

I. DOMESTIC TELECOMMUNICATIONS

I-1 Estimation of Telephone Demands

The telephone demands estimation of the Master Plan has been carried out as shown below.

(1) Basic data

Following data are used as the basic data for the estimation.

- (a) Population statistics in "PROYECCION DE LA POBLACION DEL PARAGUAY POR SEXO Y GRUPOS DE EDADES 1950 - 2025". (Refer to Table A I-1)
- (b) Telephone demands forecast results conducted by ANTELCO for the Asunción area (1980-1987).

(2) Macroscopic telephone demands throughout the nation

The demands have been estimated according to the following steps using the above-mentioned basic data.

- (a) To set the 90% of the total of telephone demands forecast for the telephone offices in the Asunción area (1980-1987) conducted by ANTELCO as the index of Asunción's macro telephone demands forecast. (Refer to Table A I-2)
- (b) To forecast Asunción's macroscopic telephone demands from 1981 to 1997 on the basis of the value (a). (Refer to Table A I-3)
- (c) To forecast the population and population concentration rate for Asunción. (Refer to Table A I-4)
- (d) To divide Asunción's macro telephone demands under (b) by the population concentration rate obtained under (c), and to set 90% of the quotient as the index of the nationwide macro telephone demands.
- (e) To obtain the index of telephone demands for areas other than Asunción.

- (f) To compensate the value obtained under (d) allowing for earning difference between Asunción and a particular area. (5 : 1, according to ANTELCO's opinion)
- (g) To obtain the nationwide macro telephone demands by summing the values of (b) and (f).

(3) Each telephone office's telephone demands (Asunción)

The demands have been estimated according to the following steps.

- (a) To divide Asunción's macro telephone demands using the ratio of the telephone demands forecast obtained by ANTELCO.
- (b) To obtain each telephone office's telephone demands by adjusting each value calculated under (a).

(4) Each telephone office's telephone demands (other than Asunción)

The demands have been estimated according to the following steps.

- (a) To obtain each prefecture's telephone demand by calculating it from the nationwide macroscopic telephone demands and from each prefecture's telephone demands distribution ratio. (Refer to Table A I-5)
- (b) Each prefecture's telephone demands distribution ratio is obtained by the liner extrapolation of each prefecture's population in 1972 and 1977. (Refer to Table A I-6)

- (c) To calculate each telephone office's demand from each prefecture's telephone demands and from each telephone office's distribution ratio (Table A I-7).
- (d) As each telephone office's distribution ratio, a telephone number ratio as of November 1981 is employed
- (e) To obtain each telephone office's demand through adjustment of the distributed values.

Table A I-1 Population of Paraguay

(PROYECCION DE LA POBLACION DEL PARAGUAY POR SEXO Y GRUPOS DE EDADES 1950 - 2025)

| Year | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Population (x 1,000) | 1479 | 1522 | 1538 | 1549 | 1567 | 1595 | 1633 | 1678 | 1727 | 1778 |

| Year | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Population (x 1,000) | 1829 | 1878 | 1926 | 1973 | 2019 | 2066 | 2116 | 2169 | 2227 | 2290 |

| Year | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Population (x 1,000) | 2359 | 2433 | 2513 | 2598 | 2686 | 2779 | 2873 | 2970 | 3068 | 3168 |

| Year | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Population (x 1,000) | 3263 | 3370 | 3473 | 3576 | 3861 | 3788 | 3897 | 4007 | 4118 | 4231 |

| Year | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Population (x 1,000) | 4344 | 4459 | 4574 | 4690 | 4807 | 4926 | 5047 | 5168 | 5289 | 5405 |

Table AI-2 Telephone demands through the Asunción area (1980 to 1987)

| Year | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|--|-------|-------|-------|-------|-------|--------|--------|--------|
| (1) Total of telephone demands for each telephone office through the Asunción area (forecasted by ANTELCO) | 62970 | 70224 | 78380 | 87254 | 97473 | 106900 | 117207 | 128531 |
| Telephone demands through the Asunción area (tentative) (1) x 0.9 | 56673 | 63202 | 70542 | 78529 | 87726 | 96210 | 105486 | 115678 |

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Table AI-3 Telephone demands through the Asunción area (1980 to 1997)

| Year | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Telephone demands through the Asunción area | 56632 | 63254 | 70540 | 78531 | 87265 | 96771 | 107076 | 118193 | 130129 |
| | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| | 142875 | 156408 | 170690 | 185666 | 201266 | 217403 | 233974 | 250866 | 267955 |
| | | | | | | | | | |

$$\text{Equation } Y = \frac{553630}{1 + 8.776e^{-0.12399x}} \quad (\text{data: } 1980 \sim 1985, \text{ Year } 1980: x=0)$$

Table A I-4 Concentration ratio of population to Asunción area

| | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Population through the country (x1000) | 3263 | 3370 | 3473 | 3576 | 3681 | 3788 | 3897 | 4007 | 4118 | 4231 | 4344 | 4459 | 4574 | 4690 | 4807 | 4926 | 5047 |
| Population through the Asunción area (x 1000) | 669 | 690 | 712 | 734 | 758 | 782 | 807 | 832 | 859 | 886 | 914 | 942 | 972 | 1002 | 1033 | 1065 | 1098 |
| Population concentration ratio to the Asunción area (%) | 20.5 | 20.5 | 20.5 | 20.5 | 20.6 | 20.6 | 20.7 | 20.8 | 20.9 | 20.9 | 21.0 | 21.1 | 21.3 | 21.4 | 21.5 | 21.6 | 21.8 |

Population through the Asunción area $Y = \frac{10577.9}{1 + 14.3369e^{-0.033778X}}$

(data: 1982 ~ 1990, Year 1980: x=0)

Table A I-5 Telephone demands for each "departamento"

| No. | "Departamento" | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|-------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 001 | Concepción | 2081 | 2322 | 2580 | 2866 | 3163 | 3486 | 3840 | 4210 | 4593 | 5003 | 5426 | 5863 | 6388 | 6766 | 7217 | 7669 | 8127 |
| 002 | San Pedro | 3154 | 3519 | 3911 | 4344 | 4795 | 5284 | 5821 | 6382 | 6962 | 7583 | 8225 | 8885 | 9561 | 10253 | 10937 | 11622 | 12314 |
| 003 | Cordillera | 2940 | 3281 | 3645 | 4048 | 4470 | 4925 | 5425 | 5949 | 6489 | 7067 | 7666 | 8283 | 8912 | 9556 | 10194 | 10831 | 11477 |
| 004 | Guairá | 1974 | 2203 | 2446 | 2718 | 3000 | 3307 | 3644 | 3994 | 4358 | 4744 | 5147 | 5560 | 5985 | 6417 | 6845 | 7272 | 7706 |
| 005 | Caaguazú | 5308 | 5922 | 6580 | 7309 | 8069 | 8892 | 9793 | 10738 | 11714 | 12759 | 13839 | 14950 | 16088 | 17252 | 18403 | 19554 | 20720 |
| 006 | Caazapa | 1694 | 1892 | 2102 | 2335 | 2577 | 2840 | 3129 | 3431 | 3743 | 4076 | 4421 | 4777 | 5139 | 5513 | 5880 | 6247 | 6619 |
| 007 | Itapúa | 4487 | 4917 | 5463 | 6070 | 6700 | 7384 | 8131 | 8917 | 9726 | 10595 | 11491 | 12416 | 13357 | 14326 | 15282 | 16237 | 17205 |
| 008 | Misiones | 1201 | 1341 | 1489 | 1655 | 1827 | 2012 | 2216 | 2431 | 2652 | 2888 | 3133 | 3386 | 3643 | 3906 | 4166 | 4428 | 4692 |
| 009 | Paraguarí | 3275 | 3654 | 4058 | 4509 | 4976 | 5485 | 6041 | 6624 | 7226 | 7870 | 8536 | 9223 | 9923 | 10643 | 11353 | 12062 | 12781 |
| 010 | Alto Paraná | 4108 | 4582 | 5092 | 5656 | 6243 | 6880 | 7579 | 8308 | 9065 | 9872 | 10709 | 11569 | 12448 | 13351 | 14241 | 15131 | 16033 |
| 011 | Central | 6442 | 7188 | 7987 | 8873 | 9794 | 10794 | 11889 | 13034 | 14219 | 15488 | 16800 | 18150 | 19528 | 20943 | 22340 | 23738 | 25152 |
| 012 | Ñeembucú | 1424 | 1591 | 1766 | 1963 | 2167 | 2388 | 2629 | 2883 | 3146 | 3427 | 3716 | 4015 | 4321 | 4634 | 4943 | 5251 | 5565 |
| 013 | Anambay | 2061 | 2298 | 2556 | 2838 | 3134 | 3453 | 3803 | 4169 | 4548 | 4954 | 5374 | 5886 | 6246 | 6698 | 7146 | 7593 | 8044 |
| 014 | Canendiyú | 989 | 1105 | 1227 | 1363 | 1504 | 1657 | 1827 | 2002 | 2184 | 2380 | 2582 | 2788 | 3000 | 3218 | 3432 | 3648 | 3864 |
| 015 | Pte. Hayes | 826 | 921 | 1023 | 1137 | 1254 | 1383 | 1523 | 1671 | 1822 | 1985 | 2153 | 2327 | 2504 | 2684 | 2864 | 3043 | 3224 |
| 016 | Alto Paraguay | 283 | 316 | 351 | 389 | 430 | 474 | 521 | 572 | 625 | 680 | 737 | 797 | 858 | 921 | 982 | 1043 | 1105 |
| 017 | Chaco | 13 | 13 | 15 | 17 | 20 | 22 | 23 | 25 | 28 | 30 | 34 | 35 | 39 | 42 | 44 | 47 | 51 |
| 018 | Nva. Asunción | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 6 | 6 | 6 | 8 | 8 | 8 | 10 | 10 | 10 | 11 |
| 019 | Boqueron | 232 | 260 | 287 | 319 | 353 | 389 | 428 | 470 | 513 | 559 | 605 | 654 | 703 | 754 | 805 | 856 | 907 |
| Dep. Total | | 42415 | 47328 | 52581 | 58412 | 64481 | 71060 | 78288 | 85816 | 93619 | 101966 | 110602 | 119493 | 128571 | 137887 | 147084 | 156281 | 165597 |
| 020 | Asunción* | 63254 | 70540 | 78531 | 87265 | 96771 | 107076 | 118193 | 130129 | 142875 | 156408 | 170690 | 185666 | 201266 | 217403 | 233974 | 250866 | 268000 |
| Grand Total | | 105669 | 117868 | 131112 | 145677 | 161352 | 178136 | 196461 | 215945 | 236494 | 258374 | 281292 | 305159 | 329837 | 355290 | 381058 | 407147 | 433552 |

* Including F. de la Mora, Lambare

Table A I-6 Telephone demands distribution ratio ("departamento" wise)

| No. | "Departamento" | 1972 | | 1977 | | Linear equation | Telephone demands distribution ratio (population ratio in 1981) |
|-----|----------------|------------|-----------|-----------------------|-----------|---------------------------------------|---|
| | | Population | Ratio | Population (forecast) | Ratio | | |
| 001 | Concepción | 108,130 | 0,0549162 | 125,242 | 0,0516669 | $Y = -0,00064986x + 0,05556606$ | 0,049067 |
| 002 | San Pedro | 138,018 | 0,0700955 | 175,655 | 0,0724641 | $Y = 0,00047372x + 0,06962178$ | 0,074358 |
| 003 | Cordillera | 194,218 | 0,0986380 | 199,602 | 0,0823432 | $Y = -0,00325896x + 0,10189696$ | 0,069307 |
| 004 | Guairá | 124,799 | 0,0633820 | 130,958 | 0,0540250 | $Y = -0,0018714x + 0,0652534$ | 0,046539 |
| 005 | Cuagazú | 202,596 | 0,1028920 | 279,347 | 0,1152400 | $Y = 0,0024696x + 0,1004224$ | 0,125118 |
| 006 | Caazapá | 103,139 | 0,0523814 | 110,271 | 0,0454908 | $Y = -0,00137812x + 0,05375952$ | 0,039978 |
| 007 | Itapúa | 201,411 | 0,1022910 | 250,117 | 0,1031820 | $Y = 0,0001782x + 0,1021128$ | 0,103894 |
| 008 | Misiones | 69,246 | 0,0351681 | 76,044 | 0,0313709 | $Y = -0,00075944x + 0,03592734$ | 0,028333 |
| 009 | Paraguari | 211,977 | 0,1076570 | 219,906 | 0,0907193 | $Y = -0,00338754x + 0,11104454$ | 0,077169 |
| 010 | Alto Paraná | 69,044 | 0,0350655 | 168,162 | 0,0693730 | $Y = 0,0068615x + 0,028204$ | 0,096819 |
| 011 | Central | 310,390 | 0,1576380 | 374,370 | 0,1544410 | $Y = -0,0006394x + 0,1582774$ | 0,151883 |
| 012 | Neembucú | 73,098 | 0,0371244 | 85,254 | 0,0351704 | $Y = -0,0003908x + 0,037512$ | 0,033607 |
| 013 | Amambay | 65,111 | 0,0330681 | 101,048 | 0,0416860 | $Y = 0,00172358x + 0,03134452$ | 0,048580 |
| 014 | Canendiyú | 27,825 | 0,0141315 | 46,655 | 0,0192469 | $Y = 0,00102308x + 0,01310842$ | 0,023339 |
| 015 | Pte. Hayes | 42,338 | 0,0215023 | 49,386 | 0,0203735 | $Y = -0,00022576x + 0,02172806$ | 0,019470 |
| 016 | Alto Paraguay | 15,080 | 0,0076587 | 17,243 | 0,0071134 | $Y = -0,00010907x + 0,00776779$ | 0,006677 |
| 017 | Chaco | 656 | 0,0003332 | 769 | 0,0003172 | $Y = -0,0000031848x + 0,0003363488$ | 0,000304 |
| 018 | Nva. Asunción | 153 | 0,0000777 | 179 | 0,0000738 | $Y = -0,00000077208x + 0,00007847658$ | 0,000070 |
| 019 | Boquerón | 11,768 | 0,0059766 | 13,817 | 0,0057000 | $Y = -0,000055324x + 0,006031964$ | 0,005478 |
| | Total | 1,968,997 | | 2,424,025 | | | |

Table A I-7 Telephone demands distribution ratio for each telephone office (1/3)

| Telephone office | Distribution ratio | Telephone office | Distribution ratio |
|--------------------|--------------------|-------------------------|--------------------|
| CONCEPCION | 0.916830 | ATYRA | 0.022300 |
| HORQUETA | 0.054158 | CARAGUATAY | 0.019953 |
| LORETO | 0.005802 | COL. 1º DE MARZO | 0.002346 |
| PASO BARRETO | 0.019342 | EUSEBIO AYALA | 0.112675 |
| PASO HORQUETA | 0.003868 | ISLA PUCU | 0.011736 |
| ITAC. DEL ROSARIO | 0.178151 | ITAC. DELA CORDILLERA | 0.037558 |
| VILLA DEL ROSARIO | 0.115966 | LOMA GRANDE | 0.001173 |
| COL GRAL AQUINO | 0.031932 | MBOCAYATY | 0.002346 |
| STA. CLARA | 0.015126 | PIRIBEBUY | 0.115023 |
| SAN ESTANISLAO | 0.270599 | SAN BERNARDINO | 0.217135 |
| TACUARAS | 0.008403 | STA. ELENA | 0.005868 |
| FELIPE MATIAUDA | 0.008403 | TOBATI | 0.083332 |
| COL LIBERACION | 0.001680 | EMBOSCADA | 0.011736 |
| GUAYAYBI | 0.006722 | NUEVA COLOMBIA | 0.001173 |
| COL. CHORE | 0.016806 | VILLARRICA | 0.854730 |
| COL. VOLENDAM | 0.008403 | COL. INDEPENDENCIA | 0.077574 |
| VILLA DE SAN PEDRO | 0.267226 | COL. MAURICIO J. TROCHE | 0.001410 |
| COL. SAN PABLO | 0.001680 | COL. MOISES S. BERTONI | 0.004231 |
| COL RIO VERDE | 0.001680 | CNEL. MARTINES | 0.002820 |
| CORORO | 0.006722 | EUGENIO A. GARAY | 0.001410 |
| JEJUI | 0.005042 | ITURBE | 0.038081 |
| LIMA | 0.016806 | ITAPE | 0.001410 |
| NUEVA GERMANIA | 0.008403 | FELIX PEREZ CARDOZO | 0.001410 |
| PTO. ANTEQUERA | 0.016806 | MBOCAYATY | 0.004231 |
| STA. ROSA | 0.010084 | ÑUMI | 0.002820 |
| TACUATI | 0.001680 | SAN SALVADOR | 0.009873 |
| COL SUSANA | 0.001680 | CNEL. OVIEDO | 0.616345 |
| CAACUPE | 0.335694 | CAAGUAZU | 0.253360 |
| ALTOS | 0.008215 | CAMPO 9 | 0.031023 |
| ARROYOS Y ESTEROS | 0.011736 | CARAYAO | 0.002068 |

| Telephone office | Distribution ratio | Telephone office | Distribution ratio |
|-------------------------|--------------------|-----------------------------|--------------------|
| COL. CECILIO BAES | 0.003102 | SAN COSME Y DAMIAN | 0.001122 |
| HUGO STROESSNER | 0.002068 | SAN PEDRO DEL PARANA | 0.011229 |
| JUAN M. FRUTOS | 0.020682 | STA. ROSA DE LIMA | 0.000561 |
| LA PASTORA | 0.001034 | S.J. BAUTISTA MISIONES | 0.247491 |
| SAN JOSE DE LOS ARROYOS | 0.040330 | ARAZAPE | 0.001672 |
| COL. REPATRIACION | 0.004136 | AYOLAS | 0.026755 |
| COL. JUAN RAMON CHAVES | 0.009307 | ITA YURU | 0.005016 |
| MBUTUY | 0.002068 | SAN ANTONIO MISIONES | 0.001672 |
| PASO YOBAY | 0.005170 | SAN IGNACIO | 0.277598 |
| CAAZAPA | 0.433335 | SAN MIGUEL | 0.010033 |
| MACIEL | 0.016666 | SAN PATRICIO | 0.005016 |
| SJ. NEPOMUCENO | 0.308333 | STA. MARIA | 0.001672 |
| YEGROS | 0.108333 | STA. ROSA MISIONES | 0.100334 |
| YUTY PUEBLO | 0.108333 | SANTIAGO | 0.010033 |
| GRAL. MORINIGO | 0.025000 | VILLA FLORIDA | 0.095317 |
| ENCARNACION | 0.766434 | YABEBYRY | 0.001672 |
| CAMBYRETA | 0.001122 | YACYRETA | 0.215719 |
| CAPT. MESA | 0.002245 | PARAGUARI | 0.316055 |
| CAPT. MIRANDA | 0.006176 | ACAHAY | 0.029173 |
| CARMEN DEL PARANA | 0.015721 | CAAPUCU | 0.019448 |
| COL. BELLA VISTA | 0.020213 | CABALLERO | 0.011345 |
| COL. FRAM | 0.005614 | CARAPEGUÁ | 0.160453 |
| COL. HOHENAU | 0.048287 | COL. CESAR BARRIENTOS | 0.003241 |
| COL. OBLIGADO | 0.019090 | ESCOBAR | 0.003241 |
| COL. PIRAPO | 0.023582 | LA COLMENA | 0.030794 |
| CNEL. BOGADO | 0.057832 | PIRAYU | 0.032414 |
| GRAL. ARTIGAS | 0.007299 | QUINDY | 0.084278 |
| GRAL. DELGADO | 0.003930 | QUYQUYHO | 0.003241 |
| JESUS | 0.000561 | ROQUE GONZALES DE STA. CRUZ | 0.008103 |
| LA PAZ | 0.007860 | SAPUCAI | 0.016207 |
| SALITRE CUE | 0.001122 | | |

| Telephone office | Distribution ratio | Telephone office | Distribution ratio |
|-----------------------|--------------------|------------------------|--------------------|
| VALLE APUA | 0.003241 | LIMPIO | 0.016798 |
| YAGUARON | 0.158833 | M.R. ALONSO | 0.074158 |
| YBYCUI | 0.108589 | ZEBALLOS CUE | 0.003822 |
| YBYTYMI | 0.004862 | ALBERDI | 0.178294 |
| MBUYAPEY | 0.004862 | VALLE PUCU | 0.007751 |
| CERRO LEON | 0.001620 | PILAR | 0.771327 |
| CDAD. PTE. STROESSNER | 0.703056 | COL. VICE PTE. SANCHES | 0.003875 |
| COL. YGUAZU | 0.012562 | GRAL. DIAZ | 0.005813 |
| HERNANDARIAS | 0.147714 | HUMAITA | 0.009689 |
| JUAN E. O'LEARY | 0.010396 | ISLA UMBU | 0.001937 |
| JUAN. L. MALLORQUIN | 0.010396 | ITA CORA | 0.003875 |
| PTO. PTE. FRANCO | 0.04635 | LAURELES | 0.009689 |
| COL. PTE. STROESSNER | 0.04635 | MAYOR MARTINES | 0.003875 |
| KM 6 RUTA 7 | 0.01545 | PASO DE PATRIA | 0.003875 |
| STA. ROSA | 0.007725 | PJ. CABALLERO | 0.853322 |
| AREGUA | 0.052370 | BELLA VISTA NORTE | 0.058118 |
| CAPIATA | 0.072629 | CAPT. BADO | 0.072878 |
| COL. NUEVA ITALIA | 0.001911 | CRUSE BELLA VISTA | 0.001845 |
| GUARAMBARE | 0.019495 | CHIRIGUELO | 0.009225 |
| ITA | 0.075687 | YBY YAU | 0.004612 |
| LUQUE | 0.227451 | SALTOS DEL GUAIRA | 0.881131 |
| NEMBY | 0.003822 | VILLA CURUGUATY | 0.080102 |
| PIQUETE CUE | 0.001911 | CORPUS CRISTI | 0.038767 |
| SAN ANTONIO | 0.034021 | PUERTO COLON | 0.006578 |
| SAN LORENZO | 0.270642 | VILLA HAYES | 0.644741 |
| VALLE PUCU | 0.000764 | BENJAMIN ACEVAL | 0.289473 |
| VILLETA | 0.037079 | CHACO-1 | 0.039473 |
| YPANE | 0.001911 | TACUARAS | 0.013157 |
| YBYPOJHY-1 | 0.001528 | 25 LENGUAS | 0.006578 |
| ZANJITA | 0.000382 | BAHIA NEGRA | 1.0000 |
| YPACARAI | 0.056957 | COL. FILADELFIA | 1.0000 |
| ITAUGUA | 0.046660 | | |

(Unit: 1,000)

Table A1-8 Automobiles forecast (passenger car, omnibus, jeep)

| "Departamento" | Year | | | | | | | | | | | | | | | | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | 1979 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | |
| Asunción | 70.7 | 103.9 | 114.3 | 125.6 | 138.1 | 151.7 | 166.5 | 182.6 | 200.3 | 219.6 | 240.6 | 263.5 | 288.5 | 315.7 | 345.4 | 377.4 | |
| Central | 34.4 | 50.6 | 55.6 | 61.1 | 67.2 | 73.8 | 81.0 | 88.9 | 97.5 | 106.9 | 117.1 | 128.2 | 140.4 | 153.6 | 168.1 | 183.7 | |
| Sub-total | 105.1 | 154.5 | 169.9 | 186.7 | 205.3 | 225.5 | 247.5 | 271.5 | 297.8 | 326.5 | 357.7 | 391.7 | 429.9 | 469.3 | 513.5 | 561.1 | |
| Cordillera | 5.6 | 8.2 | 9.0 | 9.9 | 10.9 | 12.0 | 13.1 | 14.4 | 15.8 | 17.3 | 19.0 | 20.8 | 22.8 | 24.9 | 27.3 | 29.8 | |
| Caaguazú | 2.6 | 3.8 | 4.2 | 4.6 | 5.0 | 5.5 | 6.1 | 6.6 | 7.3 | 8.0 | 8.8 | 9.6 | 10.5 | 11.5 | 12.6 | 13.7 | |
| Guairá | 1.2 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 2.8 | 3.0 | 3.3 | 3.6 | 4.0 | 4.4 | 4.8 | 5.2 | 5.7 | 6.3 | |
| Alto Paraná | 8.3 | 12.2 | 13.4 | 14.8 | 16.2 | 17.8 | 19.6 | 21.5 | 23.6 | 25.8 | 28.3 | 31.0 | 33.9 | 37.1 | 40.6 | 44.4 | |
| Paraguari | 3.2 | 4.7 | 5.2 | 5.7 | 6.2 | 6.9 | 7.5 | 8.2 | 9.0 | 9.9 | 10.9 | 11.9 | 13.0 | 14.3 | 15.6 | 17.0 | |
| Misiones | 1.6 | 2.3 | 2.5 | 2.8 | 3.1 | 3.4 | 3.7 | 4.0 | 4.4 | 4.9 | 5.3 | 5.8 | 6.4 | 7.0 | 7.6 | 8.4 | |
| Itapúa | 4.6 | 6.8 | 7.2 | 8.2 | 9.1 | 10.0 | 10.9 | 12.0 | 13.2 | 14.4 | 15.8 | 17.3 | 18.9 | 20.7 | 22.7 | 24.8 | |
| Caazapa | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.9 | |
| Neembucú | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | |
| San Pedro | 0.4 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.7 | 1.9 | 2.0 | 2.2 | |
| Concepción | 1.1 | 1.6 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 2.7 | 3.0 | 3.3 | 3.6 | 4.0 | 4.3 | 4.8 | 5.2 | 5.7 | |
| Anambay | 2.5 | 3.6 | 4.0 | 4.4 | 4.8 | 5.3 | 5.8 | 6.4 | 7.0 | 7.7 | 8.4 | 9.2 | 10.1 | 11.0 | 12.1 | 13.2 | |
| Canendiyú | 0.5 | 0.8 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.4 | 1.5 | 1.6 | 1.8 | 2.0 | 2.1 | 2.3 | 2.6 | 2.8 | |
| Region Occidental | 5.1 | 7.4 | 8.2 | 9.0 | 9.9 | 10.9 | 11.9 | 13.1 | 14.3 | 15.7 | 17.2 | 18.9 | 20.7 | 22.6 | 24.7 | 27.0 | |
| Total | 142.1 | 208.7 | 229.2 | 252.2 | 277.3 | 304.8 | 334.3 | 366.7 | 402.3 | 440.9 | 483.3 | 529.3 | 579.3 | 634.0 | 693.6 | 758.0 | |

Estimation formula: Automobiles number α (Population \times PIB per capita)

Population: Refer to Table A I-1.

$$\text{PIB per capita: } P = \frac{297,260}{1 + 897.82e^{-0.065742t}} \quad (\text{Unit US\$ Fixed price in 1972})$$

Where $t = 0$ in 1974

Table A I-9

***** Subscribers *****

(1/21)

* NO. 2001001 CENTRAL 2 (1)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 11646 12860 14091 15576 17069 18743 20575 23163 26029 28621 32034 35550 39307 43213 47299 51625 56280

* NO. 2001002 CENTRAL 29 (2)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 1916 2136 2358 2628 2919 3231 3581 4061 4552 5207 5831 6497 7228 8020 8862 9753 10720

* NO. 2001003 CENTRAL 30 (3)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 3687 4272 4896 5648 6572 7519 8591 10059 11759 13795 16304 18922 21720 24677 27789 31059 34572

* NO. 2001004 CENTRAL 35 (4)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 813 1015 1238 1576 1898 2268 2775 3351 4030 4945 5831 6984 8313 9624 11078 12923 15008

* NO. 2001005 CENTRAL 1 (5)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 12317 13566 14799 16227 17809 19458 21216 23765 26601 29546 32511 35732 39033 42707 46526 50227 53332

* NO. 2001006 CENTRAL 5 (6)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 1964 2187 2420 2692 2993 3314 3668 4164 4721 5336 5977 6659 7408 8221 9083 9997 10988

* NO. 2001007 CENTRAL 50 (7)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 2635 2936 3243 3613 4014 4445 4921 5618 6287 7159 8018 8933 9938 11027 12185 13410 14740

* NO. 2001008 CENTRAL 6 (8)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 5858 6572 7261 8075 8979 9931 11008 12491 14164 16009 17932 19978 22227 24662 27251 29990 32964

* NO. 2001009 CENTRAL 67 (9)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 1964 2187 2420 2692 2994 3311 3668 4164 4721 5336 5977 6659 7408 8221 9083 9997 10988

* NO. 2001010 CENTRAL 7 (10)
 (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997)
 1963 2190 2419 2692 2991 3313 3669 4164 4721 5343 5985 6667 7418 8230 9083 9997 10988

| * NO. | 2001001 | CENTRAL 8 | (11) | | | | | | | | | | | | | | |
|--------|---------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3112 | 3471 | 3837 | 4268 | 4743 | 5252 | 5818 | 6697 | 7539 | 8460 | 9476 | 10557 | 11746 | 13034 | 14400 | 15848 | 17420 | |

**** Subscribers total ****(11) tel. offices ****

| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 47875 | 53392 | 58982 | 65687 | 72981 | 80785 | 89490 | 101697 | 115124 | 129757 | 145876 | 163138 | 181746 | 201636 | 222639 | 244826 | 268000 |

Table A I-9

**** Subscribers ****

(3/21)

| | | | | | | | | | | | | | | | | | |
|---------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0106001 | CONCEPCION | | | | | | | | | | | | | | | | (1) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 474 | 532 | 594 | 663 | 735 | 813 | 900 | 1198 | 1537 | 1925 | 2360 | 2844 | 3376 | 3949 | 4586 | 5258 | 5979 | |
| * NO. 0106002 | HORQUETA | | | | | | | | | | | | | | | | (2) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 27 | 34 | 42 | 51 | 62 | 74 | 87 | 102 | 119 | 139 | 159 | 182 | 205 | 232 | 259 | 289 | 318 | |
| * NO. 0106003 | LORETO | | | | | | | | | | | | | | | | (3) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3 | 3 | 4 | 6 | 7 | 8 | 9 | 10 | 13 | 15 | 17 | 19 | 23 | 24 | 28 | 31 | 34 | |
| * NO. 0106004 | PASO BARRETO | | | | | | | | | | | | | | | | (4) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 12 | 14 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 57 | 65 | 73 | 83 | 92 | 102 | 115 | |
| * NO. 0106005 | PASO HORQUETA | | | | | | | | | | | | | | | | (5) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 14 | 16 | 18 | 21 | 21 | |
| * NO. 0112006 | CURUCE BELLA VISTA | | | | | | | | | | | | | | | | (6) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 2 | 3 | 3 | 3 | 5 | 5 | 6 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | |
| * NO. 0112007 | YBY YAU | | | | | | | | | | | | | | | | (7) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 12 | 14 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 57 | 65 | 73 | 83 | 92 | 102 | 115 | |
| * NO. 0209001 | ITAC. DEL ROSARIO | | | | | | | | | | | | | | | | (8) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 106 | 117 | 128 | 140 | 152 | 166 | 180 | 247 | 323 | 412 | 509 | 619 | 741 | 875 | 1017 | 1171 | 1336 | |
| * NO. 0209005 | SAN ESTANISLAO | | | | | | | | | | | | | | | | (9) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 160 | 167 | 172 | 178 | 180 | 181 | 180 | 283 | 402 | 540 | 695 | 870 | 1065 | 1266 | 1511 | 1760 | 2030 | |
| * NO. 0214012 | VILLA DE SAN PEDRO | | | | | | | | | | | | | | | | (10) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 160 | 185 | 213 | 245 | 279 | 318 | 360 | 461 | 574 | 704 | 848 | 1008 | 1184 | 1375 | 1578 | 1796 | 2030 | |

Table A I-9

***** Subscribers *****

(4/21)

| | | | | | | | | | | | | | | | | |
|---------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0209002 | VILLA DEL ROSARIO | | | | | | | | | | | | | | (11) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 68 | 81 | 97 | 114 | 133 | 155 | 180 | 218 | 260 | 309 | 362 | 420 | 483 | 551 | 625 | 701 | 797 |
| * NO. 0209003 | COL. GRAL. AQUINO | | | | | | | | | | | | | | (12) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 18 | 21 | 25 | 30 | 35 | 40 | 45 | 57 | 69 | 82 | 97 | 113 | 131 | 151 | 172 | 192 | 216 |
| * NO. 0209004 | SANTA CLARA | | | | | | | | | | | | | | (13) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 8 | 10 | 13 | 16 | 19 | 23 | 28 | 33 | 38 | 44 | 50 | 58 | 66 | 73 | 82 | 92 | 101 |
| * NO. 0209006 | TACUARAS(NORTE) | | | | | | | | | | | | | | (14) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 8 | 9 | 11 | 13 | 16 | 19 | 21 | 25 | 29 | 33 | 37 | 41 | 46 | 53 | 57 |
| * NO. 0209007 | FELIPE MATIAUDA | | | | | | | | | | | | | | (15) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 8 | 9 | 11 | 13 | 16 | 19 | 21 | 25 | 29 | 33 | 37 | 41 | 46 | 53 | 57 |
| * NO. 0209008 | COL. LIBERACION | | | | | | | | | | | | | | (16) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |
| * NO. 0209009 | GUAYABI | | | | | | | | | | | | | | (17) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 17 | 19 | 22 | 25 | 29 | 33 | 36 | 41 | 46 |
| * NO. 0209010 | COLONIA CHORE | | | | | | | | | | | | | | (18) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 9 | 11 | 15 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 56 | 65 | 73 | 83 | 92 | 102 | 113 |
| * NO. 0209011 | COL. VOLENDAN | | | | | | | | | | | | | | (19) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 8 | 9 | 11 | 13 | 16 | 19 | 21 | 25 | 29 | 33 | 37 | 41 | 46 | 53 | 57 |
| * NO. 0214013 | COL. SAN PABRO | | | | | | | | | | | | | | (20) | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |

Table A I-9

**** Subscribers ****

(5/21)

| | | | | | | | | | | | | | | | | |
|---------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0214014 | COL. RIO VERDE | | | | | | | | | | | | | | | (21) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |
| * NO. 0214015 | CORDO | | | | | | | | | | | | | | | (22) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 17 | 19 | 22 | 25 | 29 | 33 | 36 | 41 | 46 |
| * NO. 0214016 | JEJUI | | | | | | | | | | | | | | | (23) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 5 | 5 | 6 | 7 | 9 | 9 | 12 | 14 | 15 | 18 | 20 | 23 | 24 | 28 | 31 | 34 |
| * NO. 0214017 | LIMA | | | | | | | | | | | | | | | (24) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 9 | 11 | 15 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 56 | 65 | 73 | 83 | 92 | 102 | 113 |
| * NO. 0214018 | NUEVE SELMANIA | | | | | | | | | | | | | | | (25) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 8 | 9 | 11 | 13 | 16 | 19 | 21 | 25 | 29 | 33 | 37 | 41 | 46 | 53 | 57 |
| * NO. 0214019 | PTO. ANTEQUERA | | | | | | | | | | | | | | | (26) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 9 | 11 | 15 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 56 | 65 | 73 | 83 | 92 | 102 | 113 |
| * NO. 0214020 | SANTA ROSA | | | | | | | | | | | | | | | (27) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 6 | 7 | 9 | 11 | 13 | 16 | 19 | 22 | 25 | 29 | 34 | 39 | 45 | 49 | 56 | 62 | 67 |
| * NO. 0214012 | TACUATI | | | | | | | | | | | | | | | (28) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |
| * NO. 0214022 | COL. SUSANA | | | | | | | | | | | | | | | (29) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |
| * NO. 0303001 | CAACUPE | | | | | | | | | | | | | | | (30) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 286 | 339 | 398 | 466 | 540 | 625 | 720 | 895 | 1093 | 1315 | 1564 | 1838 | 2136 | 2459 | 2806 | 3175 | 3568 |

Table A I-9

***** Subscribers *****

(6/21)

| | | | | | | | | | | | | | | | | | |
|---------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0303007 | EUSEBIO AYALA | | | | | | | | | | | | | | | | (31) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 95 | 107 | 119 | 132 | 147 | 163 | 180 | 240 | 307 | 386 | 473 | 569 | 676 | 794 | 918 | 1053 | 1199 | |
| * NO. 0303012 | PRIBEBUY | | | | | | | | | | | | | | | | (32) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 98 | 110 | 121 | 135 | 149 | 164 | 180 | 241 | 311 | 390 | 479 | 579 | 687 | 808 | 935 | 1075 | 1222 | |
| * NO. 0303013 | SAN BERNARDINO | | | | | | | | | | | | | | | | (33) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 185 | 208 | 233 | 262 | 291 | 324 | 360 | 474 | 606 | 755 | 921 | 1108 | 1311 | 1535 | 1775 | 2032 | 2309 | |
| * NO. 0303002 | ALTOS | | | | | | | | | | | | | | | | (34) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 6 | 8 | 10 | 12 | 15 | 17 | 21 | 25 | 29 | 33 | 38 | 44 | 51 | 57 | 64 | 70 | 78 | |
| * NO. 0303003 | ARROYOS Y ESTEROS | | | | | | | | | | | | | | | | (35) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 11 | 14 | 17 | 21 | 25 | 30 | 36 | 41 | 48 | 56 | 64 | 72 | 81 | 91 | 101 | 112 | |
| * NO. 0303004 | ATYRA | | | | | | | | | | | | | | | | (36) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 18 | 23 | 28 | 34 | 41 | 49 | 58 | 68 | 80 | 93 | 106 | 122 | 137 | 155 | 174 | 192 | 213 | |
| * NO. 0303005 | CARAGUATAY | | | | | | | | | | | | | | | | (37) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 16 | 20 | 25 | 30 | 37 | 44 | 52 | 62 | 72 | 83 | 95 | 109 | 123 | 139 | 156 | 173 | 191 | |
| * NO. 0303006 | COL. 1° DE MARSO | | | | | | | | | | | | | | | | (38) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 14 | 16 | 18 | 21 | 23 | |
| * NO. 0303008 | ISULA PUCU | | | | | | | | | | | | | | | | (39) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 11 | 14 | 17 | 21 | 25 | 30 | 36 | 41 | 48 | 56 | 64 | 72 | 81 | 91 | 101 | 112 | |
| * NO. 0303009 | ITAC. DE LA CORDILLERA | | | | | | | | | | | | | | | | (40) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 31 | 39 | 48 | 59 | 70 | 84 | 100 | 117 | 136 | 156 | 181 | 205 | 232 | 263 | 292 | 324 | 360 | |

Table A I-9

***** Subscribers *****

(7/21)

| | | | | | | | | | | | | | | | | |
|---------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0303010 | LOMA GRANDE | | (41) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 | 11 |
| * NO. 0303011 | MBOCAYATY (STA. ELENA) | | (42) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 14 | 16 | 18 | 21 | 23 |
| * NO. 0303014 | SANTA ELENA | | (43) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 4 | 6 | 9 | 12 | 16 | 19 | 25 | 30 | 36 | 43 | 51 | 59 | 68 | 78 | 89 | 100 | 112 |
| * NO. 0303015 | TOBATI | | (44) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 71 | 84 | 99 | 116 | 135 | 157 | 180 | 219 | 263 | 312 | 366 | 425 | 490 | 560 | 634 | 713 | 797 |
| * NO. 0301016 | EMBOSCADA | | (45) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 9 | 11 | 14 | 17 | 21 | 25 | 30 | 36 | 41 | 48 | 56 | 64 | 72 | 81 | 91 | 101 | 112 |
| * NO. 0301017 | NUEVA COLOMBIA | | (46) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 | 11 |
| * NO. 0404001 | VILLARRICA | | (47) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 606 | 655 | 702 | 753 | 801 | 850 | 900 | 1229 | 1605 | 2037 | 2523 | 3062 | 3659 | 4316 | 5019 | 5775 | 6588 |
| * NO. 0404002 | COL. INDIPENDENCIA | | (48) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 54 | 66 | 80 | 96 | 114 | 134 | 157 | 183 | 212 | 243 | 278 | 315 | 354 | 397 | 441 | 489 | 539 |
| * NO. 0404003 | COL. MAURICIO J. TROCHE | | (49) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 9 |
| * NO. 0404004 | CNEL MARTINES | | (50) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 11 | 13 | 15 | 16 | 18 | 20 |

Table A I-9

**** Subscribers ****

(8/21)

| * NO. | EUGENIO A. GARAY | | | | | | | | | | | | | | | | (51) |
|--------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 9 | |

| * NO. | ITURBE | | | | | | | | | | | | | | | | (52) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 27 | 33 | 40 | 48 | 56 | 67 | 78 | 91 | 104 | 120 | 136 | 154 | 174 | 196 | 217 | 240 | 265 | |

| * NO. | ITAPE | | | | | | | | | | | | | | | | (53) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 9 | |

| * NO. | FELIX PEREZ CAROZO | | | | | | | | | | | | | | | | (54) |
|--------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 9 | |

| * NO. | MBOCAYATY | | | | | | | | | | | | | | | | (55) |
|--------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3 | 3 | 4 | 5 | 7 | 7 | 9 | 10 | 12 | 13 | 15 | 17 | 19 | 22 | 24 | 26 | 29 | |

| * NO. | NUMI | | | | | | | | | | | | | | | | (56) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 11 | 13 | 15 | 16 | 18 | 20 | |

| * NO. | SAN SALVADOR | | | | | | | | | | | | | | | | (57) |
|--------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 6 | 8 | 9 | 12 | 14 | 16 | 19 | 22 | 26 | 31 | 35 | 39 | 45 | 50 | 56 | 62 | 69 | |

| * NO. | CNEL. OVIEDO | | | | | | | | | | | | | | | | (58) |
|--------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 595 | 662 | 733 | 813 | 894 | 983 | 1080 | 1455 | 1883 | 2373 | 2924 | 3536 | 4210 | 4951 | 5745 | 6599 | 7516 | |

| * NO. | CAAGUAZU | | | | | | | | | | | | | | | | (59) |
|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 245 | 282 | 323 | 370 | 420 | 477 | 540 | 693 | 867 | 1063 | 1282 | 1526 | 1794 | 2086 | 2398 | 2732 | 3089 | |

| * NO. | COMPO 9 | | | | | | | | | | | | | | | | (60) |
|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 29 | 36 | 44 | 53 | 64 | 76 | 90 | 106 | 125 | 145 | 168 | 192 | 217 | 246 | 276 | 307 | 340 | |

Table A I-9

***** Subscribers *****

(9/21)

| | | | | | | | | | | | | | | | | |
|---------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0505004 | CRAYAO | | | | | | | | | | | | | | | (61) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |
| * NO. 0505005 | COL. CECILIO BAES | | | | | | | | | | | | | | | (62) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 3 | 4 | 6 | 7 | 7 | 10 | 11 | 12 | 15 | 17 | 19 | 22 | 24 | 28 | 31 | 34 |
| * NO. 0505006 | HUGO STROESSNER | | | | | | | | | | | | | | | (63) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 3 | 5 | 9 | 12 | 16 | 21 | 27 | 32 | 40 | 48 | 57 | 66 | 76 | 87 | 99 | 112 |
| * NO. 0505007 | JUAN M FRUTOS | | | | | | | | | | | | | | | (64) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 19 | 24 | 30 | 36 | 44 | 53 | 62 | 73 | 85 | 98 | 113 | 129 | 146 | 166 | 185 | 205 | 226 |
| * NO. 0505008 | LA PASTORA | | | | | | | | | | | | | | | (65) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 2 | 2 | 2 | 4 | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 8 | 10 | 12 |
| * NO. 0505009 | YHU | | | | | | | | | | | | | | | (66) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 8 | 10 | 13 | 16 | 19 | 23 | 28 | 33 | 38 | 44 | 51 | 58 | 66 | 73 | 82 | 92 | 103 |
| * NO. 0505010 | SAN JOSE DE LOS ARROYOS | | | | | | | | | | | | | | | (67) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 38 | 44 | 52 | 60 | 68 | 78 | 90 | 111 | 136 | 164 | 194 | 229 | 266 | 306 | 348 | 394 | 444 |
| * NO. 0505011 | COL. REPATRIACION | | | | | | | | | | | | | | | (68) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 4 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | 16 | 19 | 23 | 25 | 29 | 33 | 36 | 41 | 46 |
| * NO. 0505012 | COL. JUAN RAMON CHAVES | | | | | | | | | | | | | | | (69) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 8 | 10 | 13 | 16 | 19 | 23 | 28 | 33 | 38 | 44 | 51 | 58 | 66 | 75 | 82 | 92 | 103 |
| * NO. 0505013 | MBUTUY | | | | | | | | | | | | | | | (70) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |

Table A I-9

**** Subscribers ****

(10/21)

| | | | | | | | | | | | | | | | | |
|---------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0504014 | PASO YOBAY | | (71) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 7 | 8 | 10 | 12 | 14 | 17 | 19 | 22 | 25 | 29 | 33 | 37 | 42 | 46 | 48 | 57 |
| * NO. 0604001 | CAAZAPA | | (72) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 51 | 64 | 79 | 96 | 115 | 138 | 163 | 192 | 223 | 258 | 297 | 337 | 383 | 431 | 481 | 534 | 591 |
| * NO. 0604002 | MACIEL | | (73) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 5 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |
| * NO. 0604003 | SAN JUAN NEPOMUCENO | | (74) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 37 | 42 | 49 | 56 | 63 | 72 | 81 | 101 | 125 | 151 | 180 | 213 | 249 | 288 | 329 | 373 | 421 |
| * NO. 0606004 | YEGROS | | (75) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 13 | 16 | 20 | 24 | 29 | 34 | 41 | 48 | 56 | 64 | 74 | 85 | 96 | 107 | 121 | 133 | 148 |
| * NO. 0604005 | YUTY PUEBRO | | (76) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 13 | 16 | 20 | 24 | 29 | 34 | 41 | 48 | 56 | 64 | 74 | 85 | 96 | 107 | 121 | 133 | 148 |
| * NO. 0604006 | GENERAL MORINIGO | | (77) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 3 | 4 | 6 | 7 | 8 | 10 | 10 | 13 | 15 | 17 | 19 | 22 | 25 | 28 | 31 | 34 |
| * NO. 0604007 | COL. MOISES S. BERTONI | | (78) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 3 | 4 | 5 | 7 | 7 | 9 | 10 | 12 | 13 | 15 | 17 | 19 | 22 | 24 | 26 | 29 |
| * NO. 0702001 | ENCALNACION | | (79) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1363 | 1630 | 1932 | 2281 | 2667 | 3105 | 3600 | 4202 | 4861 | 5598 | 6398 | 7267 | 8201 | 9204 | 10254 | 11358 | 12526 |
| * NO. 0702008 | COL. HOENAU | | (80) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 86 | 98 | 111 | 127 | 142 | 160 | 180 | 216 | 257 | 302 | 352 | 408 | 466 | 531 | 599 | 671 | 748 |

| | | | | | | | | | | | | | | | | | |
|---------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0702010 | CNEL. BOGADO | | | | | | | | | | | | | | | | (81) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 103 | 123 | 147 | 175 | 205 | 239 | 278 | 320 | 367 | 419 | 475 | 536 | 599 | 668 | 741 | 815 | 895 | |
| * NO. 0702002 | CAMBYRETA | | | | | | | | | | | | | | | | (82) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 10 | 10 | 12 | 12 | 14 | 16 | 17 | |
| * NO. 0702003 | CAPITAN MEZA | | | | | | | | | | | | | | | | (83) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 4 | 4 | 5 | 7 | 8 | 9 | 11 | 13 | 14 | 16 | 18 | 20 | 24 | 26 | 28 | 32 | 35 | |
| * NO. 0702004 | CAPITAN MIRANDA | | | | | | | | | | | | | | | | (84) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 11 | 13 | 16 | 19 | 22 | 26 | 29 | 34 | 40 | 45 | 51 | 57 | 65 | 71 | 80 | 87 | 96 | |
| * NO. 0702005 | CARMEN DEL PARANA | | | | | | | | | | | | | | | | (85) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 28 | 34 | 40 | 47 | 55 | 64 | 75 | 87 | 100 | 114 | 129 | 146 | 163 | 182 | 201 | 222 | 243 | |
| * NO. 0702006 | COL. BELLA VISTA | | | | | | | | | | | | | | | | (86) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 35 | 42 | 49 | 58 | 67 | 78 | 90 | 105 | 122 | 140 | 160 | 182 | 205 | 229 | 257 | 284 | 312 | |
| * NO. 0702007 | COL. FRAN | | | | | | | | | | | | | | | | (87) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 10 | 12 | 14 | 17 | 19 | 22 | 27 | 30 | 35 | 40 | 46 | 52 | 58 | 64 | 71 | 80 | 87 | |
| * NO. 0702009 | COL. PIRAPO | | | | | | | | | | | | | | | | (88) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 42 | 50 | 60 | 71 | 84 | 97 | 113 | 131 | 150 | 171 | 193 | 218 | 244 | 273 | 302 | 332 | 366 | |
| * NO. 0701011 | GRAL. ARTIGAS | | | | | | | | | | | | | | | | (89) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 12 | 14 | 17 | 21 | 25 | 29 | 34 | 39 | 45 | 51 | 58 | 66 | 74 | 84 | 94 | 103 | 113 | |
| * NO. 0702012 | GRAL. DELGADO | | | | | | | | | | | | | | | | (90) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 7 | 8 | 10 | 12 | 14 | 16 | 19 | 22 | 26 | 28 | 32 | 37 | 41 | 45 | 50 | 56 | 61 | |

Table A I-9

**** Subscribers ****

(12/21)

| | | | | | | | | | | | | | | | | | |
|---------------|--------------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| * NO. 0702013 | JESUS | | (91) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 7 | 9 | |
| * NO. 0702014 | LA PAZ | | (92) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 14 | 17 | 20 | 24 | 28 | 33 | 37 | 44 | 50 | 57 | 65 | 72 | 82 | 91 | 101 | 111 | 121 | |
| * NO. 0702015 | SALITRE CUE | | (93) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 10 | 10 | 12 | 12 | 14 | 16 | 17 | |
| * NO. 0702016 | SAN COSME Y DAMIAN | | (94) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3 | 30 | 60 | 90 | 120 | 150 | 180 | 190 | 199 | 209 | 218 | 228 | 237 | 247 | 256 | 266 | 275 | |
| * NO. 0702017 | SAN PEDRO DEL PARANA | | (95) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 20 | 24 | 29 | 34 | 40 | 47 | 54 | 62 | 71 | 81 | 92 | 104 | 116 | 130 | 144 | 158 | 174 | |
| * NO. 0702018 | SANTA ROSA DE LIMA | | (96) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 7 | 7 | 7 | 9 | |
| * NO. 0808001 | S. J. BAUTISTA MISSIONES | | (97) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 148 | 174 | 203 | 236 | 273 | 313 | 360 | 415 | 475 | 542 | 615 | 694 | 777 | 867 | 961 | 1059 | 1161 | |
| * NO. 0808006 | SAN IGNACIO | | (98) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 165 | 191 | 217 | 248 | 281 | 319 | 360 | 423 | 492 | 569 | 654 | 745 | 844 | 950 | 1060 | 1178 | 1302 | |
| * NO. 0808014 | YACYRETA | | (99) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 128 | 151 | 179 | 210 | 244 | 282 | 326 | 375 | 426 | 484 | 548 | 615 | 686 | 761 | 842 | 925 | 1012 | |
| * NO. 0808002 | ARAZAPE | | (100) | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | |

Table A I-9

**** Subscribers ****

(13/21)

| | | | | | | | | | | | | | | | | | |
|---------------|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| * NO. 0808004 | ITA YARU | | | | | | | | | | | | | | | | (101) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 11 | 13 | 15 | 17 | 17 | 19 | 21 | |
| * NO. 0808005 | SAN ANTONIO MISSIONES | | | | | | | | | | | | | | | | (102) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | |
| * NO. 0808007 | SAN MIGUEL | | | | | | | | | | | | | | | | (103) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 5 | 6 | 7 | 9 | 10 | 12 | 13 | 15 | 18 | 20 | 22 | 26 | 28 | 32 | 36 | 38 | 41 | |
| * NO. 0808008 | SAN PATRICIO | | | | | | | | | | | | | | | | (104) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 3 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 11 | 13 | 15 | 17 | 17 | 19 | 21 | |
| * NO. 0808009 | SANTA MARIA | | | | | | | | | | | | | | | | (105) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | |
| * NO. 0808010 | SANTA ROSA MISSIONES | | | | | | | | | | | | | | | | (106) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 59 | 69 | 81 | 93 | 109 | 125 | 143 | 164 | 184 | 208 | 235 | 262 | 291 | 322 | 355 | 389 | 424 | |
| * NO. 0808011 | SANTIAGO | | | | | | | | | | | | | | | | (107) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 5 | 6 | 7 | 9 | 10 | 12 | 13 | 15 | 18 | 20 | 22 | 26 | 28 | 32 | 36 | 38 | 41 | |
| * NO. 0808012 | VILLA FLORIDA | | | | | | | | | | | | | | | | (108) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 57 | 68 | 79 | 89 | 104 | 120 | 137 | 157 | 176 | 200 | 224 | 250 | 277 | 307 | 337 | 370 | 402 | |
| * NO. 0808013 | YABEBYRY | | | | | | | | | | | | | | | | (109) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | |
| * NO. 0907001 | PARAGUARI | | | | | | | | | | | | | | | | (110) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 195 | 217 | 241 | 268 | 296 | 327 | 360 | 482 | 622 | 782 | 962 | 1161 | 1382 | 1624 | 1881 | 2160 | 2458 | |

Table A I-9

**** Subscribers ****

(14/21)

| | | | | | | | | | | | | | | | | |
|---------------|-----------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0907005 | CARAPEGUA | | (111) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 100 | 127 | 158 | 194 | 236 | 283 | 337 | 396 | 463 | 537 | 620 | 708 | 803 | 906 | 1013 | 1128 | 1248 |
| * NO. 0907002 | ACAHAY | | (112) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 17 | 21 | 27 | 33 | 39 | 47 | 56 | 66 | 76 | 89 | 102 | 116 | 131 | 148 | 167 | 185 | 205 |
| * NO. 0907003 | CAAPUCU | | (113) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 12 | 15 | 18 | 22 | 27 | 32 | 38 | 44 | 52 | 60 | 69 | 78 | 88 | 99 | 111 | 123 | 136 |
| * NO. 0907004 | CABALLERO | | (114) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 40 | 45 | 51 | 57 | 64 | 72 | 80 |
| * NO. 0907006 | COL. CESAR BARRIENTOS | | (115) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |
| * NO. 0907007 | ESCOBAR | | (116) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |
| * NO. 0907008 | LA COLMENA | | (117) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 19 | 24 | 29 | 36 | 43 | 50 | 60 | 71 | 82 | 95 | 108 | 124 | 141 | 157 | 176 | 195 | 216 |
| * NO. 0907009 | PIRAYU | | (118) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 19 | 22 | 26 | 29 | 34 | 39 | 45 | 56 | 68 | 82 | 98 | 116 | 135 | 158 | 177 | 202 | 228 |
| * NO. 0907010 | QUINDY | | (119) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 51 | 56 | 62 | 69 | 75 | 83 | 90 | 120 | 153 | 191 | 234 | 281 | 334 | 391 | 454 | 519 | 591 |
| * NO. 0907011 | QUYQUYHO | | (120) | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |

Table A I-9

***** Subscribers *****

(15/21)

| | | | | | | | | | | | | | | | | |
|---------------|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0907012 | ROQUE GONZALEZ DE S. CRUZ (121) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 8 | 9 | 11 | 13 | 16 | 18 | 21 | 25 | 29 | 33 | 37 | 41 | 46 | 51 | 57 |
| * NO. 0907013 | SAPCAI (122) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 9 | 11 | 15 | 17 | 21 | 26 | 30 | 36 | 42 | 49 | 56 | 65 | 73 | 81 | 92 | 102 | 113 |
| * NO. 0907014 | VALLE APUA (123) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 2 | 3 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 21 | 23 |
| * NO. 0907015 | YAGUARON (124) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 98 | 110 | 122 | 135 | 149 | 164 | 180 | 242 | 312 | 392 | 484 | 584 | 694 | 815 | 946 | 1086 | 1236 |
| * NO. 097016 | YBYCUI (125) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 67 | 76 | 86 | 96 | 108 | 121 | 135 | 172 | 215 | 264 | 318 | 378 | 443 | 515 | 590 | 673 | 760 |
| * NO. 0907018 | MBUYAPEY (126) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 4 | 5 | 6 | 7 | 9 | 9 | 12 | 13 | 16 | 18 | 20 | 22 | 24 | 27 | 31 | 35 |
| * NO. 0907019 | CERRO LEON (127) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 11 |
| * NO. 0907017 | YBYTYMI (128) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 4 | 5 | 6 | 7 | 9 | 9 | 12 | 13 | 16 | 18 | 20 | 22 | 24 | 27 | 31 | 35 |
| * NO. 1011005 | JUAN L. MALLOROQUIN (129) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 23 | 27 | 31 | 35 | 41 | 47 | 53 | 61 | 69 | 77 | 86 | 96 | 107 | 118 | 129 | 142 | 153 |
| * NO. 1011006 | PTO. PTE. FRANCO (130) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 107 | 136 | 170 | 210 | 254 | 306 | 367 | 432 | 504 | 585 | 676 | 773 | 878 | 990 | 1110 | 1236 | 1370 |

Table A I-9

**** Subscribers ****

(16/21)

| | | | | | | | | | | | | | | | | |
|---------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| * NO. 1011007 | COL. PTE. STROESSNER | | | | | | | | | | | | | (131) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 106 | 123 | 142 | 164 | 187 | 213 | 244 | 276 | 310 | 348 | 389 | 433 | 478 | 527 | 577 | 630 | 685 |
| * NO. 1011001 | CIUDAD PTE. STROESSNER | | | | | | | | | | | | | (132) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1622 | 1853 | 2108 | 2395 | 2700 | 3040 | 3420 | 4026 | 4707 | 5457 | 6289 | 7190 | 8159 | 9205 | 10306 | 11465 | 12694 |
| * NO. 1011003 | HERNANDARIAS | | | | | | | | | | | | | (133) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 340 | 370 | 402 | 436 | 470 | 504 | 540 | 658 | 791 | 940 | 1106 | 1287 | 1485 | 1699 | 1926 | 2167 | 2424 |
| * NO. 1011002 | COL. YGUAZU | | | | | | | | | | | | | (134) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 29 | 36 | 43 | 52 | 61 | 73 | 85 | 101 | 116 | 134 | 153 | 174 | 194 | 219 | 243 | 268 | 297 |
| * NO. 1011004 | JUAN E. OLEARY | | | | | | | | | | | | | (135) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 23 | 27 | 31 | 35 | 41 | 47 | 53 | 61 | 69 | 77 | 86 | 96 | 107 | 118 | 129 | 142 | 153 |
| * NO. 1011008 | KM 6 RUTA 7 | | | | | | | | | | | | | (136) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 0 | 0 | 30 | 38 | 47 | 57 | 68 | 118 | 133 | 150 | 167 | 187 | 205 | 228 | 249 | 271 | 297 |
| * NO. 1011009 | SANTA ROSA | | | | | | | | | | | | | (137) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 0 | 0 | 9 | 12 | 14 | 17 | 21 | 37 | 41 | 46 | 53 | 57 | 64 | 70 | 77 | 85 | 92 |
| * NO. 1101001 | AREGUA | | | | | | | | | | | | | (138) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 136 | 145 | 153 | 161 | 168 | 174 | 180 | 257 | 345 | 448 | 563 | 691 | 833 | 990 | 1158 | 1339 | 1533 |
| * NO. 1101002 | CAPIATA | | | | | | | | | | | | | (139) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 190 | 213 | 238 | 265 | 294 | 325 | 360 | 465 | 585 | 721 | 874 | 1042 | 1228 | 1430 | 1648 | 1879 | 2128 |
| * NO. 1101005 | ITA | | | | | | | | | | | | | (140) | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 198 | 221 | 244 | 271 | 298 | 328 | 360 | 470 | 595 | 738 | 898 | 1075 | 1269 | 1483 | 1710 | 1955 | 2217 |

Table A I-9

***** Subscribers *****

(17/21)

| | | | | | | | | | | | | | | | | | |
|---------------|-------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| * NO. 1101006 | LUQUE | (141) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 595 | 716 | 855 | 1015 | 1191 | 1392 | 1620 | 1944 | 2304 | 2708 | 3154 | 3641 | 4169 | 4741 | 5343 | 5983 | 6662 | |
| * NO. 1101009 | SAN ANTONIO | (142) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 88 | 100 | 113 | 128 | 143 | 161 | 180 | 224 | 273 | 330 | 392 | 461 | 536 | 618 | 705 | 797 | 897 | |
| * NO. 1101010 | SAN LORENZO | (143) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 708 | 858 | 1029 | 1227 | 1447 | 1697 | 1980 | 2365 | 2791 | 3271 | 3797 | 4372 | 4995 | 5669 | 6377 | 7131 | 7929 | |
| * NO. 1101012 | VILLETA | (144) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 97 | 117 | 141 | 167 | 198 | 231 | 270 | 323 | 381 | 448 | 519 | 598 | 683 | 776 | 874 | 977 | 1086 | |
| * NO. 1103016 | YPACARAY | (145) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 149 | 175 | 204 | 237 | 273 | 314 | 360 | 442 | 533 | 636 | 751 | 876 | 1014 | 1162 | 1321 | 1490 | 1669 | |
| * NO. 1101003 | COL. NUEVA ITALIA | (146) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 3 | 4 | 6 | 7 | 9 | 11 | 14 | 17 | 19 | 23 | 27 | 31 | 35 | 40 | 45 | 50 | |
| * NO. 1101004 | GURANBARE | (147) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 50 | 62 | 75 | 90 | 107 | 126 | 149 | 173 | 201 | 231 | 263 | 299 | 337 | 379 | 421 | 466 | 514 | |
| * NO. 1101007 | NEMBY | (148) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 11 | 14 | 16 | 20 | 24 | 28 | 33 | 38 | 45 | 51 | 58 | 65 | 74 | 83 | 91 | 101 | |
| * NO. 1101008 | PIQUETE CUE | (149) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 5 | 6 | 7 | 10 | 11 | 13 | 15 | 17 | 20 | 23 | 26 | 30 | 34 | 37 | 41 | 46 | 50 | |
| * NO. 1101011 | VALLE PUCU | (150) | | | | | | | | | | | | | | | |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 3 | 3 | 4 | 4 | 6 | 6 | 7 | 8 | 9 | 11 | 13 | 13 | 15 | 17 | 18 | 20 | |

| * NO. 1101013 | | YPANE | | (151) | | | | | | | | | | | | | | | |
|---------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 5 | 6 | 7 | 10 | 11 | 13 | 15 | 17 | 20 | 23 | 26 | 30 | 34 | 37 | 41 | 46 | 50 | | | |

| * NO. 1101014 | | YBYPQJHY-I | | (152) | | | | | | | | | | | | | | | |
|---------------|--------|------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 3 | 4 | 5 | 6 | 7 | 9 | 10 | 13 | 15 | 17 | 20 | 23 | 25 | 29 | 32 | 37 | 40 | | | |

| * NO. 1103017 | | ITAUGUA | | (153) | | | | | | | | | | | | | | | |
|---------------|--------|---------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 50 | 60 | 72 | 84 | 99 | 115 | 135 | 162 | 192 | 226 | 264 | 306 | 350 | 398 | 450 | 503 | 562 | | | |

| * NO. 1101018 | | LIMPIO | | (154) | | | | | | | | | | | | | | | |
|---------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 17 | 21 | 26 | 32 | 39 | 47 | 55 | 65 | 76 | 87 | 101 | 115 | 131 | 147 | 164 | 183 | 202 | | | |

| * NO. 1101015 | | M. R. ALONSO | | (155) | | | | | | | | | | | | | | | |
|---------------|--------|--------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 0 | 0 | 166 | 206 | 251 | 304 | 365 | 528 | 617 | 719 | 829 | 949 | 1079 | 1220 | 1367 | 1523 | 1686 | | | |

| * NO. 1101019 | | ZEBALLOS CUE | | (156) | | | | | | | | | | | | | | | |
|---------------|--------|--------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 0 | 0 | 23 | 29 | 35 | 44 | 52 | 77 | 91 | 105 | 121 | 139 | 158 | 178 | 200 | 224 | 247 | | | |

| * NO. 1201001 | | ALBERDI | | (157) | | | | | | | | | | | | | | | |
|---------------|--------|---------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 91 | 103 | 115 | 130 | 145 | 162 | 180 | 223 | 273 | 329 | 391 | 459 | 534 | 616 | 703 | 795 | 892 | | | |

| * NO. 1210003 | | PILAR | | (158) | | | | | | | | | | | | | | | |
|---------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 397 | 442 | 490 | 543 | 597 | 656 | 720 | 933 | 1175 | 1450 | 1757 | 2099 | 2474 | 2882 | 3321 | 3788 | 4293 | | | |

| * NO. 1201002 | | VILLA OLIVA | | (159) | | | | | | | | | | | | | | | |
|---------------|--------|-------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 3 | 3 | 5 | 6 | 7 | 9 | 10 | 12 | 14 | 15 | 18 | 21 | 25 | 28 | 32 | 35 | 38 | | | |

| * NO. 1210004 | | COL. VICE PTE. SANCHES | | (160) | | | | | | | | | | | | | | | |
|---------------|--------|------------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | | |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 20 | | | |

Table A I-9

**** Subscribers ****

(19/21)

| | | | | | | | | | | | | | | | | |
|---------------|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| * NO. 1210005 | GRAL. DIAZ (NEMBUCU) | | | | | | | | | | | | | | | (161) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 3 | 3 | 4 | 5 | 6 | 7 | 9 | 10 | 12 | 13 | 15 | 17 | 19 | 22 | 24 | 26 | 29 |
| * NO. 1210006 | HUMITA | | | | | | | | | | | | | | | (162) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 7 | 10 | 10 | 13 | 14 | 16 | 19 | 22 | 26 | 29 | 31 | 35 | 40 | 44 | 49 |
| * NO. 1210007 | ISLA UMBU | | | | | | | | | | | | | | | (163) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 9 |
| * NO. 1210008 | ITACORA | | | | | | | | | | | | | | | (164) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 20 |
| * NO. 1210009 | LAURELES | | | | | | | | | | | | | | | (165) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 5 | 6 | 7 | 10 | 10 | 13 | 14 | 16 | 19 | 22 | 26 | 29 | 31 | 35 | 40 | 44 | 49 |
| * NO. 1210010 | MAYOR MARTINES | | | | | | | | | | | | | | | (166) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 20 |
| * NO. 1210001 | PAZO DE PATRIA | | | | | | | | | | | | | | | (167) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 3 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 13 | 15 | 16 | 18 | 20 |
| * NO. 1201012 | ZANJITA | | | | | | | | | | | | | | | (168) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 9 | 11 |
| * NO. 1312001 | PEDRO J. CABALLERO | | | | | | | | | | | | | | | (169) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 925 | 1060 | 1208 | 1375 | 1557 | 1756 | 1980 | 2308 | 2671 | 3074 | 3512 | 3988 | 4498 | 5047 | 5622 | 6226 | 6865 |
| * NO. 1312002 | BELLA VISTA NORTE | | | | | | | | | | | | | | | (170) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 62 | 72 | 83 | 97 | 111 | 127 | 146 | 165 | 186 | 210 | 236 | 262 | 291 | 322 | 353 | 387 | 421 |

Table A I-9

**** Subscribers ****

(20/21)

| | | | | | | | | | | | | | | | | | |
|---------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| * NO. 1312003 | CAPITAN BADO | | | | | | | | | | | | | | | | (171) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 79 | 93 | 107 | 124 | 141 | 162 | 185 | 210 | 237 | 266 | 297 | 332 | 368 | 405 | 444 | 484 | 528 | |
| * NO. 1312004 | CHIRIGUELO | | | | | | | | | | | | | | | | (172) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 9 | 10 | 13 | 14 | 17 | 20 | 23 | 26 | 29 | 33 | 37 | 42 | 46 | 52 | 56 | 61 | 66 | |
| * NO. 1405001 | SALTOS DEL GUAIRA | | | | | | | | | | | | | | | | (173) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 99 | 119 | 142 | 169 | 199 | 232 | 270 | 332 | 399 | 477 | 563 | 657 | 759 | 871 | 990 | 1116 | 1250 | |
| * NO. 1405002 | VILLA CURUGUATY | | | | | | | | | | | | | | | | (174) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 8 | 10 | 13 | 16 | 19 | 23 | 28 | 33 | 38 | 44 | 51 | 58 | 66 | 75 | 82 | 92 | 103 | |
| * NO. 1405003 | LA PALOMA | | | | | | | | | | | | | | | | (175) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 0 | 0 | 9 | 12 | 14 | 17 | 21 | 30 | 34 | 39 | 46 | 52 | 59 | 67 | 74 | 83 | 92 | |
| * NO. 1405004 | CPRPUS CRISTI | | | | | | | | | | | | | | | | (176) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 0 | 0 | 9 | 12 | 14 | 17 | 21 | 30 | 34 | 39 | 46 | 52 | 59 | 67 | 74 | 83 | 92 | |
| * NO. 1515002 | VILLA HAYES | | | | | | | | | | | | | | | | (177) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 97 | 123 | 154 | 189 | 230 | 277 | 330 | 390 | 456 | 529 | 610 | 699 | 794 | 894 | 1001 | 1116 | 1236 | |
| * NO. 1506001 | PUERTO COLON | | | | | | | | | | | | | | | | (178) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 | 11 | |
| * NO. 1515003 | BENJAMIN ACEVAL | | | | | | | | | | | | | | | | (179) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 43 | 44 | 45 | 46 | 46 | 46 | 45 | 70 | 100 | 133 | 172 | 214 | 262 | 315 | 372 | 433 | 500 | |
| * NO. 1515004 | CHACO-I | | | | | | | | | | | | | | | | (180) |
| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 5 | 6 | 8 | 10 | 12 | 15 | 18 | 21 | 25 | 29 | 34 | 38 | 43 | 49 | 56 | 61 | 69 | |

| * NO. 1515005 TACUARAS (CHACO) (181) | | (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
|--|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 2 | 2 | 3 | 3 | 5 | 6 | 6 | 8 | 8 | 10 | 11 | 13 | 14 | 16 | 18 | 21 | 23 |
| * NO. 1515006 25 LEGUAS (182) | | (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 | 11 |
| * NO. 1606001 BAHIA NEGRA (183) | | (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 11 | 11 | 13 | 15 | 18 | 20 | 21 |
| * NO. 1915001 COL. FIRADEFIA (184) | | (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 0 | 79 | 93 | 110 | 128 | 148 | 172 | 231 | 277 | 329 | 384 | 449 | 515 | 590 | 669 | 753 | 842 |

***** Subscribers total ***** (184) tel. offices *****

| (1981) | (1982) | (1983) | (1984) | (1985) | (1986) | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 13076 | 15250 | 17842 | 20569 | 23534 | 26838 | 30554 | 37402 | 44865 | 53276 | 62606 | 72826 | 83943 | 95984 | 108802 | 122399 | 136901 |

I-2 Public Telephones Installation Goal

1. Asunción

- (1) The installation goal is 15 telephones per 1 km².
- (2) The area of Asunción is 177 km² (including F. DE LA MORA, LAMBARE).
- (3) Therefore, the total number would be:
$$15 \times 177 = 2,655 \text{ telephones} \quad (1)$$
- (4) The number of public telephones installed in hotels and restaurants would be 150. (2)
- (5) The number of public telephones installed at bus terminals and major bus depots would be 50. (3)
- (6) The number of public telephones in Asunción as of 1997 would be:
$$(1) + (2) + (3) = 2,855 \rightarrow 2,900 \quad (4)$$

2. Other than Asunción

- (1) Public telephones should be installed in areas other than Asunción in proportion to the ratio between the number of public telephones and the number of subscriber telephones in Asunción.

Above-mentioned public telephones do not include the public telephones planned under the rural telephone system introduction project.
- (2) The ratio of the number of public telephones and subscriber telephones in Asunción would be:
$$2,900/268,000 = 0.011 \quad (5)$$
- (3) Since the number of telephones in areas other than Asunción in 1997 would be 137,014, the number of

public telephones in the areas outside of Asunción
in 1997 would be:

$$137,014 \times 0.011 = 1,507 \rightarrow 1,500$$

3. Projected increase in the number of public telephones

Let us estimate the projected increase in the number of public telephones that will meet the goal of 4,400 public telephones in 1997.

Table A-I-10 shows the number of public telephones estimated based on existing data, assuming that public telephones will be constantly increasing throughout the period from 1981 to 1987. According to this table, the estimated number of public telephones would be 1,405 by the year of 1987.

Accordingly, the increase in the total number during the period from 1988 to 1997 would be 2,995.

Table A I-10 Public telephones (1981 ~ 1987)

| | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
|------------|------|------|------|------|------|------|------|
| "Capital" | 696 | 761 | 830 | 898 | 967 | 1035 | 1104 |
| "Interior" | 237 | 245 | 256 | 267 | 278 | 290 | 301 |
| Total | 933 | 1006 | 1086 | 1165 | 1245 | 1325 | 1405 |

"Capital" $y = 68.4857x - 134977$

"Interior" $y = 11.1143x - 21783.4$

Table A I-11 (1/20)

** Public telephones (ASUNCION) total **<11> tel. offices **

| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1104 | 1284 | 1463 | 1643 | 1822 | 2002 | 2181 | 2360 | 2540 | 2719 | 2900 |

Table A I-11 (2/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|--|--------|----|----|----|----|----|----|----|----|----|----|
| * NO. 0106001 | CONCEPCION | < 1 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 6 | 11 | 16 | 22 | 28 | 34 | 40 | 46 | 52 | 58 | 64 |
| * NO. 0106002 | HORQUETA | < 2 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 |
| * NO. 0106003 | LORETO | < 3 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0106004 | PASO BARRETO | < 4 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0106005 | PASO HORQUETA | < 5 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0112006 | CURUCE BELLA VISTA | < 6 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0112007 | YBY YAU | < 7 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209001 | ITAC. DEL ROSARIO | < 8 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 |
| * NO. 0209005 | SAN ESTANISLAO | < 9 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 |
| * NO. 0214012 | VILLA DE SAN PEDRO | < 10 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 17 | 18 | 19 |

Table A I-11 (3/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|--|--------|---|---|---|---|---|---|---|---|---|---|
| * NO. 0209002 | VILLA DEL ROSARIO | < 11 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 7 | 8 |
| * NO. 0209003 | COL. GRAL. AQUINO | < 12 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| * NO. 0209004 | SANTA CLARA | < 13 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209006 | TACUARAS(NORTE) | < 14 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209007 | FELIPE MATIAUDA | < 15 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209008 | COL. LIBERACION | < 16 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209009 | GUAYABI | < 17 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209010 | COLONIA CHORE | < 18 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0209011 | COL. VOLENDAN | < 19 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214013 | COL. SAN PABRO | < 20 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (4/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| * NO. 0214014 | COL. RIO VERDE | | | | | | | < 21 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214015 | CORORO | | | | | | | < 22 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214016 | JEJUI | | | | | | | < 23 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214017 | LIMA | | | | | | | < 24 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214018 | NUEVE GELMANIA | | | | | | | < 25 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214019 | PTO. ANTEQUERA | | | | | | | < 26 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214020 | SANTA ROSA | | | | | | | < 27 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214012 | TACUATI | | | | | | | < 28 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0214022 | COL. SUSANA | | | | | | | < 29 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0303001 | CAACUPE | | | | | | | < 30 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 4 | 7 | 10 | 14 | 18 | 22 | 25 | 28 | 31 | 34 | 37 | |

Table A I-11 (5/20)

**** Public telephones ****

| | | | | | | | | | | |
|---------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0303007 | EUSEBIO AYALA | < 31 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| * NO. 0303012 | PRIBEBUY | < 32 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 3 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 |
| * NO. 0303013 | SAN BERNARDINO | < 33 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 5 | 8 | 11 | 14 | 17 | 20 | 22 | 24 | 26 | 28 |
| * NO. 0303002 | ALTOS | < 34 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0303003 | ARROYOS Y ESTEROS | < 35 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0303004 | ATYRA | < 36 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| * NO. 0303005 | CARAGUATAY | < 37 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| * NO. 0303006 | COL. 1° DE MARSO | < 38 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0303008 | ISULA PUCU | < 39 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0303009 | ITAC. DE LA CORDILLERA | < 40 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |

Table A I-11 (6/20)

**** Public telephones ****

| | | | | | | | | | | | | |
|---------------|--|--------|----|----|----|----|----|----|----|----|----|----|
| * NO. 0303010 | LOMA GRANDE | < 41 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0303011 | MBOCAYATY (STA. ELENA) | < 42 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0303014 | SANTA ELENA | < 43 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0303015 | TOBATI | < 44 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 7 | 8 |
| * NO. 0301016 | EMBOSCADA | < 45 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0301017 | NUEVA COLOMBIA | < 46 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0404001 | VILLARRICA | < 47 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 6 | 13 | 19 | 25 | 32 | 39 | 46 | 52 | 58 | 64 | 70 |
| * NO. 0404002 | COL. INDIPENDENCIA | < 48 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| * NO. 0404003 | COL. MAURICIO J. TROCHE | < 49 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0404004 | CNEL MARTINES | < 50 > | | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (7/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0404005 | EUGENIO A. GARAY | | | | | | | | | | | < 51 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0404006 | ITURBE | | | | | | | | | | | < 52 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | |
| * NO. 0404007 | ITAPE | | | | | | | | | | | < 53 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0404008 | FELIX PEREZ CARDOZO | | | | | | | | | | | < 54 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0404009 | MBOCAYATY | | | | | | | | | | | < 55 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0404010 | ÑUMI | | | | | | | | | | | < 56 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0404011 | SAN SALVADOR | | | | | | | | | | | < 57 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 0505001 | CNEL. OVIEDO | | | | | | | | | | | < 58 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 3 | 10 | 17 | 24 | 31 | 38 | 45 | 52 | 59 | 66 | 73 | |
| * NO. 0505002 | CAAGUAZU | | | | | | | | | | | < 59 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 3 | 7 | 10 | 14 | 18 | 22 | 26 | 28 | 31 | 34 | 37 | |
| * NO. 0505003 | COMPO 9 | | | | | | | | | | | < 60 > |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | |

Table A I-11 (8/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| * NO. 0505004 | CRAYAO | | | | | | | < 61 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505005 | COL. CECILIO BAES | | | | | | | < 62 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505006 | HUGO STROESSNER | | | | | | | < 63 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505007 | JUAN M FRUTOS | | | | | | | < 64 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| * NO. 0505008 | LA PASTORA | | | | | | | < 65 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505009 | YHU | | | | | | | < 66 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505010 | SAN JOSE DE LOS ARROYOS | | | | | | | < 67 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 6 | |
| * NO. 0505011 | COL. REPATRIACION | | | | | | | < 68 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505012 | COL. JUAN RAMON CHAVES | | | | | | | < 69 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0505013 | MBUTUY | | | | | | | < 70 > | | | | |
| | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (9/20)

***** Public telephones *****

| | | | | | | | | | | | |
|---------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| * NO. 0504014 | PASO YOBAY | < 71 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0604001 | CAAZAPA | < 72 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | |
| * NO. 0604002 | MACIEL | < 73 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0604003 | SAN JUAN NEPOMUCENO | < 74 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | |
| * NO. 0606004 | YEGROS | < 75 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 |
| * NO. 0604005 | YUTY PUEBRO | < 76 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| * NO. 0604006 | GENERAL MORINIGO | < 77 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0604007 | COL. MOISES S. BERTONI | < 78 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| * NO. 0702001 | ENCALNACION | < 79 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 24 | 33 | 41 | 51 | 61 | 71 | 81 | 91 | 101 | 111 | 121 | |
| * NO. 0702008 | COL. HOENAU | < 80 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 3 | 4 | 6 | 7 | 8 | 9 | 10 | 10 | 11 | |

Table A I-11 (10/20)

***** Public telephones *****

| | | | | | | | | | | | |
|---------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| * NO. 0702010 | CNEL. BOGADO | < 81 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 4 | 4 | 5 | 6 | 7 | 8 | 8 | 9 | 10 | 11 | |
| * NO. 0702002 | CAMBYRETA | < 82 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702003 | CAPITAN MEZA | < 83 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702004 | CAPITAN MIRANDA | < 84 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702005 | CARMEN DEL PARANA | < 85 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| * NO. 0702006 | COL. BELLA VISTA | < 86 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | |
| * NO. 0702007 | COL. FRAM | < 87 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702009 | COL. PIRAPO | < 88 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | |
| * NO. 0701011 | GRAL. ARTIGAS | < 89 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702012 | GRAL DELGADO | < 90 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (11/20)

***** Public telephones *****

| | | | | | | | | | | | |
|---------------|--|---------|---|---|---|---|---|----|----|----|----|
| * NO. 0702013 | JESUS | < 91 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702014 | LA PAZ | < 92 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| * NO. 0702015 | SALITRE CUE | < 93 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0702016 | SAN COSME Y DAMIAN | < 94 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| * NO. 0702017 | SAN PEDRO DEL PARANA | < 95 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| * NO. 0702018 | SANTA ROSA DE LIMA | < 96 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808001 | S. J. BAUTISTA MISSIONES | < 97 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 2 | 4 | 4 | 6 | 8 | 9 | 10 | 10 | 11 | 12 |
| * NO. 0808006 | SAN IGNACIO | < 98 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 2 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| * NO. 0808014 | YACYRETA | < 99 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 2 | 3 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 |
| * NO. 0808002 | ARAZAPE | < 100 > | | | | | | | | | |
| | (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (12/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|-----------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0808004 | ITA YARU | < 101 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808005 | SAN ANTONIO MISSIONES | < 102 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808007 | SAN MIGUEL | < 103 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808008 | SAN PATRICIO | < 104 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808009 | SANTA MARIA | < 105 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808010 | SANTA ROSA MISSIONES | < 106 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 |
| * NO. 0808011 | SANTIAGO | < 107 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0808012 | VILLA FLORIDA | < 108 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |
| * NO. 0808013 | YABEBYRY | < 109 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0907001 | PARAGUARI | < 110 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 2 | 5 | 8 | 11 | 14 | 17 | 20 | 22 | 24 | 26 | 28 |

Table A I-11 (13/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|-----------------------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--|--|
| * NO. 0907005 | CARAPEGUA | | | | | | | < 111 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 2 | 2 | 4 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 13 | | |
| * NO. 0907002 | ACAHAY | | | | | | | < 112 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | | |
| * NO. 0907003 | CAAPUCU | | | | | | | < 113 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | |
| * NO. 0907004 | CABALLERO | | | | | | | < 114 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| * NO. 0907006 | COL. CESAR BARRIENTOS | | | | | | | < 115 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| * NO. 0907007 | ESCOBAR | | | | | | | < 116 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| * NO. 0907008 | LA COLMENA | | | | | | | < 117 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | |
| * NO. 0907009 | PIRAYU | | | | | | | < 118 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | | |
| * NO. 0907010 | QUINDY | | | | | | | < 119 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 3 | 5 | 6 | 6 | 7 | 7 | 8 | 9 | 9 | | |
| * NO. 0907011 | QUYQUYHO | | | | | | | < 120 > | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |

Table A I-11 (14/20)

***** Public telephones *****

| | | | | | | | | | | |
|---------------|---------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 0907012 | ROQUE GONZALEZ DE S. CRUZ | < 121 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0907013 | SAPCAI | < 122 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0907014 | VALLE APUA | < 123 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0907015 | YAGUARON | < 124 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| * NO. 0907016 | YBYCUI | < 125 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 |
| * NO. 0907018 | MBUYAPEY | < 126 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| * NO. 0907019 | CERRO LEON | < 127 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 0907017 | YBYTYMI | < 128 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1011005 | JUAN L. MALLOROQUIN | < 129 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| * NO. 1011006 | PTO. PTE. FRANCO | < 130 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 2 | 4 | 6 | 8 | 10 | 12 | 13 | 14 | 15 | 16 | 17 |

Table A I-11 (15/20)

***** Public telephones *****

* NO. 1011007 COL. PTE. STROESSNER < 131 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 2 2 3 3 4 5 6 7

* NO. 1011001 CIUDAD PTE. STROESSNER < 132 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 21 29 38 49 60 71 81 92 103 114 125

* NO. 1011003 HERNANDARIAS < 133 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 4 6 9 10 12 14 16 19 22 25 28

* NO. 1011002 COL. YGUAZU < 134 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 2 2 2 2 3 3 3

* NO. 1011004 JUAN E. OLEARY < 135 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 1 1 1 1 1 2 2

* NO. 1011008 KM 6 RUTA 7 < 136 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 2 2 2 2 3 3 3 3

* NO. 1011009 SANTA ROSA < 137 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 1 1 1 1 1 1 1

* NO. 1101001 AREGUA < 138 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 3 5 6 8 10 11 13 15 17 18

* NO. 1101002 CAPIATA < 139 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 3 5 7 9 11 12 15 18 21 24 26

* NO. 1101005 ITA < 140 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 3 5 8 10 12 14 16 18 20 23 25

Table A I-11 (16/20)

**** Public telephones ****

| | | | | | | | | | | | |
|---------------|-------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| * NO. 1101006 | LUQUE | < 141 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 10 | 14 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 62 | 69 | |
| * NO. 1101009 | SAN ANTONIO | < 142 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| * NO. 1101010 | SAN LORENZO | < 143 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 14 | 21 | 29 | 36 | 43 | 50 | 57 | 64 | 72 | 80 | 88 | |
| * NO. 1101012 | VILLETA | < 144 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| * NO. 1103016 | YPACARAY | < 145 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 4 | 6 | 7 | 8 | 10 | 11 | 13 | 15 | 16 | 17 | |
| * NO. 1101003 | COL. NUEVA ITALIA | < 146 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1101004 | GURAMBARE | < 147 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | |
| * NO. 1101007 | ÑEMBY | < 148 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1101008 | PIQUETE CUE | < 149 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1101011 | VALLE PUCU | < 150 > | | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

Table A I-11 (17/20)

***** Public telephones *****

| | | | | | | | | | | | | |
|---------------|------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 1101013 | YPANE | < 151 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1101014 | YBYPOJHY-I | < 152 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1103017 | ITAUGUA | < 153 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 7 | 7 |
| * NO. 1101018 | LIMPIO | < 154 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| * NO. 1101015 | M. R. ALONSO | < 155 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 2 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 15 |
| * NO. 1101019 | ZEBALLOS CUE | < 156 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 |
| * NO. 1201001 | ALBERDI | < 157 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| * NO. 1210003 | PILAR | < 158 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 4 | 7 | 11 | 14 | 18 | 22 | 26 | 31 | 36 | 41 | 45 |
| * NO. 1201002 | VILLA OLIVA | < 159 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210004 | COL. VICE PTE. SANCHES | < 160 > | | | | | | | | | | |
| | | (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table A I-11 (18/20)

***** Public telephones *****

| | | | | | | | | | | |
|---------------|----------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| * NO. 1210005 | GRAL. DIAZ (ÑEMBUKU) | < 161 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210006 | HUMITA | < 162 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210007 | ISLA UMBU | < 163 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210008 | ITACORA | < 164 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210009 | LAURELES | < 165 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210010 | MAYOR MARTINES | < 166 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1210001 | PAZO DE PATRIA | < 167 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1201012 | ZANJITA | < 168 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| * NO. 1312001 | PEDRO J. CABALLERO | < 169 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 12 | 17 | 22 | 27 | 32 | 37 | 42 | 49 | 54 | 59 | 63 |
| * NO. 1312002 | BELLA VISTA NORTE | < 170 > | | | | | | | | |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) |
| 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |

Table A I-11 (19/20)

***** Public telephones *****

| | | | | | | | | | | | |
|---------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| * NO. 1312003 | CAPITAN BADO | | | | | | | | | | < 171 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 6 | |
| * NO. 1312004 | CHIRIGUELO | | | | | | | | | | < 172 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1405001 | SALTOS DEL GUAIRA | | | | | | | | | | < 173 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 2 | 4 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 14 | |
| * NO. 1405002 | VILLA CURUGUATY | | | | | | | | | | < 174 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1405003 | LA PALOMA | | | | | | | | | | < 175 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1405004 | CPRPUS CRISTI | | | | | | | | | | < 176 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1515002 | VILLA HAYES | | | | | | | | | | < 177 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| * NO. 1506001 | PUERTO COLON | | | | | | | | | | < 178 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| * NO. 1515003 | BENJAMIN ACEVAL | | | | | | | | | | < 179 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 3 | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 7 | 8 | |
| * NO. 1515004 | CHACO-I | | | | | | | | | | < 180 > |
| (1987) | (1988) | (1989) | (1990) | (1991) | (1992) | (1993) | (1994) | (1995) | (1996) | (1997) | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |

Table A I-11 (20/20)

***** Public telephones *****

* NO. 1515005 TACUARAS (CHACO) < 181 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 1 1 1 1 1 1 1

* NO. 1515006 25 LENGUAS < 182 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 1 1 1 1 1 1 1

* NO. 1606001 BAHIA NEGRA < 183 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 1 1 1 1 1 1 1 1 1 1

* NO. 1915001 COL. FIRADEFIA < 184 >
 (1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 1 3 4 5 6 7 8 8 8 9 10

***** Public telephones total *****< 184 > tel. offices *****

(1987)(1988)(1989)(1990)(1991)(1992)(1993)(1994)(1995)(1996)(1997)
 301 421 541 661 781 901 1021 1141 1261 1381 1500

I-3 Calculation of Junction and Toll Circuits Number

The number of junction and toll circuits in the Master Plan has been calculated according to the following steps.

(1) Junction circuits in Asunción area

1) Inter-exchange traffic forecast

- (a) The inter-exchange traffic data used for the design of junction circuits in the 3rd expansion project have been employed as the basic data for the inter-exchange traffic forecast.
- (b) Using the traffic data obtained under (a) and the subscriber lines number, the inter-exchange calling rate (originating and terminating) for individual section has been calculated.
- (c) To estimate the inter-exchange calling rate at the end of the 4th expansion project (1981-1987), the following assumption has been used.

For the existing telephone offices, the inter-exchange calling rate obtained under (b) will be maintained.

For the new telephone offices, the inter-exchange calling rate has been estimated from those of other telephone offices with similar circumstances regarding the telephone traffic.

- (d) As for the inter-exchange calling rate for the period 1988 to 1997, it has been assumed that, considering the relatively large value of the inter-exchange calling rate obtained under above-mentioned process, the inter-exchange calling rate will decrease gradually owing to the diffusion of residence telephones and, at the end of the Master Plan period, will be 80% of the value obtained under (c).

2) Calculation of junction circuits number

The junction circuits number by each section has been calculated based on the inter-exchange traffic data obtained under 1) and the corresponding subscriber lines number planned in the Master Plan.

To calculate the junction circuits number, the following conditions have been applied.

Loss probability; 1%

Table of the Erlang Formula

For junction circuits between digital exchanges -- Table for full availability trunk-group.

For junction circuits between EMD exchanges and between EMD exchange and digital exchange -- Table for limited availability trunk-group.

As the circuits for the use of special service are not included in the above-mentioned circuits, 10% of the value obtained above has been added to get the junction circuits number.

(2) Toll circuits for automatic telephone offices

1) Toll traffic forecast

(a) The toll traffic data measured and collected by ANTELCO in 1979-1980 have been employed as the basic data for the toll traffic forecast.

The toll calling rate for each telephone office has been estimated from the traffic data obtained above and the subscriber line number.

(b) To estimate the toll traffic for the Master Plan period, the following has been assumed.

The toll calling rate obtained under (a) will be maintained as the results of the traffic increase due to the development of subscriber dialling toll service and traffic decrease due to the diffusion of residence telephones.

(c) The toll calling rate of the new automatic telephone offices has been estimated from the traffic data of other telephone offices with similar circumstances in connection with the telephone traffic.

2) Calculation of toll circuits number

The toll circuits number has been calculated based on the toll calling rate obtained above and the subscriber lines number in the Master Plan, using the following conditions.

Loss probability: 1%

Table of the Erlang Formula:

Table for limited availability trunk-group.

Table A I-13 Number of toll trunk line (telephone)

Note: 1. The number of toll trunk line in 1987 shows the number planned by ANTELCO.

2. The number of toll trunk line in 1988 - 1997 shows the necessary number for estimated traffic.

3. S.C. means the secondary center.

P.C. means the primary center.

ASUNCION S.C.

| Circuit section | Year | | | | | | | | | | |
|----------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ASUNCION S.C. -CENTRAL2 | | 350 | 350 | 350 | 350 | 376 | 376 | 376 | 480 | 480 | 480 |
| -CENTRAL29 | | 37 | 37 | 64 | 64 | 64 | 64 | 85 | 85 | 85 | 85 |
| -CENTRAL30 | | 115 | 115 | 115 | 115 | 220 | 220 | 220 | 290 | 290 | 290 |
| -CENTRAL35 | | 29 | 68 | 68 | 68 | 68 | 86 | 86 | 86 | 118 | 118 |
| -CENTRAL4 | | 88 | 88 | 88 | | | | | | | |
| -CENTRAL9 | 1062 | 276 | 276 | 276 | 452 | 452 | 452 | 584 | 584 | 584 | 584 |
| -CENTRAL5 | | 40 | 68 | 68 | 68 | 68 | 76 | 76 | 76 | 92 | 92 |
| -CENTRAL50 | | 51 | 51 | 51 | 84 | 84 | 84 | 112 | 112 | 112 | 126 |
| -CENTRAL6 | | 95 | 238 | 238 | 238 | 238 | 256 | 256 | 256 | 256 | 294 |
| -CENTRAL67 | | 46 | 46 | 46 | 88 | 88 | 88 | 88 | 88 | 88 | 90 |
| -CENTRAL7 | | 37 | 37 | 60 | 60 | 60 | 60 | 82 | 82 | 82 | 97 |
| -CENTRAL8 | | 55 | 55 | 111 | 111 | 111 | 126 | 126 | 126 | 150 | 150 |

| Circuit section | Year | | | | | | | | | | |
|---------------------------|---------------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ASUNCION S.C. -ALBERDI | 12 | 13 | 15 | 18 | 20 | 22 | 24 | 26 | 29 | 31 | 33 |
| -AREGUA | 12 | 21 | 26 | 30 | 34 | 39 | 45 | 54 | 60 | 68 | 76 |
| -CAPIATA | 30 | 46 | 56 | 66 | 79 | 91 | 106 | 122 | 139 | 155 | 174 |
| -EMBOSCADA | - | - | - | - | 11 | 11 | 13 | 13 | 13 | 15 | 15 |
| -COL NEUVA ITALBA | - | - | - | - | - | - | - | - | - | - | 13 |
| -GUARAMBARE | 11 | 17 | 19 | 21 | 25 | 27 | 29 | 32 | 34 | 36 | 38 |
| -ITA | 24 | 36 | 42 | 54 | 61 | 71 | 82 | 94 | 107 | 122 | 136 |
| -LIMPIO | - | 11 | 13 | 13 | 15 | 15 | 15 | 17 | 19 | 19 | 21 |
| -LUQUE | 154 | 185 | 218 | 255 | 296 | 338 | 383 | 436 | 494 | 551 | 613 |
| SAN ANTONIO -ÑEMBY | (30 pairs) | (30) | (30) | (30) | (30) | (30) | (30) | - | - | - | - |
| ASUNCION S.C. -ÑEMBY | - | - | - | - | - | - | - | 13 | 13 | 15 | 15 |
| -SAN ANTONIO | 18 | 23 | 25 | 27 | 31 | 36 | 40 | 44 | 50 | 55 | 61 |
| -SANLORENZO | 218 | 226 | 259 | 305 | 354 | 403 | 461 | 523 | 586 | 654 | 728 |
| -VILLETA | 24 | 29 | 34 | 38 | 42 | 46 | 52 | 61 | 65 | 71 | 75 |
| -M. R. ALONSO | 46 | 46 | 54 | 60 | 69 | 77 | 85 | 96 | 106 | 116 | 129 |
| -ZEBALLOS CUE | 11 | 15 | 15 | 17 | 17 | 19 | 21 | 21 | 23 | 25 | 27 |
| -CAACUPE | 45 | 46 | 54 | 64 | 73 | 83 | 96 | 109 | 122 | 138 | 153 |
| -ALTOS | - | - | - | - | - | - | - | 11 | 11 | 11 | 11 |
| -ARROYOS Y ESTEROS | - | - | - | - | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| -ATYRA | - | 11 | 11 | 11 | 13 | 13 | 15 | 15 | 15 | 17 | 17 |
| -CARAGUATAY | - | 9 | 9 | 11 | 11 | 11 | 13 | 13 | 13 | 15 | 15 |
| -EUSEBIO AYALA | 28 | 19 | 21 | 25 | 27 | 31 | 35 | 37 | 41 | 47 | 51 |
| -ISULA PUCU | - | - | - | - | 9 | 9 | 9 | 11 | 11 | 11 | 11 |
| -ITAUGUA | - | 19 | 21 | 23 | 25 | 27 | 29 | 32 | 36 | 38 | 42 |

| Circuit section \ Year | Year | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| E. AYALA -ITAC.D.CORDILLERA | 11 | 13 | 13 | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -ITAC.D.CORDILLERA | - | - | - | 13 | 15 | 15 | 17 | 19 | 19 | 21 | 21 |
| -PIRIBEBUY | 12 | 17 | 19 | 22 | 26 | 30 | 34 | 39 | 43 | 43 | 52 |
| -SAN BERNARDINO | 24 | 32 | 38 | 46 | 55 | 63 | 74 | 84 | 97 | 110 | 122 |
| E. AYALA -SANTA ELENA | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | - | - |
| ASUNCION S.C. -SANTA ELENA | - | - | - | - | - | - | - | 11 | 11 | 11 | 11 |
| -TOBATI | 11 | 17 | 19 | 21 | 23 | 28 | 30 | 32 | 36 | 38 | 41 |
| -YPACARAI | 48 | 38 | 42 | 48 | 57 | 65 | 73 | 82 | 92 | 104 | 113 |
| -VILLARRICA | 36 | 56 | 57 | 66 | 79 | 92 | 108 | 125 | 145 | 165 | 185 |
| -CAAZAPA | 14 | 15 | 15 | 17 | 19 | 19 | 22 | 24 | 26 | 26 | 28 |
| -COL. INDEPENDENCIA | - | 15 | 17 | 17 | 19 | 19 | 21 | 24 | 26 | 26 | 28 |
| -ITURBE | - | 11 | 11 | 13 | 13 | 13 | 15 | 15 | 17 | 17 | 19 |
| -PASO YOBAI | - | - | - | - | - | - | - | - | - | - | 11 |
| VILLARRICA -SAN JUAN NEPOMUCENO | 10 | - | - | - | - | - | - | - | - | - | - |
| -COL. INDEPENDENCIA | 11 | - | - | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -SAN JUAN NEPOMUCENO | - | 11 | 13 | 13 | 15 | 17 | 17 | 19 | 21 | 24 | 24 |
| -SAN SALVADOR | - | - | - | - | - | - | - | - | - | 9 | 9 |
| -YEGROS | - | - | 9 | 9 | 11 | 11 | 11 | 11 | 13 | 13 | 13 |
| -YUTY PUEBLO | - | - | 9 | 9 | 11 | 11 | 11 | 11 | 13 | 13 | 13 |
| CAAZAPA -YUTY PUEBLO | 8 | - | - | - | - | - | - | - | - | - | - |

| Circuit section | Year | | | | | | | | | | |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ASUNCION S.C. -PARAGUARI | 53 | 34 | 38 | 47 | 57 | 68 | 78 | 89 | 99 | 114 | 129 |
| -ACAHAY | - | 9 | 11 | 11 | 11 | 13 | 13 | 15 | 15 | 15 | 17 |
| -CAAPUCU | - | - | - | 11 | 11 | 11 | 11 | 11 | 13 | 13 | 13 |
| -CABALLERO | - | - | - | - | - | - | - | 9 | 9 | 11 | 11 |
| -CARAPEGUA | 40 | 24 | 28 | 30 | 32 | 36 | 41 | 43 | 47 | 52 | 58 |
| -LA COLMENA | 11 | 11 | 11 | 11 | 13 | 13 | 13 | 15 | 15 | 17 | 17 |
| PARAGUARI -PIRAYU | 8 | - | - | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -PIRAYU | - | 9 | 9 | 11 | 11 | 13 | 13 | 15 | 15 | 17 | 17 |
| CARAPEGUA -QUINDY | 10 | - | - | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -QUINDY | - | 13 | 15 | 15 | 17 | 19 | 21 | 24 | 28 | 30 | 32 |
| -ROQUE GONZALEZ DE S. CRUZ | - | - | - | - | - | - | - | - | - | - | 11 |
| -SAPCAI | - | - | - | - | 9 | 9 | 11 | 11 | 11 | 11 | 13 |
| PARAGUARI -YAGUARON | 11 | - | - | - | - | - | - | - | - | - | - |
| -QUINDY | 10 | - | - | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -YAGUARON | - | 19 | 21 | 24 | 28 | 32 | 36 | 41 | 45 | 51 | 56 |
| CARAPEGUA -YBYCUI | 11 | - | - | - | - | - | - | - | - | - | - |
| ASUNCION S.C. -YBYCUI | - | 15 | 17 | 19 | 21 | 24 | 26 | 30 | 32 | 34 | 38 |
| -PILAR | 34 | 35 | 41 | 48 | 57 | 66 | 77 | 86 | 99 | 112 | 125 |
| -VILLA HAYES | 31 | 28 | 30 | 32 | 36 | 40 | 45 | 49 | 53 | 58 | 64 |
| VILLA HAYES -BENJAMIN ACEVAL | 8 | - | - | - | - | - | - | - | - | - | - |

| Circuit section | Year | | | | | | | | | | |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ASUNCION S.C. -BENJAMIN ACEVAL | - | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 26 | 28 | 32 |
| -CHACO-I | - | - | - | - | - | - | - | - | - | 11 | 11 |
| -COL. FILADELFIA | 11 | 15 | 17 | 19 | 22 | 22 | 24 | 28 | 30 | 33 | 35 |

CNEL. OVIEDO S.C.

| Circuit section \ Year | Year | | | | | | | | | | |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| CNEL.OVIEDO S.C. -CNEL.OVIEDO | 110 | 68 | 86 | 106 | 128 | 152 | 180 | 208 | 238 | 274 | 306 |
| -CAAGUAZU | 55 | 49 | 57 | 68 | 80 | 93 | 107 | 122 | 139 | 158 | 168 |
| CAAGUAZU -CAMPO 9 | 11 | 11 | - | - | - | - | - | - | - | - | - |
| CNEL.OVIEDO S.C. -CAMPO 9 | - | - | 13 | 15 | 17 | 17 | 19 | 19 | 21 | 23 | 24 |
| CNEL.OVIEDO S.C. -C.H.STROESSNER | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | - | - | - |
| -SAN JOSE DE LOS ARROYOS | 12 | - | - | - | - | - | - | - | - | - | - |
| CNEL.OVIEDO S.C. -C.H.STROESSNER | - | - | - | - | - | - | - | - | 11 | 13 | 13 |
| CAAGUAZU -JUAN M FRUTOS | 10 | 10 | 10 | - | - | - | - | - | - | - | - |
| CNEL.OVIEDO S.C. -JUAN M FRUTOS | - | - | - | 13 | 13 | 15 | 15 | 15 | 17 | 17 | 19 |
| -YHU | - | - | - | - | - | 11 | 11 | 11 | 11 | 13 | 13 |
| -VILLA CURUGUATY | - | - | - | - | - | 11 | 11 | 11 | 11 | 13 | 13 |
| -SAN JOSE DE LOS ARROYOS | - | 13 | 15 | 15 | 17 | 19 | 21 | 23 | 25 | 28 | 30 |
| -COL.JUAN RAMON CHAVEZ | - | - | - | - | - | 11 | 11 | 11 | 11 | 13 | 13 |
| -SALTOS DEL GUAIRA | 36 | 23 | 28 | 30 | 34 | 38 | 43 | 47 | 53 | 58 | 64 |
| SALTOS DEL GUAIRA -LA PALOMA | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 13 | 13 |
| -CORPUS CRISTI | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| CNEL.OVIEDO S.C. -CONCEPCION | 75 | 55 | 68 | 81 | 98 | 118 | 137 | 158 | 180 | 206 | 231 |

| Circuit section | Year | | | | | | | | | | |
|--------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| CNEL.OVIEDO S.C. -HORQUETA | 11 | 11 | 13 | 13 | 13 | 15 | 15 | 17 | 17 | 19 | 21 |
| -PASO BARRETO | - | - | - | - | 9 | 9 | 11 | 11 | 11 | 11 | 13 |
| -ITAC.DEL ROSARIO | 14 | 15 | 17 | 20 | 24 | 26 | 31 | 33 | 37 | 42 | 50 |
| -VILLA DEL ROSARIO | 11 | 19 | 21 | 23 | 26 | 30 | 32 | 34 | 38 | 44 | 47 |
| I.D.ROSARIO -COL.GRAL.AQUINO | - | 8 | 8 | - | - | - | - | - | - | - | - |
| CNEL.OVIEDO S.C. -COL.GRAL.AQUINO | - | - | - | 11 | 11 | 11 | 13 | 13 | 15 | 15 | 17 |
| -SANTA CLARA | - | - | - | - | - | 9 | 9 | 11 | 11 | 11 | 11 |
| -SAN ESTANISLAO | 12 | 17 | 22 | 26 | 28 | 35 | 41 | 48 | 54 | 61 | 70 |
| -TACUARAS (NORTE) | - | - | - | - | - | - | - | - | - | - | 11 |
| -FELIPE MATIAUDA | - | - | - | - | - | - | - | - | - | - | 11 |
| -COLONIA CHORE | - | - | - | - | 9 | 9 | 9 | 9 | 11 | 11 | 11 |
| -COLONIA VOLENDAN | - | - | - | - | - | - | - | - | - | - | 11 |
| - CDAD.P. STROESSNER | 224 | 279 | 320 | 370 | 428 | 486 | 551 | 624 | 696 | 775 | 858 |
| -HERNANDARIAS | 36 | 28 | 33 | 37 | 44 | 46 | 52 | 61 | 68 | 74 | 83 |
| -COL.PTE.STROESSNER | 32 | 25 | 27 | 29 | 32 | 34 | 36 | 40 | 42 | 44 | 48 |
| CDAD.P. STROESSNER -COL.YGUAZU | 11 | 13 | 13 | 15 | 15 | 17 | 17 | 19 | 19 | 21 | 21 |
| -JUAN E.O'LEARY | 10 | 10 | 10 | 10 | 10 | 13 | 13 | 13 | 15 | 15 | 15 |
| -JUAN L.MALLORQUIN | 10 | 10 | 10 | 10 | 10 | 13 | 13 | 13 | 15 | 15 | 15 |
| -KM6 RUTA7 | - | 13 | 13 | 13 | 15 | 15 | 15 | 17 | 17 | 19 | 19 |
| -SANTA ROSA | - | 9 | 9 | 11 | 11 | 11 | 11 | 13 | 13 | 13 | 13 |
| -HERNANDARIAS | 25 | 20 | 22 | 24 | 28 | 30 | 32 | 38 | 40 | 46 | 50 |
| -COL.PTE.STROESSNER | 12 | 12 | 12 | 14 | 14 | 14 | 16 | 16 | 16 | 18 | 18 |
| -SALTOS DEL GUAIRA | 11 | 13 | 13 | 13 | 19 | 19 | 19 | 27 | 27 | 27 | 33 |

| Circuit section \ | Year | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| CNEL.OVIEDO S.C. -PEDRO J.CABALLERO | 86 | 96 | 111 | 124 | 141 | 156 | 178 | 197 | 219 | 240 | 248 |
| -BELLA VISTA NORTE | 11 | 13 | 13 | 15 | 15 | 17 | 17 | 19 | 19 | 22 | 22 |
| -CAPITAN BADO | 11 | 15 | 15 | 17 | 17 | 19 | 22 | 22 | 22 | 24 | 26 |
| -CHIRIGUELO | - | - | - | - | - | - | 11 | 11 | 11 | 11 | 11 |
| P.J.CABALLERO -YBY YAU | 8 | 8 | 8 | - | - | - | - | - | - | - | - |
| CNEL.OVIEDO S.C. -YBY YAU | - | - | - | 9 | 9 | 9 | 11 | 11 | 11 | 11 | 13 |

Encarnación S.C.

| Circuit section | Year | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ENCARNACION S.C. -ENCARNACION | 239 | 145 | 165 | 188 | 214 | 243 | 273 | 304 | 334 | 369 | 408 |
| -CAPITAN MIRANDA | - | - | - | - | - | - | 11 | 11 | 11 | 11 | 13 |
| -CARMEN DEL PARANA | 10 | 13 | 15 | 15 | 17 | 17 | 19 | 19 | 21 | 21 | 23 |
| -COL.BELLA VISTA | - | - | 15 | 15 | 15 | 17 | 19 | 19 | 21 | 21 | 23 |
| -COL.HOHENAU | 18 | 25 | 27 | 31 | 33 | 35 | 39 | 43 | 47 | 53 | 57 |
| -COL.PIRAPO | 11 | 15 | 15 | 17 | 17 | 19 | 19 | 21 | 23 | 23 | 25 |
| -CNEL.BOGADO | - | 32 | 34 | 38 | 42 | 44 | 48 | 52 | 58 | 62 | 68 |
| -GRAL.ARTIGAS | - | - | - | - | 11 | 11 | 13 | 13 | 13 | 15 | 15 |
| -GRAL.DELGADO | - | - | - | - | - | - | - | - | - | 11 | 11 |
| -LA PAZ | - | - | - | 9 | 11 | 11 | 11 | 13 | 13 | 13 | 13 |
| -SANCOSME Y DAMIAN | 11 | 17 | 17 | 19 | 19 | 19 | 19 | 19 | 21 | 21 | 21 |
| CNEL BOGADO -SAN PEDRO DEL PARANA | 10 | 10 | 10 | 10 | - | - | - | - | - | - | - |
| -COL.FRAN | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| ENCARNACION S.C. -SAN PEDRO DEL PARANA | - | - | - | - | 13 | 15 | 15 | 17 | 17 | 19 | 19 |
| -S.J.BAUTISTA MISIONES | 24 | 30 | 32 | 36 | 38 | 42 | 47 | 51 | 55 | 59 | 64 |
| -SAN IGNACIO | 24 | 26 | 28 | 32 | 34 | 38 | 41 | 45 | 49 | 54 | 60 |
| -SANTA ROSA MISIONES | 11 | 15 | 15 | 17 | 17 | 17 | 21 | 21 | 23 | 24 | 26 |
| -VILLA FLORIDA | 11 | 15 | 15 | 17 | 17 | 19 | 19 | 21 | 21 | 24 | 26 |
| -YACYRETA (AYOLAS) | 48 | 32 | 34 | 38 | 40 | 44 | 48 | 53 | 57 | 63 | 67 |

| Circuit section | Year | | | | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
| ASUNCION S.C. -CNEL.OVIEDO S.C. | 667 | 762 | 895 | 990 | 1090 | 1200 | 1300 | 1410 | 1510 | 1600 | 1685 |
| -ENCARNACION S.C. | 344 | 330 | 375 | 405 | 440 | 475 | 510 | 545 | 575 | 600 | 635 |
| CNEL.OVIEDO S.C. -ENCARNACION S.C. | 139 | 97 | 112 | 122 | 132 | 142 | 150 | 162 | 170 | 180 | 186 |
| Total circuit | | | | | | | | | | | |
| ASUNCION S.C. | 3139 | 3541 | 4114 | 4564 | 5144 | 5660 | 6133 | 6820 | 7442 | 8563 | 8558 |
| CNEL.OVIEDO S.C. | 1734 | 1793 | 2069 | 2325 | 2627 | 2966 | 3284 | 3676 | 3950 | 4318 | 4650 |
| ENCARNACION S.C. | 942 | 815 | 924 | 1024 | 1132 | 1234 | 1348 | 1452 | 1558 | 1671 | 1716 |

Table A I-14 Traffic conditions on land mobile telephone design

| Item | Value |
|--|--------------|
| Number of calls per day, per telephone (originating and terminating) | 3 |
| Mean holding time | 4.17 minutes |
| Concentration ratio to busy hour | 1/8 |
| Calling rate | 0.026 Erl. |
| Percentage of automobile traffic in the service area | 94% |

Table A I-15 Subscriber services by digital switching system

Digital switching system can economically provide a wide range of subscriber services. The following lists the service feature available, along with a brief description of each.

| <u>Feature</u> | <u>Brief description</u> |
|-----------------------------------|--|
| • Abbreviated dialing | - This feature allows subscribers to dial 3-digits code ('Special code' + 2 digits) and be connected to the number associated with the code. |
| • Call forwarding | - This service allows a subscriber to have his incoming calls automatically transferred to another number which he has registered by special number. |
| • Don't disturb | - Enables the subscriber to restrict incoming calls. The denied call is connected to the announcement. |
| • Call waiting | - If a second call is made to a busy line the busy line subscriber hears the tone alert of the waiting call. The subscriber can place either call in a hold status while talking to the other. |
| • Three-way calling | - A third party can be added to a two-way conversation (Add-on) without operator assistance. |
| • Hot-line | - Allows subscribers to be connected to predetermined number without dialing. |
| • Wake-up (Alarm-call service) | - Enables the subscriber to be rung up at a predetermined time. He will hear announcement when he answers. |

| <u>Feature</u> | <u>Brief description</u> |
|--|---|
| • Service interception | - Terminating calls to the designated subscriber are routed to operator or announcement machine. |
| • Special ringing | - Two telephone numbers are given to a single party line. According to each of two telephone numbers, two kind of ringing form is possible. By the above function, one telephone line is used as two telephone line similar to two-party line. |
| • PB dialing | - Subscriber who has the PB class of service can dial by PB telephone. |
| • Toll restriction | - This feature is included in Restriction of Outgoing Calls. |
| • Inward wide area telephone service (IN-WATS) | - Service which allows a customer to place a toll call to the telephone of this service class without charge. |
| • Outward wide area telephone service (OUT-WATS) | - This service permits a customer having this service class, for a monthly charge, to place toll calls to telephones within prescribed service area. |
| • Line lockout | - The subscriber line goes into line lockout after a predetermined time interval without dialing. |

Table A I-16 Coin box (Payphone) services

- Local/long distance call - Payphone is available to handling local as well as long distance calls.
- Community service call - Calls to community services, e.g. emergency calls, may be completed from payphone without use of coin or token (free call).
- Coin/token - Payphone is designed for single/multiple coin or token insertion. Basically, payphone must check the coins or tokens inserted and deposit them into a theft proof cash-box.
- Credit cards - The use of credit (debit) cards for payphone calls is being studied and some systems are already in use.
- Operator service - The payphone service may also include the possibility to make calls which are set up and charged by an operator.
- Ordinary telephone sets as public telephone station - Ordinary telephone sets installed in public locations may be used as public telephone stations. In such cases, call charges are collected by the operator, shop keeper, etc. who supervises the use of the telephone set.

I-4 Data Communications

1. Plan of data communications network

We highly recommend that a packet switching network as a means of data communication system in Paraguay be constructed. The details for this plan are described under 3-3-2 in the Master Plan. As shown in Figure A I-1, a packet switching exchange office is installed in the areas of Asunción, Cdad. Pte. Stroessner, Encarnación, and Cnel. Oviedo. Each of these offices is interconnected to form an exchange network.

The concentration stations are to be installed in San Pedro and P.J. Caballero and connected to the Cnel. Oviedo's packet switching exchange office. The purpose of this is to economically establish access to the packet exchange network from an area where traffic is relatively light. This plan enables most of Paraguay to be covered by data communications.

As shown in Figures A I-2 and A I-3, a variety of terminal equipment such as packet terminal, none packet terminal, electronic computer, etc., can be interfaced with the packet switching network, thereby making a wide range of telecommunication services possible.

CCITT recommendation numbers are shown in Figure A I-4 through A I-9 to indicate the procedure for interfacing different types of terminal equipments with the packet exchange network, and to indicate what conditions are required at this connection.

2. Example of data communication system

In this section, examples of data communication system configurations and services that ANTELCO can offer are described.

2-1 Reservation and information system

In this system, a central data processing center is installed in Asunción and data terminals which are designed exclusively for this system are installed at certain types of companies such as airlines, bus operators, travel agents, etc., and are connected to the central data processing center through leased lines. For the places with a lower frequency of use, simple types of data terminals are installed and connected to the central data processing center via the packet exchange network. Such places include hotels, supermarkets, department stores, etc.

For a low traffic reservation and information center, a mini facsimile can be installed to make reference and reservation to the particular reservation and information center that serves your locality.

Figure A I-10 shows the configuration of the reservation and information system.

2-3 Automated meteorological data acquisition system

This system is an example of one that ANTELCO can develop in association with the meteorological agency.

In this system, all data observed at every single observatory in Paraguay, e.g., precipitation, wind direction, wind speed, temperature, hours of sunshine, and so on, is sent to the meteorological data acquisition center automatically through the telephone lines at prescribed time intervals. The data thus collected at the meteorological data acquisition center is processed and again automatically returned to the

observatories. Such a system will aid in rapidly and accurately catching such changeable weather patterns as localized torrential downpours, and greatly assist in protecting life and property from impending disaster due to severe weather.

Figure A I-11 illustrates the configuration of the system.

2-4 Emergency medical information data system

This system is designed to support swift and smooth quick-response medical assistance operations via interconnection with the central computer, the emergency medical information center, hospitals, clinics, emergency ambulance centers, and so on through the telecommunication lines.

This system is one example of communication infrastructure that ANTELCO may develop in association with the related agencies to contribute to the nation's quick-response medical assistance set-up. Such an emergency medical information center can help give quick and accurate information to the reference from the citizens, emergency ambulance centers, and medical care agencies by computer. The system would be designed to provide vital medical information such as the availability of doctors, bed vacancy, availability of necessary medical equipment, blood, and blood serums, on-duty doctors, etc.; and would collect and store this information in such a way to enable emergency patients to receive optimum medical care when needed.

The configuration of the system is shown in Figure A I-12.

2-5 Material inventory and distribution system

This system is designed for controlling the large amount of materials used in ANTELCO's telecommunication facility. Data terminals installed at telephone offices and headquarters are connected to the computer center through the telephone lines to assist with materials inventory and distribution

activities, then data are processed by on-line real time operations.

Recently, the numbers and types of parts needed for complex telecommunication apparatus have been increasing rapidly, reflecting the diversified services that modern telecommunication can offer. This underlines the importance of an efficient materials inventory and distribution system. Figure A I-13 illustrates the system configuration.

2-6 Marketing information service data system

ANTELCO can construct this system in association with the Ministry of Agriculture and Stock-Farming.

This system permits information which is directly related to supply and demand and control of perishable foods, such as marketing and farm products center information, to be collected in the control center. From there, it could then be timely offered to the related departments in the Ministry of Agriculture and Stock-Farming, or other registered user. This system would be valuable in stabilizing daily and demand supply, and also in balancing out variations in prices of perishable foods at different places.

Figure A I-14 shows the system configuration.

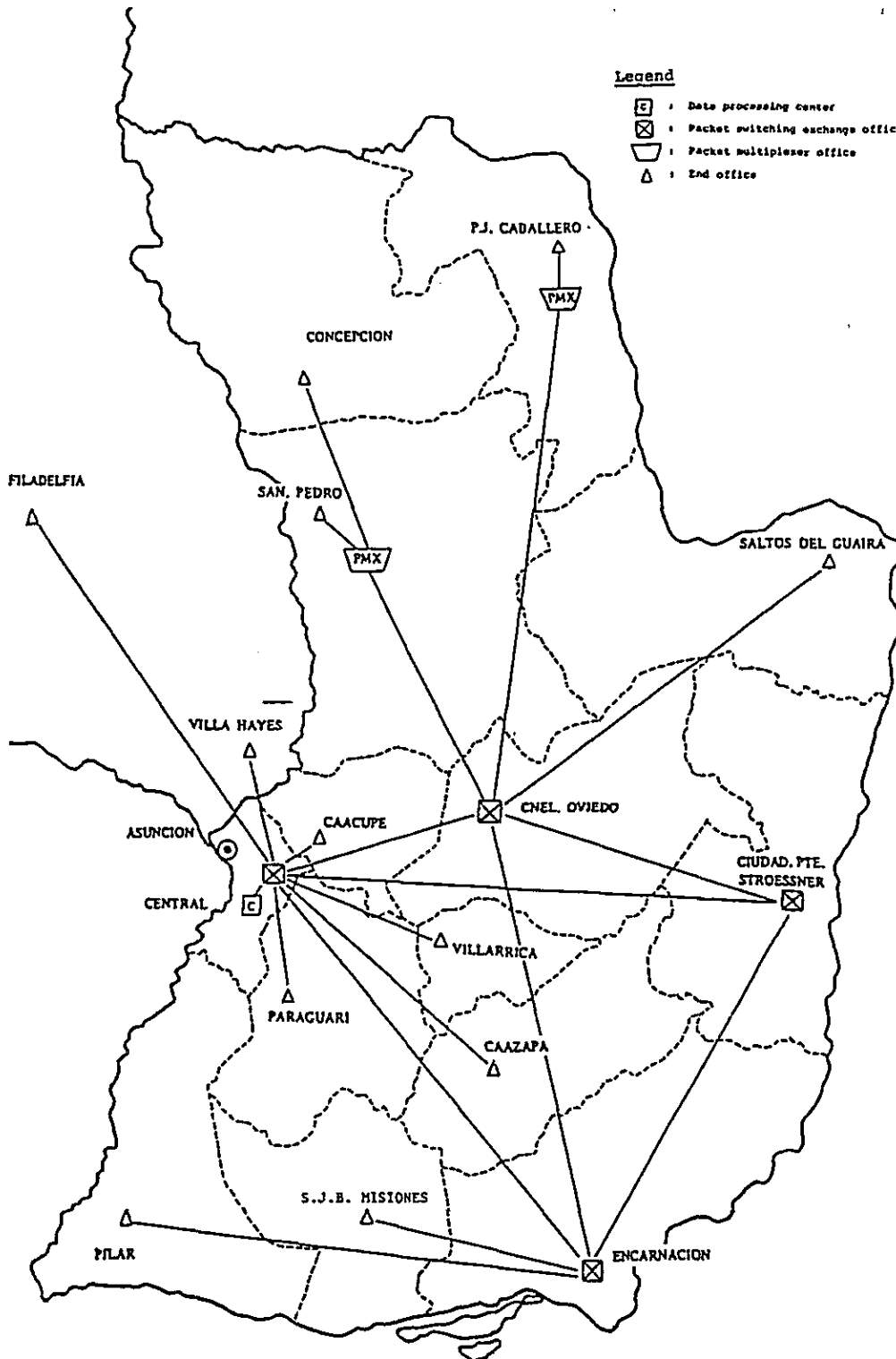


Fig. A I-1 Data communications network

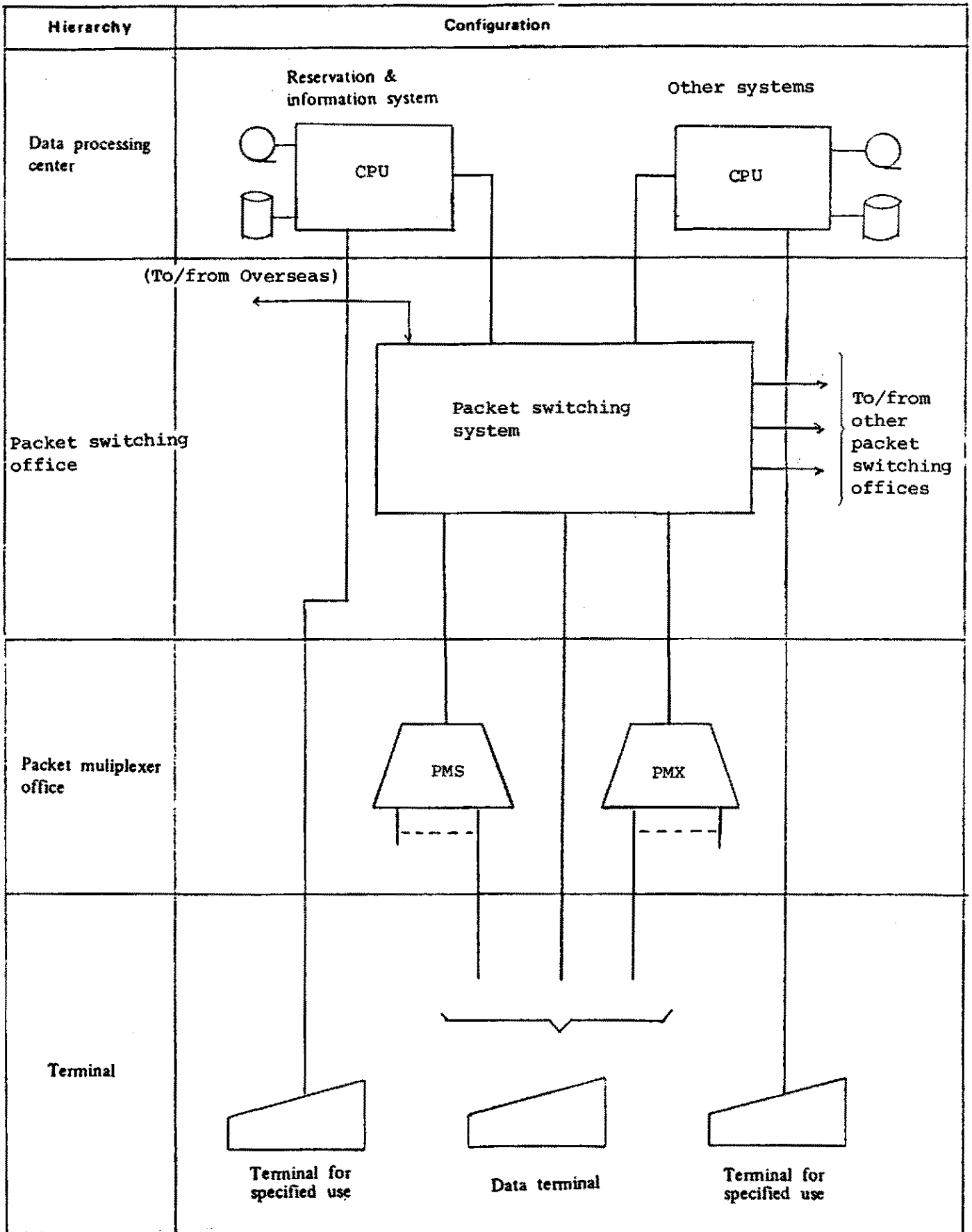


Fig. A I-2 Data communication network hierarchy

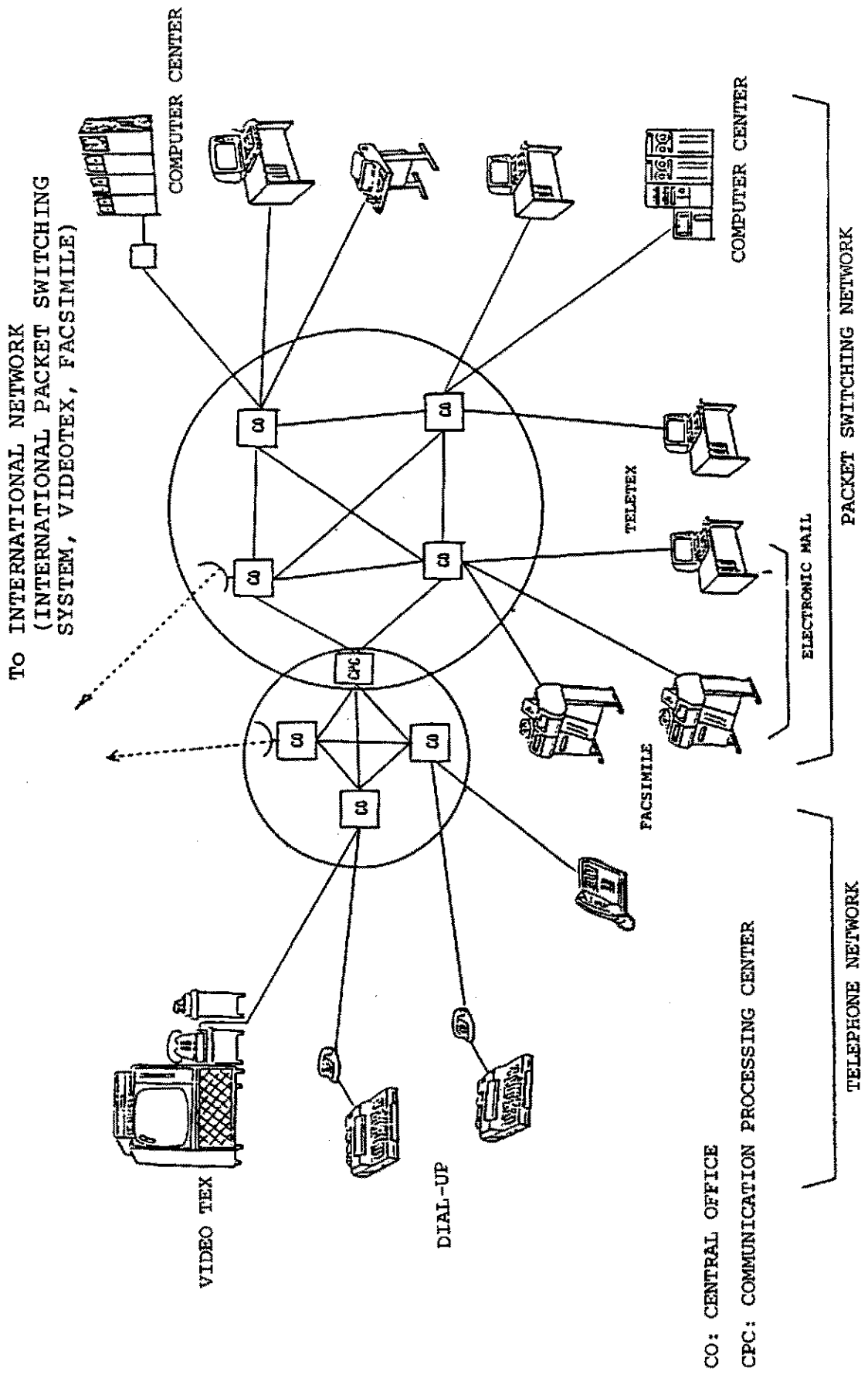


Fig. A I-3 Data switching system configuration

International Packet Switching Service

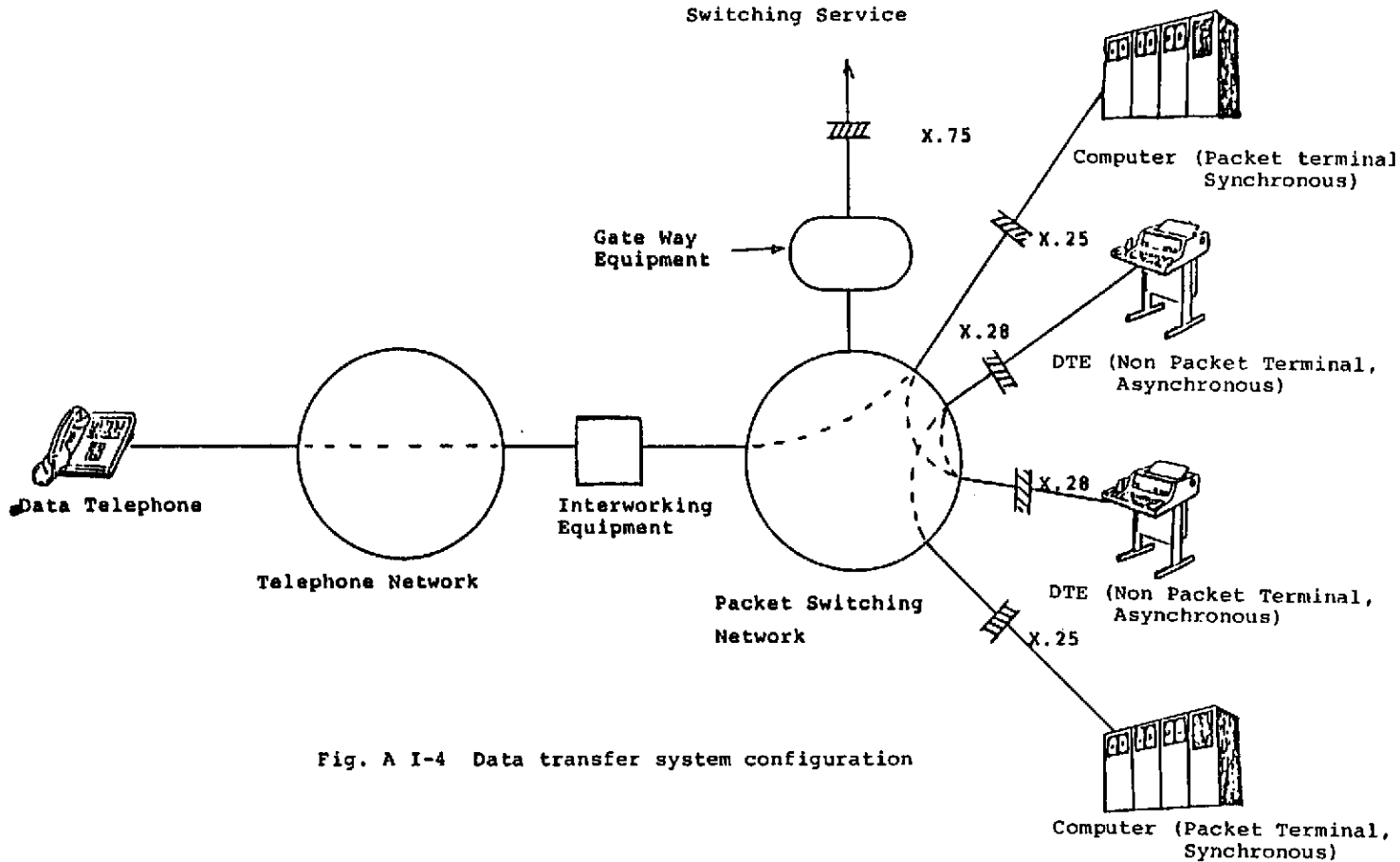


Fig. A I-4 Data transfer system configuration

International Service

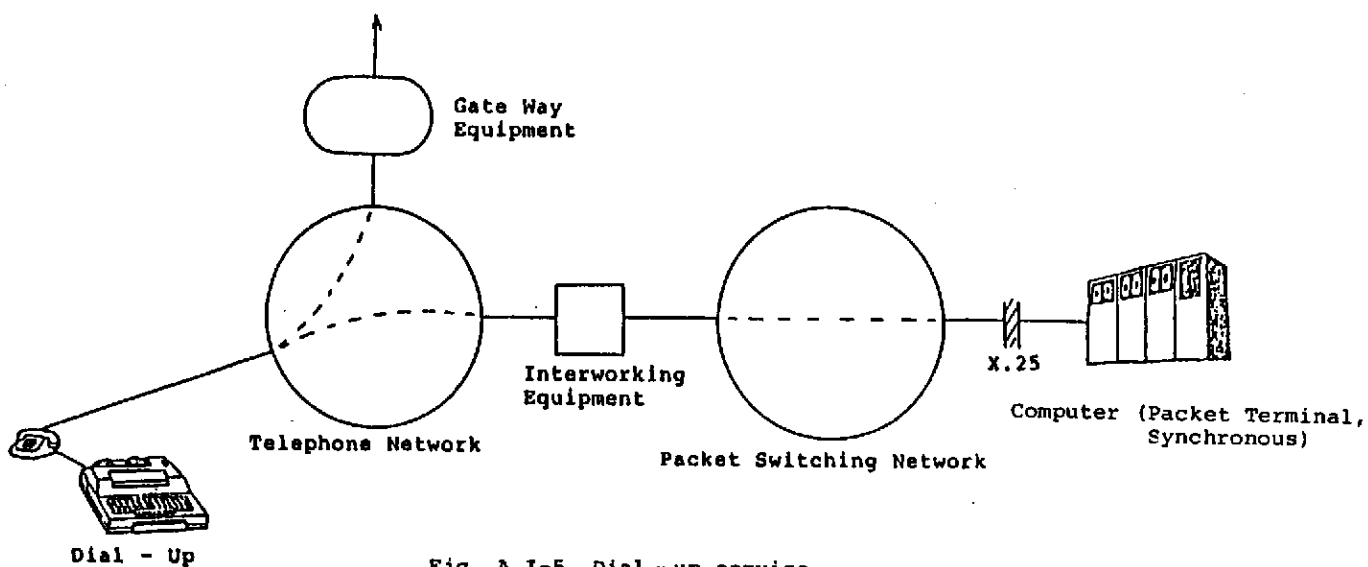


Fig. A I-5 Dial - up service

International Packet
Switching Service

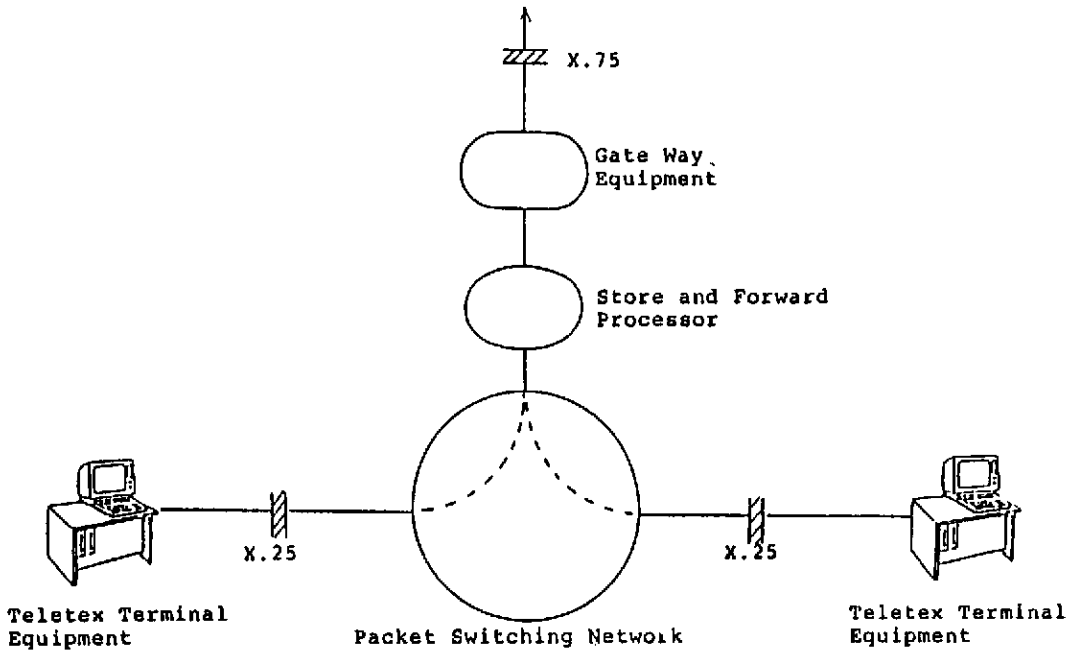


Fig. A I-6 Teletex system configuration

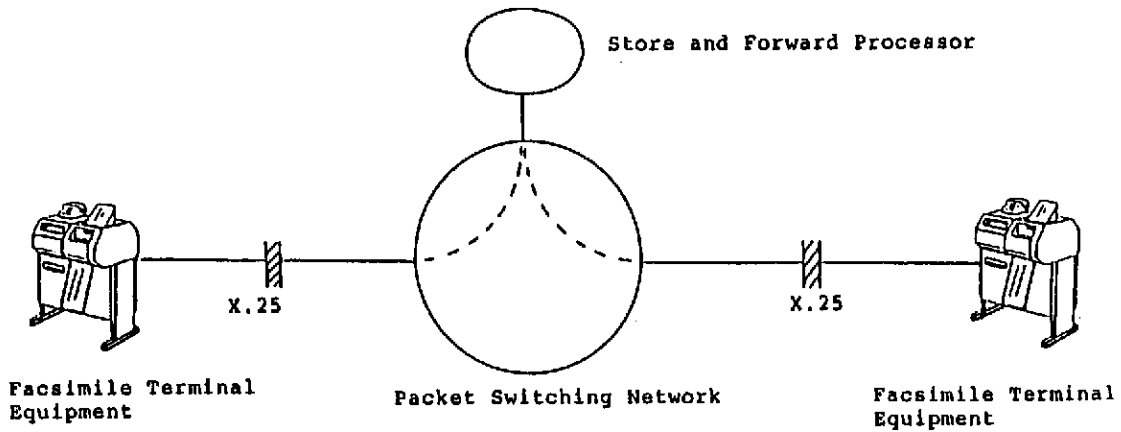


Fig. A I-7 Digital facsimile system configuration

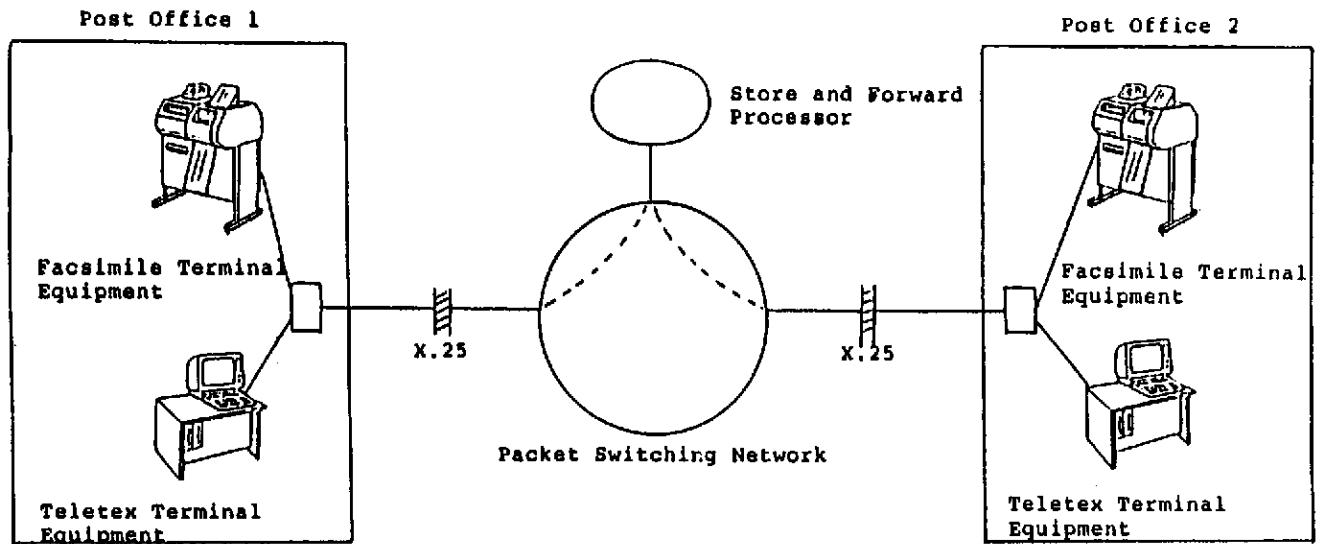


Fig. A I-8 Electronic mail system configuration

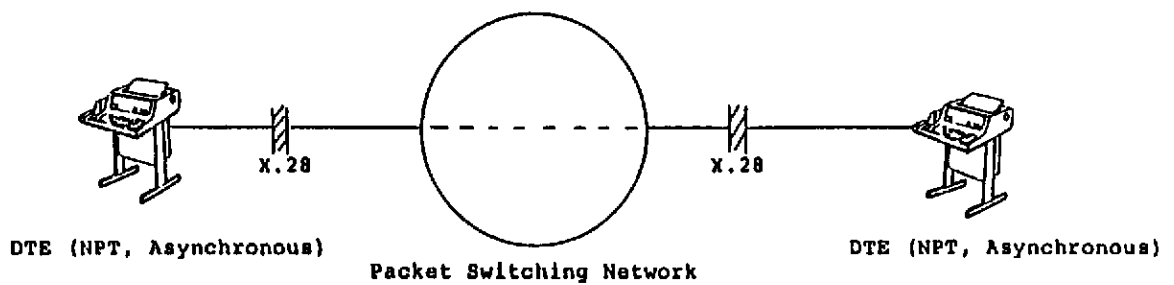


Fig. A I-9 Message switching system configuration

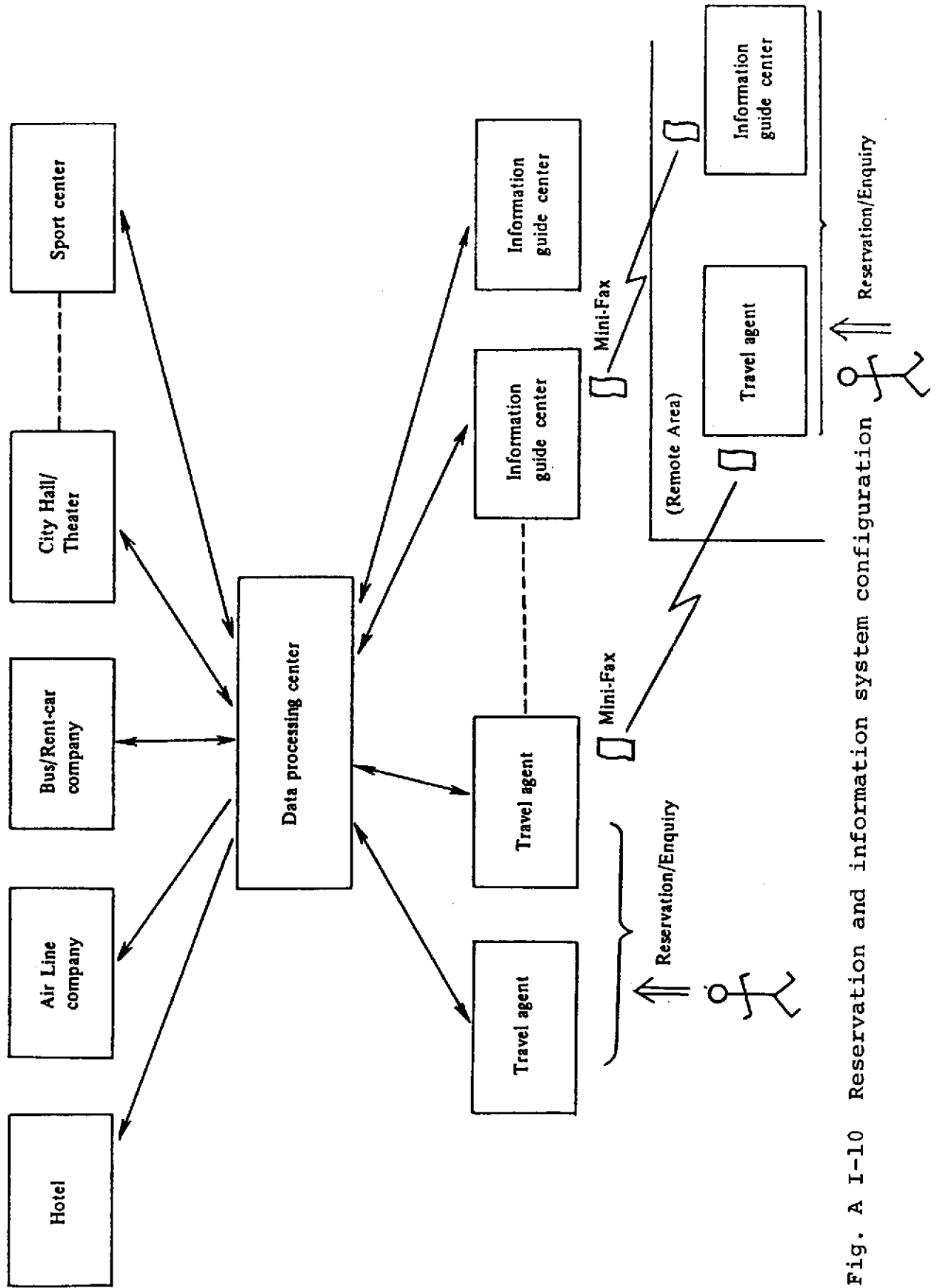
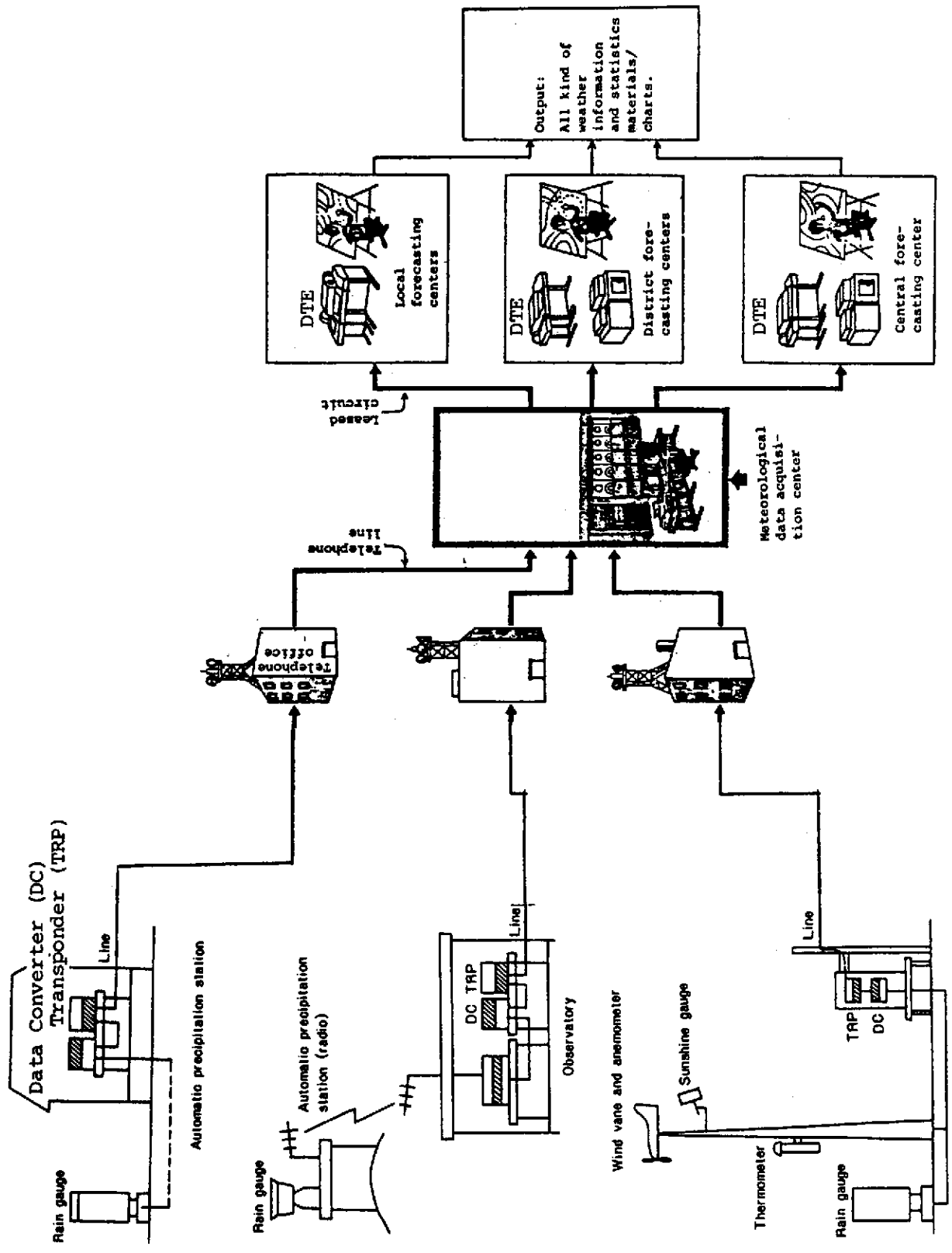


Fig. A I-10 Reservation and information system configuration



Automatic weather station Fig. A I-11 Automatic meteorological data acquisition system

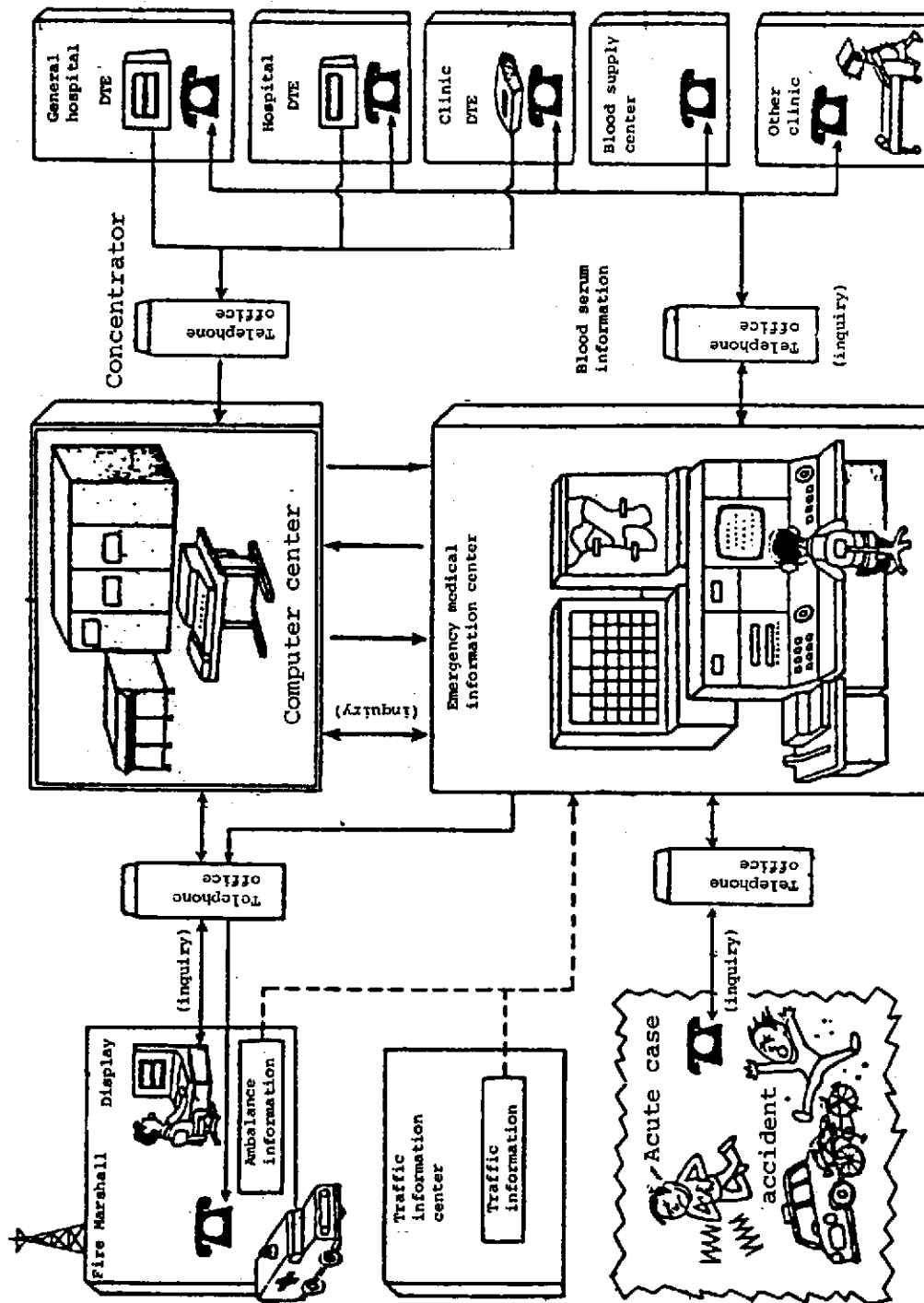


Fig. A I-12 Emergency medical information system

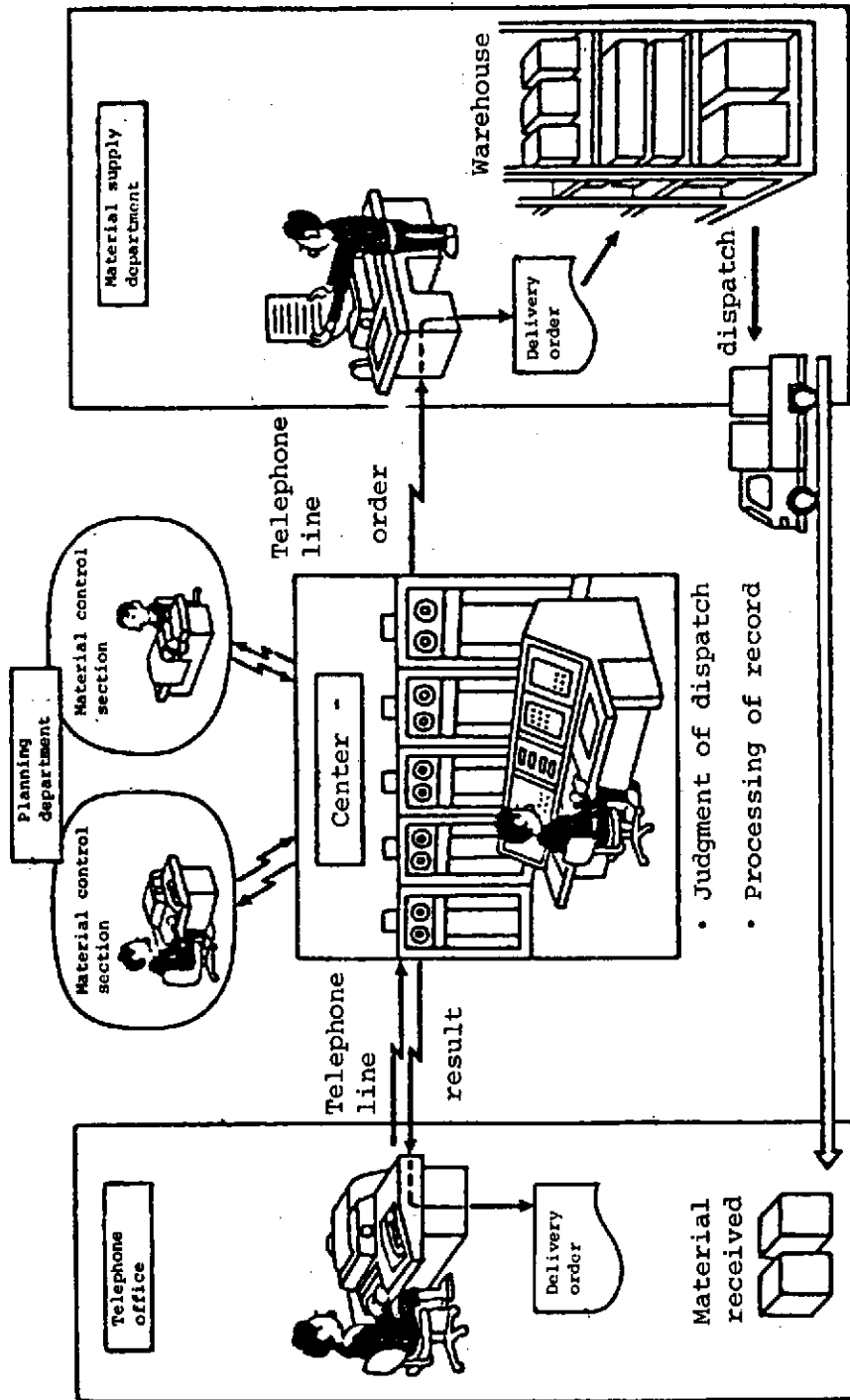


Fig. A I-13 Material inventory and distribution system

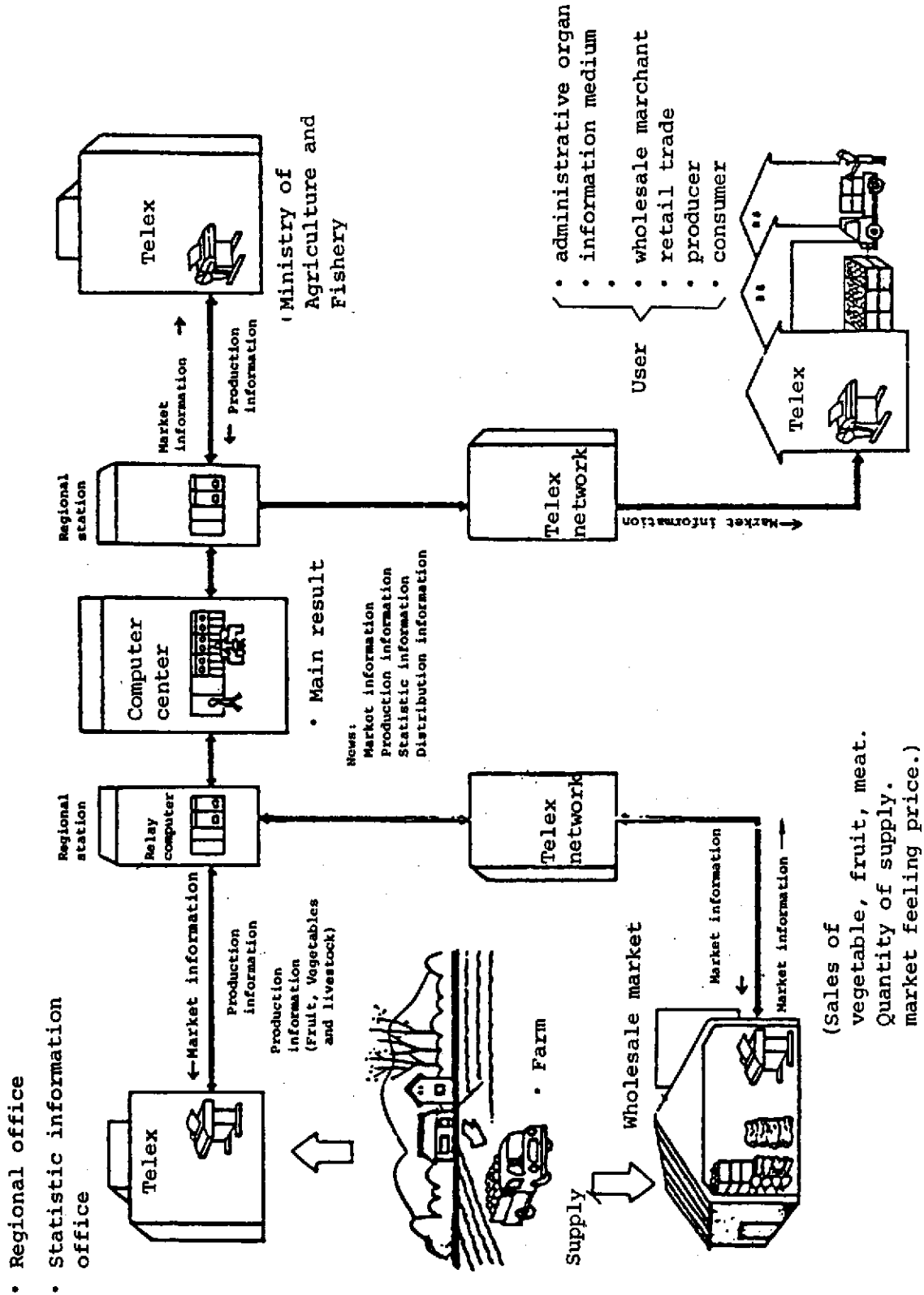


Fig. A I-14 Market information service system

Table A I-17 Breakdown of construction cost for domestic telecommunications

Unit: Foreign currency Million US dollars
Local currency Million guaranies

| Item | | Foreign currency | Local currency |
|---------------------------------------|------------------------|------------------|----------------|
| Subscriber's telephone | | 11.99 | 486 |
| Public telephone | | 1.70 | 0 |
| Rural telephone | | 20.39 | 1,689 |
| Local exchange | Digital | 109.58 | 449 |
| | EMD, Manual, etc. | 56.37 | 1,348 |
| | Information desk, etc. | 2.11 | 10 |
| | Total | 168.06 | 1,807 |
| Toll exchange | | 10.54 | 53 |
| Subscriber's cable | | 177.89 | 13,015 |
| Junction | Cable | 0.38 | 22 |
| | Transmission | 6.69 | 33 |
| | Total | 7.07 | 55 |
| Trunk transmission line | Trunk circuits | 42.17 | 619 |
| | TV transmission | 1.80 | 25 |
| | Total | 43.97 | 644 |
| Mobile radio communication | Land mobile | 15.50 | 34 |
| | Ship comm. | 2.58 | 7 |
| | Total | 18.08 | 41 |
| Telegraph, telex & data communication | | 25.22 | 124 |
| Total | | 484.91 | 17,914 |

Note: This table does not include the construction cost of the authorized plans (contracted plans and DTS, Rural telephone introduction plan).

I-5 Reference Materials for Personal Radio-paging Service

Although ANTELCO has decided to pass over the direct operation of a personal radio-paging service, this section gives a description of the personal radio-paging service plan as reference. The plan would be designed for the Asunción and Cdad. Pte. Stroessner area.

(1) Demand forecast

Personal radio-paging service demand forecast has been made on the basis of the number of employees engaged in the following industries:

Construction industry, manufacturing, wholesale and retail industry, real estate industry, and service industry.

The overall proportion of the industrial infrastructure in Paraguay for the past ten years shows roughly no change and is expected to show the same trend for the years to come. Therefore it would have to be assumed that the increase in demand source of personal radio-paging service would be only in proportion to the increase in the population.

Table A I-18 shows the result of demand source forecast carried out on the basis of the number of the demand sources obtained from 1978 statistics. In this forecast, the sum of Asunción city's and Central Prefecture's demand source is assumed to be the demand source of the Asunción area. Similarly, also Parana Prefecture's demand source is assumed to be the demand source of the Cdad. Pte. Storoesner area.

The demand ratio of 6.77 is derived from the examples of foreign countries that will show like increases, along with the modified exponential curve shown below

after the service is started.

$$Y = 6.77 - 8.10 \times 0.498^t$$

where, Y : demand factor

t : number of years subsequent to the year
of initiation

Demand ratio means the number of the real demand per demand source of 100. Table A I-19 shows the demand forecast calculated on the condition that the service starts in 1989 (t = 1 in 1989).

(2) Demand Fulfilment

The plan should be structured to meet each year's demand. The number of subscribers at the end of the planning year (1997) is expected to be roughly 6,000 in the Asunción area, and 800 in the Cdad. Pte. Stroessne area.

(3) Facilities plan

Subject to the magnitude of demand, an automatic radio-paging system would be used in the Asunción area, while a manual radio-paging system would be used in the Cdad. Pte. Stroessner area.

A single office for the automatic radio-paging central station and four offices for the radio base stations would be installed in the Asunción area. At the same time, one office for the manual radio-paging central station and one office for the radio base station would be installed in the Cdad. Pte. Stroessner area.

Table A I-20 shows the plan for buildings of the radio-paging central station and radio base station, tower, and power equipment.

(4) Operation, maintenance system, and personnel training schedule for the personal radio-paging system

A maintenance center would be installed in each of the stations in Asunción and Cdad. Pte. Stroessner. The personnel for the exchange department and the radio department would be assigned. Table A I-21 shows the assignment schedule for the personnel required. A training schedule would be implemented in combination with a program of basic theoretical training to be conducted at ANTELCO's institute (IPT), in addition to training at contractor's factory on the basis of the contract clauses, and training conducted in the home country on the basis of the contract clauses. Also, on-the-job training would be conducted while the trainee personnel engage in maintenance operations. Table A I-22 shows one of the training schedules.

(5) Cost for construction of the facility

The details for the cost of construction are shown in Table A I-23. The conditions used in this calculation are the same as the conditions stated in PART IV, in the main text of the report.

(6) Tariff

Tentative tariffs on the personal radio-paging service are shown in Table A I-24.

Table A I-18 Personal radio-paging service demand source forecast.

(Unit: 1,000)

| Year Service area | 1978 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Asunción & Central | 54.2 | 63.4 | 65.3 | 67.2 | 69.2 | 71.2 | 73.2 | 75.2 | 77.3 | 79.3 | 81.4 | 83.5 | 85.7 | 87.8 | 90.0 | 92.2 |
| Alto Paraná | 7.4 | 8.6 | 8.9 | 9.1 | 9.4 | 9.7 | 9.9 | 10.2 | 10.5 | 10.8 | 11.1 | 11.3 | 11.6 | 11.9 | 12.2 | 12.5 |
| Total | 61.6 | 72.0 | 74.2 | 76.3 | 78.6 | 80.9 | 83.1 | 85.4 | 87.8 | 90.1 | 92.5 | 94.8 | 97.3 | 99.7 | 102.2 | 104.7 |

Table A I-19 Personal radio-paging service demand forecast

| Year / Service area | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Asunción | 2,060 | 3,678 | 4,578 | 5,106 | 5,447 | 5,696 | 5,891 | 6,064 | 6,222 |
| Cdad. Pte. Stroessner | 280 | 499 | 621 | 693 | 740 | 773 | 800 | 823 | 845 |
| Total | 2,340 | 4,177 | 5,199 | 5,799 | 6,187 | 6,469 | 6,691 | 6,887 | 7,067 |

Table A I-20 Building, tower and power facilities plan for personal radio-paging system

| Station | Facilities | Building | Tower | Power supply |
|-------------------------------|-----------------------|----------|----------|--------------|
| Automatic radio-paging center | CENTRAL I | Existing | - | ○ |
| Base station | CENTRAL II | Existing | Existing | ○ |
| | SAN LORENZO | Existing | Existing | ○ |
| | M.R. ALONSO | Existing | Existing | ○ |
| | LAMBARE | Existing | ○ | ○ |
| Manual radio-paging center | CDAD. PTE. STROESSNER | Existing | Existing | ○ |
| Base station | CDAD. PTE. STROESSNER | Existing | Existing | ○ |

○ : To be installed

Table A I-21 Required maintenance and operations staffs for personal radio-paging system

| Staff | | | Asunción | Cdad. Pte. Stroessner | Total |
|--------------|----------------------------|----|----------|-----------------------|-------|
| Switching | Work administration | I | 1 | 1 | 2 |
| | Maintenance administration | I | 1 | | 1 |
| | | II | 1 | * 1 | 2 |
| | Work instruction | I | 1 | | 1 |
| | Claim handling | II | 1 | 1 | 2 |
| | Maintenance & operation | II | 2 | 1 | 3 |
| | Sub-total | I | 3 | 1 | 4 |
| | | II | 4 | 3 | 7 |
| Transmission | Work administration | I | 1 | | 1 |
| | Maintenance administration | I | 1 | | 1 |
| | | II | 1 | | 1 |
| | Work instruction | I | 1 | 1 | 2 |
| | Maintenance & operation | II | 4 | 2 | 6 |
| | Sub-total | I | 3 | 1 | 4 |
| | | II | 5 | 2 | 7 |
| Total | I | 6 | 2 | 8 | |
| | II | 9 | 5 | 14 | |

Example: I Engineer

II High level technician

* Concurrent with transmission maintenance administration

Table A I-22 Personnel training schedule for personal radio paging system

| Maintenance personnel | | 1987 | 1988 | 1989 |
|-----------------------|-----------------------|---------------------------------------|-----------------------|------|
| Switching | Engineer | (2) \xrightarrow{E} | (4) \xrightarrow{G} | |
| | High level technician | (3) $\xrightarrow{B} \xrightarrow{E}$ | (7) \xrightarrow{G} | |
| Radio | Engineer | (2) \xrightarrow{E} | (4) \xrightarrow{G} | |
| | High level technician | (3) $\xrightarrow{B} \xrightarrow{E}$ | (7) \xrightarrow{G} | |

Note: B - In-country training (IPT)

E - Training at manufacturer's plant
under construction contract

G - On-the-job training

The figures with parentheses show the numbers
of trainees.

Table A I-23 Construction cost for personal radio paging system

Unit: Foreign currency : million U.S. Dollars
 Local currency : million Guaranies

| Item | 1987 | | 1988 | | 1989 | | 1990 | | Total | |
|-------------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|
| | Foreign currency | Local currency | Foreign currency | Local currency | Foreign currency | Local currency | Foreign currency | Local currency | Foreign currency | Local currency |
| Construction cost | 2.74 | 3 | 0.91 | 11 | | | 0.78 | 1 | 4.43 | 15 |

Table A I-24 Tentative tariff on personal radio-paging service

Unit: Guaranies

| | |
|-----------------------|----------------------|
| Service | Tariff |
| Personal radio-paging | Monthly charge 2,000 |

II. INTERNATIONAL TELECOMMUNICATIONS

II-1. List of Abbreviation

| | |
|--------------|--|
| AVD | alternative voice and data |
| COM STBY GCE | common standby grand communication equipment |
| CRT | cathode ray tube |
| DSI | digital speech interpolation |
| GCE | grand communication equipment |
| GENTEX | general telegraph exchange |
| GHZ | giga hertz |
| HLC | high level center |
| HPA | high power amplifier |
| INTELSAT | The international telecommunications satellite organization |
| ISD/DDI | international subscriber dialling/direct dialling international |
| ITC | international television center |
| ITMC | international transmission maintenance center |
| LS | local switch |
| LVR | load voltage regulator |
| MUX | multiplex |
| MHZ | mega hertz |
| OR meeting | operation representative meeting |
| PCM | pulse code modulation |
| RF COMB | radio frequency combiner |
| SITA | Société internationale de telecommunications aeronautiques |
| SPADE | single channel per carrier PCM multiple access demand assignment equipment |
| SS/TDMA | satellite switching/TDMA |
| TDM | time division multiplex |
| TDMA | time division multiple access |
| TLS | toll local switch |
| VFT | voice frequency telegraph |

II-2. Guidelines of International Traffic Forecast and Demand of Circuits

1. Out going traffic forecast in paid minutes for each country

Many traffic forecasting techniques have been reporting at the meetings of CCITT, INTESAT and other conferences, but the most confident and suitable method is not conformed yet. In this report, forecasting of traffic depends on the CCITT Recommendation E502, because it is hoped that most countries estimate their International traffic by the same means. Therefore, the traffic in future was estimated by the parabolic equation below:

$$Y_t = A + Bt + Ct^2$$

In the above equation, Y_t is the Traffic after 't' time intervals, while A, B and C are parameters depending on the route observed.

2. Estimation of total traffic on the route

Sum up the traffic of direct calls and the traffic transit calls which carried on the route as to first choice. No care has been devoted to overflow traffic because it does not occur at random. The distribution of transit calls depend upon the record of executed calls in the last year and the translation table that is stored in the exchange system.

3. Conversion from traffic in paid minutes to busy hour traffic in Erlang

In order to maintain a satisfactory service grade during the mean busy hour, the circuits have to be designed depending upon the traffic flow in the busy hour. For this purpose the formula, converted from PAID MINUTES A YEAR to BUSY HOUR EARLING, is given below: (ref. the questionnaire of CCITT plan commission)

$$A = \frac{C1 \times C2 \times C3 \times (\text{PAID MIN. IN A YEAR})}{60 \times D}$$

where :

A is busy hour traffic in erlang

D is average number of working day in a year.

Telephone : 300

Telex : 270

C1 is the day to busy hour ratio, which is a function of the daily traffic profile taking into account the time difference between the two ends of a relation.

According to the analysis of past traffic measuring:

Telephone:

Neighbouring countries (less than 3 hours time difference) 0.08. Distance countries (over 3 hours time difference) 0.07

If the heavy concentration is observed on the route:

Neighbour countries 0.12

Distant countries 0.11

Telex : 0.13

Since telex has automatic receiving function, the time difference is negligible.

C2 is the ratio of paid minutes per call to the average holding time of the circuit per call, i.e. setting up time and repeated attempts. On the study of CCITT, the value was accorded 1.2 - 1.3 depending on the normal telephone call.

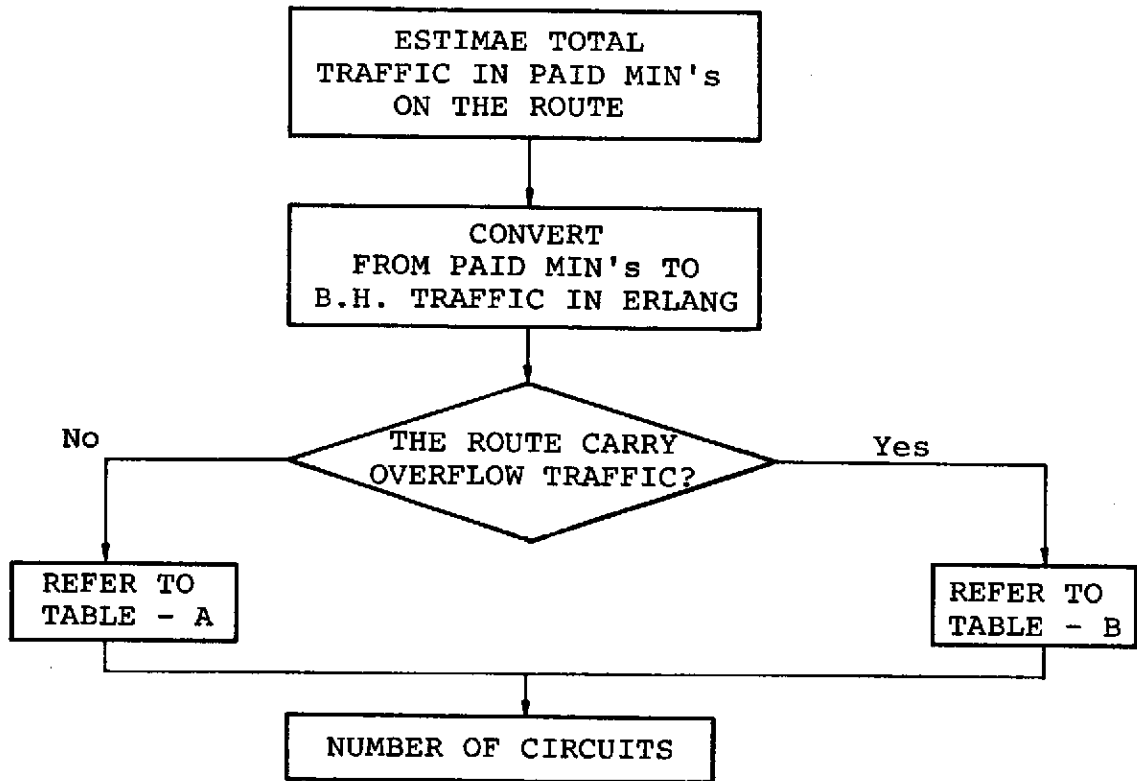
According to telex traffic call observation, on other hand, there are so many unsuccessful calls caused by the occupancy of the called subscribers that 1.7 was adopted on telex traffic.

C3 is the allowance for seasonal variations of traffic, in computer calculations of circuits quantity by CCITT, planning group a fix value of 1.3 was adopted for telephone traffic as most reasonable compromise, however, the seasonal variations of telex traffic would be less than telephone traffic because most telex calls are used as business, so that 1.2 was adopted for telex traffic.

4. Demand of circuit for each destination

The traffic forecast includes number of circuits for which carrying estimated traffic, however, actual circuits are not provided every destined countries, they are prepared for destinations which have reasonable traffic volume and the important places where we have a special relation. Destination of the number of circuits and establishment of route depend upon not only statistic conclusion but also economical balance of tariff, situations of facilities at both ends and so on. For these reasons, practical demand of circuits have to be decided by the individual case. On the other hand, guide lines are necessary for planning of reasonable network and facilities in future.

The thought of determination of the number of circuits are described in the CCITT Recommendations E Series Part V Section 3 and 4. However, a simple modified model is adopted, in this study, under a several assumptions. The flow chart mentioned below shows the general thought of determination of the number of circuits.



5. Erlang / Number of circuit table

The number of circuits for which carrying estimated busy hour traffic is read from two tables.

TABLE A: This table is adopted as to reading the number of circuits for the route which does not carry overflow traffic. This is the same table as TABLE OF THE ERLANG FORMULA, Supplement No. 1 in the CCITT Recommendations E Series.

TABLE B: This table is adopted as to reading the number of circuits for the route which carry overflow traffic.

TABLE - A (Random Seizure)

| n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% |
|-----|-------|-------|-------|-----|-------|-------|-------|-----|--------|--------|--------|-----|--------|--------|--------|
| 1 | 0.01 | 0.02 | 0.03 | 51 | 38.80 | 41.19 | 42.89 | 101 | 85.00 | 88.94 | 91.78 | 151 | 132.54 | 137.78 | 141.62 |
| 2 | 0.15 | 0.22 | 0.28 | 52 | 39.70 | 42.12 | 43.85 | 102 | 85.94 | 89.91 | 92.77 | 152 | 133.50 | 138.77 | 142.62 |
| 3 | 0.46 | 0.60 | 0.72 | 53 | 40.60 | 43.06 | 44.81 | 103 | 86.89 | 90.88 | 93.77 | 153 | 134.45 | 139.75 | 143.63 |
| 4 | 0.87 | 1.09 | 1.26 | 54 | 41.50 | 44.00 | 45.78 | 104 | 87.83 | 91.85 | 94.76 | 154 | 135.41 | 140.74 | 144.63 |
| 5 | 1.36 | 1.66 | 1.88 | 55 | 42.41 | 44.94 | 46.74 | 105 | 88.77 | 92.82 | 95.72 | 155 | 136.37 | 141.72 | 145.63 |
| 6 | 1.91 | 2.28 | 2.54 | 56 | 43.31 | 45.88 | 47.70 | 106 | 89.71 | 93.79 | 96.42 | 156 | 137.33 | 142.70 | 146.63 |
| 7 | 2.50 | 2.94 | 3.25 | 57 | 44.22 | 46.82 | 48.67 | 107 | 90.66 | 94.76 | 97.73 | 157 | 138.29 | 143.69 | 147.63 |
| 8 | 3.13 | 3.63 | 3.99 | 58 | 45.13 | 47.76 | 49.63 | 108 | 91.60 | 95.74 | 98.73 | 158 | 139.25 | 144.67 | 148.64 |
| 9 | 3.78 | 4.34 | 4.75 | 59 | 46.04 | 48.70 | 50.60 | 109 | 92.55 | 96.71 | 99.72 | 159 | 140.21 | 145.66 | 149.64 |
| 10 | 4.46 | 5.08 | 5.53 | 60 | 46.95 | 49.64 | 51.57 | 110 | 93.49 | 97.68 | 100.71 | 160 | 141.17 | 146.64 | 150.64 |
| 11 | 5.16 | 5.86 | 6.33 | 61 | 47.86 | 50.59 | 52.54 | 111 | 94.44 | 98.65 | 101.70 | 161 | 142.13 | 147.63 | 151.64 |
| 12 | 5.88 | 6.61 | 7.14 | 62 | 48.77 | 51.53 | 53.54 | 112 | 95.38 | 99.62 | 102.70 | 162 | 143.09 | 148.61 | 152.65 |
| 13 | 6.61 | 7.40 | 7.97 | 63 | 49.69 | 52.48 | 54.48 | 113 | 96.33 | 100.60 | 103.69 | 163 | 144.05 | 149.60 | 153.65 |
| 14 | 7.35 | 8.20 | 8.80 | 64 | 50.60 | 53.43 | 55.45 | 114 | 97.74 | 101.57 | 104.69 | 164 | 145.01 | 150.58 | 154.66 |
| 15 | 8.11 | 9.01 | 9.65 | 65 | 51.52 | 54.38 | 56.42 | 115 | 98.22 | 102.54 | 105.68 | 165 | 145.97 | 151.57 | 155.66 |
| 16 | 8.88 | 9.83 | 10.51 | 66 | 52.44 | 55.33 | 57.39 | 116 | 99.17 | 103.52 | 106.67 | 166 | 146.93 | 152.56 | 156.67 |
| 17 | 9.65 | 10.66 | 11.37 | 67 | 53.35 | 56.28 | 58.37 | 117 | 100.12 | 104.49 | 107.67 | 167 | 147.89 | 153.54 | 157.67 |
| 18 | 10.44 | 11.49 | 12.24 | 68 | 54.27 | 57.23 | 59.34 | 118 | 101.06 | 105.47 | 108.66 | 168 | 148.86 | 154.53 | 158.68 |
| 19 | 11.23 | 12.33 | 13.12 | 69 | 55.19 | 58.18 | 60.32 | 119 | 102.01 | 106.44 | 109.66 | 169 | 149.82 | 155.51 | 159.68 |
| 20 | 12.03 | 13.18 | 14.00 | 70 | 56.11 | 59.13 | 61.29 | 120 | 102.96 | 107.42 | 110.65 | 170 | 150.78 | 156.50 | 160.69 |
| 21 | 12.84 | 14.04 | 14.89 | 71 | 57.03 | 60.08 | 62.27 | 121 | 103.91 | 108.40 | 111.65 | 171 | 151.74 | 157.49 | 161.69 |
| 22 | 13.65 | 14.90 | 15.78 | 72 | 57.96 | 61.04 | 63.24 | 122 | 104.86 | 109.37 | 112.64 | 172 | 152.71 | 158.47 | 162.70 |
| 23 | 14.47 | 15.76 | 16.68 | 73 | 58.88 | 61.99 | 64.22 | 123 | 105.81 | 110.35 | 113.64 | 173 | 153.67 | 159.46 | 163.70 |
| 24 | 15.30 | 16.63 | 17.58 | 74 | 59.80 | 62.95 | 65.20 | 124 | 106.76 | 111.32 | 114.63 | 174 | 154.64 | 160.44 | 164.71 |
| 25 | 16.12 | 17.50 | 18.48 | 75 | 60.73 | 63.90 | 66.18 | 125 | 107.71 | 112.30 | 115.63 | 175 | 155.60 | 161.43 | 165.71 |
| 26 | 16.96 | 18.38 | 19.39 | 76 | 61.65 | 64.80 | 67.16 | 126 | 108.66 | 113.28 | 116.63 | 176 | 156.56 | 162.42 | 166.72 |
| 27 | 17.80 | 19.26 | 20.31 | 77 | 62.58 | 65.81 | 68.14 | 127 | 109.61 | 114.26 | 117.63 | 177 | 157.53 | 163.41 | 167.72 |
| 28 | 18.64 | 20.15 | 21.22 | 78 | 63.51 | 66.77 | 69.12 | 128 | 110.57 | 115.23 | 118.62 | 178 | 158.49 | 164.39 | 168.73 |
| 29 | 19.49 | 21.04 | 22.14 | 79 | 64.43 | 67.73 | 70.10 | 129 | 111.52 | 116.21 | 119.62 | 179 | 159.46 | 165.38 | 169.73 |
| 30 | 20.34 | 21.93 | 23.06 | 80 | 65.36 | 68.69 | 71.08 | 130 | 112.47 | 117.19 | 120.62 | 180 | 160.40 | 166.37 | 170.74 |
| 31 | 21.19 | 22.83 | 23.99 | 81 | 66.29 | 69.65 | 72.06 | 131 | 113.42 | 118.17 | 121.62 | 181 | 161.38 | 167.36 | 171.75 |
| 32 | 22.05 | 23.72 | 24.91 | 82 | 67.22 | 70.61 | 73.04 | 132 | 114.38 | 119.14 | 122.62 | 182 | 162.35 | 168.35 | 172.75 |
| 33 | 22.91 | 24.63 | 25.84 | 83 | 68.15 | 71.57 | 74.02 | 133 | 115.37 | 120.12 | 123.61 | 183 | 163.31 | 169.33 | 173.76 |
| 34 | 23.77 | 25.53 | 26.78 | 84 | 69.08 | 72.53 | 75.01 | 134 | 116.86 | 121.09 | 124.61 | 184 | 164.28 | 170.32 | 174.76 |
| 35 | 24.64 | 26.43 | 27.71 | 85 | 70.02 | 73.49 | 75.99 | 135 | 117.24 | 122.08 | 125.61 | 185 | 165.24 | 171.31 | 175.77 |
| 36 | 25.51 | 27.34 | 28.65 | 86 | 70.95 | 74.45 | 76.96 | 136 | 118.19 | 123.31 | 126.61 | 186 | 166.21 | 172.30 | 176.78 |
| 37 | 26.38 | 28.25 | 29.59 | 87 | 71.88 | 75.42 | 77.96 | 137 | 119.15 | 124.40 | 127.61 | 187 | 167.17 | 173.29 | 177.79 |
| 38 | 27.25 | 29.17 | 30.53 | 88 | 72.82 | 76.38 | 78.94 | 138 | 120.10 | 125.02 | 128.61 | 188 | 168.14 | 174.28 | 178.79 |
| 39 | 28.13 | 30.08 | 31.47 | 89 | 73.75 | 77.34 | 79.93 | 139 | 121.06 | 126.00 | 129.61 | 189 | 169.10 | 175.27 | 179.80 |
| 40 | 29.01 | 31.00 | 32.41 | 90 | 74.68 | 78.31 | 80.91 | 140 | 122.01 | 126.98 | 130.61 | 190 | 170.07 | 176.26 | 180.81 |
| 41 | 29.89 | 31.92 | 33.36 | 91 | 75.62 | 79.27 | 81.90 | 141 | 122.97 | 127.96 | 131.61 | 191 | 171.04 | 177.25 | 181.82 |
| 42 | 30.77 | 32.84 | 34.30 | 92 | 76.56 | 80.24 | 82.89 | 142 | 123.92 | 128.94 | 132.61 | 192 | 172.00 | 178.24 | 182.83 |
| 43 | 31.66 | 33.76 | 35.25 | 93 | 77.49 | 81.20 | 83.87 | 143 | 124.88 | 129.93 | 133.61 | 193 | 172.97 | 179.23 | 183.83 |
| 44 | 32.54 | 34.68 | 36.20 | 94 | 78.43 | 82.17 | 84.86 | 144 | 125.83 | 130.91 | 134.61 | 194 | 173.93 | 180.22 | 184.83 |
| 45 | 33.43 | 35.61 | 37.16 | 95 | 79.37 | 83.13 | 85.85 | 145 | 126.79 | 131.89 | 135.61 | 195 | 174.90 | 181.21 | 185.85 |
| 46 | 34.32 | 36.53 | 38.11 | 96 | 80.31 | 84.10 | 86.84 | 146 | 127.75 | 132.87 | 136.61 | 196 | 175.87 | 182.20 | 186.86 |
| 47 | 35.21 | 37.46 | 39.06 | 97 | 81.24 | 85.07 | 87.83 | 147 | 128.71 | 133.85 | 137.61 | 197 | 176.84 | 183.19 | 187.87 |
| 48 | 36.11 | 38.39 | 40.02 | 98 | 82.18 | 86.04 | 88.82 | 148 | 129.66 | 134.84 | 138.62 | 198 | 177.80 | 184.18 | 188.87 |
| 49 | 37.00 | 39.32 | 40.97 | 99 | 83.12 | 87.00 | 89.80 | 149 | 130.62 | 135.82 | 139.62 | 199 | 178.77 | 185.17 | 189.88 |
| 50 | 37.90 | 40.26 | 41.93 | 100 | 84.06 | 87.97 | 90.79 | 150 | 131.58 | 136.80 | 140.62 | 200 | 179.74 | 186.16 | 190.89 |

n = Number of Circuits

p = Loss Probability

Beyond 200 lines

p = 1%

p = 2%

p = 3%

n = 12.4 + 1.04 Erlangs

n = 10.6 + 1.02 Erlangs

n = 9.5 + Erlangs

TABLE - B (Nonrandom Seizure)

| n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% | n/P | 1% | 2% | 3% |
|-----|-------|-------|-------|-----|-------|-------|-------|-----|--------|--------|--------|-----|--------|--------|--------|
| 1 | 0.01 | 0.02 | 0.03 | 51 | 35.82 | 38.10 | 39.70 | 101 | 78.81 | 82.56 | 85.26 | 151 | 123.08 | 128.08 | 131.72 |
| 2 | 0.14 | 0.20 | 0.25 | 52 | 36.66 | 38.96 | 40.59 | 102 | 79.68 | 83.46 | 86.18 | 152 | 123.97 | 129.00 | 132.65 |
| 3 | 0.41 | 0.54 | 0.65 | 53 | 37.49 | 39.83 | 41.48 | 103 | 80.56 | 84.36 | 87.11 | 153 | 124.85 | 129.91 | 133.59 |
| 4 | 0.78 | 0.99 | 1.14 | 54 | 38.32 | 40.70 | 42.37 | 104 | 81.44 | 85.26 | 88.03 | 154 | 125.74 | 130.83 | 134.52 |
| 5 | 1.23 | 1.50 | 1.71 | 55 | 39.16 | 41.57 | 43.26 | 105 | 82.31 | 86.16 | 88.95 | 155 | 126.63 | 131.74 | 135.45 |
| 6 | 1.72 | 2.06 | 2.31 | 56 | 39.99 | 42.43 | 44.15 | 106 | 83.18 | 87.07 | 89.57 | 156 | 127.52 | 132.67 | 136.38 |
| 7 | 2.25 | 2.66 | 2.95 | 57 | 40.83 | 43.30 | 45.05 | 107 | 84.06 | 87.97 | 90.79 | 157 | 128.42 | 133.57 | 137.31 |
| 8 | 2.82 | 3.29 | 3.62 | 58 | 41.67 | 44.17 | 45.94 | 108 | 84.93 | 88.88 | 91.72 | 158 | 129.31 | 134.49 | 138.25 |
| 9 | 3.41 | 3.91 | 4.31 | 59 | 42.51 | 45.04 | 46.84 | 109 | 85.81 | 89.78 | 92.64 | 159 | 130.20 | 135.41 | 139.18 |
| 10 | 4.02 | 4.60 | 5.02 | 60 | 43.41 | 45.96 | 47.80 | 110 | 86.68 | 90.68 | 93.56 | 160 | 131.18 | 136.36 | 140.17 |
| 11 | 4.65 | 5.29 | 5.75 | 61 | 44.25 | 46.84 | 48.70 | 111 | 87.56 | 91.58 | 94.48 | 161 | 132.07 | 137.28 | 141.10 |
| 12 | 5.30 | 5.99 | 6.48 | 62 | 45.09 | 47.71 | 49.60 | 112 | 88.44 | 92.48 | 95.41 | 162 | 132.96 | 138.19 | 142.04 |
| 13 | 6.00 | 6.70 | 7.24 | 63 | 45.94 | 48.59 | 50.50 | 113 | 89.32 | 93.39 | 96.33 | 163 | 133.85 | 139.11 | 142.97 |
| 14 | 6.62 | 7.43 | 7.99 | 64 | 46.78 | 49.47 | 51.40 | 114 | 90.22 | 94.29 | 97.26 | 164 | 134.74 | 140.02 | 143.91 |
| 15 | 7.31 | 8.16 | 8.76 | 65 | 47.64 | 50.35 | 52.30 | 115 | 91.07 | 95.19 | 98.18 | 165 | 135.64 | 140.94 | 144.84 |
| 16 | 8.00 | 8.90 | 9.54 | 66 | 48.49 | 51.22 | 53.19 | 116 | 91.95 | 96.10 | 99.10 | 166 | 136.53 | 141.87 | 145.78 |
| 17 | 8.69 | 9.65 | 10.23 | 67 | 49.33 | 52.10 | 54.10 | 117 | 92.83 | 97.00 | 100.03 | 167 | 137.42 | 142.78 | 146.71 |
| 18 | 9.41 | 10.40 | 11.11 | 68 | 50.18 | 52.98 | 55.00 | 118 | 93.70 | 97.91 | 100.95 | 168 | 138.32 | 143.70 | 147.65 |
| 19 | 10.12 | 11.16 | 11.91 | 69 | 51.03 | 53.86 | 55.91 | 119 | 94.58 | 98.81 | 101.87 | 169 | 139.21 | 144.61 | 148.58 |
| 20 | 10.93 | 12.01 | 12.79 | 70 | 51.92 | 54.80 | 56.85 | 120 | 95.55 | 99.80 | 102.87 | 170 | 140.10 | 145.53 | 149.52 |
| 21 | 11.74 | 12.87 | 13.67 | 71 | 52.77 | 55.68 | 57.76 | 121 | 96.43 | 100.71 | 103.80 | 171 | 141.00 | 146.45 | 150.45 |
| 22 | 12.48 | 13.66 | 14.49 | 72 | 53.63 | 56.57 | 58.66 | 122 | 97.31 | 101.62 | 104.72 | 172 | 141.90 | 147.36 | 151.39 |
| 23 | 13.23 | 14.45 | 15.31 | 73 | 54.48 | 57.45 | 59.56 | 123 | 98.19 | 102.53 | 105.65 | 173 | 142.79 | 148.28 | 152.32 |
| 24 | 13.99 | 15.24 | 16.14 | 74 | 55.33 | 58.34 | 60.47 | 124 | 99.07 | 103.43 | 106.57 | 174 | 143.69 | 149.19 | 153.26 |
| 25 | 14.74 | 16.04 | 16.96 | 75 | 56.19 | 59.22 | 61.38 | 125 | 99.95 | 104.34 | 107.50 | 175 | 144.58 | 150.11 | 154.19 |
| 26 | 15.50 | 16.85 | 17.80 | 76 | 57.04 | 60.11 | 62.29 | 126 | 100.84 | 105.25 | 108.43 | 176 | 145.48 | 151.03 | 155.13 |
| 27 | 16.27 | 17.65 | 18.64 | 77 | 57.91 | 60.99 | 63.20 | 127 | 101.72 | 106.16 | 109.36 | 177 | 146.38 | 151.95 | 156.06 |
| 28 | 17.04 | 18.47 | 19.48 | 78 | 58.77 | 61.88 | 64.11 | 128 | 102.61 | 107.06 | 110.28 | 178 | 147.27 | 152.87 | 157.00 |
| 29 | 17.82 | 19.29 | 20.32 | 79 | 59.62 | 62.77 | 65.02 | 129 | 103.49 | 107.97 | 111.21 | 179 | 148.17 | 153.79 | 157.93 |
| 30 | 18.64 | 20.16 | 21.25 | 80 | 60.54 | 63.70 | 65.98 | 130 | 104.37 | 108.88 | 112.14 | 180 | 149.08 | 154.77 | 158.92 |
| 31 | 19.47 | 21.03 | 22.18 | 81 | 61.40 | 64.59 | 66.89 | 131 | 105.25 | 109.79 | 113.07 | 181 | 149.98 | 155.70 | 159.86 |
| 32 | 20.26 | 21.85 | 23.03 | 82 | 62.26 | 65.48 | 67.80 | 132 | 106.14 | 110.69 | 114.00 | 182 | 150.89 | 156.62 | 160.80 |
| 33 | 21.05 | 22.68 | 23.89 | 83 | 63.12 | 66.37 | 68.71 | 133 | 107.06 | 111.60 | 114.92 | 183 | 151.78 | 157.53 | 161.74 |
| 34 | 21.84 | 23.51 | 24.76 | 84 | 63.98 | 67.26 | 69.63 | 134 | 108.45 | 112.50 | 115.85 | 184 | 152.68 | 158.45 | 162.67 |
| 35 | 22.64 | 24.34 | 25.62 | 85 | 64.84 | 68.15 | 70.54 | 135 | 108.80 | 113.42 | 116.78 | 185 | 153.57 | 159.37 | 163.61 |
| 36 | 23.44 | 25.18 | 26.48 | 86 | 65.71 | 69.04 | 71.44 | 136 | 109.68 | 114.57 | 117.71 | 186 | 154.48 | 160.29 | 164.55 |
| 37 | 24.24 | 26.02 | 27.35 | 87 | 66.58 | 69.94 | 72.37 | 137 | 110.57 | 115.58 | 118.64 | 187 | 155.37 | 161.21 | 165.49 |
| 38 | 25.03 | 26.87 | 28.16 | 88 | 67.45 | 70.83 | 73.28 | 138 | 111.45 | 116.46 | 119.57 | 188 | 156.27 | 162.13 | 166.42 |
| 39 | 25.84 | 27.70 | 29.03 | 89 | 68.31 | 71.73 | 74.20 | 139 | 112.34 | 117.07 | 120.50 | 189 | 157.16 | 163.05 | 167.36 |
| 40 | 26.73 | 28.61 | 29.96 | 90 | 69.21 | 72.67 | 75.12 | 140 | 113.30 | 118.04 | 121.48 | 190 | 158.05 | 163.97 | 168.30 |
| 41 | 27.54 | 29.47 | 30.84 | 91 | 70.08 | 73.56 | 76.04 | 141 | 114.19 | 118.95 | 122.41 | 191 | 158.95 | 164.90 | 169.24 |
| 42 | 28.35 | 30.32 | 31.71 | 92 | 70.95 | 74.46 | 76.96 | 142 | 115.07 | 119.86 | 123.34 | 192 | 159.86 | 165.82 | 170.18 |
| 43 | 29.17 | 31.17 | 32.59 | 93 | 71.81 | 75.35 | 77.87 | 143 | 115.96 | 120.78 | 124.27 | 193 | 160.76 | 166.74 | 171.11 |
| 44 | 29.99 | 32.02 | 33.46 | 94 | 72.68 | 76.25 | 78.79 | 144 | 116.85 | 121.69 | 125.20 | 194 | 161.65 | 167.65 | 172.05 |
| 45 | 30.81 | 32.88 | 34.35 | 95 | 73.55 | 77.14 | 79.71 | 145 | 117.74 | 122.60 | 126.13 | 195 | 162.55 | 168.58 | 172.99 |
| 46 | 31.63 | 33.72 | 35.23 | 96 | 74.42 | 78.04 | 80.63 | 146 | 118.63 | 123.52 | 127.06 | 196 | 163.45 | 169.50 | 173.93 |
| 47 | 32.45 | 34.58 | 36.11 | 97 | 75.29 | 78.94 | 81.55 | 147 | 119.52 | 124.43 | 127.99 | 197 | 164.36 | 170.42 | 174.87 |
| 48 | 33.28 | 35.44 | 36.99 | 98 | 76.16 | 79.85 | 82.47 | 148 | 120.40 | 125.35 | 128.93 | 198 | 165.25 | 171.34 | 175.80 |
| 49 | 34.10 | 36.30 | 37.87 | 99 | 77.03 | 80.74 | 83.38 | 149 | 121.29 | 126.26 | 129.86 | 199 | 166.15 | 172.25 | 176.74 |
| 50 | 34.99 | 37.24 | 38.81 | 100 | 77.94 | 81.66 | 84.34 | 150 | 122.19 | 127.17 | 130.79 | 200 | 167.05 | 173.18 | 177.68 |

n = Number of Circuit

P = Loss Probability

Beyond 200 lines

p = 1%

n = 12.9 + 1.12 Erlangs

p = 2%

n = 11 + 1.09 Erlangs

p = 3%

p = 3%

n = 9.8 + 1.07 Erlangs

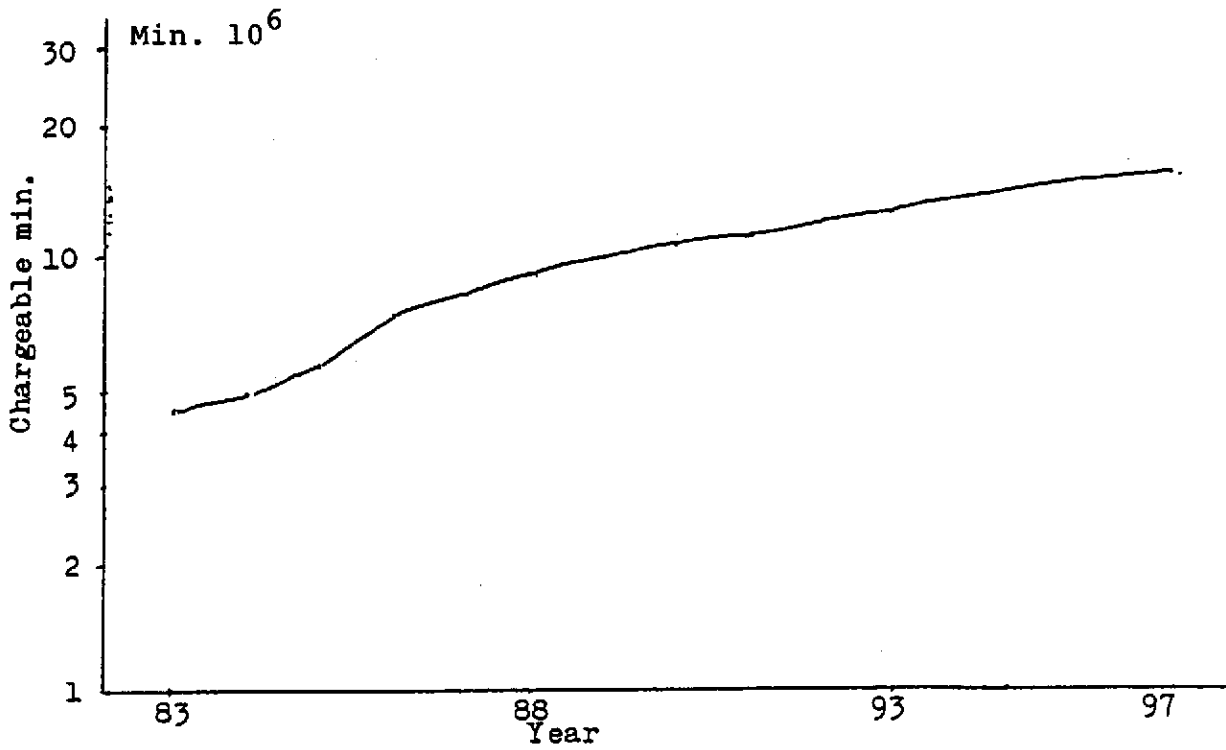


Fig. A II-1 Traffic forecast (1983-1997)
Outgoing international telephone

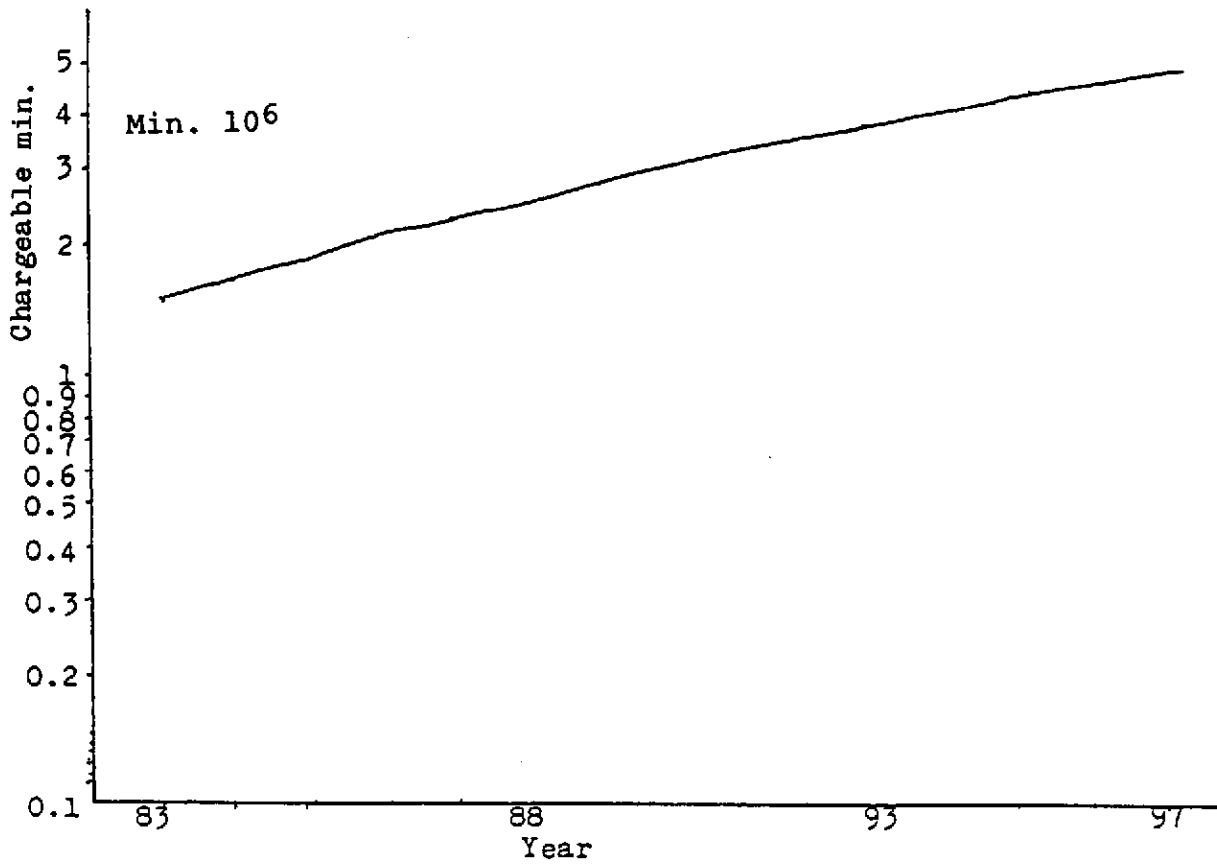


Fig. A II-2 Traffic forecast (1983-1997)
Outgoing frontier telephone

Table A II-1 Statistic traffic forecast

Note: Telephone

Based upon C.C.I.T.T. Recommendation E Series

Assumed Discontinuities Traffic growth by establishment of I.S.D. in 1985: +15%
in 1986: +10%
in 1987: + 5%
by expansion of exchange in 1985: +20%

Traffic data: Executed chargeable minutes 1972-1981

Telex

1983-1987: Analysis of covariance

Explanatory variance: Number of telex subscribers Time series data

1988-1997: Exponential regression

C.C.I.T.T. Recommendation E Series

Traffic data: Executed chargeable minutes 1971-1980

Table A II-1 Statistic traffic forecast (International telephone) 1/6

| Destination | 1983 | | | 1984 | | | 1985 | | | 1986 | | | 1987 | | |
|----------------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|
| | Chargeable Min. x1000 | TFC/BH Erl. | No. cct. | Chargeable Min. x1000 | TFC/BH Erl. | No. cct. | Chargeable Min. x1000 | TFC/BH Erl. | No. cct. | Chargeable Min. x1000 | TFC/BH Erl. | No. cct. | Chargeable Min. x1000 | TFC/BH Erl. | No. cct. |
| Buenos Aires | 1,179 | 23.00 | 33 | 1,264 | 24.66 | 35 | 1,794 | 34.99 | 46 | 2,092 | 35.35 | 47 | 2,328 | 39.35 | 51 |
| Pittsburg | 571 | 11.14 | 20 | 613 | 11.95 | 21 | 869 | 16.95 | 27 | 1,014 | 17.13 | 28 | 1,128 | 19.07 | 30 |
| Montevideo | 131 | 3.41 | 3 | 140 | 3.66 | 4 | 150 | 3.91 | 4 | 160 | 4.17 | 4 | 170 | 3.32 | 4 |
| Rio de Janeiro | 1,014 | 19.78 | 31 | 1,087 | 21.21 | 33 | 1,543 | 30.09 | 44 | 1,799 | 30.41 | 44 | 2,002 | 33.84 | 48 |
| Santiago Chile | 101 | 1.98 | 6 | 109 | 2.12 | 6 | 116 | 2.27 | 6 | 124 | 2.10 | 6 | 132 | 2.23 | 6 |
| Madrid | 164 | 3.19 | 8 | 175 | 3.42 | 9 | 248 | 4.85 | 10 | 290 | 4.90 | 11 | 323 | 5.46 | 12 |
| Rome | 54 | 1.06 | 4 | 58 | 1.13 | 4 | 82 | 1.61 | 5 | 96 | 1.63 | 5 | 107 | 1.81 | 6 |
| Panama | 38 | 0.98 | 2 | 40 | 1.05 | 2 | 43 | 1.12 | 2 | 46 | 1.20 | 2 | 49 | 0.95 | 2 |
| Frankfurt | 96 | 1.87 | 5 | 103 | 2.01 | 6 | 146 | 2.85 | 7 | 170 | 2.88 | 7 | 190 | 3.21 | 8 |
| London | 35 | 0.68 | 3 | 38 | 0.73 | 3 | 53 | 1.04 | 4 | 62 | 1.05 | 4 | 69 | 1.17 | 4 |
| Paris | 46 | 0.90 | 4 | 49 | 0.96 | 4 | 70 | 1.37 | 5 | 82 | 1.38 | 5 | 91 | 1.54 | 5 |
| Tokyo | 20 | 0.34 | 2 | 21 | 0.37 | 2 | 30 | 0.52 | 3 | 35 | 0.53 | 3 | 39 | 0.59 | 4 |
| Lima | 24 | 0.47 | 2 | 26 | 0.50 | 2 | 28 | 0.54 | 2 | 29 | 0.5 | 2 | 31 | 0.53 | 3 |
| Zurich | 20 | 0.39 | 2 | 22 | 0.42 | 2 | 31 | 0.60 | 3 | 36 | 0.61 | 3 | 40 | 0.68 | 5 |
| La Paz | 38 | 0.74 | 3 | 41 | 0.79 | 3 | 43 | 0.85 | 3 | 46 | 0.78 | 3 | 49 | 0.83 | 3 |
| Montreal | 15 | 0.29 | 2 | 16 | 0.32 | 2 | 23 | 0.45 | 3 | 27 | 0.45 | 3 | 30 | 0.50 | 3 |
| Mexico | 23 | 0.45 | 2 | 25 | 0.49 | 3 | 35 | 0.69 | 3 | 41 | 0.70 | 3 | 46 | 0.78 | 3 |
| Caracas | 19 | 0.36 | 2 | 20 | 0.39 | 2 | 28 | 0.55 | 3 | 33 | 0.56 | 3 | 37 | 0.62 | 3 |
| SPADE | 40 | 0.69 | 3 | 43 | 0.74 | 3 | 61 | 1.05 | 4 | 71 | 1.06 | 4 | 79 | 1.18 | 4 |
| Clorinda | 264 | 8.4 | 13 | 296 | 9.42 | 14 | 331 | 10.51 | 16 | 409 | 9.45 | 15 | 461 | 10.99 | 16 |
| Resistencia | 300 | 9.52 | 14 | 336 | 10.68 | 16 | 375 | 11.91 | 17 | 464 | 11.05 | 17 | 522 | 12.45 | 19 |
| Curitiba | 339 | 21.57 | 28 | 380 | 24.18 | 31 | 424 | 26.97 | 34 | 525 | 25.03 | 33 | 592 | 28.20 | 36 |

Table A II-1 Statistic traffic forecast (International telephone) 2/6

| Destination | 1988 | | | 1989 | | | 1990 | | | 1991 | | | 1992 | | |
|----------------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|-----------------------|-------------|----------|
| | Chargeable Min. x1000 | TPC/BH Erl. | No. cct. | Chargeable Min. x1000 | TPC/BH Erl. | No. cct. | Chargeable Min. x1000 | TPC/BH Erl. | No. cct. | Chargeable Min. x1000 | TPC/BH Erl. | No. cct. | Chargeable Min. x1000 | TPC/BH Erl. | No. cct. |
| Buenos Aires | 2,468 | 41.71 | 53 | 2,611 | 44.13 | 55 | 2,757 | 46.60 | 59 | 2,906 | 47.23 | 60 | 3,057 | 49.68 | 62 |
| Pittsburg | 1,196 | 20.21 | 31 | 1,265 | 21.38 | 33 | 1,336 | 22.58 | 34 | 1,408 | 22.88 | 35 | 1,481 | 24.07 | 36 |
| Montevideo | 181 | 3.52 | 4 | 191 | 3.73 | 4 | 230 | 3.89 | 9 | 266 | 4.32 | 9 | 293 | 4.76 | 10 |
| Rio de Janeiro | 2,123 | 35.88 | 51 | 2,246 | 37.96 | 53 | 2,371 | 40.08 | 56 | 2,499 | 40.62 | 56 | 2,629 | 42.73 | 59 |
| Santiago Chile | 140 | 2.36 | 6 | 148 | 2.50 | 7 | 179 | 3.03 | 7 | 206 | 3.35 | 8 | 227 | 3.69 | 8 |
| Madrid | 342 | 5.79 | 12 | 362 | 6.12 | 13 | 327 | 5.52 | 13 | 339 | 5.51 | 12 | 353 | 5.74 | 12 |
| Rome | 114 | 1.92 | 6 | 120 | 2.03 | 7 | 127 | 2.14 | 6 | 130 | 2.17 | 6 | 137 | 2.29 | 7 |
| Panama | 52 | 1.01 | 2 | 54 | 1.07 | 2 | 66 | 1.12 | 4 | 76 | 1.24 | 4 | 84 | 1.37 | 5 |
| Frankfurt | 201 | 3.40 | 8 | 213 | 3.60 | 8 | 225 | 3.80 | 9 | 237 | 3.85 | 9 | 249 | 4.05 | 9 |
| London | 73 | 1.24 | 4 | 77 | 1.31 | 4 | 82 | 1.38 | 5 | 86 | 1.40 | 5 | 91 | 1.47 | 5 |
| Paris | 97 | 1.63 | 5 | 102 | 1.73 | 5 | 108 | 1.82 | 5 | 114 | 1.85 | 5 | 120 | 1.94 | 6 |
| Tokyo | 42 | 0.63 | 3 | 44 | 0.66 | 3 | 47 | 0.70 | 3 | 49 | 0.71 | 3 | 52 | 0.74 | 3 |
| Lima | 33 | 0.56 | 3 | 35 | 0.59 | 3 | 42 | 0.72 | 3 | 49 | 0.79 | 3 | 54 | 0.88 | 4 |
| Zurich | 43 | 0.72 | 3 | 45 | 0.76 | 3 | 47 | 0.80 | 3 | 50 | 0.81 | 3 | 53 | 0.86 | 4 |
| La Paz | 52 | 0.88 | 4 | 55 | 0.93 | 4 | 66 | 1.12 | 4 | 77 | 1.25 | 4 | 85 | 1.37 | 5 |
| Montreal | 32 | 0.53 | 3 | 33 | 0.56 | 3 | 35 | 0.60 | 3 | 37 | 0.60 | 3 | 39 | 0.64 | 3 |
| Mexico | 49 | 0.82 | 3 | 51 | 0.87 | 4 | 54 | 0.92 | 4 | 57 | 0.93 | 4 | 60 | 0.98 | 4 |
| Caracas | 39 | 0.66 | 3 | 41 | 0.70 | 3 | 43 | 0.74 | 3 | 45 | 0.75 | 3 | 48 | 0.78 | 3 |
| Bogota | | | | | | | 23 | 0.38 | 2 | 26 | 0.43 | 2 | 28 | 0.47 | 3 |
| Quito | | | | | | | 33 | 0.55 | 3 | 38 | 0.62 | 3 | 42 | 0.68 | 3 |
| SPADE | 84 | 1.25 | 5 | 88 | 1.33 | 5 | 93 | 1.40 | 5 | 98 | 1.42 | 5 | 103 | 1.49 | 5 |
| Clorinda | 514 | 12.26 | 18 | 564 | 13.45 | 19 | 617 | 14.70 | 20 | 672 | 16.02 | 22 | 730 | 17.40 | 23 |
| Resistencia | 583 | 13.89 | 20 | 640 | 15.24 | 22 | 699 | 16.66 | 24 | 762 | 18.15 | 25 | 827 | 19.72 | 27 |
| Curitiba | 660 | 31.47 | 40 | 724 | 34.52 | 43 | 792 | 37.74 | 47 | 863 | 34.26 | 43 | 937 | 37.21 | 46 |

A-111 Table A II-1 Statistic traffic forecast (International telephone) 3/6

| Destination | 1993 | | | 1994 | | | 1995 | | | 1996 | | | 1997 | | |
|----------------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|
| | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct |
| Buenos Aires | 3,213 | 52.22 | 65 | 3,371 | 54.78 | 68 | 3,533 | 57.41 | 71 | 3,695 | 60.05 | 74 | 3,861 | 62.75 | 77 |
| Pittsburg | 1,557 | 25.30 | 38 | 1,663 | 26.54 | 39 | 1,711 | 27.82 | 41 | 1,790 | 29.09 | 43 | 1,871 | 30.40 | 44 |
| Montevideo | 308 | 5.00 | 10 | 323 | 5.25 | 11 | 339 | 5.50 | 11 | 354 | 5.76 | 11 | 370 | 6.01 | 12 |
| Rio de Janeiro | 2,764 | 44.91 | 61 | 2,899 | 47.11 | 64 | 3,038 | 49.37 | 67 | 3,178 | 51.65 | 69 | 3,321 | 53.97 | 72 |
| Santiago Chile | 239 | 3.89 | 9 | 250 | 4.07 | 9 | 262 | 4.26 | 9 | 274 | 4.46 | 10 | 287 | 4.66 | 10 |
| Madrid | 371 | 6.04 | 13 | 390 | 6.33 | 13 | 408 | 6.64 | 14 | 427 | 6.95 | 14 | 446 | 7.25 | 14 |
| Rome | 145 | 2.37 | 7 | 153 | 2.52 | 7 | 160 | 2.62 | 7 | 168 | 2.75 | 7 | 175 | 2.86 | 8 |
| Panama | 88 | 1.44 | 4 | 93 | 1.51 | 4 | 97 | 1.58 | 5 | 102 | 1.65 | 7 | 106 | 1.73 | 5 |
| Frankfurt | 261 | 4.26 | 9 | 275 | 4.46 | 10 | 287 | 4.68 | 10 | 301 | 4.89 | 10 | 315 | 5.11 | 10 |
| London | 95 | 1.55 | 5 | 100 | 1.63 | 6 | 105 | 1.70 | 5 | 110 | 1.78 | 5 | 115 | 1.86 | 5 |
| Paris | 126 | 2.04 | 6 | 132 | 2.14 | 6 | 138 | 2.25 | 6 | 145 | 2.35 | 6 | 151 | 2.45 | 6 |
| Tokyo | 54 | 0.78 | 4 | 57 | 0.82 | 4 | 60 | 0.86 | 4 | 62 | 0.90 | 4 | 65 | 0.94 | 4 |
| Lima | 57 | 0.92 | 4 | 59 | 0.97 | 4 | 62 | 1.01 | 4 | 65 | 1.06 | 4 | 68 | 1.11 | 4 |
| Zurich | 55 | 0.90 | 4 | 58 | 0.97 | 4 | 61 | 0.99 | 4 | 64 | 1.03 | 4 | 66 | 1.08 | 4 |
| La Paz | 89 | 1.44 | 5 | 93 | 1.52 | 5 | 98 | 1.59 | 5 | 102 | 1.66 | 5 | 107 | 1.74 | 5 |
| Montreal | 41 | 0.67 | 3 | 43 | 0.70 | 3 | 45 | 0.73 | 3 | 47 | 0.77 | 3 | 49 | 0.80 | 3 |
| Mexico | 63 | 1.03 | 4 | 66 | 1.08 | 4 | 70 | 1.13 | 4 | 73 | 1.18 | 4 | 76 | 1.24 | 4 |
| Caracas | 50 | 0.82 | 3 | 53 | 0.86 | 4 | 55 | 0.91 | 4 | 58 | 0.95 | 4 | 61 | 0.99 | 4 |
| Bogota | 30 | 0.49 | 3 | 32 | 0.52 | 3 | 33 | 0.54 | 3 | 35 | 0.57 | 3 | 37 | 0.59 | 3 |
| Quito | 44 | 0.71 | 3 | 46 | 0.75 | 3 | 48 | 0.78 | 3 | 50 | 0.82 | 3 | 53 | 0.86 | 4 |
| SPADK | 108 | 1.57 | 5 | 114 | 1.64 | 5 | 120 | 1.72 | 6 | 125 | 1.80 | 6 | 131 | 1.88 | 6 |
| Clorinda | 790 | 18.64 | 25 | 853 | 20.34 | 27 | 919 | 21.91 | 28 | 983 | 23.43 | 30 | 1,051 | 25.05 | 32 |
| Resistencia | 896 | 21.35 | 29 | 967 | 23.05 | 31 | 1,042 | 24.83 | 33 | 1,124 | 26.79 | 35 | 1,208 | 28.80 | 37 |
| Curitiba | 1,014 | 40.29 | 50 | 1,095 | 43.50 | 53 | 1,180 | 46.85 | 57 | 1,262 | 43.11 | 54 | 1,349 | 46.08 | 56 |

A-112 Table A II-1 Traffic forecast (International Telex) 4/6

| Destination | 1983 | | | 1984 | | | 1985 | | | 1986 | | | 1987 | | |
|----------------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|
| | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct |
| Buenos Aires | 254 | 8.29 | 14 | 313 | 10.22 | 16 | 383 | 12.52 | 19 | 466 | 15.25 | 22 | 565 | 18.48 | 27 |
| Rio de Janeiro | 485 | 15.87 | 26 | 598 | 19.26 | 30 | 733 | 23.96 | 36 | 808 | 26.44 | 39 | 980 | 32.03 | 46 |
| Montevideo | 51 | 1.66 | 5 | 63 | 2.04 | 5 | 77 | 2.50 | 5 | 93 | 3.05 | 7 | 113 | 3.70 | 8 |
| Frankfurt | 88 | 2.88 | 6 | 108 | 3.54 | 7 | 133 | 4.34 | 9 | 162 | 5.29 | 10 | 196 | 6.41 | 12 |
| Rome | 97 | 3.16 | 8 | 119 | 3.90 | 9 | 146 | 4.77 | 11 | 149 | 4.88 | 11 | 181 | 5.91 | 12 |
| Madrid | 34 | 1.11 | 4 | 42 | 1.36 | 5 | 51 | 1.67 | 5 | 62 | 2.03 | 6 | 75 | 2.46 | 7 |
| Paris | | | | | | | | | | 93 | 3.05 | 7 | 113 | 3.70 | 8 |
| London | | | | | | | | | | 131 | 4.27 | 8 | 158 | 5.17 | 11 |
| Tokyo | | | | | | | | | | 118 | 3.86 | 9 | 143 | 4.68 | 11 |
| New York | 683 | 22.33 | 34 | 841 | 27.52 | 40 | 1,031 | 33.71 | 48 | 1,026 | 33.55 | 48 | 1,243 | 40.66 | 56 |

A-113 Table A II-1 Traffic forecast (International Telex) 5/6

| Destination | 1988 | | | 1989 | | | 1990 | | | 1991 | | | 1992 | | |
|----------------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|-----------------------|-------------|---------|
| | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct |
| Buenos Aires | 644 | 21.06 | 30 | 728 | 23.82 | 34 | 819 | 26.77 | 37 | 914 | 29.90 | 41 | 1,016 | 33.21 | 44 |
| Rio de Janeiro | 1,116 | 36.50 | 51 | 1,263 | 41.29 | 57 | 1,419 | 46.40 | 63 | 1,585 | 51.82 | 69 | 1,761 | 57.57 | 76 |
| Montevideo | 129 | 4.21 | 9 | 146 | 4.76 | 10 | 164 | 5.35 | 11 | 183 | 5.98 | 12 | 203 | 6.64 | 13 |
| Frankfurt | 223 | 7.30 | 13 | 253 | 8.26 | 15 | 284 | 9.28 | 16 | 317 | 10.36 | 17 | 352 | 11.51 | 19 |
| Rome | 206 | 6.74 | 14 | 233 | 7.62 | 15 | 262 | 8.57 | 16 | 293 | 9.57 | 18 | 325 | 10.63 | 19 |
| Madrid | 86 | 2.81 | 8 | 97 | 3.18 | 9 | 109 | 3.57 | 9 | 122 | 3.99 | 9 | 135 | 4.43 | 10 |
| Paris | 129 | 4.21 | 9 | 146 | 4.76 | 10 | 164 | 5.35 | 11 | 183 | 5.98 | 18 | 203 | 6.64 | 13 |
| London | 180 | 5.90 | 12 | 204 | 6.67 | 13 | 229 | 7.50 | 14 | 256 | 8.37 | 15 | 284 | 9.30 | 16 |
| Tokyo | 163 | 5.33 | 12 | 185 | 6.03 | 13 | 207 | 6.78 | 14 | 232 | 7.57 | 15 | 257 | 8.41 | 16 |
| New York | 1,417 | 46.33 | 63 | 1,602 | 52.41 | 70 | 1,801 | 58.89 | 78 | 2,011 | 65.78 | 82 | 2,235 | 73.07 | 90 |

A-114 Table A II-1 Traffic forecast (International telex) 6/6

| Destination | 1993 | | | 1994 | | | 1995 | | | 1996 | | | 1997 | | |
|----------------|--------------------------|----------------|------------|--------------------------|----------------|------------|--------------------------|----------------|------------|--------------------------|----------------|------------|--------------------------|----------------|------------|
| | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct | Chargeable Min. x1000 | TFC/BH Erl. | No. cct |
| Buenos Aires | 1,123 | 36.71 | 48 | 1,235 | 40.39 | 52 | 1,353 | 44.26 | 57 | 1,477 | 48.31 | 61 | 1,607 | 52.55 | 66 |
| Rio de Janeiro | 1,946 | 63.63 | 83 | 2,141 | 70.02 | 90 | 2,346 | 76.72 | 98 | 2,560 | 83.74 | 106 | 2,785 | 91.08 | 115 |
| Montevideo | 225 | 7.34 | 13 | 247 | 8.08 | 14 | 271 | 8.85 | 15 | 295 | 9.66 | 17 | 321 | 10.51 | 18 |
| Frankfurt | 389 | 12.73 | 20 | 428 | 14.00 | 22 | 469 | 15.34 | 24 | 512 | 16.75 | 25 | 557 | 18.22 | 27 |
| Rome | 359 | 11.75 | 21 | 395 | 12.93 | 22 | 433 | 14.16 | 24 | 473 | 15.46 | 25 | 514 | 16.82 | 27 |
| Madrid | 150 | 4.89 | 11 | 165 | 5.39 | 12 | 180 | 5.90 | 12 | 197 | 6.44 | 13 | 214 | 7.01 | 14 |
| Paris | 225 | 7.34 | 13 | 247 | 8.08 | 14 | 271 | 8.85 | 15 | 295 | 9.66 | 17 | 321 | 10.51 | 18 |
| London | 314 | 10.28 | 17 | 346 | 11.31 | 19 | 379 | 12.39 | 20 | 414 | 13.53 | 21 | 450 | 14.71 | 23 |
| Tokyo | 284 | 9.30 | 17 | 313 | 10.23 | 19 | 343 | 11.21 | 21 | 374 | 12.24 | 21 | 407 | 13.31 | 23 |
| New York | 2,470 | 80.77 | 99 | 2,718 | 88.87 | 112 | 2,978 | 97.38 | 122 | 3,250 | 106.29 | 132 | 3,535 | 115.61 | 142 |

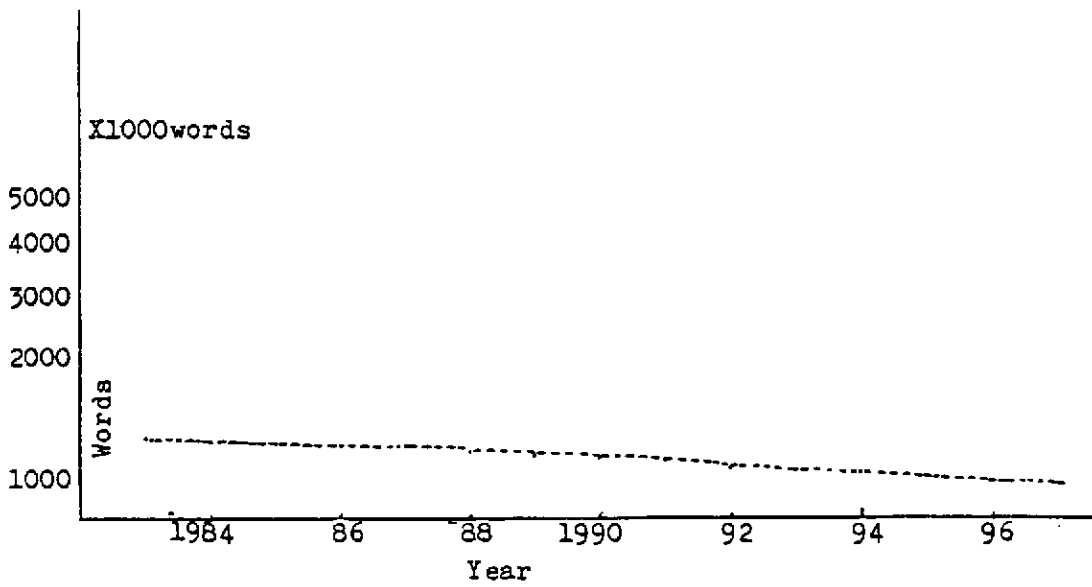


Fig. A II-3 Traffic forecast (1983-1997)
Outgoing international telegraph

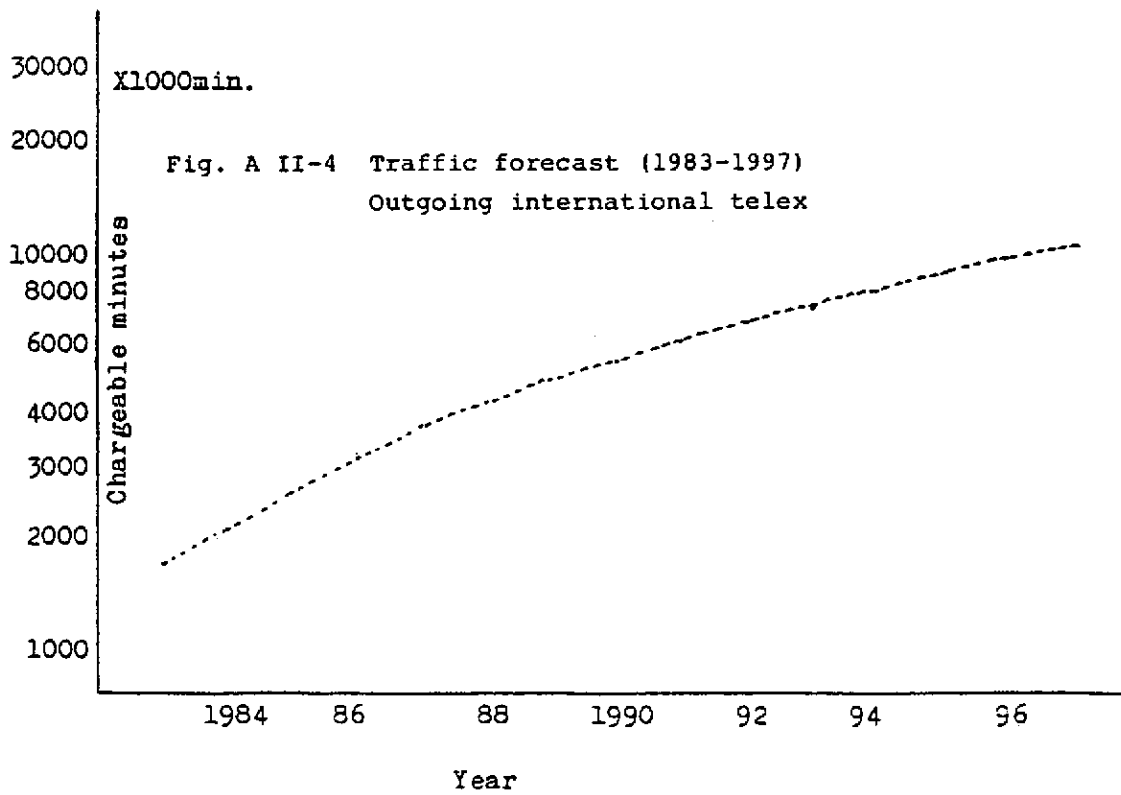


Fig. A II-4 Traffic forecast (1983-1997)
Outgoing international telex

Table A II-2 Demand forecast of international telegraph in number of messages

(Unit : X1000 Messages)

| Year | Outgoing | Incoming | Total |
|------|----------|----------|-------|
| 1983 | 51.5 | 71.5 | 123.0 |
| 1984 | 50.5 | 70.1 | 120.6 |
| 1985 | 49.6 | 68.8 | 118.4 |
| 1986 | 48.9 | 67.7 | 116.6 |
| 1987 | 48.1 | 66.8 | 114.9 |
| 1988 | 47.1 | 65.3 | 112.4 |
| 1989 | 46.1 | 63.9 | 110.0 |
| 1990 | 45.1 | 62.5 | 107.6 |
| 1991 | 44.1 | 61.2 | 105.3 |
| 1992 | 43.2 | 59.8 | 103.0 |
| 1993 | 42.2 | 58.5 | 100.7 |
| 1994 | 41.3 | 57.3 | 98.6 |
| 1995 | 40.4 | 56.0 | 96.4 |
| 1996 | 39.5 | 54.8 | 94.3 |
| 1997 | 38.7 | 53.6 | 92.3 |

Method of estimation

1983- 1987 : Analysis of covariance

Explanatry variance : Number od telex subscribers

Time series data

1988 - 1997 : Exponential regresion

C.C.I.T.T. Recommendation Series"E"

Table A II-3 Demand forecast of international telegraph in words

(Unit : 1000 Words)

| Year | Outgoing | Incoming | Total |
|------|----------|----------|--------|
| 1983 | 1292.7 | 2238.0 | 3530.7 |
| 1984 | 1267.6 | 2194.1 | 3461.7 |
| 1985 | 1245.0 | 2153.4 | 3398.4 |
| 1986 | 1227.4 | 2119.0 | 3346.4 |
| 1987 | 1207.3 | 2090.8 | 3298.1 |
| 1988 | 1182.2 | 2043.9 | 3226.1 |
| 1989 | 1157.1 | 2000.1 | 3157.2 |
| 1990 | 1132.0 | 1956.3 | 3088.3 |
| 1991 | 1106.9 | 1915.6 | 3022.5 |
| 1992 | 1084.3 | 1871.7 | 2956.0 |
| 1993 | 1059.2 | 1831.1 | 2890.3 |
| 1994 | 1036.6 | 1793.5 | 2830.1 |
| 1995 | 1014.0 | 1752.8 | 2766.8 |
| 1996 | 991.5 | 1715.2 | 2706.7 |
| 1997 | 971.4 | 1677.7 | 2649.1 |

Method of estimation

1983-1987 : Analysis of covariance

Explanatory variance : Number of telex subscribers

Time series data

1988-1997 : Exponential regression

C.C.I.T.T. Recommendation Series"E"

Table A II-4 Demand forecast of international telex in chargeable minutes

(Unit : 1000 min.)

| Year | Outgoing | Incoming | Total |
|------|----------|----------|---------|
| 1983 | 1691.1 | 1795.8 | 3486.9 |
| 1984 | 2083.9 | 2212.7 | 4296.6 |
| 1985 | 2552.7 | 2710.5 | 5263.2 |
| 1986 | 3109.4 | 2301.7 | 6411.1 |
| 1987 | 3767.8 | 4000.8 | 7768.6 |
| 1988 | 4293.4 | 4558.9 | 8852.3 |
| 1989 | 4856.5 | 5157.0 | 10013.5 |
| 1990 | 5457.3 | 5794.8 | 11252.1 |
| 1991 | 6095.4 | 6472.5 | 12567.9 |
| 1992 | 6771.3 | 7190.1 | 13961.4 |
| 1993 | 7484.6 | 7947.5 | 15432.1 |
| 1994 | 8235.4 | 8744.9 | 16980.3 |
| 1995 | 9023.8 | 9582.0 | 18605.8 |
| 1996 | 9849.7 | 10459.0 | 20308.7 |
| 1997 | 10713.2 | 11375.8 | 22089.0 |

Method of estimation

1983-1987 : Analysis of covariance

Explanatory variance : Number of telex subscribers

Time series data

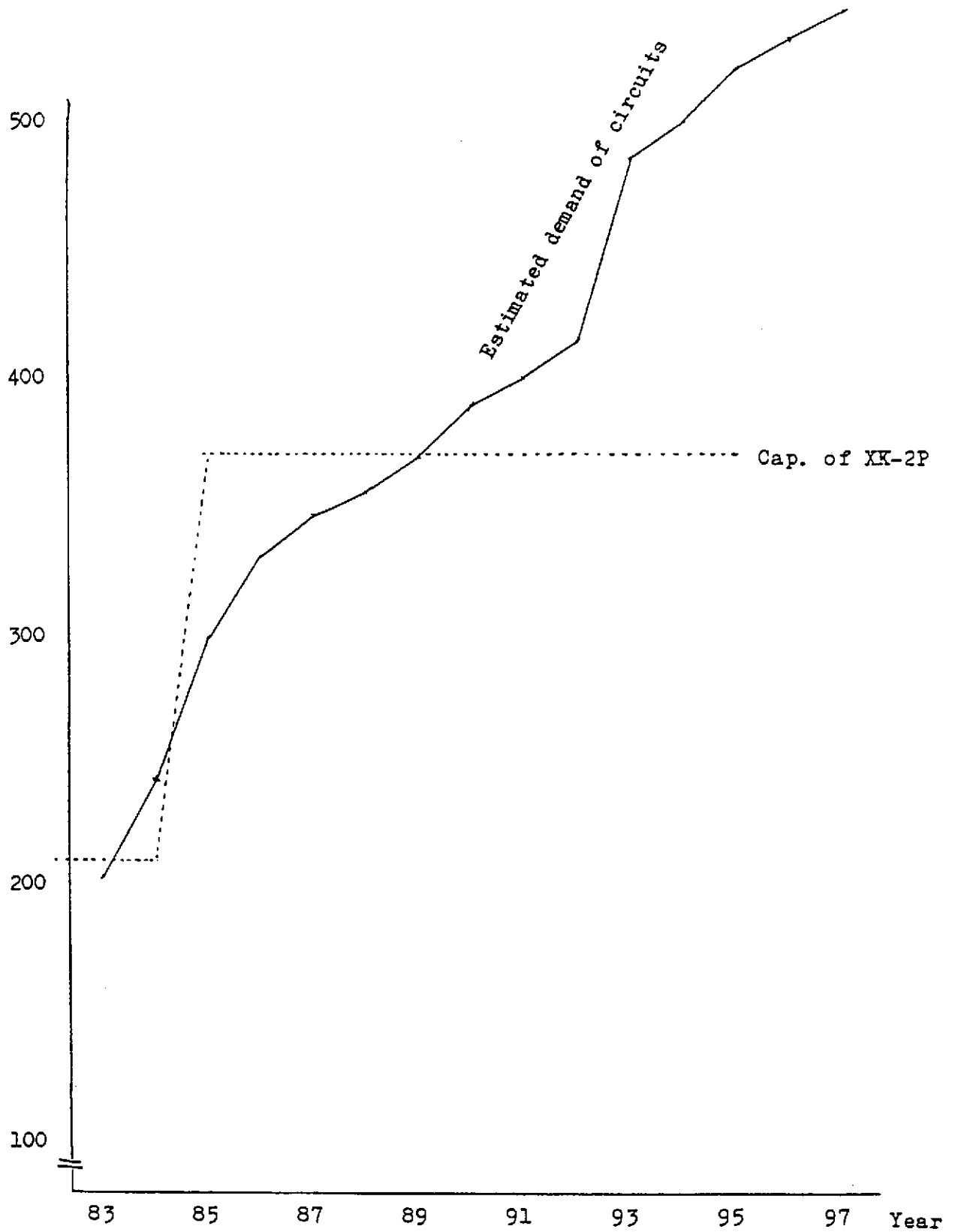
1988-1997 : Exponential regression

C.C.I.T.T. Recommendation Series"E"

Table A II-5 Demand forecast of international facsimile service

| Year | Number of messages |
|------|--------------------|
| 1983 | - |
| 1984 | 7420 |
| 1985 | 8162 |
| 1986 | 8978 |
| 1987 | 9876 |
| 1988 | 10864 |
| 1989 | 11950 |
| 1990 | 13145 |
| 1991 | 14459 |
| 1992 | 15905 |
| 1993 | 17496 |
| 1994 | 19246 |
| 1995 | 21170 |
| 1996 | 23287 |
| 1997 | 25616 |

Number of messages are estimated based upon the volum of external postal messages and the trend of telecommunications in destined countries.



Maximum capacity of XK-2P and international circuits demand

Fig. A II-5 No. of circuits

Table A II-6 International telephone circuits by destinations
(Dec. 1981)

| Destnation | No. of circuits | Sig. | Trans. path | Operation mode*1 | |
|----------------|-----------------|------|-------------|------------------|------|
| | | | | O/G | I/C |
| Buenos Aires | 8 | No.5 | Satellite | SA | SA A |
| | 10 | | Micro | | |
| Resistencia | 24 | R2 | Micro | SA | SA A |
| Clorinda | 4 | No.1 | Micro | M | M |
| Rio de Janeiro | 6 | No.5 | Satellite | SA | SA A |
| | 16 | R2 | Micro | | |
| Curitiba | 30 | R2 | Micro | SA | SA A |
| Montevideo | 2 | No.1 | Micro | M | M |
| Santiago | 2 | No.5 | Satellite | SA | SA |
| Panama | 2 | No.1 | " | M | M |
| Pittsburg | 16 | No.5 | " | SA | SA A |
| Madrid | 10 | No.5 | " | SA | SA A |
| Frankfurt-M | 8 | No.5 | " | SA | SA A |
| Rome | 4 | No.5 | " | SA | SA |
| SPADE *2 | 6 | No.5 | " | SA | SA |

*1 Operation mode A:Automatic SA:Semi-automatic M:Manual

*2 Destinations of SPADE (32 countries)

Canada, U. S. A. , Alaska, Hawaii,

Namibia, Botswana, Egypt, Lesoto, Nigeria, Zimbabwe, Swaziland,
South Africa,

Belgium, Denmark, Greenland, Finland, Greece, Netherlands, U. K. ,

Ireland, Scotland, Iceland, Norway, Sweden, Switzerland,

Liechtenstein,

Brazil(Area 2 3 6 7 8 9), Peru, Venezuela,

Saudi Arabia, Iraq, Jordan

Table A II-7 International message circuits by destinations
(Dec. 1981)

| Destination | Transmission path | Multiplexer | Classification of service | | |
|-------------|---------------------------|------------------|---------------------------|-----------|---------|
| | | | Telex | Telegraph | Private |
| ITT/N.Y. | Satellite | T.D.M. (Databit) | 15 | | 1 |
| RCA/N.Y. | " | " | RCA 13 WUI 7 TRT 7 | 1 | 9 |
| Spain | " | V.F.T. | Spain 4 W Germany 7 | | 1 |
| Uruguay | Micro | " | 2 | 1 | |
| Italy | Satellite | " | 9 | 1 | |
| Brazil I | Micro | " | 20 | 1 | 2 |
| Brazil II | Micro | " | 5 | | |
| Chile | Satellite | F.S. | | 1 | |
| Argentina | Micro | V.F.T. | 12 | 1 | 4 |
| Total | Satellite: 5 Micro : 4 | | 101 | 6 | 17 |

Table A II-8 International telex circuits (Nov. 1981)

| Destination | International circuits | | | |
|----------------|------------------------|-----------|----------|------------|
| | O/G | I/C | B/W | Total |
| Buenos Aires | 4 | 8 | | 12 |
| Rio de Janeiro | 10 | 15 | | 25 |
| U. S. A. | RCA/N.Y. | 7 | 6 | 13 |
| | WUI/N.Y. | 4 | 3 | 7 |
| | ITT/N.Y. | 8 | 7 | 15 |
| | TRT/N.Y. | 3 | 4 | 7 |
| Montevideo | 1 | 1 | | 2 |
| Hamburg | 3 | 4 | | 7 |
| Rome | | | 9 | 9 |
| Madrid | 2 | 2 | | 4 |
| Total | 42 | 50 | 9 | 101 |

Table A II-9 International telex traffic by destinations (1980)

| Destination | Traffic in minutes | | | |
|-------------|--------------------|---------|---------|-------|
| | O/G | I/C | Total | % |
| Argentina | 119881 | 198582 | 318463 | 16.9 |
| Brazil | 271210 | 457535 | 728745 | 38.7 |
| U. S. A. | 308242 | 336363 | 644605 | 34.2 |
| W. Germany | 17687 | 384 | 18071 | 1.0 |
| Uruguay | 6996 | 520 | 7516 | 0.4 |
| Italy | 74405 | 80611 | 155016 | 8.3 |
| Spain | 10136 | - | 10136 | 0.5 |
| Total | 808557 | 1073995 | 1882552 | 100.0 |

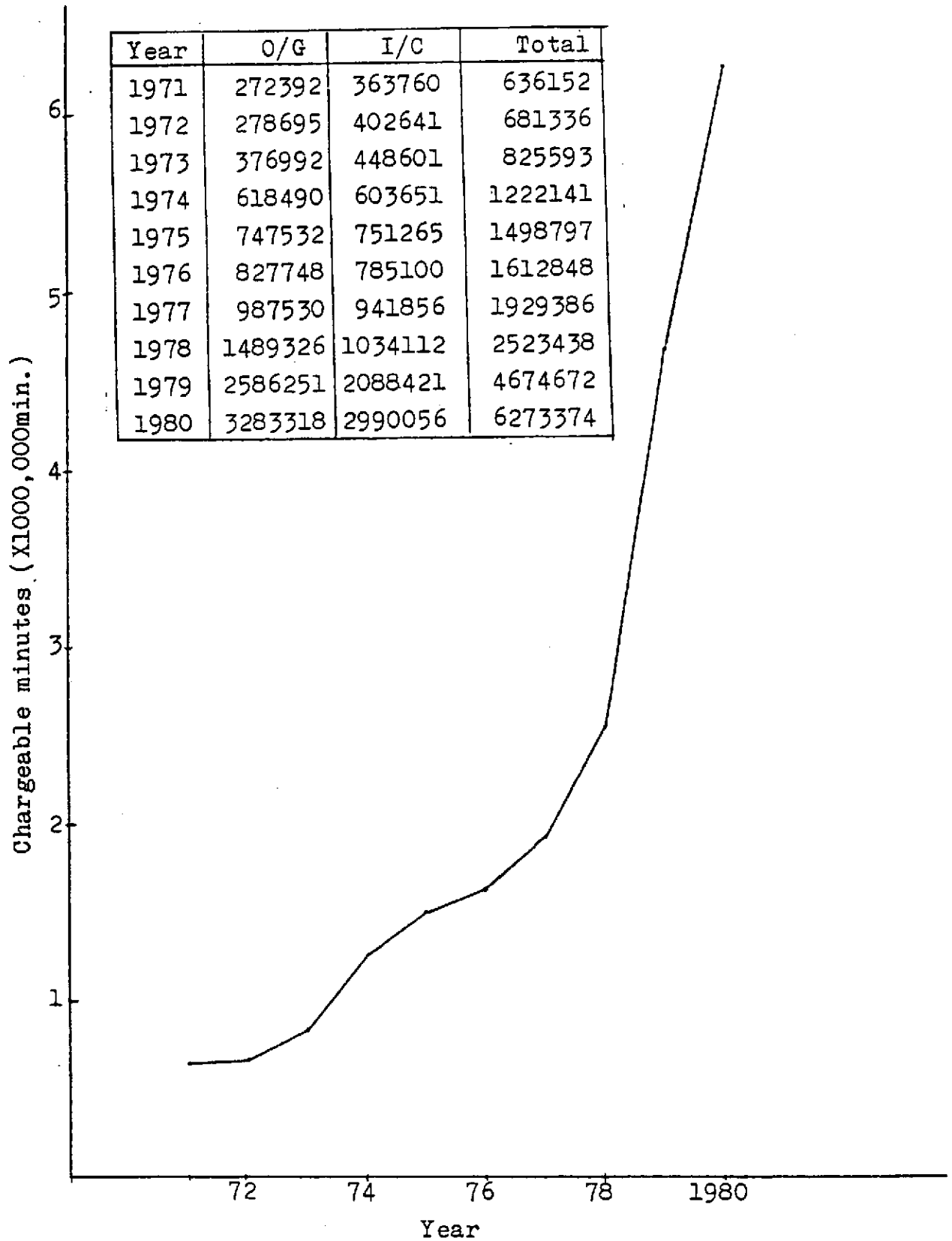


Fig. A II-6 International telephone traffic growth (1971-1980)

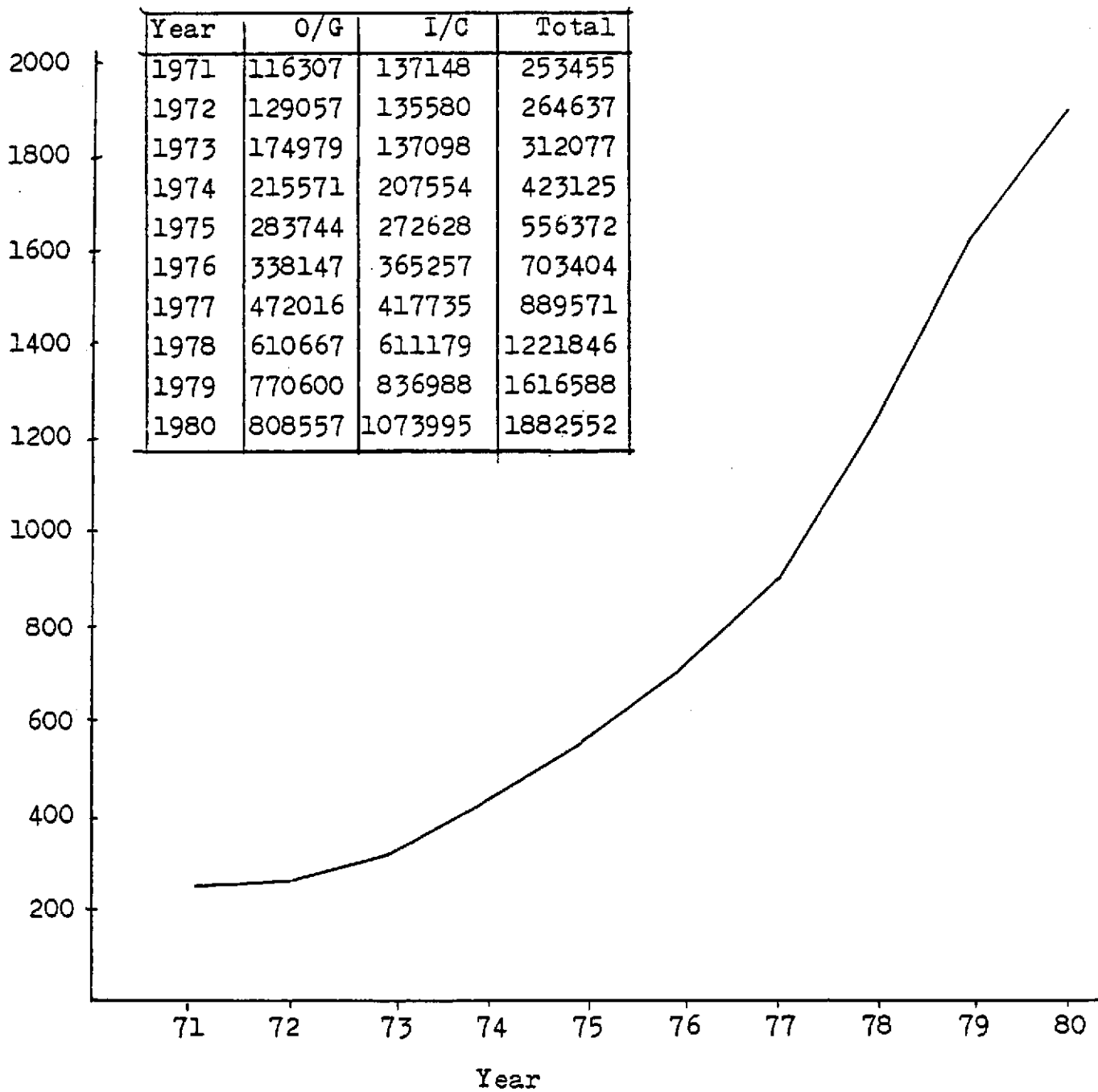


Fig. A II-7 International telex traffic growth (1971-1980)

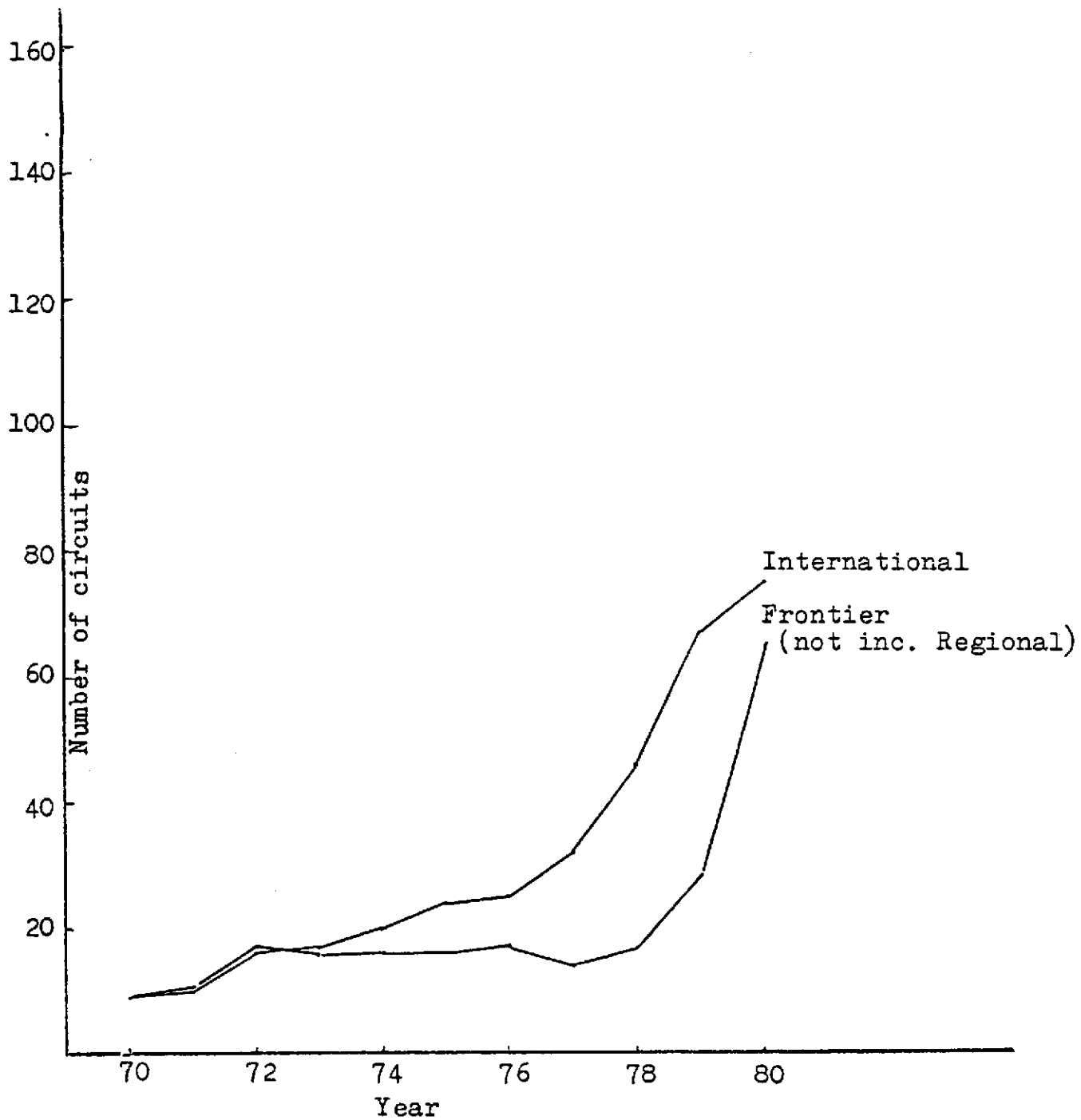


Fig. A II-8 Increment of international telephone circuits (1970-1980)

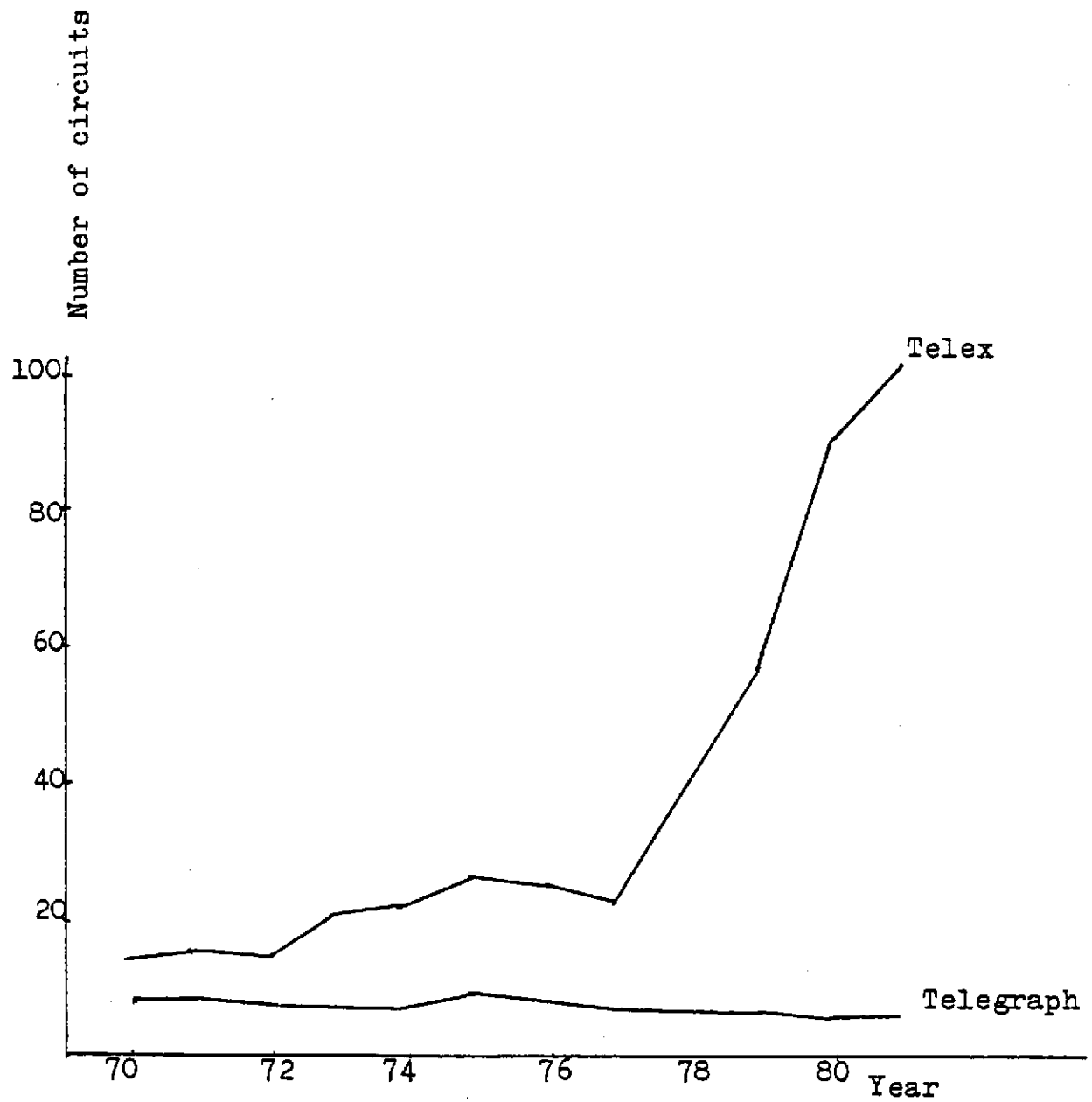


Fig. A II-9 Increment of international telegraph and telex circuits (1970-1981)

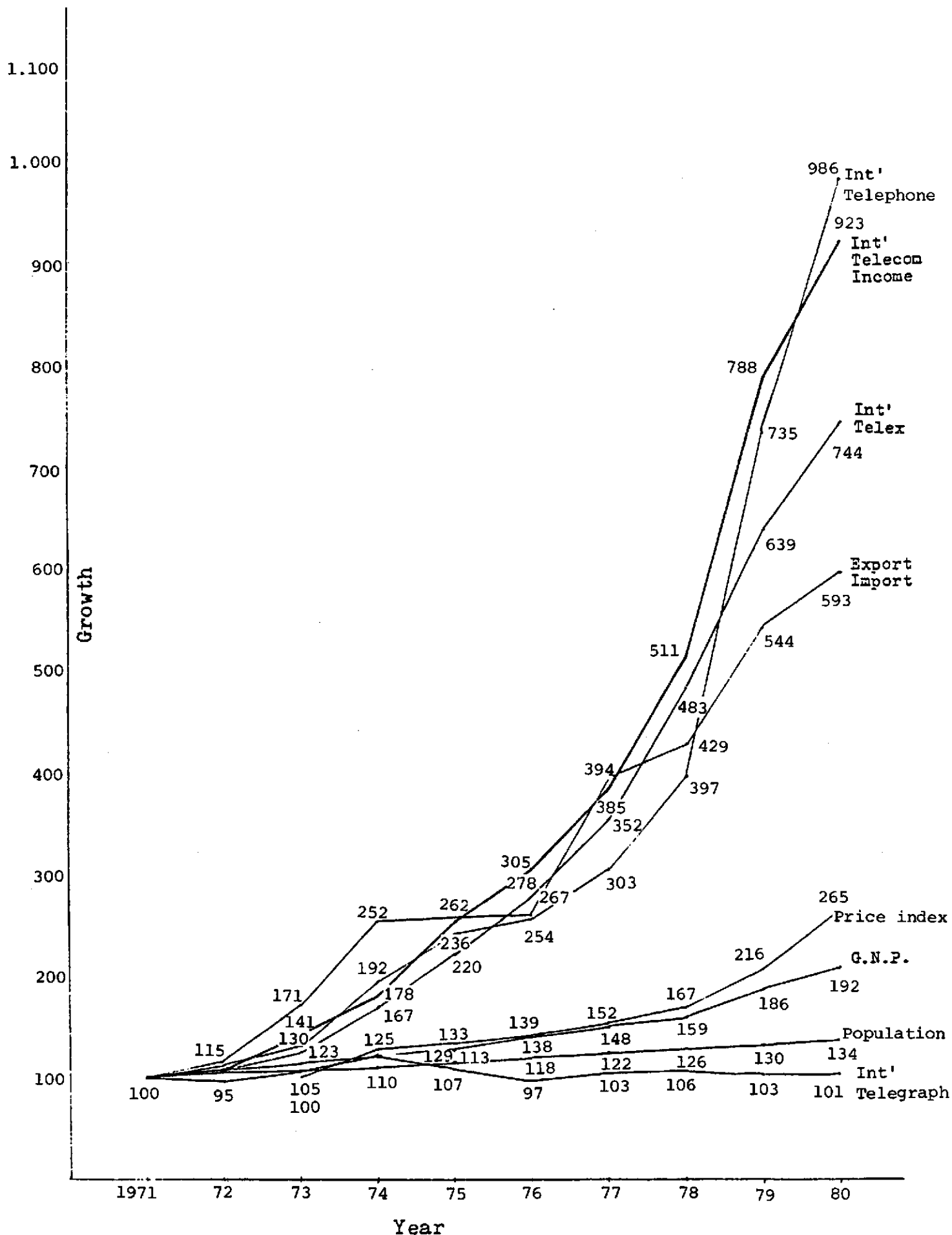


Fig. A II-10 Economic & telecommunications (1971-1980)

Table A II-10 Growth of telecommunications in Republic of Paraguay

| | Year | | | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
| 1 Population (X1000) | 2359 (100) | 2433 (103) | 2513 (107) | 2598 (110) | 2686 (113) | 2779 (118) | 2873 (122) | 2970 (126) | 3068 (130) | 3168 (134) |
| 2 G.N.P. (U.S.\$10 ⁶) | 731 (100) | 769 (105) | 829 (113) | 898 (123) | 941 (129) | 1008 (138) | 1182 (148) | 1160 (159) | 1363 (186) | 1404 (192) |
| 3 Price Index | - | - | 100 | 125.2 +25.2 | 133.6 +6.2 | 139.6 +4.5 | 152.7 +9.4 | 168.9 +10.6 | 216.5 +28.2 | 265.0 +22.4 |
| 4 Export Import (U.S.\$10 ⁶) | 135.6 (100) | 156.0 (115) | 231.7 (171) | 341.2 (252) | 355.1 (262) | 362.0 (267) | 534.3 (394) | 574.7 (429) | 737.0 (544) | 804.5 (593) |
| 5 Int' Telecom. Income (\$ X10 ⁶) | 199 (100) | 212 (107) | 280 (141) | 355 (178) | 512 (257) | 606 (305) | 766 (385) | 1016 (511) | 1569 (788) | 1836 (923) |
| 6 Int' Telephone (1000min.) | 636 (100) | 681 (107) | 826 (130) | 1222 (192) | 1499 (236) | 1613 (254) | 1929 (303) | 2523 (397) | 4675 (735) | 6273 (986) |
| 7 Int' Telex (1000 min.) | 253 (100) | 265 (105) | 312 (123) | 423 (167) | 556 (220) | 703 (278) | 890 (352) | 1222 (483) | 1617 (639) | 1883 (744) |
| 8 Int' Telegraph (1000 Words) | 3845 (100) | 3654 (95) | 4045 (105) | 4704 (122) | 4118 (107) | 3740 (97) | 3977 (103) | 4092 (106) | 3950 (103) | 3871 (101) |

References:

- 1 : Proyección de la Población del Paraguay
- 2,3 : Cuentas Nacionales (Banco Central)
- 4 : Boletín Nacional del Paraguay (")
Reseña Económica, Financiera y Monetaria
- 5,6,7,8 : Memoria y Balance General (ANTELCO)

V. MANPOWER DEVELOPMENT

Table A V-1 (i) Personnel training schedule (Domestic telecommunications)

| Personnel | Year | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Note |
|--|------|------|------|------|------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|--|
| Subscriber telephone installation | III | | | | | B G (11) | B G (3) | B G (3) | B G (4) | B G (5) | B G (1) | B G (3) | B G (3) | B G (4) | B G (3) | | A: Overseas training (Government-to-government base) |
| | | | | | | | | | | | | | | | | | |
| Public telephone maintenance | II | | | | (3) | B F G | | | | | | | | | | | B: In-country training (IPT) |
| | III | | | | (10) | B F G | | | | | | | | | | | |
| Subscribers cable maintenance | II | | | | | B G | B G | B G | B G | B G | B G | B G | B G | B G | B G | | F: On-site training under construction contract |
| | III | | | | | B G | B G | B G | B G | B G | B G | B G | B G | B G | B G | | |
| Asunción area junction cable (optical fiber) maintenance | II | | | | (2) | B F G | | | | | | | | | | | The figures in parentheses show the number of trainees |
| | III | | | | (6) | B F G | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | II : High level technician |
| | | | | | | | | | | | | | | | | | III: Medium level technician |

Table A V-1 (ii) Personnel training schedule (Domestic telecommunications) for switching system

| Personnel | | Year | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Note |
|---|----------|------|------|--------------|------|------------------|-------------------|-------------------|-------------------|-----------------|------------------|-------------------|-------------------|-------------------|-----------------|------------|-------------|--|
| Digital tele- phone switching system mainte- nance | I | | | B A+E (4) | F | | G B A+E (4) | F B A+E (2) | G B A+E (4) | B A+E (2) | F | G B A+E (4) | F B A+E (4) | G B A+E (2) | | | | A: Overseas training (Government-to- gogernment base) |
| | II | | | B F (16) | | G B F (19) | G B F (6) | G B F (11) | G B F (10) | G B F (5) | G B F (14) | G B F (12) | G B F (8) | G B F (6) | G B F (8) | | | B: In-country train- ing (IPT) |
| Movable exchange maintenance | I | | | | | | | B G (2) | B G (2) | | | | | | | | | E: Training at manu- facturer's plant under construc- tion contract |
| | II | | | | | | | B G (14) | B G (8) | B G (6) | B G (18) | B G (8) | B G (4) | B G (4) | B G (12) | B G (8) | B G (18) | F: On-site training under construc- tion contract |
| Information desk & toll switchboard | II | | | | | | | | B G (5) | | B G (5) | | B G (5) | | B G (5) | | | G: On-the-job train- ing |
| | Operator | | | | | | | | B G (5) | | B G (5) | | B G (5) | | B G (5) | | | The figure in parentheses show the number of trainees |
| | | | | | | | | | | | | | | | | | | I: Engineer II: High level technician |

Table A V-1 (iii) Personnel training schedule (Domestic telecommunications)

| Personnel \ Year | | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Note | |
|--|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|
| OH Microwave system maintenance | I | | | | | | | | | | | | | (3) | E | F | G | A: Overseas training (Government-to-government base) B: In-country training (IPT) E: Training at manufacturer's plant under construction contract F: On-site training under construction contract G: On-the-job training The figure in parentheses show the number of trainees I : Engineer II : High level technician III: Medium level technician |
| | II | | | | | | | | | | | | | (2) | E | F | G | |
| Maintenance of cable PCM system for short distance toll line | I | | | | | (2) | E | F | G | | | | | | | | | |
| | II | | | | | (3) | E | F | G | | | | | | | | | |

Table A V-1 (iv) Personnel training schedule (Domestic telecommunications)

| Personnel | | Year | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Note |
|--|-----|------|-------|------------|---------|-------------|---------|---------|---------|----------|------|---------|------|---------|------|---------|------|--|
| Trunk transmission line maintenance | I | | | | | | (2) B G | (3) B G | | | | | | | | | | A: Overseas training (Government-to-government base) B: In-country training (IPT) |
| | II | | | | | | (7) B G | (8) B G | (9) B G | (10) B G | | | | | | | | |
| Asunción area junction maintenance (Transmission) | I | | | | | (4) B E F G | | | | | | | | | | | | E: Training at manufacturer's plant under construction contract F: On-site training under construction contract |
| | II | | | | | (14) B F G | | | | | | | | | | | | |
| Rural telephone (subscriber's terminal) installation | I | | | (1) B F G | | | | | | | | | | | | | | G: On-the-job training The figures in parentheses show the number of trainees |
| | II | | | (5) B F G | | | | | | | | | | | | | | |
| | III | | | (10) B F G | | | | | | | | | | | | | | |
| Rural telephone system maintenance | I | | (2) E | (2) E G | | | | | | (1) B G | | | | | | | | I : Engineer II: High level technician |
| | II | | (3) E | (11) E G | (2) F G | (2) F G | (2) B G | (2) B G | (2) B G | (2) B G | | (3) B G | | (2) B G | | (2) B G | | |

Table A V-1 (v) Personnel training schedule (Domestic telecommunications)

| Maintenance personnel | | Year | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1996 | Note | |
|--|--------------|------|------|------|------|------|------|----------------------|--------------------|--------------------|-----------------------|------|------|------|------|------|------|--|--|
| Land mobile telephone system maintenance | Switching | I | | | | | | (2) $\overline{B E}$ | (2) \overline{G} | | | | | | | | | A: Overseas training (Government-to-government base) B: In-country training (IPT) E: Training at manufacturer's plant under construction contract F: On-site training under construction contract G: On-the-job training | |
| | | II | | | | | | (3) $\overline{B E}$ | (7) \overline{G} | | | | | | | | | | |
| | Transmission | I | | | | | | (2) \overline{E} | (2) \overline{G} | | | | | | | | | | |
| | | II | | | | | | (3) $\overline{B E}$ | (5) \overline{G} | | | | | | | | | | |
| Ship communication | | I | | | | | | | | (3) \overline{E} | (6) $\overline{F G}$ | | | | | | | The figures in parentheses show the number of trainees I : Engineer II : High level technician III: Medium level technician | |
| | | II | | | | | | | | (3) \overline{E} | (11) $\overline{F G}$ | | | | | | | | |

Table A V-1 (vi) Personnel training schedule (Domestic telecommunications)

| Maintenance personnel | Year | 1983 | 1984 | 1985 | 1986 | 1987 | | 1988 | | 1989 | | 1990 | | 1991 | | 1992 | | 1993 | | 1994 | | 1995 | | 1996 | 1997 | Note |
|----------------------------|----------|------|------|------|------|------------------|---|------------------|---|-----------------|---|-----------------|---|------------------|---|-----------------|---|------------------|---|-----------------|---|-----------------|---|-----------------|-----------------|--|
| | | | | | | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G | B | G | | | |
| Telegraph & Telex | I&II | | | | | (7) | | (5) | | (4) | | (3) | | (6) | | (10) | | (11) | | (7) | | (9) | | | | A: Overseas training (Government-to-government base) B: In-country training (IPT) |
| | Operator | | | | | <u>B</u> (12) | | <u>B</u> (14) | | <u>B</u> (9) | | <u>B</u> (7) | | <u>B</u> (11) | | <u>B</u> (8) | | <u>B</u> (12) | | <u>B</u> (8) | | <u>B</u> (4) | | | | |
| Facsimile (Tele-Fax) | I | | | | | | | <u>E</u> (2) | | | | | | | | | | <u>E</u> (2) | | | | | | | | E: Training at manufacturer's plant under construction contract F: On-site training under construction contract G: On-the-job training |
| | II | | | | | | | <u>E</u> (3) | | <u>B</u> (3) | | <u>B</u> (3) | | <u>B</u> (3) | | <u>B</u> (3) | | <u>B</u> (3) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | <u>B</u> (2) | |
| Data communication (MODEM) | I | | | | | <u>E</u> (2) | | <u>B</u> (1) | | | | | | | | | | | | | | | | | | The figures in parentheses show the number of trainees I : Engineer II: High level technician |
| | II | | | | | <u>E</u> (2) | | <u>B</u> (3) | | <u>B</u> (3) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | | <u>B</u> (2) | <u>B</u> (2) | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table A V-2 Expenditure for personnel training in domestic telecommunications

| Year | Foreign Currency Component (US\$ million) | Local Currency Component (Million Guaranies) |
|-------|---|--|
| 1983 | 0 | 0 |
| 1984 | 0.33 | 0 |
| 1985 | 0.07 | 0 |
| 1986 | 0 | 0 |
| 1987 | 0.22 | 0 |
| 1988 | 0.31 | 0 |
| 1989 | 0.14 | 0 |
| 1990 | 0.15 | 0 |
| 1991 | 0 | 0 |
| 1992 | 0.07 | 0 |
| 1993 | 0.07 | 0 |
| 1994 | 0 | 0 |
| 1995 | 0.16 | 0 |
| 1996 | 0.07 | 0 |
| 1997 | 0 | 0 |
| Total | 1.59 | 0 |

Table A V-3 Basic instruments for training in radio regulation and monitoring

| | | |
|--|-------------------|---|
| 1) Radio measuring equipment | | |
| A. Frequency meter | 1 unit | 10 Hz to 1 GHz |
| B. Antenna power meter | 4 units in all | Terminating type, through type (75 ohms, 50 ohms) |
| C. Spectrum analyzer | 1 unit | 100 kHz to 1,700 MHz |
| D. Transmitter receiver for testing use | 2 units | Amateur radio HF, VHF |
| E. Linear detector | 2 units | AM, FM |
| F. Low-frequency generator | 1 unit | |
| 2) Equipment for maintenance training | | |
| A. Signal generator | 1 unit | 10 kHz to 1,500 MHz |
| B. Selective level meter | 1 unit | |
| C. Oscilloscope | 1 unit | |
| D. DC constant voltage supply unit | 1 unit | 12 V, 10 A |
| E. Digital multimeter | 2 units | |

Table A V-4 Expenditure for basic instruments for training in radio regulation and monitoring

| Classification Year | Expenditure for training equipment | |
|------------------------|---------------------------------------|--|
| | Purchase (foreign currency component) | Maintenance (local currency component) |
| 1983 | US\$ 0.12 million | 5 million G |
| 1984 | | 5 |
| 1985 | | 5 |
| 1986 | | 5 |
| 1987 | | 5 |
| 1988 | | 5 |
| 1989 | | 5 |
| 1990 | | 5 |
| 1991 | | 5 |
| 1992 | | 5 |
| 1993 | 0.12 | 5 |
| 1994 | | 5 |
| 1995 | | 5 |
| 1996 | | 5 |
| 1997 | | 5 |
| Total | US\$ 0.24 million | 75 million G |

Grand total Foreign currency component : US\$0.24 million
Local currency component: 75 million G

Table A V-5 (i) Schedule for education and training of personnel of national educational TV broadcasting

| ASUNCION PERSONNEL | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | AUNCION PERSONNEL |
|--|------|------|------|------|------|------|------|-------|------|------|------|-------|------|------|------|--|
| President | | | | | | | | | | | | | | | | President |
| Director, Technical Dept. Manager, Engineering Div. (1) | | | | | | | | | | | | | | | | Director, Technical Dept. Manager, Engineering Div. (1) |
| Manager, Technical Administ. Div. (1) | | 5 B | A+E | D | | | | A+E | A+E | | | A+E | A+E | | | Manager, Technical Administ. Div. (1) |
| Maintenance staff, Tech. Adm. Div. (1) | | | 6 B | A+E | D | | | | | | | | | | | Maintenance staff, Tech. Adm. Div. (1) |
| Maintenance staff, Tech. Adm. Div. (2) | | | | | | | | | | | | | | | | Maintenance staff, Tech. Adm. Div. (2) |
| Technical Director, Engineering Div. (2) | | | | 7 B | D | | | | | | | | | | | Technical Director, Engineering Div. (2) |
| Operator, Engineering Div. (3) | | | | B D | B D | | | 12 D | 11 D | | | 3 D | 2 D | | | Operator, Engineering Div. (3) |
| Director, Program Dept. Manager, Program Control Div. (1) | | | 2 C | A | | | | | | | | | | | | Director, Program Dept. Manager, Program Control Div. (1) |
| Manager, Program Production Div. (1) | | | 2 C | A | D | | | 1 C+D | A | | | 1 C+D | A | | | Manager, Program Production Div. (1) |
| Chief, Program Production Div. (1) | | | | | | | | | | | | | | | | Chief, Program Production Div. (1) |
| Producer, Program Production Div. (2) | | | | 21 C | D | A | A | A | A | A | A | 14 C | D | A | | Producer, Program Production Div. (2) |
| Stage Props, Program Production Div. (2) | | | | 3 C | D | | | | | | | 1 C | D | | | Stage Props, Program Production Div. (2) |
| Clerk, Program Control Div. (2) | | | | 4 D | | | | 1 D | 3 D | | | 2 D | 2 D | | | Clerk, Program Control Div. (2) |
| Assistant (Producer) (3) | | | | | | | | | | | | | | | | Assistant (Producer) (3) |
| Assistant (Stage Props) (3) | | | | | | | | | | | | | | | | Assistant (Stage Props) (3) |
| Assistant (Clerk) (3) | | | | | | | | | | | | | | | | Assistant (Clerk) (3) |
| Training Staff - IPT Training Staff - Institute concerned | A | A | | | | A | A | | | | | | | | | Training Staff - IPT Training Staff - Institute concerned |
| LOCAL STATION PERSONNEL | | | | | | | | | | | | | | | | LOCAL STATION PERSONNEL |
| Manager, Technical Division (1) | | | | 2 B | A+E | D' | | | | | | | | | | Manager, Technical Division (1) |
| Maintenance staff, Tech. Div. (2) | | | | | 12 B | D' | D | D | | | | | | | | Maintenance staff, Tech. Div. (2) |
| Technical Director, Tech. Div. (2) | | | | | | | | | | | | | | | | Technical Director, Tech. Div. (2) |
| Operator, Technical Div. (3) | | | | | | | | | | | | | | | | Operator, Technical Div. (3) |
| Manager, Program Division (1) | | | | | | | | | | | | | | | | Manager, Program Division (1) |
| Producer, Program Division (2) | | | | | | 10 C | D'+D | | | | | | | | | Producer, Program Division (2) |
| Clerk, Program Division (2) | | | | | | | | | | | | | | | | Clerk, Program Division (2) |
| Assistant (Producer) (3) | | | | | | | | | | | | | | | | Assistant (Producer) (3) |
| Assistant (Clerk) (3) | | | | | | | | | | | | | | | | Assistant (Clerk) (3) |

Table A V-5 (ii) Education and training of personnel of national educational TV broadcasting

| <u>AUNCIÓN PERSONNEL</u> | (RANKING) | DURATION |
|--|-----------|---|
| <u>PRESIDENT</u> | | |
| President | | 0.5-month (Abroad : A) |
| <u>TECHNICAL PERSONNEL</u> | | |
| Director, Technical Dept. | (1) | 6-month (IPT : B) + |
| Manager, Engineering Div. | (1) | 3-month (Abroad : A + E) + |
| Manager, Technical Administration Div. | (1) | 6-month (OJT : D) |
| Maintenance staff, Tech. Adm. Div. | (1) | |
| Maintenance staff, Tech. Adm. Div. | (2) | |
| Technical Director, Engineering Div. | (2) | 6-month (IPT : B) + 6-month (OJT : D) |
| Operator, Engineering Div. | (3) | 6-month (OJT : D) |
| <u>PROGRAM PERSONNEL</u> | | |
| Director, Program Dept. | (1) | 6-month (Institute concerned: C) + |
| Manager, Program Control Div. | (1) | 0.5-month (Abroad : A) |
| Manager, Program Production Div. | (1) | 6-month (Institute concerned: C) + |
| Chief, Program Production Div. | (1) | 2-month (Abroad : A) + 12-month (OJT : D) |
| Producer, Program Production Div. | (2) | 6-month (Institute concerned: C) + |
| Stage props, Program Production Div. | (2) | 6-month (OJT : D) + 2-month (Abroad : A)* |
| Clerk, Program Control Div. | (2) | 6-month (Institute concerned: C) + 6-month (OJT : D) |
| Assistant (Producer), P. Prod. Div. | (3) | 6-month (OJT : D) |
| Assistant (Stage props), P. Prod. Div. | (3) | |
| Assistant (clerk), Program Cont. Div. | (3) | |
| <u>TRAINING STAFF</u> | | |
| IPT and Institute concerned | | 2-month (Abroad : A) |
| <u>LOCAL STATION PERSONNEL</u> | | |
| <u>TECHNICAL PERSONNEL</u> | | |
| Manager, Technical Div. | (1) | 6-month (IPT : B) + 3-month (Abroad : A + E) + 6-month (OJT : D') |
| Maintenance staff, Tech. Div. | (2) | 6-month (IPT : B) + |
| Technical Director, Tech. Div. | (2) | 6-month (OJT : D') |
| Operator, Technical Div. | (3) | 3-month (OJT) |
| <u>PROGRAM PERSONNEL</u> | | |
| Manager, Program Div. | (1) | 6-month (Institute concerned : C) + |
| Producer, Program Div. | (2) | 6-month (OJT : D' + D) |
| Clerk, Program Div. | (2) | |
| Assistant (Producer), Prog. Div. | (3) | 6-month (OJT : D) |
| Assistant (Clerk), Prog. Div. | (3) | |

A: Training abroad
 B: Training in Paraguay (IPT)
 C: Training in Paraguay (Institute concerned)
 D: On-the-job training
 D': On-the-job training (to be concentrated at Asuncion Station)
 E: Training abroad (at manufacturers' plants)

* Additional course for limited number of persons

Table A V-6 Breakdown of expenses particularly needed for personnel training of national educational TV broadcasting

| Training | Contents of equipment and facilities | Amount (Million U.S. dollars) |
|------------------------|---|-------------------------------------|
| Program personnel | ENG equipment, VTR editing system, audio-visual equipment: Two sets of each | 0.24 |
| Technical personnel | Telecine arrangements, studio cameras, ENG equipment, VTR editing systems, audio equipment, measuring instruments, audio-visual equipment: Two sets of each | 0.67 |
| Total | | 0.91 |

Table A V-7 Main outline of first IPT expansion

| | | |
|---|---------------|-----------------------|
| o | Building | 9,369 m ² |
| o | Tower | 50 m height x 1 |
| o | Swimming pool | 1,875 m ² |
| o | Sports ground | 20,000 m ² |

| 1. Principal building | | Area (m ²) |
|-----------------------|--------------------------------|------------------------|
| 1.1 | Director's meeting room | 6 x 9 = 54 |
| 1.2 | Director's office | 9 x 12 = 108 |
| 1.3 | Administration & Planning room | 9 x 12 = 108 |
| 1.4 | Expert leader's room | 6 x 9 = 54 |
| 1.5 | Foreign expert's room | 6 x 12 = 72 |
| 1.6 | University professor's room | 6 x 12 = 72 |
| 1.7 | Waiting room | 6 x 9 = 54 |
| 1.8 | Medical room | 6 x 9 = 54 |
| 1.9 | Office worker's office | 6 x 9 = 54 |
| 1.10 | Janitor's office | 6 x 9 = 54 |
| 1.11 | Professor's meeting room | 6 x 9 = 54 |
| 1.12 | Data processing room | 6 x 12 = 72 |
| 1.13 | Great auditorium | 20 x 30 = 600 |
| 1.14 | Small hall | 9 x 12 = 108 |
| 1.15 | Secretary's office | 6 x 9 = 54 |
| 1.16 | Toilet No.1 | 6 x 3 = 18 |
| 1.17 | Toilet No.2 | 6 x 3 = 18 |
| 1.18 | Toilet No.3 | 6 x 3 = 18 |
| 1.19 | Toilet No.4 | 6 x 3 = 18 |
| 1.20 | Storerom No.1 | 6 x 6 = 36 |
| 1.21 | Storerom No.2 | 6 x 6 = 36 |
| Sub-total | | 1,716 |

| 2. University building | | Area (m ²) |
|------------------------|------------------------------------|------------------------|
| 2.1 | Classroom No.1 | 6 x 9 = 54 |
| 2.2 | Classroom No.2 | 6 x 9 = 54 |
| 2.3 | Classroom No.3 | 6 x 9 = 54 |
| 2.4 | Classroom No.4 | 6 x 9 = 54 |
| 2.5 | Audio-visual room | 6 x 12 = 72 |
| 2.6 | Language laboratory | 6 x 12 = 72 |
| 2.7 | Store No.1 | 6 x 6 = 36 |
| 2.8 | Store No.2 | 6 x 6 = 36 |
| 2.9 | Technician's classroom No.1 | 6 x 9 = 54 |
| 2.10 | Technician's classroom No.2 | 6 x 9 = 54 |
| 2.11 | Technician's classroom No.3 | 6 x 9 = 54 |
| 2.12 | Technician's classroom No.4 | 6 x 9 = 54 |
| 2.13 | Technician's classroom No.5 | 6 x 9 = 54 |
| 2.14 | Technician's classroom No.6 | 6 x 9 = 54 |
| 2.15 | Technician's classroom No.7 | 6 x 9 = 54 |
| 2.16 | Electromagnetism laboratory | 9 x 12 = 108 |
| 2.17 | Electronics laboratory | 9 x 12 = 108 |
| 2.18 | Microwave & multiplexer laboratory | 9 x 12 = 108 |
| 2.19 | HF, VHF, UHF laboratory | 6 x 12 = 72 |
| 2.20 | Broadcasting laboratory | 9 x 18 = 162 |
| 2.21 | TV studio | 9 x 12 = 108 |
| 2.22 | Radio broadcasting studio | 6 x 9 = 54 |
| 2.23 | Planning study room | 9 x 18 = 162 |
| 2.24 | Switching laboratory | 9 x 12 = 108 |
| 2.25 | Toilet No.1 | 6 x 3 = 18 |

| | | |
|------|----------------|------------|
| 2.26 | Toilet No.2 | 6 x 3 = 18 |
| 2.27 | Toilet No.3 | 6 x 3 = 18 |
| 2.28 | Toilet No.4 | 6 x 3 = 18 |
| 2.29 | Storeroom No.1 | 6 x 6 = 36 |
| 2.30 | Storeroom No.2 | 6 x 6 = 36 |

Sub-total

1,944

3. Technical high school building Area (m²)

| | | |
|------|--|--------------|
| 3.1 | Classroom No.1 | 6 x 9 = 54 |
| 3.2 | Classroom No.2 | 6 x 9 = 54 |
| 3.3 | Classroom No.3 | 6 x 9 = 54 |
| 3.4 | Classroom No.4 | 6 x 9 = 54 |
| 3.5 | Classroom No.5 | 6 x 9 = 54 |
| 3.6 | Classroom No.6 | 6 x 9 = 54 |
| 3.7 | Classroom No.7 | 6 x 9 = 54 |
| 3.8 | Central study room for tech. high school | 6 x 9 = 54 |
| 3.9 | Secretary's office | 6 x 9 = 54 |
| 3.10 | Meeting room | 6 x 9 = 54 |
| 3.11 | Professor's room | 6 x 12 = 72 |
| 3.12 | Store No.1 | 6 x 6 = 36 |
| 3.13 | Store No.2 | 6 x 6 = 36 |
| 3.14 | Telegraph, Telex & Data laboratory | 9 x 12 = 108 |
| 3.15 | Outside plant laboratory | 9 x 15 = 135 |
| 3.16 | Power laboratory | 9 x 12 = 108 |
| 3.17 | Toilet No.1 | 6 x 3 = 18 |
| 3.18 | Toilet No.2 | 6 x 3 = 18 |
| 3.19 | Toilet No.3 | 6 x 3 = 18 |
| 3.20 | Toilet No.4 | 6 x 3 = 18 |
| 3.21 | Storeroom No.1 | 6 x 6 = 36 |
| 3.22 | Storeroom No.2 | 6 x 6 = 36 |

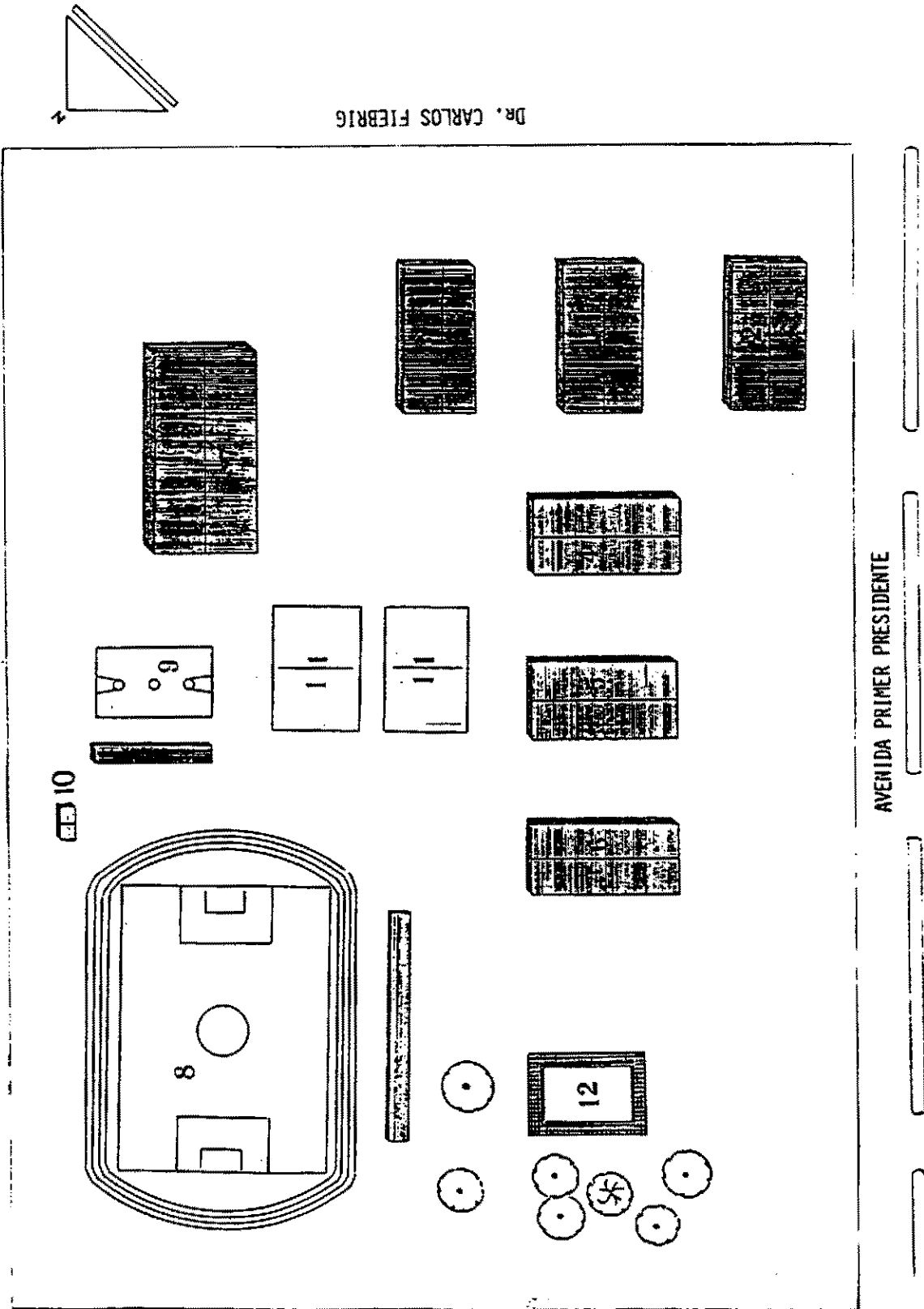
Sub-total

1,179

| 4. General service building | | Area (m ²) |
|-----------------------------|---------------------------------------|------------------------|
| 4.1 | Library | 12 x 30 = 360 |
| 4.2 | Document printing & reproduction room | 9 x 12 = 108 |
| 4.3 | Dark room | 6 x 6 = 36 |
| 4.4 | Office worker's room | 6 x 6 = 36 |
| 4.5 | Drawing room | 6 x 9 = 54 |
| 4.6 | Store No.1 | 6 x 6 = 36 |
| 4.7 | Store No.2 | 6 x 6 = 36 |
| 4.8 | Store No.3 | 6 x 6 = 36 |
| 4.9 | Toilet No.1 | 6 x 3 = 18 |
| 4.10 | Toilet No.2 | 6 x 3 = 18 |
| 4.11 | Meeting room | 6 x 12 = 72 |
| 4.12 | Dining room with kitchen | 12 x 24 = 288 |
| 4.13 | Power room | 6 x 9 = 54 |
| 4.14 | Store No.1 | 6 x 6 = 36 |
| 4.15 | Store No.2 | 6 x 6 = 36 |
| 4.16 | Store No.3 | 6 x 6 = 36 |
| 4.17 | Store No.4 | 6 x 6 = 36 |
| 4.18 | Mechanical workshop | 6 x 12 = 72 |
| 4.19 | Carpenter's shop | 6 x 12 = 72 |
| 4.20 | Office worker's room | 6 x 6 = 36 |
| 4.21 | Toilet No.1 | 6 x 3 = 18 |
| 4.22 | Toilet No.2 | 6 x 3 = 18 |
| Sub-total | | 1,512 |

| 5. Special building | | Area (m ²) |
|---------------------|--------------------------|------------------------|
| 5.1 | Student's residence No.1 | 9 x 30 = 270 |
| 5.2 | Student's residence No.2 | 9 x 30 = 270 |
| 5.3 | Student's residence No.3 | 9 x 30 = 270 |
| 5.4 | Student's residence No.4 | 9 x 30 = 270 |
| 5.5 | Dining room | 9 x 12 = 108 |
| 5.6 | Kitchen | 6 x 12 = 72 |
| 5.7 | Recreation room No.1 | 9 x 12 = 108 |
| 5.8 | Recreation room No.2 | 9 x 12 = 108 |
| 5.9 | Toilet No.1 | 6 x 3 = 18 |
| 5.10 | Toilet No.2 | 6 x 3 = 18 |
| 5.11 | Toilet No.3 | 6 x 3 = 18 |
| 5.12 | Toilet No.4 | 6 x 3 = 18 |
| 5.13 | Store No.1 | 6 x 9 = 54 |
| 5.14 | Store No.2 | 6 x 9 = 54 |
| 5.15 | Dormitory | 6 x 9 = 54 |
| 5.16 | Garage | 9 x 12 = 108 |
| 5.17 | Gymnasium | 30 x 40 = 1,200 |
| <hr/> Sub-total | | 3,018 |

| 6. Others | | Area (m ²) |
|-----------|-------------------------------------|------------------------|
| 6.1 | Self-supporting tower for microwave | 50 m height |
| 6.2 | Football ground | 90 x 120 = 10,800 |
| 6.3 | Large swimming pool | 30 x 50 = 1,500 |
| 6.4 | Small swimming pool | 15 x 25 = 375 |
| 6.5 | Tennis ground (2) | 25 x 50 x 2 = 2,500 |
| 6.6 | Volley - ball | 25 x 50 = 1,250 |
| 6.7 | Basketball | 25 x 50 = 1,250 |
| 6.8 | Athletic sports ground | 100 x 150 = 15,000 |



DR. CARLOS FIEBRIG

AVENIDA PRIMER PRESIDENTE

Fig. A V-1 Layout of first IPT expansion palm

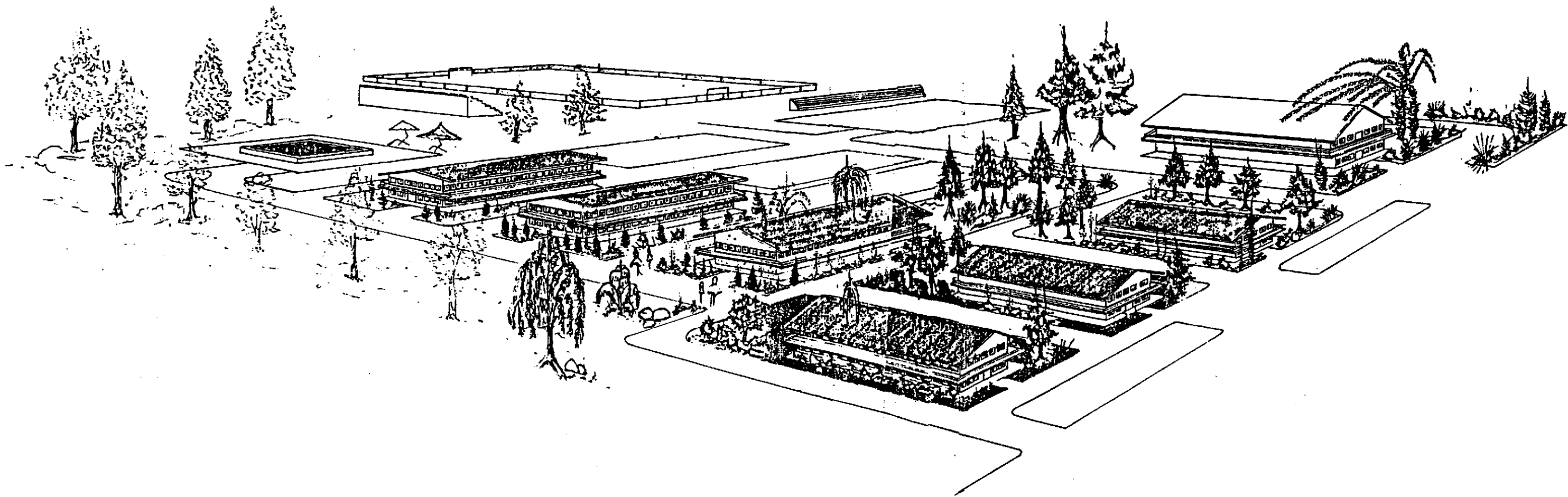


Fig. A V-2 Imaginary picture of first IPT expansion building

Table A V-8 Plan for first expansion of training and measuring instruments

(Millions of U.S. dollars)

| | | |
|----|---|------|
| 1) | Electromagnetism training room | 0.30 |
| | The following basic inspection instruments: | |
| | • Ammeter | |
| | • Voltmeter | |
| | • Wattmeter | |
| | • Frequency meter | |
| | • Impedance meter | |
| | • Resistor | |
| | • Bridge | |
| | • Others | |
| 2) | Electronic circuit training room | 0.39 |
| | • Training instrument of analog circuit | |
| | • Training instrument of digital circuit | |
| | • Other additional measuring equipments | |
| | - Oscilloscope | |
| | - Pulse generator | |
| | - Sweep generator | |
| | - Others | |
| 3) | Radio transmission training room | 0.44 |
| | • PCM unit | |
| | • Subscriber line carrier transmission unit | |
| | • 2 GHz radio PCM unit | |
| | • Microwave unit | |

- Carrier Multiplex unit
 - Others
- 4) HV, VHF and UHF training room 0.31
- Rural radio system unit
 - Short wave transmitter
 - Short wave receiver
 - Mobile radio communication car
 - Measuring instruments
- 5) TV and radio training room 0.36
- TV transmitter
 - Studio instruments (including measuring instruments)
 - Radio transmitter
 - Others
- 6) Switching training room 0.55
- Digital switching system
 - Measuring instruments
- 7) Telegraphy, Data and Telex training room 0.35
- Medium-sized computers and measuring instruments
 - Telex equipments and measuring instruments
(including terminal units)
 - Facsimile equipments
- 8) Outside plant training room 0.05
- Optical fiber
 - Measuring instruments
- 9) Electric power training room 0.16
- High-voltage test equipments
 - Engine generator

| | | |
|-----|---|-------|
| | • Rectifier battery | |
| | • Voltage regulator and measuring instruments | |
| 10) | Teaching material and text preparation room | 0.05 |
| | • Copying machine | |
| | • Printer | |
| | • Electronic printer | |
| | • Word processor | |
| 11) | Dark room | 0.01 |
| 12) | Audiovisual classroom | 0.06 |
| 13) | Drawing room | 0.03 |
| 14) | Language study classroom | 0.05 |
| 15) | Machine and wood work shop | 0.05 |
| 16) | Other teaching materials and office machines | 0.08 |
| | | <hr/> |
| | Total | 3.24 |

Table A V-9 (i) Investment plan of IPT expansion (1983 - 1997)

| Item | Currency | Unit | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Total |
|-----------------------|----------|-------------------|------|-------|------|------|------|------|-------|------|------|------|------|------|-------|------|------|-------|
| Building & Facilities | Foreign | Million US\$ | 0 | 6.33 | 0 | 0 | 0 | 0 | 6.52 | 0 | 0 | 0 | 0 | 0 | 6.96 | 0 | 0 | 19.81 |
| | Local | Million Guaranies | 20 | 450 | 142 | 0 | 0 | 50 | 450 | 150 | 0 | 0 | 0 | 80 | 500 | 120 | 0 | 1,962 |
| | Total | Million Guaranies | 20 | 1,247 | 142 | 0 | 0 | 50 | 1,272 | 150 | 0 | 0 | 0 | 80 | 1,377 | 120 | 0 | 4,458 |
| Equipment | Foreign | Million US. \$ | 0 | 3.24 | 0 | 0 | 0 | 0 | 4.05 | 0 | 0 | 0 | 0 | 0 | 4.13 | 0 | 0 | 11.42 |
| | Local | Million Guaranies | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 55 |
| | Total | Million Guaranies | 0 | 408 | 15 | 0 | 0 | 0 | 510 | 20 | 0 | 0 | 0 | 0 | 520 | 20 | 0 | 1,493 |
| Total | Foreign | Million US. \$ | 0 | 9.57 | 0 | 0 | 0 | 0 | 10.57 | 0 | 0 | 0 | 0 | 0 | 11.09 | 0 | 0 | 31.23 |
| | Local | Million Guaranies | 20 | 450 | 157 | 0 | 0 | 50 | 450 | 170 | 0 | 0 | 0 | 80 | 500 | 140 | 0 | 2,017 |
| | Total | Million Guaranies | 20 | 1,655 | 157 | 0 | 0 | 50 | 1,782 | 170 | 0 | 0 | 0 | 80 | 1,897 | 140 | 0 | 5,951 |

(ii) Management (Operation & personnel) expenses for IPT.

| Item | Currency | Unit | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Total |
|-----------------------|----------|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| Operation & Personnel | Foreign | Million US. \$ | 0.33 | 0.41 | 0.41 | 0.65 | 0.65 | 0.71 | 0.80 | 0.80 | 0.80 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 10.54 |
| | Local | Million Guaranies | 90 | 110 | 120 | 130 | 140 | 160 | 180 | 185 | 190 | 200 | 205 | 215 | 230 | 230 | 230 | 2,615 |
| | Total | Million Guaranies | 131 | 162 | 172 | 212 | 222 | 250 | 281 | 286 | 291 | 304 | 309 | 319 | 334 | 335 | 335 | 3,943 |

VI. MASTER PLAN INTER-FIELD COORDINATION AND OTHERS

VI-1 Features of Digital Telephone Network

1. Features of digital switching system

- (1) High prospects of reduction in cost of switching equipment itself with the progress of electronics components and parts.
- (2) High prospects of reduction in size of switching equipment itself and hence in building space.
- (3) Elimination of needs for adjustment of mechanical components, elimination of needs for traffic load equalization, and hence the reduction in the manpower and expenses for maintenance and operation.

2. Features of digital transmission system

- (1) Improvement in the reliability of transmission systems owing to progress of electronic components and parts.
- (2) High-quality noise-free transmission of voice signals without being influenced by distance, because of digital encoding, decoding and regenerative transmission technics.
- (3) High-flexibility high-efficiency multiplex digital transmission of voice signals and other various non-telephony communication signals.

3. Features of integrated digital network

- (1) High economy because the switching and transmission interfaces dispense with A/D conversion (encoding, decoding).

(2) Improvement in transmission quality because the feature (1) above prevents the accumulation of quantum noise at the intervening interfaces.

(3) Reduction in circuit chain net loss because voice repeater level changes are not accumulated, and resultant improvement in transmission quality or improved economy by an increase in distributed line loss.

(4) Integration of telecommunication services.

4. Features to be noted

Listed below are features of a digital network to be noted. The world-wide experiences predict no particular difficult problems in new technology acquisition and operation & maintenance for that network, if only normal necessary countermeasures and considerations are taken duly in the relevant system design and supporting measures especially in terms of reliability and training.

* Features of electronic switching system in use, whether analogue or digital:

(1) Use of electronic components and their environmental adaptation.

(2) Arrangement of low voltage d.c. sources.

(3) Administration of stored programmes.

* Features proper to a digital network:

(4) Economical drawback in long distance conventional transmission.

(5) Merge in transmission and switching maintenance.

(6) Association with a synchronization network.

VI-2 Features of Stored Program Controlled Network

- (1) Inter-exchange connection by a common channel signalling system between the stored program controlled (SPC) central processors of switching equipments for unified program controlling of the entire network enabling it to offer highly sophisticated switching services between exchanges.
- (2) Highly sophisticated network management capability (monitoring and control of overload traffic and troubles).
- (3) Offering of advanced network services, including such as communication processing and information processing, through the coupling of computer functions and telecommunication functions.
- (4) Highly-efficient selection and use of circuit groups by accommodating a number of transmission circuit groups with a common channel signalling system network.

VI-3 Features of Common Control Switching Network

The control system the digital switch has (see (1) in ANNEX VI-2) is essentially a common control system, and offers the following a variety of highly advanced features :

- (1) Improvement in circuit utilization efficiency through full availability selection of a circuit group whether small or large.
- (2) High-efficiency use of network through alternative routing, predictive selection routing, re-routing, variable routing, etc., and high-flexibility operation against circuit troubles.
- (3) Systematic and flexible numbering, with avoidance of frequent number change, and ease of number change in case of necessity.
- (4) Mutual independency of exchange hierarchy, network configuration, routing methods, numbering plan, switching system, signal system and rate system.

VI-4 Transition toward Digital Network

The digital network's weak spots are difficulty in economical arrangement of long-distance transmission system, incurred costs and accumulated transmission quality degradation because of A/D conversions in case analog and digital systems coexist.

For the purpose of digitizing the network to elicit the maximum of the outstanding features of the integrated digital network while suppressing these weak points, the following engineering considerations are helpful for both and through domestic and international networks:

(1) Extension of integrated digital connection

To achieve an integrated digital connection in which digital signals are directly channeled without intervention of A/D conversion between transmission and switching systems in both and through domestic and international networks, extending in the ultimate stage from terminal to terminal. In other words, it is required to minimize the number of pairs of coder-decoder (CODEC) in the connection between terminals. To do this, it is necessary to digitize not only the switching equipment, but the associated transmission circuits as well.

(2) Systematic promotion of digitization

To phase out the existing analog network with a new digital network, there are two methods: "built-in method" in which part of the analog network is replaced or expanded with digital facilities (transmission, switching), and "overlay method" in which digital facilities or a digital network is installed in

parallel with part or all of the analog network which is left intact.

The overlay method phases out the existing analog network in a gradual and easy way, making it possible to realize the integrated digital network early throughout the country. Since the long-distance analog transmission lines are economical and to be constructed according to the Master Plan, it is recommended to digitize the local networks (in the order of Asunción, 'interior' larger and smaller cities) and the related toll exchanges in the said order and then digitize the transmission lines between digital local and toll exchanges and further long-distance transmission lines by taking every opportunity to do so, for the purpose of integrating digitized local networks gradually into a national one.

Note 1. In order to make new communication services available uniformly throughout the country, it is necessary to convert the provincial communication networks into digital/SPC ones equally to the capital network.

VI-5 Notes on the Fundamental Telephone Network Planning, etc.

1. Exchange hierarchy, circuit network and switching network

ANTELCO has the following view towards the future, which was given as the basis of the Master Plan. In order to provide against the expected increase in traffic between 'interior' cities due to the regional development and also to avert the drawbacks resulting from the overconcentration of circuit networks in the capital, main 'interior' cities, e.g., the seats of the district governments, can be installed with primary centres, and among them Asunción, Encarnacion, and Cnel. Oviedo can be installed with secondary centres. The secondary centre and the allocated primary centres and terminal exchanges will form a two-stage star type network. The three secondary centres will mutually be interlinked forming a mesh type network. These two basic toll networks will be reinforced with transversal trunks as required. Asuncion is installed with an international which will be equivalent to a tertiary centre exchange. The secondary centres, primary centres and major local exchanges will be installed with SPC switching equipments, which centrally control other local exchanges or remote switches.

For the time being, the nationwide primary centre switching functions currently concentrated in Asuncion will be distributed among the pertinent secondary centres.

However, there is an opinion that the adequate number of hierchical level of a digital network tends to be less than that of an equivalent analogue network. This possibility should, therefore, be studied before applying the network configuration described above to the basic structure for the future digitized network.

2. Routing plan and signalling system

The SPC exchange will undertake alternative routing according to the far-to-near sequence rule. The signalling system among the SPC exchanges should be a common channel signalling system or an equivalent one.

3. Numbering plan

With the proposals in the Master Plan as a basis, the toll codes (trunk codes) will be assigned according to the existing numbering system, and a SPC exchange subscriber's number, together with a toll code (excl. prefix), will be in 8 or 9 digits uniformly. The implementation should be carried out in a manner to minimize the chances of number change in future.

For the special service numbers and access codes to various domestic communication networks other than telephony, the respective code systems, 1XY and 0XO, will be systematically assigned in view of the new services to be introduced in future. For details of the international prefix, refer to ANNEX VI-6.

4. Rate system

In the current rate system, the rate zones are determined according to distance between the calling and called exchanges (representing unit rate areas), and both automatic calls and manual calls are charged according to a common distance-call duration rate system.

In the future, however, efforts should be made to expand the coverage of a unit rate area, reduce the number of rate zones and the rate difference between short and long distance calls, charge the automatic call less than manual call, and to simplify the relevant charging system.

On the other hand, in the integrated services digital network, ISDN, which offers various communication services through an digital network in an integrated manner, the rate system may have to be formulated based on the information amount carried in terms of, say, bits, and the value of communication service rendered, rather than on the distance and duration of a call.

5. Charging system

The charging system will be transformed into computer-aided electronic one following the introduction of SPC switching system. Thus, it should be noted that such a system has a capability to adapt itself to any rate system with ease and to economically perform identifying calling subscriber numbers and detailed billing in terms of call items or types of communication.

6. Engineering standards

The traffic engineering standards should be established with account taken of the user's perception of grade of service and the characteristics of switching and signalling systems employed (internal block overload, etc.).

The transmission engineering standards should be formulated based on the subjective assessment of overall transmission quality ; as regards the digital system, standardization should be carried out to improve transmission quality and economic performance (especially local telephone system, i.e., subscriber system) by making the best of the merits the digital system has as explained in ANNEX VI-1. (low net loss, non-accumulation of noise and distortion, etc.).

The reliability engineering standards should be formulated based on track records to specify the traffic and transmission quality objectives to be maintained even in case of facilities trouble or under overload conditions and also to serve as guidelines for facilities reliability design (dualization of transmission line routes, systems, components, etc.) and for network management (variable routing, etc.).

These standards should clearly show the individual objectives with respect to performance, design, commissioning (acceptance inspection) and maintenance & operation, and should be established with due consideration given to the overall performance of the domestic reference connection and international reference connection incorporating it, and to the allocation of

performances or impairments to the constituent components of the respective reference connections.

7. Fundamental network plans for telecommunications other than telephony

Just as with the telephone network, the fundamental network plan for the telex network should be stated in a written form first, and should be implemented in a phased manner in keeping with the future developments.

When the introduction of new services such as data transmission and facsimile is given the go-ahead, it is necessary to formulate a fundamental network plan also as a basis of implementation just the same way as with the telephone network.

VI-6 Connection System between Domestic and International Telephone Networks

1. International prefix

In addition to the proposed international prefix (002), the 001 type is conceivable as an alternative. One of the merits of the 00X type is that "X" (2 through 9) may be used as prefixes for access to various kind of international networks in the future. Another alternative is the most widely accepted "00" type. (In order to retain the currently used international operator access code "001", a technical study is necessary to realize the most economical connection system compatible with the North American country code "1" by means of the least modifications in the existing EMD directional selector system.

2. Circuit group organization

For the purpose of observing the CCITT's Recommendations, it is required to organize groups of circuits interconnecting the international exchange and the highest ranking domestic toll exchanges (secondary centres) into groups of basic toll circuits. As touched upon in ANNEX VI-1 in relation to the introduction of digital switching equipments, efforts should be stepped up aiming at overall digital integration to digitize the transmission lines and also the intermediate toll exchange between the digital switching equipments in the local exchanges and the international digital exchange.

For this aim, while the analog toll switching equipments (EMD) are still in use, it will be advisable to study the feasibility of directly connecting local digital exchanges and the international digital exchange with digital circuits. It will also be advantageous to push forward converting the existing pair cable circuits into PCM system for the purpose of economic introduction and expansion of digital circuits.

VI-7 Organization and Management for Telecommunication Enterprise

1. Enterprise organization and management

Whether public or private, an enterprise is organized and managed as a system of functions to achieve its purposes effectively adapting to external conditions and their changes.

Its management forecasts the external conditions, sets up policies and objectives, works out a plan to achieve the policies and objectives (PLAN), implements the plan (DO: construction of facilities, their operation and maintenance), evaluates the results (SEE), and feeds back the findings to the planning, implementing, etc. for corrective measures (ACTION). To put these five functions on the wheels is the point of enterprise organization and management. This way of enterprise management is widely called the "PLAN-DO-SEE" management cycle.

The organization is a combination of line and staff, which are an order and report system and a brain and support system respectively. Often it is stratified hierarchically to some degree depending on the scale of the enterprises.

On the other hand, the operation is carried out through the five basic functions referred to in the foregoing and their supporting subfunctions.

The organization and management should be so divided in consequence to the five basic functions as to always keep these functions in good working order. Thus, the rights and duties of each division can and must be clearly defined and mutually respected.

Whereas, the organization often is divided by particular items such as geographical locations, business fields, specialities, etc..

2. Division of enterprise system, and hierarchy

As discussed in the foregoing, the enterprise system is classified largely into two types: 'functional division type' and 'particular division type'.

A large enterprise is hierarchized systematically as a combination of these basic two types.

If an enterprise deals with a single business item, the functional division type is useful as each of the divisions or departments can undertake their clearly defined shares and responsibilities of business systematically according to a sequential order. On the other hand, the particular division type is useful for a enterprise dealing with diversified business items, because its each business division can do its particular assignments timely and properly, as if independent of other divisions, by making the most use of specific information. However, each type cuts both ways; namely, each is hard to avail itself of the other's good virtues.

In a large-scale enterprise, it is widely practiced to employ either the functional division type organization in the superordinate level and the particular division type organization in the subordinate level (instead, sometimes with particular division type organization in the same superordinate level), or the particular division type organization in the superordinate level and the functional division organization in the subordinate level. Thus, both types of organization are interwoven alternatively on the subsequent hierarchical levels and sometimes complementarily on the same level.

3. Organization and management of telecommunication enterprise

A functional division type-oriented telecommunication enterprise is organized of marketing, planning, design, procurement, construction, operation, maintenance, supporting activities (research and development, accounting, training, welfare and health etc.), and auditing.

On the other hand, a particular division type-oriented one usually is divided into telephone, telegraph, data, etc. or terminal equipment, switching, line, transmission, radio, supporting, and auditing.

The functional division type-oriented system agrees with the PLAN-DO-SEE management cycle, and is suitable when expansion projects such as for telephone are carried out as a major business. (Ex. ANTELCO, AT & T, NTT, etc.)

The particular division type-oriented system is advantageous when handling diversifying and ramifying business such as for various sophisticated new telecommunication services, though it requires a precaution not to go astray from the inherent management cycle nor let loose the mutual coordination. In a grown and stable stage or enterprise in which the telecommunication business centers around operation and maintenance, the particular division type-oriented system is mostly useful. (Ex. Governmental telecommunications enterprises in European countries; however, most of them use the functional division type in combination.)

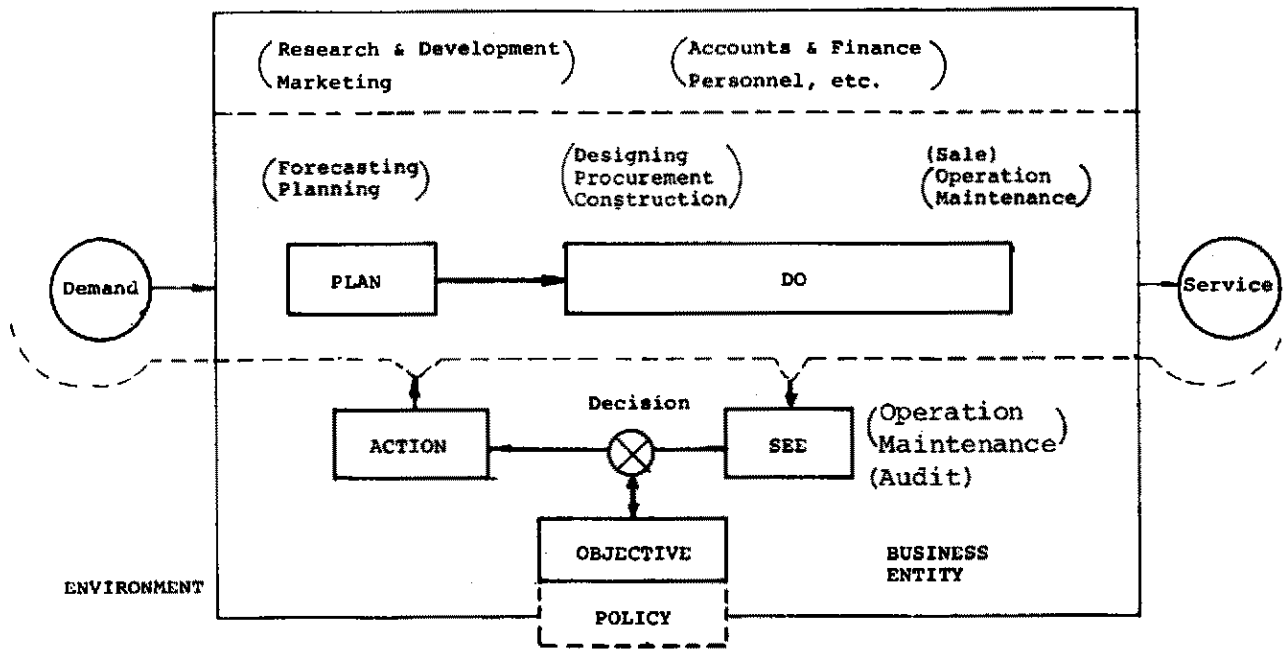


Fig. 1 General structure of organizational and managerial system of business entity

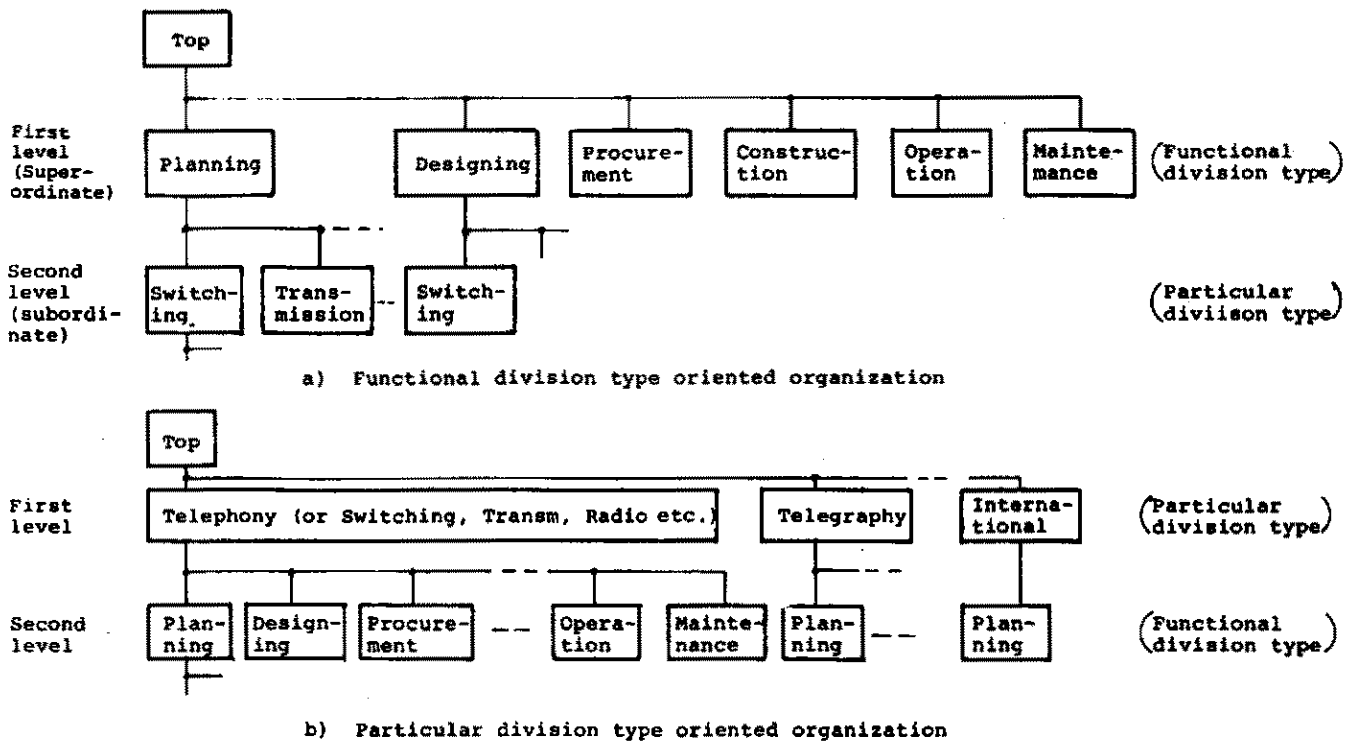


Fig. 2 Basic organization diagrams of telecommunication entity

VI-8 Planning in Telecommunication Enterprise

1. Classification of plans

Plans in enterprises are classified variously in some hierarchical systems depending on how they are viewed.

A. In the telecommunication field, the plans usually are classified by 'the length of time' as follows:

- o Long-term plan: Usually covers a project (Note) which will extend over 10 to 20 years. Mainly used to show the purposes and objectives of the project.
- o Mid-term plan: Usually covers a project, 5 years long or so. Mainly used to show implementation programs of the long-term plan.
- o Short-term plan: Usually covers 1 to 3 year project. Mainly used to show detailed working programs to implement the mid-term plan.
- o Annual plan: Usually is one year undertaking. Mainly used to execute the detailed working plans formulated according to the short-term plan.

In some case, the mid-term plan is called the short-term plan, and the short-term plan the implementation plan.

B. The plans are also classified by 'the purposes' as follows:

- o Basic plan: A statement of the purpose and objectives of whole projects of an enterprise, and of the basic measures to achieve them.

Note - A 'project' is, in a wide sense, substance constituting a plan; while it is, in a narrow sense, one of items of the implementation program of a plan, as seen in the classifications B and C.

- o Program: A statement of sequences and preparations to execute the basic plan.
- o Project (Note): A formula of each of the undertakings prepared in the program.
- o Work process: A set of tasks to perform each undertaking.

In many cases, the above correspond to the long-term plan, mid-term plan, short-term plan and annual plan respectively.

C. From the viewpoint of 'the procedures' through which to achieve enterprise projects, the planning activities are classified as follows:

- o Master plan (M/P): A plan of the highest level. Serves as a mother's body of subordinate plans.
- o Project formation (P/F): According to the master plan (M/P), several projects (Note) are formulated and program preparations are made for implementing the master plan.
- o Feasibility survey (F/S): Studying each project as to technical and financial & economic feasibilities.
- o Detailed designing (D/D): Detailed design and engineering of the committed project.

These four terms may respectively correspond to those four terms in the preceding classifications, A and B.

Practically, these classifications and terms vary from country to country and from corporation to corporation, and often are used in proper combination or in traditional ways.

2. Framework and significance of master plan in telecommunication enterprise.

The master plan is a long-term plan and at the same time, a basic plan as defined earlier. In a telecommunication enterprise, the master plan is formulated in such a way as follows:

- (1) To show the aims, purposes and objectives of the enterprise which extends 10 to 20 years.
- (2) To specify all of the specific communication services and its whole coverage in the country.
- (3) To state the fundamental telecommunication network plans, and the service and engineering standards which are the planning guide-lines, according to the policies of the enterprise and the present state of the art and the envisaged future developments in services and technologies.
- (4) To show the facilities requirements and necessary arrangements according to the demand forecast and based on the fundamental network plans and the relevant service and engineering standards.
- (5) To state financial requirements, balance of payment prospects, man-power requirements, organizational and managerial requirements, etc.
- (6) To demonstrate the financial and economic justifiability of the planned items.

The master plan has a significance in view of the following:

- (1) To lay a foundation for the superordinate national socio-economic plans.

- (2) To serve as a basis upon which to formulate the subordinate implementation programs.
- (3) To help cultivate and promote the consensus and fellow feeling as well as progress studies among the people working for the enterprise.
- (4) To serve as a means to declare publicly the purpose to which the enterprise is directed and to gain the public understanding and acceptance of the enterprise intention.

3. Implementation of the master plan

In an enterprise which can implement and execute the plan autonomously over a long period, it is possible to achieve it by repeating a series of activities with center on the mid-term plans.

If the enterprise is influenced by external conditions because of its dependency on outside financial sources, etc., the master plan plays its role as a precept, while the results of the feasibility study are taken much account of as a decisive qualifying factor for loan provision. Thus, the master plan cannot always be performed in a regular manner. It should also be noted here that the master plan usually shows just a rough verification of financial plan, and has no direct bearing on the practical measures for fund raising.

As the master plan sees the deep future of the enterprise, it needs to be reviewed systematically depending on the past achievements and future change prospects.