4) Transmitting Scale

By selecting Caaguazu City (43km) as a representative service area, the ERP is set at 60kW with a new 150m high antenna large size tower. The antenna size for channel 2 gives and the number of stages for 2D antennas is limited to four (4) by taking into account the wind load. In addition, the radiation characteristic of the antenna is designed by 3dB down toward Ybyturuzu hill, to avoid the ghost phenomenon. The list of transmitting specification is given in Table 6.4.1.

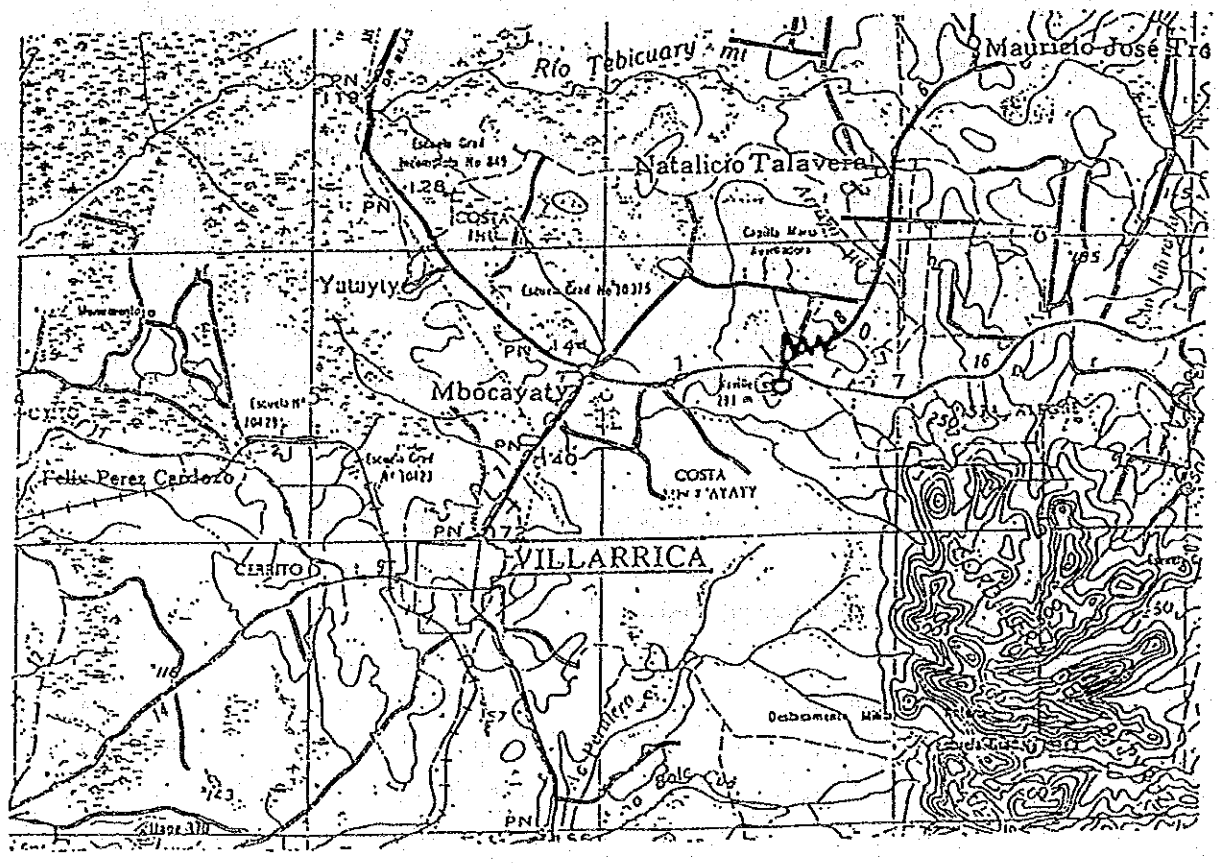


Table 6.4.1 Transmitting specification of Villarrica Station

Articles			
1. Name of station	Villarrica (Department : Guaira)		
2. Plan by CP *1	CH : 10 (VHF)	Freq : 195 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 25° 43' 38"	Longitude : 56° 20' 35"	
	Altitude (m) : 291		
	Location : Cerro Naville		
4. Selected channel : CH 2	Center freq : 57 MHz		
5. ERP (kW) : 60	6. Transmitter power (kW) : 10		
7. Antenna gain (dB) : 7.8	(Times) : 6		

8. Antenna constitution

Name of antenna : 2D				
Planes	A	B	C	D
Antenna	2D	2D	2D	2D
Stages	4	2	4	4
Power ratio	1	1	1	1

Radiation condition :
(1) -3dB reduction for Cordillera Ybytruzu

9. Tower height (m) : 150	10. Center height of antenna (m) : 145
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	488,800

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.4.2 Latent Field Strength in Villarrica City

CH	Measuring point			Station's name of coming TV wave
	25°46, 2′ 56°27, 1′	25°46, 48′ 56°29	25°31, 7′ 56°43, 5′	
CH2				
CH3				
CH4				Asuncíon (Planned)
CH5				
CH6				Asuncíon (Planned ETV)
CH7		50 dBμ/m		Clorinda (Argentina)
CH8				
CH9	34 dBμ/m	36 dBμ/m	32 dBμ/m	Asuncíon (SNT)
CH10				
CH11				
CH12	53 dBμ/m	60 dBμ/m		Villarrica (SNT)
CH13	33 dBμ/m	34 dBμ/m	32 dBμ/m	Asuncíon (RPC)
UHF	None			
FM				

Table 6.4.3 Numbers of population in the service area of Villarrica station

Transmission point	Cities	Distance	Urban population	Total population	Altitude
VILLARRICA			27,673	43,813	291m
	Independencia	17km	1,156	35,048	200m
	Capitán Manricio José Troche	13km	2,239	8,003	150m
	Mbocayaty	6km	1,592	5,723	150m
	Cnel. Martinez	28km	1,528	5,983	100m
	Itapé	31km	1,683	6,261	100m
	Borja	29km	367	8,894	120m
	Iturbe	39km	3,358	8,111	100m
	San Salvador	28km		3,406	120m
	Ñumi	25.2km		3,438	140m
[CAAGUAZÚ]	Caaguazú	43km	38,200	82,638	300m
	Repatriación	41km	1,473	26,024	300m
	Dr. Juan Manuel Frutos	64km	3,396	20,103	300m
	Carayaó	58km	1,340	12,890	100m
	Coronel Oviedo	31km	38,250	64,616	130m
	San José de los Arroyos	44km	4,648	14,727	100m
	Dr. J. Eulogio Estigarribia	75km	5,763	△ 18,895	300m
	Yhu	84km	1,714	△ 32,157	300m
	Dr. Cecillo Baez	73km	1,818	5,489	200m
[CORDLLERA]	Eusebio Ayala	73km	6,351	15,516	150m
	Piribebuy	76km	7,406	21,796	250m
	Valenzuela	55km	755	6,883	100m
[PARAGUARI]	Escobar	70km	435	5,412	130m
	Sapucai	62km	1,423	6,088	150m
	Caballero	52km	946	6,476	150m
	Ybytimi	46km	622	6,934	150m
	Mbuyapey	69km	1,854	12,406	100m
[CAAZAPA]	Caazapá	52km	3,834	20,334	100m
	Fulgenio Yegro	81km	964	6,208	100m

△means area in which can receive TV wave for half population

Figure 6.4.1 Peripheral cities of Villarrica station

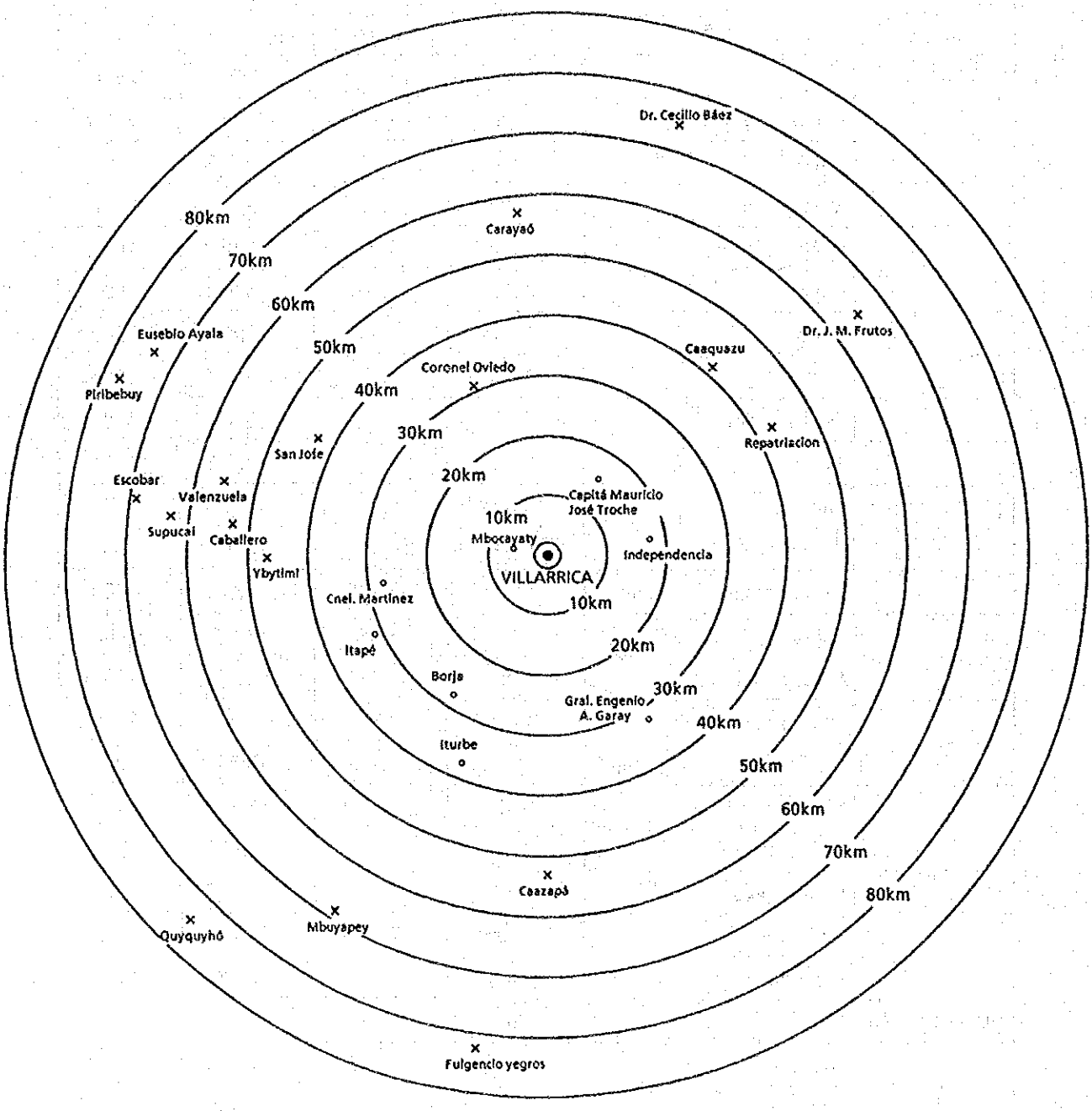
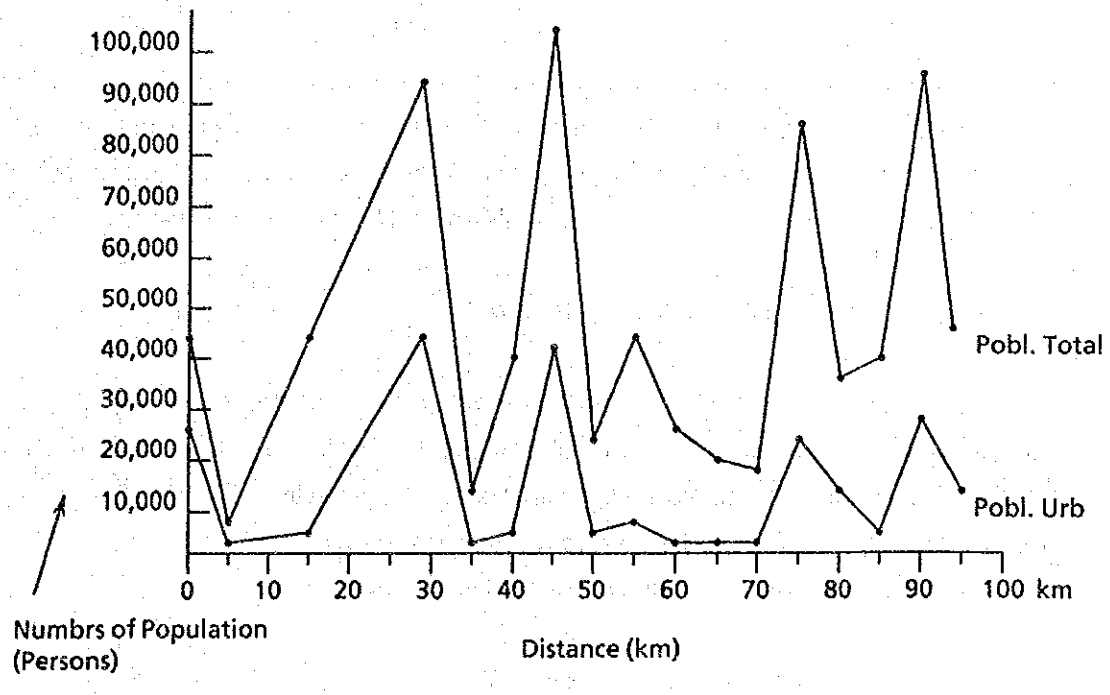


Figure 6.4.2 Population Distribtution



6.5 P. J. Caballero Station

1) Location

Although the city of P. J. Caballero is located along river side of boarder area, the river runs in high altitude land. Therefore the antenna height can be obtained relatively high towards targeted service area. The transmitter site shall be existing ANTELCO relay station's site with its tower to be used.

2) Channel Plan and Latent Field Strength

Proposed channel CH5 at the four country meeting was already assigned to commercial TV station. So that TV channel for ETV must be assigned CH11. On the other hand, Ponta Pola station (Brazil) is operating at CH12, however, it can be obtained sufficient D/U ratio at the service area.

The measured data are shown in the Table 6.5.2.

3) Service Area and Population Covered

Caballero city is aparted from other cities in same prefecture considerably with 80km, and the population is not so large, therefore the planned service area shall be only the city of Caballero. The other cities shall be covered by the 2nd channel plan.

Peripheral cities of Caballero with respective population and location are shown in the Figure 6.5.1.

4) Transmitting Scale

Estimating the boarder of the P. J. Caballero city is 40km in radius, the necessary ERP shall be 6kW. The antenna directivity shall be 6db down for the direction of Brazil taking into consideration of boarder area.

The transmitting specification is shown in Table 6.5.1.

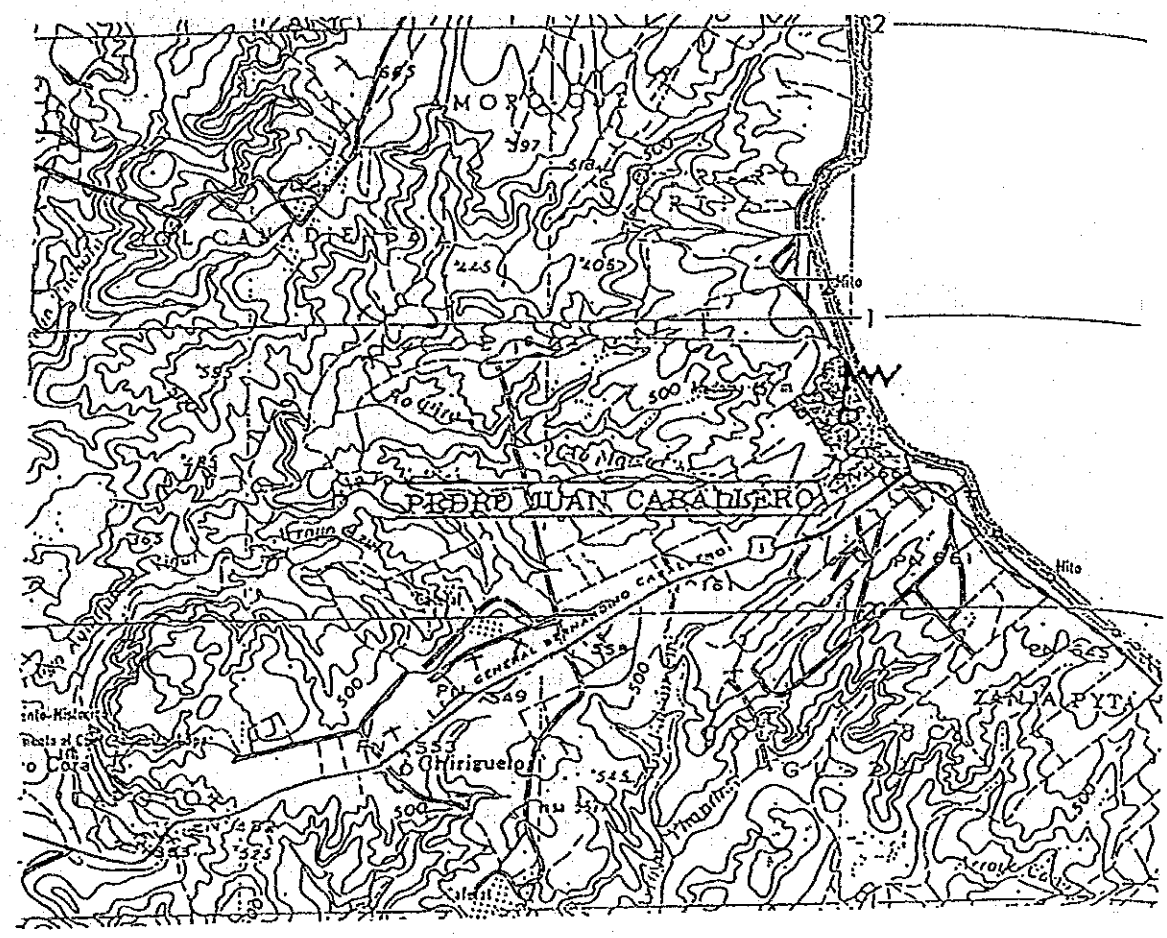

2
565
MORO
397
500
518
225
205
Hito
1
500
PEDRO JUAN CABALLERO
Hito
500
549
553
Chiriguelo
545
500
ZANJA PYTA
500

Table 6.5.1 Transmitting Specification of P. J. Caballero Station

Articles			
1. Name of station	P. J. Caballero (Department : Amambay)		
2. Plan by CP *1	CH : 5+ (VHF)	Freq : 79 MHz	ERP (kW) : 3
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 22° 32' "	Longitude : 55° 44' "	
	Altitude (m) : 650		
	Location : P. J. Caballero		
4. Selected channel : CH 11	Center freq : 201 MHz		
5. ERP (kW) : 6	6. Transmitter power (kW) : 1		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 2D				
Planes	A	B	C	D
Antenna	2D	0	2D	2D
Stages	3	0	3	3
Power ratio	1	0	1	1

Radiation condition :
(1) -6dB reduction for Brazil

9. Tower height (m) : 103	10. Center height of antenna (m) : 93
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	76,700

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.5.2 Latent Field Strength in the P.J. Caballero City

CH	Measuring point			Station's name of coming TV wave
	22°32′ 55°44′	22°32′ 55°43′	In city	
CH2				
CH3				
CH4	70 dBμ/m			Ponta Pora (Brazil)
CH5	None			
CH6				
CH7		46 dBμ/m		Ponta Pora (Brazil)
CH8				
CH9			84 dBμ/m	P. J. Caballero (RPC)
CH10				
CH11				
CH12			40 dBμ/m	Ponta Pora (Brazil)
CH13				
UHF	None			
FM				

Table 6.5.3 Numbers of population in the service area of P.J. Caballero city

Transmission point	Cities	Distance	Urban population	Total population	Altitude
PEDRO JUAN CABALLERO			53,601	76,682	630m

Figure6.5.1 Peripheral cities of P.J. Caballero station

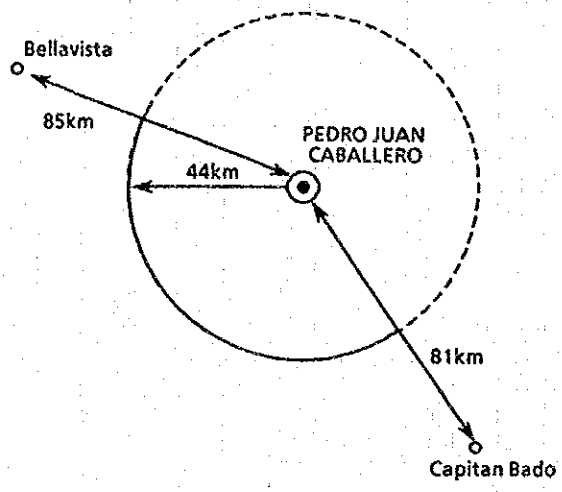
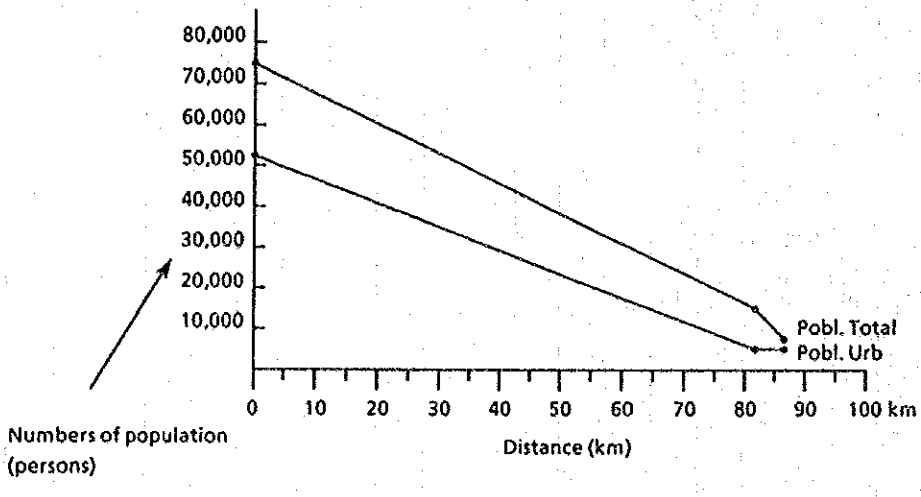


Figure 6.5.2 Population distribution



6.6 Saltos del Guaira Station

1) Location

In case that a transmitting station in the city is assumed, it not obtain a wide service area, because this city is situated on lowlands in a border area along a river. Therefore, Puente Kyjha village which is on the inland side of the service area and where a ANTELCO microwave tower has been built. This station is selected as the transmitting point with commonly usage of the ANTELCO tower, thus inland area is more covered by this station.

2) Channel Assignment and Latent Field Strength

As clear channel 5 and 13 were already assigned to commercial TV stations, channel for ETV must be assigned UHF-CH17°.

The measured data are shown at Table 6.6.2.

3) Service Area and Population Covered

Since peripheral cities are considerably far from the proposed transmitting point, the cities within a 40-km radius shall be included in the service area. Curuguati City, which is not included in the service area of Saltos del Guaira Station due to its distance from the proposed transmitting point, has a large population and cannot receive any TV waves, this city will be included in the secondary channel plan. The population in the service area of this station is estimated at 58,000 by supporting report (Figure 6.6.2).

4) Transmitting Scale

As shown in Table 6.6.1, the ERP is set at 30kW in consideration of serving area from Puente Kyjha to Saltos del Guaira (37km).

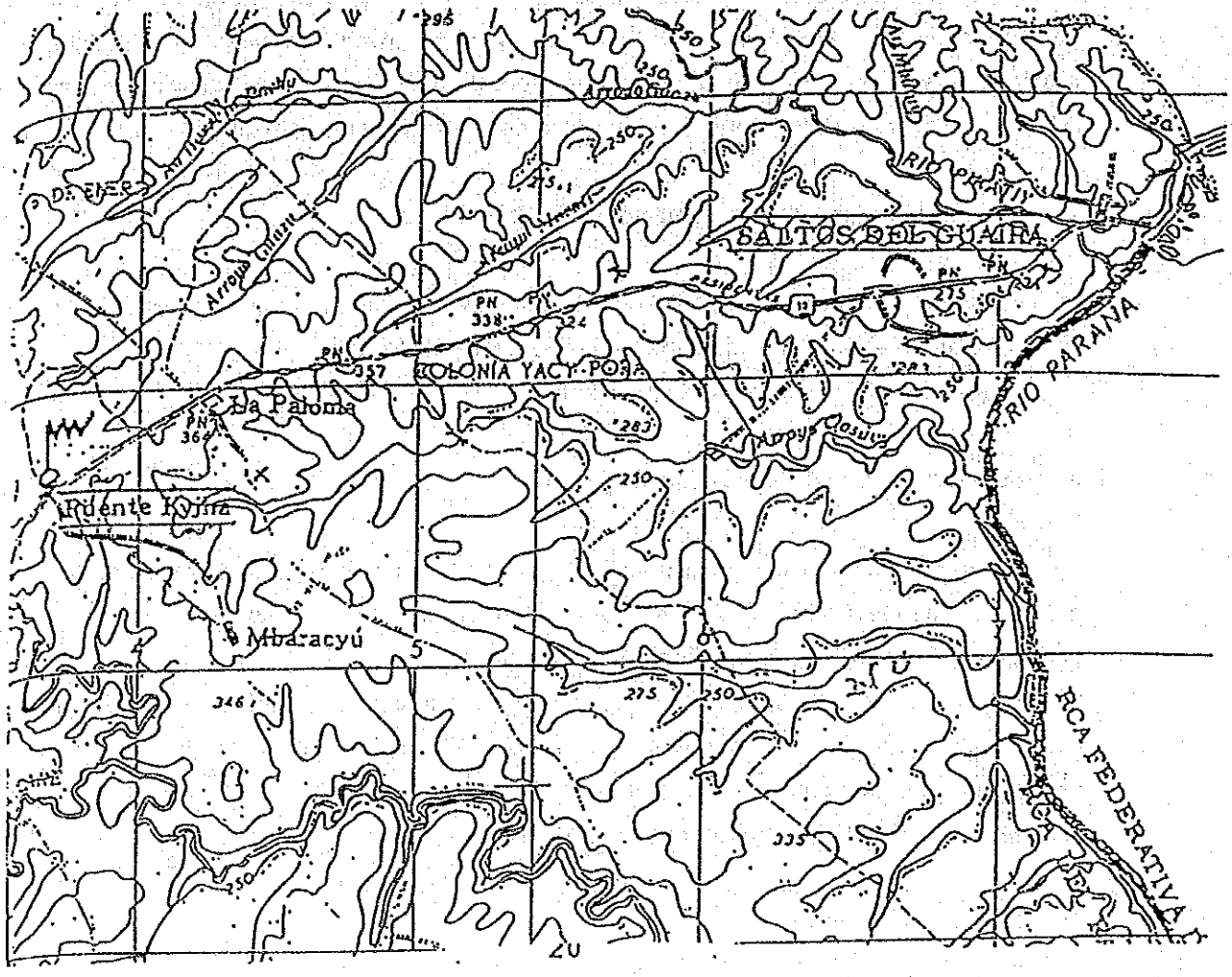

SALTOS DEL GUAIRA
COLONIA YACY-PORA
La Paloma
Puente Kyjha
Mbaracyú
RIO PARANA
RCA FEDERATIVA

Table 6.6.1 Transmitting Specification of Saltos del Guaira Station

Articles			
1. Name of station	S. del Guaira (Department : Canindeyu)		
2. Plan by CP *1	CH : 13- (VHF)	Freq : 213 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : (a) -3dB reduction for Iguatemi (b) -3dB reduction for Perola		
3. Site of location	Latitude : 24°09' 25"	Longitude : 54° 40' 21"	
	Altitude (m) : 360		
	Location : Pte. Kyjha (ANTELCO)		
4. Selected channel : CH 17°	Center freq : 491 MHz		
5. ERP (kW) : 30	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 7.8	(Times) : 6.02		

8. Antenna constitution

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

(1) Omnidirectional pattern

(2) Site location is 37km apart from Saltos del Guaira to be satisfied the radiation condition by CP.

9. Tower height (m) : 100	10. Center height of antenna (m) : 102
11. Type of tower : Self supported tower (ANTELCO)	
12. Total number of population in the service area :	57,500

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.6.2 Latent Field Strength in Saltos del Guaira City

CH	Measuring point			Station's name of coming TV wave
	In city			
CH2	68.9 dBμ/m			Guaira (Brazil)
CH3				
CH4	37.2 dBμ/m			Marechal Candido Rondon (Brazil)
CH5				
CH6				
CH7	40.5 dBμ/m			Iguatemi (Brazil)
CH8				
CH9	60.2 dBμ/m			Marechal Candido Rondon (Brazil)
CH10				
CH11	66.2 dBμ/m			Guaira (Brazil)
CH12	40.8 dBμ/m			Iguatemi (Brazil)
CH13				
UHF	None			
FM93.5MHz	40.1 dBμ/m			Brazil
FM94.9MHz	52.9 dBμ/m			Brazil
FM93.9MHz	44.0 dBμ/m			Brazil
FM95.5MHz	70.7 dBμ/m			Saltos del Guaira
FM98.6MHz	98.6 dBμ/m			No identified

Table 6.6.3 Numbers of population in the service area of Saltos del Guaira station

Transmission point	Cities	Distance	Urban population	Total population
SALTOS DEL GUAIRA		37km	4,558	15,815
	Puente Kyjha		2,209	22,269
	Corpus Cristi	28km	1,573	19,353

Figure 6.6.1 Peripheral cities of Saltos del Guaira station

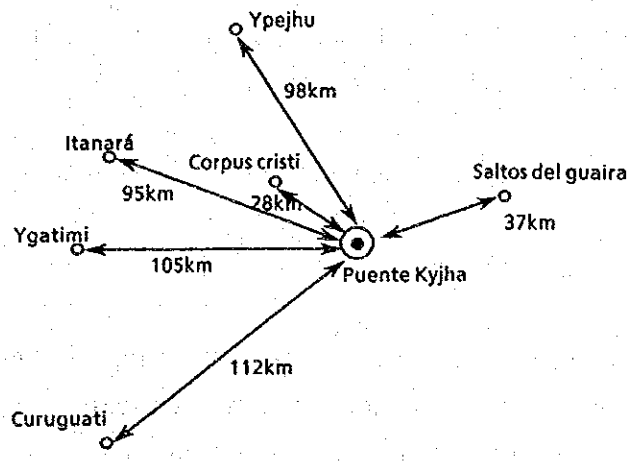
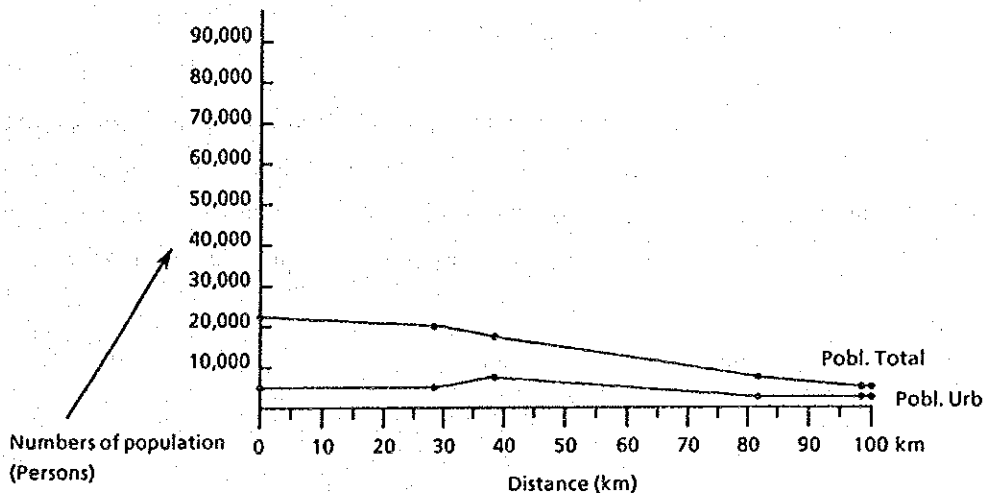


Figure 6.6.2 Population distribution



6.7 San Estanislao Station

1) Location

While the capital of San Pedro Prefecture is San Pedro City, the location for installing TV transmitting station is decided to be a site near to Primary School No. 657 along National Road No.3 running north of San Estanilslao City due to the following reasons:

- The Population of San Estanilslao is 83,500 which is much larger than that of San Pedro City and, in addition, it is estimated that the population of the former city will increase in the future.

- San Estanilslao City is included in the new colony policy of the Paraguay government and it is expected that the number of new immigrants will increase in the near future.

- Since the distance between San Estanilslao City and San Pedro City is 81km which is transhorizon distance, it is economically difficult to construct a transmitting station which can serve two cities. For San Pedro City, therefore, VHF repeating service will be considered in the secondary plan. A new 120m tower will be build as the guyed wire tower.

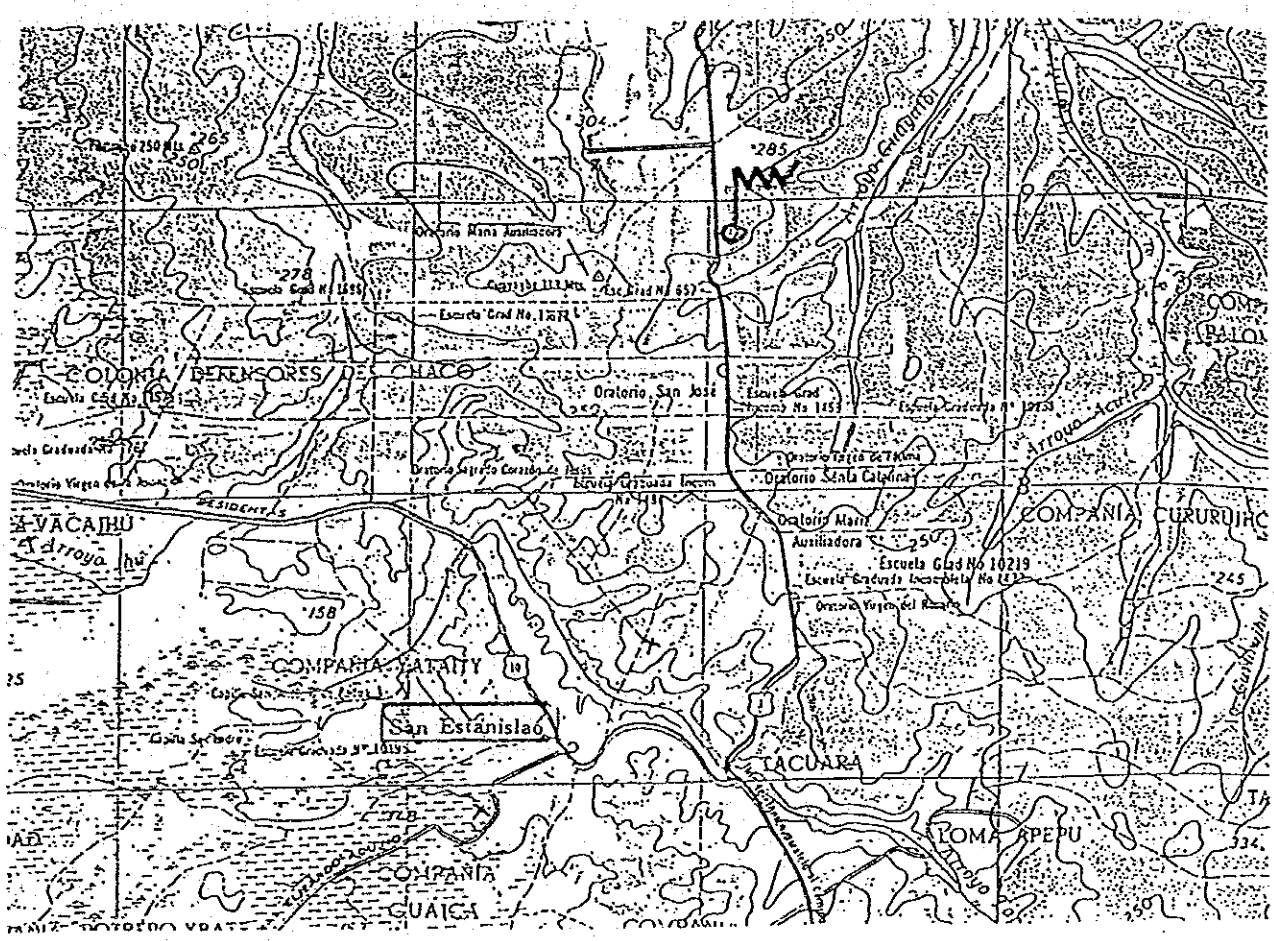
2) Channel Assignment and Latent Field Strength

The channel assigned to San Estanislao City is Channel 4, but it is expected at a new commercial TV station will start on Channel 4 in Asuncion in the near future. Therefore, the channel of San estanislao City shall be changed to UHF-Ch.16°. Latent field strength is shown in supporting report (Table 6.7.2).

3) Service Area and Population Covered

The service area of this station includes Chore City which has the second largest population in San Pedro Prefecture, the objective area of the new immigration policy which locates along National Road No.3, Gral. Aquino City, etc. as the farthest service areas (51km).

Population covered in this service area can be estimated at 226,000 by supporting report (Table 6.7.3).



4) Transmitting Scale

The directions toward the area along National Road No.3, which is expected to be developed in the future, and toward San Elizardo Aquino shall be selected as the main service area of this station and the REP is set at 60kW.

The Table 6.7.1 shows Transmitting specification of San Estanislao station.

Table 6.7.1 Transmitting specification of San Estanislao Station

Articles			
1. Name of station	San Estanislao (Department : S. Pedro)		
2. Plan by CP *1	CH : 4 (VHF)	Freq : 69 MHz	ERP (kW) : 1
	Antenna height (m) : 60		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 24° 30' 32"	Longitude : 56° 24' 45"	
	Altitude (m) : 250		
	Location : Near by Esc. grad N° 657 (RIII)		
4. Selected channel : CH 16°	Center freq : 485 MHz		
5. ERP (kW) : 60	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 10.8	(Times) : 12		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	4	4	4	4
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 120	10. Center height of antenna (m) : 115
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	225,300

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.7.2 Latent Field Strength in San Estanislao City

CH	Measuring point			Station's name of coming TV wave
	In city	Itacurbi		
CH2				
CH3	56.0 dBμ/m			Radio communication with 63.8 MHz
CH4	39.0 dBμ/m			Radio communication with 71.92 MHz
CH5				
CH6				Asuncíon (Planned ETV)
CH7				
CH8				
CH9	66.2 dBμ/m	Evaluation 5		Asuncíon (SNT)
CH10				
CH11				
CH12				
CH13	65.1 dBμ/m	Evaluation 4		Asuncíon (RPC)
FM88.8MHz	101.7 dBμ/m			San Estanislao
FM90.8MHz	52.8 dBμ/m			No identified
FM92.3MHz	49.6 dBμ/m			Ditto
FM95.7MHz	55.1 dBμ/m			San Pedro
FM97.1MHz	46.9 dBμ/m			No identified
FM98.6MHz	46.6 dBμ/m			Ditto
FM99.1MHz	48.7 dBμ/m			Ditto
FM101.0MHz	44.2 dBμ/m			Ditto
FM105.1MHz	44.8 dBμ/m			Ditto
UHF	None			

Table 6.7.3 Numbers of Population in the service area of San Estanislao station

Transmission point	Cities	Distance	Urban population	Total population	Altitude
SAN ESTANISLAO		17km	9,127	83,417	160m
	Choré	40km	1,624	36,438	150m
	Gral. Elizardo Aquino	50km	1,963	21,598	100m
	Itacurubi del Rosario	42km	3,619	12,035	100m
	Yataity del Norte	38km	1,146	12,833	
	Union	16km	1,383	6,044	130m
	25 de Diciembre	33km	552	8,611	79m
	Yhu		1,714	△ 32,157	300m
	San Joaquin		1,619	18,740	
	R. I. 3 Corrales		248	9,430	

△means area in whic can receive TV wave for half population

Figure 6.7.1 Peripheral cities of Estanislao station

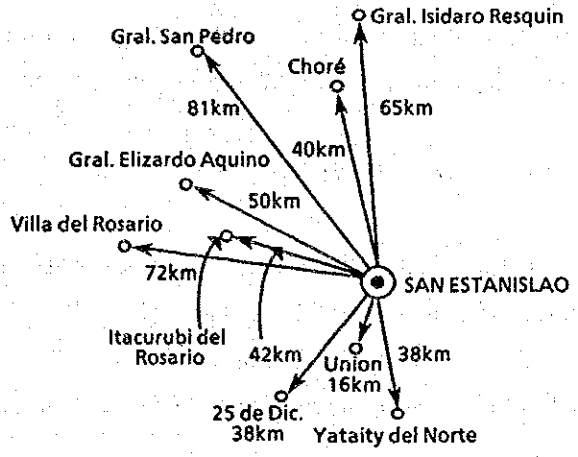
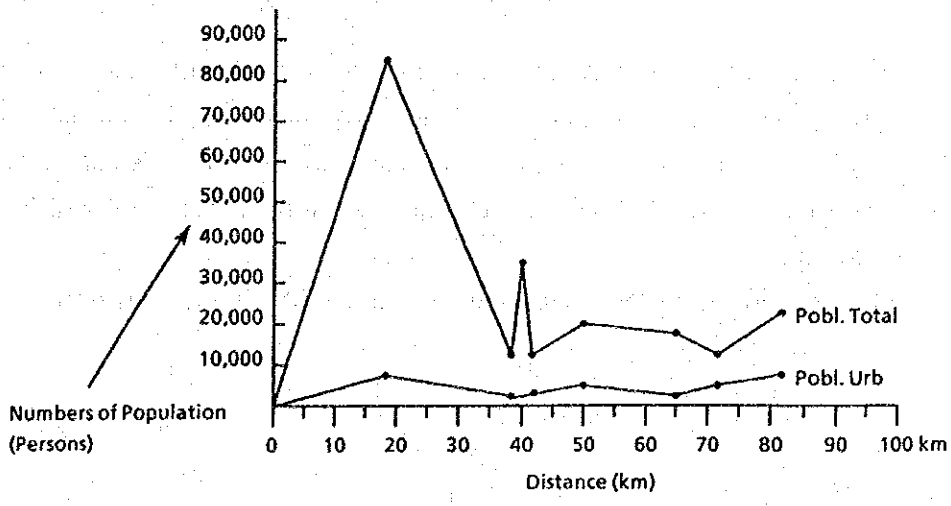


Figure 6.7.2 Population distribution



6.8 Filadelfia Station

1) Location

While the departmental capital of Boqueron Prefecture exists in Mcal. Estigarribia City, the transmitting site of this station is decided to be in Filadelfia City due to the following reasons:

- The ANTELCO tower in Estigarribia City has a maximum height of 41m which is not tall enough and is of a guyed wire type. Whereas the ANTELCO tower in Filadelfia City is of a self-supported type and has a height of 110m which is suitable for broadcasting.

2) Channel Assignment and Latent Field Strength

Although Conception City uses Co-Channel 7 with this station given by 4 countries Meeting, no trouble is found, because it is for enough from other TV stations. Measured data is shown is supporting report (Table 6.8.2).

3) Service Area and Population Covered

The population of Boqueron Prefecture is extremely small as compared with the eastern part of Paraguay, therefore the cities to be served are Estigarribia and Filadelfia Cities only. Population coverd in this service area can be estimated at 29,000 by supporting report (Table 6.8.3).

4) Transmitting Scale

Since this city is situated on flat ground and same altitude of site, this transmitting point is not so good for transmission, the radiation power must be increased to secure a wide service area. The ERP however, is set at 46kW from the economical point of view. An ANTELCO tower (120m high) will be used for this station also.

The Transmitting specification of Filadelfia Station is shown in Table 6.8.1.

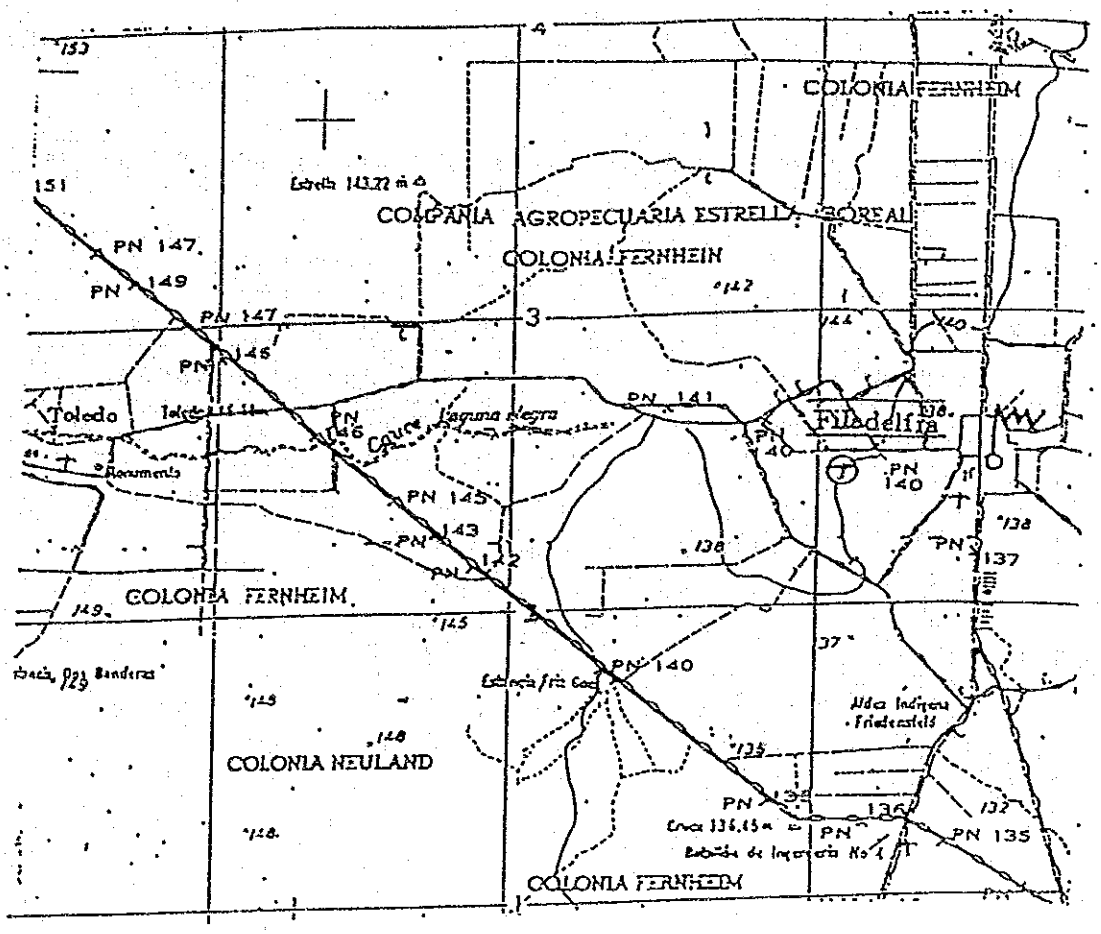

COLONIA FERNHEIM
COMPANIA AGROPECUARIA ESTRELLA BOREAL
COLONIA FERNHEIN
Toledo
Filadelfia
COLONIA FERNHEIM
COLONIA NEULAND
COLONIA FERNHEIM
PN 147
PN 149
PN 147
PN 146
PN 146
PN 145
PN 143
PN 142
PN 141
PN 140
PN 140
PN 137
PN 135
PN 136
Laguna Negra
Curva 136,15 m

Table 6.8.1 Transmitting Specification of Filadelfia Station

Articles			
1. Name of station	Filadelfia (Department : Boqueron)		
2. Plan by CP *1	CH : 7 (VHF)	Freq : 177 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 22° 21' 31"	Longitude : 60° 02' 07"	
	Altitude (m) : 139		
	Location : Filadelfia city (ANTELCO)		
4. Selected channel : CH 7	Center freq : 177 MHz		
5. ERP (kW) : 46	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 9.6	(Times) : 9.12		
8. Antenna constitution			

Name of antenna :				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	3	3	3	3
Power ratio	1	1	1	1

Radiation condition :
(1) Nothing

9. Tower height (m) : 105	10. Center height of antenna (m) : 100
11. Type of tower : Self supported tower (ANTELCO)	
12. Total number of population in the service area :	29,000

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.8.2 Latent Filed Strength in Filadelfia City

CH	Measuring point			Station's name of coming TV wave
	Filadelfia	Mcal Estigarribia		
CH2				
CH3				
CH4				
CH5				
CH6				
CH7	None	None		Concepcion (RPC)
CH8				
CH9	None	None		Asuncíon (SNT)
CH10				
CH11				
CH12				
CH13	None	110.1 dBμ/m		Estigarribia (RPC)
UHF	None			
FM96.82MHz	None	93.3 dBμ/m		No identified

Table 6.8.3 Numbers of population in the service area of Filadelfia station

Transmission point	Cities	Distance	Urban population	Total population	Altitude
FILADELFIA				18,000	
	Mcal Estigarribia	68km	1,685	△21,997	

△ means area in which can receive TV wave for half population

Figure 6.8.1 Peripheral cities of Filadelfia station

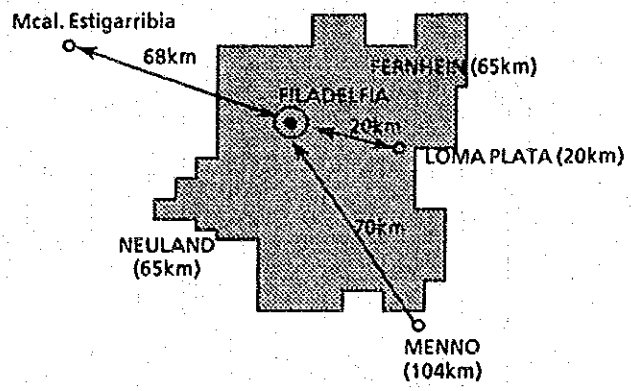
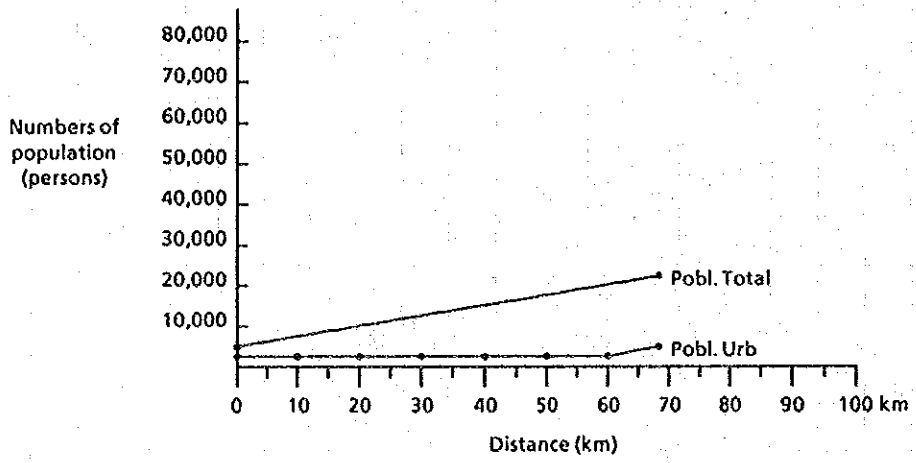


Figure 6.8.2 Population distribution



6.9 Pilar Station

1) Location

A location which is a short distance from Pilar City and where an ANTELCO tower is existed has been selected as the transmitting point for this station.

2) Channel Assignment and Latent Field Strength

As shown in Table 10-1 of the Supporting Report, field strength of 64 and 63 dBu/m are respectively detected on Channels 11 and 13, with the D/U being -4 and -3 dB against Channel 12 which is proposed for this station. However, protection ratio of adjacent channel is decided to -6dB by FCC regulation, this measured D/U value is satisfied by FCC regulation.

Although it had better select one channel from family channel which are Channels 7, 9, 11, and 13, it is inevitable to select Channel 12 because foreign waves are arriving on Channels 9, 11, and 13. The measured data relating this selection are shown in Table 6.9.2 in the Supporting Report.

3) Service Area and Population Covered

Eight cities within a 48km radius can be included in the service area without Alberdi City, which is the too far city from this transmitting point. The population of this service area is estimated at 44,000 by supporting report (Table 6.9.3).

4) Transmitting Scale

The ERP is set at 16kW with Gral. Diaz City (48km away) in the service area. An existing ANTELCO tower is used for this purpose also. Since this city is also situated in a border area, the radiation characteristic of the antenna is reduced by 6dB toward Argentine. In order to reduce the radiation power, the number of antenna stages and the power distribution ratio of each antenna are changed.

Transmitting Specifications are listed in Table 6.9.1.

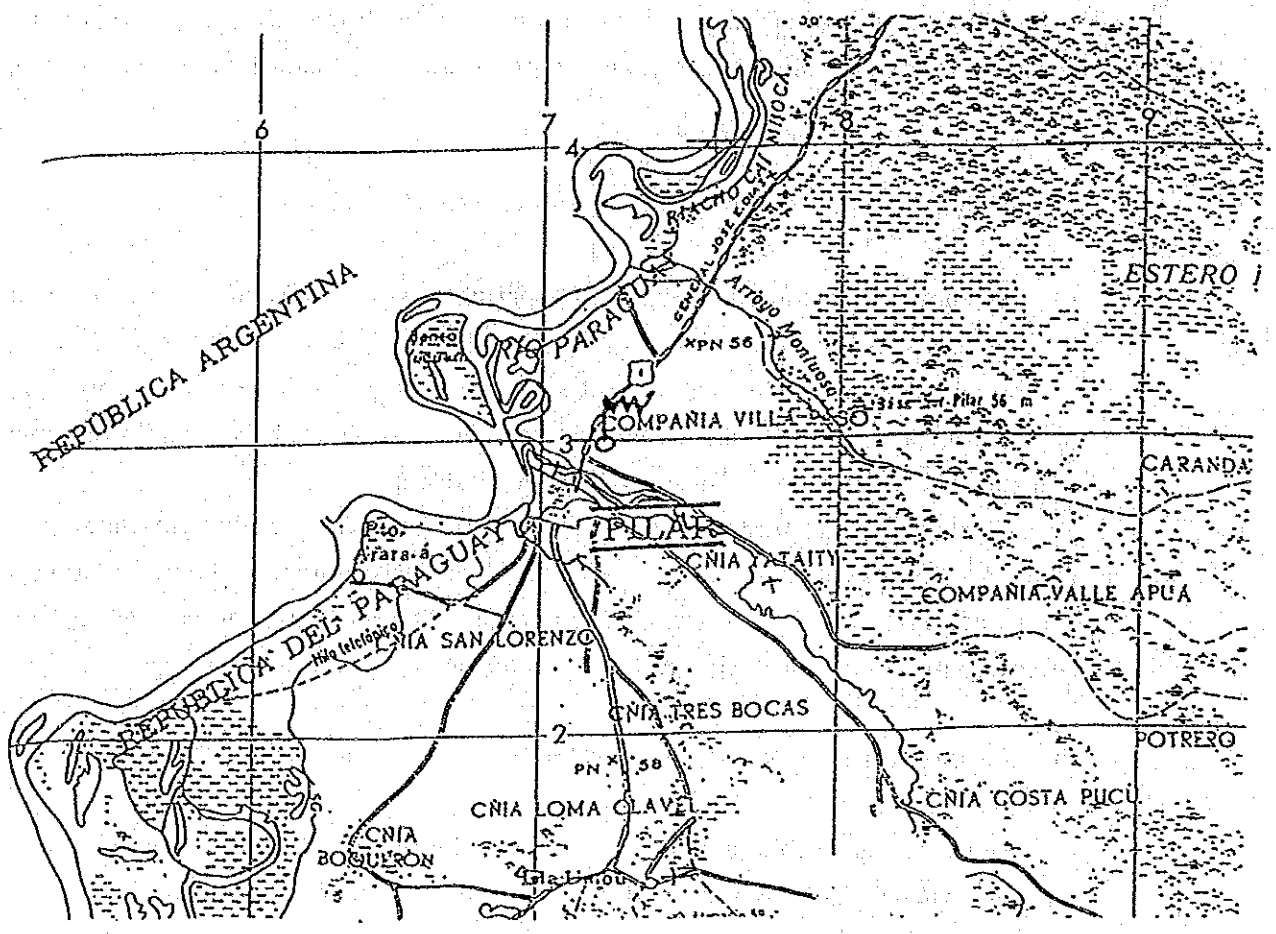

REPUBLICA ARGENTINA
REPUBLICA DEL PARAGUAY
RIO PARAGUAY
Arroyo Montuoso
ESTERO
XPN 56
COMPAÑIA VILLA ROSO
CARANDA
PILAR
CNIA TAITY
COMPAÑIA VALLE APUA
CNIA SAN LORENZO
CNIA TRES BOCAS
POTRERO
PN 58
CNIA LOMA CLAVEL
CNIA COSTA PUCU
CNIA BOQUERON
6
7
8
9
4
3
2

Table 6.9.1 Transmitting Specification of Pilar Station

Articles			
1. Name of station	Pilar (Department : Ñeembucu)		
2. Plan by CP *1	CH : 12 (VHF)	Freq : 207 MHz	ERP (kW) : 40
	Antenna height (m) : 120		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 26° 50' 30"	Longitude : 58° 17' 27"	
	Altitude (m) : 57		
	Location : Pilar city (ANTELCO)		
4. Selected channel : CH 12	Center freq : 207 MHz		
5. ERP (kW) : 16	6. Transmitter power (kW) : 4		
7. Antenna gain (dB) : 6.0	(Times) : 4		

8. Antenna constitution

Name of antenna :				
Planes	A	B	C	D
Antenna	4D	4D	4D	2D
Stages	1	1	1	1
Power ratio	2			1

Radiation condition :
(1) -6dB reduction for Argentine

9. Tower height (m) : 117	10. Center height of antenna (m) : 86.5
11. Type of tower : Self supported tower (ANTELCO)	
12. Total number of population in the service area :	43,600

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.9.2 Latent Field Strength in Pilar City

Channel	Measuring Point				Station's name of coming TV wave
	Airport	ANTELCO	Despensa in city	Pasode Patrio (Rio Parana)	
CH2		63.5 dBμ/m	46.5 dBμ/m		
CH3					
CH4					
CH5					
CH6					
CH7	53.2 dBμ/m	80.6 dBμ/m	Evaluation 3		Pilar (SNT)
CH8					
CH9	48.6 dBμ/m			53.2 dBμ/m	Resistencia (Argentina)
CH10					
CH11	64.0 dBμ/m	49.5 dBμ/m	Evaluation 1		Formosa (Argentina)
CH12					
CH13	52.1 dBμ/m			63.5 dBμ/m	Corriente (Argentina)
UHF	None				
FM95.2MHz				47.1 dBμ/m	Argentina
FM101.34MHz				41.5 dBμ/m	Argentina
FM105.39MHz				43.5 dBμ/m	Argentina

Table 6.9.3 Numbers of population in the service area of Pilar Station

Transmission point	Cities	Distance	Urban population	Total population
PILAR			19,151	22,131
	Humaitá	31.5km	1,113	2,886
	Mayor Martinez	32km	738	3,512
	Desmochado	35km	232	1,817
	Gral Diáz	37km	976	3,502
	S. J. Bautista Ñeembucú	48km	807	5,970
	Paso de Patria	48km	682	1,581
	Villalbin	48km	360	2,175

Figure 6.9.1 Peripheral cities of Pilar station

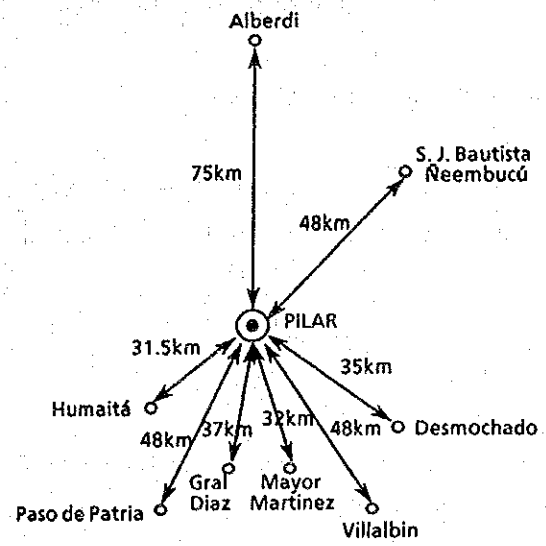
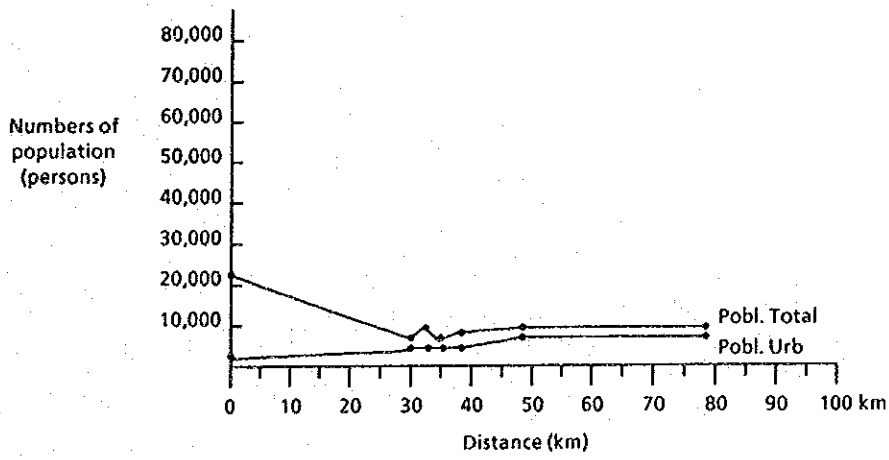


Figure 6.9.2 Population distribution



6.10 Conception Station

1) Location

Although the city is located along a river and the transparent condition from the city is not so good, taking into consideration that the population of the city as the most large in comparison with other vicinities, the transmitting site shall be determined in a ANTELCO station in Conception city.

2) Channel Assignment and Latent Field Strength

A new commercial TV station (SNT) with Ch.11 is scheduled to open in the near future. The proposed TV channel 9 has no problem with incoming other TV stations signals The measured data of field strength are shown in Table 6.10.2.

3) Service Area and Population Covered

Conception, Horqueta, Loreto and Beren cities are within the service area of this station and population covered is estimated at 138,000 in the table 6.10.3.

4) Transmitting Scale

Taking Horqueta city (41km) to be covered into account, the ERP shall be 20kW. The radiation of antenna shall be 3 directions excluding west side where people are not inhabited. The transmitting specification is shown in Table 6.10.1.

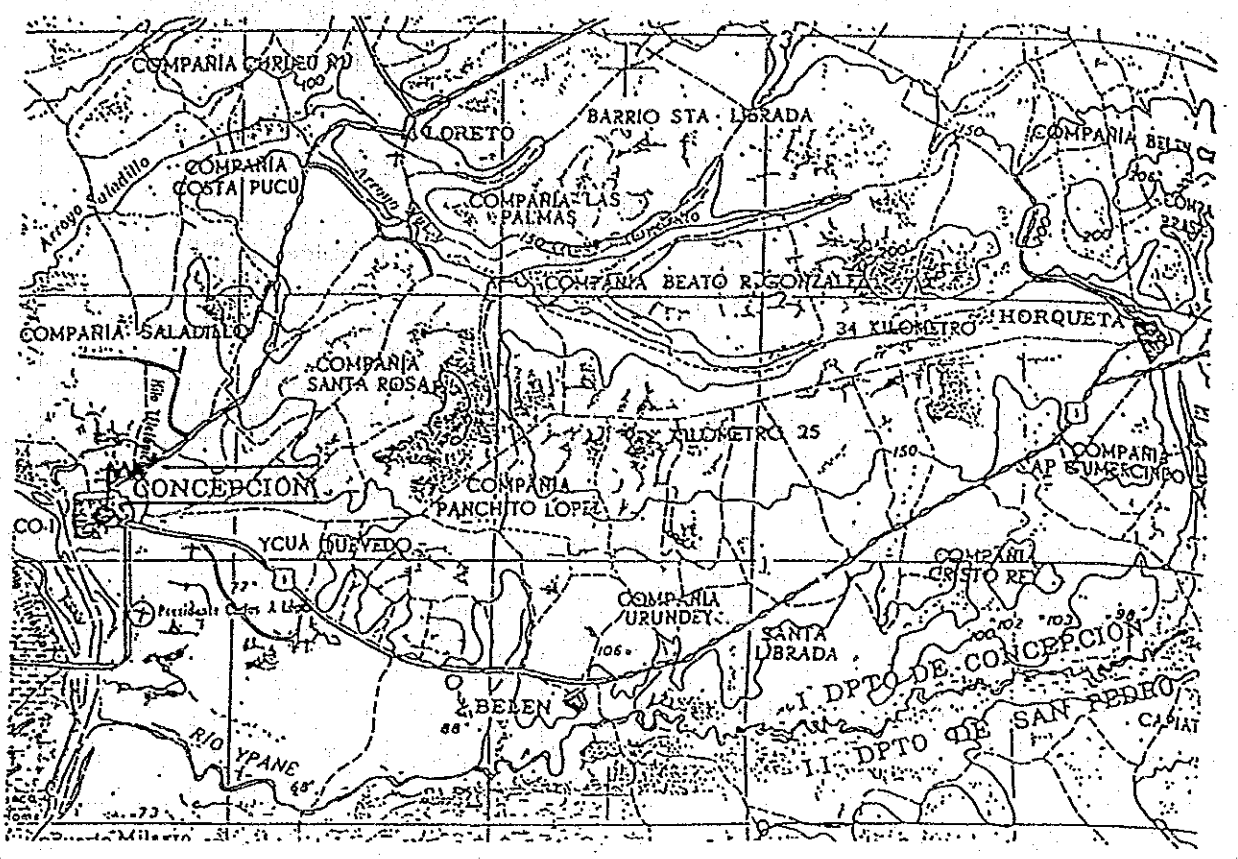

COMPAÑIA CURIEU PU
LORETO
BARRIO STA. LIBRADA
COMPAÑIA COSTA PUCU
Arroyo Saladillo
Arroyo
COMPAÑIA LAS PALMAS
COMPAÑIA BEATO R. GONZALEZ
COMPAÑIA SALADILLO
34 KILOMETRO
HORQUETA
COMPAÑIA SANTA ROSA
Arroyo Tacuara
KILOMETRO 25
CONCEPCION
COMPAÑIA PANCHITO LOPEZ
COMPAÑIA SUMERCINDO
YCUA BUEYEDO
COMPAÑIA CRISTO REY
COMPAÑIA URUNDEY
SANTA LIBRADA
I DPTO DE CONCEPCION
BELEN
II DPTO DE SAN PEDRO
RIO YPANE

Table 6.10.1 Transmitting Specification of Conception Station

Articles			
1. Name of station	Conception (Department : Conception)		
2. Plan by CP *1	CH : 5 (VHF)	Freq : 79 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 23° 24' 33"	Longitude : 57° 26' 72"	
	Altitude (m) : 70		
	Location : Conception city (ANTELCO)		
4. Selected channel : CH 9	Center freq : 189 MHz		
5. ERP (kW) : 20	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 6.0	(Times) : 4		

8. Antenna constitution

Name of antenna : 2D				
Planes	A	B	C	D
Antenna	4D	4D	4D	0
Stages	1	1	1	0
Power ratio	1	1	1	0

Radiation condition :

(1) No radiation for west side

9. Tower height (m) : 93	10. Center height of antenna (m) : 80.5
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	137,900

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.10.2 Latent Field Strength in Concepcion City

Channel	Measuring point			Station's name of coming TV wave
	Point B	23°27, 1′ 57°27, 5′		
CH2				
CH3				
CH4				
CH5				
CH6				
CH7	86 dBμ/m	78 dBμ/m		Concepcion (RPC)
CH8				
CH9				
CH10				
CH11				Planned station (SNT)
CH12	58 dBμ/m			No identified
CH13				
UHF	None			
FM				

Table 6.10.3 Numbers of population in the service area of Concepción station

Transmission point	Cities	Distance	Urban population	Total population	Altitude
CONCEPCIÓN			35,485	61,897	50m
	Belén	20km	1,829	10,307	100m
	Horqueta	41km	8,269	△48,704	150m
	Loreto	19km	2,453	16,964	150m

△ means area in which can receive TV wave for half population

Figure 6.10.1 Peripheral cities of Concepción station

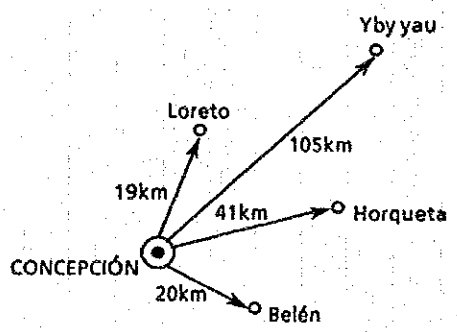
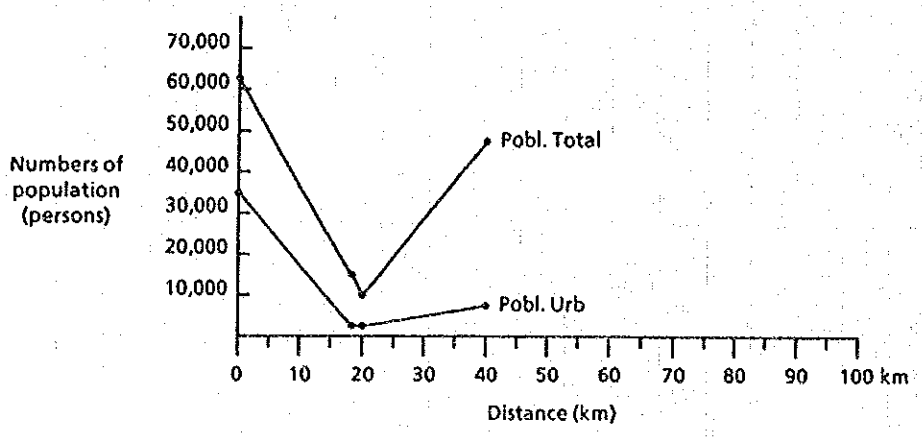


Figure 6.10.2 Population distribution



6.11 San Ignacio Station

1) Location

A Farmland on high ground along a national road in the northern suburb of San Igancio City has been selected as the location of this transmitting station due to the following reasons:

- S.J. Bautista City is the seat of prefectural office, but the city has a small population of 14,000. On the other hand, S. Ignacio City has a population of 20,000 and is suitable for TV service.

- Since highly populated cities, which are to be served are arranged in a line, as shown in below. And, when the transmitting location is installed at S.J. Bautista City which is far end city, it is difficult to obtain a wide service area including such highly populated cities as Santa Rosa, etc.
  S.J. bautista → S.Ignacio → Santa Rosa → San Patricio → Santiago → Ayora

2) Channel Assignment and Latent Field Strength

Proposed CH 11 at the four country meeting was assigned, however, CH 10 was already assigned to commercial TV station. Consequently, CH 5 must be assigned to ETV station.

3) Service Area and Population Covered

S.J. Bautista, Santa Rosa, and other cities are transparent area. Reception Picture in Ayola City will be one rank lower. The covered population is estimated at 80,000. The detailed data area shown in Table 6.11.3.

4) Transmitting Scale

The ERP is set at 15kW by designing the service distance as 45km.
A nondirectional antenna will be used for this station.
The transmitting specification is shown in Table 6.11.1.

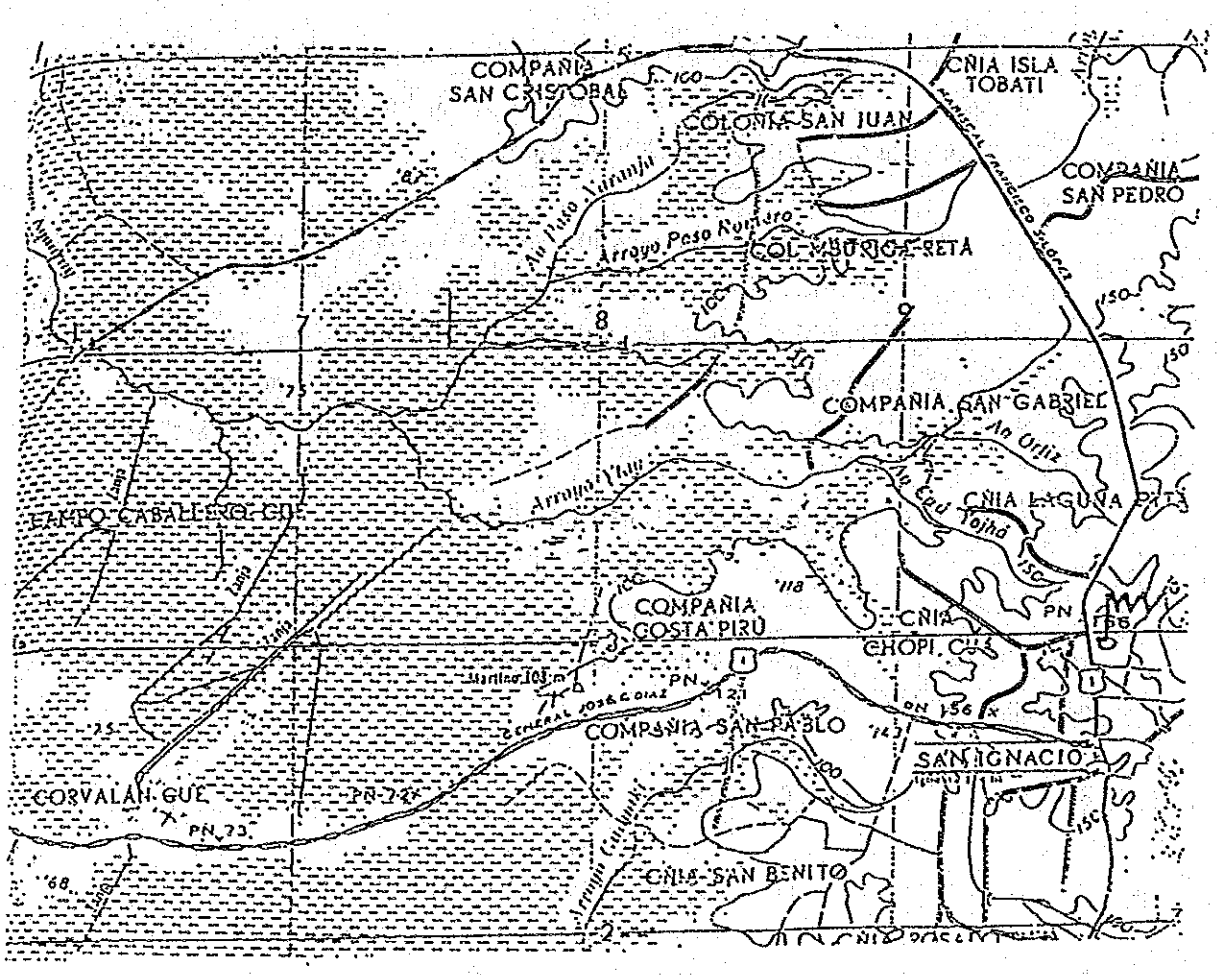


Table 6.11.1 Transmitting Specification of San Ignacio Station

Articles			
1. Name of station	San Ignacio (Department : Misiones)		
2. Plan by CP *1	CH : 11 (VHF)	Freq : 201 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : 26° 51' 15"	Longitude : 57° 02' 06"	
	Altitude (m) : 176		
	Location : RI km 221.5 North of Ignac		
4. Selected channel : CH 5°	Center freq : 79 MHz		
5. ERP (kW) : 15	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 4.8	(Times) : 3		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	2D	2D	2D	2D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 100	10. Center height of antenna (m) : 98.5
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	80,600

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.11.2 Latent Field Strength in Sanignacio City

Channel	Measuring point			Station's name of coming TV wave
	Ruta II (km221.5)	C° Perro		
CH2				
CH3				
CH4				
CH5				
CH6				
CH7		46 dBμ/m		Encarnacion (SNT)
CH8	50 (Evaluation4)	70.7 dBμ/m		Itayuru (RPC)
CH9		None		
CH10				
CH11	(Evaluation1)			Formosa (Argentira)
CH12	(Evaluation2)			Villarrica (SNT)
CH13	58 dBμ/m	None		San Patricio (RPC)
	(Evaluation4)			San Patricio (RPC)
UHF	None			
FM				

Table 6.11.3 Numbers of Population in the service area of San Ignacio station

Transmission point	Cities	Distance	Urban population	Total population
SAN IGNACIO			11,584	20,066
	Santa María	12km	1,607	6,687
	Santa Rosa	18km	5,679	16,651
	San Patricio	24km	1,640	3,121
	S. J. Bautista Misiones	23km	8,164	13,628
	San Miguel	35km	1,162	4,631
	Yabebyry	60km	651	2,938
	Ayolas	63km	9,197	12,866

Figure 6.11.1 Pripheral cities of San Ignacio station

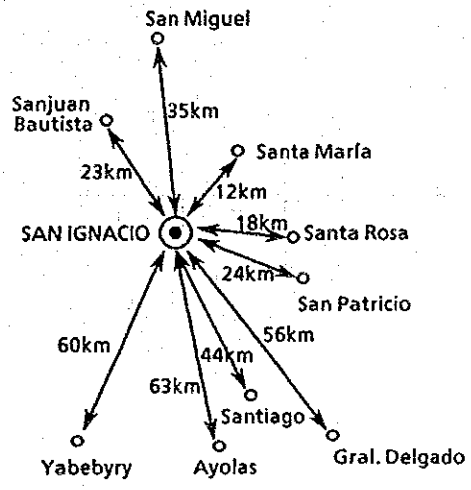


Figure 6.11.2 Population distribution

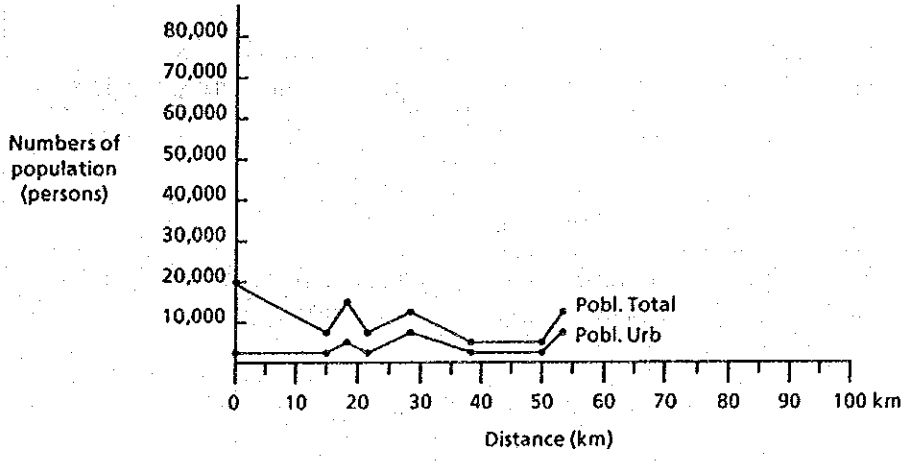


Table 6.12.1 Transmitting Specification of Tomas R. Pereira Station

Articles			
1. Name of station	T. R. Pereira (Department : Itapua)		
2. Plan by CP *1	CH : 9 (VHF)	Freq : 189 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 350		
	Location : ANTELCO microwave station		
4. Selected channel : CH 16+	Center freq : 485 MHz		
5. ERP (kW) : 30	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 7.8	(Times) : 6		

8. Antenna constitution

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 102	10. Center height of antenna (m) : 104
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	162,500

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 6.13.1 Transmitting Specification of J. L. Mallorquin Station

Articles			
1. Name of station	J. L. Mallorquin (Department : Alto Parana)		
2. Plan by CP *1	CH : 11 (VHF)	Freq : 195 MHz	ERP (kW) : 6
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : -3dB reduction for Foz do Iguazu		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 250		
	Location : Guyrangua ANTELCO station		
4. Selected channel : CH 14+	Center freq : 473 MHz		
5. ERP (kW) : 30	6. Transmitter power (kW) : 5		
7. Antenna gain (dB) : 7.8	(Times) : 6		

8. Antenna constitution

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 83	10. Center height of antenna (m) : 100
11. Type of tower : Self supported tower	
12. Total number of population in the service area :	69,500

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

7. Site of transmitting point, channel and transmitting scale etc. (2nd channel plan stations)

(Related to M/R II -5.4)

Table 7.1 Transmitting Specification of San Pedro de Parana Station

Articles			
1. Name of station	S.P. de Parana (Department : Itapua)		
2. Plan by CP *1	CH : 9+ (VHF)	Freq : 189 MHz	ERP (kW) : 4
	Antenna height (m) : 60		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 140		
	Location : San Pedro de Parana city		
4. Selected channel : CH 40	Center freq : 629 MHz		
5. ERP (kW) : 28	6. Transmitter power (kW) : 1		
7. Antenna gain (dB) : 14.4	(Times) : 28		

8. Antenna constitution

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	3	1	1	1
Power ratio	3	1		

Radiation condition :

9. Tower height (m) : 80	10. Center height of antenna (m) : 85
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	71,800
13. Receiving system of TV program	On-air program from Encarnacion city

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.2 Transmitting Specification of Ñacunday Station

Articles			
1. Name of station	Ñacunday (Department : Alto Parana)		
2. Plan by CP *1	CH : -- (VHF)	Freq : -- MHz	ERP (kW) : --
	Antenna height (m) : ---		
	Limiting condition of antenna radiation : -----		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 250		
	Location : Near N. road at Puerto Paranambu		
4. Selected channel : CH 42	Center freq : 641 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 60	10. Center height of antenna (m) : 70
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	30,900
13. Receiving system of TV program	On-air program from Ciudad de Este station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.3 Transmitting Specification of San Alberto Station

Articles			
1. Name of station	San Alberto (Department : Alto Parana)		
2. Plan by CP *1	CH : 3- (VHF)	Freq : 63 MHz	ERP (kW) : 1
	Antenna height (m) : 60		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 250		
	Location : San Alberto city (ANTELCO)		
4. Selected channel : CH 40	Center freq : 629 MHz		
5. ERP (kW) : 12	6. Transmitter power (kW) : 1		
7. Antenna gain (dB) : 10.8	(Times) : 12		

8. Antenna constitution

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	1	1	2	2
Power ratio	1	1	1	2

Radiation condition :

9. Tower height (m) : 110	10. Center height of antenna (m) : 120
11. Type of tower : Self supported tower (ANTELCO)	
12. Total number of population in the service area :	54,700
13. Receiving system of TV program	ANTELCO microwave link at San Alberto city

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.4 Transmitting Specification of Jose Fasardy Station

Articles			
1. Name of station	Jose Fasardy (Department : Guaira)		
2. Plan by CP *1	CH : 4+ (VHF)	Freq : 69 MHz	ERP (kW) : 1
	Antenna height (m) : 60		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 200		
	Location : Jose Fasardy city		
4. Selected channel : CH 8+	Center freq : 183 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		

8. Antenna constitution

Name of antenna : 2D				
Planes	A	B	C	D
Antenna	2D	2D	2D	2D
Stages	1	3	3	1
Power ratio	1	1	1	1

Radiation condition :

(1) It is necessary offset carrier system to Ciudad de Este station.

9. Tower height (m) : 60	10. Center height of antenna (m) : 58
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	72,500
13. Receiving system of TV program	On-air program from Pereira station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.5 Transmitting Specification of San Pedro Station

Articles			
1. Name of station	San Pedro (Department : San Pedro)		
2. Plan by CP *1	CH : 12 (VHF)	Freq : 207 MHz	ERP (kW) : 20
	Antenna height (m) : 120		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 70		
	Location : San Pedro city (ANTELCO)		
4. Selected channel : CH 12	Center freq : 207 MHz		
5. ERP (kW) : 27	6. Transmitter power (kW) : 1		
7. Antenna gain (dB) : 14.4	(Times) : 27		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	0	4D	4D	0
Stages	0	3	2	0
Power ratio	0	3	1	0

Radiation condition :

9. Tower height (m) : 102	10. Center height of antenna (m) : 95
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	86,300
13. Receiving system of TV program	ANTELCO microwave link at San Pedro

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.6 Transmitting Specification of San I. de Curuguaty Station

Articles			
1. Name of station	S. I. de Curuguaty (Department : Canindeyu)		
2. Plan by CP *1	CH : 4 (VHF)	Freq : 69 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 262		
	Location : Suburb of S. I. de Curuguaty city		
4. Selected channel : CH 4	Center freq : 69 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 70	10. Center height of antenna (m) : 68
11. Type of tower : Guyed wire tower (New tower)	
12. Total number of population in the service area :	33,500
13. Receiving system of TV program	On-air program from San Estanislao station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.7 Transmitting Specification of Yby yau Station

Articles			
1. Name of station	Yby yau (Department : concepcion)		
2. Plan by CP *1	CH : -- (VHF)	Freq : -- MHz	ERP (kW) : --
	Antenna height (m) : ---		
	Limiting condition of antenna radiation : ------		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 320		
	Location : Cerro Memby		
4. Selected channel : CH 13	Center freq : 213 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 103	10. Center height of antenna (m) : 98
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	20,000
13. Receiving system of TV program	On-air program from P. J. Caballero station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.8 Transmitting Specification of Capitan Bado Station

Articles			
1. Name of station	Cap. Bado (Department : Amambay)		
2. Plan by CP *1	CH : 10 (VHF)	Freq : 195 MHz	ERP (kW) : 20
	Antenna height (m) : 120		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 500		
	Location : Cap. Bado city (ANTELCO)		
4. Selected channel : CH 40	Center freq : 629 MHz		
5. ERP (kW) : 2	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 9	(Times) : 7.9		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 53	10. Center height of antenna (m) : 63
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	13,300
13. Receiving system of TV program	On-air program from P. J. Caballero station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.9 Transmitting Specification of Pozo Colorado Station

Articles			
1. Name of station	Pozo Colorado (Department : Pte. Hayes)		
2. Plan by CP *1	CH : 12 (VHF)	Freq : 207 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 100		
	Location : Pozo Colorado city (ANTELCO)		
4. Selected channel : CH 12	Center freq : 207 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 105	10. Center height of antenna (m) : 72
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	17,900
13. Receiving system of TV program	ANTELCO microwave link at Pozo Colorado city

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

Table 7.10 Transmitting Specification of Mcal. Estigarribia Station

Articles			
1. Name of station	M. Estigarribia (Department : Boqueron)		
2. Plan by CP *1	CH : 10 (VHF)	Freq : 195 MHz	ERP (kW) : 10
	Antenna height (m) : 75		
	Limiting condition of antenna radiation : No condition		
3. Site of location	Latitude : ° ' "	Longitude : ° ' "	
	Altitude (m) : 170		
	Location : M. Estigarribia city (ANTELCO)		
4. Selected channel : CH 11	Center freq : 201 MHz		
5. ERP (kW) : 1.5	6. Transmitter power (kW) : 0.25		
7. Antenna gain (dB) : 7.8	(Times) : 6		
8. Antenna constitution			

Name of antenna : 4D				
Planes	A	B	C	D
Antenna	4D	4D	4D	4D
Stages	2	2	2	2
Power ratio	1	1	1	1

Radiation condition :

9. Tower height (m) : 41	10. Center height of antenna (m) : 37
11. Type of tower : Guyed wire tower (ANTELCO)	
12. Total number of population in the service area :	11,000
13. Receiving system of TV program	On-air program from Filadelfia station

*1 CP : Cuatripartita (Four country make an agreement related to VHF channels; Paraguay, Brazil, Argentine and Uruguay)

8. Demand Forecast of TV Receivers

8 Demand Forecast of Television Sets

Table 8-1 shows crrelation among diffusion of television set (Number of TV sets per 1,000 persons) and GDP per capita in 17 countries of Central and South America.

Figure 8-1 ~ 8-4 show the scatter conditions of the two data and linear correlation formula in 1989, 1985, 1980 and 1970.

1989 : $y = 0.055\,x + 47$
1985 : $y = 0.049\,x + 25$
1980 : $y = 0.32\,x + 24$
1970 : $y = 0.024\,x + 14$

here y : Number of TV sets per 1,000 persons
x : GDP per Capita

Figure 8-5 and 8-6 show predictions of a and b in the formula of $y = ax + b$.

2000 : $y = 0.072\,x + 56$
2005 : $y = 0.081\,x + 63$
2010 : $y = 0.089\,x + 70$

Figure 8-7 shows past trend of GDP per capita and predictions in 2000, 2005 and 2010 in Paraguay.

The result of TV demand forecast is as follows:

2000 : $0.072 \times 1{,}560 + 56 = 168$ sets/1,000 persons
2005 : $0.081 \times 1{,}670 + 63 = 198$ sets/1,000 persons
2010 : $0.089 \times 1{,}770 + 70 = 228$ sets/1,000 persons

The result shows that in 2010, there will be one TV set for 4.4 person.

Future populations are estimated by STP as follows:

2000	:	5,538 thousand
2005	:	6,215 thousand
2010	:	6,928 thousand

Then number of TV sets in Paraguay can be forecast as follows:

2000	:	930 thousand sets
2005	:	1,231 thousand sets
2010	:	1,580 thousand sets

Table 8-1 Data of GDP per Capita and TV set Diffusion in Central and South American Countries in 1989, 1985, 1980, 1970

	1989		1985		1980		1970	
	GDP/Capita	TV/1000	GDP/Capita	TV/1000	GDP/Capita	TV/1000	GDP/Capita	TV/1000
Costa Rica	1452	136	1355	76	1552	68	1201	57.7
El Salvador	660	87	667	73	773	66	719.5	25.6
Guatemara	799	45	794	26	983	25	755.9	13.7
Honduras	630	70	614	64	685	18	553.9	8.4
Mexico	2382	127	2543	107	2608	54	1863.5	34.1
Nicaragua	484	61	662	58	738	58	968.7	26.8
Pamana	1467	165	1803	115	1766	115	1377.6	84.9
Argentina	2357	219	2468	214	3010	182	2748.5	146.1
Bolivia	602	98	627	66	691	54	690.7	8.1
Brazil	2012	204	1901	184	2008	124	1111	63.6
Chile	2590	201	2100	144	2315	110	2121.2	52.6
Colombia	1387	108	1232	92	1207	84	896.5	37.9
Ecuador	1355	82	1404	64	1415	62	754.7	24.8
Paraguay	1296	140	1239	23	1293	21	752	19.1
Peru	916	95	1045	77	1190	52	1065.9	29.9
Urguay	2162	227	1883	166	2286	125	1816.6	99.7
Venezuela	3122	156	3214	130	4100	114	4838.4	89.6

Figure 8-1 Correlation between GDP per Capita and TV set Diffusion (1989)

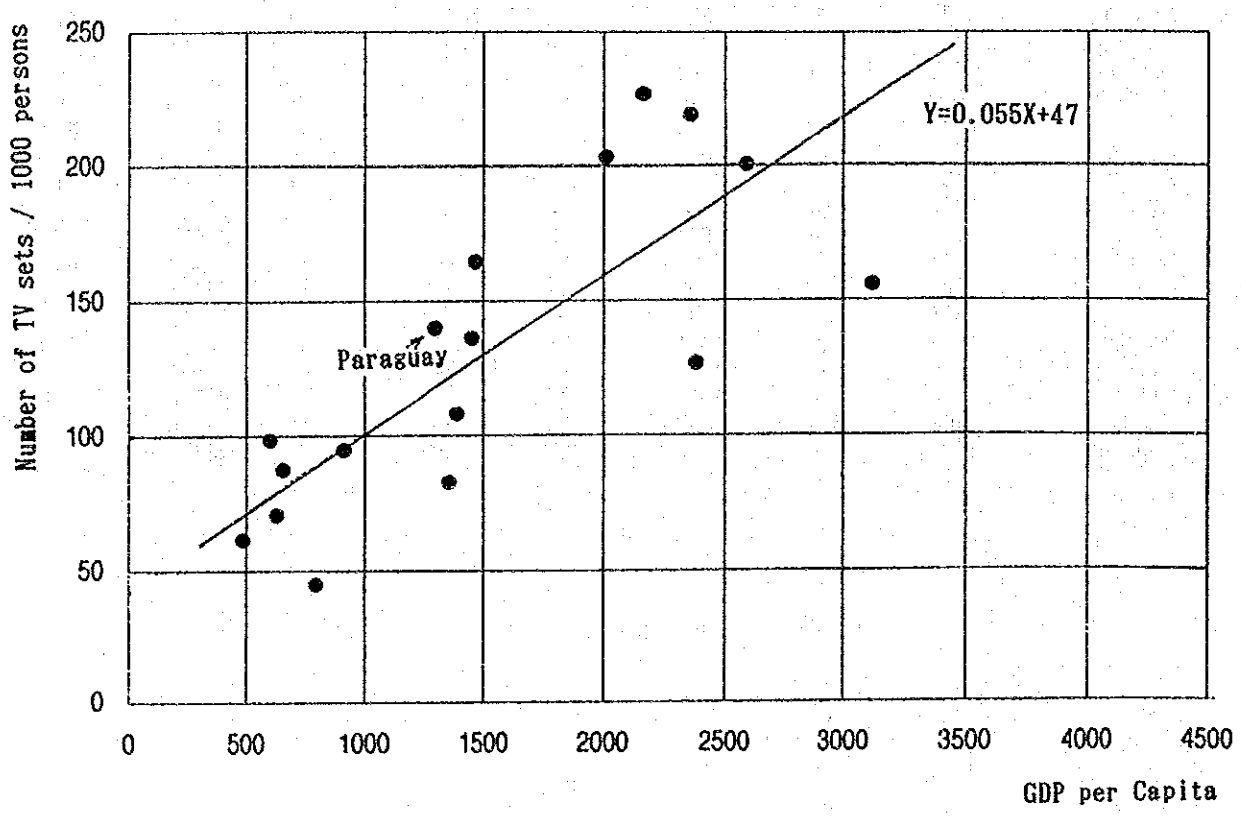


Figure 8-2 Correlation between GDP per Capita and TV set Diffusion (1985)

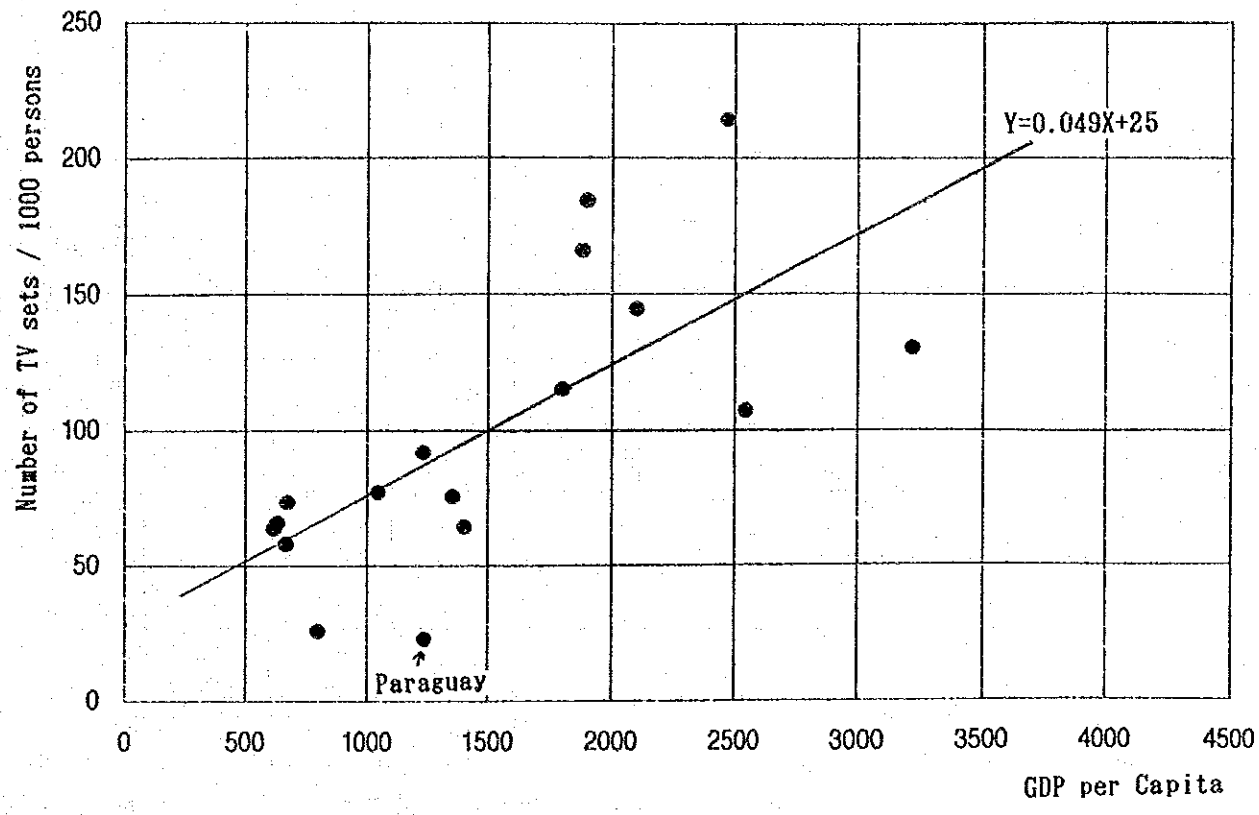


Figure 8-3 Correlation between GDP per Capita and TV set Diffusion (1980)

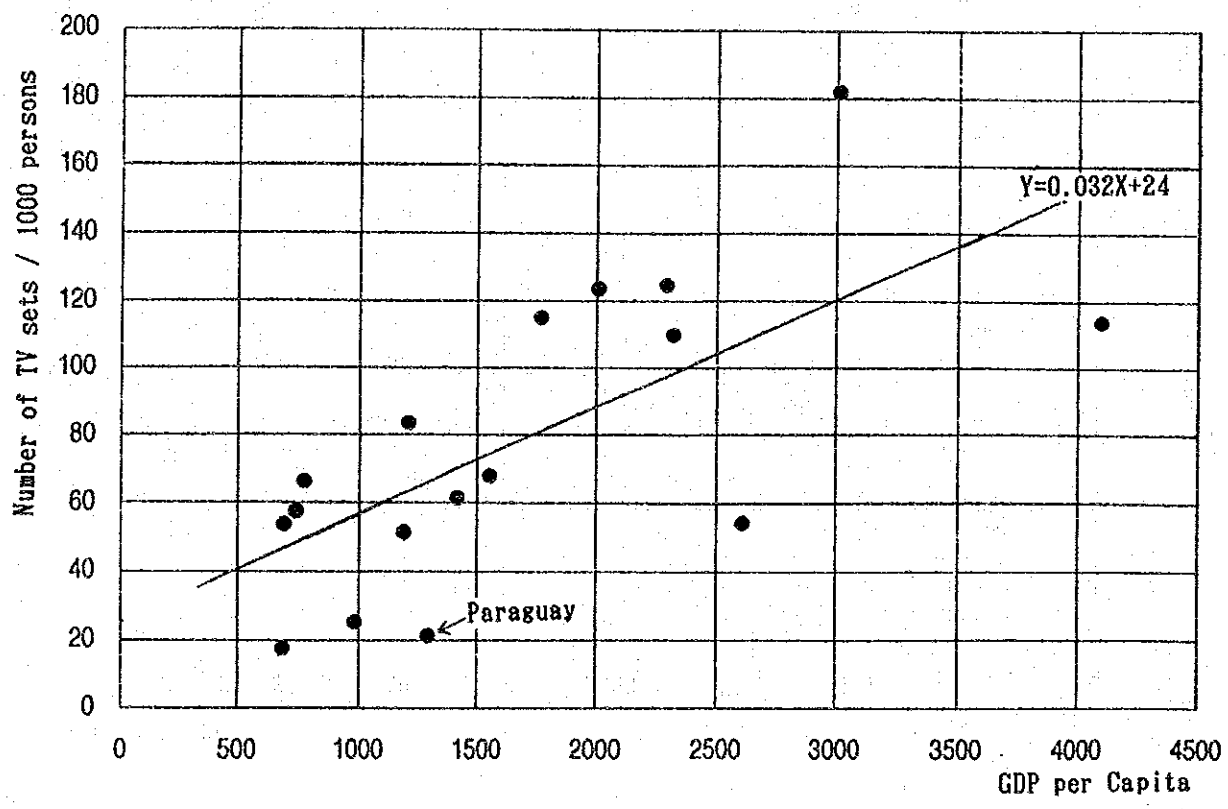


Figure 8-4 Correlation between GDP per Capita and TV set Diffusion (1970)

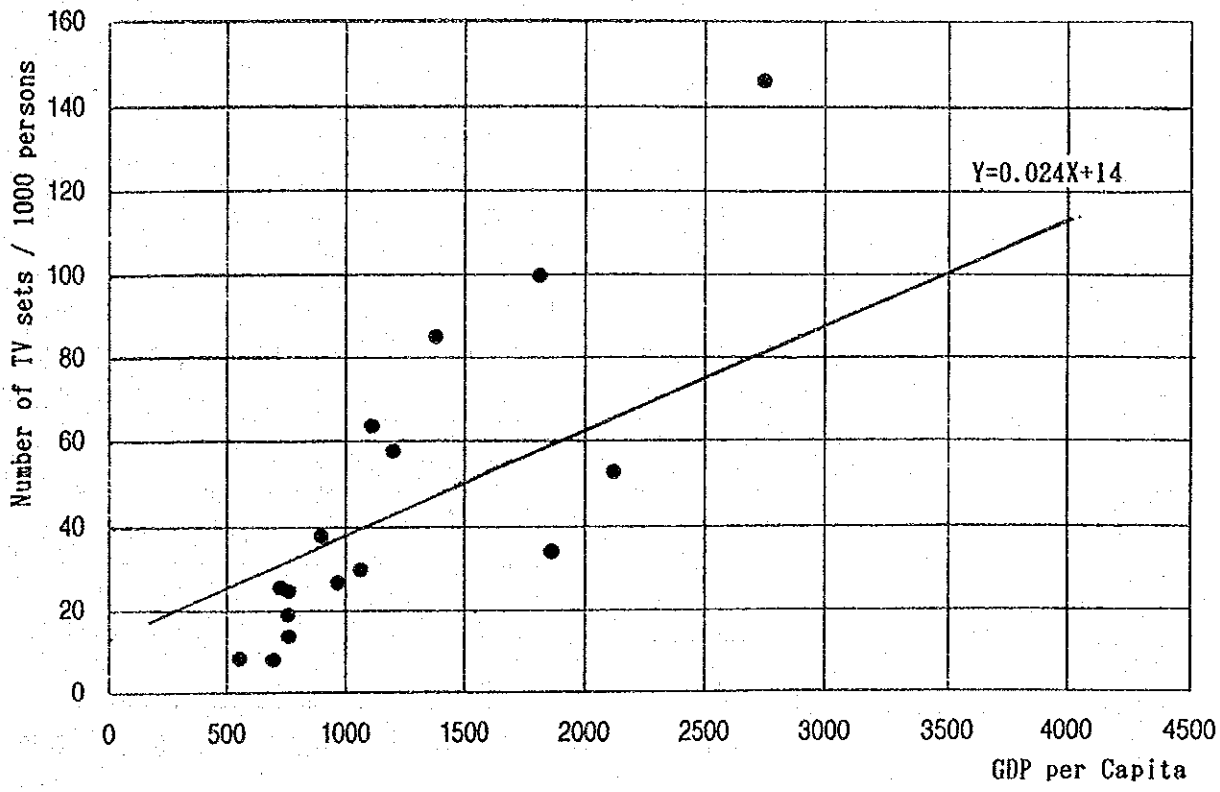


Figure 8-5 Trend of (a) in Correlation formula

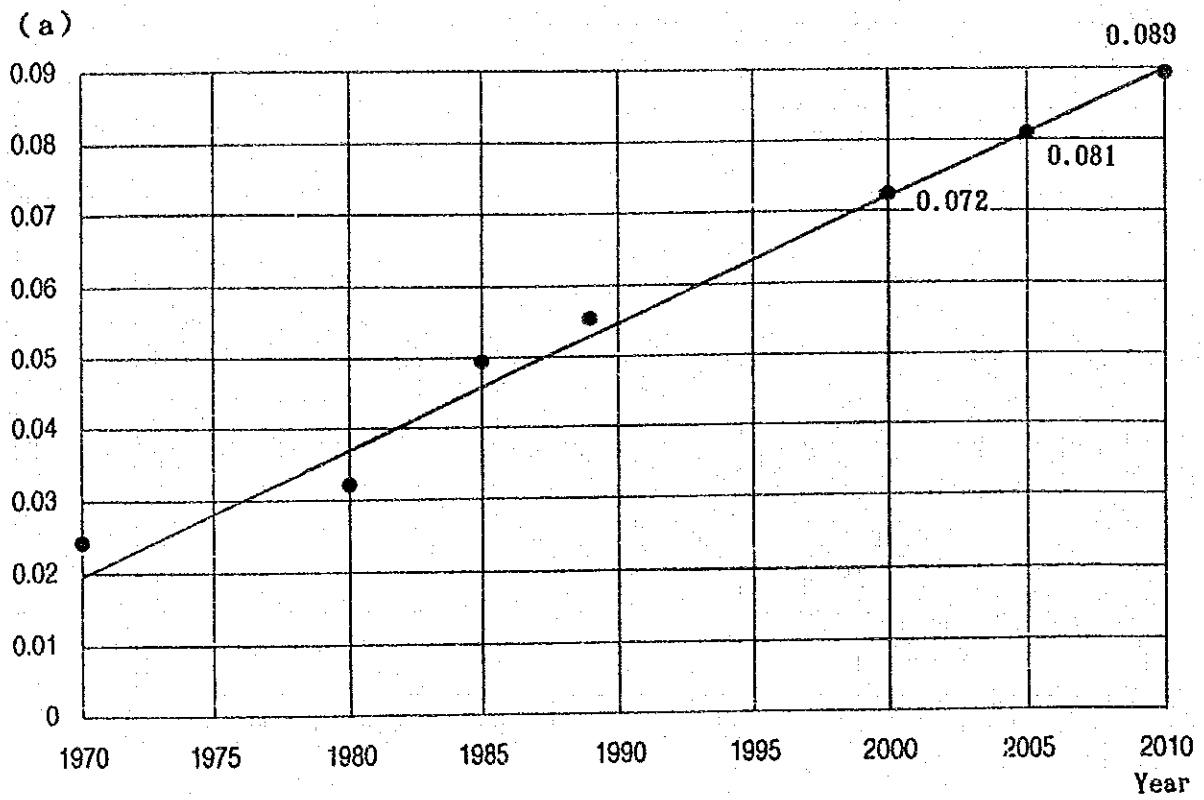


Figure 8-6 Trend of (b) in Correlation formula

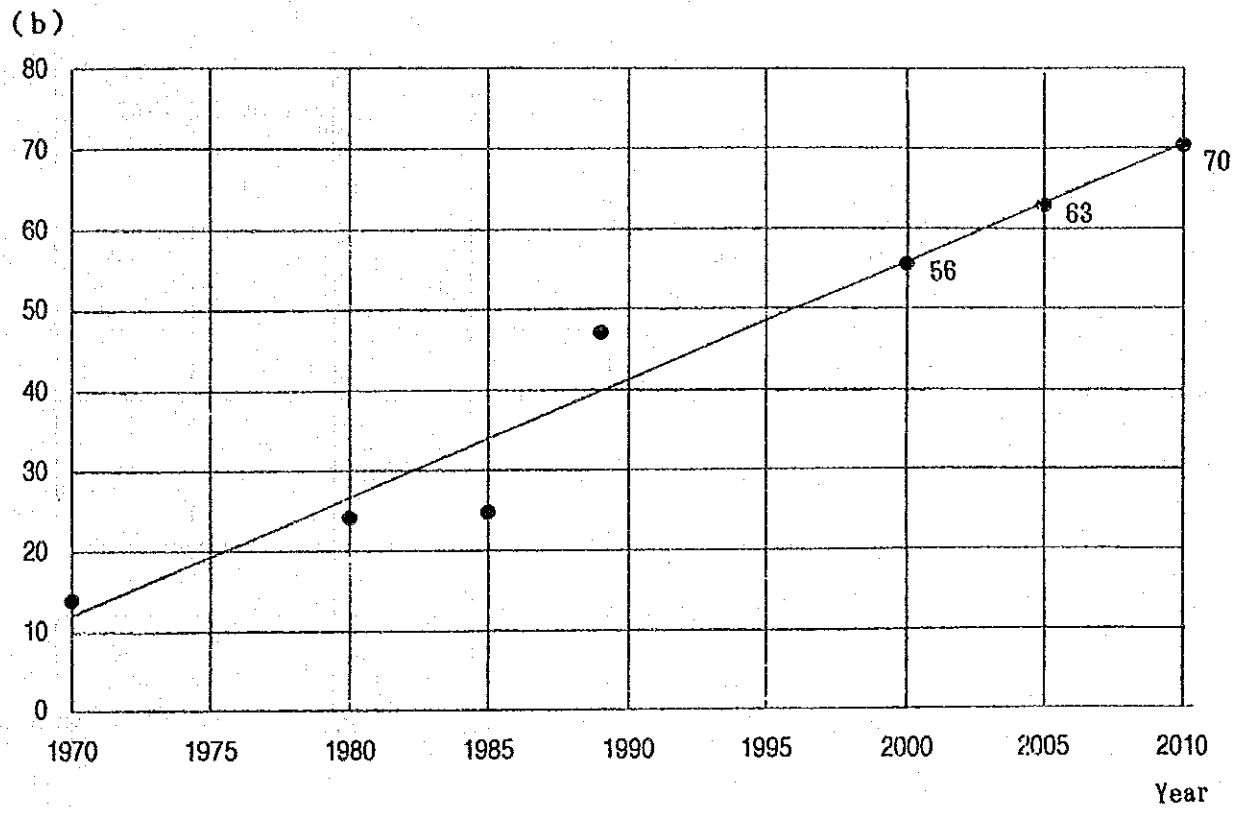
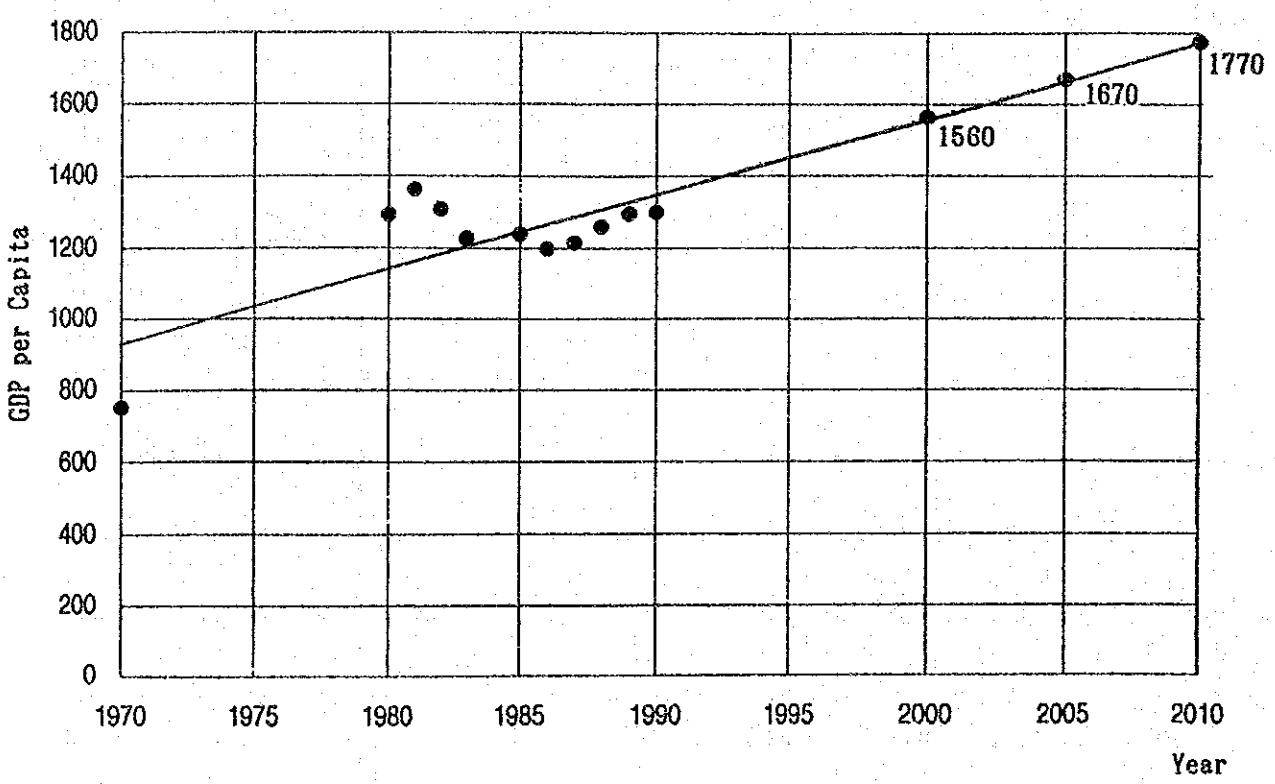


Figure 8-7 Trend of GDP per Capita



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