4-4 Calculation Result

Calculation result of traffic distribution in 1979 is shown in Table II-10. Calculation results of traffic distribution for the planned years, i.e., 1983, 1987 and 1993, are shown in Table II-11, II-12 and II-13, which are used in the succeeding work of circuit calculation that appears in PART IV of this report. Calculation results are summarized below:

Item	Year 1979	1983	1987	1993
1) Weighted Average Originating Calling Rate in Erlang	0.068	0.0552	0.0535	0.0495
2) Number of Line Units	93,511*	271,700	376,200	569,200
3) Originating Traffic in Erlang				
a) Local	5890.08	13,188.82	17,290.40	23,810.11
b) Trunk	369.48	1,512.39	2,428.66	3,735.64
c) Special	99.84	287.79	402.43	605.25
Total	6,359.40	14,989.00	20,121.49	28,151.00
4) Number of Exchanges	26	32	32	33
5) Number of Switching System Units	33	54	58	63

*Note: Number of working lines (for December, 1979)

Table II-10 Traffic Distribution as of 1979

FROM \ TO	KT 1	KT 2	PLT	ANC	GB 1(EMD)	GB 1(PRX)	GB 2	SM1	SM2	SLP	PLM	CPP	RMG	TPR	KBY(EMD)	KBY(PRX)	CPA	CPE	PSM	KAL	JT 1	JT 2	CAW	PSR	TBT	GAN	SLDD+ SUB TDM	10X+11X		TOTAL	TO \ FROM
KT 1	146 38	82 28	18 26	5 05	165 05	79 18	16 34	29 97	2 89	29.01	7 56	17 19	10 56	16 98	22 47	11 75	0 18	3 04	0 88	4 27	14 47	6.78	1 19	0 53	9 11	0 90	44 05	11 90		758.24	KT 1
KT 2	75 98	61 22	9 67	3 30	120.37	57 75	11 92	21.00	2 05	18 76	4 99	12 66	7 70	11 20	15 59	8 15	0 12	2 13	0 63	3 12	10 66	4.99	0 87	0 39	6 71	0 66	29 65	8 01		510 28	KT 2
PLT	23 01	13 19	5 33	0 82	27 54	13 21	2 70	5 31	0 52	5 62	1 51	2 73	1 66	2 89	4 23	2 21	0 04	0 58	0 16	0 74	2 34	1 10	0 20	0 09	1 52	0 16	7 49	2 02		128 93	PLT
ANC	5 67	4 01	0 73	0 41	8 63	4 14	0 93	1 51	0 15	1 23	0 34	1 14	0 74	1 38	1 08	0 57	0.01	0 15	0 05	0 23	0 91	0 42	0 07	0 03	0 53	0 05	2 20	0 59		37 88	ANC
GB 1(EMD)	132 23	104.43	17 51	6 16	421 84	202.38	40.95	73 60	7 10	47 75	15 51	35 26	22 77	22.43	52 49	27 44	0 42	7 17	2 20	10 92	35 18	16 48	3 03	1 37	23 04	2 31	83.55	22 58		1438 10	GB 1(EMD)
GB 1(PRX)	63 44	50.10	8 40	2 96	202.38	97 09	19 64	35 31	3 41	22 91	7 44	16 92	10 93	10 76	25.18	13 16	0 20	3 44	1 05	$ 24	16 88	7 91	1 45	0 65	11 05	1 11	40 06	10 83		689 92	GB 1(PRX)
GB 2	14 91	11 77	1 95	0 76	46.61	22 36	7 76	11 31	1 15	5 44	2 03	5 26	3 99	3 03	7 99	4 18	0 07	1 18	0 38	1 97	6 60	3 09	0 57	0 25	4 33	0 42	10 62	2.87		182 86	GB 2
SM 1	28.91	21 94	4 07	1 29	88.61	42 51	11 96	35 81	3 46	12 75	6 06	8 19	6 27	4 81	25.29	13.22	0 20	3 60	1 06	4 95	11 71	5 48	1 24	0 73	8 56	1 05	22 19	6 00		381 89	SM 1
SM 2	3 00	2 30	0 43	0 14	9 19	4 41	1 30	3 71	0 46	1 32	0 71	0 90	0 72	0 52	3.08	1 61	0.03	0 46	0.14	0 64	1 38	0 65	0 16	0 08	1 02	0 14	2 41	0 65		41 54	SM 2
SLP	28 10	19 68	4 32	1 06	57 74	27 70	5.78	12 81	1 24	13.70	3 57	4 92	2 99	3 60	10 30	5 38	0 09	1 39	0 39	1 75	4 96	2 32	0 45	0 21	3 42	0 37	13 69	3.70		235 66	SLP
PLM	8 42	6 02	1 34	0 33	21 57	10 35	2 48	6 99	0 76	4 11	2 53	1 84	1 29	1 16	6 80	3 56	0 06	0 96	0 25	1 04	2 29	1 07	0 25	0 13	1 67	0 23	5 49	1 48		94 45	PLM
CPP	16.99	13 55	2 14	1.01	43.49	20 86	5.70	8 39	0 86	5 02	1 63	7 62	4 63	4.34	5 92	3 10	0 05	0 87	0 29	1 52	6 04	2 83	0 47	0 20	3.37	0 33	10 11	2.73		174.04	CPP
RMG	13.32	10 52	1 66	0.83	35 84	17 19	5 51	8 19	0 87	3 90	1 46	5 91	8 17	4 28	5.90	3 08	0 05	0 97	0 35	1 91	8 46	3 96	0 65	0 28	3 98	0 48	9 27	2 50		159.50	RMG
TPR	26 93	19 25	3 64	1 95	44.41	21 31	5.27	7 91	0 79	5 90	1 65	6.97	5 39	17 45	5 58	2 92	0 05	0 79	0 26	1 39	5 87	2 75	0 44	0 19	3 11	0 32	12.07	3 26		207 82	TPR
KBY (EMD)	25.42	19 10	3 80	1 09	74 12	35.56	9 91	29 66	3 36	12 03	6 91	6 78	5 29	3 98	36 66	19 17	0,29	4 86	1 32	5 32	10 29	4 82	1 26	0 69	7 53	1 23	20 73	5 60		356 77	KBY (EMD)
KBY (PRX)	13 29	9 98	1 98	0 57	38 75	18.59	5 18	15.50	1 76	6 29	3 61	3 54	2 77	2 08	19 17	10 02	0 15	2 54	0 69	2 78	5 38	2 52	0 66	0 36	3 93	0 64	10 84	2.93		186 50	KBY (PRX)
CPA	0 64	0 47	0 10	0 03	1 82	0 87	0 25	0 73	0 09	0 31	0 19	0 17	0 15	0 10	0 89	0 47	0 08	0.35	0.08	0 22	0 31	0 14	0 05	0 04	0 21	0 10	0 56	0 15		9 58	CPA
CPE	5 46	4.15	0 82	0 24	16 09	7 72	2 33	6 70	0 80	2 56	1 55	1.58	1 38	0.90	7 72	4 04	0 18	3 20	0 65	1 92	2 81	1 32	0 45	0 31	1 98	0 64	4 86	1 31		83 68	CPE
PSM	1 51	1 18	0.22	0 07	4 71	2 26	0 72	1 88	0.23	0 68	0 39	0 50	0 48	0.26	2 00	1 05	0.04	0 62	0 25	0.70	0 98	0 46	0 17	0 12	0 65	0.23	1 40	0 38		24 15	PSM
KAL	5 97	4 72	0 82	0.29	19 06	9 14	3 02	7 18	0'86	2 53	1 30	2 15	2 11	1 23	6 58	3 44	0 09	1 50	0.57	3 11	4 28	2 00	0 71	0 38	2 80	0 65	5 43	1 47		93 40	KAL
JT 1	16.76	13 37	2 15	0.93	50 86	24.40	8.39	14.06	1 54	5 93	2 38	7 08	7 77	4 28	10 54	5 51	0 10	1 81	0 66	3 54	15 88	7 44	1 19	0 51	6 97	0 86	13 48	3 64		232 03	JT 1
JT 2	7 85	6 26	1 01	0.44	23 83	11.43	3 93	6 59	0 72	2 78	1 11	3 32	3 64	2 01	4 94	2 58	0.05	0 85	0.31	1 66	7 44	3 49	0 56	0 24	3 27	0 40	6.32	1 71		108.72	JT 2
CAW	1 81	1 44	0.24	0 09	5 76	2 76	0.95	1 96	0 23	0 71	0 34	0.72	0 79	0 43	1 69	0 89	0.02	0 38	0 15	0 78	1 56	0 73	0 31	0 13	0 90	0 22	1 63	0.44		28.07	CAW
PSR	1,13	0 89	0.15	0 06	3 60	1 73	0 58	1 61	0 16	0 47	0 25	0 43	0 47	0 26	1 28	0 67	0.03	0 37	0 15	0 57	0 94	0 44	0 18	0 19	0 56	0 32	1 10	0.30		18.87	PSR
TBT	9,61	7 67	1 27	0.49	30 36	14.56	5 01	9 37	1 04	3 72	1.58	3 60	3.33	2 07	7 02	3 67	0 06	1 16	0 40	2 11	6 35	2 98	0.62	0.28	4 79	0 46	7 75	2.10		133.45	TBT
GAN	2.54	2.02	0 36	0 13	8 10	3.88	1 31	3 05	0.37	1 08	0.58	0 95	1 06	0 57	3 06	1.60	0 08	1 00	0 38	1 31	2 09	0 98	0 41	0 42	1 23	1 33	2 50	0 68		43.06	GAN
SLDD + SUB TDM	44 05	29 65	7 49	2 20	83 55	40 08	10.62	22 19	2 41	13.69	5 49	10 11	9 27	12 07	20 73	10 84	0 56	4.86	1 40	5 43	13 48	6 32	1 63	1 10	7 75	2 50	—	—		—	SLDD + SUB TDM
OPERATOR	11 90	8 01	2 02	0 59	22 58	10.83	2 87	6.00	0 65	3.70	1 48	2 73	2 50	3.26	5.60	2 93	0,15	1.31	0,38	1.47	3.64	1 71	0 44	0.30	2 10	0 68	—	—		—	OPERATOR
TOTAL	735.23	529 17	101 89	33 30	1676.45	804 27	192.32	388 31	39 92	233.91	84 15	171 19	128 82	138 33	319 78	167 17	3 43	51 55	15 49	70.60	203 16	95 20	19 68	10 22	126.06	18 80	—	—		5959.40	TOTAL

Table II-11 Traffic Distribution as of 1983

FROM \ TO	KT 1	KT 2 A	KT 2 B	KT 2 C	KT 2 D	CKG A	PLT A	PLT B	ANC A	ANC B	TGL	GB 1 A	GB 1 B	GB 1 C	GB 1 D	GB 2 A	GB 2 B	GB 2 C	GB 2 D	SM 1 A	SM 1 B	SM 2 A	SM 2 B
KT 1	79.95	26.28	26.28	26.28	26.28	6.11	14.22	17.78	13.40	6.70	2.04	39.15	37.96	18.56	18.56	14.46	14.46	47.14	25.14	13.72	7.10	11.28	7.34
KT 2 A	23.85	11.24	11.24	11.24	11.24	1.97	4.33	5.41	5.03	2.51	0.63	16.40	15.90	7.78	7.78	6.06	6.06	19.75	10.54	5.52	2.86	4.58	2.99
KT 2 B	23.85	11.24	11.24	11.24	11.24	1.97	4.33	5.41	5.03	2.51	0.63	16.40	15.90	7.78	7.78	6.06	6.06	19.75	10.54	5.52	2.86	4.58	2.99
KT 2 C	23.85	11.24	11.24	11.24	11.24	1.97	4.33	5.41	5.03	2.51	0.63	16.40	15.90	7.78	7.78	6.06	6.06	19.75	10.54	5.52	2.86	4.58	2.99
KT 2 D	23.85	11.24	11.24	11.24	11.24	1.97	4.33	5.41	5.03	2.51	0.63	16.40	15.90	7.78	7.78	6.06	6.06	19.75	10.54	5.52	2.86	4.58	2.99
CKG A	11.78	4.20	4.20	4.20	4.20	7.35	3.67	4.59	1.99	1.00	1.74	7.86	7.62	3.73	3.73	2.93	2.93	9.57	5.10	3.76	1.94	3.18	2.07
PLT A	17.47	5.86	5.86	5.86	5.86	2.34	5.78	7.22	3.02	1.51	0.82	9.08	8.80	4.31	4.31	3.32	3.32	10.83	5.77	3.38	1.75	2.80	1.83
PLT B	21.83	7.32	7.32	7.32	7.32	2.92	7.22	9.03	3.77	1.88	1.02	11.35	11.00	5.38	5.38	4.15	4.15	13.53	7.22	4.22	2.19	3.50	2.28
ANC A	14.17	5.86	5.86	5.86	5.86	1.09	2.60	3.25	4.98	2.49	0.37	9.36	9.00	4.44	4.44	3.78	3.78	12.34	6.58	3.15	1.63	2.61	1.70
ANC B	7.08	2.93	2.93	2.93	2.93	0.55	1.30	1.62	2.49	1.24	0.19	4.68	4.54	2.22	2.22	1.89	1.89	6.17	3.29	1.58	0.82	1.31	0.85
TGL	4.39	1.50	1.50	1.50	1.50	1.95	1.46	1.79	0.76	0.38	0.91	2.60	2.52	1.23	1.23	0.96	0.96	3.13	1.67	1.13	0.59	0.95	0.62
GB 1 A	31.29	14.45	14.45	14.45	14.45	3.26	5.91	7.39	7.06	3.54	0.96	43.34	42.00	20.55	20.55	15.69	15.69	51.16	27.29	14.59	7.55	11.98	7.81
GB 1 B	33.08	15.28	15.28	15.28	15.28	3.45	6.25	7.81	7.49	3.74	1.02	45.83	44.41	21.74	21.74	16.59	16.59	54.10	28.85	15.43	7.99	12.67	8.26
GB 1 C	14.84	6.85	6.85	6.85	6.85	1.55	2.80	3.50	3.36	1.68	0.46	20.55	19.92	9.75	9.75	7.44	7.44	24.26	12.94	6.92	3.58	5.68	3.70
GB 1 D	14.84	6.85	6.85	6.85	6.85	1.55	2.80	3.50	3.36	1.68	0.46	20.55	19.92	9.75	9.75	7.44	7.44	24.26	12.94	6.92	3.58	5.68	3.70
GB 2 A	11.57	5.34	5.34	5.34	5.34	1.22	2.16	2.70	2.86	1.43	0.36	15.71	15.22	7.45	7.45	9.76	9.76	31.82	16.97	7.38	3.81	6.35	4.14
GB 2 B	11.57	5.34	5.34	5.34	5.34	1.22	2.16	2.70	2.86	1.43	0.36	15.71	15.22	7.45	7.45	9.76	9.76	31.82	16.97	7.38	3.81	6.35	4.14
GB 2 C	37.73	17.42	17.42	17.42	17.42	3.97	7.06	8.82	9.34	4.67	1.16	51.22	49.64	24.29	24.29	31.82	31.82	103.76	55.34	23.99	12.41	20.70	13.50
GB 2 D	20.12	9.29	9.29	9.29	9.29	2.12	3.76	4.70	4.98	2.49	0.62	27.32	26.47	12.96	12.96	16.97	16.97	55.34	29.52	12.80	6.62	11.04	7.20
SM 1 A	12.05	5.35	5.35	5.35	5.35	1.71	2.42	3.02	2.62	1.31	0.46	16.04	15.55	7.61	7.61	8.08	8.08	26.34	14.05	12.51	6.47	10.27	6.70
SM 1 B	6.23	2.77	2.77	2.77	2.77	0.89	1.25	1.56	1.35	0.68	0.24	8.30	8.04	3.93	3.93	4.18	4.18	13.62	7.27	6.47	3.35	5.31	3.46
SM 2 A	10.34	4.63	4.63	4.63	4.63	1.51	2.09	2.62	2.27	1.13	0.40	13.76	13.33	6.52	6.52	7.28	7.28	23.74	12.66	10.73	5.55	11.19	7.30
SM 2 B	6.74	3.02	3.02	3.02	3.02	0.99	1.37	1.71	1.48	0.74	0.26	8.97	8.69	4.25	4.25	4.75	4.75	15.48	8.26	7.00	3.62	7.30	4.75
SLP A	13.21	5.41	5.41	5.41	5.41	1.86	2.90	3.62	2.42	1.21	0.54	11.79	11.42	5.59	5.59	4.40	4.40	14.34	7.65	5.05	2.61	4.14	2.70
SLP B	15.85	6.49	6.49	6.49	6.49	2.23	3.48	4.35	2.91	1.45	0.65	14.14	13.71	6.71	6.71	5.28	5.28	17.20	9.18	6.05	3.13	4.97	3.24
PLM A	6.68	2.79	2.79	2.79	2.79	1.28	1.51	1.89	1.29	0.64	0.24	7.43	7.20	3.52	3.52	3.19	3.19	10.40	5.55	4.65	2.41	4.30	2.81
PLM B	3.34	1.40	1.40	1.40	1.40	0.65	0.76	0.94	0.64	0.32	0.17	3.72	3.60	1.76	1.76	1.59	1.59	5.20	2.77	2.33	1.20	2.15	1.40
KED	5.25	1.99	1.99	1.99	1.99	1.40	1.38	1.72	0.91	0.45	0.37	4.24	4.11	2.01	2.01	1.63	1.63	5.31	2.83	2.13	1.10	1.80	1.17
MER	1.32	0.53	0.53	0.53	0.53	0.34	0.32	0.40	0.24	0.12	0.08	1.32	1.28	0.63	0.63	0.57	0.57	1.89	0.99	0.85	0.44	0.74	0.49
CPP A	11.96	5.58	5.58	5.58	5.58	1.04	2.15	2.69	3.44	1.72	0.32	13.30	12.89	6.31	6.31	6.50	6.50	21.19	11.30	4.95	2.56	4.31	2.81
CPP B	12.95	6.51	6.51	6.51	6.51	1.21	2.51	3.13	4.01	2.01	0.38	15.51	15.03	7.36	7.36	7.58	7.58	24.72	13.18	5.77	2.99	5.03	3.28
RMG A	11.50	5.31	5.31	5.31	5.31	1.02	2.05	2.56	3.48	1.74	0.31	13.44	13.02	6.37	6.37	7.71	7.71	25.13	13.40	5.93	3.07	5.38	3.51
RMG B	4.79	2.21	2.21	2.21	2.21	0.43	0.85	1.07	1.45	0.72	0.13	5.60	5.43	2.66	2.66	3.21	3.21	10.47	5.58	2.47	1.28	2.24	1.46
TPR A	18.89	7.89	7.89	7.89	7.89	1.47	3.64	4.55	6.63	3.32	0.53	13.52	13.10	6.41	6.41	5.98	5.98	19.50	10.40	4.65	2.40	3.97	2.59
TPR B	11.33	4.74	4.74	4.74	4.74	0.88	2.18	2.73	3.98	1.99	0.12	8.11	7.86	3.85	3.85	3.59	3.59	11.70	6.24	2.79	1.44	2.38	1.55
KPG	5.78	2.59	2.59	2.59	2.59	0.45	1.04	1.30	1.95	0.97	0.15	5.26	5.10	2.49	2.49	2.54	2.54	8.30	4.43	1.92	0.99	1.67	1.09
CLC	8.22	3.50	3.50	3.50	3.50	0.63	1.54	1.92	2.86	1.43	0.27	6.57	6.36	3.11	3.11	3.11	3.11	10.16	5.42	2.37	1.23	2.07	1.35
PGG	7.36	3.40	3.40	3.40	3.40	0.61	1.30	1.62	2.34	1.17	0.19	7.94	7.69	3.76	3.76	4.46	4.46	14.55	7.76	3.40	1.76	3.08	2.01
KBY A	14.07	6.18	6.18	6.18	6.18	2.51	3.00	3.75	2.94	1.47	0.65	17.81	17.26	8.45	8.45	8.88	8.88	28.95	15.44	13.75	7.11	13.25	8.64
KBY B	10.44	4.59	4.59	4.59	4.59	1.87	2.22	2.78	2.18	1.09	0.48	13.22	12.81	6.27	6.27	6.59	6.59	21.49	11.46	10.21	5.28	9.83	6.41
KBY C	10.44	4.59	4.59	4.59	4.59	1.87	2.22	2.78	2.18	1.09	0.48	13.22	12.81	6.27	6.27	6.59	6.59	21.49	11.46	10.21	5.28	9.83	6.41
CPA A	1.98	0.85	0.85	0.85	0.85	0.42	0.44	0.55	0.40	0.20	0.12	2.43	2.35	1.15	1.15	1.25	1.25	4.07	2.17	1.89	0.98	1.92	1.25
CPE A	7.79	3.46	3.46	3.46	3.46	1.58	1.68	2.09	1.66	0.83	0.39	9.96	9.65	4.72	4.72	5.38	5.38	17.53	9.35	8.00	4.14	8.10	5.28
PSM A	1.82	0.83	0.83	0.83	0.83	0.31	0.37	0.47	0.42	0.21	0.08	2.47	2.39	1.17	1.17	1.42	1.42	4.62	2.46	1.91	0.99	1.99	1.30
KAL A	8.63	3.98	3.98	3.98	3.98	1.22	1.70	2.12	2.05	1.03	0.32	11.95	11.58	5.67	5.67	7.06	7.06	23.02	12.28	8.69	4.49	8.99	5.80
JGA	0.87	0.39	0.39	0.39	0.39	0.16	0.18	0.22	0.20	0.10	0.04	1.16	1.12	0.55	0.55	0.67	0.67	2.19	1.17	0.90	0.47	0.93	0.61
JTG A	9.99	4.66	4.66	4.66	4.66	1.03	1.83	2.29	2.71	1.35	0.30	13.16	12.76	6.24	6.24	8.10	8.10	26.40	14.08	7.02	3.63	6.56	4.28
JTG B	10.76	5.02	5.02	5.02	5.02	1.11	1.97	2.47	2.91	1.46	0.32	14.18	13.74	6.72	6.72	8.72	8.72	28.43	15.16	7.56	3.91	7.07	4.61
CAW A	6.77	3.16	3.16	3.16	3.16	0.84	1.29	1.61	1.73	0.86	0.28	9.37	9.08	4.44	4.44	5.76	5.76	18.80	10.03	6.17	3.19	6.16	4.03
CAW B	5.07	2.37	2.37	2.37	2.37	0.63	0.97	1.21	1.29	0.65	0.21	7.03	6.81	3.33	3.33	4.32	4.32	14.10	7.52	4.63	2.39	4.64	3.02
PSR	2.90	1.34	1.34	1.34	1.34	0.41	0.56	0.71	0.72	0.36	0.11	4.02	3.90	1.91	1.91	2.42	2.42	7.90	4.21	3.47	1.79	2.93	1.91
TBT A	10.05	4.69	4.69	4.69	4.69	1.16	1.90	2.37	2.51	1.26	0.32	13.78	13.35	6.53	6.53	8.48	8.48	27.64	14.74	8.21	4.24	7.75	5.05
GAN	2.36	1.10	1.10	1.10	1.10	0.36	0.47	0.59	0.58	0.29	0.09	3.27	3.17	1.55	1.55	1.97	1.97	6.42	3.42	2.38	1.23	2.45	1.60
KLD	2.44	1.14	1.14	1.14	1.14	0.23	0.44	0.55	0.72	0.36	0.08	3.09	3.00	1.47	1.47	1.86	1.86	6.08	3.24	1.57	0.81	1.48	0.97
SLDD	72.72	28.62	28.62	28.62	28.62	15.88	17.64	22.05	17.64	8.82	5.29	59.89	58.04	28.40	28.40	28.40	28.40	92.61	49.39	30.89	15.88	28.40	18.52
SUB TOM	10.47	4.12	4.12	4.12	4.12	2.29	2.54	3.18	2.54	1.27	0.76	8.62	9.12	4.09	4.09	4.09	4.09	13.34	7.11	4.42	2.29	4.09	2.67
OPERATOR	15.83	6.23	6.23	6.23	6.23	3.45	3.84	4.81	3.84	1.92	1.15	13.04	12.79	6.19	6.19	6.19	6.19	20.17	10.75	6.68	3.45	6.19	4.03
TOTAL	807.28	343.17	343.17	343.17	343.17	106.48	166.45	208.06	187.30	93.65	32.58	790.53	766.08	374.89	374.89	374.96	374.96	1222.65	652.10	378.78	195.92	339.15	221.18

FROM \ TO	SLP A	SLP B	PLM A	PLM B	KED	MER	CPP A	CPP B	RMG A	RMG B	TPR A	TPR B	KPG	CLC	PGG	KBY A	KBY B	KBY C	CPA A	CPE A	PSM A	KAL A	JGA	JTG A	JTG B	CAW A	CAW B	PSR	TBT A
KT 1	13.91	16.69	6.44	3.22	4.12	1.03	13.40	15.63	10.78	4.49	13.34	8.00	4.88	4.43	5.56	13.81	10.25	10.25	0.67	5.11	1.26	7.44	0.41	10.18	10.96	5.51	4.16	1.71	11.11
KT 2 A	5.17	6.20	2.44	1.22	1.41	0.38	5.67	6.62	4.52	1.88	5.06	3.03	1.98	1.74	2.33	5.50	4.09	4.09	0.26	2.06	0.53	3.12	0.17	4.31	4.64	2.33	1.75	0.71	4.70
KT 2 B	5.17	6.20	2.44	1.22	1.41	0.38	5.67	6.62	4.52	1.88	5.06	3.03	1.98	1.74	2.33	5.50	4.09	4.09	0.26	2.06	0.53	3.12	0.17	4.31	4.64	2.33	1.75	0.71	4.70
KT 2 C	5.17	6.20	2.44	1.22	1.41	0.38	5.67	6.62	4.52	1.88	5.06	3.03	1.98	1.74	2.33	5.50	4.09	4.09	0.26	2.06	0.53	3.12	0.17	4.31	4.64	2.33	1.75	0.71	4.70
KT 2 D	5.17	6.20	2.44	1.22	1.41	0.38	5.67	6.62	4.52	1.88	5.06	3.03	1.98	1.74	2.33	5.50	4.09	4.09	0.26	2.06	0.53	3.12	0.17	4.31	4.64	2.33	1.75	0.71	4.70
CKG A	3.77	4.53	2.40	1.20	2.12	0.51	2.25	2.62	1.84	0.77	2.00	1.20	0.74	0.67	0.90	4.76	3.53	3.53	0.28	2.01	0.41	2.04	0.14	2.02	2.18	1.31	0.98	0.47	2.47
PLT A	3.75	4.50	1.79	0.89	1.33	0.21	2.95	3.45	2.25	0.98	3.16	1.88	1.08	1.03	1.20	3.61	2.68	2.68	0.19	1.35	0.33	1.80	0.10	2.29	2.47	1.39	0.91	0.61	2.58
PLT B	4.69	5.62	2.23	1.12	1.66	0.28	3.70	4.31	2.94	1.23	3.95	2.37	1.34	1.29	1.50	4.52	3.35	3.35	0.23	1.69	0.40	2.25	0.13	2.86	3.09	1.62	1.21	0.51	3.22
ANC A	2.70	3.24	1.31	0.66	0.75	0.20	4.07	4.75	3.45	1.44	4.95	2.97	1.74	1.65	1.87	3.05	2.26	2.26	0.14	1.15	0.31	1.87	0.10	2.92	3.14	1.49	1.12	0.45	2.94
ANC B	1.35	1.62	0.66	0.33	0.38	0.10	2.04	2.38	1.72	0.72	2.48	1.49	0.87	0.83	0.93	1.52	1.13	1.13	0.07	0.58	0.15	0.94	0.05	1.46	1.57	0.74	0.56	0.22	1.47
TGL	1.22	1.46	0.70	0.35	0.62	0.14	0.78	0.91	0.62	0.26	0.80	0.48	0.27	0.33	0.31	1.37	1.01	1.01	0.09	0.55	0.12	0.60	0.04	0.65	0.70	0.45	0.37	0.14	0.77
GB 1 A	9.93	11.90	9.72	2.95	2.65	0.83	11.50	13.89	10.07	4.19	7.63	4.58	3.55	2.87	4.79	13.97	10.37	10.37	0.66	5.22	1.39	8.24	0.63	10.72	11.55	6.10	4.58	1.89	12.17
GB 1 B	10.49	12.59	6.05	3.02	2.83	0.87	12.59	14.69	10.64	4.43	8.07	4.84	3.75	3.03	5.06	14.77	10.97	10.97	0.70	5.52	1.46	8.72	0.66	11.36	12.21	6.46	4.84	2.00	12.88
GB 1 C	4.70	5.64	2.71	1.36	1.26	0.39	5.64	6.59	4.77	1.99	3.62	2.17	1.68	1.36	2.27	6.63	4.92	4.92	0.31	2.48	0.66	3.91	0.21	5.08	5.48	2.90	2.17	0.90	5.77
GB 1 D	4.70	5.64	2.71	1.36	1.26	0.39	5.64	6.59	4.77	1.99	3.62	2.17	1.68	1.36	2.27	6.63	4.92	4.92	0.31	2.48	0.66	3.91	0.21	5.08	5.48	2.90	2.17	0.90	5.77
GB 2 A	3.70	6.45	2.46	1.23	1.07	0.36	5.82	6.79	5.78	2.41	3.38	2.03	1.72	1.36	2.70	6.98	5.18	5.18	0.34	2.82	0.80	4.88	0.25	6.60	7.11	3.76	2.82	1.14	7.50
GB 2 B	3.70	6.45	2.46	1.23	1.02	0.36	5.82	6.79	5.78	2.41	3.39	2.03	1.72	1.36	2.70	6.98	5.18	5.18	0.34	2.82	0.80	4.88	0.25	6.60	7.11	3.76	2.82	1.14	7.50
GB 2 C	12.08	14.50	8.01	4.01	3.34	1.16	18.99	22.16	18.85	7.85	11.02	6.61	5.60	4.44	8.79	22.75	16.88	16.88	1.11	9.21	2.60	15.90	0.82	21.53	23.19	12.26	9.19	3.27	24.44
GB 2 D	6.44	7.73	4.27	2.14	1.78	0.62	10.13	11.82	10.05	4.19	5.88	3.53	2.99	2.37	4.69	12.13	9.00	9.00	0.59	4.91	1.38	8.48	0.44	11.48	12.37	6.54	4.90	1.98	13.04
SM 1 A	4.61	5.60	3.93	1.97	1.47	0.58	4.87	5.68	4.88	2.03	2.88	1.73	1.42	1.14	2.25	11.86	8.80	8.80	0.57	4.42	1.18	6.59	0.37	6.29	6.77	4.42	3.31	1.79	7.97
SM 1 B	2.41	2.90	2.03	1.02	0.76	0.30	2.52	2.94	2.52	1.05	1.49	0.89	0.74	0.59	1.17	6.14	4.55	4.55	0.29	2.29	0.61	3.41	0.19	3.25	3.50	2.28	1.71	0.93	4.12
SM 2 A	4.00	4.80	3.80	1.90	1.20	0.53	4.43	5.17	4.63	1.93	2.57	1.54	1.29	1.04	2.14	11.94	8.86	8.86	0.60	4.88	1.28	7.04	0.40	6.14	6.61	4.62	3.47	1.58	7.88
SM 2 B	2.61	3.13	2.48	1.24	0.85	0.35	2.89	3.37	3.02	1.26	1.68	1.01	0.84	0.68	1.39	7.78	5.78	5.78	0.39	3.18	0.84	4.59	0.26	4.00	4.31	3.02	2.26	1.03	5.12
SLP A	5.65	6.79	2.62	1.31	1.50	0.41	3.30	3.85	2.63	1.10	2.44	1.46	1.02	0.85	1.32	5.45	4.04	4.04	0.27	2.02	0.48	2.63	0.15	3.00	3.24	1.82	1.36	0.59	3.59
SLP B	6.79	8.14	3.14	1.57	1.80	0.50	3.96	4.62	3.16	1.32	2.92	1.75	1.23	1.02	1.58	6.54	4.85	4.85	0.33	2.42	0.58	3.16	0.18	3.61	3.88	2.18	1.64	0.71	4.30
PLM A	2.86	3.43	3.13	1.56	1.11	0.45	2.08	2.43	1.41	0.59	1.33	0.79	0.61	0.49	0.85	6.01	4.51	4.51	0.32	2.34	0.53	2.63	0.17	2.34	2.52	1.69	1.21	0.60	2.98
PLM B	1.43	1.72	1.56	0.78	0.56	0.22	1.04	1.21	0.95	0.40	0.66	0.40	0.30	0.25	0.44	3.04	2.25	2.25	0.16	1.17	0.26	1.31	0.09	1.17	1.26	0.85	0.63	0.30	1.48
KED	2.01	2.42	1.34	0.68	1.21	0.27	1.18	1.37	0.99	0.41	0.90	0.54	0.36	0.31	0.47	2.64	1.96	1.96	0.16	1.06	0.23	1.16	0.08	1.12	1.21	0.75	0.56	0.26	1.40
MER	0.56	0.67	0.55	0.28	0.27	0.16	0.37	0.43	0.34	0.14	0.25	0.15	0.11	0.09	0.16	1.21	0.90	0.90	0.08	0.53	0.11	0.50	0.04	0.42	0.45	0.32	0.24	0.12	0.53
CPP A	3.10	3.73	1.79	0.89	0.87	0.28	7.65	8.93	4.10	2.54	4.40	2.64	2.24	1.79	3.05	4.69	3.48	3.48	0.23	1.88	0.54	3.41	0.17	5.48	5.90	2.79	2.10	0.83	5.30
CPP B	3.62	4.35	2.09	1.04	0.96	0.30	8.93	10.42	7.11	2.98	5.13	3.08	2.61	2.09	3.56	5.47	4.06	4.06	0.27	2.19	0.62	3.98	0.20	6.39	6.88	3.26	2.44	0.97	6.18
RMG A	2.96	3.55	1.96	0.98	0.83	0.28	7.29	8.50	13.17	5.49	5.32	3.19	2.99	2.65	6.09	5.73	4.26	4.26	0.32	2.57	0.81	5.25	0.27	9.41	10.13	4.80	3.60	1.43	7.68
RMG B	1.23	1.48	0.82	0.41	0.35	0.12	3.04	3.54	5.49	2.29	2.22	1.33	1.25	1.10	2.54	2.39	1.77	1.77	0.13	1.07	0.34	2.19	0.11	3.92	4.22	2.00	1.50	0.59	3.20
TPR A	3.63	4.36	1.80	0.90	1.00	0.27	6.97	8.14	7.06	2.94	17.59	10.56	4.23	5.58	4.54	4.40	3.27	3.27	0.21	1.71	0.49	3.11	0.16	5.30	5.71	2.66	1.99	0.79	4.88
TPR B	2.18	2.62	1.08	0.54	0.60	0.16	4.18	4.88	4.24	1.77	10.56	6.33	2.54	3.35	2.72	2.64	1.96	1.96	0.13	1.03	0.29	1.87	0.09	3.18	3.42	1.59	1.19	0.47	2.93
KPG	1.28	1.53	0.69	0.35	0.34	0.10	2.97	3.46	3.32	1.38	3.54	2.12	2.01	1.61	2.07	1.80	1.34	1.34	0.09	0.74	0.22	1.39	0.07	2.44	2.63	1.22	0.92	0.36	7.14
CLC	1.64	1.97	0.87	0.43	0.45	0.13	3.67	4.28	4.54	1.89	7.21	4.33	2.48	5.86	3.32	2.23	1.65	1.65	0.11	0.92	0.28	1.81	0.09	3.21	3.45	1.64	1.23	0.50	2.75
PGG	1.83	2.30	1.13	0.57	0.49	0.16	4.52	5.28	7.55	3.15	4.26	2.54	2.31	2.40	6.23	3.29	2.44	2.44	0.19	1.50	0.48	3.13	0.16	5.55	5.98	2.58	2.23	0.91	4.40
KBY A	5.84	7.01	5.96	2.98	2.11	0.96	5.35	6.24	5.47	2.28	3.17	1.90	1.55	1.24	2.53	22.83	16.94	16.94	1.07	8.28	1.95	9.39	0.63	7.34	7.90	5.93	4.45	2.22	9.10
KBY B	4.34	5.20	4.42	2.21	1.57	0.71	3.97	4.64	4.06	1.69	2.35	1.41	1.15	0.92	1.88	16.94	12.58	12.58	0.79	6.15	1.45	6.97	0.47	5.45	5.87	4.40	3.30	1.65	6.90
KBY C	4.34	5.20	4.42	2.21	1.57	0.71	3.97	4.64	4.06	1.69	2.35	1.41	1.15	0.92	1.88	16.94	12.58	12.58	0.79	6.15	1.45	6.97	0.47	5.45	5.87	4.40	3.30	1.65	6.90
CPA A	0.84	1.00	0.92	0.46	0.37	0.19	0.75	0.88	0.87	0.36	0.44	0.26	0.27	0.19	0.41	3.08	2.29	2.29	1.69	3.29	0.64	2.15	0.38	1.21	1.30	1.36	1.02	0.78	1.46
CPE A	3.23	3.88	3.43	1.72	1.27	0.63	3.21	3.74	3.66	1.53	1.84	1.11	0.95	0.77	1.73	12.38	9.19	9.19	1.71	14.05	2.47	6.74	0.98	5.16	5.56	5.41	4.06	2.62	6.29
PSM A	0.73	0.87	0.72	0.36	0.26	0.12	0.85	1.00	1.08	0.45	0.49	0.29	0.26	0.22	0.52	2.72	2.02	2.02	0.31	2.31	0.82	2.70	0.26	1.52	1.63	1.74	1.30	0.86	1.76
KAL A	3.21	3.85	2.90	1.47	1.04	0.49	4.43	5.17	5.70	2.38	2.54	1.53	1.36	1.15	2.74	10.68	7.93	7.93	0.85	6.65	2.20	14.31	0.73	7.95	8.57	8.16	6.57	3.18	9.03
JGA	0.34	0.41	0.35	0.18	0.13	0.06	0.41	0.48	0.54	0.22	0.26	0.14	0.13	0.11	0.27	1.32	0.98	0.98	0.28	1.38	0.39	1.32	0.31	0.76	0.82	0.94	0.70	0.62	0.83
JTG A	3.10	3.73	2.21	1.10	0.87	0.32	6.02	7.02	8.65	3.60	3.67	2.20	2.02	1.72	4.12	7.07	5.25	5.25	0.40	3.33	1.05	6.74	0.35	12.19	13.13	6.03	4.53	1.79	9.28
JTG B	3.34	4.01	2.38	1.19	0.93	0.35	6.48	7.57	9.32	3.88	3.95	2.37	2.18	1.85	4.43	7.61	5.65	5.65	0.44	3.58	1.13	7.26	0.38	13.13	14.14	6.50	4.87	1.93	9.99
CAW A	2.35	2.82	2.00	1.00	0.72	0.30	3.84	4.48	5.52	2.30	2.30	1.38	1.26	1.10	2.76	7.14	5.30	5.30	0.57	4.36	1.50	9.28	0.54	7.55	8.13	9.76	7.32	2.84	7.52
CAW B	1.76	2.11	1.50	0.75	0.54	0.23	2.88	3.36	4.14	1.72	1.77	1.03	0.95	0.82	2.07	5.36	3.98	3.98	0.43	3.27	1.13	6.96	0.40	5.66	6.09	7.32	5.49	2.12	5.64
PSR	1.06	1.27	0.99	0.49	0.35	0.16	1.58	1.85	2.27	0.95	0.95	0.57	0.52	0.46	1.17	3.70	2.75	2.75	0.45	2.93	1.03	4.67	0.49	3.11	3.35	3.94	2.96	2.88	3.19
TBT A	3.42	4.10	2.58	1.29	0.99	0.36	5.37	6.27	6.51	2.71	3.12	1.87	1.63	1.36	3.01	8.26	6.13	6.13	0.45	3.73	1.12	7.05	0.36	8.55	9.21	5.55	4.16	1.70	11.17
GAN	0.88	1.05	0.84	0.42	0.30	0.14	1.26	1.47	1.85	0.77	0.76	0.46	0.42	0.37	0.96	3.20	2.37	2.73	0.52	2.65	0.94	3.87	0.58	2.50	2.69	3.23	2.43	2.29	2.54
KLD	0.71	0.86	0.50	0.25	0.20	0.07	1.56	1.82	2.72	1.13	1.10	0.66	0.62	0.56	1.50	1.56	1.17	1.17	0.10	0.80	0.26	1.70	0.09	2.81	3.02	1.68	1.26	0.53	2.14
SLDD	19.85	23.81	14.11	7.06	7.94	2.65	23.81	27.78	28.58	11.91	28.67	17.20	10.58	14.55	17.64	38.50	28.58	28.58	6.17	24.70	6.17	28.58	3.09	28.67	30.87	22.93	17.20	10.58	28.58
SUB TOM	2.86	3.43	2.03	1.02	1.14	0.38	3.43	4.00	4.11	1.71	4.13	2.48	1.52	2.10	2.54	5.54	4.11	4.11	0.89	3.56	0.89	4.11	0.44	4.13	4.45	3.30	2.48	1.52	4.11
OPERATOR	4.32	5.18	3.07	1.53	1.73	0.58	5.18	6.05	6.22	2.60	6.24	3.74	2.31	3.16	3.84	8.38	6.22	6.22	0.74	5.37	1.34	6.22	0.68	6.24	6.73	4.99	3.79	2.31	6.22
TOTAL	228.82	274.58	151.87	75.93	72.51	24.07	288.68	366.79	301.41	125.55	244.87	146.89	102.87	101.87	156.76	424.02	314.75	314.75	31.21	201.08	52.95	286.46	19.55	223.65	348.54	219.50	164.63	79.26	344.06

FROM \ TO	GAN	KLD	GBDD	SLDD	SUB TOM	10 %	11 %	TOTAL
KT 1	1.05	1.99	3.44	72.72	10.47	11.46	4.37	624.50
KT 2 A	0.45	0.84	1.45	28.62	4.12	4.51	1.72	324.50
KT 2 B	0.45	0.84	1.45	28.62	4.12	4.51	1.72	324.50
KT 2 C	0.45	0.84	1.45	28.62	4.12	4.51	1.72	324.50
KT 2 D	0.45	0.84	1.45	28.62	4.12	4.51	1.72	324.50
CKG A	0.31	0.37	0.69	15.88	2.29	2.50	0.95	180.00
PLT A	0.26	0.44	0.80	17.64	2.54	2.78	1.06	200.00
PLT B	0.32	0.55	1.00	22.05	3.18	3.48	1.33	250.00
ANC A	0.28	0.62	0.83	17.64	2.54	2.78	1.06	200.00
ANC B	0.14	0.31	0.41	8.82	1.27	1.39	0.53	100.00
TGL	0.09	0.15	0.23	5.29	0.76	0.83	0.32	60.00
GB 1 A	1.17	2.01	3.83	59.89	8.62	9.44	3.60	679.00
GB 1 B	1.23	2.13	4.05	63.33	9.12	9.98	3.81	718.00
GB 1 C	0.55	0.96	1.82	28.40	4.09	4.48	1.71	322.00
GB 1 D	0.55	0.96	1.82	28.40	4.09	4.48	1.71	322.00
GB 2 A	0.70	1.22	1.39	28.40	4.09	4.48	1.71	322.00
GB 2 B	0.70	1.22	1.39	28.40	4.09	4.48	1.71	322.00
GB 2 C	2.30	3.97	4.53	92.61	13.34	14.60	5.57	1050.00
GB 2 D	1.22	2.11	2.61	49.39	7.11	7.78	2.97	560.00
SM 1 A	0.93	1.12	1.42	30.63	4.42	4.84	1.84	344.00
SM 1 B	0.48	0.58	0.73	15.88	2.29	2.50	0.95	180.00
SM 2 A	1.01	1.11	1.22	28.40	4.09	4.48	1.71	322.00
SM 2 B	0.66	0.72	0.79	18.52	2.67	2.92	1.11	210.00
SLP A	0.37	0.55	1.04	19.85	2.86	3.13	1.19	225.00
SLP B	0.45	0.66	1.25	23.81	3.42	3.75	1.43	270.00
PLM A	0.39	0.67	0.66	14.11	2.03	2.22	0.85	160.00
PLM B	0.20	0.21	0.33	7.06	1.02	1.11	0.42	80.00
KED	0.17	0.21	0.37	7.94	1.14	1.25	0.48	90.00
MER	0.08	0.07	0.12	2.65	0.38	0.42	0.16	30.00
CPP A	0.50	1.16	1.17	23.81	3.43	3.75	1.43	270.00
CPP B	0.55	1.33	1.37	27.78	4.00	4.38	1.67	315.00
RMG A	0.88	2.36	1.19	28.58	4.11	4.50	1.72	324.00
RMG B	0.37	0.98	0.49	11.91	1.71	1.88	0.72	135.00
TPR A	0.48	1.27	1.19	28.67	4.13	4.52	1.72	325.00
TPR B	0.29	0.76	0.77	17.02	2.48	2.71	1.03	195.00
KPG	0.22	0.60	0.46	10.58	1.52	1.67	0.64	120.00
CLC	0.31	0.86	0.58	14.55	2.01	2.29	0.87	165.00
PGG	0.57	1.62	0.70	17.64	2.54	2.78	1.06	200.00
KBY A	1.45	1.31	1.57	38.50	5.54	6.07	2.31	436.50
KBY B	1.08	0.97	1.17	28.58	4.11	4.50	1.72	324.00
KBY C	1.08	0.97	1.17	28.58	4.11	4.50	1.72	324.00
CPA A	0.64	0.24	0.21	6.17	0.89	0.37	0.37	70.00
CPE A	1.94	0.99	0.86	24.70	3.56	3.89	1.48	280.00
PSM A	0.60	0.31	0.22	6.17	0.89	0.97	0.37	70.00
KAL A	2.00	1.60	1.06	28.58	4.11	4.50	1.72	324.00
JGA	0.55	0.16	0.10	3.09	0.44	0.49	0.19	35.00
JTG A	1.10	2.25	1.16	28.67	4.13	4.52	1.72	325.00
JTG B	1.18	2.42	1.25	30.87	4.45	4.87	1.86	350.00
CAW A	1.77	1.68	0.83	29.93	3.30	3.61	1.38	260.00
CAW B	1.33	1.26	0.62	17.20	2.48	2.71	1.03	195.00
PSR	1.74	0.73	0.36	10.58	1.52	1.67	0.64	120.00
TBT A	1.03	1.58	1.22	28.58	4.11	4.50	1.72	324.00
GAN	2.63	0.59	0.29	8.82	1.27	1.39	0.53	100.00
KLD	0.32	0.92	0.27	7.06	1.02	1.11	0.42	80.00
SLDD	8.82	7.06	5.29	–	–	–	–	–
SUB TOM	1.27	1.02	0.76	–	–	–	–	–
OPERATOR	1.92	1.53	1.15	–	–	–	–	–
TOTAL	54.10	66.55	69.86	–	–	–	–	[illegible]

Table II-12 Traffic Distribution as of 1987

FROM \ TO	KT 1	KT 2 A	KT 2 B	KT 2 C	KT 2 D	KT 2 E	CKG A	CKG B	PLT A	PLT B	ANC A	ANC B	TGL	GB 1 A	GB 1 B	GB 1 C	GB 1 D	GB 2 A	GB 2 B	GB 2 C	GB 2 D
KT 1	81.28	22.95	22.95	22.95	22.95	31.12	4.74	4.74	12.42	24.84	11.70	14.62	4.89	34.18	32.77	16.21	16.21	12.62	12.62	41.16	35.68
KT 2 A	20.85	8.44	8.44	8.44	8.44	11.44	1.32	1.32	3.25	6.50	3.78	4.72	1.30	12.32	11.81	5.84	5.84	4.55	4.55	14.83	12.85
KT 2 B	20.85	8.44	8.44	8.44	8.44	11.44	1.32	1.32	3.25	6.50	3.78	4.72	1.30	12.32	11.81	5.84	5.84	4.55	4.55	14.83	12.85
KT 2 C	20.85	8.44	8.44	8.44	8.44	11.44	1.32	1.32	3.25	6.50	3.78	4.72	1.30	12.32	11.81	5.84	5.84	4.55	4.55	14.83	12.85
KT 2 D	20.85	8.44	8.44	8.44	8.44	11.44	1.32	1.32	3.25	6.50	3.78	4.72	1.30	12.32	11.81	5.84	5.84	4.55	4.55	14.83	12.85
KT 2 E	28.27	11.44	11.44	11.44	11.44	15.51	1.79	1.79	4.41	8.81	5.12	6.40	1.77	16.70	16.01	7.92	7.92	6.17	6.17	20.11	17.43
CKG A	8.88	2.72	2.72	2.72	2.72	3.68	4.23	4.23	2.38	4.75	1.29	1.61	3.10	5.09	4.88	2.41	2.41	1.90	1.90	6.19	5.37
CKG B	8.88	2.72	2.72	2.72	2.72	3.68	4.23	4.23	2.38	4.75	1.29	1.61	3.10	5.09	4.88	2.41	2.41	1.90	1.90	6.19	5.37
PLT A	15.14	4.36	4.36	4.36	4.36	5.91	1.55	1.55	4.30	8.60	2.25	2.81	1.68	6.76	6.48	3.21	3.21	2.47	2.47	8.06	6.99
PLT B	30.28	8.72	8.72	8.72	8.72	11.83	3.09	3.09	8.60	17.20	4.48	5.61	3.35	13.52	12.96	6.41	6.41	4.94	4.94	16.12	13.97
ANC A	12.25	4.35	4.35	4.35	4.35	5.90	0.72	0.72	1.93	3.86	3.69	4.62	0.76	6.95	6.67	3.30	3.30	2.81	2.81	9.16	7.94
ANC B	15.31	5.44	5.44	5.44	5.44	7.38	0.90	0.90	2.41	4.82	4.62	5.77	0.95	8.69	8.33	4.12	4.12	3.51	3.51	11.45	9.92
TGL	10.17	2.99	2.99	2.99	2.99	4.05	3.45	3.45	2.86	5.72	1.51	1.89	5.00	5.17	4.96	2.45	2.45	1.91	1.91	6.23	5.40
GB 1 A	27.78	11.02	11.02	11.02	11.02	14.94	2.21	2.21	4.51	9.01	5.40	6.74	2.02	33.05	31.68	15.67	15.67	11.98	11.98	39.01	33.81
GB 1 B	29.90	11.86	11.86	11.86	11.86	16.08	2.38	2.38	4.85	9.70	5.81	7.26	2.18	35.57	34.11	16.87	16.87	12.88	12.88	42.00	36.39
GB 1 C	13.17	5.23	5.23	5.23	5.23	7.08	1.05	1.05	2.14	4.27	2.56	3.20	0.96	15.67	15.02	7.43	7.43	5.67	5.67	18.50	16.03
GB 1 D	13.17	5.23	5.23	5.23	5.23	7.08	1.05	1.05	2.14	4.27	2.56	3.20	0.96	15.67	15.02	7.43	7.43	5.67	5.67	18.50	16.03
GB 2 A	10.19	4.04	4.04	4.04	4.04	5.48	0.82	0.82	1.64	3.27	2.17	2.71	0.74	11.88	11.39	5.63	5.63	7.38	7.38	24.06	20.86
GB 2 B	10.19	4.04	4.04	4.04	4.04	5.48	0.82	0.82	1.64	3.27	2.17	2.71	0.74	11.88	11.39	5.63	5.63	7.38	7.38	24.06	20.86
GB 2 C	33.22	13.18	13.18	13.18	13.18	17.87	2.67	2.67	5.34	10.67	7.06	8.83	2.42	38.74	37.14	18.37	18.37	24.06	24.06	78.47	68.01
GB 2 D	28.79	11.42	11.42	11.42	11.42	15.49	2.31	2.31	4.62	9.25	6.12	7.65	2.09	33.57	32.19	15.92	15.92	20.86	20.86	68.01	58.94
SM 1 A	11.40	4.35	4.35	4.35	4.35	5.89	1.24	1.24	1.96	3.93	2.13	2.66	1.03	13.03	12.50	6.18	6.18	6.56	6.56	21.40	18.55
SM 1 B	13.76	5.24	5.24	5.24	5.24	7.11	1.49	1.49	2.37	4.74	2.57	3.21	1.25	15.73	15.08	7.46	7.46	7.92	7.92	25.83	22.38
SM 2 A	8.59	3.46	3.46	3.46	3.46	4.69	1.00	1.00	1.57	3.13	1.70	2.12	0.83	10.28	9.86	4.88	4.88	5.44	5.44	12.75	15.38
SM 2 B	13.69	5.27	5.27	5.27	5.27	7.14	1.53	1.53	2.38	4.76	2.58	3.22	1.27	15.64	15.00	7.42	7.42	8.28	8.28	27.00	23.40
SLP A	10.25	3.61	3.61	3.61	3.61	4.89	1.10	1.10	1.93	3.86	1.61	2.02	0.99	7.85	7.53	3.72	3.72	2.93	2.93	9.55	8.28
SLP B	30.75	10.82	10.82	10.82	10.82	14.67	3.30	3.30	5.80	11.59	4.84	6.05	2.96	23.56	22.59	11.17	11.17	8.79	8.79	28.66	24.84
PLM A	5.83	2.09	2.09	2.09	2.09	2.84	0.86	0.86	1.13	2.27	0.97	1.21	0.69	5.57	5.34	2.64	2.64	2.39	2.39	7.79	6.76
PLM	5.83	2.09	2.09	2.09	2.09	2.84	0.86	0.86	1.13	2.27	0.97	1.21	0.69	5.57	5.34	2.64	2.64	2.39	2.39	7.79	6.76
KED	9.06	2.94	2.94	2.94	2.94	3.99	1.84	1.84	2.05	4.09	1.34	1.68	1.50	6.28	6.02	2.98	2.98	2.41	2.41	7.87	6.82
MER	3.81	1.33	1.33	1.33	1.33	1.80	0.75	0.75	0.79	1.59	0.60	0.75	0.57	3.29	3.15	1.56	1.56	1.41	1.41	4.60	3.99
CPP A	11.54	4.62	4.62	4.62	4.62	6.27	0.77	0.77	1.78	3.56	2.85	3.56	0.74	11.02	10.56	5.22	5.22	5.38	5.38	17.56	15.22
CPP B	21.16	8.48	8.48	8.48	8.48	11.49	1.41	1.41	3.27	6.53	5.22	6.53	1.35	20.20	19.37	9.58	9.58	9.87	9.87	32.19	27.50
RMG A	9.82	3.89	3.89	3.89	3.89	5.28	0.67	0.67	1.50	3.00	2.55	3.19	0.62	9.85	9.45	4.67	4.67	5.65	5.65	18.42	15.97
RMG B	8.18	3.25	3.25	3.25	3.25	4.40	0.55	0.55	1.25	2.50	2.12	2.66	0.52	8.21	7.87	3.89	3.89	4.71	4.71	15.36	13.31
TPR A	15.95	5.73	5.73	5.73	5.73	7.76	0.95	0.95	2.64	5.28	4.81	6.01	1.05	9.81	9.40	4.65	4.65	4.34	4.34	14.14	12.26
TPR B	20.68	7.42	7.42	7.42	7.42	10.06	1.23	1.23	3.42	6.85	6.24	7.80	1.36	12.72	12.19	6.03	6.03	5.62	5.62	18.33	15.89
KPG	13.06	5.03	5.03	5.03	5.03	6.82	0.78	0.78	2.02	4.03	3.78	4.73	0.80	10.21	9.79	4.84	4.84	4.94	4.94	16.11	13.96
CLC	12.47	4.57	4.57	4.57	4.57	6.19	0.73	0.73	2.00	4.01	3.72	4.65	0.96	8.56	8.21	4.06	4.06	4.06	4.06	13.24	11.47
PGG	11.91	4.72	4.72	4.72	4.72	6.41	0.76	0.76	1.80	3.60	3.25	4.06	0.73	11.03	10.58	5.23	5.23	6.20	6.20	20.22	17.53
KBY A	12.35	4.66	4.66	4.66	4.66	6.32	1.69	1.69	2.26	4.52	2.22	2.77	1.34	13.43	12.88	6.37	6.37	6.70	6.70	21.84	18.92
KBY B	9.17	3.46	3.46	3.46	3.46	4.69	1.25	1.25	1.68	3.35	1.64	2.06	0.99	9.97	9.56	4.73	4.73	4.97	4.97	16.21	14.05
KBY C	9.17	3.46	3.46	3.46	3.46	4.69	1.25	1.25	1.68	3.35	1.64	2.06	0.99	9.97	9.56	4.73	4.73	4.97	4.97	16.21	14.05
CPA A	3.35	1.24	1.24	1.24	1.24	1.68	0.55	0.55	0.64	1.29	0.58	0.73	0.50	3.54	3.39	1.68	1.68	1.82	1.82	5.92	5.13
CPE A	6.73	2.56	2.56	2.56	2.56	3.48	1.05	1.05	1.24	2.49	1.23	1.54	0.80	7.39	7.08	3.50	3.50	3.99	3.99	13.01	11.27
PSM A	3.10	1.22	1.22	1.22	1.22	1.65	0.40	0.40	0.54	1.09	0.61	0.76	0.31	3.61	3.46	1.71	1.71	2.07	2.07	4.75	5.85
KAL A	7.26	2.88	2.88	2.88	2.88	3.91	0.79	0.79	1.23	2.45	1.48	1.85	0.64	8.64	8.28	4.10	4.10	5.10	5.10	16.65	14.43
KAL B	3.63	1.44	1.44	1.44	1.44	1.95	0.39	0.39	0.61	1.23	0.74	0.93	0.32	4.32	4.14	2.05	2.05	2.55	2.55	4.32	7.21
JGA	2.19	0.84	0.84	0.84	0.84	1.14	0.30	0.30	0.38	0.77	0.43	0.54	0.23	2.50	2.40	1.19	1.19	1.45	1.45	4.73	4.10
JTG A	8.57	3.43	3.43	3.43	3.43	4.66	0.67	0.67	1.35	2.70	1.99	2.49	0.60	9.70	9.30	4.60	4.60	5.97	5.97	19.46	16.86
JTG B	15.83	6.34	6.34	6.34	6.34	8.60	1.25	1.25	2.49	4.98	3.68	4.60	1.11	17.91	17.17	8.49	8.49	11.02	11.02	35.92	31.13
CAW A	5.70	2.29	2.29	2.29	2.29	3.10	0.54	0.54	0.93	1.87	1.25	1.56	0.55	6.73	6.51	3.22	3.22	4.17	4.17	13.61	11.80
CAW B	11.41	4.57	4.57	4.57	4.57	6.20	1.08	1.08	1.87	3.74	2.50	3.12	1.11	13.57	13.01	6.44	6.44	8.35	8.35	27.22	23.59
PSR	4.04	1.60	1.60	1.60	1.60	2.17	0.44	0.44	0.67	1.35	0.86	1.07	0.35	4.80	4.60	2.28	2.28	2.89	2.89	9.44	8.18
TBT A	8.71	3.49	3.49	3.49	3.49	4.73	0.77	0.77	1.41	2.82	1.87	2.34	0.66	10.25	9.83	4.86	4.86	6.31	6.31	20.56	17.82
TBT B	3.63	1.45	1.45	1.45	1.45	1.97	0.32	0.32	0.59	1.18	0.78	0.97	0.27	4.27	4.10	2.03	2.03	2.63	2.63	8.57	7.43
GAN	3.91	1.57	1.57	1.57	1.57	2.12	0.45	0.45	0.67	1.35	0.83	1.04	0.36	4.65	4.46	2.21	2.21	2.80	2.80	9.14	7.92
KLO	5.16	2.07	2.07	2.07	2.07	2.80	0.38	0.38	0.80	1.61	1.30	1.62	0.42	5.61	5.38	2.66	2.66	3.38	3.38	11.02	9.55
SLDD	103.10	34.85	34.85	34.85	34.85	47.26	17.26	17.18	21.48	42.96	21.48	26.85	12.72	72.92	69.92	34.58	34.58	34.58	34.58	112.77	97.73
SUB TOM	12.97	4.32	4.32	4.32	4.32	5.85	2.13	2.13	2.66	5.32	2.66	3.33	2.39	9.03	9.72	4.28	4.28	4.28	4.28	13.97	12.10
OPERATOR	19.20	6.49	6.49	6.49	6.49	8.80	3.20	3.20	4.00	8.00	4.00	5.00	3.30	13.58	13.02	6.44	6.44	6.44	6.44	21.00	18.20
TOTAL	957.37	348.57	348.57	348.57	348.57	472.64	101.15	101.15	171.55	343.10	192.52	240.65	96.61	792.32	759.66	375.74	375.74	378.05	378.05	1232.77	1068.40

FROM \ TO	SM 1 A	SM 1 B	SM 2 A	SM 2 B	SLP A	SLP B	PLM A	PLM B	KED	MER	CPP A	CPP B	RMG A	RMG B	TPR A	TPR B	KPG	CLC	PGG	KBY A	KBY B	KBY C
KT 1	12.98	15.66	9.83	14.96	10.80	32.39	5.62	5.62	7.20	2.99	13.00	23.83	9.41	7.84	11.61	15.05	11.35	7.13	8.34	12.06	8.95	8.95
KT 2 A	4.49	5.42	3.44	5.23	3.45	10.35	1.83	1.83	2.12	0.95	4.73	8.67	3.39	2.83	3.78	4.91	3.97	2.37	3.37	4.13	3.07	3.07
KT 2 B	4.49	5.42	3.44	5.23	3.45	10.35	1.83	1.83	2.12	0.95	4.73	8.67	3.39	2.83	3.78	4.91	3.97	2.37	3.37	4.13	3.07	3.07
KT 2 C	4.49	5.42	3.44	5.23	3.45	10.35	1.83	1.83	2.12	0.95	4.73	8.67	3.39	2.83	3.78	4.91	3.97	2.37	3.37	4.13	3.07	3.07
KT 2 D	4.49	5.42	3.44	5.23	3.45	10.35	1.83	1.83	2.12	0.95	4.73	8.67	3.39	2.83	3.78	4.91	3.97	2.37	3.37	4.13	3.07	3.07
KT 2 E	6.09	7.35	4.68	7.09	4.68	14.04	2.48	2.48	2.88	1.28	6.41	11.76	4.60	3.83	5.13	6.65	5.38	3.22	4.56	5.60	4.16	4.16
CKG A	2.64	3.18	2.06	3.13	2.17	6.51	1.56	1.56	2.75	1.11	1.62	2.96	1.19	1.00	1.29	1.68	1.28	0.79	1.12	3.08	2.29	2.29
CKG B	2.64	3.18	2.06	3.13	2.17	6.51	1.56	1.56	2.75	1.11	1.62	2.96	1.19	1.00	1.29	1.68	1.28	0.79	1.12	3.08	2.29	2.29
PLT A	2.73	3.29	2.09	3.17	2.48	7.44	1.33	1.33	1.98	0.76	2.45	4.48	1.75	1.46	2.34	3.04	2.14	1.40	1.72	2.69	2.00	2.00
PLT B	5.45	6.58	4.17	6.35	4.96	14.89	2.66	2.66	3.96	1.52	4.89	8.97	3.51	2.92	4.68	6.07	4.27	2.79	3.44	5.38	3.99	3.99
ANC A	2.54	3.06	1.96	2.95	1.78	5.34	0.97	0.97	1.12	0.49	3.36	6.16	2.56	2.13	3.67	4.75	3.44	2.23	2.67	2.28	1.68	1.68
ANC B	3.17	3.83	2.43	3.69	2.23	6.68	1.22	1.22	1.40	0.62	4.20	7.70	3.20	2.66	4.58	5.94	4.31	2.75	3.34	2.83	2.10	2.10
TGL	2.45	2.95	1.89	2.88	2.16	6.48	1.39	1.39	2.47	0.94	1.73	3.17	1.24	1.02	1.59	2.06	1.45	1.15	1.19	2.72	2.02	2.02
GB 1 A	12.06	14.55	9.13	13.90	6.72	20.17	4.36	4.36	4.06	2.10	10.08	18.49	7.68	6.40	5.80	7.52	7.21	3.98	7.03	10.66	7.91	7.91
GB 1 B	12.98	15.66	9.84	14.96	7.24	21.72	4.69	4.69	4.37	2.26	10.86	19.91	8.26	6.88	6.24	8.10	7.76	4.28	7.57	11.48	8.51	8.51
GB 1 C	5.72	6.90	4.33	6.59	3.19	9.57	2.07	2.07	1.92	1.00	4.78	8.77	3.64	3.03	2.75	3.57	3.42	1.89	3.33	5.05	3.75	3.75
GB 1 D	5.72	6.90	4.33	6.59	3.19	9.57	2.07	2.07	1.92	1.00	4.78	8.77	3.64	3.03	2.75	3.57	3.42	1.89	3.33	5.05	3.75	3.75
GB 2 A	6.03	7.28	4.80	7.31	2.49	7.47	1.86	1.86	1.55	0.90	4.89	8.97	4.37	3.64	2.55	3.30	3.46	1.87	3.90	5.28	3.92	3.92
GB 2 B	6.03	7.28	4.80	7.31	2.49	7.47	1.86	1.86	1.55	0.90	4.89	8.97	4.37	3.64	2.55	3.30	3.46	1.87	3.90	5.28	3.92	3.92
GB 2 C	19.66	23.72	15.65	23.82	8.12	24.36	6.06	6.06	5.05	2.92	15.96	29.26	14.25	11.88	8.31	10.77	11.30	6.11	12.80	17.20	12.77	12.77
GB 2 D	17.04	20.56	13.57	20.65	7.04	21.12	5.25	5.25	4.38	2.53	13.83	25.36	12.35	10.29	7.20	9.33	9.79	5.30	11.09	14.91	11.07	11.07
SM 1 A	11.01	13.29	8.34	12.70	3.37	10.11	3.20	3.20	2.39	1.57	4.40	8.06	3.97	3.30	2.33	3.03	3.08	1.68	3.53	9.64	7.15	7.15
SM 1 B	13.29	16.04	10.07	15.32	4.07	12.20	3.86	3.86	2.88	1.90	5.31	9.73	4.79	3.99	2.82	3.65	3.72	2.03	4.26	11.63	8.63	8.63
SM 2 A	8.69	10.48	8.37	12.73	2.66	7.98	2.84	2.84	1.94	1.33	3.68	6.75	3.46	2.86	1.92	2.48	2.58	1.41	3.07	8.92	6.62	6.62
SM 2 B	13.22	15.95	12.73	19.37	4.05	12.14	4.33	4.33	2.95	2.02	5.60	10.27	5.26	4.38	2.92	3.78	3.93	2.15	4.68	12.57	10.08	10.08
SLP A	3.64	4.40	2.76	4.20	3.35	10.05	1.74	1.74	2.00	0.92	2.44	4.48	1.75	1.46	1.62	2.10	1.82	1.03	1.69	3.63	2.69	2.69
SLP B	10.93	13.19	8.28	12.59	10.05	30.16	5.23	5.23	6.00	2.79	7.33	13.45	5.26	4.38	4.85	6.29	5.46	3.10	5.06	10.89	8.08	8.08
PLM A	3.78	4.56	3.23	4.91	1.91	5.72	2.34	2.34	1.67	1.12	1.73	3.18	1.43	1.19	0.99	1.28	1.22	0.67	1.28	4.55	3.38	3.38
PLM	3.78	4.56	3.23	4.91	1.91	5.72	2.34	2.34	1.67	1.12	1.73	3.18	1.43	1.19	0.99	1.28	1.22	0.67	1.28	4.55	3.38	3.38
KED	3.42	4.13	2.67	4.06	2.65	7.96	2.02	2.02	3.60	1.33	1.94	3.55	1.47	1.22	1.33	1.73	1.44	0.84	1.35	3.92	2.91	2.91
MER	2.27	2.75	1.85	2.81	1.23	3.69	1.37	1.37	1.34	1.12	1.01	1.86	0.84	0.70	0.61	0.79	0.72	0.40	0.75	3.00	2.23	2.23
CPP A	4.44	5.36	3.57	5.44	2.29	6.86	1.48	1.48	1.37	0.71	7.05	12.92	5.05	4.21	3.63	4.71	4.54	2.70	4.87	3.89	2.89	2.89
CPP B	8.14	9.83	6.55	9.97	4.19	12.58	2.72	2.72	2.50	1.30	12.92	23.69	9.26	7.72	6.66	8.63	9.06	4.95	8.92	7.13	5.29	5.29
RMG A	4.71	5.68	3.94	6.00	1.33	5.78	1.44	1.44	1.22	0.69	5.94	10.88	5.66	8.05	3.89	5.04	5.85	3.53	8.59	4.20	3.12	3.12
RMG B	3.92	4.74	3.29	5.00	1.61	4.82	1.20	1.20	1.02	0.57	4.95	9.07	8.05	6.71	3.24	4.20	4.87	2.94	7.16	3.50	2.60	2.60
TPR A	3.65	4.41	2.88	4.38	2.34	7.03	1.31	1.31	1.46	0.66	5.62	10.30	5.12	4.27	12.72	16.49	8.17	7.36	6.33	3.19	2.37	2.37
TPR B	4.73	5.71	3.73	5.68	3.04	9.11	1.69	1.69	1.89	0.85	7.29	13.36	6.64	5.53	16.49	21.38	10.60	9.54	8.21	4.14	3.07	3.07
KPG	4.03	4.87	3.75	6.94	2.29	6.62	1.35	1.35	1.37	0.66	6.60	11.74	6.49	5.37	6.84	8.87	10.39	5.68	7.74	3.50	2.59	2.59
CLC	3.35	4.04	2.69	4.10	1.91	5.72	1.13	1.13	1.16	0.55	5.31	9.74	5.91	4.93	9.37	12.14	8.62	13.88	9.33	2.90	2.15	2.15
PGG	5.12	6.18	4.28	6.52	2.27	6.80	1.58	1.58	1.37	0.75	6.95	12.81	10.50	8.75	5.88	7.62	8.57	6.07	16.67	4.57	3.39	3.39
KBY A	11.24	13.56	9.99	15.20	3.92	11.75	4.49	4.49	3.19	2.42	4.49	8.22	4.13	3.44	2.38	3.09	3.11	1.70	3.67	17.21	12.78	12.78
KBY B	8.34	10.07	7.41	11.28	2.91	8.72	3.33	3.33	2.37	1.79	3.33	6.10	3.06	2.55	1.77	2.29	2.31	1.26	2.72	12.78	9.48	9.48
KBY C	8.34	10.07	7.41	11.28	2.91	8.72	3.33	3.33	2.37	1.79	3.33	6.10	3.06	2.55	1.77	2.29	2.31	1.26	2.72	12.78	9.48	9.48
CPA A	2.99	3.61	2.79	4.25	1.08	3.25	1.33	1.33	1.08	0.91	1.22	2.23	1.26	1.05	0.64	0.83	0.85	0.48	1.16	4.49	3.33	3.33
CPE A	6.43	7.76	6.01	9.15	2.13	6.40	2.55	2.55	1.88	1.56	2.65	4.85	2.72	2.26	1.36	1.77	1.87	1.03	2.47	9.19	6.82	6.82
PSM A	3.02	3.65	2.91	4.43	0.94	2.83	1.06	1.06	0.75	0.59	1.39	2.54	1.58	1.31	0.71	0.93	1.02	0.58	1.46	3.98	2.96	2.96
KAL A	6.81	8.21	6.42	9.78	2.06	6.19	2.12	2.12	1.50	1.10	3.56	6.52	4.12	3.44	1.83	2.38	2.62	1.51	3.81	7.72	5.73	5.73
KAL B	3.40	4.11	3.21	4.89	1.03	3.09	1.06	1.06	0.75	0.55	1.78	3.26	2.06	1.72	0.92	1.19	1.31	0.75	1.91	3.86	2.87	2.87
JGA	2.12	2.55	2.02	3.07	0.68	1.98	0.76	0.76	0.55	0.45	0.99	1.82	1.18	0.97	0.51	0.66	0.73	0.42	1.11	2.65	2.11	2.11
JTG A	5.61	6.77	4.86	7.36	2.03	6.10	1.63	1.63	1.28	0.79	4.93	9.04	6.38	5.31	2.70	3.50	3.97	2.31	5.84	5.21	3.87	3.87
JTG B	10.35	12.49	8.93	13.59	3.75	11.26	3.00	3.00	2.36	1.46	9.10	16.69	11.77	9.81	4.98	6.46	7.34	4.26	10.78	9.62	7.14	7.14
CAW A	4.84	5.84	4.48	6.81	1.51	4.53	1.45	1.45	1.05	0.73	3.09	5.66	4.00	3.33	1.66	2.15	2.44	1.45	3.88	5.17	3.84	3.84
CAW B	9.68	11.68	8.95	13.63	3.02	9.07	2.89	2.89	2.10	1.47	6.18	11.33	7.99	6.66	3.31	4.30	4.88	2.89	7.70	10.34	7.68	7.68
PSR	4.48	5.41	3.50	5.33	1.12	3.37	1.18	1.18	0.84	0.63	2.10	3.59	2.72	2.26	1.13	1.46	1.66	1.00	2.70	4.42	3.28	3.28
TBT A	6.61	7.98	5.76	8.77	2.26	6.78	1.92	1.92	1.48	0.93	4.44	8.14	6.84	4.04	2.31	3.00	3.24	1.84	4.31	6.15	4.56	4.56
TBT B	2.76	3.33	2.40	3.65	0.94	2.82	0.80	0.80	0.62	0.39	1.85	3.39	2.02	1.68	0.96	1.25	1.35	0.77	1.79	2.56	1.90	1.90
GAN	3.66	4.42	3.49	5.32	1.11	3.31	1.20	1.20	0.85	0.66	1.99	3.64	2.63	2.19	1.08	1.40	1.59	0.97	2.64	4.55	3.38	3.38
KLO	3.08	3.72	2.69	4.09	1.15	3.46	0.90	0.90	0.72	0.43	3.15	5.77	4.92	4.10	1.98	2.57	3.01	1.91	5.24	2.86	2.13	2.13
SLDD	40.49	48.87	34.58	52.63	21.48	64.44	17.18	17.18	19.33	10.74	32.22	59.07	34.80	29.00	34.80	45.11	34.37	32.22	41.35	46.88	34.80	34.80
SUB TOM	5.01	6.05	4.28	6.52	2.66	7.98	2.13	2.13	2.39	1.33	3.99	7.32	4.31	3.59	4.31	5.59	4.26	3.99	5.12	5.81	4.31	4.31
OPERATOR	7.54	9.10	6.44	9.80	4.00	12.00	3.20	3.20	3.60	2.00	6.00	11.00	6.48	5.40	6.48	8.40	6.40	6.00	7.70	8.73	6.48	6.48
TOTAL	416.79	503.03	345.55	525.84	207.41	622.23	155.01	155.01	150.56	82.82	327.69	600.76	313.06	260.88	256.16	332.07	287.51	196.19	318.78	429.63	318.90	318.90

FROM \ TO	CPA A	CPE A	PSM A	KAL A	KAL B	JGA	JTG A	JTG B	CAW A	CAW B	PSR	TBT A	TBT B	GAN	KLO	GBOID	SLDD	SUB TOM	10 X	11 X	TOTAL
KT 1	1.18	4.46	2.23	6.42	3.21	1.07	8.89	16.41	4.81	9.63	2.48	9.70	4.04	1.84	4.35	4.03	103.10	12.77	13.92	5.28	960.00
KT 2 A	0.40	1.54	0.80	2.31	1.16	0.37	3.24	5.97	1.75	3.50	0.89	3.53	1.47	0.67	1.58	1.45	34.85	4.32	4.71	1.78	324.50
KT 2 B	0.40	1.54	0.80	2.31	1.16	0.37	3.24	5.97	1.75	3.50	0.89	3.53	1.47	0.67	1.58	1.45	34.85	4.32	4.71	1.78	324.50
KT 2 C	0.40	1.54	0.80	2.31	1.16	0.37	3.24	5.97	1.75	3.50	0.89	2.51	1.47	0.67	1.58	1.45	34.85	4.32	4.71	1.78	324.50
KT 2 D	0.40	1.54	0.80	2.31	1.16	0.37	3.24	5.97	1.75	3.50	0.89	3.53	1.47	0.67	1.58	1.45	34.85	4.32	4.71	1.78	324.50
KT 2 E	0.54	2.09	1.08	3.14	1.57	0.51	4.39	8.10	2.38	4.75	1.21	4.78	1.99	0.91	2.14	1.97	47.26	5.85	6.38	2.42	440.00
CKG A	0.36	1.30	0.54	1.30	0.65	0.28	1.31	2.42	0.85	1.70	0.50	1.60	0.67	0.40	0.60	0.60	17.18	2.13	2.32	0.88	160.00
CKG B	0.36	1.30	0.54	1.30	0.65	0.28	1.31	2.42	0.85	1.70	0.50	1.60	0.67	0.40	0.60	0.60	17.18	2.13	2.32	0.88	160.00
PLT A	0.28	1.01	0.48	1.32	0.66	0.23	1.71	3.15	0.96	1.92	0.51	1.92	0.80	0.39	0.83	0.80	21.48	2.66	2.90	1.10	200.00
PLT B	0.55	2.01	0.96	2.64	1.32	0.46	3.41	6.30	1.92	3.85	1.01	3.84	1.60	0.77	1.65	1.59	42.96	5.32	5.80	2.20	400.00
ANC A	0.21	0.85	0.46	1.37	0.69	0.22	2.16	4.00	1.10	2.21	0.55	2.18	0.91	0.41	1.15	0.82	21.48	2.66	2.90	1.10	200.00
ANC B	0.27	1.07	0.57	1.72	0.86	0.27	2.71	5.00	1.38	2.76	0.69	2.72	1.14	0.51	1.43	1.02	26.85	3.33	3.63	1.38	250.00
TGL	0.36	1.10	0.47	1.18	0.59	0.23	1.29	2.39	0.97	1.95	0.45	1.53	0.64	0.35	0.73	0.61	17.72	2.19	2.39	0.91	165.00
GB 1 A	1.01	3.98	2.11	6.21	3.10	0.99	8.18	15.09	4.65	9.31	2.40	9.28	3.87	1.78	3.84	3.89	72.92	9.03	9.85	3.73	679.00
GB 1 B	1.09	4.29	2.28	6.68	3.35	1.07	8.80	16.25	5.01	10.03	2.58	9.99	4.17	1.91	4.13	4.19	78.51	9.72	10.60	4.02	731.00
GB 1 C	0.48	1.89	1.00	2.94	1.47	0.47	3.88	7.16	2.21	4.42	1.14	4.40	1.83	0.84	1.82	1.85	34.58	4.28	4.67	1.77	322.00
GB 1 D	0.48	1.89	1.00	2.94	1.47	0.47	3.88	7.16	2.21	4.42	1.14	4.40	1.83	0.84	1.82	1.85	34.58	4.28	4.67	1.77	322.00
GB 2 A	0.51	2.14	1.20	3.64	1.82	0.57	4.99	9.22	2.84	5.69	1.44	5.67	2.36	1.06	2.30	1.40	34.58	4.28	4.67	1.77	322.00
GB 2 B	0.51	2.14	1.20	3.64	1.82	0.57	4.99	9.22	2.84	5.69	1.44	5.67	2.36	1.06	2.30	1.40	34.58	4.28	4.67	1.77	322.00
GB 2 C	1.68	6.97	3.93	11.88	5.94	1.86	16.28	30.06	9.27	18.54	4.69	18.48	7.70	3.47	7.50	4.56	112.77	13.97	15.23	5.78	1050.00
GB 2 D	1.45	6.04	3.40	10.29	5.15	1.61	14.11	26.05	8.03	16.07	4.06	16.02	6.68	3.01	6.50	3.96	97.75	12.10	13.20	5.01	910.00
SM 1 A	0.92	3.75	1.91	5.29	2.64	0.91	5.11	9.43	3.59	7.18	2.42	6.47	2.70	1.51	2.28	1.54	40.69	5.01	5.47	2.07	377.00
SM 1 B	1.11	4.53	2.31	6.38	3.19	1.09	6.16	11.38	4.33	8.66	2.92	7.81	3.25	1.83	2.75	1.85	48.89	6.05	6.60	2.50	455.00
SM 2 A	0.90	3.65	1.92	5.20	2.60	0.90	4.59	8.47	3.46	6.91	1.97	5.87	2.45	1.50	2.07	1.21	34.58	4.28	4.67	1.77	322.00
SM 2 B	1.36	5.55	2.92	7.91	3.95	1.37	6.98	12.83	5.26	10.52	3.00	8.94	3.72	2.29	3.15	1.84	52.61	6.52	7.11	2.70	490.00
SLP A	0.36	1.34	0.65	1.73	0.87	0.31	2.00	3.70	1.21	2.42	0.66	2.39	1.00	0.50	0.92	0.93	21.48	2.66	2.90	1.10	200.00
SLP B	1.09	4.03	1.96	5.19	2.60	0.92	6.01	11.09	3.63	7.26	1.97	7.17	2.99	1.49	2.77	2.78	64.44	7.98	8.70	3.30	600.00
PLM A	0.49	1.75	0.79	1.94	0.97	0.39	1.75	3.23	1.27	2.54	0.75	2.22	0.93	0.59	0.79	0.66	17.18	2.13	2.32	0.88	160.00
PLM	0.49	1.75	0.79	1.94	0.97	0.39	1.75	3.23	1.27	2.54	0.75	2.22	0.93	0.59	0.79	0.66	17.18	2.13	2.32	0.88	160.00
KED	0.48	1.57	0.68	1.67	0.84	0.36	1.67	3.08	1.11	2.22	0.65	2.07	0.86	0.50	0.76	0.74	19.32	2.39	2.61	0.99	180.00
MER	0.41	1.32	0.54	1.23	0.62	0.28	1.04	1.93	0.79	1.57	0.49	1.32	0.55	0.39	0.46	0.39	10.74	1.33	1.45	0.55	100.00
CPP A	0.38	1.56	0.89	2.79	1.40	0.43	4.54	8.38	2.32	4.63	1.15	4.39	1.83	0.83	2.36	1.30	32.22	3.99	4.35	1.65	300.00
CPP B	0.70	2.86	1.63	5.12	2.56	0.79	8.32	15.36	4.24	8.49	2.10	8.05	3.35	1.53	4.32	2.38	59.07	7.32	7.98	3.03	550.00
RMG A	0.46	1.88	1.18	3.60	1.90	0.59	6.90	12.73	3.52	7.04	1.74	5.63	2.35	1.29	4.33	1.16	34.80	4.31	4.70	1.78	324.00
RMG B	0.39	1.57	0.93	3.17	1.58	0.49	5.75	10.61	2.93	5.86	1.45	4.65	1.95	1.08	3.61	0.97	29.00	3.59	3.92	1.49	270.00
TPR A	0.31	1.24	0.71	2.23	1.11	0.34	3.84	7.10	1.92	3.84	0.95	3.54	1.47	0.70	2.30	1.16	34.80	4.21	4.70	1.78	324.00
TPR B	0.40	1.61	0.92	2.89	1.44	0.44	4.98	9.20	2.49	4.98	1.23	4.59	1.91	0.91	2.98	1.50	45.11	5.59	6.09	2.31	420.00
KPG	0.26	1.43	0.85	2.67	1.33	0.41	4.74	8.76	2.37	4.74	1.17	4.15	1.73	0.86	2.92	1.20	37	4.26	4.64	1.76	320.00
CLC	0.29	1.20	0.72	2.33	1.16	0.36	4.18	7.72	2.13	4.26	1.08	3.59	1.49	0.80	2.81	1.01	32.22	3.99	4.35	1.65	300.00
PGG	0.52	2.09	1.34	4.30	2.15	0.69	7.72	14.26	4.14	8.28	2.31	6.12	2.55	1.58	5.63	1.30	41.35	5.12	5.58	2.12	385.00
KBY A	1.61	6.24	2.94	7.00	3.50	1.42	5.53	10.22	4.47	8.94	2.79	7.01	2.92	2.19	2.47	1.58	46.88	5.81	6.33	2.40	436.00
KBY B	1.20	4.64	2.18	5.19	2.60	1.05	4.11	7.58	3.32	6.64	2.07	5.21	2.17	1.63	1.84	1.17	34.80	4.31	4.70	1.78	324.00
KBY C	1.20	4.64	2.18	5.19	2.60	1.05	4.11	7.58	3.32	6.64	2.07	5.21	2.17	1.63	1.84	1.17	34.80	4.31	4.70	1.78	324.00
CPA A	4.92	4.79	1.87	3.10	1.55	1.66	1.76	3.25	1.98	3.96	1.90	2.12	0.88	1.98	0.87	0.42	15.04	1.86	2.03	0.77	140.00
CPE A	2.54	10.42	3.67	6.41	3.20	2.19	3.83	7.07	4.01	8.03	3.25	4.66	1.94	2.88	1.84	0.87	30.07	3.72	4.06	1.54	280.00
PSM A	0.91	3.38	2.40	3.90	1.95	1.12	2.22	4.10	2.55	5.09	2.10	2.57	1.07	1.75	1.12	0.43	15.04	1.86	2.03	0.77	140.00
KAL A	1.23	4.81	3.18	10.22	5.11	1.55	5.75	10.62	6.34	12.67	3.81	6.53	2.72	2.90	2.90	1.02	34.37	4.26	4.64	1.76	320.00
KAL B	0.62	2.40	1.59	5.11	2.55	0.78	2.88	5.31	3.17	6.34	1.92	3.26	1.36	1.45	1.45	0.51	17.18	2.12	2.22	0.88	160.00
JGA	1.20	2.98	1.56	2.82	1.41	2.00	1.65	3.05	2.03	4.06	2.21	1.84	0.77	2.38	0.88	0.29	11.28	1.40	1.52	0.58	105.00
JTG A	0.60	2.49	1.54	4.90	2.49	0.78	8.98	16.59	4.45	8.89	2.20	6.84	2.85	1.62	4.14	1.14	34.91	4.32	4.71	1.79	325.00
JTG B	1.10	4.52	2.85	9.05	4.53	1.43	16.59	30.62	8.21	16.42	4.07	12.62	5.26	2.98	7.64	2.11	64.44	7.98	8.70	3.30	600.00
CAW A	0.82	3.16	2.17	6.64	3.32	1.17	5.46	10.09	7.06	14.13	3.43	5.45	2.27	2.57	3.04	0.80	27.92	3.46	3.77	1.43	260.00
CAW B	1.65	6.31	4.35	13.27	6.64	2.34	10.93	20.18	14.13	28.26	6.86	10.89	4.54	5.13	6.09	1.60	55.85	6.92	7.54	2.86	520.00
PSR	1.08	3.50	2.46	5.51	2.76	1.75	3.71	6.86	4.71	9.41	5.74	3.82	1.59	4.16	2.17	0.57	21.48	2.66	2.90	1.10	200.00
TBT A	0.67	2.78	1.66	5.18	2.59	0.80	6.37	11.75	4.13	8.26	2.11	8.31	3.46	1.53	2.93	1.21	34.80	4.31	4.70	1.78	324.00
TBT B	0.28	1.16	0.69	2.16	1.08	0.33	2.65	4.90	1.72	3.44	0.88	3.46	1.44	0.64	1.22	0.50	14.50	1.80	1.96	0.74	135.00
GAN	1.47	4.06	2.69	5.44	2.72	2.46	3.56	6.57	4.60	9.21	5.44	3.62	1.51	7.50	2.11	0.55	21.48	2.66	2.90	1.10	200.00
KLO	0.36	1.45	0.96	3.04	1.52	0.51	5.09	9.40	3.05	6.09	1.59	3.87	1.61	1.18	4.19	0.66	21.48	2.66	2.90	1.10	200.00
SLDD	15.04	30.07	15.04	34.37	17.18	11.28	34.91	64.44	27.92	55.85	21.48	34.80	14.50	21.48	21.48	8.59	–	–	–	–	–
SUB TOM	1.86	3.72	1.86	4.26	2.13	1.40	4.32	7.98	3.46	6.92	2.66	4.31	1.80	2.66	2.66	1.06	–	–	–	–	–
OPERATOR	2.80	5.60	2.80	6.40	3.20	2.10	6.50	12.00	5.20	10.40	4.00	6.48	2.70	4.00	4.00	1.60	–	–	–	–	–
TOTAL	67.44	208.46	111.03	254.81	147.21	63.23	334.18	616.94	231.12	462.24	141.55	252.01	146.67	117.62	174.87	93.35	–	–	–	–	20021.50

Table II-13 Traffic Distribution as of 1993

FROM \ TO	KT1	KT2 A	KT2 B	KT2 C	KT2 D	KT2 E	CKG A	CKG B	PLT A	PLT B	ANC A	ANC B	TGL	GB1 C	GB1 D	GB1 E	GB2 A	GB2 B	GB2 C	GB2 D	SM1 A	SM1 B	SM2 A
KT1	93.41	21.13	21.13	21.13	21.13	35.76	3.81	13.35	10.28	33.40	9.68	31.45	6.13	14.90	14.90	77.74	11.60	11.60	37.84	42.89	12.85	28.80	9.12
KT2 A	19.23	6.24	6.24	6.24	6.24	10.55	0.85	2.98	2.16	7.01	2.51	8.15	1.31	4.31	4.31	22.49	3.36	3.36	10.95	12.41	3.57	8.00	2.56
KT2 B	19.23	6.24	6.24	6.24	6.24	10.55	0.85	2.98	2.16	7.01	2.51	8.15	1.31	4.31	4.31	22.49	3.36	3.36	10.95	12.41	3.57	8.00	2.56
KT2 C	19.23	6.24	6.24	6.24	6.24	10.55	0.85	2.98	2.16	7.01	2.51	8.15	1.31	4.31	4.31	22.49	3.36	3.36	10.95	12.41	3.57	8.00	2.56
KT2 D	19.23	6.24	6.24	6.24	6.24	10.55	0.85	2.98	2.16	7.01	2.51	8.15	1.31	4.31	4.31	22.49	3.36	3.36	10.95	12.41	3.57	8.00	2.56
KT2 E	32.54	10.55	10.55	10.55	10.55	17.86	1.44	5.04	3.65	11.47	4.24	13.79	2.22	7.29	7.29	38.06	5.68	5.68	18.52	20.89	6.04	13.54	4.33
CKG A	6.87	1.68	1.68	1.68	1.68	2.85	2.29	8.02	1.32	4.03	0.72	2.34	2.62	1.49	1.49	7.80	1.18	1.18	3.83	4.34	1.76	3.94	1.29
CKG B	24.05	5.89	5.89	5.89	5.89	9.97	8.02	28.06	4.63	15.05	2.52	8.18	9.17	5.23	5.23	27.29	4.11	4.11	13.42	15.21	6.15	13.93	4.50
PLT A	12.47	2.88	2.88	2.88	2.88	4.87	0.89	3.12	2.55	8.29	1.33	4.33	1.51	2.11	2.11	11.02	1.63	1.63	5.31	6.02	1.93	4.33	1.39
PLT B	40.51	9.35	9.35	9.35	9.35	15.82	2.90	10.13	8.29	26.83	4.33	14.06	4.89	6.86	6.86	35.80	5.29	5.29	17.25	19.56	6.26	14.08	4.51
ANC A	9.98	2.84	2.84	2.84	2.84	4.61	0.41	1.44	1.13	3.68	2.17	7.04	0.67	2.15	2.15	11.21	1.83	1.83	5.97	6.77	1.78	3.95	1.28
ANC B	32.43	9.23	9.23	9.23	9.23	15.62	1.34	4.68	3.68	11.95	2.04	22.89	2.19	6.98	6.98	36.43	5.95	5.95	19.40	21.99	5.78	12.97	4.15
TGL	12.39	2.92	2.92	2.92	2.92	4.94	2.94	10.29	2.51	8.15	1.32	4.30	6.64	2.39	2.39	12.47	1.86	1.86	6.07	6.88	2.57	5.75	1.86
GB1 C	12.05	3.83	3.83	3.83	3.83	6.48	0.67	2.35	1.41	4.58	1.69	5.48	0.96	5.44	5.44	28.38	4.15	4.15	13.54	15.35	4.51	10.10	3.20
GB1 D	12.05	3.83	3.83	3.83	3.83	6.48	0.67	2.35	1.41	4.58	1.69	5.48	0.96	5.44	5.44	28.38	4.15	4.15	13.54	15.35	4.51	10.10	3.20
GB1 E	62.89	19.99	19.99	19.99	19.99	33.83	3.50	12.25	7.35	23.88	8.80	28.59	4.99	28.38	28.38	148.30	21.67	21.67	70.66	80.08	23.52	52.71	16.70
GB2 A	9.25	2.94	2.94	2.94	2.94	4.97	0.52	1.82	1.07	3.48	1.41	4.60	0.73	4.09	4.09	21.34	5.36	5.36	17.47	19.80	4.71	10.57	2.52
GB2 B	9.25	2.94	2.94	2.94	2.94	4.97	0.52	1.82	1.07	3.48	1.41	4.60	0.73	4.09	4.09	21.34	5.36	5.36	17.47	19.80	4.71	10.57	2.52
GB2 C	30.12	9.58	9.58	9.58	9.58	16.22	1.70	5.93	3.49	11.33	4.61	14.99	2.39	13.36	13.36	69.59	17.47	17.47	56.98	64.57	15.37	34.45	11.47
GB2 D	34.17	10.86	10.86	10.86	10.86	18.38	1.92	6.72	3.95	12.84	5.23	16.99	2.71	15.12	15.12	78.87	19.80	19.80	64.57	73.18	17.42	39.04	13.00
SM1 A	10.95	3.34	3.34	3.34	3.34	5.66	0.83	2.91	1.36	4.42	1.47	4.78	1.08	4.75	4.75	24.78	5.04	5.04	16.45	18.64	9.11	20.43	6.47
SM1 B	24.55	7.50	7.50	7.50	7.50	12.69	1.86	6.52	3.05	9.90	3.30	10.72	2.43	10.65	10.65	55.54	11.30	11.30	36.86	41.78	20.43	45.79	14.50
SM2 A	8.04	2.48	2.48	2.48	2.48	4.20	0.63	2.20	1.01	3.27	1.09	3.55	0.81	3.49	3.49	18.18	3.89	3.89	12.69	14.38	6.68	14.99	6.04
SM2 B	28.93	8.92	8.92	8.92	8.92	15.10	2.26	7.92	3.63	11.78	3.93	12.76	2.90	12.55	12.55	65.46	14.01	14.01	45.67	51.76	24.06	53.97	21.73
SLP A	9.32	2.63	2.63	2.63	2.63	4.45	0.70	2.45	1.27	4.11	1.06	3.44	0.98	2.71	2.71	14.14	2.13	2.13	6.95	7.88	2.86	6.40	2.03
SLP B	41.04	11.57	11.57	11.57	11.57	19.58	3.08	10.79	5.57	18.10	4.56	15.12	4.31	11.93	11.93	62.24	9.38	9.38	30.60	34.68	12.56	28.16	8.92
PLM A	4.55	1.31	1.31	1.31	1.31	2.21	0.47	1.65	0.64	2.07	0.54	1.76	0.59	1.65	1.65	8.60	1.49	1.49	4.86	5.51	2.54	5.69	2.03
PLM B	13.65	3.92	3.92	3.92	3.92	6.64	1.41	4.94	1.91	6.20	1.63	5.29	1.77	4.94	4.94	25.79	4.47	4.47	14.58	16.53	7.61	17.06	6.09
KED	13.53	3.52	3.52	3.52	3.52	5.96	1.93	6.75	2.20	7.15	1.44	4.70	2.44	3.56	3.56	18.57	2.88	2.88	9.41	10.66	4.40	9.86	3.22
MER	6.75	1.88	1.88	1.88	1.88	3.19	0.93	3.27	1.01	3.29	0.76	2.49	1.11	2.21	2.21	11.54	2.00	2.00	6.53	7.40	3.47	7.79	2.65
CPP A	11.15	3.58	3.58	3.58	3.58	6.06	0.52	1.81	1.24	4.03	1.98	6.44	0.78	4.04	4.04	21.07	4.16	4.16	13.57	15.38	3.70	8.29	2.79
CPP B	20.78	6.67	6.67	6.67	6.67	11.29	0.97	3.38	2.31	7.51	3.70	12.01	1.45	7.53	7.53	39.28	7.76	7.76	25.30	28.67	6.89	15.45	5.20
CPP C	24.56	7.89	7.89	7.89	7.89	13.34	1.14	4.00	2.73	8.87	4.37	14.19	1.71	8.90	8.90	46.42	9.17	9.17	29.90	33.88	8.15	18.26	6.14
RMG A	8.56	2.72	2.72	2.72	2.72	4.60	0.41	1.42	0.94	3.06	1.60	5.20	0.59	3.26	3.26	17.01	3.94	3.94	12.86	14.57	3.54	7.93	2.76
RMG B	12.84	4.08	4.08	4.08	4.08	6.91	0.61	2.13	1.41	4.59	2.40	7.80	0.89	4.89	4.89	25.51	5.91	5.91	19.28	21.85	5.31	11.89	4.16
TPR A	14.26	4.10	4.10	4.10	4.10	6.94	0.59	2.08	1.70	5.52	3.10	10.06	1.02	3.33	3.33	17.36	3.10	3.10	10.11	11.46	2.81	6.30	2.08
TPR B	24.17	6.95	6.95	6.95	6.95	11.76	1.01	3.52	2.88	9.36	5.25	17.06	1.74	5.64	5.64	29.42	5.26	5.26	17.14	19.43	4.77	10.68	3.52
KPG	23.37	7.21	7.21	7.21	7.21	12.20	0.98	3.44	2.60	8.44	4.88	15.85	1.56	6.93	6.93	36.17	7.07	7.07	23.06	26.13	6.22	13.94	4.69
CLC	23.44	6.88	6.88	6.88	6.88	11.64	0.97	3.38	2.71	8.81	5.04	16.38	1.98	6.11	6.11	31.85	6.11	6.11	19.91	22.56	5.42	12.16	4.09
PGG	17.84	5.67	5.67	5.67	5.67	9.59	0.80	2.79	1.94	6.31	3.50	11.39	1.19	6.27	6.27	32.71	7.43	7.43	24.23	27.47	6.60	14.80	5.18
KBY A	9.75	2.96	2.96	2.96	2.96	5.01	0.93	3.27	1.29	4.19	1.26	4.11	1.16	4.04	4.04	21.06	4.26	4.26	13.86	15.68	7.67	17.19	6.39
KBY B	8.07	2.44	2.44	2.44	2.44	4.13	0.77	2.70	1.06	3.46	1.04	3.39	0.96	3.33	3.33	17.37	3.50	3.50	11.41	12.94	6.33	14.18	5.27
KBY C	8.07	2.44	2.44	2.44	2.44	4.13	0.77	2.70	1.06	3.46	1.04	3.39	0.96	3.33	3.33	17.37	3.50	3.50	11.41	12.94	6.33	14.18	5.27
KBL	5.45	1.60	1.60	1.60	1.60	2.71	0.64	2.25	0.76	2.45	0.67	2.18	0.77	2.12	2.12	11.06	2.14	2.14	6.98	7.91	3.87	8.67	3.22
CPA A	2.49	0.74	0.74	0.74	0.74	1.25	0.28	1.00	0.34	1.12	0.31	1.01	0.40	1.00	1.00	5.20	1.08	1.08	3.52	3.99	1.91	4.29	1.68
CPA B	1.24	0.37	0.37	0.37	0.37	0.62	0.14	0.50	0.17	0.56	0.16	0.51	0.20	0.50	0.50	2.60	0.54	0.54	1.76	2.00	0.96	2.14	0.84
CPE A	4.17	1.27	1.27	1.27	1.27	2.16	0.45	1.59	0.56	1.80	0.55	1.79	0.54	1.74	1.74	9.07	1.98	1.98	6.46	7.32	3.44	7.71	3.01
CPE B	5.74	1.75	1.75	1.75	1.75	2.97	0.62	2.18	0.76	2.48	0.76	2.46	0.74	2.39	2.39	12.47	2.72	2.72	8.88	10.06	4.73	10.60	4.14
PSM A	2.30	0.72	0.72	0.72	0.72	1.22	0.21	0.72	0.29	0.95	0.32	1.05	0.25	1.02	1.02	5.31	1.23	1.23	4.01	4.55	1.93	4.33	1.74
PSM B	1.73	0.54	0.54	0.54	0.54	0.92	0.16	0.54	0.22	0.71	0.24	0.79	0.19	0.76	0.76	3.98	0.92	0.92	3.01	3.41	1.45	3.25	1.31
KAL A	5.54	1.76	1.76	1.76	1.76	2.98	0.42	1.47	0.67	2.19	0.82	2.65	0.53	2.50	2.50	13.05	3.12	3.12	10.17	11.52	4.48	10.03	3.96
KAL B	11.09	3.52	3.52	3.52	3.52	5.96	0.84	2.95	1.35	4.38	1.63	5.30	1.06	5.00	5.00	26.11	6.24	6.24	20.33	23.04	8.95	20.07	7.92
JGA	3.13	0.97	0.97	0.97	0.97	1.64	0.30	1.06	0.40	1.29	0.44	1.44	0.36	1.36	1.36	7.09	1.66	1.66	5.41	6.13	2.61	5.84	2.33
JTG A	7.59	2.44	2.44	2.44	2.44	4.12	0.42	1.46	0.86	2.80	1.27	4.13	0.58	3.26	3.26	17.01	4.23	4.23	13.79	15.62	4.28	9.59	3.46
JTG B	14.02	4.50	4.50	4.50	4.50	7.62	0.77	2.70	1.59	5.16	2.35	7.63	1.07	6.02	6.02	31.40	7.81	7.81	25.45	28.84	7.50	17.70	6.39
JTG C	9.34	3.00	3.00	3.00	3.00	5.08	0.51	1.80	1.06	3.44	1.56	5.09	0.71	4.01	4.01	20.93	5.20	5.20	16.97	19.23	5.27	11.80	4.25
CAW A	4.60	1.48	1.48	1.48	1.48	2.50	0.30	1.06	0.54	1.77	0.73	2.36	0.43	2.08	2.08	10.84	2.69	2.69	8.79	9.96	3.36	7.54	2.92
CAW B	16.11	5.17	5.17	5.17	5.17	8.75	1.06	3.72	1.90	6.18	2.54	8.26	1.71	7.27	7.27	37.94	9.43	9.43	30.75	34.85	11.77	26.39	10.21
PSR	5.48	1.74	1.74	1.74	1.74	2.94	0.42	1.45	0.66	2.14	0.84	2.72	0.52	2.47	2.47	12.89	3.14	3.14	10.24	11.61	5.24	11.75	3.83
TBT A	7.65	2.46	2.46	2.46	2.46	4.16	0.47	1.65	0.89	2.91	1.18	3.85	0.63	3.42	3.42	17.85	4.44	4.44	14.46	16.39	5.01	11.23	4.09
TBT B	9.57	3.07	3.07	3.07	3.07	5.20	0.59	2.06	1.12	3.63	1.48	4.81	0.79	4.28	4.28	22.31	5.54	5.54	18.06	20.49	6.26	14.04	5.11
GAN	6.68	2.14	2.14	2.14	2.14	3.63	0.54	1.88	0.83	2.69	1.02	3.32	0.67	3.01	3.01	15.72	3.83	3.83	12.49	14.16	5.38	12.09	4.82
KLD	7.24	2.32	2.32	2.32	2.32	3.93	0.37	1.30	0.81	2.64	1.31	4.27	0.64	2.99	2.99	15.58	3.80	3.80	12.38	14.03	3.73	8.35	3.04
SLDD	142.06	38.48	38.48	38.48	38.48	65.12	16.58	58.02	21.31	69.26	21.31	69.26	26.64	38.12	38.12	198.91	38.12	38.12	124.32	140.90	48.07	107.74	38.48
SUB TOM	17.16	4.65	4.65	4.65	4.65	7.87	2.00	7.01	2.57	8.37	2.57	8.37	3.22	4.60	4.60	24.02	4.06	4.06	15.02	17.02	5.81	13.01	4.65
OPERATOR	25.80	6.99	6.99	6.99	6.99	11.83	3.01	10.53	3.87	12.58	3.87	12.58	4.84	6.92	6.92	36.12	6.92	6.92	22.57	25.58	8.73	19.56	6.99
TOTAL	1195.80	347.74	347.74	347.74	347.74	588.49	92.64	324.22	155.46	505.23	175.19	569.38	136.74	375.41	375.41	1958.58	379.69	379.69	1238.11	1403.19	456.79	1023.85	356.90

FROM \ TO	SM2 B	SLP A	SLP B	PLM A	PLM B	KED	MER	CPP A	CPP B	CPP C	RMG A	RMG B	TPR A	TPR B	KPG	CLC	PGG	KBY A	KBY B	KBY C	KBL	CPA A	CPA B	CPE A	CPE B	PSM A	PSM B	KAL A	KAL B
KT1	32.84	9.93	43.68	4.52	13.56	11.03	5.50	12.82	24.10	28.48	8.54	12.82	10.69	18.12	21.20	16.21	14.72	9.85	8.13	8.13	4.54	0.93	0.46	2.93	4.03	1.76	1.32	5.16	10.33
KT2 A	9.22	2.55	11.20	1.18	3.55	2.61	1.40	3.78	7.04	8.32	2.47	3.71	2.80	4.74	5.95	3.79	4.26	2.71	2.24	2.24	1.21	0.25	0.13	0.81	1.12	0.50	0.38	1.49	2.99
KT2 B	9.22	2.55	11.20	1.18	3.55	2.61	1.40	3.78	7.04	8.32	2.47	3.71	2.80	4.74	5.95	3.79	4.26	2.71	2.24	2.24	1.21	0.25	0.13	0.81	1.12	0.50	0.38	1.49	2.99
KT2 C	9.22	2.55	11.20	1.18	3.55	2.61	1.40	3.78	7.04	8.32	2.47	3.71	2.80	4.74	5.95	3.79	4.26	2.71	2.24	2.24	1.21	0.25	0.13	0.81	1.12	0.50	0.38	1.49	2.99
KT2 D	9.22	2.55	11.20	1.18	3.55	2.61	1.40	3.78	7.04	8.32	2.47	3.71	2.80	4.74	5.95	3.79	4.26	2.71	2.24	2.24	1.21	0.25	0.13	0.81	1.12	0.50	0.38	1.49	2.99
KT2 E	15.60	4.31	18.96	2.00	6.01	4.42	2.37	6.39	11.91	14.08	4.18	6.27	4.73	8.02	10.07	6.42	7.20	4.59	3.78	3.78	2.05	0.42	0.21	1.38	1.90	0.85	0.64	2.53	5.06
CKG A	4.63	1.34	5.91	0.84	2.53	2.83	1.37	1.08	2.02	2.39	0.73	1.10	0.80	1.36	1.61	1.06	1.18	1.70	1.40	1.40	0.96	0.19	0.10	0.57	0.79	0.28	0.21	0.71	1.41
CKG B	16.20	4.70	20.69	2.95	8.85	9.91	4.80	3.79	7.07	8.35	2.56	3.83	2.81	4.76	5.62	3.69	4.15	5.94	4.90	4.90	3.38	0.67	0.33	2.01	2.76	1.00	0.75	2.47	4.94
PLT A	4.99	1.63	7.19	0.77	2.30	2.17	1.00	1.74	3.25	3.84	1.14	1.71	1.55	2.62	2.86	1.99	1.94	1.57	1.30	1.30	0.76	0.16	0.08	0.47	0.65	0.27	0.20	0.76	1.52
PLT B	16.22	5.31	23.37	2.49	7.49	7.07	3.25	5.66	10.56	12.48	3.71	5.56	5.02	8.51	9.29	6.48	6.32	5.12	4.22	4.27	2.48	0.51	0.25	1.54	2.11	0.88	0.66	2.48	4.95
ANC A	4.60	1.16	5.10	0.56	1.67	1.21	0.64	2.37	4.42	5.22	1.65	2.47	2.39	4.06	4.56	3.15	2.98	1.31	1.08	1.08	0.58	0.12	0.06	0.40	0.55	0.26	0.19	0.76	1.57
ANC B	14.93	3.77	16.59	1.80	5.41	3.95	2.09	7.70	14.36	16.97	5.35	8.03	7.78	13.18	14.82	10.24	9.69	4.26	3.52	3.52	1.87	0.39	0.19	1.29	1.78	0.83	0.62	2.54	5.09
TGL	6.69	2.11	9.27	1.18	3.59	4.02	1.83	1.82	3.39	4.01	1.19	1.79	1.55	2.63	2.87	2.42	1.99	2.36	1.94	1.94	1.30	0.30	0.15	0.77	1.05	0.39	0.29	1.00	2.00
GB1 C	11.52	2.33	10.27	1.32	3.97	2.35	1.46	3.79	7.06	8.34	2.63	3.95	2.02	3.42	5.08	2.99	4.19	3.29	2.71	2.71	1.43	0.30	0.15	0.99	1.36	0.63	0.47	1.89	3.77
GB1 D	11.52	2.33	10.27	1.32	3.97	2.35	1.46	3.79	7.06	8.34	2.63	3.95	2.02	3.42	5.08	2.99	4.19	3.29	2.71	2.71	1.43	0.30	0.15	0.99	1.36	0.63	0.47	1.89	3.77
GB1 E	60.10	12.18	53.58	6.91	20.73	12.24	7.61	19.76	36.84	43.54	13.73	20.60	10.52	17.84	26.53	15.62	21.84	17.16	14.15	14.15	7.45	1.57	0.78	5.15	7.09	3.28	2.46	9.84	19.67
GB2 A	12.67	1.81	7.96	1.18	3.54	1.87	1.30	3.84	7.17	8.47	3.13	4.70	1.85	3.14	5.11	2.95	4.89	3.40	2.81	2.81	1.42	0.32	0.16	1.11	1.52	0.75	0.56	2.31	4.63
GB2 B	12.67	1.81	7.96	1.18	3.54	1.87	1.30	3.84	7.17	8.47	3.13	4.70	1.85	3.14	5.11	2.95	4.89	3.40	2.81	2.81	1.42	0.32	0.16	1.11	1.52	0.75	0.56	2.31	4.63
GB2 C	41.30	5.90	25.95	3.85	11.55	6.11	4.24	12.53	23.37	27.62	10.22	15.33	6.04	10.24	16.66	9.61	15.93	11.10	9.16	9.16	4.63	1.04	0.52	3.61	4.97	2.44	1.83	7.55	15.09
GB2 D	46.81	6.68	29.41	4.36	13.09	6.92	4.80	14.20	26.48	31.30	11.58	17.38	6.85	11.60	18.88	10.89	18.06	12.58	10.38	10.38	5.25	1.18	0.59	4.09	5.63	2.77	2.08	6.55	17.10
SM1 A	23.30	2.59	11.40	2.15	6.45	3.06	2.42	3.65	6.81	8.05	3.01	4.51	1.80	3.04	4.81	2.80	4.64	6.58	5.43	5.43	2.75	0.61	0.30	2.06	2.83	1.26	0.94	3.55	7.11
SM1 B	52.21	5.81	25.55	4.82	14.45	6.85	5.41	8.19	15.27	18.05	6.75	10.12	4.03	6.82	10.78	6.28	10.41	14.76	12.17	12.17	6.16	1.36	0.68	4.61	6.34	2.82	2.12	7.97	15.94
SM2 A	21.73	1.90	8.36	1.78	5.33	2.31	1.90	2.85	5.31	6.27	2.44	3.66	1.37	2.33	3.75	2.18	3.77	5.67	4.68	4.68	2.37	0.55	0.27	1.86	2.56	1.18	0.88	3.25	6.50
SM2 B	78.23	6.64	30.11	6.40	19.21	8.32	6.64	10.25	19.11	22.58	8.79	13.18	4.94	8.37	13.49	7.86	13.56	20.41	16.83	16.83	8.52	1.94	0.95	6.71	9.22	4.23	3.17	11.70	23.40
SLP A	7.30	2.44	10.73	1.11	3.33	2.43	1.34	1.93	3.59	4.24	1.26	1.89	1.18	2.00	2.68	1.63	2.11	2.39	1.94	1.94	1.12	0.23	0.11	0.70	0.96	0.40	0.30	1.10	2.20
SLP B	32.19	10.73	47.20	4.88	14.65	10.68	5.89	8.47	15.79	18.67	5.54	8.32	5.19	8.80	11.84	7.18	9.27	10.33	8.52	8.52	4.91	0.99	0.50	3.07	4.23	1.77	1.33	4.85	9.70
PLM A	7.31	1.19	5.23	1.28	3.84	1.73	1.40	1.17	2.18	2.58	0.88	1.32	0.62	1.05	1.54	0.91	1.37	2.52	2.08	2.08	1.27	0.26	0.13	0.78	1.07	0.42	0.32	1.06	2.12
PLM B	21.94	3.57	15.69	3.84	11.52	5.19	4.19	3.51	6.54	7.73	2.64	3.96	1.85	3.14	4.62	2.72	4.12	7.57	6.24	6.24	3.82	0.78	0.39	2.34	3.22	1.27	0.95	3.18	6.37
KED	11.58	3.17	13.94	2.11	6.32	7.16	3.17	2.50	4.67	5.51	1.74	2.61	1.60	2.70	3.50	2.16	2.77	4.16	3.43	3.43	2.25	0.49	0.24	1.34	1.84	0.70	0.57	1.75	3.50
MER	9.32	1.75	7.68	1.70	5.10	3.37	3.38	1.55	2.90	2.42	1.17	1.71	0.86	1.46	2.09	1.23	1.82	3.73	3.12	3.12	2.24	0.49	0.25	1.33	1.83	0.65	0.49	1.53	3.06
CPP A	10.03	1.77	7.78	1.00	3.01	1.76	1.09	5.89	10.98	12.98	3.84	5.78	2.81	4.76	2.75	4.52	6.45	2.67	2.20	2.20	1.33	0.25	0.13	0.86	1.18	0.59	0.44	1.89	3.78
CPP B	18.71	3.30	14.50	1.87	5.61	3.28	2.04	10.98	20.48	24.20	7.19	10.78	5.24	8.88	14.46	8.42	12.02	4.98	4.11	4.11	2.10	0.47	0.23	1.60	2.21	1.10	0.82	3.52	7.04
CPP C	22.11	3.89	17.13	2.21	6.63	3.88	2.41	12.98	24.20	28.60	8.50	12.74	6.19	10.50	17.08	9.96	14.20	5.88	4.85	4.85	2.48	0.55	0.28	1.90	2.61	1.30	0.97	4.16	8.32
RMG A	9.38	1.34	5.91	0.88	2.63	1.42	0.96	4.48	8.35	9.87	6.66	9.98	2.72	4.60	8.28	5.33	10.27	2.61	2.15	2.15	1.09	0.28	0.14	0.94	1.29	0.71	0.53	2.32	4.64
RMG B	14.99	2.02	8.87	1.32	3.95	2.13	1.43	6.72	12.53	14.80	9.98	14.98	4.08	6.91	12.42	8.00	15.41	3.91	3.23	3.23	1.63	0.41	0.21	1.41	1.93	1.06	0.80	3.48	6.96
TPR A	7.48	1.67	7.37	0.82	2.45	1.74	0.94	4.35	8.11	9.58	3.62	5.43	9.11	15.45	11.87	11.41	7.77	2.03	1.67	1.67	0.87	0.19	0.09	0.63	0.87	0.43	0.33	1.39	2.79
TPR B	12.68	2.84	12.48	1.39	4.16	2.94	1.59	7.37	13.74	16.24	6.13	9.20	15.45	26.14	20.13	19.36	13.16	3.44	2.84	2.84	1.48	0.32	0.16	1.08	1.48	0.74	0.55	2.36	4.73
KPG	16.88	3.16	13.89	1.65	5.06	3.14	1.88	9.91	18.48	21.84	9.11	13.67	9.81	16.63	30.22	17.61	18.99	4.45	3.67	3.67	1.88	0.42	0.21	1.46	2.01	1.04	0.78	2.34	6.68
CLC	14.72	2.87	12.61	1.49	4.46	2.91	1.65	8.64	16.12	19.05	8.78	13.18	14.11	23.91	26.35	45.22	21.47	3.88	3.20	3.20	1.65	0.38	0.19	1.29	1.77	0.93	0.70	3.06	6.13
PGG	18.65	2.72	11.95	1.65	4.94	2.73	1.80	9.06	16.89	19.96	12.42	18.63	7.05	11.95	20.87	15.77	34.24	4.87	4.01	4.01	2.03	0.53	0.27	1.79	2.45	1.38	1.03	4.51	9.02
KBY A	23.00	2.48	10.92	2.49	7.47	3.37	3.06	2.07	5.73	6.77	2.58	3.88	1.51	2.56	4.01	2.33	3.99	9.70	8.00	8.00	4.01	0.88	0.44	2.83	3.89	1.60	1.20	3.88	7.76
KBY B	18.97	2.05	9.01	2.05	6.16	2.78	2.53	2.54	4.73	5.59	2.13	3.20	1.25	2.11	3.30	1.93	3.29	8.00	6.60	6.60	3.30	0.72	0.36	2.33	3.21	1.37	0.99	3.20	6.40
KBY C	18.97	2.05	9.01	2.05	6.16	2.78	2.53	2.54	4.73	5.59	2.13	3.20	1.25	2.11	3.30	1.93	3.29	8.00	6.60	6.60	3.30	0.72	0.36	2.33	3.21	1.32	0.99	3.20	6.40
KBL	11.60	1.43	6.27	1.52	4.56	2.20	2.19	1.57	2.93	3.45	1.30	1.95	0.79	1.33	2.04	1.20	2.01	4.84	3.99	3.99	3.43	0.70	0.35	2.04	2.81	1.21	0.91	2.16	4.32
CPA A	6.03	0.64	2.83	0.69	2.08	1.07	1.08	0.78	1.46	1.72	0.74	1.11	0.38	0.65	1.03	0.61	1.18	2.37	1.96	1.96	1.57	2.51	1.25	2.03	2.80	0.95	0.71	1.61	3.22
CPA B	3.02	0.32	1.42	0.35	1.04	0.53	0.54	0.39	0.73	0.86	0.37	0.56	0.19	0.32	0.51	0.31	0.59	1.19	0.98	0.98	0.78	1.25	0.63	1.02	1.40	0.48	0.36	0.81	1.61
CPE A	10.84	1.06	4.65	1.11	3.32	1.56	1.55	1.42	2.65	3.13	1.33	2.00	0.68	1.15	1.83	1.11	2.10	4.05	3.34	3.34	2.42	1.08	0.54	3.69	5.08	1.56	1.17	2.78	5.57
CPE B	14.91	1.46	6.40	1.52	4.56	2.14	2.13	1.95	3.64	4.30	1.83	2.75	0.93	1.58	2.60	1.53	2.88	5.57	4.60	4.60	3.33	1.48	0.74	5.08	6.99	2.15	1.61	3.83	7.65
PSM A	6.28	0.56	2.47	0.55	1.65	0.75	0.70	0.83	1.66	1.96	0.92	1.39	0.43	0.72	1.23	0.74	1.48	2.10	1.74	1.74	1.32	0.46	0.23	1.44	1.97	1.22	0.92	2.03	4.06
PSM B	4.71	0.42	1.85	0.41	1.24	0.56	0.52	0.67	1.25	1.47	0.69	1.04	0.32	0.54	0.93	0.56	1.11	1.58	1.30	1.30	0.99	0.35	0.17	1.08	1.48	0.92	0.69	1.52	3.04
KAL A	14.26	1.26	5.56	1.13	3.40	1.53	1.36	2.35	4.38	5.18	2.49	3.73	1.12	1.90	3.25	1.95	3.93	4.19	3.46	3.46	1.93	0.64	0.32	2.10	2.88	1.67	1.25	5.46	10.92
KAL B	28.52	2.52	11.05	2.26	6.79	3.06	2.68	4.70	8.77	10.36	4.97	7.46	2.24	3.80	6.51	3.89	7.99	8.39	6.92	6.92	3.87	1.29	0.64	4.20	5.77	3.33	2.50	10.92	21.84
JGA	8.39	0.76	3.33	0.77	2.30	1.05	1.02	1.23	2.29	2.70	1.31	1.97	0.59	0.99	1.70	1.05	2.17	2.90	2.39	2.39	1.63	1.17	0.59	2.44	3.35	1.63	1.22	2.82	5.64
JTG A	12.45	1.44	6.34	1.01	3.03	1.51	1.12	3.78	7.05	8.33	4.46	6.69	1.91	3.24	5.72	3.54	7.09	3.28	2.71	2.71	1.36	0.36	0.18	1.24	1.71	0.94	0.70	3.04	6.08
JTG B	22.99	2.66	11.71	1.86	5.59	2.78	2.07	6.98	13.01	15.37	8.24	12.35	3.53	5.99	10.56	6.54	13.10	6.06	5.00	5.00	2.50	0.67	0.33	2.29	3.15	1.73	1.30	5.61	11.23
JTG C	15.73	1.77	7.80	1.24	3.72	1.86	1.38	4.65	8.67	10.25	5.49	8.24	2.36	3.99	7.04	4.36	8.73	4.04	3.33	3.33	1.67	0.45	0.22	1.53	2.10	1.15	0.86	3.76	7.48
CAW A	10.50	0.98	4.29	0.82	2.45	1.13	0.95	2.16	4.02	4.75	2.55	3.82	1.07	1.82	3.20	2.07	4.26	2.97	2.45	2.45	1.31	0.46	0.23	1.45	2.00	1.20	0.90	3.75	7.50
CAW B	36.75	3.41	15.02	2.86	8.58	3.95	3.31	7.55	14.08	16.64	8.91	13.37	3.75	6.36	11.21	7.07	14.90	10.39	8.57	8.57	4.60	1.60	0.80	5.09	7.00	4.21	3.16	13.12	26.24
PSR	13.80	1.22	5.37	1.12	3.35	1.51	1.36	2.47	4.60	5.43	2.31	4.37	1.22	2.08	3.66	2.36	5.01	4.27	3.52	3.52	2.05	1.01	0.50	2.71	3.73	2.29	1.72	5.23	10.47
TBT A	14.73	1.59	6.99	1.18	3.54	1.73	1.31	3.38	6.30	7.44	3.37	5.05	1.63	2.76	4.63	2.18	5.19	3.84	3.17	3.17	1.59	0.40	0.20	1.40	1.92	1.00	0.75	3.19	6.38
TBT B	18.41	1.99	8.76	1.48	4.43	2.16	1.64	4.22	7.87	9.31	4.21	6.31	2.04	3.45	5.79	3.51	6.49	4.80	3.96	3.96	1.98	0.50	0.25	1.74	2.40	1.25	0.94	3.99	7.97
GAN	17.35	1.52	6.68	1.43	4.30	1.94	1.80	2.95	5.49	6.49	3.55	5.32	1.48	2.51	4.42	2.87	6.18	5.53	4.56	4.56	2.79	1.73	0.86	3.96	5.45	3.15	2.36	6.51	13.02
KLD	10.96	1.29	5.69	0.89	2.66	1.24	0.97	3.83	7.13	8.43	5.46	8.19	2.23	3.78	6.66	4.65	10.09	2.86	2.36	2.36	1.20	0.35	0.17	1.16	1.59	0.92	0.69	2.99	5.97
SLDD	138.53	23.68	104.19	16.58	49.73	35.52	21.68	38.42	71.63	84.66	37.89	56.83	38.42	65.12	76.96	76.96	78.14	45.94	37.89	37.89	24.86	14.21	7.01	23.68	32.56	14.21	10.66	33.15	66.30
SUB TOM	16.73	2.86	12.58	2.00	6.01	4.29	2.46	4.64	8.65	10.22	4.58	6.86	4.64	7.87	9.30	9.30	9.44	5.55	4.58	4.58	3.00	1.72	0.86	2.86	3.93	1.72	1.29	4.00	8.01
OPERATOR	25.15	4.30	18.92	3.01	9.03	6.45	4.30	6.98	13.01	15.37	6.88	10.32	6.98	11.82	13.97	13.97	14.19	8.34	6.88	6.88	4.51	2.58	1.29	4.30	5.91	2.58	1.93	6.02	12.04
TOTAL	1284.82	208.75	914.51	138.74	416.23	257.16	170.77	360.89	672.85	795.19	317.77	476.85	262.58	445.06	603.30	452.60	567.90	388.36	321.12	321.12	182.90	60.55	30.27	195.46	213.75	99.46	74.60	276.30	534.60

FROM \ TO	JGA	JTG A	JTG B	JTG C	CAW A	CAW B	PSR	TBT A	TBT B	GAN	KLD	SLDD	SUB TOM	10X	11X	TOTAL
KT1	1.64	8.17	15.05	10.06	4.09	14.30	3.59	8.80	11.00	3.38	6.39	142.08	17.16	18.72	7.08	1200.00
KT2 A	0.46	2.39	4.41	2.94	1.19	4.18	1.04	2.57	3.22	0.99	1.87	38.48	4.65	5.07	1.92	325.00
KT2 B	0.46	2.39	4.41	2.94	1.19	4.18	1.04	2.57	3.22	0.99	1.87	38.48	4.65	5.07	1.92	325.00
KT2 C	0.46	2.39	4.41	2.94	1.19	4.18	1.04	2.57	3.22	0.99	1.87	38.48	4.65	5.07	1.92	325.00
KT2 D	0.46	2.39	4.41	2.94	1.19	4.18	1.04	2.57	3.22	0.99	1.87	38.48	4.65	5.07	1.92	325.00
KT2 E	0.78	4.04	7.46	4.97	2.02	7.07	1.76	4.35	5.44	1.67	3.16	65.12	7.89	8.58	3.25	550.00
CKG A	0.28	0.81	1.50	1.00	0.49	1.70	0.49	0.98	1.22	0.49	0.59	16.58	2.00	2.18	0.83	140.00
CKG B	0.99	2.84	5.24	3.50	1.70	5.95	1.72	3.42	4.27	1.72	2.07	58.02	7.01	7.64	2.89	490.00
PLT A	0.25	1.12	2.07	1.38	0.58	2.05	0.52	1.25	1.56	0.51	0.87	21.31	2.57	2.81	1.06	180.00
PLT B	0.82	3.65	6.74	4.50	1.90	6.65	1.71	4.05	5.07	1.65	2.83	69.26	8.37	9.13	3.45	585.00
ANC A	0.24	1.41	2.60	1.74	0.66	2.32	0.57	1.40	1.75	0.53	1.20	21.31	2.57	2.81	1.06	180.00
ANC B	0.77	4.54	8.46	5.64	2.16	7.56	1.84	4.56	5.70	1.73	3.89	69.26	8.37	9.13	3.45	585.00
TGL	0.38	1.26	2.32	1.55	0.88	3.06	0.69	1.47	1.84	0.68	1.14	26.64	3.22	3.51	1.33	225.00
GB1 C	0.57	2.84	5.24	3.49	1.49	5.22	1.31	3.18	3.98	1.23	2.13	38.12	4.60	5.02	1.90	322.00
GB1 D	0.57	2.84	5.24	3.49	1.49	5.22	1.31	3.18	3.98	1.23	2.13	38.12	4.60	5.02	1.90	322.00
GB1 E	2.99	14.81	27.34	18.22	7.78	27.24	6.85	16.60	20.75	6.44	11.13	198.91	24.02	26.21	9.91	1680.00
GB2 A	0.69	3.63	6.69	4.46	1.91	6.67	1.64	4.07	5.08	1.55	2.67	38.12	4.60	5.02	1.90	322.00
GB2 B	0.69	3.63	6.69	4.46	1.91	6.67	1.64	4.07	5.08	1.55	2.67	38.12	4.60	5.02	1.90	322.00
GB2 C	2.25	11.82	21.82	14.55	6.21	21.75	5.36	13.26	16.57	5.04	8.71	124.32	15.02	16.30	6.28	1050.00
GB2 D	2.55	13.40	24.73	16.49	7.04	24.65	6.07	15.02	18.78	5.71	9.87	140.90	17.02	18.56	7.02	1190.00
SM1 A	1.16	3.92	7.25	4.83	2.55	8.91	2.93	4.91	6.14	2.33	2.81	48.07	5.81	6.33	2.40	406.00
SM1 B	2.60	8.80	16.24	10.83	5.70	19.97	6.57	11.01	13.76	5.22	6.29	107.74	13.01	14.20	5.37	910.00
SM2 A	1.07	3.28	6.06	4.04	2.28	7.98	2.22	4.15	5.18	2.15	2.37	38.48	4.65	5.07	1.92	325.00
SM2 B	3.86	11.61	21.80	14.53	6.21	28.74	7.98	14.93	18.66	7.74	8.53	138.53	16.73	18.25	6.90	1190.00
SLP A	0.37	1.46	2.69	1.79	0.81	2.85	0.75	1.72	2.15	0.72	1.07	23.68	2.86	3.12	1.18	200.00
SLP B	1.63	6.41	11.84	7.89	3.58	12.53	3.31	7.56	9.45	3.18	4.72	104.19	12.58	13.73	5.19	880.00
PLM A	0.40	1.09	2.02	1.34	0.73	2.56	0.74	1.37	1.71	0.73	0.79	16.58	2.00	2.18	0.83	140.00
PLM B	1.21	3.28	6.05	4.03	2.19	7.67	2.22	4.10	5.13	2.19	2.37	49.73	6.01	6.55	2.84	420.00
KED	0.67	1.99	3.68	2.45	1.23	4.30	1.22	2.44	3.05	1.20	1.45	35.52	4.29	4.68	1.77	300.00
MER	0.65	1.48	2.73	1.82	1.03	3.61	1.10	1.85	2.32	1.12	1.05	23.68	2.86	3.12	1.18	200.00
CPP A	0.55	3.51	6.48	4.32	1.65	5.78	1.40	3.35	4.19	1.29	2.19	38.42	4.64	5.06	1.91	324.50
CPP B	1.03	6.54	12.07	8.05	3.08	10.78	2.60	6.25	7.81	2.40	5.43	71.63	8.65	9.44	3.57	605.00
CPP C	1.22	7.73	14.27	9.51	3.64	12.74	3.08	7.39	9.23	2.84	6.42	84.66	10.22	11.15	4.22	715.00
RMG A	0.69	4.81	8.88	5.92	2.27	7.93	1.92	3.88	4.85	1.80	4.83	37.89	4.58	4.99	1.89	320.00
RMG B	1.03	7.22	13.32	8.88	3.40	11.89	2.87	5.82	7.27	2.70	7.25	56.83	6.86	7.49	2.83	480.00
TPR A	0.61	2.75	5.09	3.38	1.27	4.46	1.07	2.50	3.12	1.00	2.63	38.42	4.64	5.06	1.91	324.50
TPR B	0.69	4.66	8.60	5.73	2.15	7.53	1.82	4.24	5.29	1.69	4.45	65.12	7.87	8.58	3.25	550.00
KPG	0.98	6.79	12.53	8.36	3.13	10.97	2.65	5.87	7.34	2.47	6.69	76.96	9.30	10.14	3.84	650.00
CLC	0.90	6.29	11.61	7.74	2.96	10.36	2.55	5.33	6.66	2.40	6.77	76.96	9.30	10.14	3.84	650.00
PGG	1.37	9.25	17.08	11.39	4.58	16.03	3.99	7.24	9.05	3.79	10.80	78.14	9.44	10.30	3.89	660.00
KBY A	1.50	3.51	6.47	4.32	2.62	9.16	2.78	4.39	5.49	2.78	2.51	45.94	5.55	6.05	2.29	388.00
KBY B	1.24	2.89	5.34	3.56	2.16	7.55	2.30	3.62	4.53	2.29	2.07	37.89	4.58	4.99	1.89	320.00
KBY C	1.24	2.89	5.34	3.56	2.16	7.55	2.30	3.62	4.53	2.29	2.07	37.89	4.58	4.99	1.89	320.00
KBL	1.02	1.75	3.23	2.16	1.40	4.90	1.61	2.19	2.74	1.70	1.24	24.86	3.00	3.28	1.24	210.00
CPA A	1.64	1.05	1.93	1.29	1.09	3.80	1.76	1.25	1.56	2.35	0.83	14.21	1.72	1.87	0.71	120.00
CPA B	0.82	0.52	0.97	0.64	0.54	1.90	0.88	0.62	0.78	1.17	0.41	7.10	0.86	0.94	0.35	60.00
CPE A	1.81	1.90	3.51	2.34	1.84	6.44	2.54	2.29	2.86	2.86	1.46	23.68	2.86	3.12	1.18	200.00
CPE B	2.49	2.61	4.83	3.22	2.53	8.85	3.49	3.14	3.93	3.93	2.00	32.56	3.93	4.29	1.62	275.00
PSM A	1.11	1.32	2.43	1.62	1.40	4.89	1.96	1.51	1.89	2.08	1.06	14.21	1.72	1.87	0.71	120.00
PSM B	0.84	0.99	1.83	1.22	1.05	3.66	1.47	1.13	1.47	1.56	0.80	10.66	1.29	1.40	0.53	90.00
KAL A	1.58	3.51	6.49	4.32	3.57	12.50	3.69	3.94	4.92	3.54	2.83	33.15	4.00	4.37	1.65	280.00
KAL B	3.16	7.03	12.97	8.65	7.14	25.01	7.38	7.88	9.85	7.08	5.66	66.30	8.01	8.74	3.30	560.00
JGA	3.81	1.89	3.49	2.32	2.14	7.50	3.99	2.08	2.60	5.44	1.62	20.72	2.50	2.73	1.03	175.00
JTG A	0.92	6.37	11.75	7.83	2.91	10.18	2.46	4.78	5.98	2.29	4.69	38.48	4.65	5.07	1.92	325.00
JTG B	1.69	11.75	21.70	14.46	5.37	18.80	4.54	8.83	11.04	4.23	8.66	71.04	8.58	9.36	3.54	600.00
JTG C	1.13	7.83	14.46	9.64	3.58	12.53	3.03	5.89	7.36	2.82	5.77	47.36	5.72	6.24	2.36	400.00
CAW A	1.26	3.53	6.51	4.34	4.21	14.73	3.49	3.47	4.34	3.31	3.14	28.42	3.43	3.74	1.42	240.00
CAW B	4.41	12.34	22.79	15.19	14.73	51.56	12.21	12.15	15.19	11.60	11.00	99.46	12.01	13.10	4.96	840.00
PSR	3.17	4.03	7.44	4.96	4.72	16.50	9.80	4.09	5.11	9.04	3.78	37.30	4.50	4.91	1.86	315.00
TBT A	0.94	4.48	8.27	5.51	2.68	9.38	2.33	5.77	7.72	2.15	3.30	37.89	4.58	4.99	1.89	320.00
TBT B	1.18	5.60	10.33	6.89	3.35	11.73	2.92	7.22	9.02	2.69	4.12	47.36	5.72	6.24	2.36	400.00
GAN	5.60	4.87	8.98	5.99	5.81	20.33	11.77	4.89	6.11	20.49	4.60	47.36	5.72	6.24	2.36	400.00
KLD	0.96	5.72	10.55	7.03	3.26	11.05	2.81	4.30	5.37	2.64	7.52	37.89	4.58	4.99	1.89	320.00
SLDD	20.72	38.48	71.04	47.36	28.42	99.46	37.30	37.89	47.36	47.36	37.89	–	–	–	–	–
SUB TOM	2.50	4.65	8.58	5.72	3.42	12.01	4.50	4.58	5.72	5.72	4.58	–	–	–	–	–
OPERATOR	3.76	6.99	12.90	8.60	5.16	18.06	6.77	6.88	8.60	8.60	6.88	–	–	–	–	–
TOTAL	111.29	341.95	631.30	420.87	220.68	772.37	234.28	354.25	442.81	250.06	289.09	–	–	–	–	28510.00

PART III TELEPHONE NETWORK EXPANSION PLAN

PART III TELEPHONE NETWORK EXPANSION PLAN

In accordance with the telephone demand forecast for Jakarta City prepared in PART I of this report, the long term plan for expansion of the Jakarta Telephone Network is presented in this PART III. The plan aims at gradual fulfillment of telephone facilities improvement to meet the demand as of 1987, the year during the Fourth Five-Year Plan (Repelita IV). Thus the complete fulfillment of improvement plans according to the demand will be after 1987. Based on the long term plan, the implementation plans for improvement of exchange building and inside plant facilities, as well as outside plant facilities, will be drawn up.
And, to make the implementation plans, the examination of the existing telephone facilities has been carried out. However, the detailed plan including financial program and manpower schedule is not considered in this long term plan. Therefore, such detailed plan must be prepared by PERUMTEL.

1. Long Term Plan

The long term plan for expansion of the Jakarta Telephone Network has been drawn up. The plan covers the demand as of 1993 which is the year during the Fifth Five-Year Plan (Repelita V).

1-1 Long Term Plan

The number of subscribers in Jakarta City at the end of 1979 is 91,850, while the telephone demand estimated by JTP '79 in 1979 is 168,400. The considerable gap between the actual supply and the demand is due to the lag of supply of telecommunication facilities reflecting the telecommunication management policy and budget, as well as the installation, maintenance and operation capacity and the availability of personnel concerned.
After careful examination of the existing telephone facilities and capacity for installation work in Jakarta, JTP '79 presented the practical telephone growth to the telephone demand, indicating that the growth would gradually approach to the demand by 1987, the year during Repelita IV. In order to realize this practical telephone growth, 23,800

subscribers have to be additionally installed in 1980. In addition, the yearly installation capacity must be gradually expanded; then in 1987, 33,700 subscribers must be newly installed. Figure III-1 shows the telephone demand and the workable subscriber number in chronological order.

The number of subscribers to be additionally installed per year by 1987 is summarized below:

Year	Number of Additional Subscribers
1980	23,800
1981	22,050
1982	23,400
1983	24,300
1984	26,150
1985	27,650
1986	30,000
1987	33,700
Total	211,050

Table III-1 shows the number of telephone subscribers of each exchange in Jakarta City in chronological order by 1993.

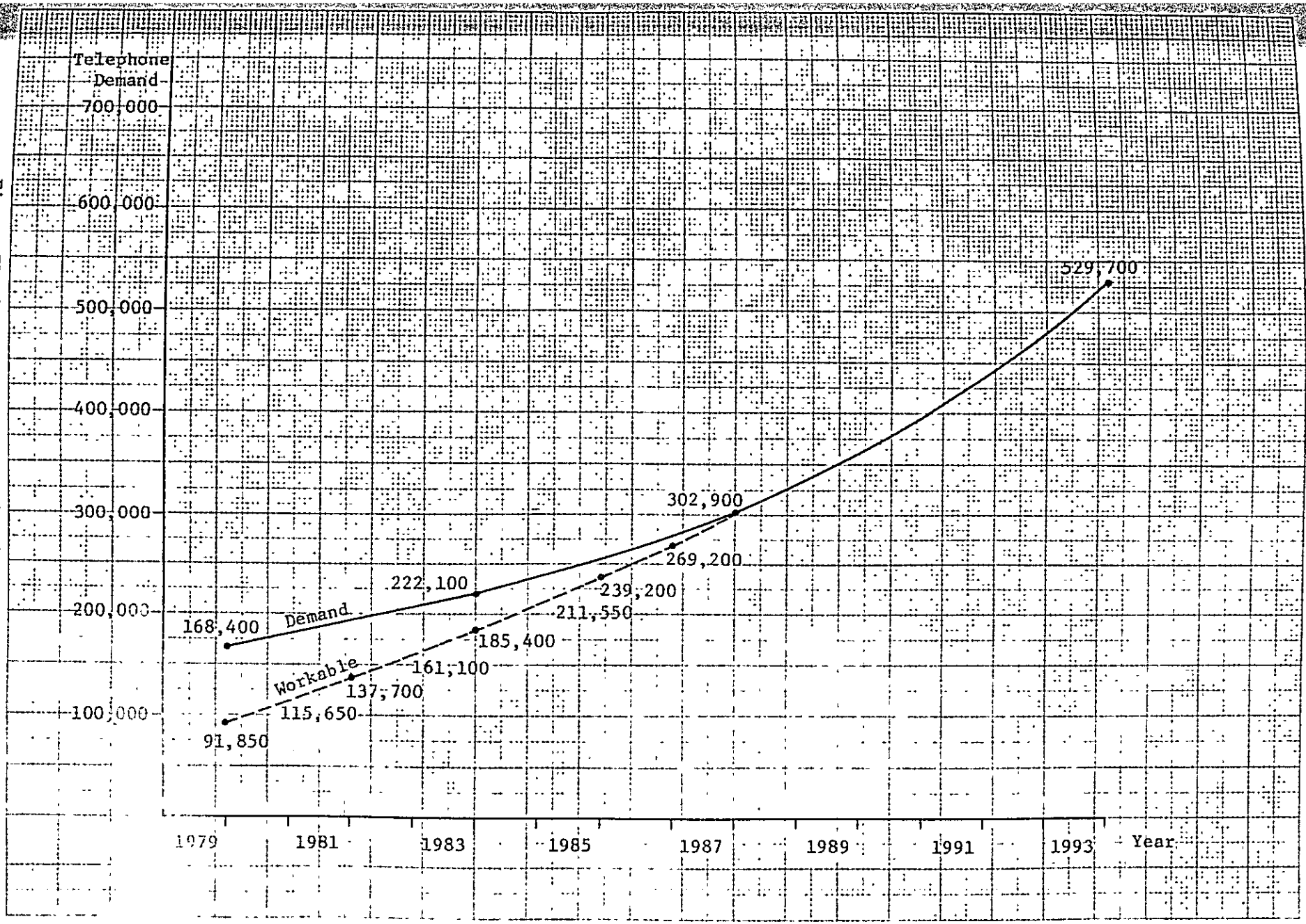


Figure III-1 Telephone Demand and Workable Subscriber Number in Jakarta Telephone Network

Table III-1 Workable Estimated Values for Each Exchange Area in Relation to Telephone Expansion Plan

No.	Exchange	79	80	81	82	83	84	85	86	87	88	90	93
1.	Kota I	5,650	6,250	6,800	7,400	8,000	8,550	9,150	9,700	10,300	10,700	11,700	13,300
2.	Kota II	12,610	14,600	16,550	18,550	20,500	22,500	24,450	26,450	28,400	29,600	32,100	36,300
3.	Cengkareng	240	500	950	1,450	2,000	2,650	3,400	4,300	5,300	6,400	9,600	17,400
4.	Pluit	3,940	4,400	4,850	5,400	6,050	6,700	7,450	8,300	9,200	10,100	12,100	16,100
5.	Ancol	840	1,700	2,550	3,350	4,200	5,050	5,900	6,750	7,600	8,500	10,500	14,600
6.	Tegal Alur	(10)	200	450	700	950	1,200	1,450	1,700	2,000	2,200	2,900	4,400
7.	Gambir I	14,380	15,550	16,850	18,200	19,700	21,300	23,100	24,950	27,000	27,900	29,800	33,000
8.	Gambir II	11,300	14,300	17,300	20,300	23,300	26,300	29,300	32,300	35,300	36,100	37,600	39,900
9.	Semanggi I	1,620	2,650	3,700	4,750	5,800	6,850	7,900	8,950	10,000	11,100	13,500	18,400
10.	Semanggi II	3,260	3,750	4,350	5,000	5,750	6,650	7,700	8,850	10,200	11,500	14,500	20,600
11.	Slipi	4,340	5,050	5,850	6,800	7,900	9,150	10,600	12,300	14,300	15,900	19,600	26,800
12.	Pal Merah	1,780	2,100	2,500	3,000	3,550	4,250	5,050	6,000	7,100	8,000	10,200	14,500
13.	Kedoya	(890)	1,100	1,300	1,600	1,950	2,350	2,850	3,450	4,200	4,900	6,800	11,200
14.	Meruya	(10)	250	500	800	1,000	1,300	1,600	1,850	2,300	2,800	4,200	7,700
15.	Cempaka Putih	3,260	4,650	6,000	7,400	8,800	10,150	11,550	12,900	14,300	15,600	18,600	24,500
16.	Rawa Mangun	3,480	4,000	4,600	5,300	6,100	7,000	8,050	9,200	10,600	11,700	14,300	19,300
17.	Tanjung Priok	2,660	3,600	4,600	5,600	6,550	7,500	8,450	9,450	10,400	11,100	12,500	15,300
18.	Kelapa Gading	(400)	900	1,400	1,900	2,400	2,900	3,400	3,900	4,600	5,400	7,500	12,300
19.	Cilincing	(60)	450	850	1,250	1,650	2,100	2,400	2,850	3,400	4,100	5,700	9,800
20.	Penggilingan	(50)	500	1,000	1,500	1,950	2,450	2,800	3,300	4,000	4,700	6,400	10,400
21.	Kebayoran	9,350	10,250	11,150	12,050	12,900	13,800	14,600	15,400	16,500	17,400	19,300	22,900
22.	Kebayoran Lama	(570)	700	850	1,100	1,350	1,650	2,050	2,500	3,100	3,400	4,400	6,300
23.	Cipete	2,140	2,500	2,900	3,350	3,850	4,500	5,200	6,000	7,000	8,000	10,600	16,500
24.	Pasar Minggu	580	700	850	1,050	1,250	1,500	1,850	2,250	2,700	3,100	4,300	6,800
25.	Kalibata	2,200	2,600	3,100	3,650	4,300	5,100	6,000	7,100	8,400	9,800	13,400	21,500
26.	Jagakarsa	(10)	150	350	550	750	1,000	1,200	1,500	1,800	2,100	3,000	4,800
27.	Jatinegara I	2,110	2,500	2,850	3,200	3,550	3,900	4,300	4,600	5,000	5,500	6,500	8,300
28.	Jatinegara II	2,460	3,650	4,800	6,000	7,200	8,350	9,550	10,700	11,900	12,700	14,600	18,000
29.	Cawang	590	1,500	2,400	3,300	4,250	5,150	6,000	6,900	7,900	9,100	11,900	17,800
30.	Pasar Rebo	220	300	450	600	850	1,200	1,700	2,400	3,300	3,900	5,400	8,900
31.	Tebet	2,840	3,300	3,800	4,400	5,000	5,800	6,700	7,700	8,800	9,800	12,000	16,400
32.	Gandaria	(230)	350	450	600	800	1,100	1,500	2,100	2,800	3,400	4,800	8,100
33.	Klender	(500)	650	800	1,000	1,250	1,600	2,000	2,600	3,200	3,700	4,900	7,600
	Total	91,850	115,650	137,700	161,100	185,400	211,550	239,200	269,200	302,900	330,200	395,200	529,700

1-2 Recent Tendency

Table III-2 is the statistics of the number of subscribers, applicants and installed subscribers per month in the last 21 months until September 1980. The total number of installed subscribers is 17,315 in 1979 and 19,613 in the first 9 months of 1980. The breakdown of these figures classified by exchanges appears in Item 5, PART VIII of this report. Rapid increase of telephone applicants in May, 1980 stands out. This might be considered to be due to the telephone installation fee reduction effective May 1, 1980. Since then, the number of monthly installed subscribers has become greater than before.

Figure III-2 also summarizes the increase of subscribers in Jakarta City. On the basis of those figures collected recently, the study of the short term trend has been made, which appears in Item 6, PART VIII (Volume II) of this report. Priority of the telephone expansion project will be determined by such recent tendency of telephone demand with reference to the existing telephone facilities.

Table III-2 Number of Subscribers, Applicants and Installed Subscribers

Year	Month	Number of Subscribers	Applicants		Installed Subscribers
			Sold	Waiting	
1979	Jan.	75,488	714	472	788
	Feb.	76,495	1,107	806	909
	Mar.	78,910	2,424	1,037	2,076
	Apr.	80,350	1,431	664	1,896
	May	83,037	1,604	623	1,584
	Jun.	84,690	1,505	760	1,515
	Jul.	84,663	1,041	1,246	1,177
	Aug.	85,763	849	889	896
	Sep.	87,427	1,412	766	1,250
	Oct.	89,896	2,271	501	1,895
	Nov.	90,535	1,622	519	1,978
	Dec.	92,054	1,353	822	1,351
Total		92,054	17,333	9,105	17,315
1980	Jan.	93,390	1,368	557	1,086
	Feb.	95,633	1,652	926	1,601
	Mar.	97,614	2,154	1,482	1,815
	Apr.	99,770	2,165	861	1,697
	May	103,888	4,075	1,849	3,388
	Jun.	105,969	2,005	2,038	2,812
	Jul.	108,250	2,079	1,736	2,481
	Aug.	110,663	2,403	1,614	2,392
	Sep.	113,013	2,307	2,288	2,341
Total		113,013	20,208	13,351	19,613

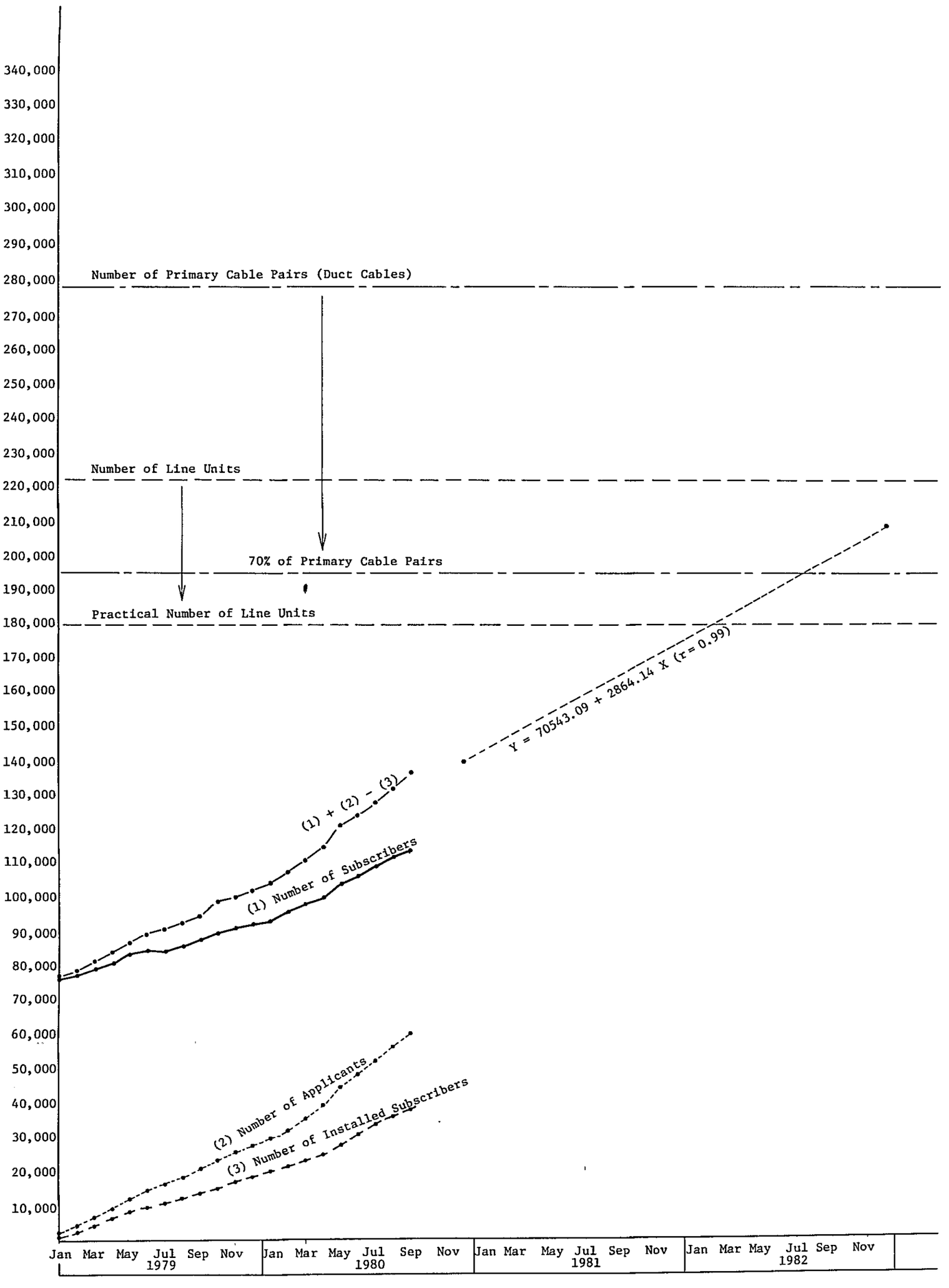


Figure III-2 Number of Subscribers and Applicants in Jakarta Telephone Network

2. Review of Existing Telephone Network

Existing telephone facilities in the Jakarta Telephone Network are described here, and the examination of those facilities has been made for the planning of network expansion.

2-1 Exchange Service Area

The examination of telephone exchange service areas has been prepared in accordance with the telephone demand forecast. In addition, the wire center study for the proposed exchanges has been made on the basis of the demand density in each exchange area.

2-1-1 Present Exchange Service Area

The exchange establishment plan, which defines the boundaries of service areas of both existing and proposed exchanges in Jakarta City, had been prepared by PERUMTEL in the former Second Five-Year Plan (Repelita II). According to this plan, 32 telephone exchanges are supposed to be established in Jakarta City as shown in Figure III-3. Out of this number, the following 24 exchanges are now in service: Kota I, Kota II, Cengkareng, Pluit, Ancol, Gambir I, Gambir II, Semanggi I, Semanggi II, Slipi, Pal Merah, Cempaka Putih, Rawa Mangun, Tanjung Priok, Kebayoran, Cipete, Pasar Minggu, Kalibata, Jatinegara I, Jatinegara II, Cawang, Pasar Rebo, Tebet and Gandaria.
Pasar Rebo and Gandaria are currently operated by the mobile switching system, although the building construction of Pasar Rebo Exchange has already been completed.

2-1-2 Revision of Exchange Service Area

The existing situation and future plan with regard to the exchange service areas in the Jakarta Telephone Network have been reviewed and studied carefully. The revision of service areas of some exchanges has been made after full consultation with PERUMTEL.

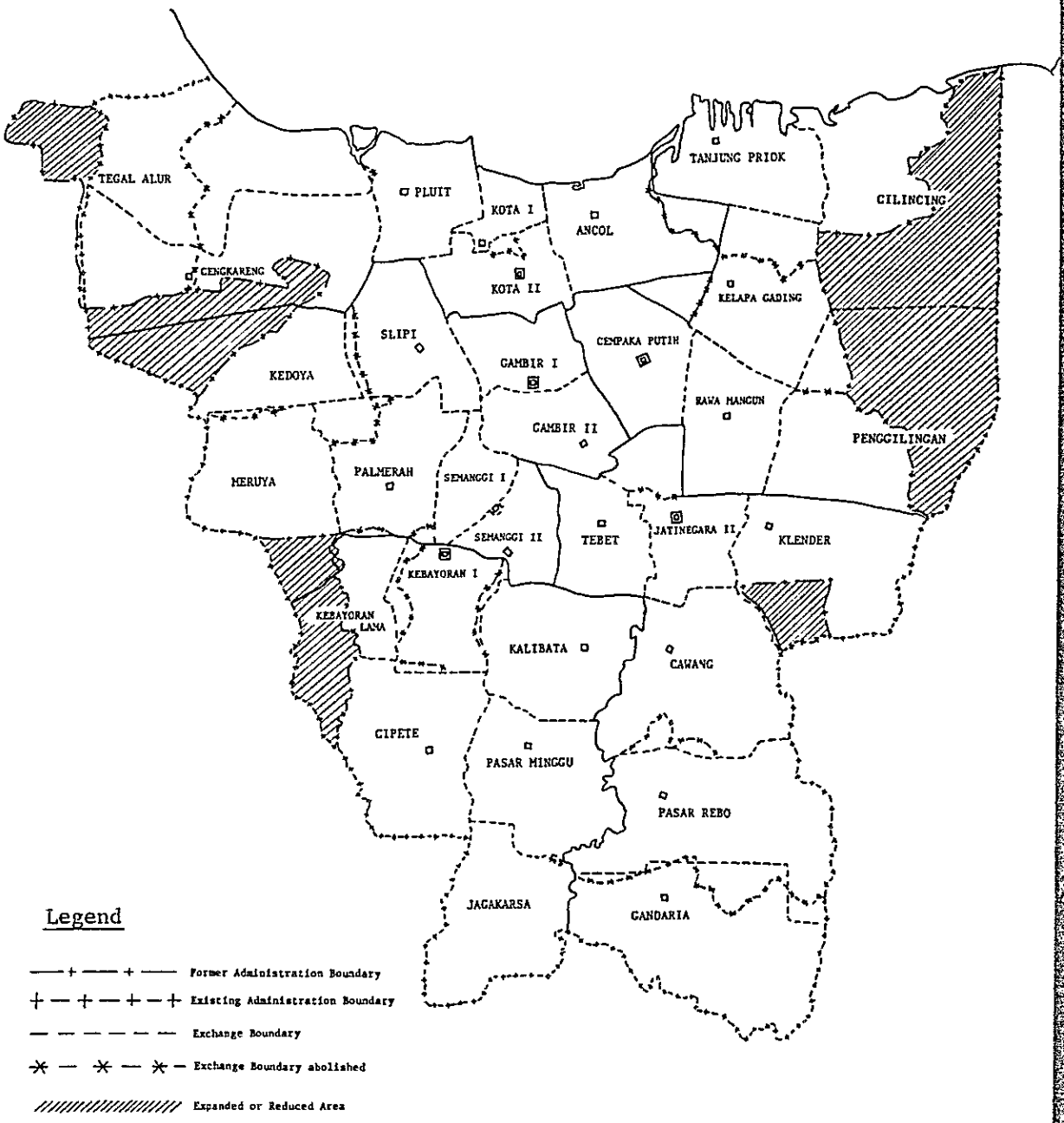


Figure III-3 Exchange Area Boundaries

(1) Expansion of Service Area

The service areas of the following exchanges are to be expanded in view of the expansion of Jakarta City administrative area (see Figure III-3): Cengkareng, Kedoya, Meruya, Cilincing, Penggilingan and Klender.

In addition, the service area of Kebayoran Exchange is to be divided into two in the future by reasons of area size, exchange building capacity and distribution of demand. The scheduled two new service areas are Kebayoran and Kebayoran Lama.

(2) Exchange Boundary Change

The juxtaposed service areas of the Cengkareng and Tegal Alur Exchanges are to undergo the boundary change. At present, the Cengkareng Exchange is located in the area originally intended to be the Tegal Alur Exchange service area. This area is situated side by side or, more precisely, west to east, with the Cengkareng Exchange service area.

After the planned area change, the Cengkareng Exchange will be in its original service area, and the projected Tegal Alur service area will be juxtaposed north to south with the Cengkareng Exchange area.

(3) Unification of Service Areas

In view of the geographic situations of the Jatinegara I and Jatinegara II Exchanges, it is recommended that the Jatinegara I Exchange be discontinued and absorbed by the Jatinegara II Exchange for the following reasons:

1) Outworn building can no longer endure the existing 4,000 line units of EMD switching system.

2) No spare space in the exchange land plot.

3) Little or no economic merits to maintain the exchange.

Details of economic study on the abolition of Jatinegara I Exchange appear in Paragraph 3-5, PART VI of this report.

(4) Minor Modification of Service Area

Several exchange service area boundaries have to be modified in consideration of the courses of railroads, rivers, projected roads, etc. (Figure III-3)

2-1-3 Wire Center of Exchange

Theoretical wire center study for the following 7 proposed exchanges is made: Tegal Alur, Kedoya, Meruya, Cilincing, Penggilingan, Kebayoran Lama and Jagakarsa. Wire center of each exchange is principally determined by the center of demand density in the telephone demand forecast as of 1993 prepared by JTP '79. Theoretical demand density maps of the proposed exchanges are in Figure III-4,5,6,7,8,9 and 10. However, the practical location of each wire center will take into account the ease of cable routing into the exchange building and the relative advantages of crossroad location. It is also necessary to consider the effect of junction cable distances and circuit quantities. Locations of the proposed exchanges are shown in Paragraph 10, PART VIII (Volume II) of this report.

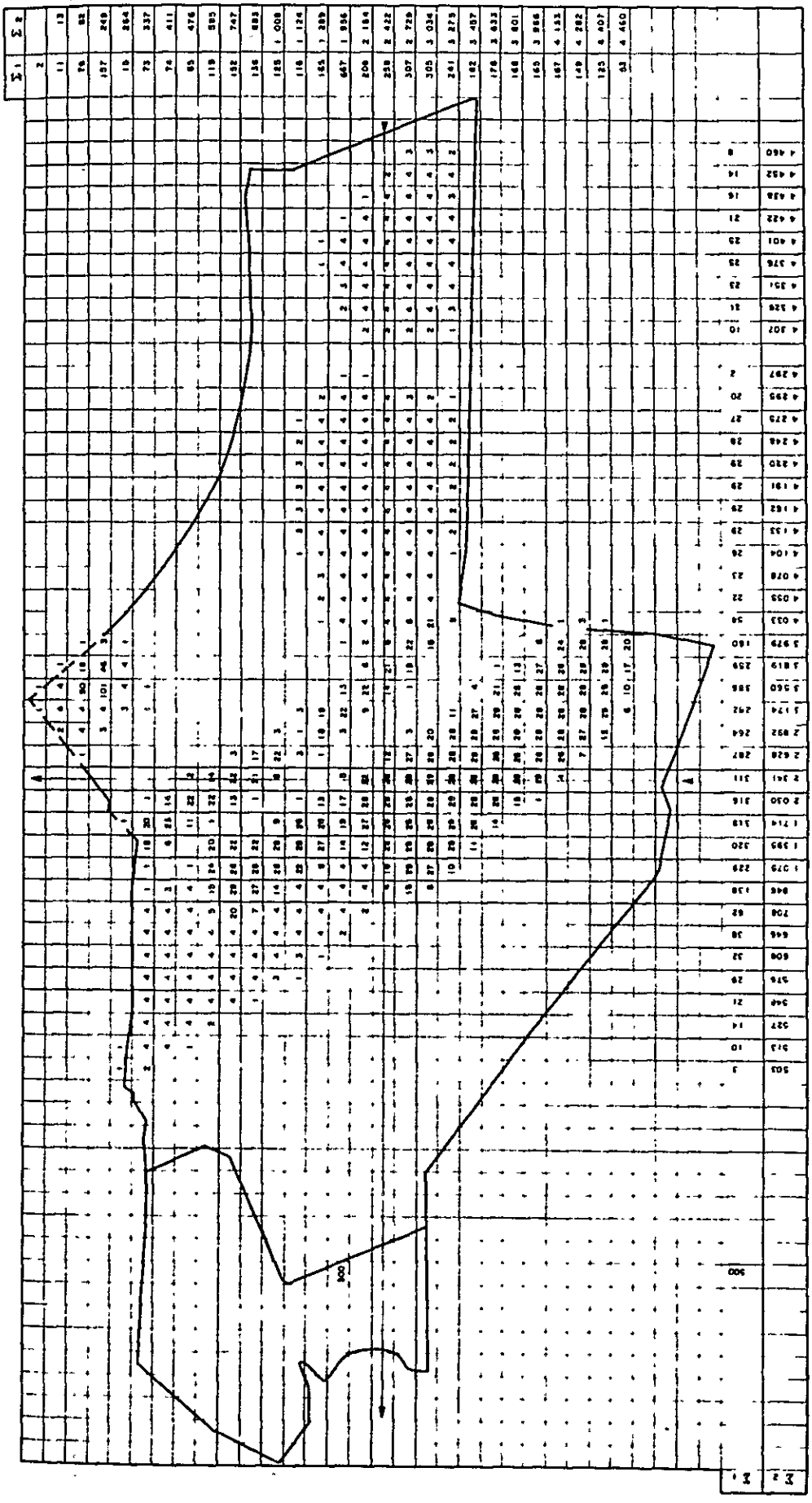
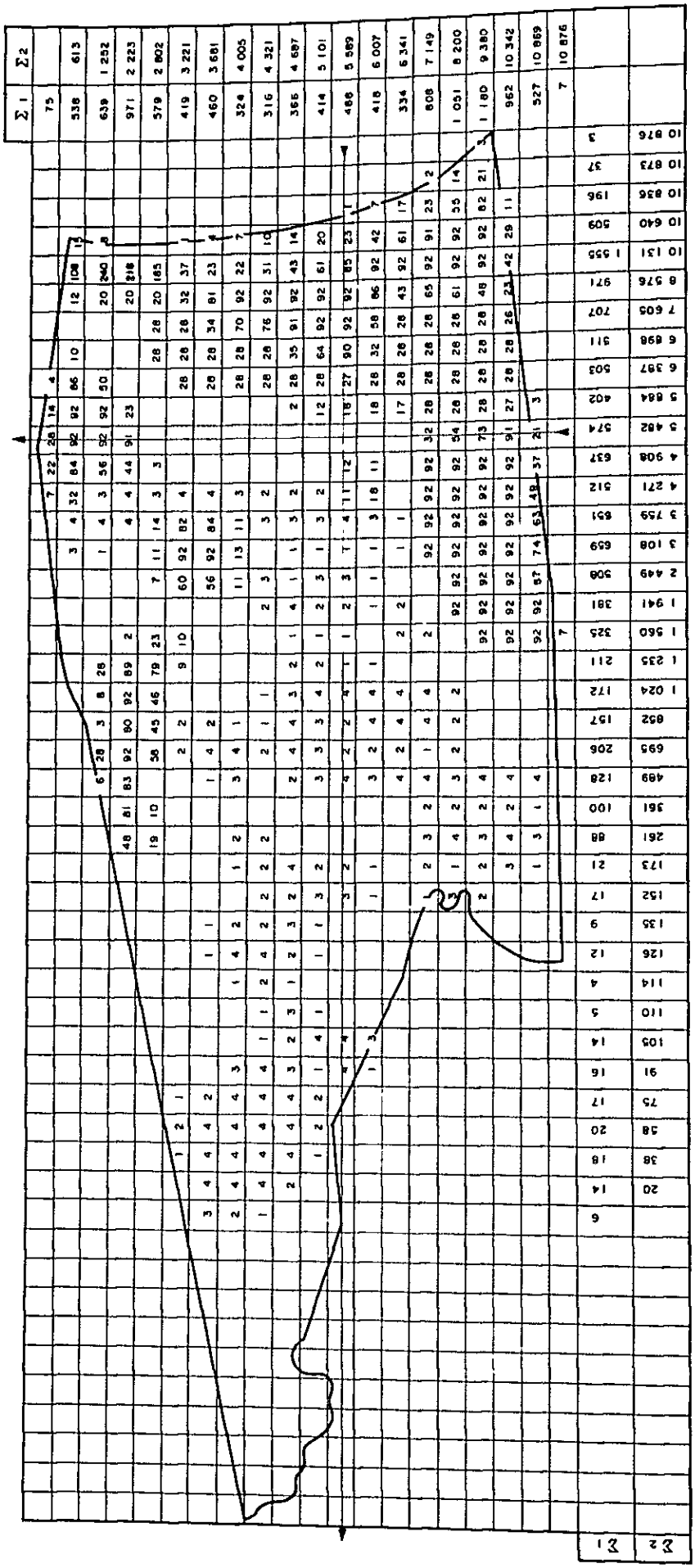
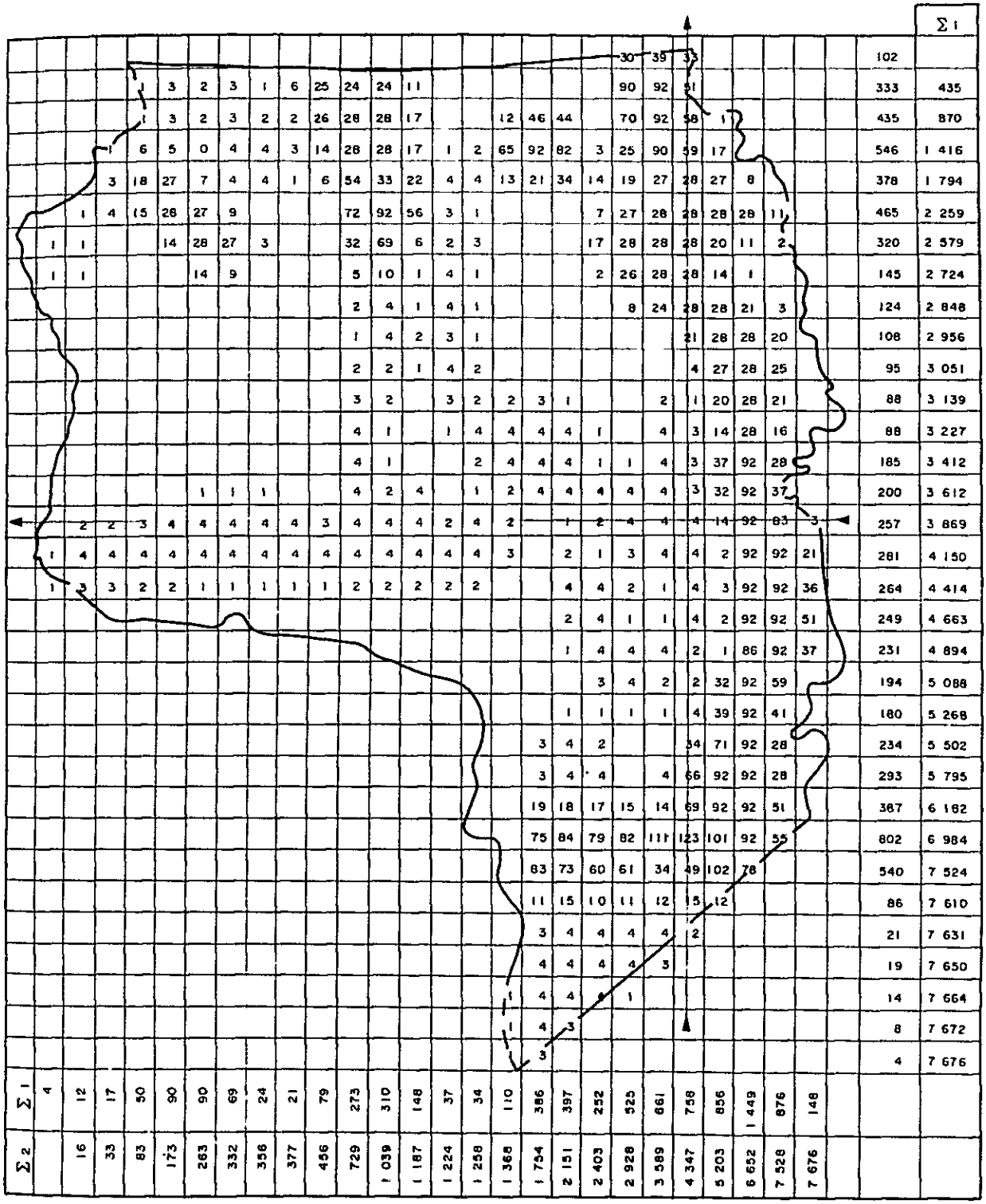


Figure III-4 Location of Theoretical Wire Center (Tegal Alur Exchange)



Σ1 = Individual sums of lines or columns
Σ2 = Addition of the individual sums
Total number of lines = 10 876 The trial point is at about 10 876/2 = 5 438 (shown by arrows)

Figure III-5 Location of Theoretical Wire Center (Kedoya Exchange)



$\Sigma 1$ = Individual sums of lines or columns

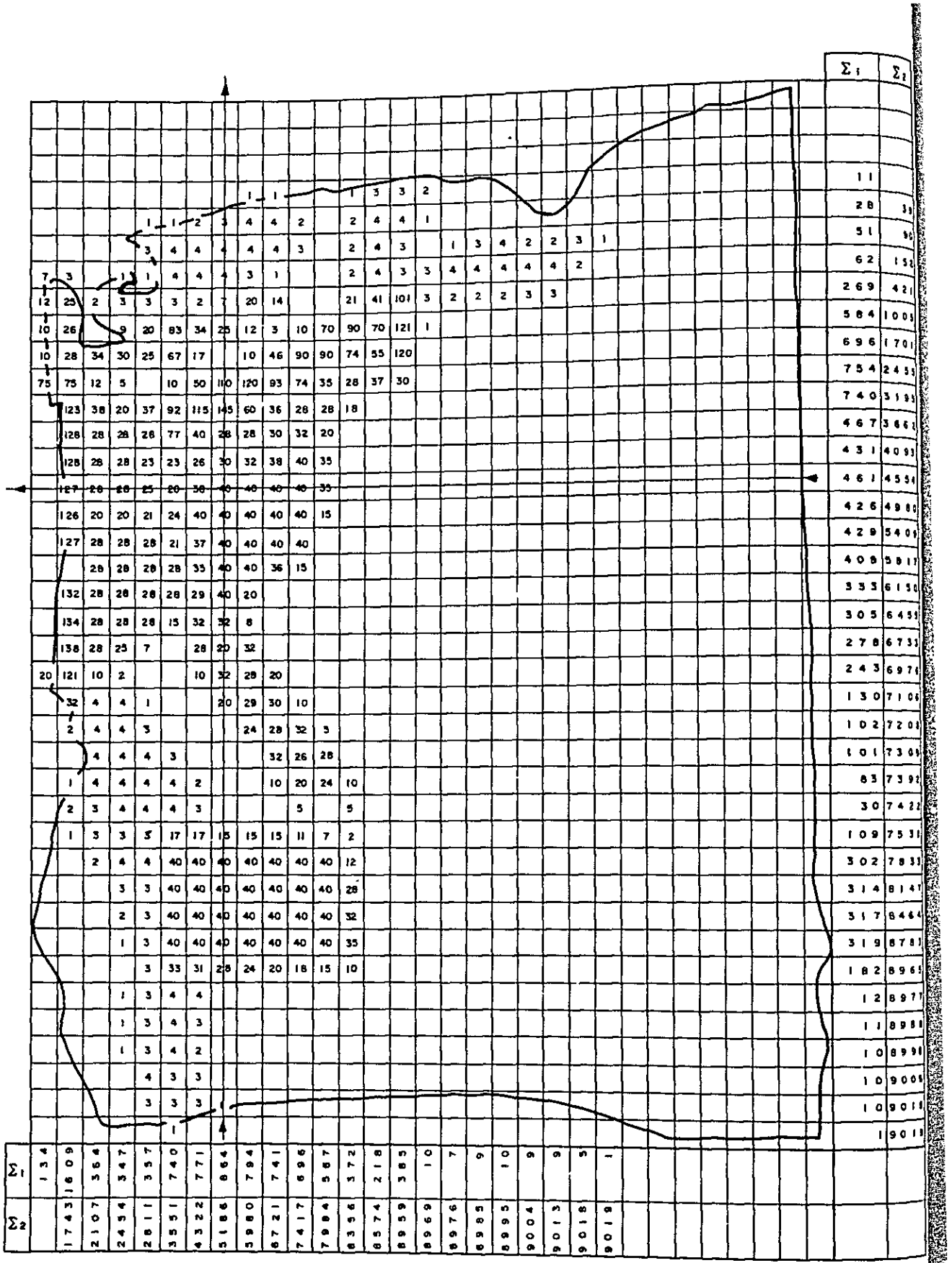
$\Sigma 2$ = Addition of the individual sums

Total number of lines = 7 676

The trial point is at about 7 676/2 = 3 834

(shown by arrows)

Figure III-6 Location of Theoretical Wire Center (Meruya Exchange)



Σ_1 = individual sums of lines or columns

Σ_2 = Addition of individual sums

Total number of lines = 9019

The trial point is at about 9019/2 = 4510 (shown by arrows)

Figure III-7 Location of Theoretical Wire Center (Cilincing Exchange)

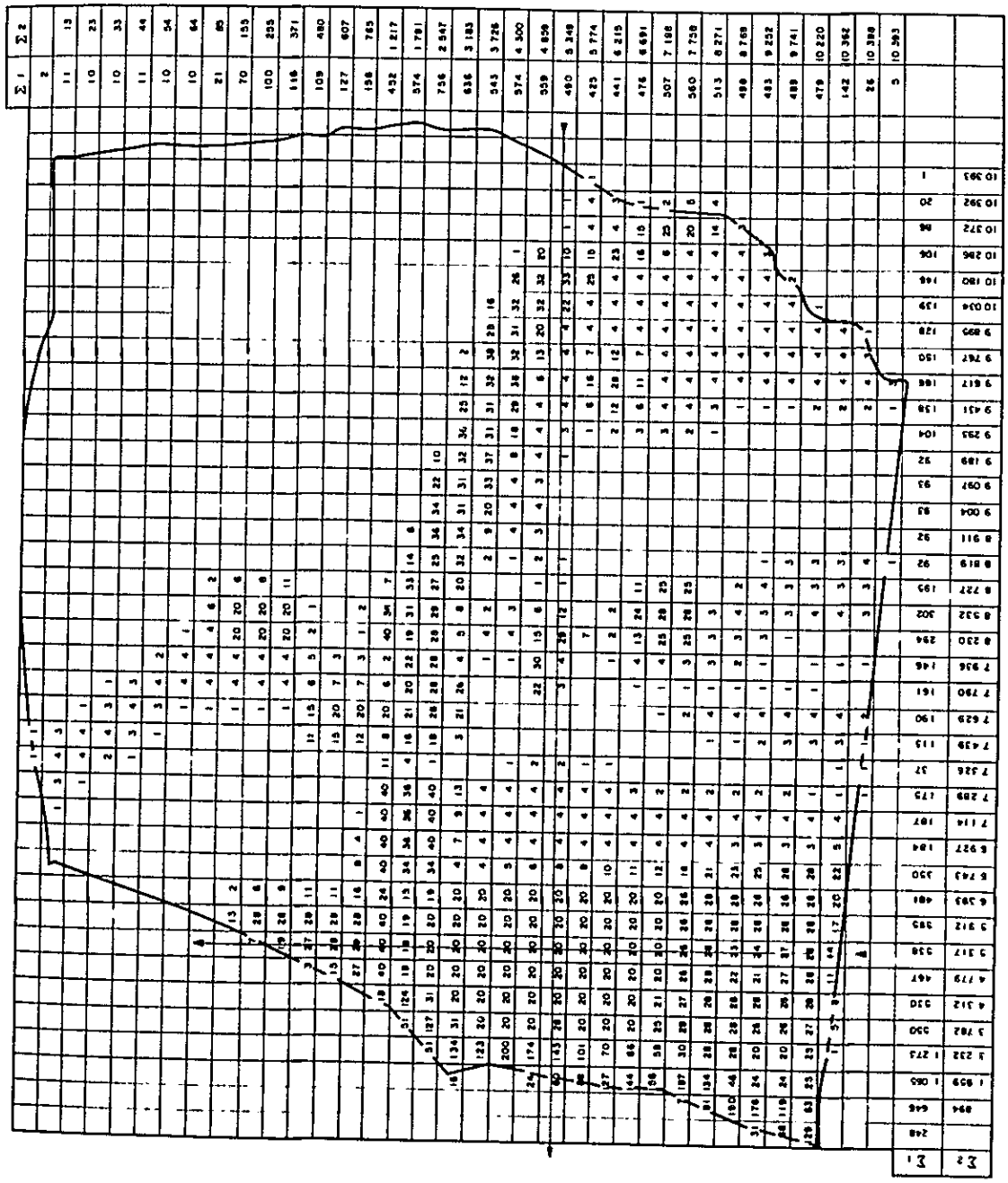
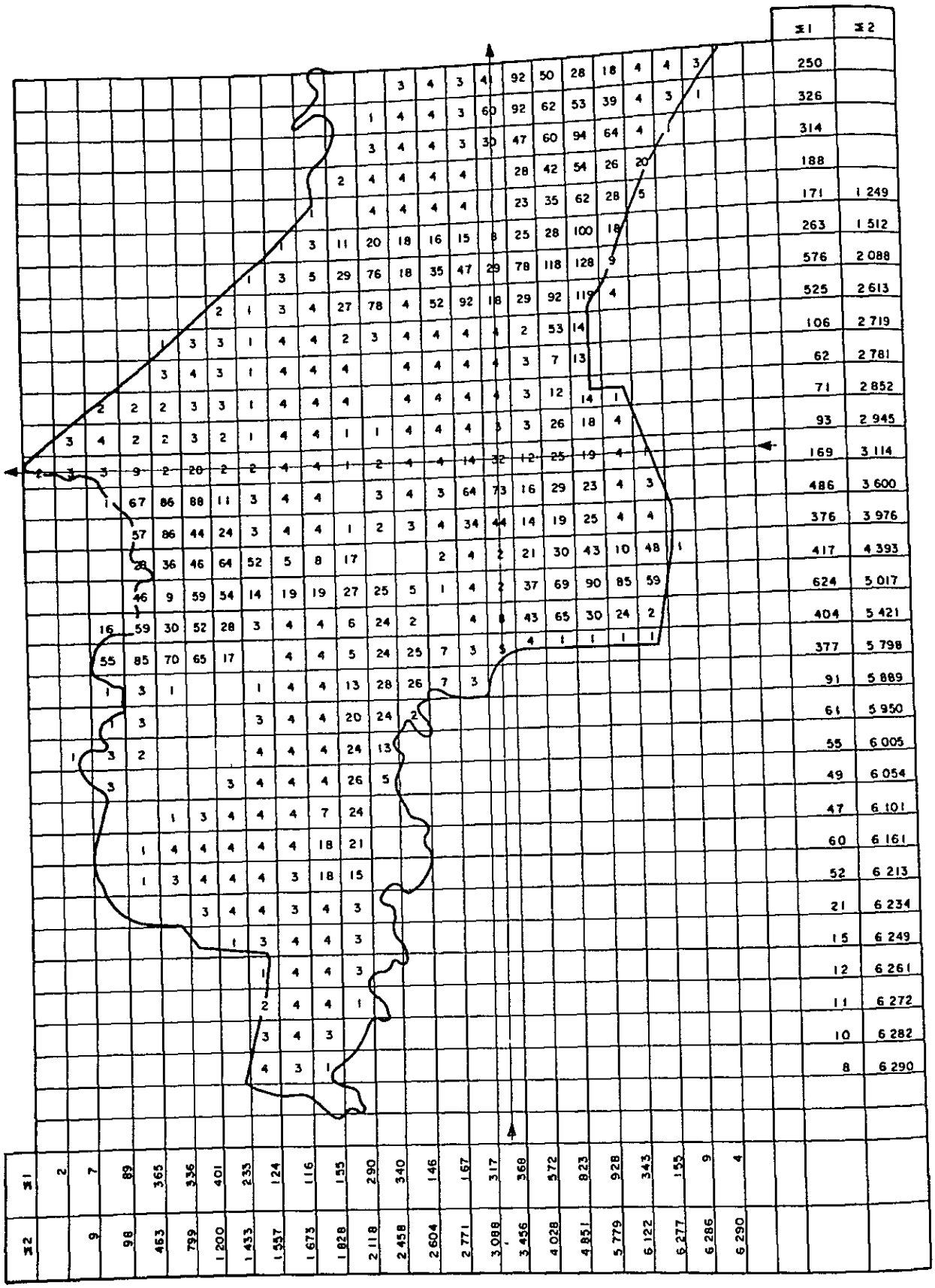


Figure III-8 Location of Theoretical Wire Center
(Penggilingan Exchange)



Σ1 = Individual sums of lines or columns

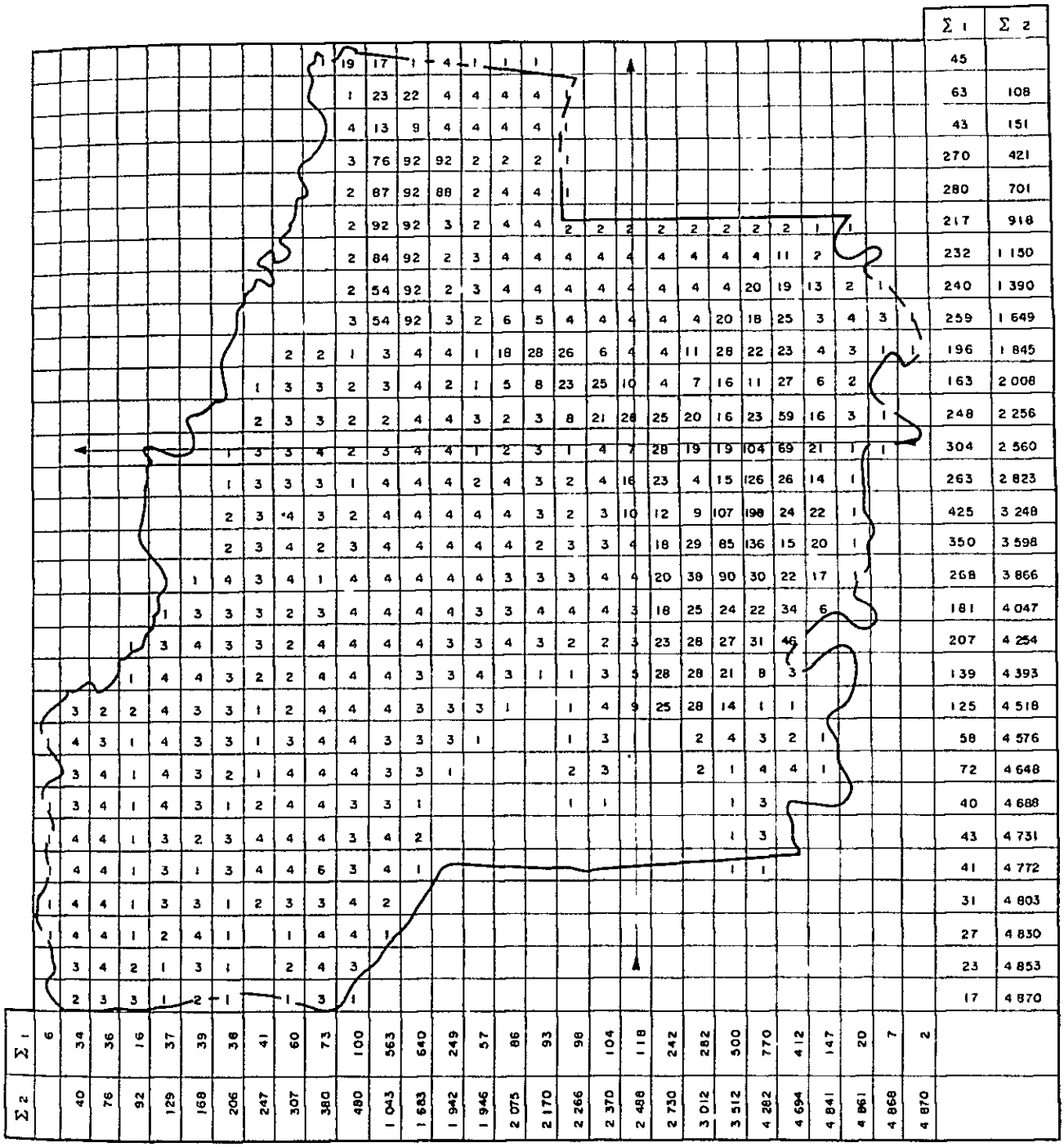
Σ2 = Addition of the individual sums

Total number of lines = 6 290

The trial point is at about 6 290 / 2

= 3 145 (shown by arrows)

Figure III-9 Location of Theoretical Wire Center
(Kebayoran Lama Exchange)



$\Sigma 1$ = Individual sums of lines or columns

$\Sigma 2$ = Addition of the individual sums

Total number of lines = 4 870

The trial point is at about 4 870/2 = 2 435
(shown by arrows)

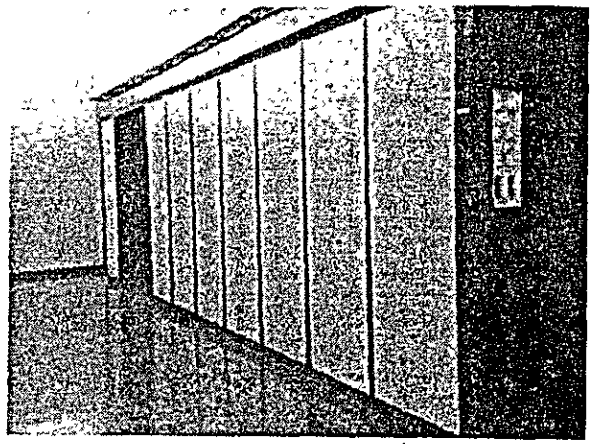
Figure III-10 Location of Theoretical Wire Center (Jagakarsa Exchange)

2-2 Switching System

The number of line units of the existing switching system, the type of switching system and its problem are described.

2-2-1 Existing Switching System

Several types of switching systems are now in operation in the Jakarta Telephone Network. They are PRX205 system for the local and tandem exchanges, EMD and mobile cross-bar (MCX) system for the local exchanges, CIT JANUS cross-bar system for the suburban tandem exchange and Metaconta 10C system for the combined trunk and international exchange. Table III-3 shows the existing local telephone exchanges, which can also be summarized as follows:



PRX Switching System

Type of Switching System	Number of Line Units	Number* of Lines	Occupancy (%)
a) PRX 205	162,000	68,654	42
b) EMD	59,000	42,589	72
c) MCX	2,000	640	32
Total	223,000	111,883	50

*Note: Figures for September, 1980

Table III - 3 List of Existing Exchanges (1/2)

No.	Exchange	Type of Switching System	Number of Line Units	Number* of Subscribers
1	Kota I	EMD	10,000	9,914
2	Kota II A	PRX	8,000	)
3	Kota II B	PRX	8,000	) 13,255
4	Kota II C	PRX	8,000	)
5	Kota II D	PRX	8,000	
6	Cengkareng	PRX	4,000	772
7	Pluit	PRX	4,000	3,791
8	Ancol	PRX	4,000	1,285
9	Gambir I A	EMD	10,000	) 14,244
10	Gambir I B	EMD	10,000	
11	Gambir I C	PRX	8,000	) 9,878
12	Gambir I D	PRX	8,000	
13	Gambir II A	PRX	8,000	) 3,945
14	Gambir II B	PRX	8,000	
15	Semanggi I	EMD	6,000	4,348
16	Semanggi II	PRX	8,000	1,502
17	Slipi	EMD	5,000	4,989
18	Pal Merah	PRX	4,000	2,449
19	Cempaka Putih	PRX	8,000	4,544
20	Rawa Mangun	PRX	8,000	5,048
21	Tanjung Priok	PRX	6,000	3,163
22	Kebayoran A	EMD	10,000	5,585
23	Kebayoran B	PRX	8,000	) 4,758
24	Kebayoran C	PRX	8,000	
25	Ciputat	EMD	2,000	347
26	Cipete	PRX	8,000	3,016
27	Pasar Minggu	EMD	2,000	816
28	Kalibata	PRX	8,000	3,260

* Note: Figures for September, 1980

Table III - 3 List of Existing Exchanges (2/2)

No.	Exchange	Type of Switching System	Number of Line Units	Number* of Subscribers
29	Jatinegara I	EMD	4,000	2,346
30	Jatinegara II	PRX	8,000	3,386
31	Cawang	PRX	4,000	751
32	Pasar Rebo	MCX	1,000	383
33	Tebet	PRX	8,000	3,851
34	Gandaria	MCX	1,000	257
	Total		223,000	111,883

* Note: Figures for September, 1980

Technical properties of local switching systems are as follows:

(1) PRX205 System

The technical properties of PRX205 (TCP18 mono-processor version) introduced in the Jakarta Telephone Network are as follows:

a) Type -- Space division electronic switching system with stored program control
b) Speech path -- Minireed relay switch
c) Line unit capacity -- 8,000
d) Traffic capacity of switching netowrk -- 1,000 Erlang
e) Call handling capacity of processor -- 36,000 BHCA

(2) Mobile Cross-bar (MCX) System

The technical properties of MCX system introduced in the Jakarta Telephone Network are as follows:

a) Type -- Electromagnetic switching system with wired logic common control
b) Speech path -- Cross-bar switch
c) Line unit capacity -- 1,000
d) Traffic capacity of switching network -- 140 Erlang
e) Call handling capacity of marker -- approximately 6,500 BHCA

2-2-2 Additional Installation or Replacement of EMD Equipment

No surplus floor space for increase of terminals is available at the existing EMD exchanges with the exception of Pasar Minggu and Ciputat Exchanges. Terminal increase of EMD equipment is recommended only at Pasar Minggu and Ciputat Exchanges, because the floor layout of these two exchanges allows additional installation of 2,000 terminals.
For the reasons stated below, replacement of EMD equipment by an electronic switching system is recommended for the future:
In the first place, almost all the present EMD exchanges are located in the commercial centers of Jakarta City. With the gradual sophistication of business activities, these limited EMD exchanges can no longer meet the need for new services, such as touch tone dialling, abbreviated dialling, call transfer, malicious call tracing, and conference services. Secondly, the spare parts supply for EMD equipment has been stagnant and might be discontinued for good one day in the near future.

2-2-3 Practical Capacity of PRX Switching System

The problem which is intensely felt by subscribers of certain PRX exchanges is the difficulty of receiving a dial tone because of over-load of processor.

In general, the maximum system capacity of common control switching system is determined by two factors, i.e., maximum traffic capacity of switching network and maximum call handling capacity of common control equipment.

From the viewpoint of call handling capacity, the value of 36,000 BHCA is not sufficient because a great number of ineffective calls in the Jakarta Telephone Network are loaded to the system, reducing the actual line capacity to less than 8,000.

The number of actually processed calls with the average holding time per call including ineffective calls and offered traffic is calculated by the following formula:

$$\text{Number of calls (BHCA)} = \frac{\text{Offered Traffic (Erl.)} \times 3{,}600}{\text{Average Holding Time (Sec.)}}$$

The above formula indicates that the number of calls increases as the average holding time shortens. Figure III-11 shows correlation between the originating calling rate per subscriber and the maximum line capacity, based on the mean value of average holding time at present in the Jakarta Telephone Network.

2-2-4 Improvement of PRX Exchange

As stated in Paragraph 2-2, the practical number of subscribers of a PRX is much smaller than 8,000 at an exchange with high traffic density because of a large number of ineffective calls.

Reduction of ineffective calls causes the number of subscribers to increase.

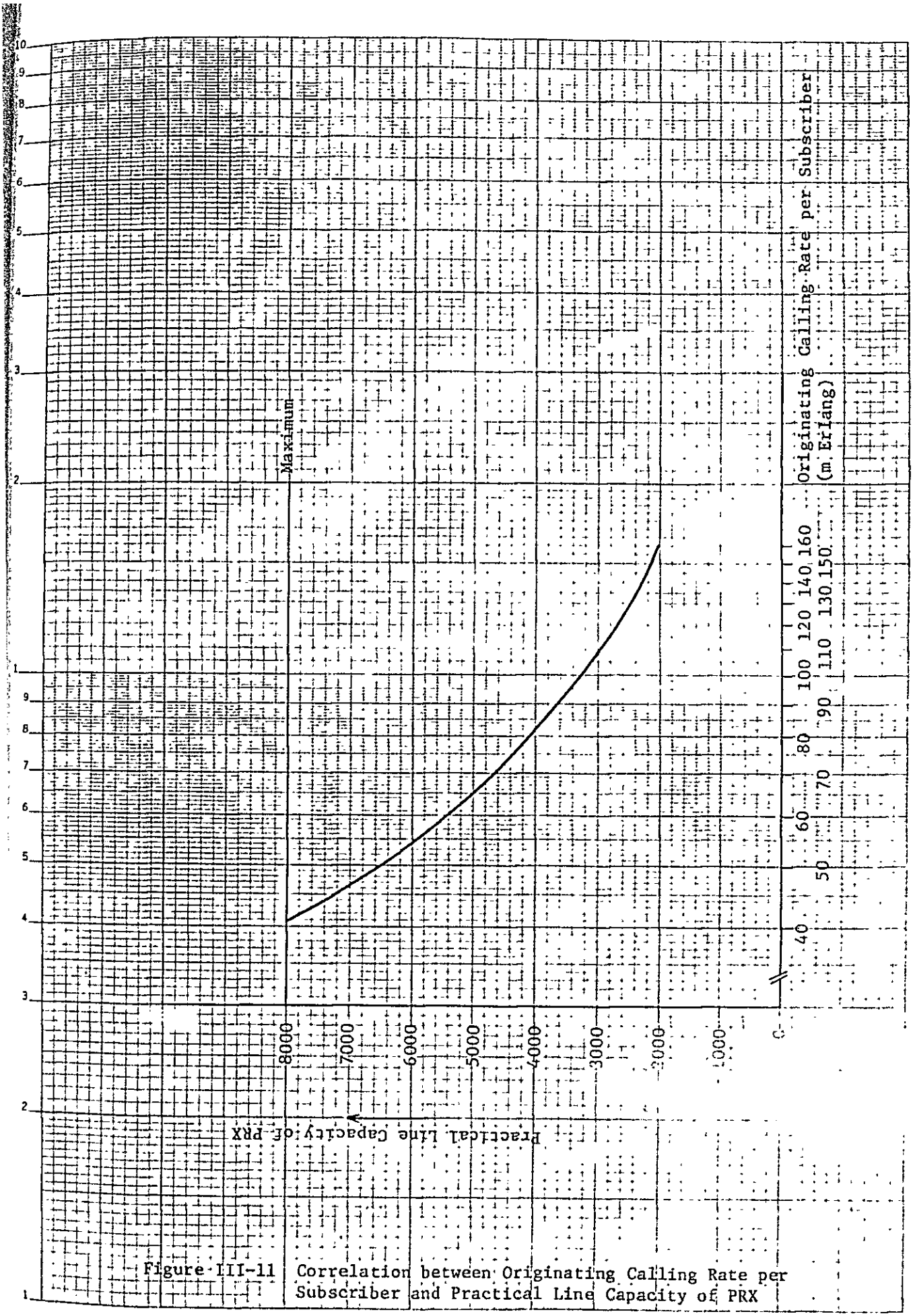


Figure III-11 Correlation between Originating Calling Rate per Subscriber and Practical Line Capacity of PRX

The recent surveys revealed the following phenomena:

1) Numerous ineffective calls with a very short holding time at EMD exchanges, assumed to be the result of idle hooking of telephone sets.

2) Dialling before hearing dial tone.

3) Non-grouping of telephone numbers of PBX.

4) A large number of calls with holding time of 10 - 20 seconds as observed at an OGT of mobile cross-bar exchanges.

To reduce mis-attempt calls, the following notices are recommended for announcement to subscribers by PERUMTEL:

a) To avoid aimless hooking by all means.

b) To dial only after receiving dial tone.

c) To ascertain desired telephone number before dialling.

In this connection, it is important to promote the increase of telephone lines for subscribers with high telephone density, and the grouping of telephone numbers of PBX.

2-3 Junction Cable

The number of existing junction cables is 98 as of September, 1980. The total number of cable pairs is 56,200. Out of this figure, 29,430 pairs are non-loaded and 26,770 pairs loaded. Details of junction cables appear in PART V of this report.

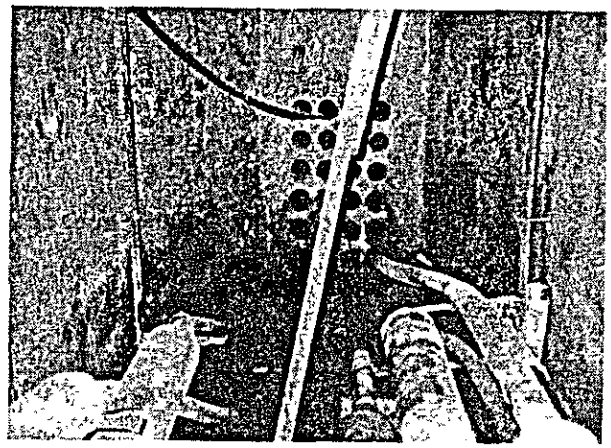
2-4 Subscriber Cable

2-4-1 Number of Primary Cable Pairs

Total number of primary cable pairs of 24 existing telephone exchanges is 363,887 pairs. They are classified as follows:

Type of Cable	Number of Cable Pairs
1) Direct Buried Cable	69,487
2) Ducted Cable	
a) Existing	275,800
b) Under installation	18,600
Total	363,887

The number of existing primary cables of each telephone exchange in the Jakarta Telephone Network is shown in Table III-4. Details of subscriber cables for each exchange appear in Paragraph 7 of PART VIII (Volume II) of this report.



Inside View of Manhole

2-4-2 Cut-over of Subscribers

The "cut-over" is defined here as to transfer the subscriber which is currently connected to other exchange to its original exchange. The following number of subscribers are to be re-connected to the exchanges to which they respectively belong:

Original Exchange	Present Exchange	Number of Cut-over Subscribers*
Kota II	Kota I	3,370
Cengkareng	Kota I	20
Pluit	Kota I	600
Gambir II	Jatinegara I	400
Gambir II	Gambir I	8,800
Semanggi II	Semanggi I	2,500
Slipi	Kota II	60
Cempaka Putih	Jatinegara I	20
Cempaka Putih	Gambir I	210
Jatinegara II	Jatinegara I	100
Cawang	Jatinegara I	120
Total		16,200

*Note: At the end of July, 1980.

The cut-over work for these subscribers should be carried out prior to the cable expansion work. In particular, the cut-over works to Kota II from Kota I and to Gambir II from Gambir I should be carried out urgently.

Table III-4 Number of Existing Primary Cables of Each Telephone Exchange

No.	Exchange	Existing Direct Buried Cable	Ducted Cable			Total
			Existing	Under Installation	Others*	
1	Kota I	12,000	9,600	-	-	21,600
2	Kota II	-	40,800	-	-	40,800
3	Cengkareng	-	4,600	800	-	5,400
4	Pluit	-	6,400	-	-	6,400
5	Ancol	-	3,400	-	-	3,400
6	Gambir I	32,812	37,200	7,000	10,200	87,212
7	Gambir II	-	14,600	10,800	-	25,400
8	Semanggi I	4,200	6,600	-	6,000	16,800
9	Semanggi II	-	5,200	-	-	5,200
10	Slipi	2,880	10,900	-	-	13,780
11	Pal Merah	-	4,800	-	-	4,800
12	Cempaka Putih	-	17,000	-	-	17,000
13	Rawa Mangun	-	14,800	-	-	14,800
14	Tanjung Priok	4,080	9,200	-	-	13,280
15	Kebayoran	8,840	25,400	-	-	34,240
16	Cipete	-	8,000	-	-	8,000
17	Pasar Minggu	-	5,100	-	-	5,100
18	Kalibata	-	6,000	-	-	6,000
19	Jatinegara I	4,195	1,800	-	-	5,995
20	Jatinegara II	-	8,800	-	-	8,800
21	Cawang	-	5,600	-	-	5,600
22	Pasar Rebo	-	2,600	-	-	2,600
23	Tebet	-	10,000	-	-	10,000
24	Gandaria	480	1,200	-	-	1,680
	Total	69,487	259,600	18,600	16,200	363,887

*Note: Cables serving in other exchange area.

3. Network Expansion Plan

Network expansion plan, which comprises the provision of switching system, building construction, and expansion of both junction and subscriber cables, is described here on the basis of demand and traffic forecasts made so far.

3-1 Switching System

3-1-1 Introduction of New Switching System

For the multi-exchange area with high traffic density like the Jakarta Telephone Network, the proposed switching system should be larger in system capacity than the existing system. The major technical properties of the new switching system are recommended to be as follows:

a) Line capacity - more than 20,000
b) Traffic capacity of switching netowrk - more than 4,000 Erlang
c) Call handling capacity of processor - more than 300,000 BHCA

3-1-2 Provisioning Period

The optimum provisioning period is 3 - 4 years in view of the complex procedure for import of switching system from abroad.
For the exchanges where the growth rate of telephone demand is limited, the provisioning period might be more than 3 years.

3-1-3 Installation Plan

Installation plans for a number of line terminals of switching system in both existing and proposed exchanges are being made in due compliance with the telephone demand at each exchange. These are shown in Table III-6. Total number of line units of switching system additionally installed for the Jakarta Telephone Network by 1993 is 404,000. Figure III-12 summarizes the provisioning of switching system, based on the telephone demand in the Jakarta Telephone Network. Installation plan for each exchange appears in Item 13 of PART VIII (Volume II) of this report. The following assumptions were taken into consideration in making the above installation plans:

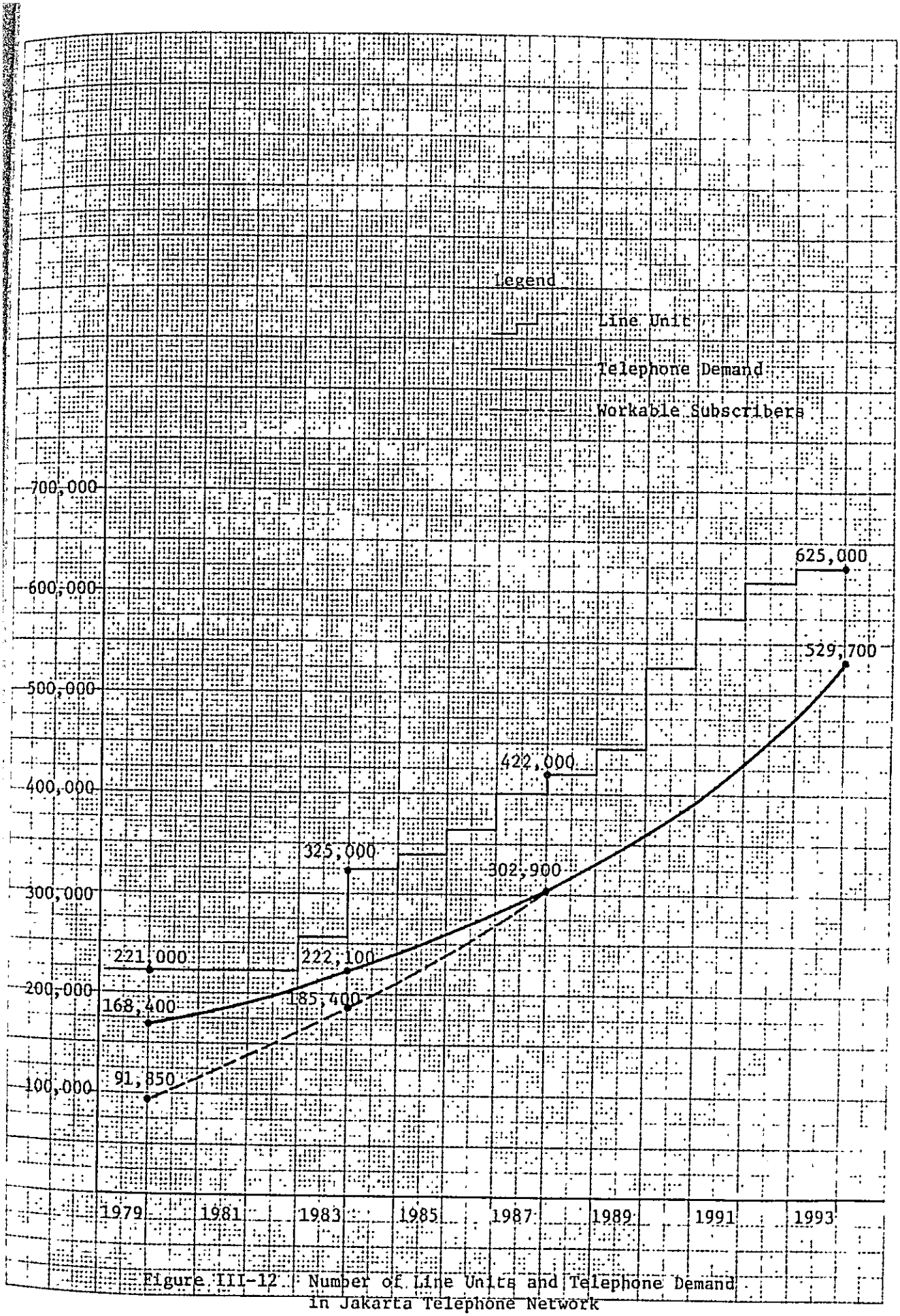


Figure III-12 Number of Line Units and Telephone Demand in Jakarta Telephone Network

1) The maximum number of subscribers of PRX and mobile cross-bar system be determined not only by traffic capacity but by call handling capacity of common control equipment even though the line terminals of switching system become unusable for one reason or another. (refer to Paragraph 2-2-2 of PART III.)

2) Subscriber accommodation rates of EMD and new switching equipment be as follows:
   a) New system 100%
   b) EMD system 97%

3) New switching system be introduced at both existing and proposed exchanges in case of replacement, additional or initial installation.

4) No terminal increase at EMD except in some special cases.

5) Provisioning period of 3 years or more.

6) The minimum number of line terminals to be increased be 1,000.

3-2 Exchange Building

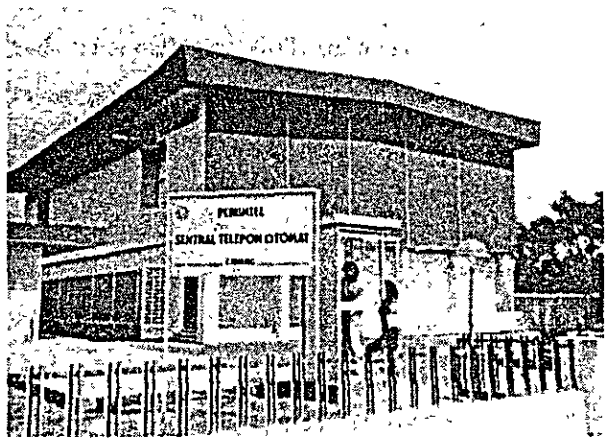
3-2-1 Construction of New Exchange Building

According to the current Third Five-Year Plan (Repelita III), the following 8 exchanges are proposed to be newly established during the period of this plan (1979-1983): Tegal Alur, Kedoya, Meruya, Kelapa Gading, Cilincing, Penggilingan, Jagakarsa and Klender. The building construction for Kelapa Gading and Klender Exchanges has already been completed; therefore, the building construction required is for 6 other proposed exchanges.

Pasar Rebo and Gandaria are currently operated by the mobile switching system. The building construction for Gandaria Exchange is necessary. The building construction for Pasar Rebo Exchange has already been completed.

3-2-2 Expansion or Reconstruction of Existing Exchange Building

For installing an additional switching system, it is necessary to examine the availability of building space at each existing exchange in the Jakarta Telephone Network. For details of the existing exchange building layout and equipment room layout, see Paragraphs 8 and 9 of PART VIII (Volume II) of this report. In case where building expansion is required, the necessary floor space for switching equipment is estimated to be 100 square meters per 10,000 terminals, without regard to the type of switching equipment to be installed.



Standard Exchange Building

Exchange building capacity shall be decided with due regard to telephone demand at the exchange concerned in the future. Building expansion plans for the existing exchanges are described below.

(1) Kota I Exchange

The existing EMD of 10,000 line units will not possibly meet the telephone demand after the year 1986; however, no surplus floor space for terminal increase is available. Therefore, construction of a new exchange building is recommended, using the place where the existing administrative building is located by withdrawing this latter building.

The EMD shall be repalced with a new switching system this time, because of its superannuation and the need to provide new telephone services.

(2) Gambir I Exchange

The existing switching system will not meet the telephone demand after the year 1990, while the necessary floor space for additional installation of switching equipment is not available. Considering the necessity to provide new telephone services, the existing EMD shall be replaced with a new switching system which is to be installed in a newly constructed exchange building. This new building construction is proposed at the quadrangle of Gambir I Exchange. The existing EMD switching room in the existing building can be re-used for new tandem and local switching equipment.

(3) Gambir II Exchange

The existing switching room holds space for both the existing 16,000 line unit PRX with actual capacity of 8,000 lines, and 15,000 lines of new switching equipment. However, the power room and MDF room leave no surplus space for installation of additional equipment. MDF and power room expansion is urgently required.

(4) Semanggi I Exchange

The existing building shall be expanded since EMD with 6,000 line units will not satisfy the telephone demand after 1982.

(5) Slipi Exchange

The existing switching system will not meet the telephone demand after 1981. However, no surplus floor space is available in the existing building.

It is recommended that the construction of a new building be started as soon as possible.

(6) Cempaka Putih Exchange

The actual line capacity of the existing PRX of this exchange is 6,000. Additional 11,000 lines in the switching room can be accommodated if a new system is installed at the available floor space. However, since the space for power equipment is insufficient, building expansion is urgently required.

(7) Jatinegara II Exchange

Existing building has the floor space for additional switching system installation to meet the demand by 1987; however, no floor space is available for the rectifier and battery room. Therefore, the building expansion for rectifier and battery installation is necessary. Also for the expected demand growth after 1988, the building expansion will be necessary. Addition of one more story to the existing building may be possible.

3-3 Junction Cable Network

Junction cable network plans for the years 1987 and 1993 are prepared on the basis of traffic forecast which, in turn, is based on the switching system installation plan. Introduction of primary order PCM system is a major precondition in this plan. Details of junction cable network plans appear in PART V of this report.

3-4 Subscriber Cable Network

Basic design of subscriber cable network for 5 local exchanges has been carried out at the request of PERUMTEL. The 5 exchanges are Kota I, Kota II, Pluit, Gambir I and Jatinegara Exchanges. Details of the basic design for these 5 local exchanges appear in PART VI of this report. In addition, the examination of subscriber cable facilities for other exchanges than abovementioned is made in accordance with the demand forcast projection. Based on the result of this examination, the order of priority in the subscriber cable expansion project has been determined.

3-4-1 Efficiency of Existing Subscriber Cable Facilities

How long can the existing number of primary cable pairs cover the telephone demand has been examined. As the result, it is assumed that the efficiency of the existing primary cable pairs might be 70% at a maximum, considering undistributed pairs and demand fluctuations. However, the number of direct buried cables and primary cables currently serving other exchange areas is not counted in the number of

primary cable pairs concerned. The efficiency of the existing subscriber cable facilities in terms of duration in years can be expressed as follows:

$$D = \frac{P \times 0.7 - N}{\bar{n}}$$

where

D = Duration in years of demand coverage by the existing cable facilities

P = Number of the existing primary cable pairs

N = Number of working subscribers in 1980

$\bar{n}$ = Average number of subscriber increase per year between 1980 and 1987

Table III - 5 shows the calculation result by the above formula for each exchange in the Jakarta Telephone Network. The number of working subscribers in 1980, which is shown in item (3) of Table III - 5, is on the assumption that the cut-over work has been completed. The cut-over work is described in the previous Paragraph 2-4-2.

3-4-2 Provisioning Period

Provisioning period for primary cable facilities is from 3 to 7 years in accordance with the demand in the telephone exchange area concerned, while the provisioning period for other outside plant facilities is much longer. Although the provisioning period for primary cables is 5 years, preparations for the next period will have to be made in advance in order to ensure the uninterrupted supply of primary cable facilities relating to the telephone demand in due consideration of completion period for cable installation work.

Table III-5 Examination of the Existing Primary Cable Pairs

No.	Exchange	No.of Primary Cable Pairs (1) Direct Buried Cable	Ducted Cable	Total	Effective No. of Pairs (1)x0.7=(2)	No. of Subs.*1 Lines in Jul.'80 (3)	Occupied*2 Rate (%)	Demand in 1987 (4)	Average Increase (4)-(3) /7=(5)	Duration (Year) (2)-(3)/ (5)
1	Kota I	12,000	9,600	21,600	6,720	5,688 (9,738)	(50)	10,300	659	1.6
2	Kota II	-	40,800	40,800	28,560	16,059 (12,689)	31	28,400	1,763	7.1
3	Cengkareng	-	5,400	5,400	3,780	578 (558)	10	5,300	675	4.7
4	Pluit	-	6,400	6,400	4,480	4,313 (3,713)	58	9,200	698	0
5	Ancol	-	3,400	3,400	2,380	1,226 -	36	7,600	911	1.3
6	Tegal Alur	-	-	-	-	- -	-	2,000	-	-
7	Gambir I	32,812	44,200	77,012	30,940	14,972 (23,982)	45	27,000	1,718	9.3
8	Gambir II	-	25,400	25,400	17,760	12,964 (3,764)	15	35,300	3,191	1.5
9	Semanggi I	4,200	6,600	10,800	4,620	1,718 (4,218)	(25)	10,000	1,183	2.5
10	Semanggi II	-	5,200	5,200	3,640	3,894 (1,394)	27	10,200	901	0
11	Slipi	2,880	10,900	13,780	7,630	5,042 (4,982)	46	14,300	1,323	2.0
12	Pal Merah	-	4,800	4,800	3,360	2,330 -	49	7,100	681	1.5
13	Kedoya	-	-	-	-	- -	-	4,200	-	-
14	Meruya	-	-	-	-	- -	-	2,300	-	-
15	Cempaka Putih	-	17,000	17,000	11,900	4,356 (4,126)	24	14,300	1,421	5.3
16	Rawa Mangun	-	14,800	14,800	10,360	4,815 -	33	10,600	826	6.7
17	Tanjung Priok	4,080	9,200	13,280	6,440	3,079 -	33	10,400	1,046	3.2
18	Kelapa Gading	-	-	-	-	- -	-	4,600	-	-
19	Cilincing	-	-	-	-	- -	-	3,400	-	-
20	Penggilingan	-	-	-	-	- -	-	4,000	-	-
21	Kebayoran*3	8,840	25,400	34,240	17,780	10,439 -	41	196,000	1,309	4.6
22	Cipete	-	8,000	8,000	5,600	2,853 -	36	7,000	592	4.6
23	Pasar Minggu	-	5,100	5,100	3,570	781 -	15	2,700	274	10.2
24	Kalibata	-	6,000	6,000	4,200	3,053 -	51	8,400	764	1.5
25	Jagakarsa	-	-	-	-	- -	-	1,800	-	-
26	Jatinegara I	4,195	1,800	5,995	1,260	1,740 (2,380)	(33)	5,000	466	0
27	Jatinegara II	-	8,800	8,800	6,160	3,344 (3,244)	37	11,900	1,222	2.3
28	Cawang	-	5,600	5,600	3,920	735 (615)	11	7,900	1,024	3.1
29	Pasar Rebo	-	2,600	2,600	1,820	363 -	14	3,300	420	3.5
30	Tebet	-	10,000	10,000	7,000	3,656 -	37	8,800	735	4.5
31	Gandaria	480	1,200	1,680	840	252 -	21	2,800	364	1.6
32	Klender	-	-	-	-	- -	-	3,200	-	-
	Total	69,487	278,200	347,687	194,600	108,250 -	37	302,900	27,807	3.1

*Note: 1. (xxxx) Number of subscribers before cut-over
2. (xx) Including direct buried cable
3. Including Kebayoran Lama Exchange

3-4-3 Subscriber Cable Expansion Plan

On the basis of the covering duration of the existing primary cable facilities, the implementation schedule for the subscriber cable network expansion plan is made as shown in Table III-6. However, this schedule is only for the initial stage of installation work. This is because the provisioning period for primary cables is relatively short, compared with other outside plant facilities, such as underground duct systems and secondary cables. The starting point of installation work is assumed to be uniformly one year before service-in. In case where the cut-over work is included in the cable installation work, this installation period is assumed to be two years.

Therefore, the subsequent subscriber cable installation plan will be projected, based on the careful analysis of telephone demand in the future. The amount of work in the subscriber cable expansion plan, based on the demand forecast in 1993, is shown in Table VII-7 in PART VII of this report.

However, the cable work, wherein the telephone demand is not yet available at this stage because of the pending development plan for geographical and social reasons, is not included in this amount of work. Details of subscriber cable work for each exchange appear in Paragraph 14 of PART VIII (Volume II) of this report.

Subscriber cable expansion plan will have to be revised several times because of demand fluctuations. However, a wholesale revision is to be avoided as it leads to the confusion of the scheduled work progress and the consequent disturbance from the viewpoint of engineering economy.

Table III - 6 Implementation Schedule (1/2)

- - - - - Building Construction
--------- Switching System Installation
========= Cable Installation

Unit: Thousand

No.	Exchange	Third Five-Year Plan				Fourth Five-Year Plan					Fifth Five-Year Plan				Total L.U
		Existing L.U	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
1	Kota I	10		=======		*A	12(-10) =======						3		15
2	Kota II	32	Cut-over			5 =======			3			3			43
3	Cengkareng	4			4 =======						10				18
4	Pluit	4		4 =======				4			5				17
5	Ancol	4		2 =======			3			3			5		17
6	Tegar Alur	0			*B	2 =======			1			2			5
7	Gambir I	36				=======				*C	24(-20)				40
8	Gambir II	16		*C =======	23 =======			5			4				48
9	Semanggi I	6		*C	3	=======		4				6			19
10	Semanggi II	8		3 =======	=======		4			5			6		26
11	Slipi	5		*C |====	10 =======				5			7			27
12	Pal Merah	4		2 =======			2			4			4		16
13	Kedoya	0		*B	4 =======			2			5				11
14	Meruya	0		*B	3 =======				1			4			8
15	Cempaka Putih	8	*C	7			=======	4			5			8	32
16	Rawa Mangun	8			3	=======		3			6				20
17	Tanjung Priok	6		5			=======		2			3			16
18	Kelapa Gading	0			5 =======				3			5			13

*Note: A. Building reconstruction
B. Building construction
C. Building expansion
D. Cut-over to Jatinegara II Exchange

Table III - 6 Implementation Schedule (2/2)

- - - - - Building Construction
--------- Switching System Installation
========= Cable Installation

Unit: Thousand

No.	Exchange	Third Five-Year Plan				Fourth Five-Year Plan					Fifth Five-Year Plan				
		Existing L.U	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Total L.U
19	Cilincing	0		*B	3			2			5				10
20	Penggilingan	0		*B	4				3			4			11
21	Kebayoran	26													26
22	Kebayoran Lama	0										*B	7		7
23	Cipete	8								5			6		19
24	Pasar Minggu	2				1			1			3			7
25	Kalibata	8						4			7			5	24
26	Jagakarsa	0			*B	2			1			2			5
27	Jatinegara I	4		*D	(-4)										0
28	Jatinegara II	8	*C	7			5			4			4		28
29	Cawang	4			3			5				6			18
30	Pasar Rebo	1		3(-1)				2			4				9
31	Tebet	8				3				3			4		18
32	Gandaria	1		*B	3(-1)			1			4				8
33	Klender	0		3					2			3			8
Junction Network															
Total Line Units	Expansion			36	68	13	26	36	22	24	79	48	39	13	404
	Total	221		257	325	338	364	400	422	446	525	573	612	625	625

*Note: A. Building reconstruction
B. Building construction
C. Building expansion
D. Cut-over to Jatinegara II Exchange

PART IV. TECHNICAL OBJECTIVES

PART IV TECHNICAL OBJECTIVES

Technical objectives concerning subscriber and junction cable networks are described here for the purpose of network planning and basic design. These objectives are determined after full discussions with PERUMTEL, in accordance with the "Fundamental Plan 1972" formulated by PERUMTEL.

1. Numbering

Numbering plans should be valid for long periods of time. Changes in the existing plan often require modifications in switching equipment, and successively cause additional operational burden on the administration and considerable inconvenience to the subscribers.

The current numbering plan of Jakarta Telephone Network and its problems are described here, and the numbering capacity is examined in accordance with the telephone demand forecast by JTP '79.

1-1 Present Numbering

The present subscriber number in the Jakarta Telephone Network is composed of 6 digits, which is expressed as AB - CDEF, where:

A : 2 to 8
B - F : 1 to 0

The rest of the numbers of the A code are used as follows:

1(XX) : Special service
9 : Suburban exchange prefix
0 : SLDD prefix

In the national numbering plan, Jakarta is assigned the trunk area code of "21".

Table IV-1 shows the present exchange code in Jakarta Telephone Network, and the 29 exchange codes available for additional switching installation.

The present special service code in Jakarta is shown in Table IV-2.

Table IV-1 Present Exchange Code in Jakarta Telephone Network (1980)

Exchange Code	Local Exchange	Switching System	Exchange Code	Local Exchange	Switching System
(21-20)	Vacant	-	66	PLT	PRX
31	(GBIA)*	-	67	KT1	EMD
32	GB2A	PRX	68	ANC	PRX
33	GB2B	PRX	(69,60)	Vacant	-
34	GB1A	EMD	71	KB1B	PRX
35	GB1B	EMD	72	(PSM)*	-
36	GB1C	PRX	73	KB2	PRX
37	GB1D	PRX	74	CPA	EMD
(38)	Vacant	-	75	(KB1A)*	-
39	(GB1B)*	-	76	CPE	PRX
30	GBDID	EMD	77	KB1A	EMD
41	CPP	PRX	78	PSM	EMD
(42-47)	Vacant	-	79	KAL	PRX
48	RMG	PRX	(70)	Vacant	-
49	TPR	PRX	81	JT2	PRX
40	Vacant	-	82	TBT	PRX
51	SM2	PRX	(83)	Vacant	-
(52,53)	Vacant	-	84	PSR	MCX
54	PLM	PRX	(85,86)	Vacant	-
(55-57)	Vacant	-	87	GAN	MCX
58	SM1	EMD	88	JT1	EMD
59	SLP	EMD	(89)	Vacant	-
50	(SLP)*	-	80	CAW	PRX
61	CKG	PRX			
62	KT2A	PRX	*Note: Level Extension of		
63	KT2B	PRX	Group Selector		
64	KT2C	PRX			
65	KT2D	PRX			

Table IV-2 Present Special Service Code in Jakarta (1980)

Code	Service
100	Booking for trunk and interinsular calls
101	Booking for international calls
102	Information for international calls
103	Speaking clock
104	Booking for international calls
(105)	Vacant
106	Information and assistance for trunk and interinsular calls
(107)	Vacant
108	General information and local directory information
109	Phonogram
110	Police
(111)	Vacant
(112)	ditto
113	Fire brigade
114	Ringback
(115)	Vacant
(116)	ditto
117	Complaints regarding connection troubles
118	Ambulance (Central Hospital)
119	Ambulance (Municipal Hospital)

1-2 Numbering Capacity

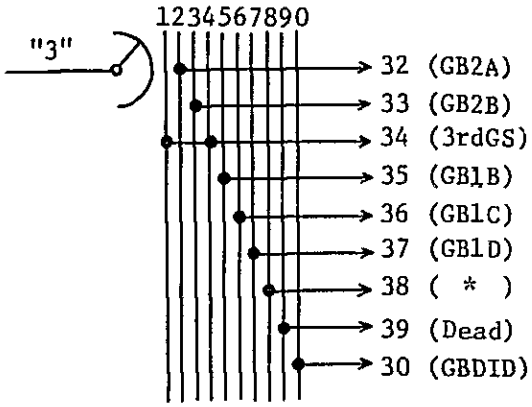
The theoretical combination of six digits for subscriber numbers in the Jakarta Telephone Network totals 700,000, although in actual practice, this number may be less than 450,000 for the following reasons:

1) Uniform numbering enabling the identification of a tandem area by an A code.
2) The independent use of exchange code for each switching system, even though line capacity of switching system is less than 10,000.
3) In the case of a switching system lacking subscriber number digit analysis facilities such as EMD, the relation between numbering and routing is very close to the point where every dialled digit determines a selection step directly. This eliminates most of the freedom and flexibility in the assignment of numbers.
4) In a trunking scheme of group selectors of EMD exchanges, there are level extensions which cause the numbering capacity to be eliminated as shown in Figure IV-1.

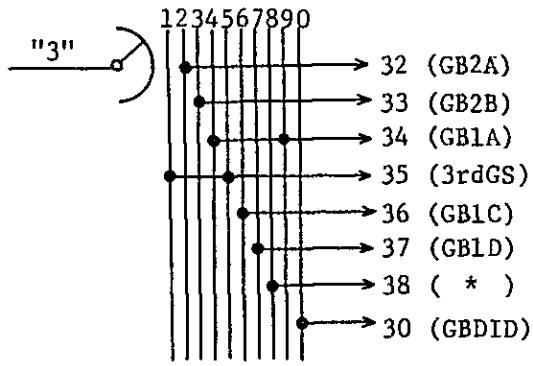
In conformity with the implementation schedule for switching installation planned by JTP '79, the number of exchange code to be required for tandem area in chronological order is examined, as shown below.

Number of Exchange Code to be Required							
Tandem Area/Year	'79	'80	'81	'82	'83	'84	'85
Kota (6x)	8	9	9	11	11	12	12
Gambir (3x)	9	11	11	11	12	12	12
Gambir (5x)	5	5	8	10	11	11	11
Cempaka Putih (4x)	3	6	8	8	9	9	9
Kebayoran (7x)	9	9	10	10	10	10	10
Jatinegara (8x)	6	6	7	7	8	8	10
Total	40	47	53	57	61	61	63

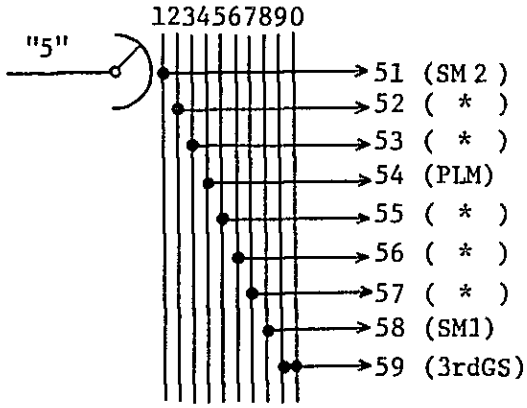
(1) GB1A Exchange



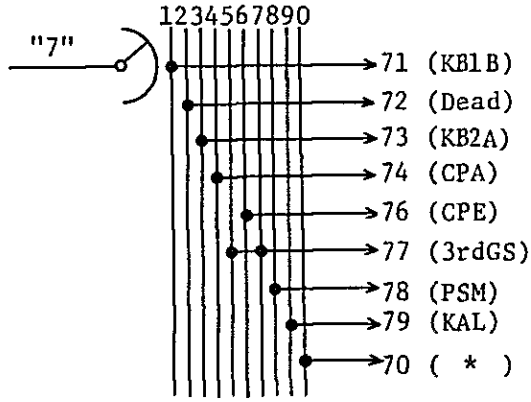
(2) GB1B Exchange



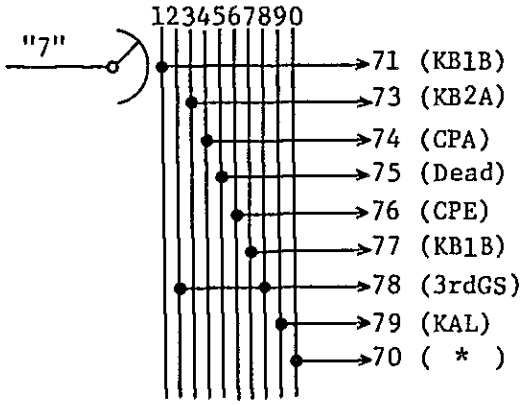
(3) SLP Exchange



(4) KB1A Exchange



(5) PSM Exchange



*Note: Vacant Level

Figure IV-1 Trunking Diagram of 2nd Group Selector at Major EMD Exchanges

The exchange code will be in short supply in Gambir tandem area (3x) in 1980, in Kota tandem (6x) in 1982, in Gambir tandem area (5x) in 1983 and in other tandem areas after 1985, since the present double figures provide maximum 10 independent exchange codes for each tandem area. Therefore, a 3 digits exchange code will have to be introduced in some exchanges after 1980. Otherwise, the present vacant codes of "2x" can be temporarily given to the exchanges concerned. However, the 3 digits exchange code configuration will be appropriate in the Jakarta Telephone Network in the early part of this decade in view of increasing telephone demand. The numbering plan constitutes the basic requirement for the network engineering. It is not an exaggeration to say that whether or not a network can be rationally and economically organized largely depends on whether or not the numbering plan is well organized.
The following remarks should be taken into consideration for the introduction of 3 digits exchange code:

1) Simple order of digit addition which can be easily identified by subscriber.
2) Addition of group selector stage for existing EMD exchange should be avoided if possible.
3) Numbering plan should be made systematic, to enable the identification of the corresponding tandem area by an A code and the exchange building by a B code if possible.
4) Addition of a switching system should be by a type which enables the efficient use of a given numbering.

2. Signalling

Signalling in terms of cable transmission is described in this chapter. One aspect of signalling that affects the transmission plan is that relating to the losses established between exchanges when using conventional channel associated signalling (i.e., MFC signalling), because they must signal to each other on the end-to-end basis.

Moreover, loop resistance is also to be taken into account, depending upon the switching system selected in terms of line signalling. The sequences of line signals are described in relation to the introduction of a PCM transmission system. In addition, the transmission level of VFT transmission system is examined.

2-1 Loop Resistance Limit

In switching systems, the loop resistances of the local junction and subscriber lines must not exceed certain limits which depend on the switching system, so that signalling between exchange facilities and also signalling and feeding to the telephone set are ensured.

(1) Subscriber Line

Signalling limit for subscriber line classified by switching system is as follows:

Type of Switching System	Maximum Loop Resistance (ohm)
a) EMD	1500
b) PRX205	1800
c) MCX	1700

(2) Junction Line

Signalling limit for junction line classified by connection between switching systems is as follows:

Inter-Exchange Connection	Maximum Loop Resistance (ohm)
a) EMD - EMD (3W)	700
b) EMD - EMD (2W)	1600
c) EMD - PRX	1600
d) EMD - MCX	1600
e) EMD - CIT	1600
f) EMD - 10C	1600
g) PRX - PRX	1800
h) PRX - MCX	1800
i) PRX - CIT	1800
j) PRX - 10C	1800
k) MCX - CIT	1800
l) MCX - 10C	1800

2-2 Inter-Exchange Signalling

(1) Line Signalling

Line signalling systems used on local junctions are direct current methods compatible with switching systems. The sequences of the major line signalling depending on the connections are shown in Table IV-3, 4, 5 and 6. The particular of the line signalling used in Indonesia is the "Forced Release" signal. The definition of this signal is as follows:

This backward signal sent to the originating exchange prior to answering a signal indicates a condition which requires a forced release of the established connection in case of a time-out ringing period. This signal is also sent to the originating exchange when metering signals are used and no clearback condition is sent. This signal means then that the B-release condition has been detected by the charging center for a period from 30 to 60 seconds.

Table IV-3 Line Signalling: From PRX to PRX over Physical Lines with SMFC Register Signalling

Type of Signal	Direction	Status of Outgoing Equipment	Status of Incoming Equipment	Duration
Idle	-------	High resistance loop (10 k ohm min.)	a : Battery (-) b : Ground (+)	Continuous
Seizure	⟶	Low Resistance loop	ditto	ditto
Answer	⟵	ditto	a : Ground (+) b : Battery (-)	ditto
Clear Back	⟵	ditto	a : Battery (-) b : Ground (+)	ditto
Clear Forward	⟶	Open loop, then high loop resistance	a : Battery (-) b : Ground (+) Then, polarities on a-b wire are reversed.	600 ms (minimum)
Forced Release	⟵	Low resistance loop	Open loop (Removal of potentials)	600 ms (Minimum)
Blocking	⟵	High resistance loop	Open loop	Continuous

Table IV-4 Line Signalling: From EMD to EMD over 2-Wire Junction with 100 Hz Release Circuit

Type of Signal	Direction	Status of Outgoing Equipment	Status of Incoming Equipment
Idle	--------	a-b loop through rectifier and high-ohmic guard relay (15.4 k ohm)	a : Ground via 1 k ohm b : -60 V via resistance depending on line resistance
Seizure	⟶	a : High ohmic ground (100 k ohm) b : Low ohmic ground (400 ohm)	a : Ground via 1 k ohm b : -60 V via resistance depending on line resistance
Seizure Acknowledgement	⟵	a : High ohmic ground (100 k ohm) b : ditto	a : -60 V via 1 k ohm b : Ground via 101 k ohm
Numerical Information	⟶	a : Ground pulses 62ms + 38ms open b : High ohmic ground (100 k ohm)	a : -60 V via 1 k ohm b : Open
Answer	⟵	a : High ohmic ground b : Low ohmic ground	a : Low ohmic -60 V (790 ohm) b : Low ohmic -60 V (790 ohm)
Clear Forward	⟶	100 Hz over a and b wires for 150 ms	100 Hz detection relay operates
Release Guard	⟵	a-b loop: High ohmic guard resistance	a : Removal of -60 V b : Open (momentarily)
Blocking	⟵	Guard relay release	b : Removal of -60 V

Table IV-5 Line Signalling: From PRX to Metaconta 10C over Physical Lines with SMFC Register Signalling

Type of Signal	Direction	Status of Outgoing Equipment	Status of Incoming Equipment	Duration
Idle	--------	High resistance loop (20 K ohm minimum)	a : Battery(-) b : Ground (+)	Continuous
Seizure	⟶	Low resistance loop (900 ohm maximum)	ditto	ditto
Answer	⟵	ditto	a : Ground (+) b : Battery (-)	ditto
Metering	⟶	ditto	a : Battery (-) b : Ground (+)	150 ms
Clear Back	⟵	ditto	a : Battery (-) b : Ground (+)	Continuous
Clear Forward	⟶	Open loop, then high loop resistance	a : Battery (-) b : Ground (+) Then, polarities on a - b wire are reversed.	600 ms (minimum)
Forced Release	⟵	Low resistance loop (900 ohm maximum)	Open loop	600 ms
Blocking	⟵	High resistance loop (20 k ohm minimum)	Open loop (Removal of potentials)	Continuous

Table IV-6 Line Signalling: From Metaconta 10C to PRX over Physical Lines with SMFC Register Signalling (1/2)

Type of Signal	Direction	Status of Outgoing Equipment	Status of Incoming Equipment	Duration	Tone
Idle	-------	High resistance loop (20 k ohm minimum)	a : Battery(-) b : Ground (+)	Continuous	-
Seizure	——→	Low resistance loop (900 ohm maximum)	ditto	ditto	-
Answer	←——	ditto	a : Ground b : Battery	ditto	-
Clear Back	←——	ditto	a : Battery b : Ground	ditto	-
Clear Forward	——→	Open loop, then high loop resistance	a : Battery b : Ground Then, polarities on a - b wire are reversed.	600 ms (minimum)	-
Forced Release	←——	Low resistance loop (900 ohm maximum)	Open loop	600 ms	-
Blocking	←——	High resistance loop (20 k ohm minimum)	Open loop (Removal of potentials)	Continuous	-

Table IV-6 Line Signalling : From Metaconta 10C to PRX over Physical Lines with SMFC Register Signalling (2/2)

Type of Signal	Direction	Status of Outgoing Equipment	Status of Incoming Equipment	Duration	Tone
Called Subscriber Busy	←	Low resistance loop (900 ohm maximum)	a : Battery(-) b : Ground (+)	Continuous	-
Called Subscriber Free	←	Low resistance loop	a : Battery (-) b : Ground (+)	ditto	-
Offering	→	Open loop	a : Battery (-) b : Ground (+)	150 ms	Busy Tone
Cancel Offering	→	ditto	ditto		Offering Tone
Listening-in	←	Low resistance loop	ditto	Continuous	ditto
Called Subscriber Ringing	→	ditto	ditto	Continuous	Ringing Tone
Re-ringing	→	Open loop	ditto	150 ms	-

(2) MFC Signalling Level

In case of connections between PRXs and between PRX and Metaconta 10C exchange, semi-compelled MFC (SMFC) signalling is used.
"Send" and "receive" levels of MFC signalling used in Indonesia are as follows:

Send level : -8 dBm per frequency
Receiving range: -35 dBm to -5 dBm

Considering that the send level is -8 dBm per frequency, the maximum loss between sender and receiver should not exceed (-8 dBm) - (-35 dBm) = 27 dB.
Assuming that the exchange loss for two end exchanges is 1 dB, maximum attenuation assigned to the transmission section is 26 dB at 1980 Hz; then, the converted value at 800 Hz is 16.64 dB in case where non-loaded cable is used.
Frequencies used for inter-register signalling are as follows:

Forward direction, 6 frequencies : 1380, 1500, 1620, 1740, 1860, 1980 Hz
Backward direction, 6 frequencies: 1140, 1020, 900, 780, 660, 540 Hz

(3) VFT Transmission Level

The VFT transmission system is used for connection between telex exchanges. Therefore, there is no signalling limit in terms of direct current resistance. The signalling limit only arises from transmission attenuation.
"Send" and "receive" levels of VFT transmission system (WT1000) used in Indonesia are as follows:

Send level : -22.5 dBm per channel at point of zero relative level (24 channels)
Receiving range : -39.9 dBm to -13.8 dBm

Considering that the send level is -22.5 dBm per channel, the maximum loss between sender and receiver should not exceed (-22.5 dBm) - (-39.9 dBm) = 17.4 dB at the maximum value of nominal mean frequency which is 3180 + 30 = 3210 Hz; then, the converted value at 800 Hz is 8.69 dB in case where non-loaded cable is used.

3. Transmission Loss Objective

A transmission plan specifies the quality of transmission perceived by two subscribers subsequent to the establishment of a connection between them. The transmission plan of the Indonesian Network is a part of the National Fundamental Plan 1972.

It is based on the use of three four-wire circuits between a Primary Trunk Center (PTC) and the International Switching Center (ISC). The four-wire circuit in the long-distance network is operated at zero loss.

3-1 Reference Equivalent

The overall reference equivalent is a measure of the transmission loss between two subscribers and is a fundamental parameter of the transmission network.

Transmission loss objectives for Indonesia in terms of reference equivalent are presented as follows:

(1) For a national call, the overall reference equivalent should not exceed 33 dB as is illustrated in Figure IV-2, whereas for an international call this value should not exceed 36 dB.

(2) The reference equivalents of the local system consist of:
   1) The sending reference equivalent (S.R.E) of the local system, which should not exceed 10.3 dB.
   2) The receiving reference equivalent (R.R.E) of the local system, which should not exceed 1.7 dB.

(3) The exchange-to-exchange reference equivalent should not exceed 21 dB, including cross exchange loss of about 0.5 dB for each two-wire transit exchange.

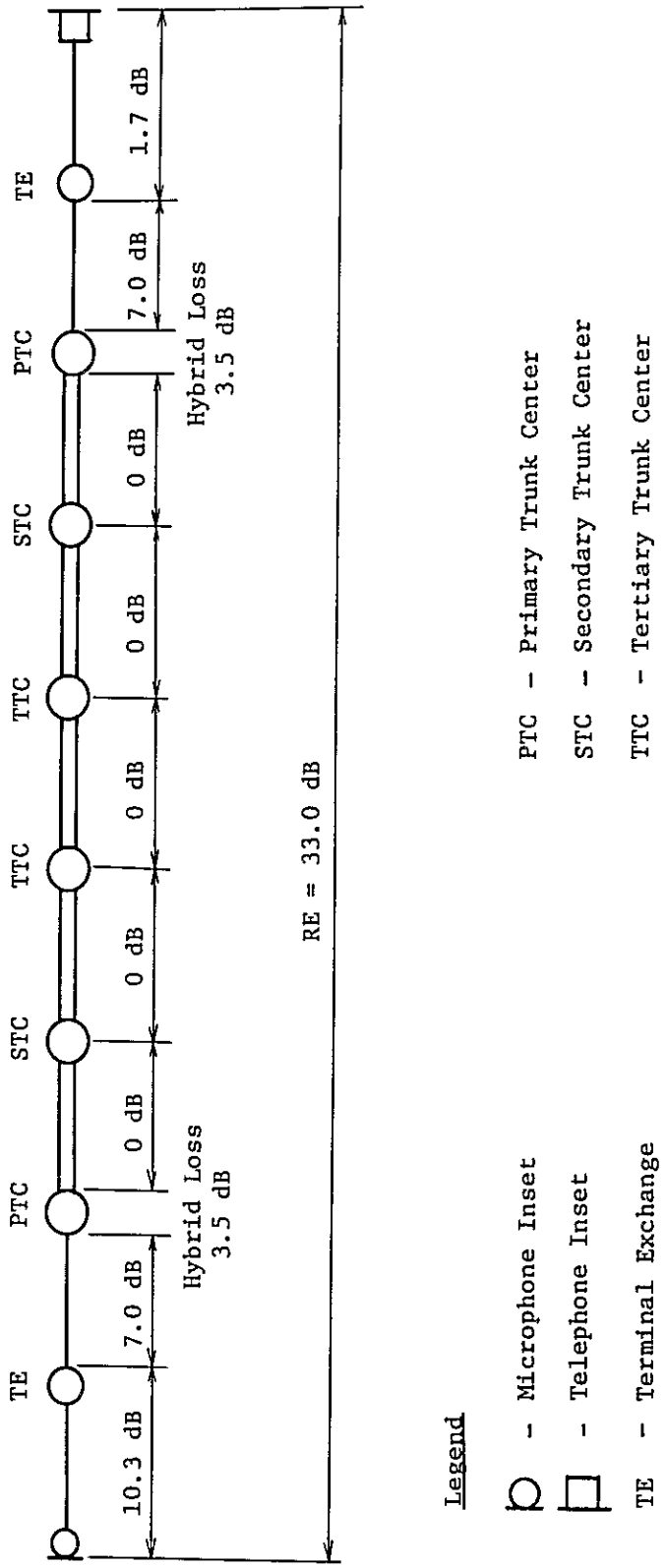


Figure IV-2 Overall Reference Equivalent of a National Long-Distance Telephone Connection

(4) The national sending and receiving reference equivalents for 97% of the calls should individually comply with the following conditions:

1) The national sending reference equivalent, i.e. from the telephone set up to the International Switching Center (ISC), should not exceed 21 dB.

2) The national receiving reference equivalent, i.e. from the International Switching Center (ISC) down to the telephone set, should not exceed 12 dB.

3-2 Exchange to Exchange Reference Equivalent for Jakarta Telephone Network

To fulfil the nominal overall reference equivalent for national connection, and in view of the SRE and RRE of the local systems, the exchange to exchange reference equivalent has to meet with the values defined in the National Fundamental Plan 1972.

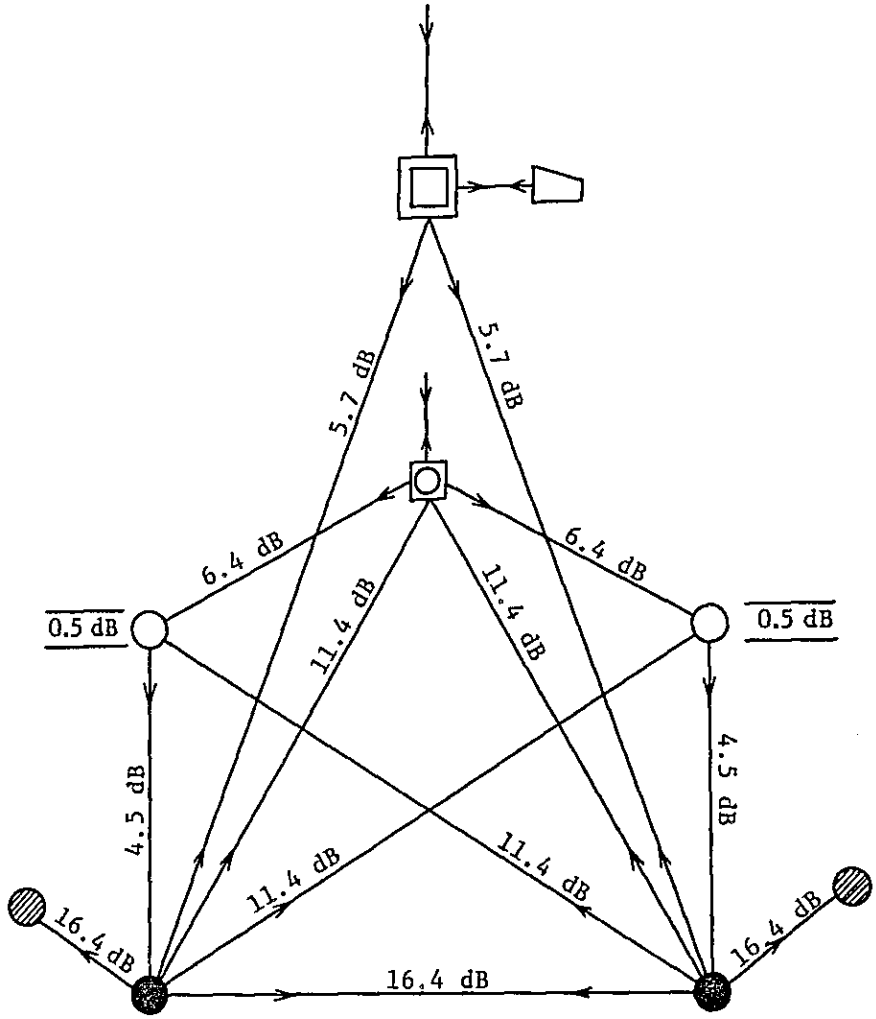
However, the improved values of reference equivalent for the Jakarta Telephone Network are determined after discussions with PERUMTEL.

Reference equivalents at a frequency of 800 Hz are as follows:

	Connection	Reference Equivalent at 800 Hz (dB)
a)	Between Local Exchanges	16.4
b)	Local Exchange to Tandem Exchange	11.4
c)	Tandem Exchange to Local Exchange	4.5
d)	Between Local and SLDD (PTC) Exchanges	5.7
e)	Local Exchange to Suburban Tandem Exchange	11.4
f)	Suburban Tandem Exchange to Tandem Exchange	6.4
g)	Between Local and Special Service (10X) Exchanges	5.7
h)	Local Exchange to Special Service (11X) Exchange	16.4

For each two-wire transit exchange, a cross exchange loss of 0.5 dB must be added.

Figure IV-3 also shows an exchange to exchange reference equivalent for the Jakarta Telephone Network.



Legend

- SLDD (PTC) Exchange
- Suburban Tandem Exchange
- Special Service (10 X) Exchange
- Special Service (11 X) Exchange
- Area Tandem Exchange
- Local Exchange

Figure IV-3 Transmission Loss Objective of Jakarta Telephone Network

4. Characteristics of Cable Transmission

Characteristics of cable trasmission in terms of image attenuation and impedance are calculated.

4-1 Attenuation

800 Hz has been adopted in Indonesia as the standard frequency for calculation of attenuation of both non-loaded and loaded cables in accordance with CCITT recommendation.

4-1-1 Non-loaded Cable

(1) Calculation Formula

$$\alpha = \sqrt{\frac{\omega \times Ro \times Co}{2}} \quad (Np/km)$$

$$\alpha' = 8.686 \sqrt{\pi \times f \times Ro \times Co} \quad (dB/km)$$

Where:

α' = cable attenuation (dB/km)

ω = $2\pi f$

f = frequency (Hz)

Ro = loop resistance (ohm/km)

Co = mutual capacitance (F/km)

(2) Calculation Result

Image attenuation of non-loaded cable at 800 Hz for each condutor diameter is shown in Table IV-7. Frequency response of image attenuation is shown in Figure IV-4.

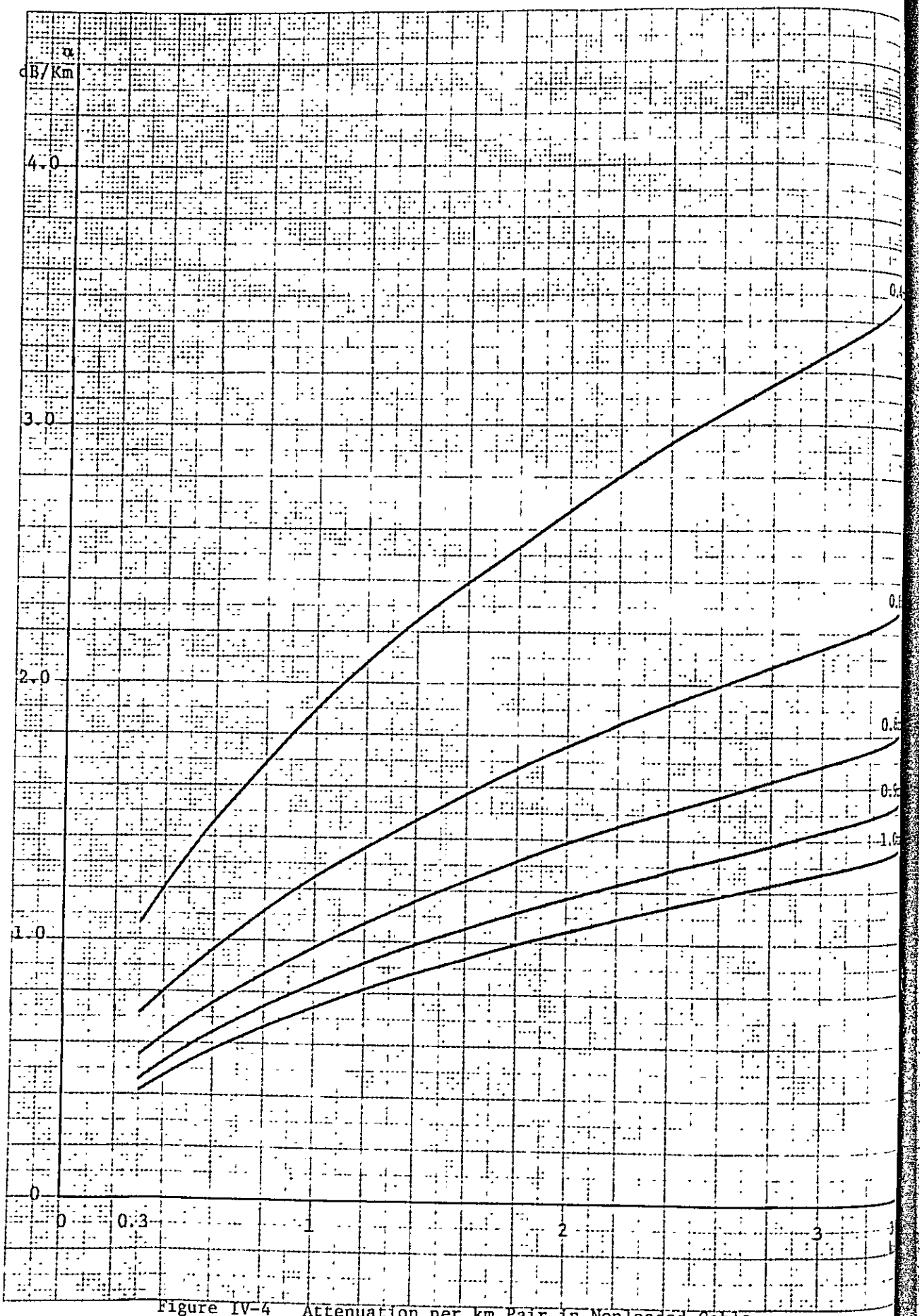


Figure IV-4 Attenuation per km Pair in Nonloaded Cable

4-1-2 Loaded Cable

(1) Calculation Formula

$$\alpha = \frac{1}{So}\left[\left[\frac{So \times Ro}{2}\left(1 - \frac{2}{3}\left(\frac{\omega}{\omega o}\right)^2\right) + \frac{Rp}{2}\right]\sqrt{\frac{So \times Co}{So \times Lo + Lp}}\right.$$

$$\left. + \frac{So \times Go}{2}\sqrt{\frac{So \times Lo + Lp}{So \times Co}}\right] \frac{1}{\sqrt{1 - \left(\frac{\omega}{\omega o}\right)^2}} \quad (Np/km)$$

$$\alpha' = 8.686\ \alpha (dB/km)$$

$$\omega o = 2/\sqrt{So \times Co\ (So \times Lo + Lp)}$$

Where:

α' = cable attenuation (dB/km)

ω = $2\pi f$

f = frequency (Hz)

Ro = loop resistance (ohm/km)

Co = mutual capacitance (F/km)

Lo = mutual inductance (H/km)

Go = leak resistance (S/km)

Lp = loading coil inductance (H)

Rp = loading coil resistance (ohm)

So = loading coil spacing (km)

(2) Calculation Result

Image attenuation of loaded cable at 800 Hz for each conductor diameter is shown in Table IV-8. Frequency response of image attenuation is shown in Figure IV-5.

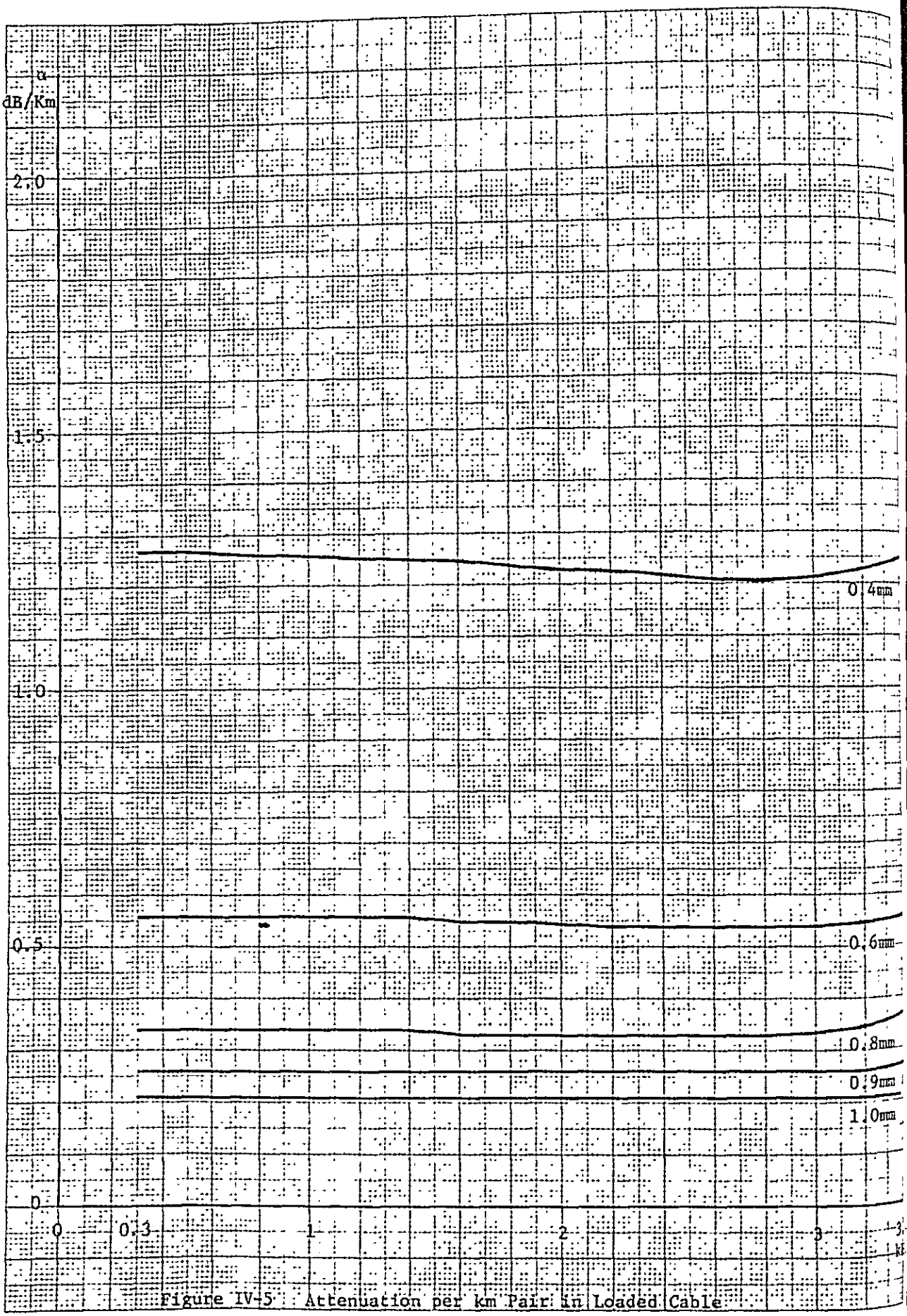


Figure IV-5 : Attenuation per km Pair in Loaded Cable

4-2 Impedance

4-2-1 Non-loaded Cable

(1) Calculation Formula

$$Z = \sqrt{\frac{Ro}{\omega \times Co}}\, e^{-j45^{o}} \text{ (ohm)}$$

Where:

Z = image impedance (ohm)

$\omega = 2\pi f$

f = frequency (Hz)

Ro = loop resistance (ohm/km)

Co = mutual capacitance (F/km)

(2) Calculation Result

Image impedance of non-loaded cable at 800 Hz for each conductor diameter is shown in Table IV-7. Frequency response of image attenuation is shown in Figure IV-6.

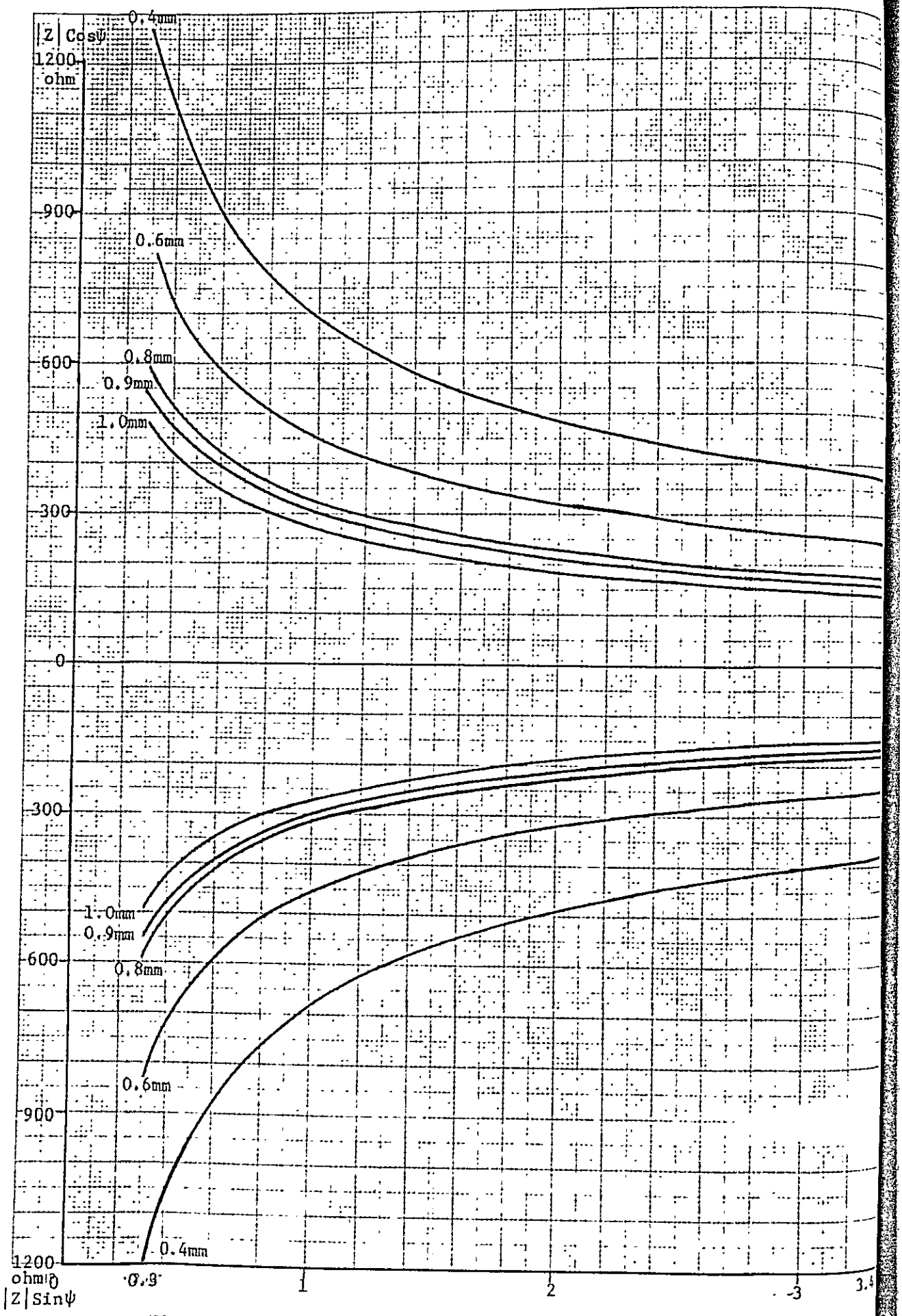


Figure IV-6 Image Impedance per km Pair in Nonloaded Cable

4-2-2 Loaded Cable

(1) Calculation Formula

$$Z = Zo / \sqrt{1 - (\omega/\omega o)^2} \quad \text{(ohm)}$$

$$Zo = \sqrt{\frac{(So \times Ro + Rp) + j\,(So \times Lo + Lp)}{So(Go + j\ Co)}} \quad \text{(ohm)}$$

$$\omega o = 2 / \sqrt{So \times Co\ (So \times Lo + Lp)}$$

Where:

Z = image impedance (ohm)

$\omega = 2\pi f$

f = frequency (Hz)

Ro = loop resistance (ohm/km)

Co = mutual capacitance (F/km)

Lo = mutual inductance (H/km)

Go = leak resistance (S/km)

Lp = loading coil inductance (H)

Rp = loading coil resistance (ohm)

So = loading coil spacing (km)

(2) Calculation Result

Image impedance of loaded cable at 800 Hz for each conductor diameter is shown in Table IV-8. Frequency response of image attenuation is shown in Figure IV-7.

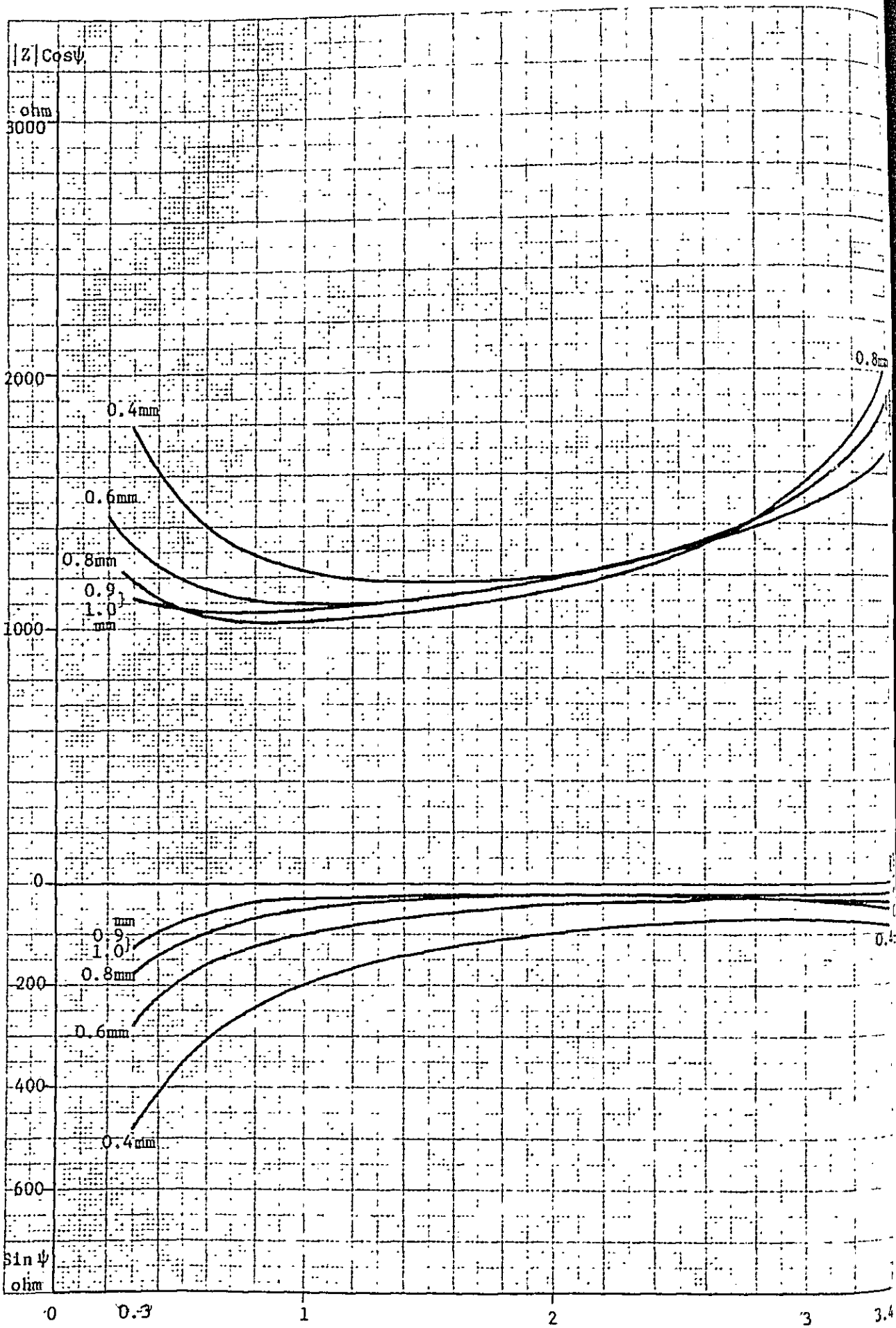


Figure IV-7 Image Impedance per km Pair in Loaded Cable

Table IV-7 Image Attenuation and Impedance of Non-Loaded Cable at 800 Hz

Conductor Diameter (mm)	Loop Resistance Ro (ohm/km)	Mutual Capacitance Co (nF/km)	Image Attenuation (dB/km)	Image Impedance Z Cos$\frac{\Psi}{2}$ (ohm)
0.4	300	50	1.69	773
0.6	130	50	1.11	509
0.8	73	55	0.87	364
0.9	58	50	0.74	340
1.0	46	50	0.66	303

Table IV-8 Image Attenuation and Impedance of Loaded Cable at 800 Hz

Conductor Diameter (mm)	Loop Resistance Ro (ohm/km)	Mutual Capacitance Co (nF/km)	Mutual Inductance Lo (nH/km)	Leak Resistance Go (micro S/km)	Image Attenuation (dB/km)	Image Impedance Z Cos$\frac{\Psi}{2}$ (ohm)
0.4	300	50	0.57	0.14	1.26	1259
0.6	130	50	0.54	0.14	0.56	1102
0.8	73	55	0.53	0.14	0.34	1030
0.9	58	50	0.53	0.14	0.26	1072
1.0	46	50	0.53	0.14	0.21	1067

Note: 1. Inductance of loading coil (Lp) is 80 mH.
2. Resistance of loading coil (Rp) is 7 ohm.
3. Distance of loading spacing is 1.5 km.