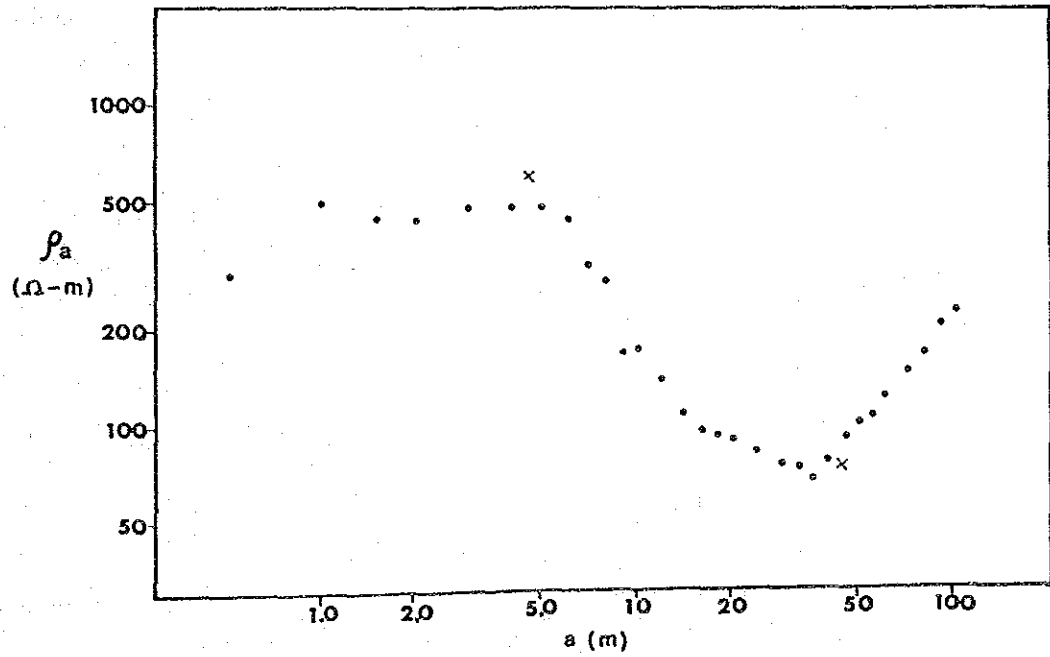
530	133	3000
-----	-----	------

MKWEPELE

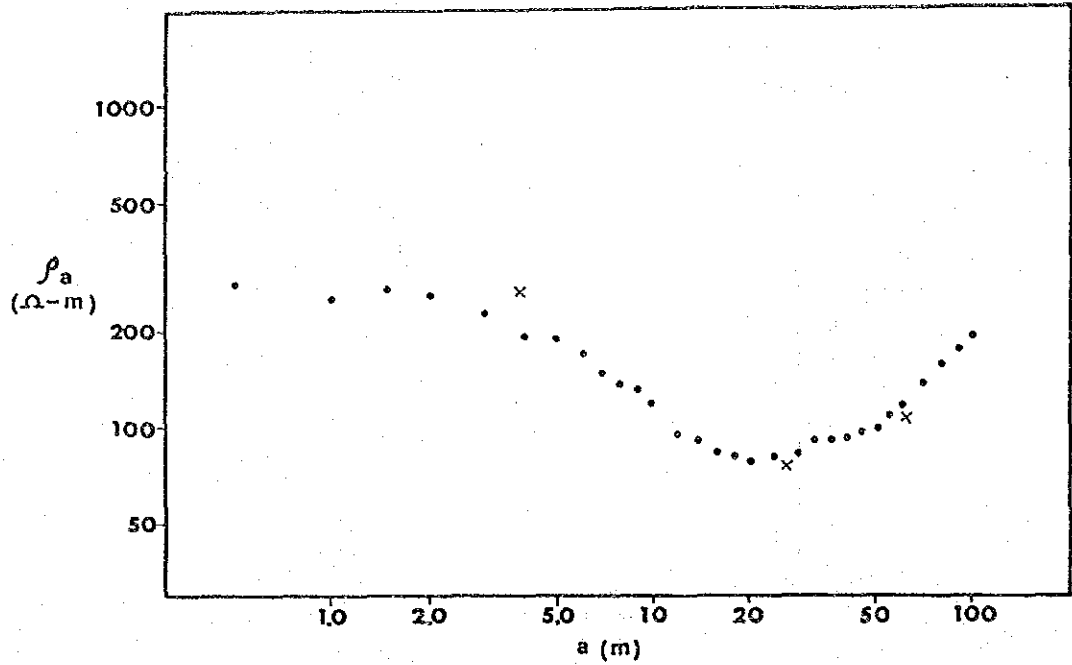
No. 1



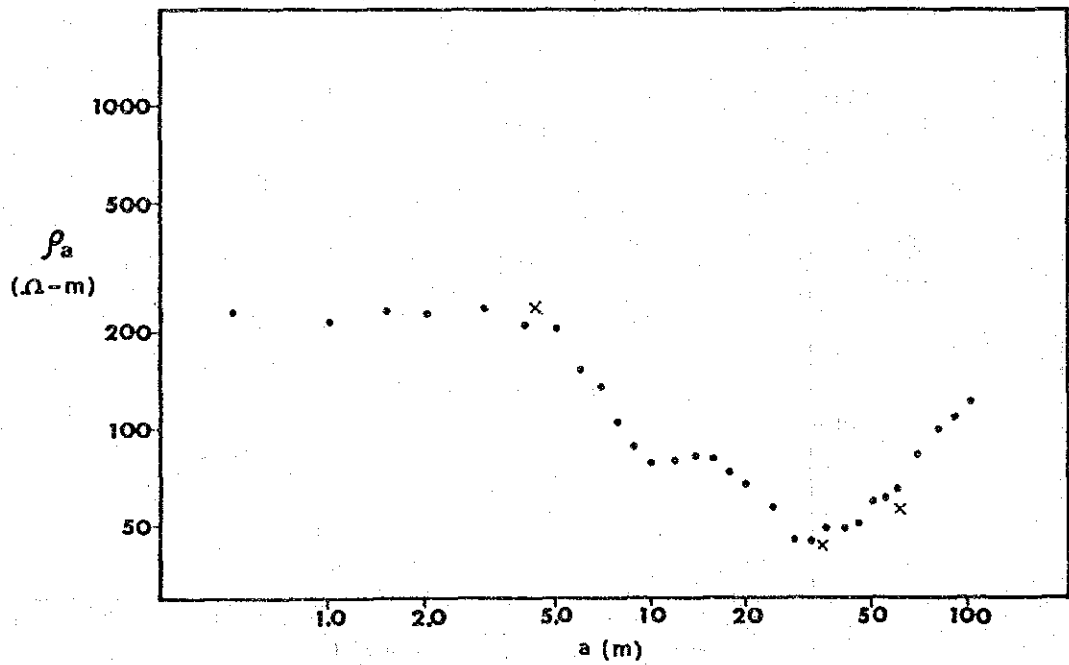
No. 2



No. 3



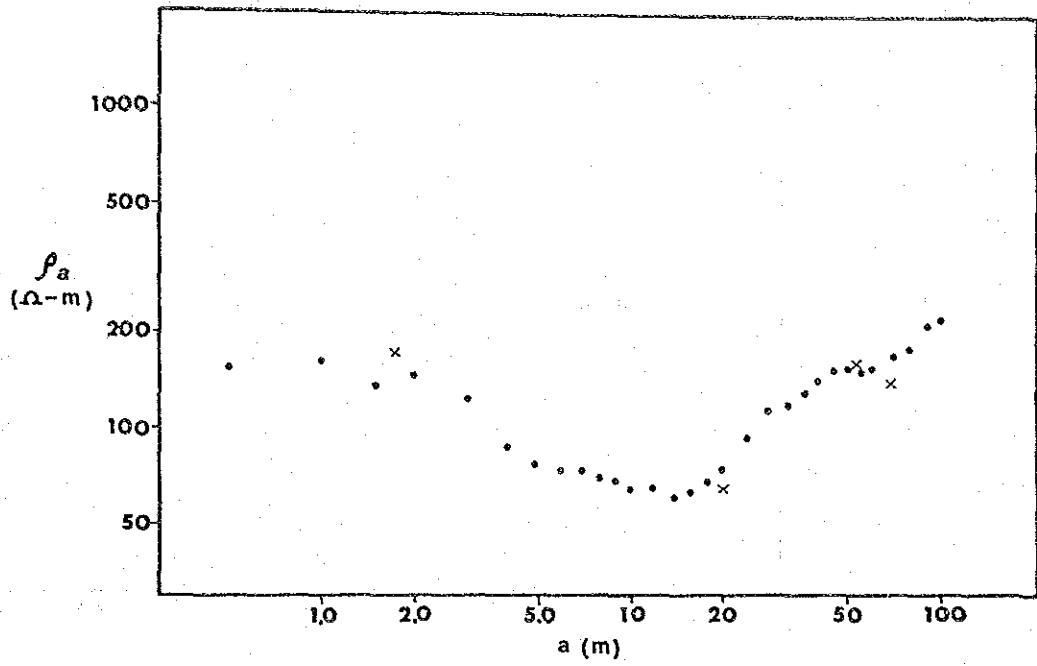
No. 4



MWITIYA

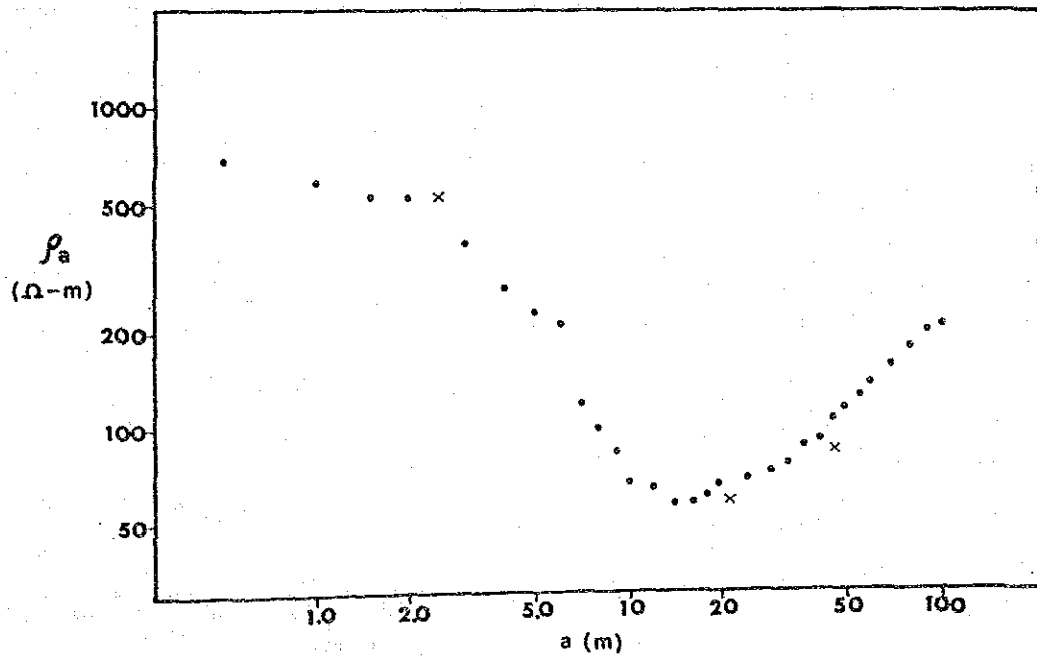
A-8 (5)  $\rho - a$  曲線 (電気探査)

No. 1



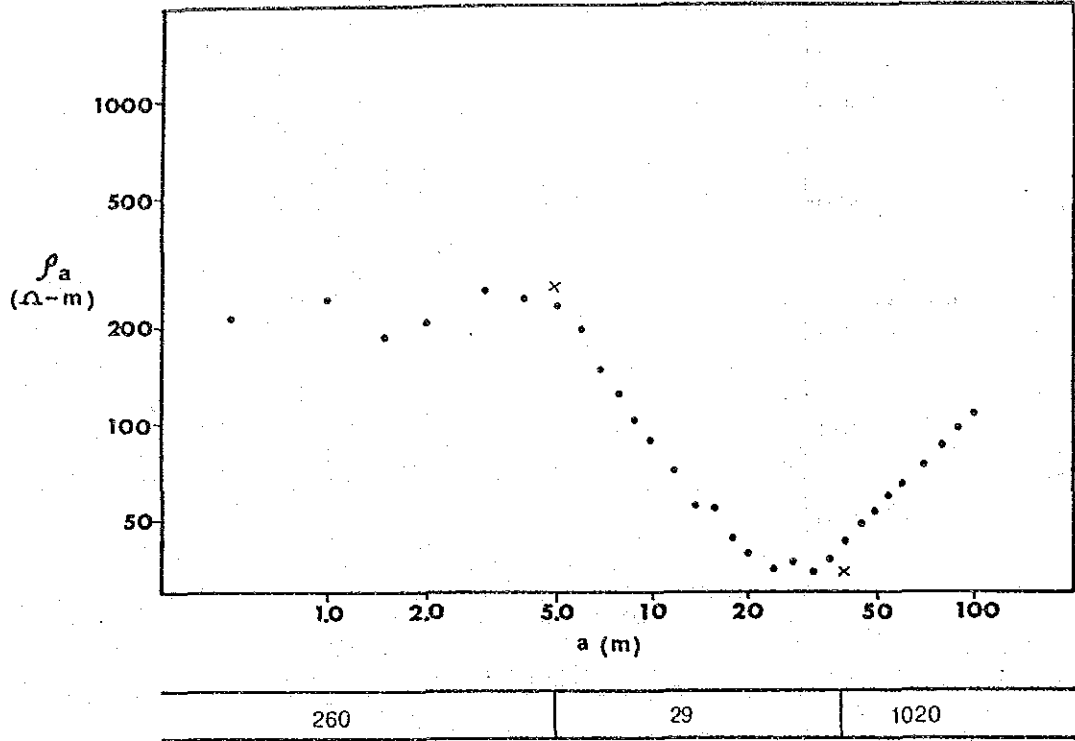
170	57	620	100	980
-----	----	-----	-----	-----

No. 2



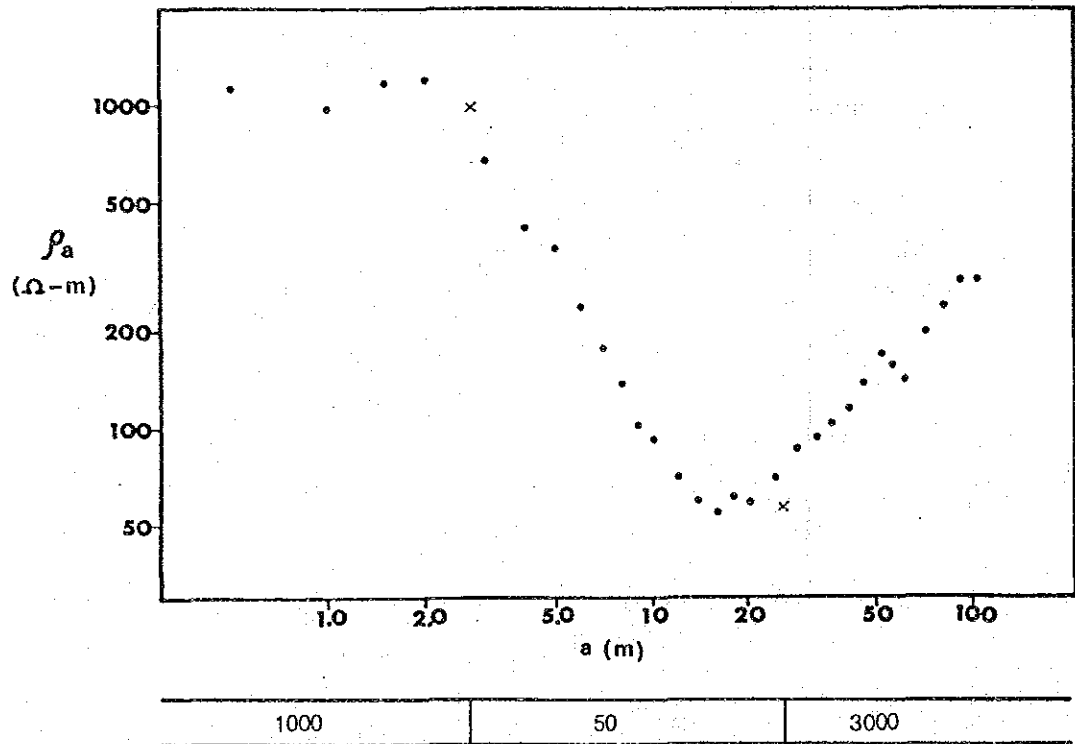
540	54	120	1640
-----	----	-----	------

No. 3

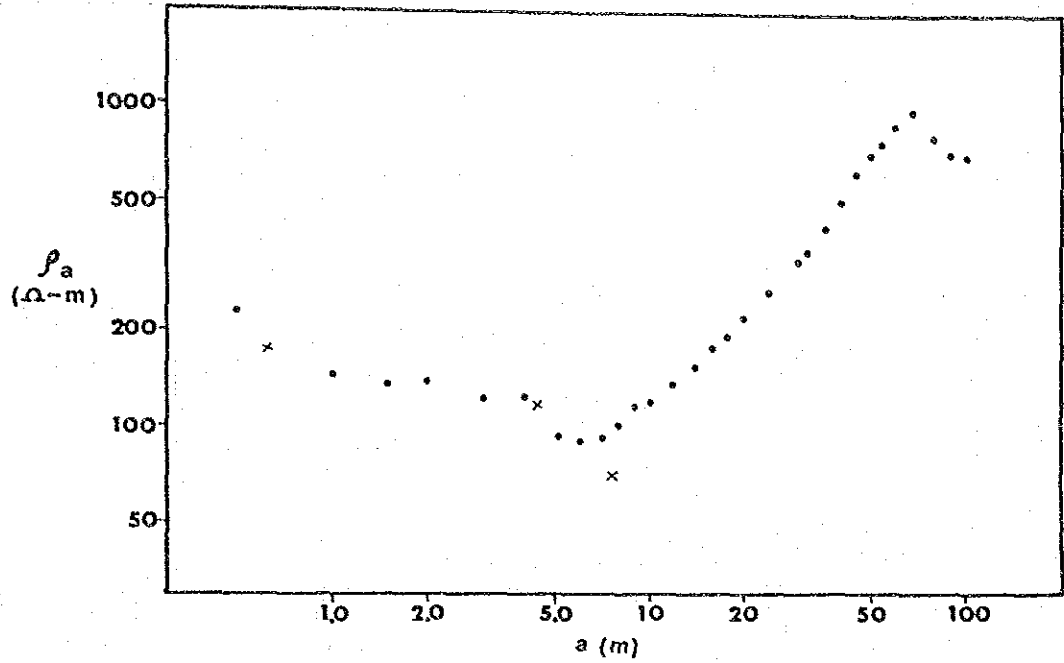


NKHOKWE

No. 1

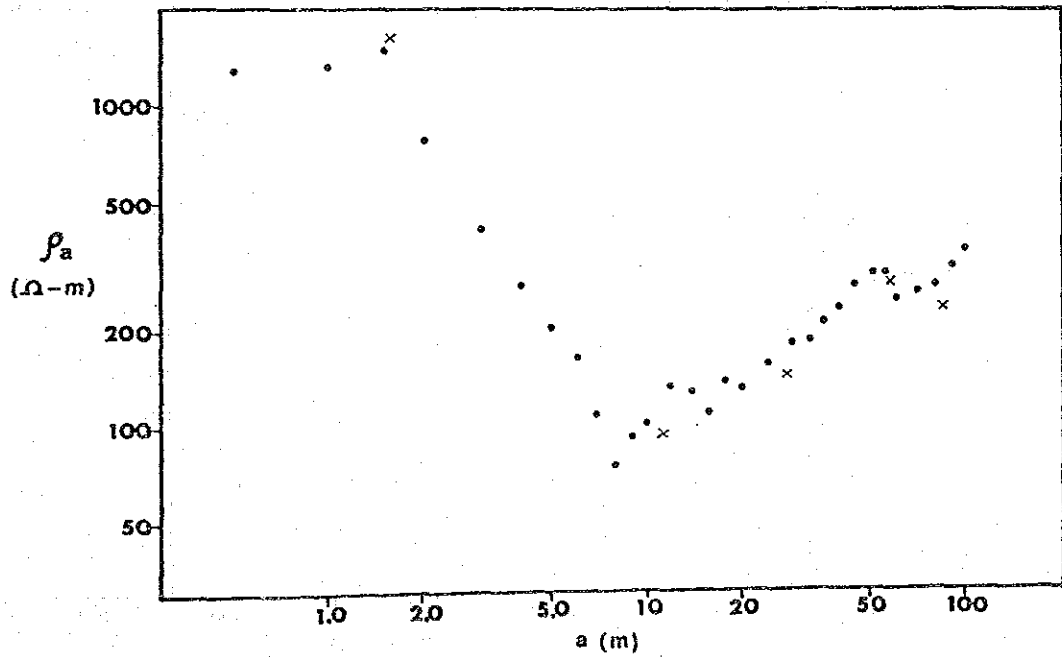


No. 2

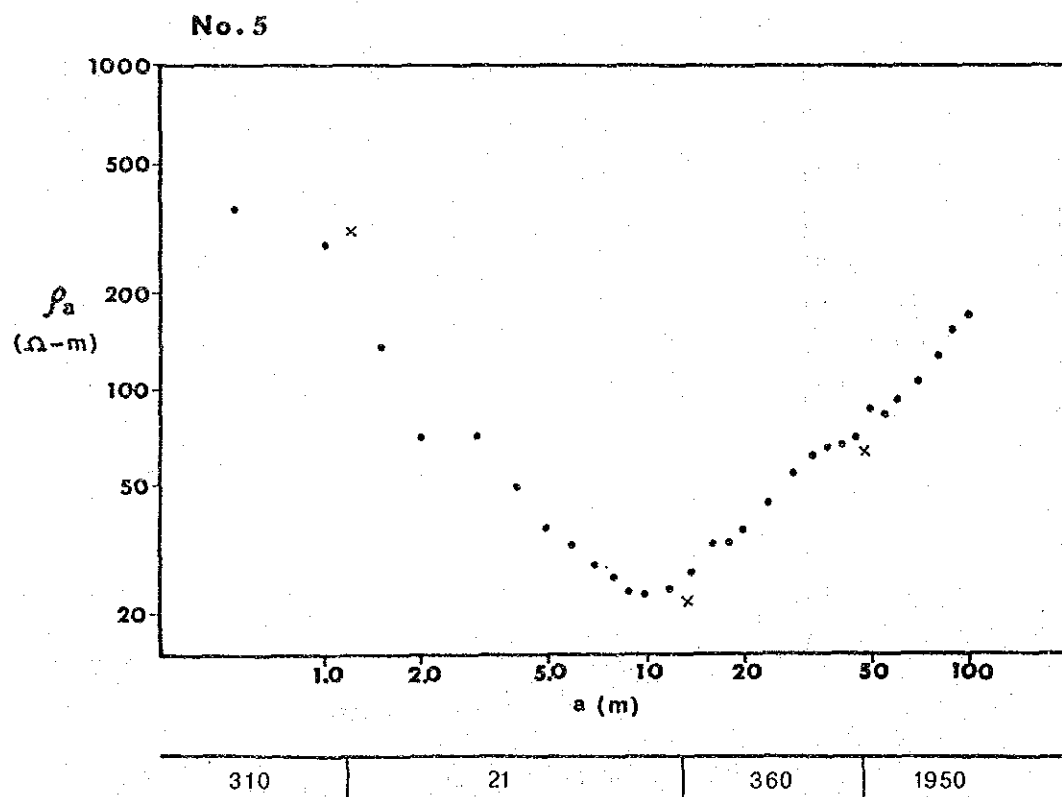
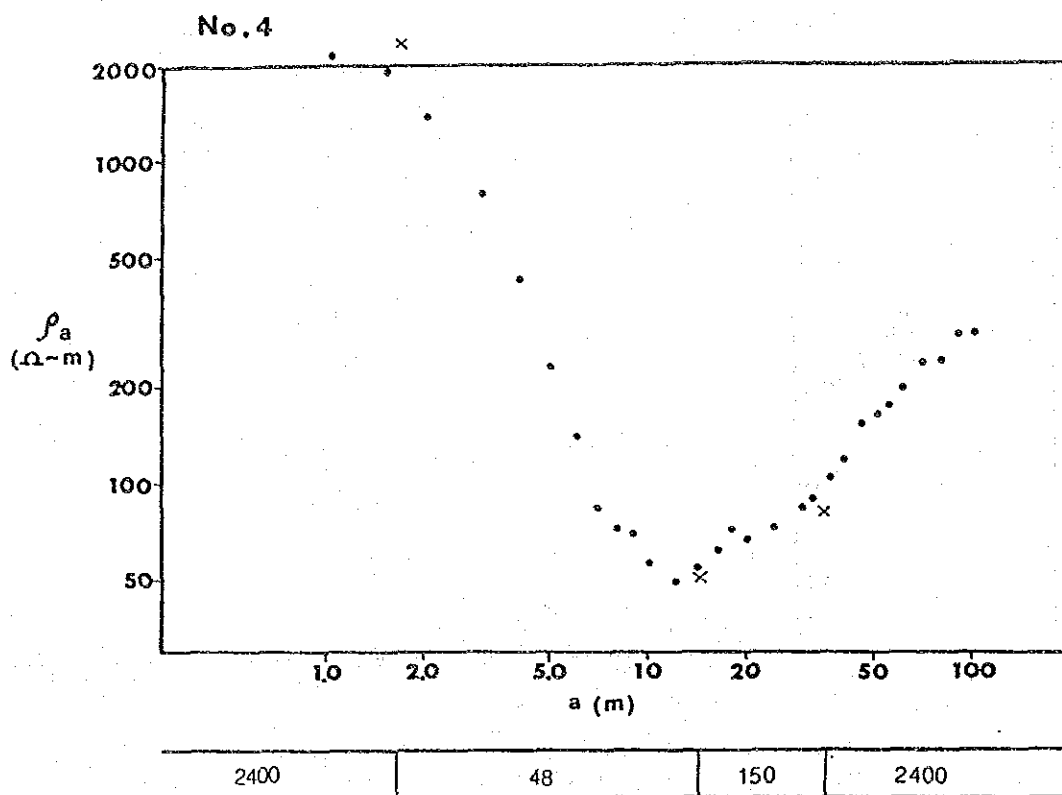


176	113	48	3500
-----	-----	----	------

No. 3



1600	80	285	1310	190	2400 <
------	----	-----	------	-----	--------

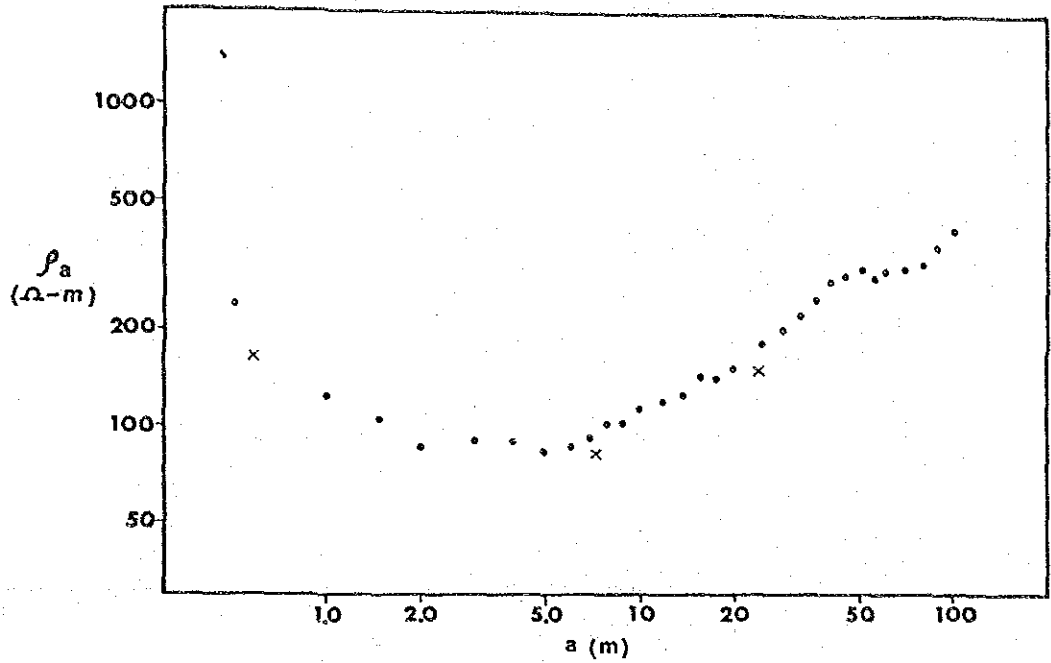




CHIKWEO

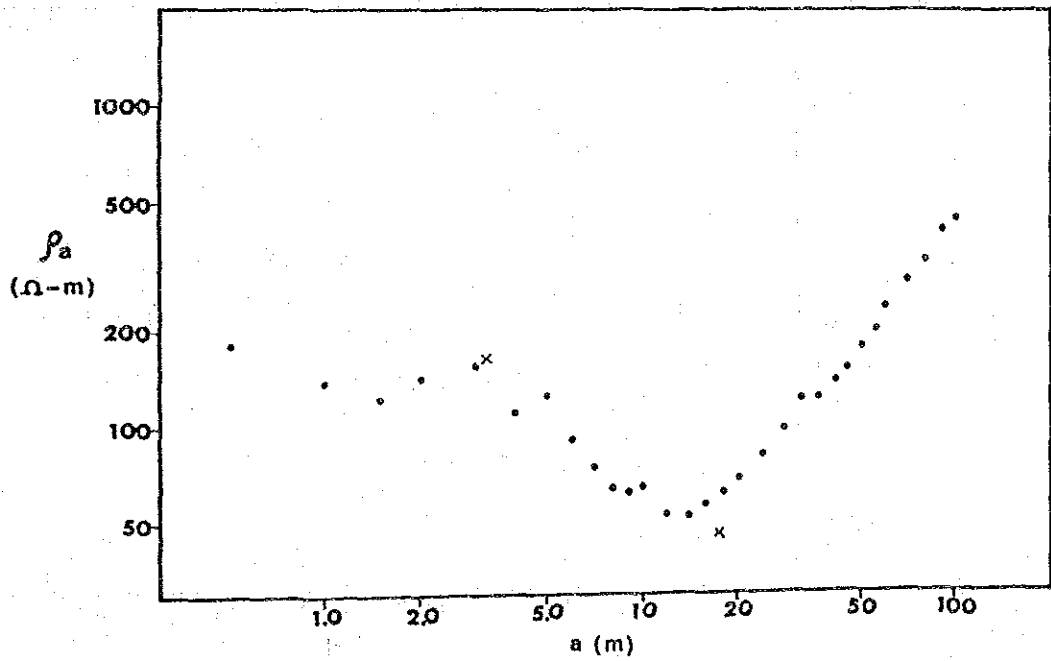
A-8 (9)  $\rho - a$  曲線 (電気探査)

No. 1



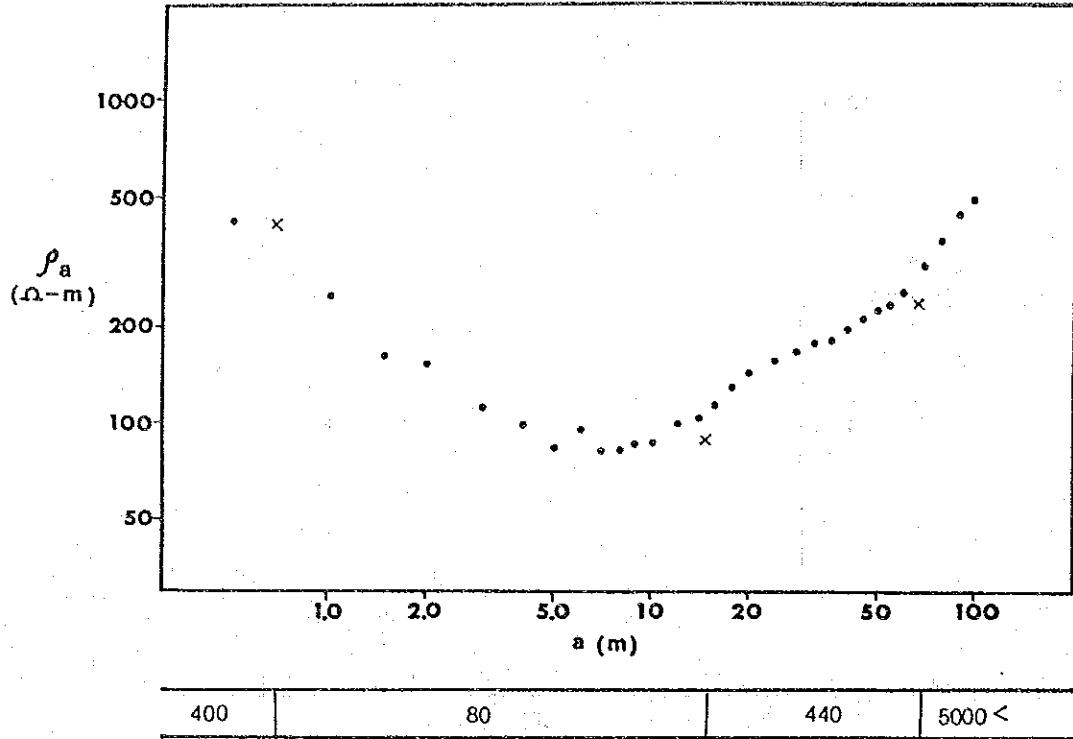
160	80	250	600
-----	----	-----	-----

No. 2

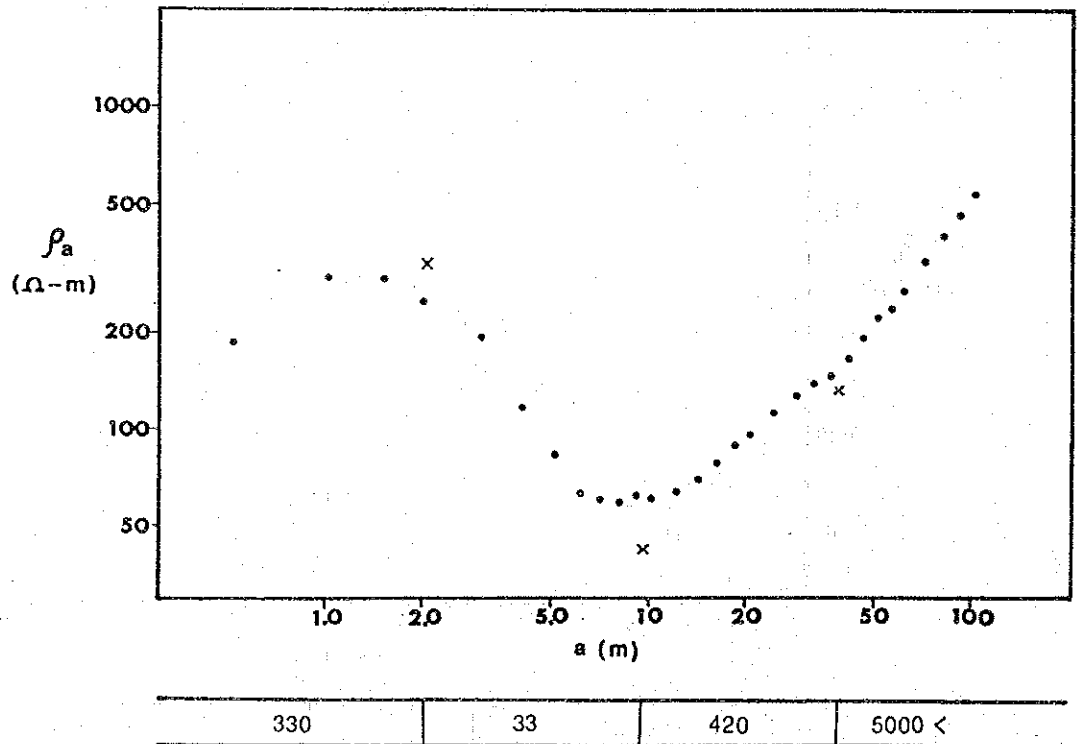


160	40	2300<
-----	----	-------

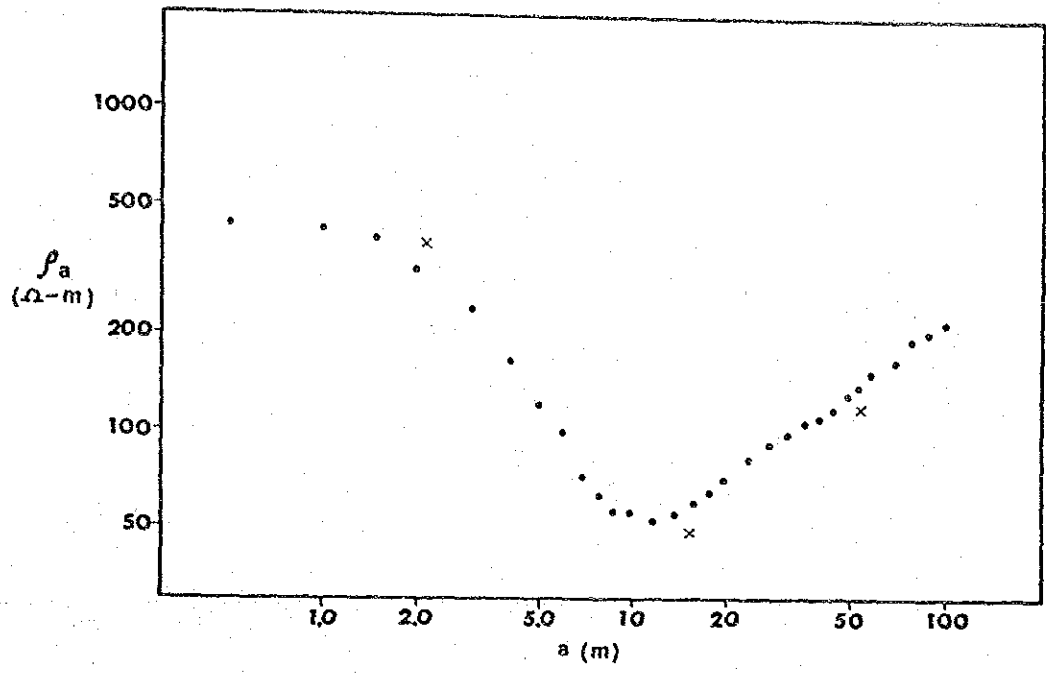
No. 3



No. 4

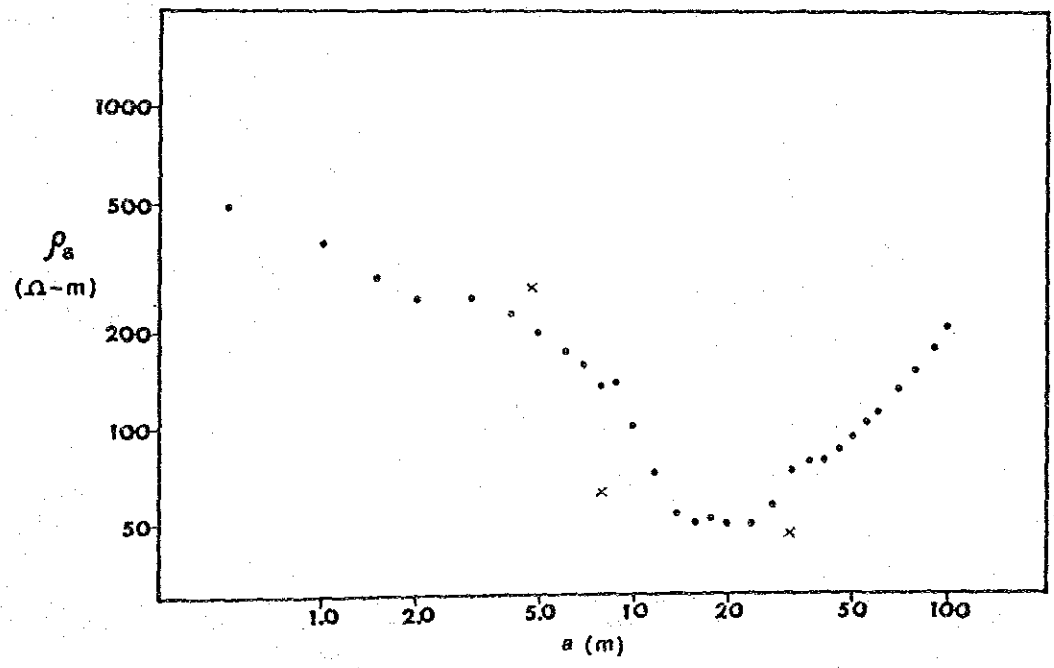


No. 5



790	88	600	1440
-----	----	-----	------

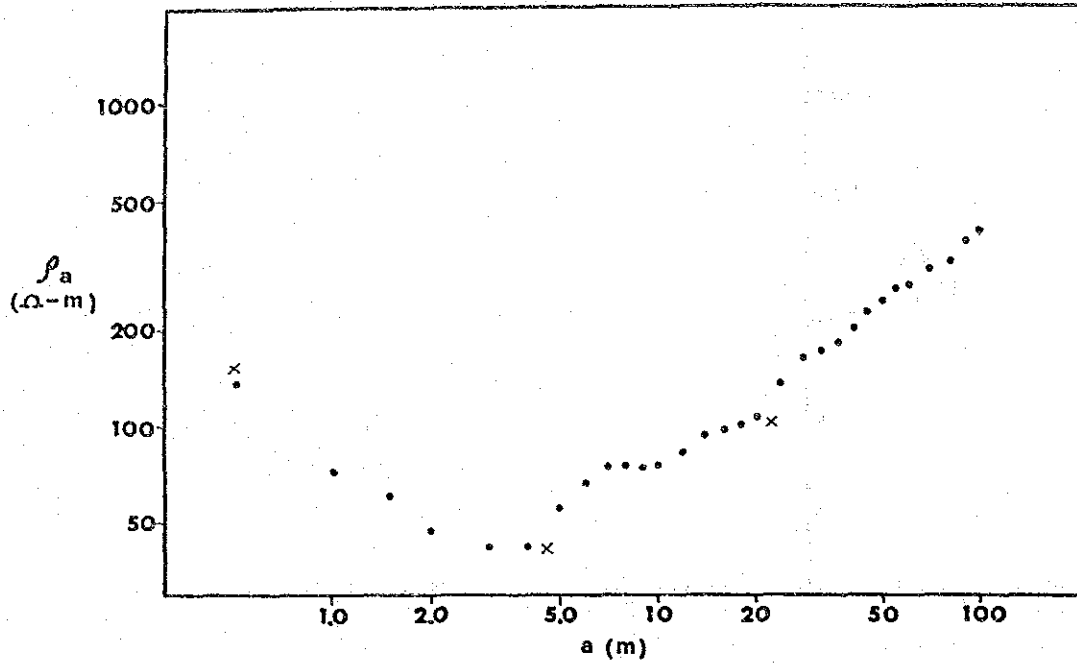
No. 6



560	56	83	4500
-----	----	----	------

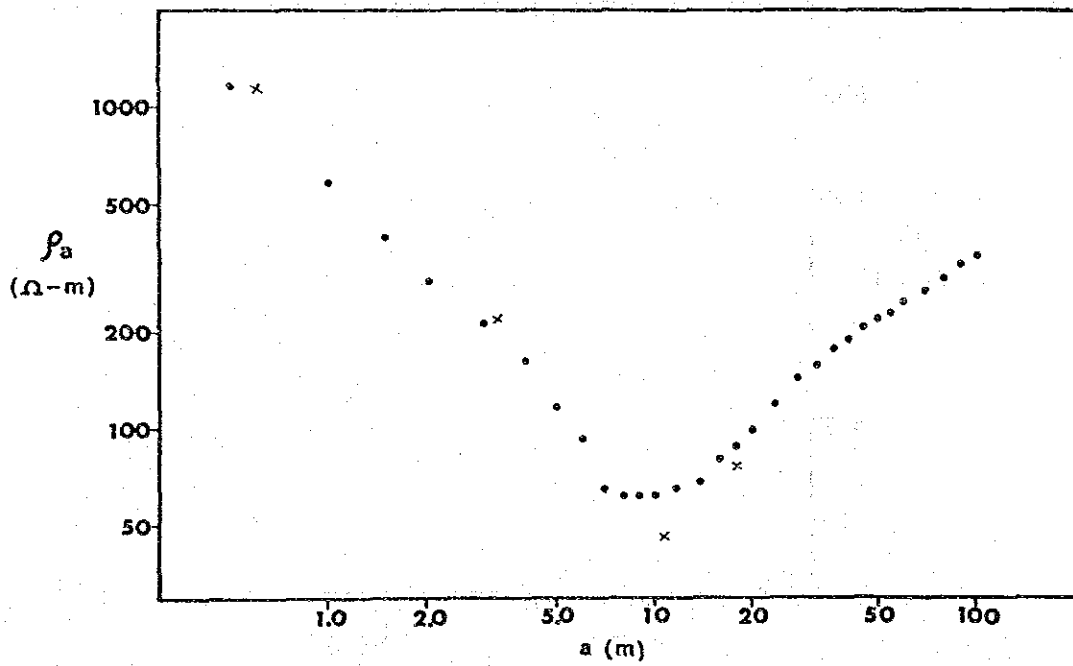
MPILI

No. 1



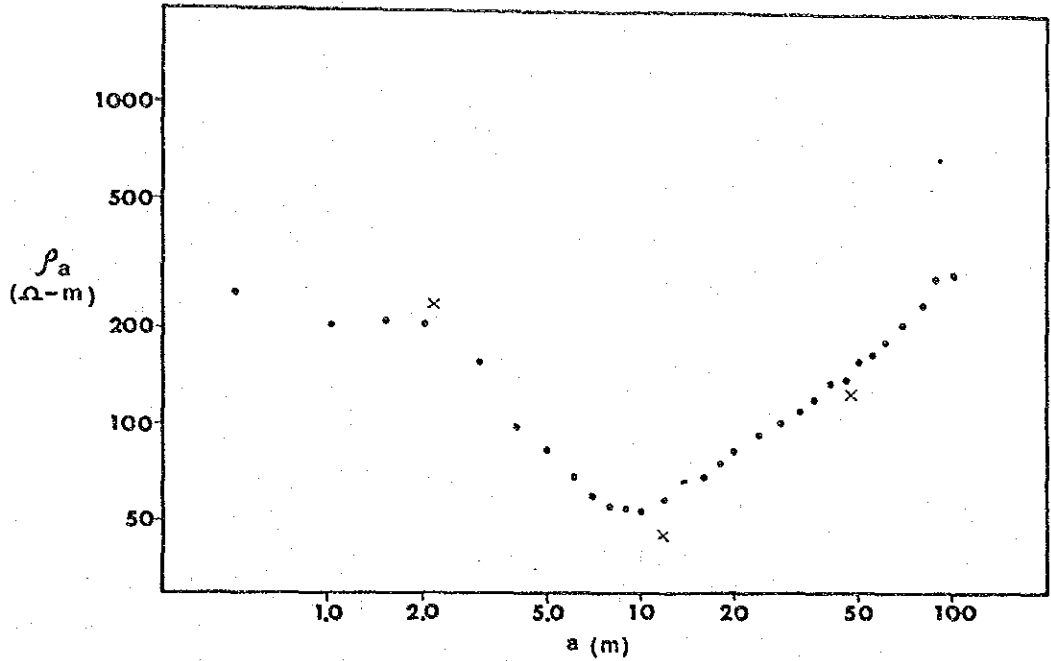
150	38	168	1000
-----	----	-----	------

No. 2



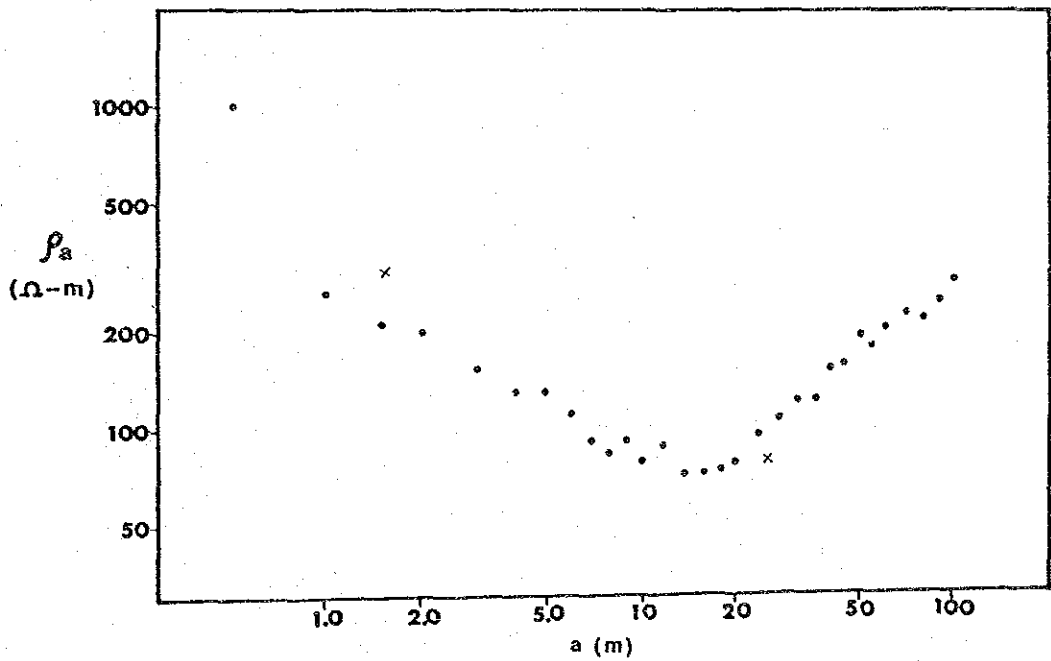
1150	192	37	360	1125
------	-----	----	-----	------

No. 3



240	40	315	3000
-----	----	-----	------

No. 4



310	78	1275
-----	----	------



## 付録 IV 面会者リスト





付録 IV 面会者リスト

1) Embassy of Japan in Kenya

Mr. Y. Nishitani First Secretary

2) JICA in Kenya

Mr. A. Takahashi Resident Representative

Mr. S. Kaiho Assistant Resident Representative

Mr. K. Miyauchi Expert

Mr. T. Toyoda Expert

3) JICA in Malawi

Mr. M. Narawa Resident Representative

Mr. S. Ono Coordinator

Mr. M. D. Manger Officer

4) Office of President and Cabinet

Mr. T. A. Kalebe Senior Economist

5) Ministry of Works and Supplies

Mr. Clark Principal Secretary

Mr. A. E. Mkandawire Acting Secretary for Works and Supplies

Mr. B. H. Mwakikunga Acting Engineer in Chief

Mr. John Brickle Quantity Surveyor

Mr. C. de Souza Acting Water Engineer-in-Chief  
Water Department

Mr. S. M. N. Mainala Principal Hydrogeologist, Water Dept.

Mr. F. Msonthi Hydrogeologist, Water Dept.

6) Ministry of Finance

Mr. T. A. V. Chande Under Secretary, Development Section

Mr. H. S. Mononga Acting Senior Assistant Secretary  
External Aid Section

7) Ministry of Agriculture

Mr. F. M. Kangaudi Controller of Agriculture Services (NRDP)

Mr. E. Malindi Acting Chief Agricultural Officer

- |                      |  |
|----------------------|--|
| Mr. D. J. Bisika     | Deputy Chief Agricultural Officer<br>(Planning & Monitoring) |
| Mr. A. D. Lidamlendo | Programme Manager, Liwonde A.D.D.                            |
| Mr. J. Malongo       | Manager, Liwonde R.D.P.                                      |
- 8) Ministry of Forestry and Natural Resources
- |                   |   |
|-------------------|---|
| Mr. J. C. Chatupa | Chief Geologist, Geological Survey Dept.                  |
| Mr. A. T. Mndala  | Assistant Chief Geologist<br>Geological Survey Department |
- 9) Ministry of Health
- |                     |                             |
|---------------------|-----------------------------|
| Mr. P. A. Chindamba | Chief Public Health Officer |
|---------------------|-----------------------------|
- 10) National Statistical Office
- |                    |  |
|--------------------|--|
| Mr. H. E. Namarika | Commissioner for Census and Statistics |
|--------------------|--|
- 11) Department of Surveys
- |                   |                         |
|-------------------|-------------------------|
| Mr. A. F. Tambala | Commissioner for Survey |
|-------------------|-------------------------|
- 12) Meteorological Department
- |                     |  |
|---------------------|--|
| Mr. G. Munthali     | Chief Meteorological Officer           |
| Mr. D. R. Kamadonya | Assistant Chief Meteorological Officer |
- 13) Machinga District
- |                     |  |
|---------------------|--|
| Mr. M. S. M. Mlonga | Assistant District Commissioner        |
| Mr. L. M. Nikisi    | District Community Development Officer |
- 14) UNDP
- |                 |                                |
|-----------------|--------------------------------|
| Mr. K. Liyanage | Design and Production Engineer |
|-----------------|--------------------------------|
- 15) UNDP/World Bank in Kenya
- |             |                                |
|-------------|--------------------------------|
| Mr. J. Keen | Design and Production Engineer |
|-------------|--------------------------------|

付録 V 収集資料リスト



付録 V 収集資料リスト

1. Statement of Development Policies (1971-1980)  
- Office of the President and Cabinet (OPC) -
2. National Rural Development Programme, 1978  
- Ministry of Agriculture -
3. The International Drinking Water Supply and Sanitation Decade Directory  
(2nd Edition), 1984  
- UNDP -
4. National Water Resources Master Plan, 1986  
- Department of Water/UNDP -
5. Report on Machinga District Development Plan, 1986 (Draft)  
- OPC/UNDP/UNCHS -
6. National Physical Development Plan, 1986 (Draft)  
- UNDP/UNCHS -
7. Malawi Statistical Year Book, 1985  
- National Statistical Office -
8. Malawi Population Census, 1977 (Machinga District)  
- National Statistical Office -
9. Statistical Reference Tables, 1984  
- Ministry of Health -
10. Economic Report, 1985  
- OPC -
11. The Geology of the Lake Chiuta Area, 1970  
- Geological Survey Department -
12. Meteorological Data  
- Meteorological Department -
13. Manual for Integrated Project for Rural Groundwater Supplies, 1982  
- UNDP -
14. Development Operation and Maintenance of Low-Cost Rural Water Supplies  
in Malawi, 1986  
- Department of Water -

16. Annual Report on Handpump Testing in Upper Livulezi Project in Malawi  
- UNDP -
17. The National Atlas of Malawi  
- Department of Surveys -
18. Map of Natural Region and Areas - Southern Malawi (Scale 1:500,000)  
- Department of Surveys -
19. Map of North Kawinga Area (Sheet 1435C2, C4, D1 - D4) (Scale 1:50,000)  
- Department of Surveys -
20. Hydrogeological Reconnaissance Map (Sheet 6 Machinga, Sheet 8 Blantyre) (Scale 1:250,000)  
- Department of Surveys -
21. Map of Mangochi (Sheet 8) (Scale 1:250,000)  
- Department of Surveys -
22. Airborne Geological Survey Magnetic Contour Map (Sheet 1435D1 - D4) (Scale 1:50,000)  
- Geological Survey Department -
23. Distribution Map of Houses in Machinga District (DWG No. 122 - 129, 130 - 131) (Scale 1:25,000/1:50,000)  
- National Statistical Office -
24. Infrastructure Map of North Kawinga (Machinga 9, 10, 11) (Scale 1:50,000)  
- Liwonde ADD, Ministry of Agriculture -
25. Road Map of North Kawinga (Machinga 9, 10, 11) (Scale 1:50,000)  
- Liwonde ADD, Ministry of Agriculture -



JICA