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## KINGDOM OF THAILAND

DETAILED DESIGN REPORT of the

BANGKOK TELEPHONE NETWORK PROJECT (JUNCTION LINES)

1047 SEPTEMBER, 1977 

JAPAN INTERNATIONAL COOPERATION AGENCY CIONGL



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### PREFACE

In compliance with the request of the Government of the Kingdom of Thailand, the Government of Japan as part of its overseas technical cooperation has decided to make detailed designs of the junction and local cable networks for the Bangkok Telephone Network Project.

The Japan International Cooperation Agency (JICA), organized two survey reams: one for the junction cable lines and the other for the local cable lines.

An eight-member survey team for the junction cable lines was dispatched to Thailand on February 28, 1977, and carried out a field survey for approximately four months, in close cooperation with all perties and organizations concerned in Bangkok.

After returning to Japan, the survey team finalized the design report, based on the results of the survey and discussions made in Bangkok with all the persons concerned.

We sincerely hope that the report will be useful to the expansion and improvement of the telephone network in Bangkok and thereby contribute to social and economic development of the Kingdom of Thailand and to further enhance the friendly relationship between our two countries.

Finally, I should like to express my deep appreciation to all the staff members who participated in this study, as well as my heartfelt gratitude to the staff members concerned of the Government of Thailand and the Telephone Organization of Thailand for the full cooperation extended to the team.

October 1977

Shinsaku Hogen President Japan International Cooperation Agency

### LETTER OF TRANSMITTAL

Mr. Shinsaku Hogen President Japan International Cooperation Agency

We have the honor to present herewith the detailed design report on the junction cable lines for the Bangkok Telephone Network Project.

Our junction cable line survey team carried out the field survey in Bangkok for approximately four months from February 28 to June 30, 1977.

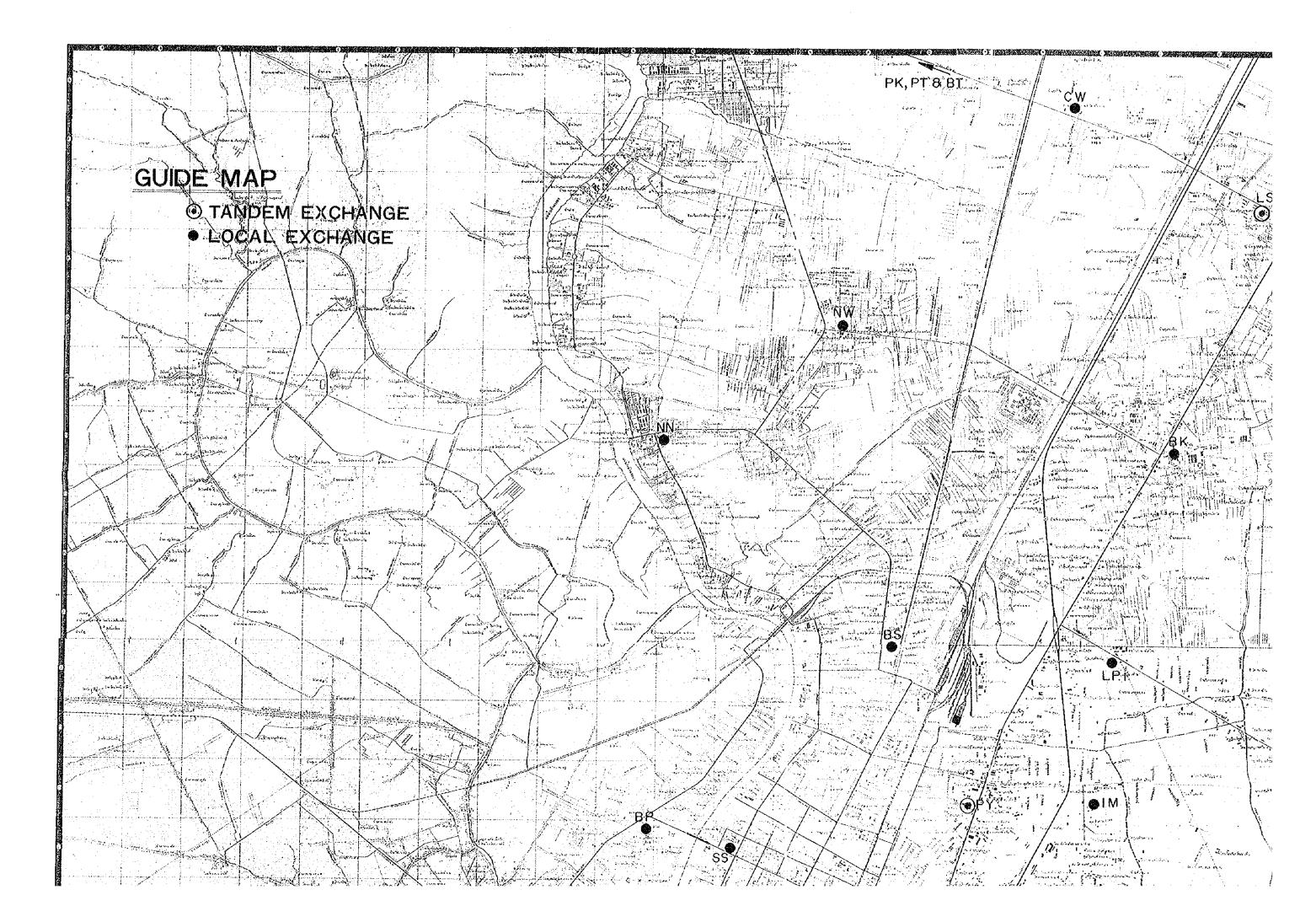
During the survey period in Bangkok, a very close liaison was maintained with all the persons concerned in the Telephone Organization of Thailand (TOT), so as to incorporate their desires and suggestions concerning every point in the detailed design.

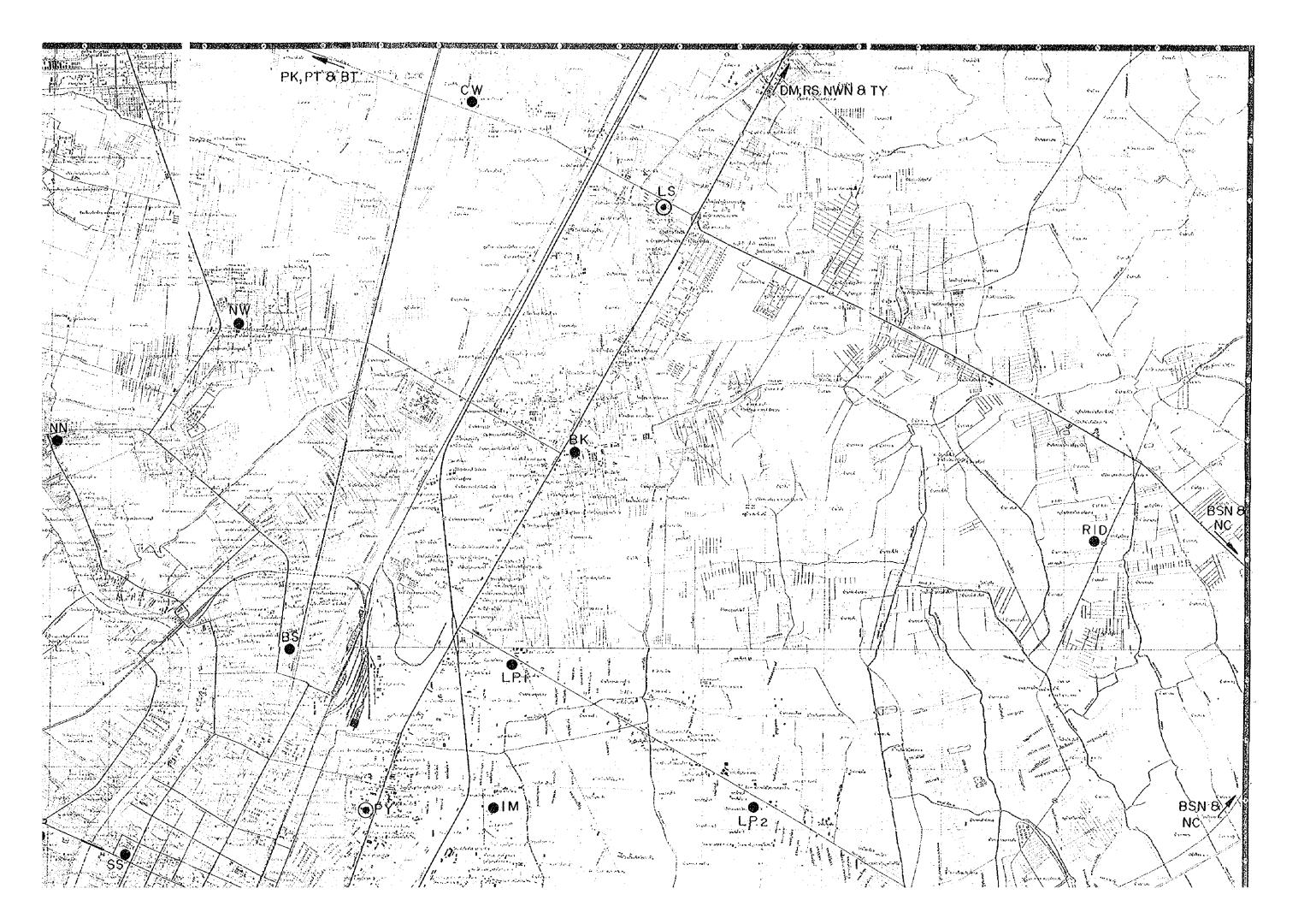
After returning to Japan, the survey team further studied the survey results, and consulted the opinions of other experts in Japan when necessary. We believe, therefore, the design thus completed is the optimum one for the envisaged expansion and improvement of the telephone network in Metropolitan Bangkok.

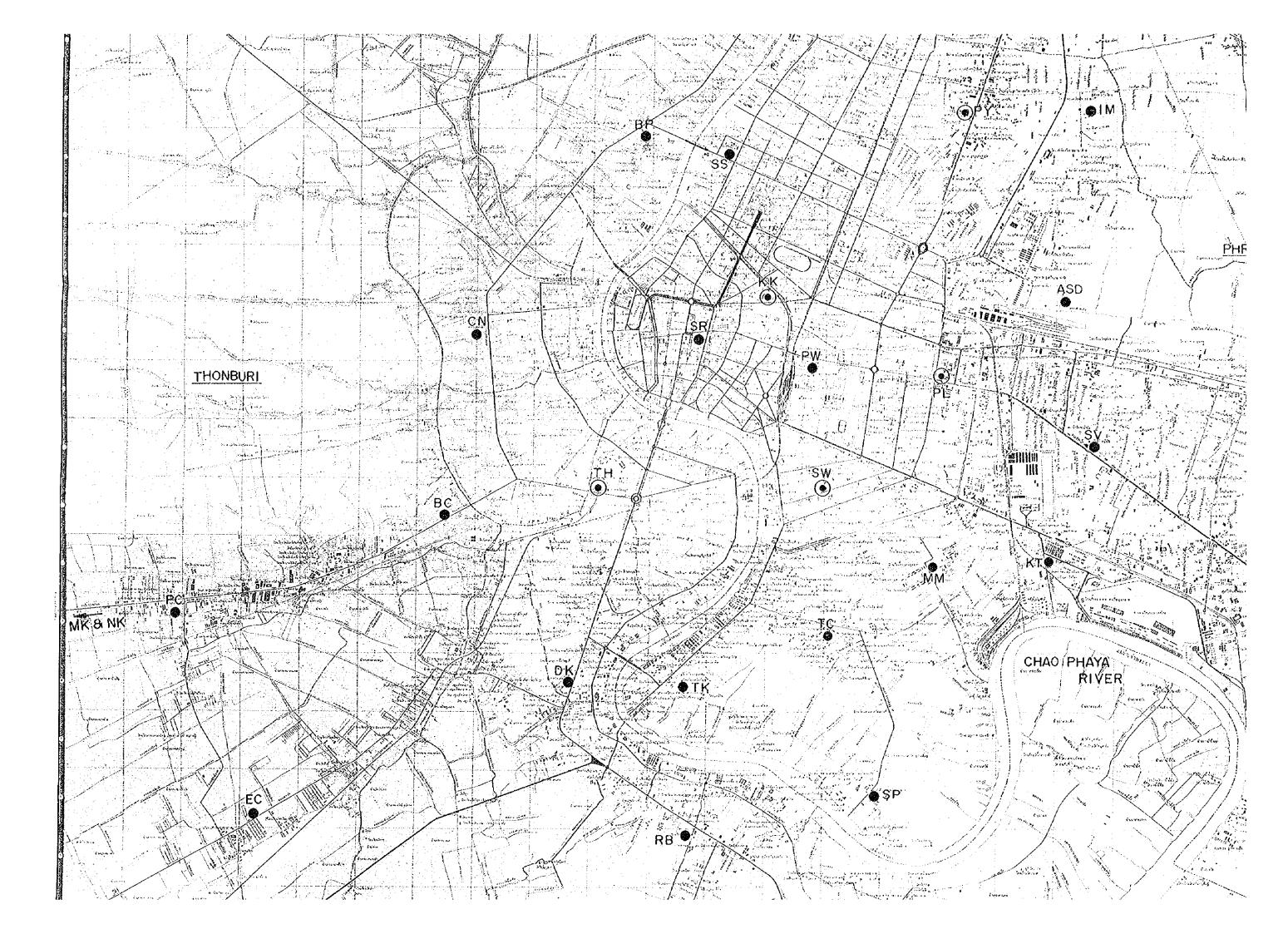
In closing, we wish to express our sincere gratitude to the Government of Thailand Telephone Organization of Thailand, Japanese Embassy, representatives of Japan International Cooperation Agency in Bangkok, Japanese Ministry of Foreign Affairs and Ministry of Posts and Telecommunications, Nippon Telegraph and Telephone Public Corporation and Work Supervisory Committee, for their warm support and cooperation.

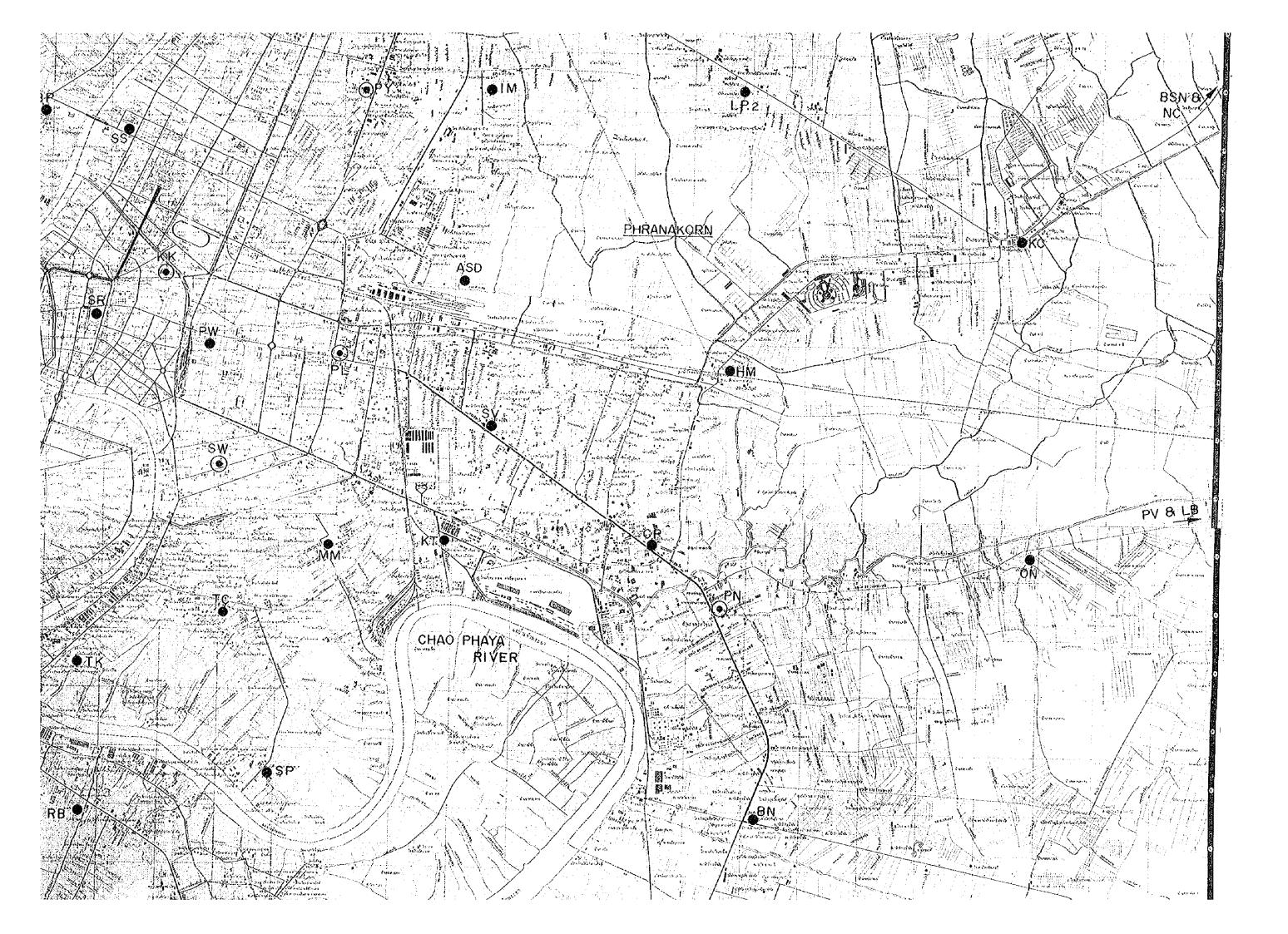
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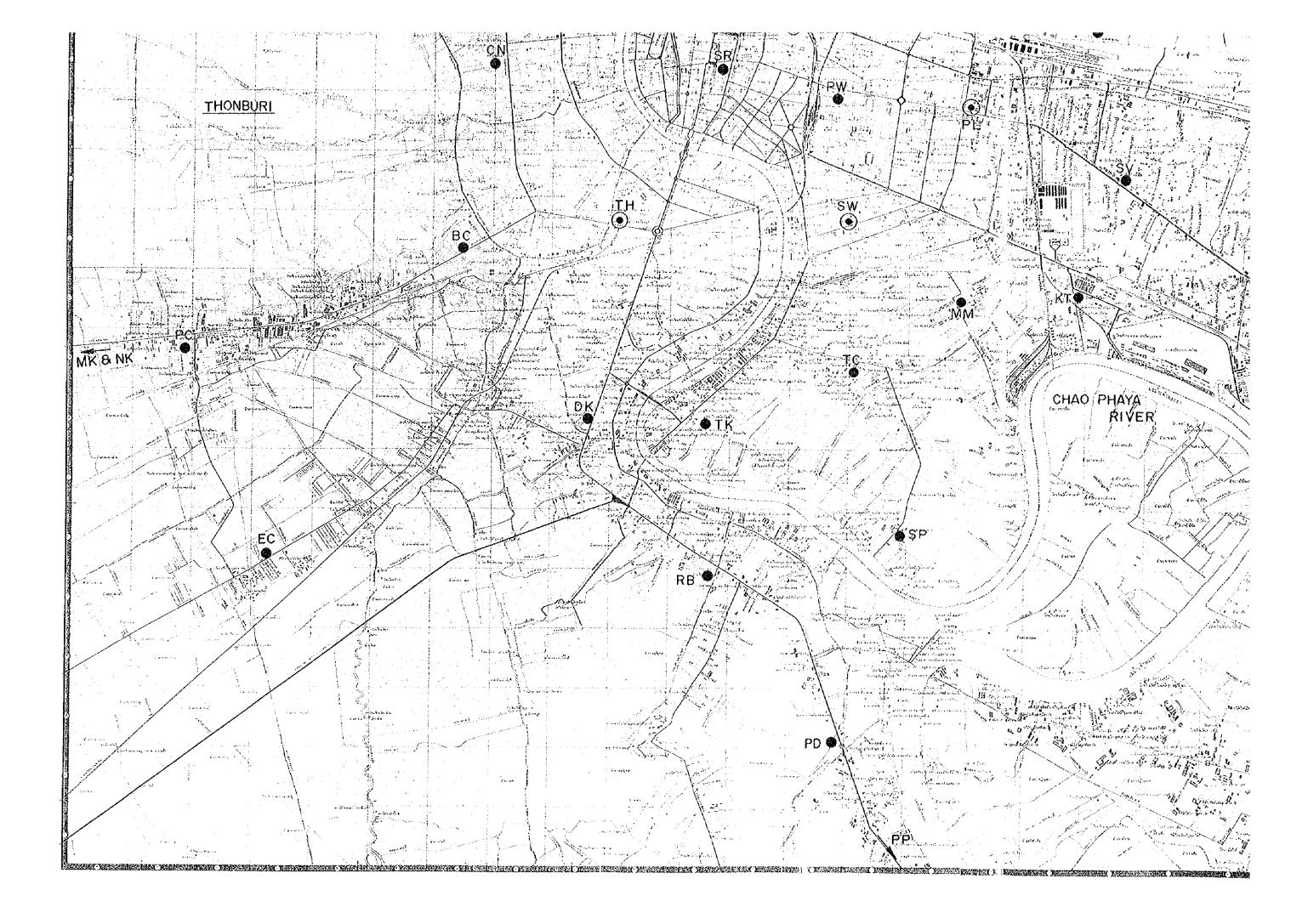
Nobuo Yoshida Study Team Leader

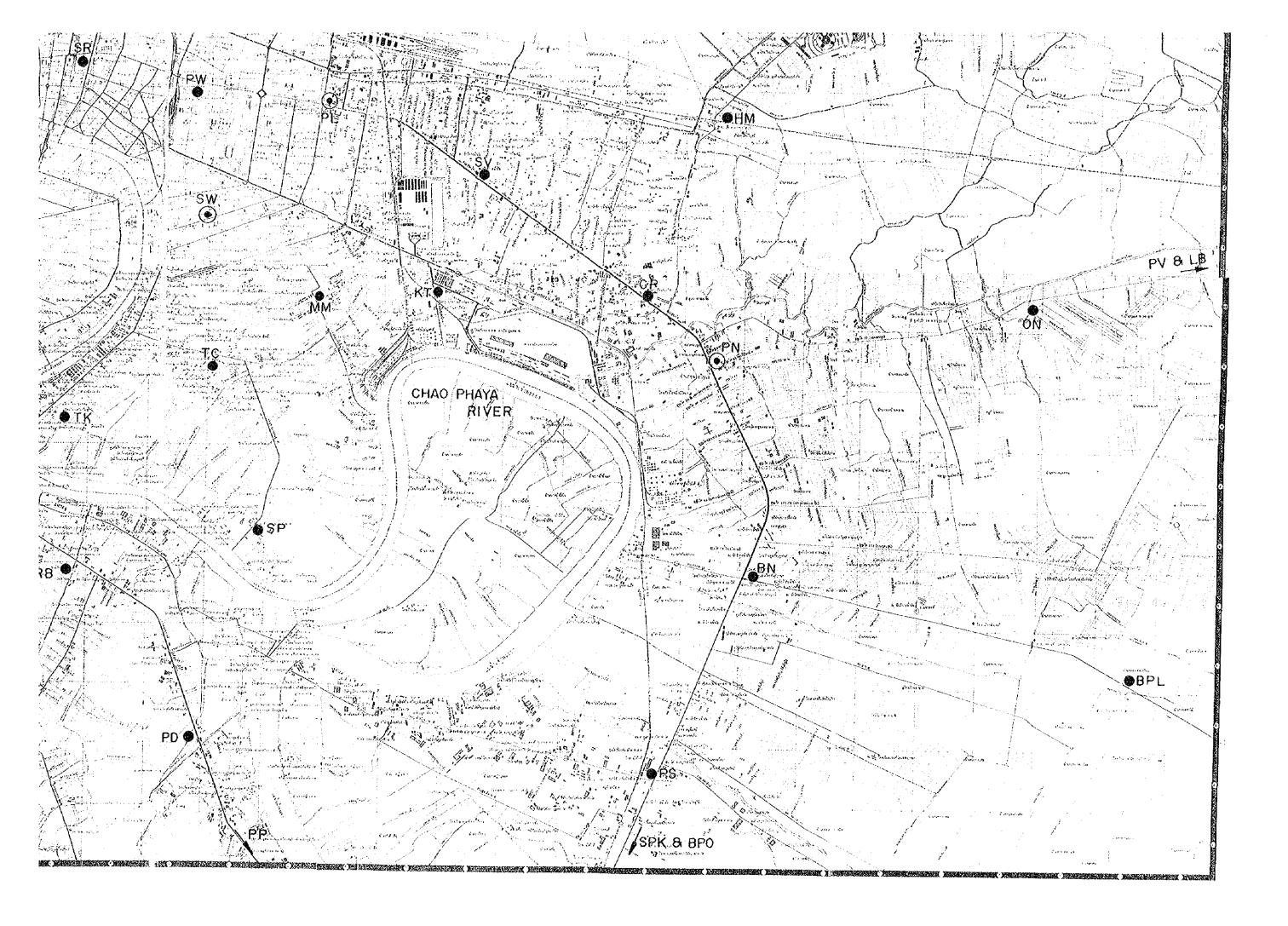


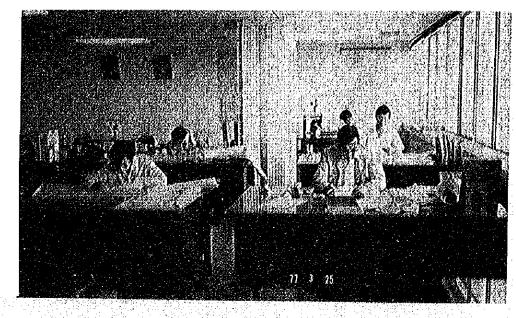












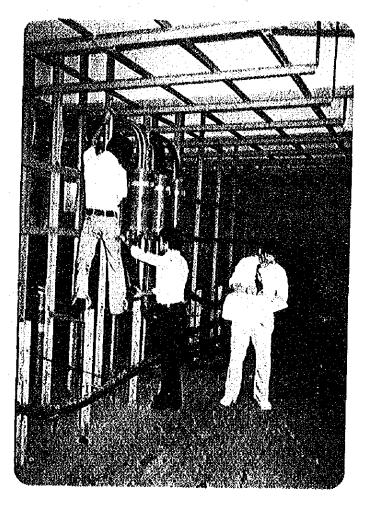
1. NTC members and TOT counterparts at NTC Bangkok Office.



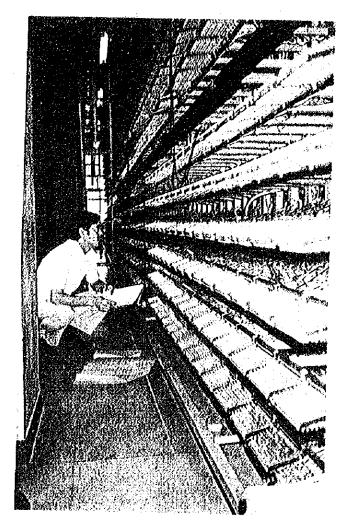
2. Survey of Aerial Route between SPK and BPO Exchanges.



3. Survey of Aerial Route in the canal between PK and BT Exchanges.



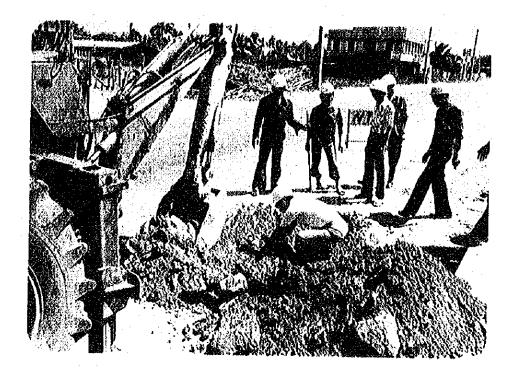
4. Investigation of Cable Vault at BK Exchange.



5. Investigation of MDF at SR Exchange.



6. Investigation of Manhole at Sukhumvit Rd.



7. Investigation of Manhole at Sukhumvit Rd. Working for digging the road about 40 cm by use of shovel car because the manhole to be investigated is buried due to the road width expansion construction.



 Investigation of Manhole at the Crossing of Chakawat Rd at Night Time (Using 2 sets of pumps to decrease the drainage time)

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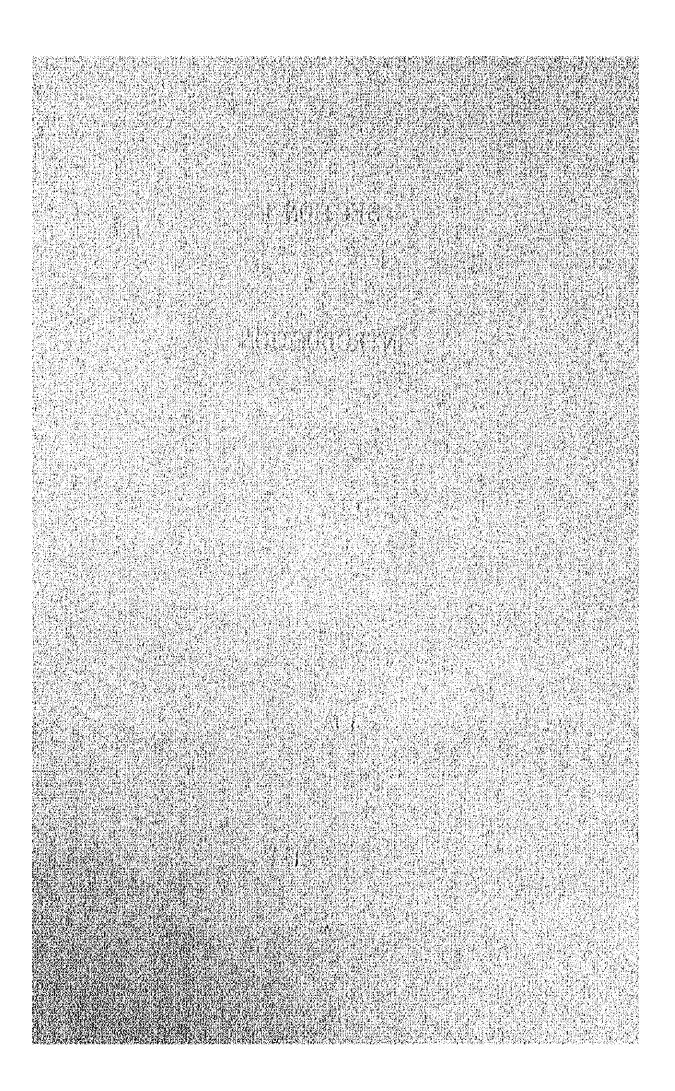
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## SECTION 1

## INTRODUCTION



SECTION, 1, INTRODUCTION, Stationer Constants

1-1 Background

The Telephone Organization of Thailand (TOT) is now pursuing telephone expansion programs for the whole country, based on the long-term plan, i.e., "The Economic Development Project 1977 - 1984 of TOT." This is a sub-project of the "Fourth National Economic Development Plan 1977 - 1981 for the Whole Kingdom." This longterm project consists of the following two phases:

Phase I (1977 - 1982)

(a) In the Bangkok Metropolitan Area

1) Installation of 103,200 terminals in 34 local exchanges.

a statu

2) Construction of 136,200 local cable pairs.

3) Construction of 250,000 pair-km junction cable.

4) Installation of subscriber facilities.

(b) In the Provincial Area

- 1) Installation of 32,800 terminals in 19 local exchanges.
- 2) Construction of 39,000 local cable pairs.

3) Installation of subscriber facilities.

(c) Installation of 7,398 channel-ends for long distance circuits.

(d) Installation of a long distance transmission system to provide a long distance service in 131 remote rural districts.

(e) Construction of approximately 10,275 STD transit switching circuits at 30 centers.

Phase II (1981 - 1984)

- (a) In the Bangkok Metropolitan Area
  - 1) Installation of 120,000 terminals in 28 local exchanges.

2) Construction of 168,500 local cable pairs.

3) Installation of subscriber facilities.

(b) In the Provincial Area

- 1) Installation of 41,600 terminals in 88 local exchanges.
- 2) Construction of 51,700 local cable pairs.
- 3) Installation of subscriber facilities.

(c) Installation of 3,625 channel-ends for long distance circuits.

(d) Construction of 3,466 STD transit switching circuits at 57

centers.

When this project is completed in 1984, the telephone density will be improved as follows:

	1976	<u>1984</u>	Increase Rate
Nationwide	0.87	1.31	50.6%
Bangkok Metropolitan Area	5.18	6.35	22.6%
Provincial Area	0.25	0.39	56.0%

TOT requested the Government of Japan, through the Government of Thailand, to provide the technical cooperation with respect to the engineering of junction cable network and five local cable networks in the Bangkok Metropolitan Area of this project, because a sufficient number of TOT engineers are not available for this work.

The Government of Japan decided to accept this request and the matter was commissioned to the Japan International Cooperation Agency (JICA), the official agency responsible for implementation of the Japanese Government technical cooperation programme.

On 9 February, 1977, JICA dispatched a preliminary survey team to Bangkok to confirm the scope of work and the survey schedule, as well as the local support available in Thailand. After discussion with TOT, the survey team finalized the scope of work and exchanged with TOT the "Minutes of the Meeting on the Scope of Work for the Detailed Design of Bangkok Telephone Network Project 1977."

The detailed design of the junction and local cable networks was then entrusted to The Nippon Telecommunications Consulting Co., Ltd. (NTC), a firm having rich and long experience in designing the telephone facilities in Bangkok, as well as the supervision of construction work thereof.

To carry out the entrusted work, NTC organized two teams, one for junction network design and the other for local network design. This report covers the junction network design work only. The local network design work is now under way and its report will be submitted in March 1978.

### 1-2 Method of Approach

After studying TOT's requirements and the scope of work specified in the Minutes, NTC divided the junction network design work into two categories: inside plant design work and outside plant design work. The following is the method of approach pursued in the work for each category.

1-2-1 Inside Plant Design Work

- (1) Preliminary study based on TOT's data
  - List of circuit assemblies based on traffic data Drawing up of a list of circuit assemblies, after a study of the traffic data and trunking scheme prepared by TOT.

2) Floor layout plan based on plant record

- Study of a floor layout plan for junction equipment to be increased, such as impedance matching coils, negative impedance repeater and PCM equipment prepared by TOT.

- Study of a terminal block accommodation plan for termination of new junction cables at MDF, and an MDF layout plan, if necessary, based on the plant record prepared by TOT.

\* Note: The required number of junction equipments is to be decided after discussion with the engineers in charge of the outside plant design work.

(2) Discussion with TOT

Discussion with TOT on the following, based on the traffic data and trunking scheme prepared by TOT;

Kinds of circuits.

Required number of circuits.

Traffic routing.

Homing arrangement.

(3) Field survey

Investigation of an MDF room and junction equipment in each exchange.

Confirmation of the installation positions and quantity of the existing MDFs and junction equipments, as well as the positions for additional installation, in an MDF room and, if necessary, other rooms.

(4) Works after survey

1) Compiling of the survey data and drawing up of the following diagrams:

Line assignment for the junction network, and Layout plan for the junction equipments.

- 2) Calculation of the amount of work
- 3) Estimate of the quantity of main materials
- 1-2-2 Outside Plant Design Work
  - (1) Preliminary study
    - 1) An overall study of the following:
      - a) Exchange office site plan
      - b) Telephone network plan
      - c) Transmission loss distribution plan
      - d) Present state of roads, bridges, etc. and future plans involving them
      - e) Introduction of new techniques and economization of facilities
      - f) Relation with existing plants

2) Determination of the cable conductor diameter and the number of cable pairs based on the foregoing studies and according to the following procedures:

a) Determination of the cable conductor diameter

1) After an overall study of the required number of circuits, kinds of circuits, existing cable conductor diameter, and the number of circuits in use, as well as the possibility of existing cable pair transfer, the cable conductor diameter is determined. 11) Usually, a cable has circuits each having different allowable transmission loss. In principle, the conductor diameter of a cable is determined, based on the minimum allowable transmission loss.

111) A comparison study is made between the negative impedance repeater and the PCM system, in consideration of the required number of circuits, signalling system, cable section length and the junction cable type (aerial or underground). Then, the economically favourable one should be adopted.

b) Determination of the number of cable pairs
 The number of cable pairs is determined on the following principles:

1) Since there is a shortage of underground conduits in Bangkok, the maximum number of cable pairs for the required conductor gauge is to be installed in principle.

11) The design provisioning periods are tentatively determined as follows. They will be finalized after discussion with TOT.

Aerial Cable

15 years after service-in Underground Cable

 $5 \ 15$  years after service-in

In the case of the expansion at the existing conduit routes, the period will be changed after an economic study in consideration of the conduit usage plan and the time of expansion.

3) Determination of junction cable type

The junction cable type is determined according to the TOT standard, depending upon the scale of junction cable and the junction route.

4) Selection of junction route

The junction routes are selected in consideration of the following:

a) Selection of the shortest route in consideration of effective use of the existing facilities.

b) Selection of the road for new junction route where there is not much traffic and exist not many underground facilities such as the water supply and sewer pipes.

c) Study of the road construction plan according to the city planning.

d) Study of new exchange site plan

5) Layout of loading spacing

The layout of loading spacing is arranged by the type H-88 loading system which is adopted by TOT, according to the following standards:

Standard (So) 1,830 m

Deviation between Standard (So)  $\pm 2\% > \frac{So-S}{So} \times 100$ and Average (S)

Individual deviation from  $\pm 2\% > \frac{S-S1}{S} \times 100$ Average (S)

 $\frac{So}{4} < S$  half  $< \frac{3}{4}$  So

End Section

In case the above standards cannot be satisfied, compensation by B.O.N. or other methods will be made.

6) Design of PCM system

The repeating point is selected, based on the repeater spacing designed according to the type of junction cable, kind of cable and the number of systems required 15 years hence.

(2) Field survey

Based on the design plan made from the preliminary study, the following field surveys are carried out:

1) Route selection

After comparison studies of the proposed routes from various viewpoints, the optimal routes are selected.

2) Underground and aerial cables

In regard to the underground cables, both the existing and new routes are surveyed, and the locations of loading manholes, PCM manholes, etc. will be determined.

8 -

In regard to aerial cables, studies are made on the method of cable placement. Where there is the fear of inductive interference, a study is made as to its countermeasure. Surveys are also made on the location of poles and guys, etc., and on the pole mounting method, etc., for loading poles, PCM poles, etc.

3) Manhole

The duct position in which cables are placed is investigated, and the cable placement method, cable bending method and location of cable splicing, etc., are determined.

In addition, the space for installation of loading coils, impedance compensators and PCM repeaters is checked, and, if necessary, a comparison study between the modification of existing manhole and new manhole construction is made.

4) MDF and cable vault

The riser position of the entrance cables and way of cable placement in the cable vault are investigated and studies are made for preparation of a plan for junction cable termination at MDF.

5) Discussion with TOT

Upon completion of the field survey, discussion will be held with the senior members of TOT with respect to the survey results. (3) Preparation of drawings

Based on the survey results and the plant records prepared by TOT, the following drawings are prepared:

Lange Route

- 1) Key map
- 2) Duct scheme plan
- 3) General junction cable plan
- 4) Layout plan for junction equipment and the second
- 5) Junction cable terminating plan at MDF
- 6) Layout plan for loading spacing
- 7) Jointing diagram
- 8) Junction cable construction detail
- 9) Manhole racking diagram
- 10) Gas pressurization system
- 11) Line assignment for junction network
- 12) Computed transmission performance & line resistance
- (4) Calculation of amount of work and estimate of quantity of
- main materials.

The amount of work and the quantity of main materials will

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be calculated from the above drawings.

1-3 Organization of Survey Team

Members of the survey team for the junction network design work and their survey periods, are as follows:

> Survey Period (1977)

Nobuo YOSHIDA (Team leader) NTC Overseas Dept.

Tadamasa KOMURA (In charge of outside plant) NTC Overseas Dept.

Hideyasu IMAIZUMI (In charge of inside plant) NTC Overseas Dept.

Tadashi KOGAWA (In charge of outside plant) NTC Nagoya Branch Office

Katsuji NAKA (In charge of outside plant) NTC Osaka Branch Office

Tadayoshi OTA (In charge of inside plant) NTC Overseas Dept.

Nobuo NAKAJIMA (In charge of inside plant) NTC Overseas Dept.

Katsuya ASAKA (In charge of outside plant) NTC Overseas Dept. Feb. 28 - June 30

Feb. 28 ~ Apr. 19

Feb. 28 - Mar. 31

Feb. 28 - June 30

Apr. 1 - June 30

1-4 Establishment of Work Supervisory Committee

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For the smooth execution of the detailed design work and the supervision thereof, a work supervisory committee was established.

### SECTION 2

## DISCUSSION ON SCOPE OF WORK

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SECTION 2. DISCUSSION ON SCOPE OF WORK

2-1 Negotiations with the Government of Thailand and TOT On February 9, 1977, a preliminary survey team, consisting of Mr. M. Iijima and Mr. S. Saito, members of the Work Supervisory Committee, and Mr. N. Yoshida and Mr. H. Imaizumi, NTC Engineers, was dispatched to Bangkok, to hold discussions with officials of the Government of Thailand and TOT regarding the scope of work for the detailed design. Through these discussions, the scope of work for the detailed, and on February 21, 1977, Mr. Surin of TOT and Mr. Iijima, chief of the work supervisory committee signed the "Minutes of the Meeting on the Scope of Work for the Detailed Design of Bangkok Telephone Network Project 1977." (Refer to Annex 1.)

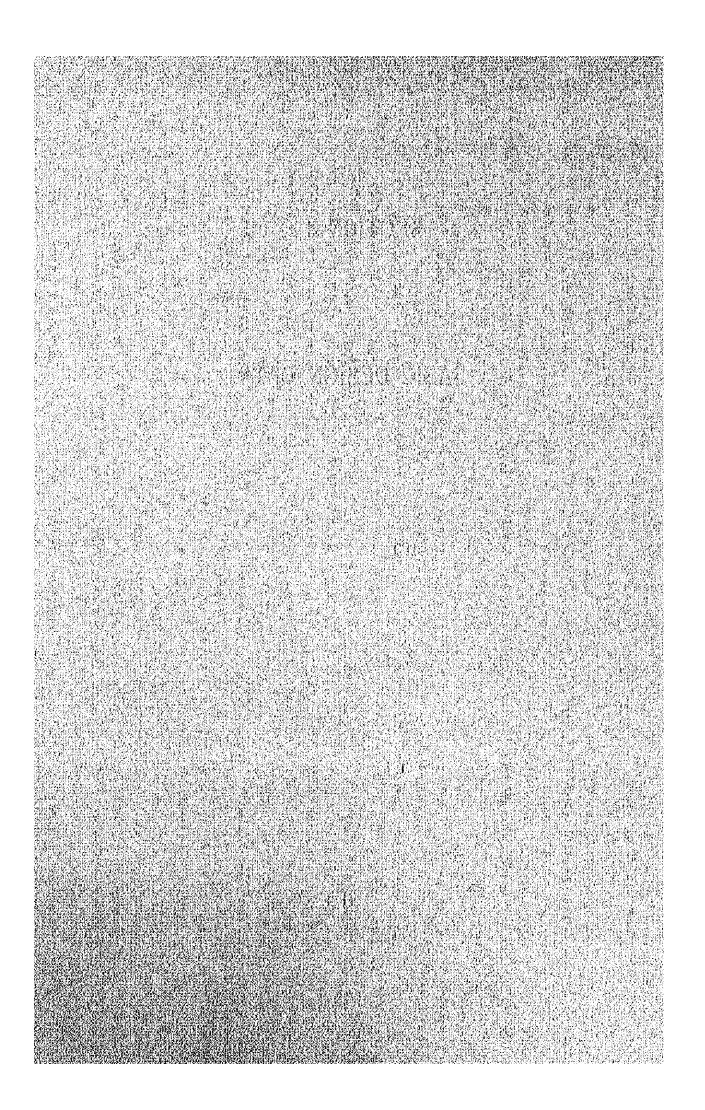
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## SECTION 3

## BASIC DESIGN DATA



#### SECTION 3, BASIC DESIGN DATA

3-1 Telephone Exchange Site Plan and Planned Number of Lines

The telephone exchange site plan and the planned number of lines prepared by TOT are shown in Figs. 1 and 2, respectively.

In 1979, with the completion of the EDP Project (1972 - 1979) which is now under way, the number of subscriber lines will be increased to 310,584, and the number of local exchanges to 40, and the telephone network with 7 local tandem exchanges will be realized in the Bangkok Metropolitan Area.

According to the EDP Project (1977 - 1984), the number of subscriber lines will be increased to 538,000 and the number of local exchanges to 57 in 1984. The increase rate of the subscriber lines is 1.73.

12 out of the 17 local exchanges to be installed by this Project are sited outside the subscriber area to be expanded by 1979, so that in 1984 the final exchange area will be approximately 76 km east to west and 90 km north to south.

3-2 Traffic Data

The traffic data prepared by TOT (refer to annexed sheets A) is based on the two-tandem alternative routing plan, while the existing system employs one-tandem alternative routing plan. The change was made aiming at the increase of circuit efficiency.

The routing and transmission loss distribution plans based on the two-tandem alternative routing plan are as follows:

3-2-1 Local Call Connection

Fig. 3 shows the routing and transmission loss distribution plans for local call connection.

The priority of the local call connection order between any two local exchanges at which high-usage circuits are provided is as follows:

- 19 -

$$1 - --- LE \frac{H.U. Circuit}{11 dB} LE$$

$$2 - --- LE \frac{TDM-1 Circuit}{4 dB} TDM \frac{TDM-2 Circuit}{6 dB} LE$$

$$3 - --- LE \frac{TDM-1 Circuit}{4 dB} TDM \frac{TDM-3 Circuit}{2 dB} TDM \frac{TDM-1 Circuit}{4 dB} LE$$

The connection order priority when a high-usage circuit is not provided is equivalent to dropping '1' above and replacing '2' to '1' and '3' to '2', respectively.

3-2-2 Long Distance Call Connection (STD service)

As shown in Figs. 4 & 5, two types of routing and transmission loss distribution plans are adopted for the long distance call connection of STD service. The routing and transmission loss distribution plans shown in Fig. 4 apply to local exchanges having office codes starting with "2", that is, KK, SS, SR, PW, IM, PL, ASD, SV, KT, NM, SW, TC, SP, KT, and PY local exchanges.

As for the STD circuits from these 15 local exchanges, 2-wire/4 dB circuits are provided to connect them with both KK and PY toll exchanges. The routing and transmission loss distribution plans shown in Fig. 5 apply to the local exchanges having the office codes starting with a number other than "2", that is, all the local exchanges in LS, TH and PN tandem areas and BS, LP1, LP2, NN and BSN. In this case, the local tandem exchanges of LS, TH and PN operate as primary centers and accommodate STD circuits from the local exchanges in their respective tandem areas. However, BP is accommodated in TH tandem exchange, BS, LP1, LP2 and NN in LS tandem exchange and BSN in PN tandem exchange respectively depending upon their assigned office codes.

2-wire/4 dB STD circuits are provided between these local exchanges and their tandem exchanges and, at the same time, 0 dB circuits are provided between LS, TH and PN tandem exchanges and KK and PY toll exchanges by means of PCM 2W - 4W circuit.

- 20 -

3-2-3 Long Distance Call Connection (OTD service)

As shown in Fig. 6, a toll manual board is installed in KK exchange and OTD circuits from all the local exchanges are directly connected to this KK exchange on 2-wire/4 dB basis.

#### 3-2-4 Special Service Call Connection

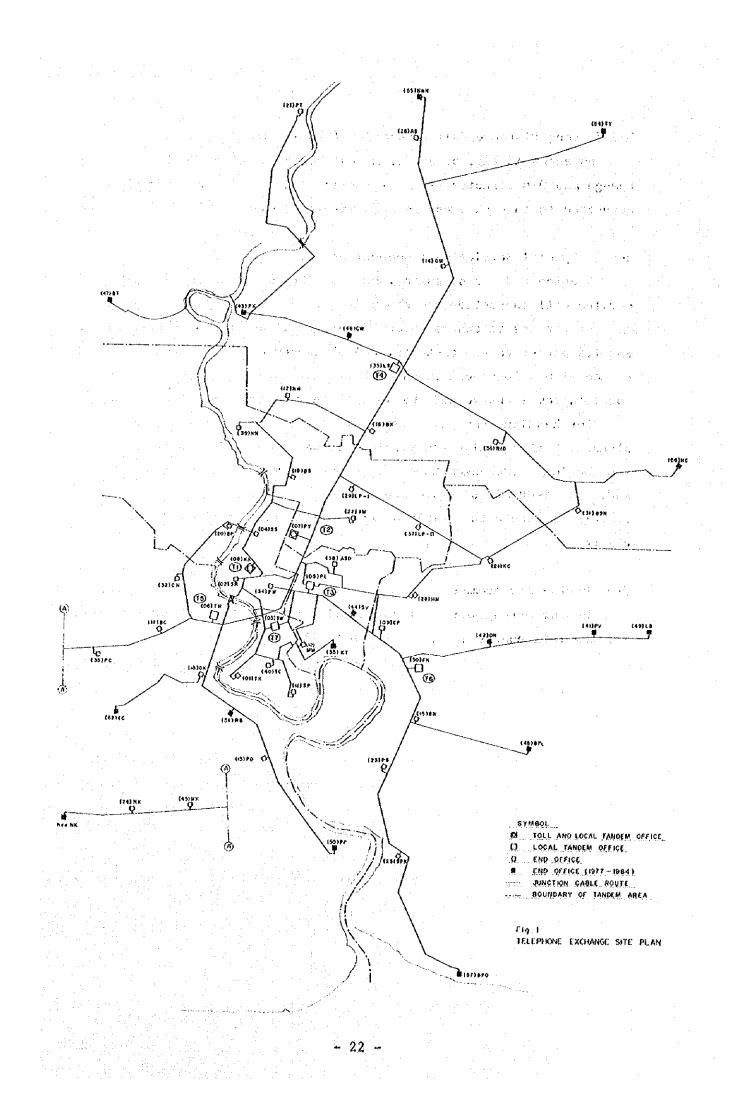
Routing and transmission loss distribution plans for special service call connection are shown in Fig. 7.

As for the telephone number inquiry call between a local exchange and its parent tandem exchange, a 4-dB tandem circuit is used in common with a local call, and 6-dB circuits are provided between each local tandem exchange and the special service exchange at SW exchange.

For handling complaint calls, four maintenance centers (MC) are planned. 6-dB circuits are provided between four maintenance centers and the local exchanges in their respective maintenance areas. In addition, 4-dB circuits are provided between any two maintenance centers to handle the complaint call originating from any local exchange.

#### 3-3 Homing Arrangement

Homing arrangements for local call, and STD call, as well as those for the maintenance area, are shown in Figs. 8 and 9.



Io         NA ME         IP72-1979/1977-1984         TOTAL           09         KK         KRUNGKASEM         20000         20000         20000           02         SR         SAMRANRAT         30000         10000         40000           20         BP         BANGPLAD         8000         3000         11000           20         BP         BANGPLAD         8000         3000         11000           34         PW         PHAHONYOTHIN         15000         20000         23000           07         PY         PHAHONYOTHIN         15000         4000         9000           371P2         LADPRAO-1         5000         2000         5000           291P-1         LADPRAO-1         5000         2000         5000           371P-2         LADPRAO-1         5000         10000         10000           39         NN         NONTHABURI         3000         2000         26000           39         NN         NONTHABURI         3000         10000         10000           345         ASOKDINDAENG         5000         10000         15000           44         SV         SUKHUMVIT         10000         10000      <		Flg	.2	NO. OF	LINES		
OB         KK         KUNGKASEM         20000	DM				NO. OF	LINES	
Q2         SAMRANRAT         30000         10000         40000           1         Q4         S5         SAMSEN         5000         5000         10000           20         BP         BANGPLAD         8000         3000         10000           30         PY         PHAHUMWAN         5000         16000         23000           37         PY         PHAHONYOTHIN         15000         5000         20000           19         BS         BANGSUE         10000         3000         13000           22         IM         INTAMARA         6000         4000         9000           37         P.2         LADPRAO-1         5000         4000         9000           39         NN ONTHABURI         2000         6000         26000           10         MM MAHAMEK         10000	NQ			NAME		1977-1984	TOTAL
1         04         SS         SAMSEN         5000         5000         10000           20         BP         BANOPLAD         8000         3000         11000           34         PW         PATHUMWAN         5000         18000         2000           19         BS         BANOSUE         10000         3000         13000           22         IM         INTAMARA         6000         4000         9000           37.LP2         LAOPRAO-1         5000         4000         9000           37.LP2         LAOPRAO-2         3000         6000         2000         5000           05         PL LOENCHIT         2000         2000         25000           38ASD         ASOKDINDAENG         5000         10000         15000           44         SV         SUKHUMVIT         -         10000         10000           33         LS         LAKSI         2000         4000         6000           33         LS         LAKSI         2000         2000         2000           34         DONMUANG         3000         3000         3000         3000           35         KT         KHLONGTOEI         -	<b> </b>					10000	
20         BP         BANGPLAD         8000         3000         11000           34         PW         PATHUMWAN         5000         16000         23000           07         PY         PHAHONYOTHIN         15000         3000         13000           19         BS         BANGSUE         10000         3000         13000           22         J.M.         INTAMARA         6000         4000         9000           37.IPZ         LADPRAO-2         3000         2000         5000           37.IPZ         LADRAO-2         3000         2000         5000           05         PL         PLOENCHIT         20000         6000         26000           05         PL         PLOENCHIT         -         10000         15000           44         SV         SUKHUMVIT         -         10000         15000           44         SV         SUKHUMVIT         -         10000         10000           31         LS         LAKSI         2000         2000         2000           26         RANGSHINN         8008         2000         2000         2000           27         PT         PATHUMTHANI         8008 </td <td>}</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	}						
34         PW         PATHUMWAN         5000         18000         23000           07         PY         PHAHONYOTHIN         15000         5000         20000           19         BS         BANGSUE         10009         3000         13000           22         IM         INTAMARA         6000         4000         9000           37         IN         NONTHABURI         3000         6000         9000           39         NN ONTHABURI         3000         2000         5000         10000         -           10         MM MAHAMEK         10000         -         10000         15000           38         ASOKDINDAENG         5000         10000         15000           44         SUKHUMVIT         -         11000         10000           33         LAKSI         2000         4000         6000           27         PATHUMHANG         8008         2000         2000           26         RANGSIT         8008         2000         2000           31         BSN         BANGSHUN         8008         3000         3000           27         PT ATHUMMHAN         8008         10000         10000 <td>TĘ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	TĘ						
07         PY         PHAHONYOTHIN         15000         5000         2000           19         BS         BANGSUE         10000         3000         13000           22         IMITAMARA         6000         4000         9000           37(P2         LAOPRAO-1         5000         4000         9000           37(P2         LAOPRAO-2         3000         6000         9000           37(P2         LAOPRAO-2         3000         6000         2000           38(ASD         ASOKDINDAENG         5000         0000         15000           38(ASD         ASOKDINDAENG         5000         0000         15000           44         SV         SUKHUMVIT							
19         BS         BANGSUE         10000         3000         13000           22         I MINTAMARA         6000         4000         10000           37IP2         LAOPRAO-2         3000         4000         9000           37IP2         LAOPRAO-2         3000         2000         5000           39         NN NONTHABURI         3000         2000         5000           10         MM MAHAMEK         10000         -         10000           38         ASOKDINDAENG         5000         10000         15000           44         SV         SUKHUMVIT         -         110000         15000           33         LS         LAKSI         2000         4000         6000           33         LS         LAKSI         2000         2000         2000           26         RS         RANGSIT         8002         2000         2000           26         RS         RANGSIT         8002         2000         2000           31         BSN         BANGSHUN         8002         3000         3000           43         RD         PANTHUMTHANI         8002         2000         2000           44 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>20000</td>							20000
2         21         IMINTAMARA         6000         4000         10000           37 LP2         LADPRAO-1         5000         4000         9000           37 LP2         LADPRAO-2         3000         6000         9000           39 INN NONTHABURI         3000         2000         5000           05 PL         PLOENCHIT         20000         6000         26000           38 ASD         ASOKDINDAENG         5000         10000         15000           44 SV         SUKHUMVIT         -         11000         10000           33 LS         LAKSI         2000         4000         6000           34 BM         DONMUANG         3000         4000         7000           16 BK         BANGKHEN         5000         2000         2000           26 RS         RANGSIT         8008         2000         2000           31 BSN BANGSHUN         8008         10000         10000           43 EK         PATHUMTHANI         8008         10000         10000           43 EK         BANGBUATHONG         -         10008         10000           46 CW         CHAENGWATANA         -         2000         2000           56	- i. [						
2         29LP-1         LADPRAO - 1         5000         4000         9000           37LP-2         LADPRAO - 2         3000         6000         9000           39         NN         NONTHABURI         3000         2000         5000           05         PL CENCHIT         20000         6000         26000           10         MM         MAHAMEK         10000					1.		
37(P-2         LADPRAO - 2         3000         6000         9000           39         NN         NONTHABURI         3000         2000         5000           05         PL.OENCHIT         2000         600         26000           10         MM         MAHAMEK         10000         -         10000           38         ASD         ASOKDINDAENG         5000         10000         15000           44         SV         SUKHUMVIT         -         11000         10000           53         KT         KHLDNGTOEI         -         10000         10000           33         LS         LAKSI         2000         4000         6000           14         DM         DONMUANG         3000         4000         7000           26         RS         RANGSIT         800%         2000         2000           27         PT         PATHUMTHANI         800%         3000         3000           43         RK         PAKKRET         -         2000         2000           46         CW         CHAENGWATANA         -         2000         2000           55         MW         NAMANAAKHON         - <td< td=""><td>r 2</td><td>29</td><td>LP-I</td><td>LADPRAO-1</td><td></td><td></td><td></td></td<>	r 2	29	LP-I	LADPRAO-1			
39         NN         NONTHABURI         3000         2000         5000           05         PL         PLOENCHIT         20000         6000         26000           10         MMAHAMEK         10000	1					6000	9000
OS         PL         PLOENCHIT         20000         -         6000         28000           3         BASD         ASOKDINDAENG         5000         10000         15000           3         BASD         ASOKDINDAENG         5000         10000         15000           44         SV         SUKHUMVIT         -         11000         15000           53         KT         KHLONGTOEI         -         10000         6000           33         LS         LAKSI         2000         4000         6000           34         BANGKHEN         5000         10000         2000           26         RS         RANGSIT         8008         2000         2000           31         BSN         BANGSHUN         8008         2000         2000           46         RM         RAMGNA         8008         3000         3000           46         CW         CHAENSWATANA         -         2000         2000           54         TY         THANYABURI         -         10008         1000           55         NWN         NAWANAKHON         -         2000         15000           55         NWN NAWANAKHON	I	39	ŃN	NONTHABURI	3000	2000	5000
3         38         ASO KOINDAENG         5000         10000         15000           44         SV         SUKHUMVIT		05	PL	PLOENCHIT		6000	
44         SV         SUKHUMVIT          11000         11000           53         KT         KHIDNGTOEI          10000         10000           33         LS         LAKSI         2000         4000         6000           14         DM         DONMUANG         3000         4000         7000           16         BK         BANGKHEN         5000         5000         10000           26         RANGSIT         8008         2000         2000           27         PT         PATHUMTHANI         8008         3000         3000           36         RID         RAMIDRA         8008         10000         10000           46         CW         CHAENGWATANA          5000         5000           47         T         BANGBUATHONG          10006         10000           55         NW         NAWANAKHON          2000         20000           56         NC         NONGCHOK          10006         10000           12         NW MAMANKHON          20000         -         20000           56         NC         NONGCHOK	·						
53         KT         KHLONGTOEI          1,0000         10000           33         LS         LAKSI         2000         4000         6000           14         DM         DOMMUANG         3000         4000         7000           16         BK         BANGKHEN         5000         10000         2000           26         RS         RANGSIT         8008         2000         2000           27         PT         PATHUMTHANI         8008         3000         3000           31         BSN         BANGSHUN         8008         3000         3000           43         RK         PAKKRET          2000         2000           43         RK         PAKKRET          2000         2000           55         WM         NAWANAKHON          2000         2000           55         NW         NAWANAKHON          2000         2000           55         NW         NAWANAKHON          2000         10000           12         NW         NGAWANKHON          2000         20000           15         BA         DAGKANONG	T3	38	1 I		5000		
33         LS         LAKSI         2000         4000         6000           14         DM         DONMUANG         3000         4000         7000           16         BK         BANGKHEN         5000         5000         10000           26         RS         RANGSIT         8008         2000         2000           27         PT         PATHUMTHANI         8008         2000         2000           31         BSN         BANGSHUN         8008         3000         3000           36         RID         RAMINDRA         8008         10000         10000           43         PK         PAKKRET         -         2000         2000           46         CW         CHAENGWATANA         -         5000         5000           47         BT         BANGBUATHONG         -         10008         1000           55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         10008         1000           12         NW         NGAWONGWAN         5000         10000         15000           13         PD         PHRAPRADAENG <td></td> <td></td> <td>SV</td> <td></td> <td>•••</td> <td></td> <td></td>			SV		•••		
JAD         DONMUANG         3000         4000         7000           14         DM         DONMUANG         3000         4000         7000           16         BK         BANGKHEN         5000         5000         10000           26         RS         RANGSIT         8008         2000         2000           27         PT         PATHUMTHANI         8008         2000         2000           36         RID         RAMINDRA         8008         3000         3000           4         36         RID         RAMINDRA         -         2000         2000           43         FK         PAKKRET         -         2000         2000           46         CW         CHAENGWATANA         -         10008         10000           55         NWN         NAWANAKHON         -         2000         2000           55         NWN         NAWANAKHON         -         2000         10000           12         NW         NGAMWONGWAN         5000         10000         15000           12         NW         NGAMWONGWAN         5000         10000         10000           13         PD         PHRAPRAD							
16         BK         BANGKHEN         5000         5000         10000           26         RS         RANGSIT         800%         2000         2000           27         PT         PATHUMTHANI         800%         2000         2000           31         BSN         BANGSHUN         800%         3000         3000           4         6RID         RAMINDRA         800%         10000         10000           43         RID         RAMINDRA         -         2000         2000           46         CW         CHAENGWATANA         -         5000         5000           47         BT         BANGBUATHONG         -         1000%         1000           55         WW         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         1000%         1000           12         NW         NGAMWONGWAN         5000         10000         15000           13         PD         PHRAPRADAENG         3000         7000         10000           13         PD         PHRAPRADAENG         3000         2000         2000           232         CN	1					and the second s	· · · · · · · · · · · · · · · · · · ·
26         RS         RANGSIT         800%         2000         2000           27         PT         PATHUMTHANI         800%         2000         2000           31         BSN         BANGSHUN         800%         3000         3000           4         36         RID         RAMINDRA         800%         3000         10000           43         PK         PAKKRET         -         2000         2000           46         CW         CHAENGWATANA         -         5000         5000           46         CW         CHAENGWATANA         -         1000%         1000           54         TY         THANYABURI         -         1000%         1000           55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         1000%         1000           12         NW         NGAMWONGWAN         5000         10000         15000           13         PD         PHRAPRADAENG         3000         7000         10000           14         BK         DAOKANONG         8000         2000         30000           15         BC	Ċ.						
27         PT         PATHUMTHANI         800%         2000         2000           31         BSN         BANGSHUN         800%         3000         3000           4         36         RID         RAMINDRA         800%         10000         10000           43         PK         PAKKRET         -         2000         2000           46         CW         CHACKGWATANA         -         5000         5000           47         BT         BANGBUATHONG         -         1000%         1000           54         TY         THANYABURI         -         1000%         1000           55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         1000%         1000           12         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         20000         20000         10000           13         PD         PHRAPRADAENG         3000         7000         10000           14         BOK         DAOKANONG         8000         4000         9000           32         CN	]				a second of the second s		
31 BSN         BANGSHUN         800x         3000         3000           4         36 RID         RAMINDRA         800x         10000         10000           43 PK         PAKKRET         -         2000         2000           46 CW         CHAENGWATANA         -         5000         5000           47 BT         BANGBUATHONG         -         1000%         1000           54 TY         THANYABURI         -         1000%         1000           55 NWN         NAWANAKHON         -         2000         2000           56 NC         NONGCHOK         -         1000%         1000           12 NW         NGAMWONG WAN         5000         10000         15000           06 TH         THONBURI         20000         -         20000           13 PD         PHRAPRADAENG         3000         7000         10000           14 B DK         DAOKANONG         8000         2000         10000           24 NK         NONGKHAEM         1 184%         2000         2000           35 PC         PHASEECHAROEN         2000         3000         5000           45 MK         MUBANSETHAKIT         -         2000         2000	{F	20	PT		800	2000	
4       36       RID       RAMINDRA       800*       10000       10000         43       PK       PAKKRET        2000       2000         46       C W       CHAENGWATANA        5000       5000         47       BT       BANGBUATHONG        1000*       1000         54       TY       THANYABURI        1000*       1000         55       WN       NAWANAKHON        2000       2000         56       NC       NORGCHOK        1000*       1000         12       NW       NGAMWONG WAN       5000       10000       15000         13       PD       PHRAPRADAENG       3000       7000       10000         14       BO       DAOKANONG       8000       2000       10000         15       BX       DAOKANONG       8000       2000       10000         16       DK       DAOKANONG       8000       2000       3000       5000         15       S2       CN       CHARUNSANITWONG       5000       4000       9000         55       PP       PHOMPRACHOOL       -       1000*       1000	ł				the second and the second second		
43         PK         PAKKRE T	ام <del>ا</del>						
46         CW         CHAENGWATANA         -         5000         5000           47         BT         BANGBUATHONG         -         10008         1000           54         TY         THANYABURI         -         10008         1000           55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         10008         1000           12         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         2000         -         20000           13         PD         PHRAPRADAENG         3000         7000         10000           18         DK         DAOKANONG         8000         2000         2000           24         NK         NONGKHAEM         1184\$         2000         2000           32         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP	•••						
47         BT         BANGBUATHONG         -         1000%         1000           54         TY         THANYABURI         -         1000%         1000           55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         1000%         1000           12         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         20000         -         20000           13         PD         PHRAPRADAENG         3000         7000         10000           14         B bk         DAOKANONG         8000         2000         10000           24         NK         NONGKHAEM         1         184\$         2000         2000           25         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         10008         1000           51	1						
55         NWN         NAWANAKHON         -         2000         2000           56         NC         NONGCHOK         -         1000%         1000           12         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         20000         -         20000           13         PD         PHRAPRADAENG         3000         7000         10000           17         BC         BANGCAE         6000         4000         10000           18         DK         DAOKANONG         8000         2000         10000           24         NK         NONGKHAEM         1         184\$         2000         2000           25         22         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000\$         1000           51         RB         RACHBURANA         -         4000         40000				BANGBUATHONG			
56         NC         NONGCHOK          I 000*         1000           I2         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         20000          20000           13         PD         PHRAPRADAENG         3000         7000         10000           17         BC         BANGCAE         6000         4000         10000           24         NK         NONGKHAEM         1184½         2000         2000           24         NK         NONGKHAEM         1184½         2000         2000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSETHAKIT          2000         2000           50         PP         PHOMPRACHOOL          1000%         1000           51         RB         RACHBURANA          4000         4000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         15000         2000           21         KC							
I 2         NW         NGAMWONGWAN         5000         10000         15000           06         TH         THONBURI         20000							
06         TH         THONBURI         20000	1						
13         PD         PHRAPRADAENG         3000         7000         10000           17         BC         BANGCAE         6000         4000         10000           18         DK         DAOKANONG         8000         2000         10000           24         NK         NONGKHAEM         1184#         2000         2000           24         NK         NONGKHAEM         1184#         2000         2000           32         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSETHAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000#         1000           51         R8         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           50         PP         PHRAKANONG         5000         3000         8000           62         EC         EKACHAI         -         4000         4000           20000         - <t< td=""><td></td><td></td><td></td><td></td><td></td><td>10000</td><td></td></t<>						10000	
I         7         BC         BANGCAE         6000         4000         10000           18         DK         DAOKANONG         8000         2000         10000           24         NK         NONGKHAEM         1184%         2000         2000           32         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000%         1000           51         R8         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         15000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         -         5000           23	:					7000	
18         DK         DAOKANONG         8000         2000         10000           24         NK         NONGKHAEM         1184%         2000         2000           32         CN         CHARUNSANITWONG         5000         4000         9000           35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000%         1000           51         RB         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         15000         15000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         -         5000           23         PS	-						
10         Dr.         Nongkhaem         1184%         2000         2000           32         CN         Charunsanitwong         5000         4000         9000           35         PC         Phaseecharoen         2000         3000         5000           45         MK         MUBANSE THAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000%         1000           51         RB         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         15000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         -         5000           23         PS         POOCHAOSAMINGPRAI         5000         -         5000           41         PV<	ł						
5       32       CN       CHARUNSANITWONG       5000       4000       9000         35       PC       PHASEECHAROEN       2000       3000       5000         45       MK       MUBANSETHAKIT       -       2000       2000         50       PP       PHOMPRACHOOL       -       1000%       1000         51       RB       RACHBURANA       -       4000       4000         52       EC       EKACHAI       -       4000       4000         30       PN       PHRAKANONG       5000       3000       8000         30       PN       PHRAKANONG       5000       -       20000         21       KC       KLONGCHAN       8000       7000       15000         23       PS       POOCHAOSAMINGPRAI       5000       -       5000         23       PS       SAMUTPRAKAN       5000       -       5000         41       PV	: · ·						
35         PC         PHASEECHAROEN         2000         3000         5000           45         MK         MUBANSETHAKIT         -         2000         2000           50         PP         PHOMPRACHOOL         -         1000%         1000           51         RB         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         3000         8000           30         PN         PHRAKANONG         5000         15000         20000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         -         5000           23         PS         SAMUTPRAKAN         5000         -         5000           41         PV <t< td=""><td> F</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	F						
45       MK       MUBANSETHAKIT       -       2000       2000         50       PP       PHOMPRACHOOL       -       1000%       1000         51       RB       RACHBURANA       -       4000       4000         52       EC       EKACHAI       -       4000       4000         30       PN       PHRAKANONG       5000       3000       8000         30       PN       PHRAKANONG       5000       3000       8000         09       CP       CHAIYAPRUK       20000       -       20000         15       BN       BANGNA       10000       5000       15000         21       KC       KLONGCHAN       8000       7000       15000         23       PS       POOCHAOSAMINGPRAI       5000       2000       7000         25       SPK       SAMUTPRAKAN       5000       -       5000         28       HM       HUAMAK       8000       4000       12000         41       PV       PRAVET       -       1000%       1000         42       ON       ONNUT       -       1000%       1000         48       BPL       BANGPOO       - </td <td>r5 </td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	r5						
50         PP         PHOMPRACHOOL         -         1000%         1000           51         RB         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           09         CP         CHAIYAPRUK         20000         -         20000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         2000         7000           25         SPK         SAMUTPRAKAN         5000         -         5000           41         PV         PRAVET         -         1000%         1000           42         ON         ONNUT         -         5000         5000           48         BPL         BANGPHLI         -         1000%         1000           49         LB         LADKABANG         -         1000%         1000           57         BPO         BANGPOO	÷	1.112		والمراد المهرر فالربعية المعارف للمستر بعبرا بمرا وتستر والمدف كملاه فللعاق والارام المار		1	
51         RB         RACHBURANA         -         4000         4000           52         EC         EKACHAI         -         4000         4000           30         PN         PHRAKANONG         5000         3000         8000           09         CP         CHAIYAPRUK         20000         -         20000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         2000         7000           25         SPK         SAMUTPRAKAN         5000         -         5000           41         PV         PRAVET         -         1000%         1000           42         ON         ONNUT         -         5000         5000           48         BPL         BANGPHLI         -         1000%         1000           49         LB         LADKABANG         -         1000%         1000           57         BPO         BANGPOO         -         1000%         1000           63         SW         SURAWONG <t< td=""><td>ł</td><td></td><td>······</td><td>the second particular and the second second second second second</td><td>· ····</td><td>·</td><td></td></t<>	ł		······	the second particular and the second second second second second	· ····	·	
52         EC         EKACHAI          4000         4000           30         PN         PHRAKANONG         5000         3000         8000           09         CP         CHAIYAPRUK         20000          20000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000          5000           25         SPK         SAMUTPRAKAN         5000          5000           41         PV         PRAVET          10008         1000           42         ON         ONNUT          5000         5000           48         BPL         BANGPHLI          10008         1000           49         LB         LADKABANG          10008         1000           63         SW         SURAWONG         30000         6000         36000           7         HM         HUAMAK         30000         2000         5000	ł		i		<u> </u>		
O9         CP         CHAIYAPRUK         20000         -         20000           15         BN         BANGNA         10000         5000         15000           21         KC         KLONGCHAN         8000         7000         15000           23         PS         POOCHAOSAMINGPRAI         5000         2000         7000           25         SPK         SAMUTPRAKAN         5000         -         5000           6         28         HM         HUAMAK         8000         4000         12000           41         PV         PRAVET         -         10008         1000           42         ON         ONNUT         -         5000         5000           48         BPL         BANGPHLI         -         10008         1000           49         LB         LADKABANG         -         10008         1000           63         SW         SURAWONG         30000         6000         36000           7         O1         TK         TANONTOK         3000         2000         5000						4000	4000
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6         28         HM         HUAMAK         8000         4000         12000           41         PV         PRAVET         -         1000%         1000           42         ON         ONNUT         -         5000         5000           48         BPL         BANGPHLI         -         1000%         1000           49         LB         LADKABANG         -         1000%         1000           57         BPO         BANGPOO         -         1000%         1000           03         SW         SURAWONG         30000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000	.			······································		2000	
41         PV         PRAVET         -         10008         1000           42         ON         ONNUT         -         5000         5000           48         BPL         BANGPHLI         -         10008         1000           49         LB         LADKABANG         -         10008         1000           57         BPO         BANGPOO         -         10008         1000           03         SW         SURAWONG         30000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000	_  ·				· · · · · · · · · · · · · · · · · · ·	4000	
42         ON         ONNUT          5000         5000           48         BPL         BANGPHLI          1000\$         1000           49         LB         LADKABANG          1000\$         1000           57         BPO         BANGPOO          1000\$         1000           03         SW         SURAWONG         30000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000	r 6						
48         BPL         BANGPHLI          1000*         1000           49         LB         LADKABANG          1000*         1000           57         BPO         BANGPOO          1000*         1000           03         SW         SURAWONG         3000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000	-						
49         LB         LADKABANG         -         1000g         1000           57         BPO         BANGPOO         -         1000g         1000           03         SW         SURAWONG         30000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000	·  -	ا منه		**************************************			
57 BPO         BANGPOO         -         10008         1000           03 SW         SURAWONG         30000         6000         36000           01 TK         TANONTOK         3000         2000         5000           11 SP         SATHUPRADIT         3000         2000         5000	ł						
03         SW         SURAWONG         30000         6000         36000           01         TK         TANONTOK         3000         2000         5000           11         SP         SATHUPRADIT         3000         2000         5000							
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		40	TC	TROKCHAN	5000	10000	15000

- 23 -

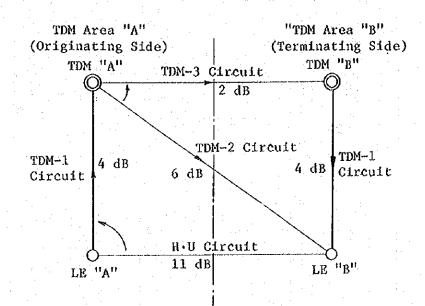


Fig. 3 Local Call Connection

Note:

1. . . .

H.U Circuit : High-usage circuit - •

TDM-1 Circuit :	Circuit between Local Exchange
	and its parent Tandem Exchange
TDM-2 Circuit :	Circuit between Local Exchange
· ·	and Tandem Exchange in other
	Tandem Area
TDM-3 Circuit :	Circuit between any two Tandem

Exchanges

24

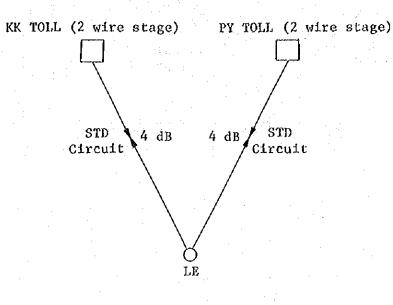
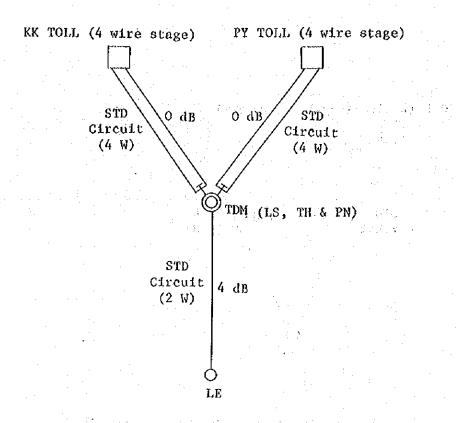


Fig. 4 Long-distance Call Connection (STD Service) - 1

#### Note:

This figure applies to Local Exchanges having office codes starting with "2", that is, KK, SS, SR, PW, IM, PL, ASD, SV, KT, MM, SW, TC, SP, TK and PY Local Exchanges.

STD circuit is established on 2 wire-4 dB basis.



Long-distance Call Connection (STD Service) - 2

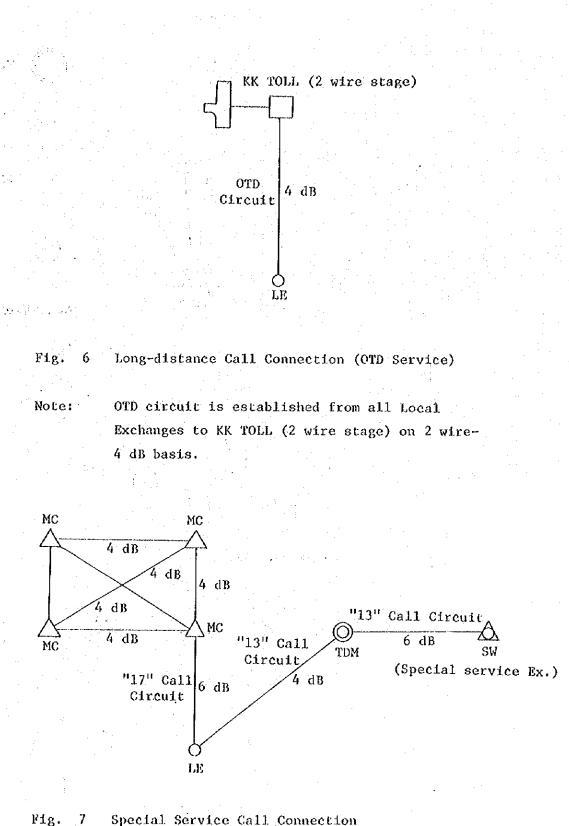
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Note:

Fig.

5

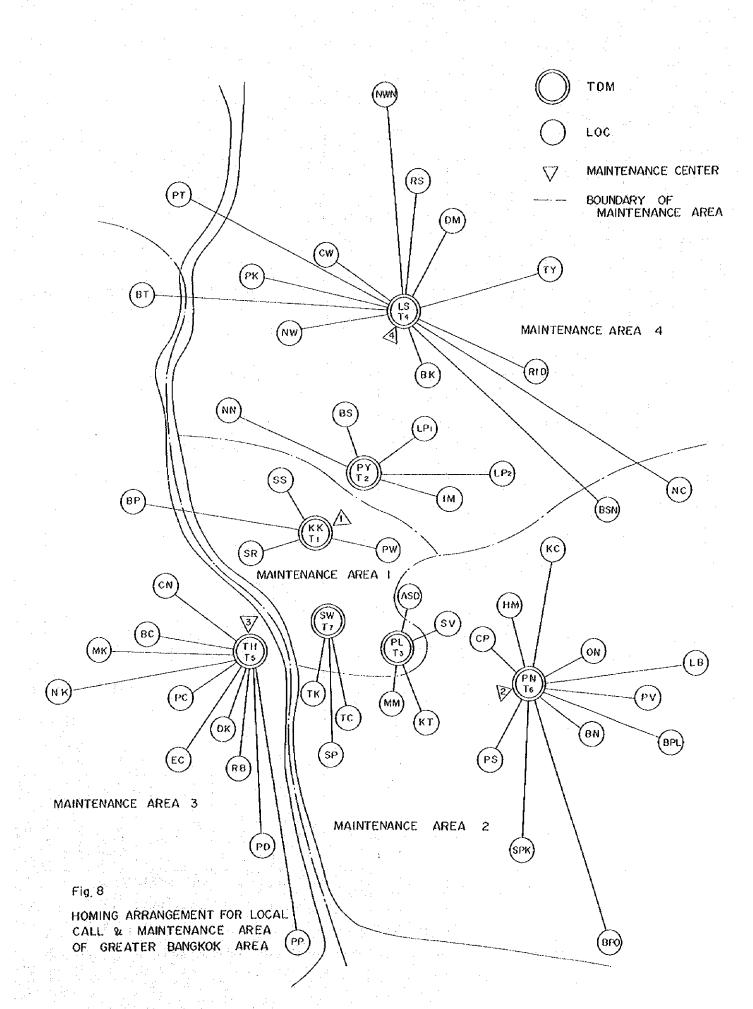
This figure applies to LS, TH & PN Tandem Exchanges and Local Exchanges in their Tandem Areas as well as BP, BS, LP 1, LP 2, NN & BSN Local Exchanges. O dB on STD circuit (4 W) from Tandem Exchanges to KK & PY TOLL (4 wire stage) and vice versa is ensured by means of PCM 2W - 4W channel.



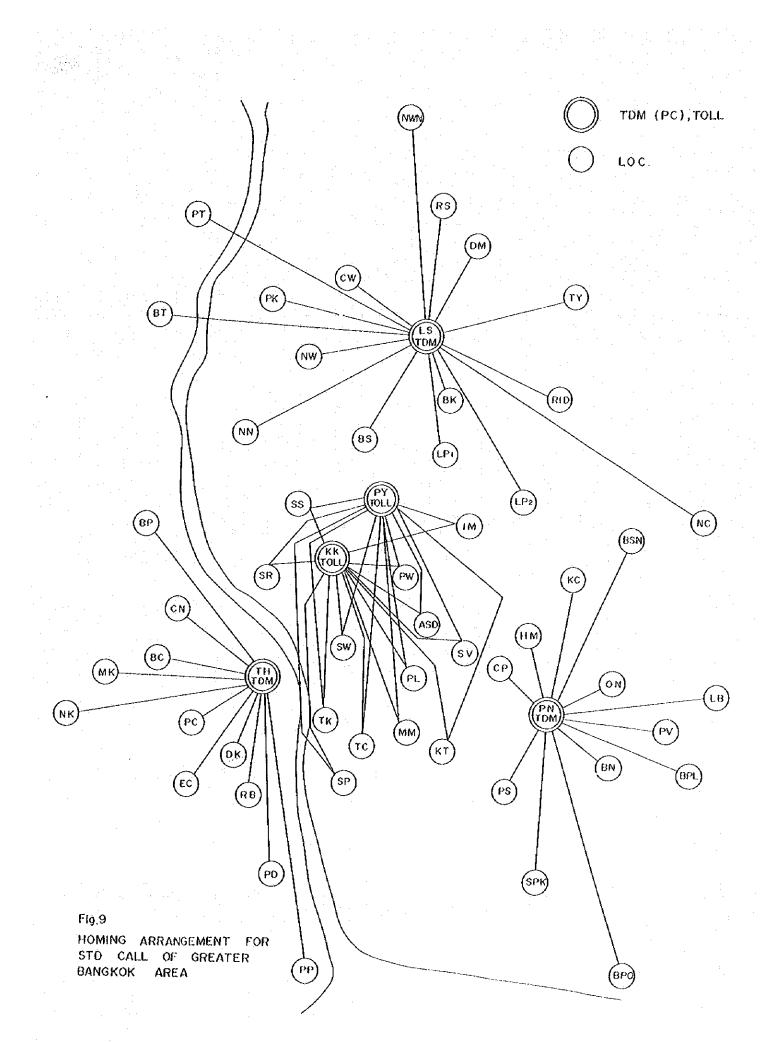
Special Service Call Connection

Note:

"13" call circuit from Local Exchange to its parent Tandem Exchange is not prepared, but, "13" call is carried on TDM-1 circuit shown in Fig. 3, in the same way as Local Call Connection.

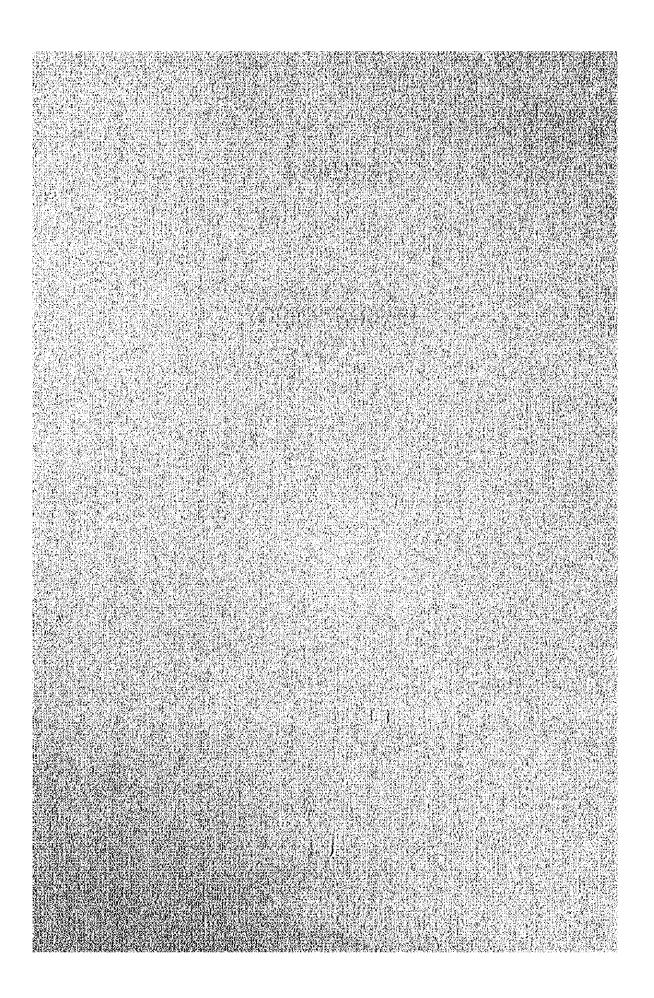


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# SECTION 4 DESIGN POLICY

LOIGN POLICY 



#### SECTION 4. DESIGN POLICY and state bart for the sector of the sector of

4-1 Basic Idea

The objective of this detailed design is to establish the junction network in the Bangkok Metropolitan Area to realize the demand-fulfilment program and local exchange site plan covered by The EDP Project (1977 - 1984).

and the policies of the same

The EDP Project (1972 - 1979) which is in progress will be completed in 1979 and, after that the telephone service will be operated by 7 tandem exchanges instead of the existing 3 tandem exchanges. In the EDP Project (1977 - 1984), the number of tandem exchanges does not change, but the number of local exchanges is increased by 17. Therefore, the 14 new junction routes from each newly planned local

exchange are designed to connect it with its parent tandem exchange and adjacent local exchange in the same tandem area.

In order to conform to the change in routing and transmission loss distribution plans, PCM 2W - 4W circuit was adopted for the STD circuit between KK and PY toll exchanges and LS, TH and PN tandem exchanges. Other required circuits are accommodated in the new or existing cables in the existing junction routes.

4-2 Determination of Number of Cable Pairs

On the basis of the traffic data as well as the basic idea, the circuit assembly list is prepared.

This circuit assembly list is arranged by separating the circuits within the same tandem area and the circuits to the exchange in another tandem area, and by deciding the transmission loss and transmission system from the economical viewpoint.

From this list, the number of circuits between exchanges is calculated, based on the kind of transmission system, and the number of cable pairs is determined. This cable pair determination is based on the number of circuits required in 1994 (70% increase in the number of circuits required in 1984). The quantity of cables required for the next project (five year hence) is also calculated. However, the construction of underground conduits is difficult because of the special conditions in Bangkok. Therefore, it is planned, for efficient use of the conduits, that the cables be placed with the maximum number of cable pairs in consideration of the existing plant and road conditions of the junction routes.

#### 4-3 Adoption of PCM System

As stated in the foregoing, in line with the expansion of the exchange area, the length of the junction circuit becomes longer, so that the PCM system is adopted to keep the transmission loss and line resistance within the limits (line resistance limit: 2,000 ohm maximum). Since the civil works for increasing conduits are difficult in Bangkok, the PCM system is also adopted for effective use of the existing cables.

4-4 Adoption of Toll PEF-P Cable

There are two kinds of cables to be used for the PCM system operation, i.e., the ASP cable and the toll PEF-P cable. The toll PEF-P cable is adopted even though it is higher in cost because it has the following advantages:

- (1) PCM system accommodation ratio is high, and
- (2) The number of repeating points can be reduced by lengthening the distance between the repeaters.

#### 4-5 Selection of Routes

(1) Bangbuathong route

After a comparison study of the following three routes, (a), (b) and (c) for the junction routes between newly planned Bangbuathong exchange and the Laksi tandem exchange, the route (a) has been chosen for reason of economy even though it runs along the canal.

(a)	BT-13, 3-PK-6, 5-CW-4, 2-LS	24 kn	Ł
(b)	BT-17.6-NN-4.2-NW-5.3-BK-4.7-LS	31.8 km	۱
(c)	BT-17.6-NN-5.4-BS-6.8-LS	29,8 km	۱

#### (2) Khlong Toei route

There exists a conduit route via Rama IV road between newly planned Khlong Toei exchange and the existing Mahamek exchange.

However, since no vacant conduit was available, and there exists difficulty in constructing additional conduits due to the traffic congestion along the route, Nang Linchi - Nonsi road route is selected although the new route is approximately 800 meters longer than the existing route.

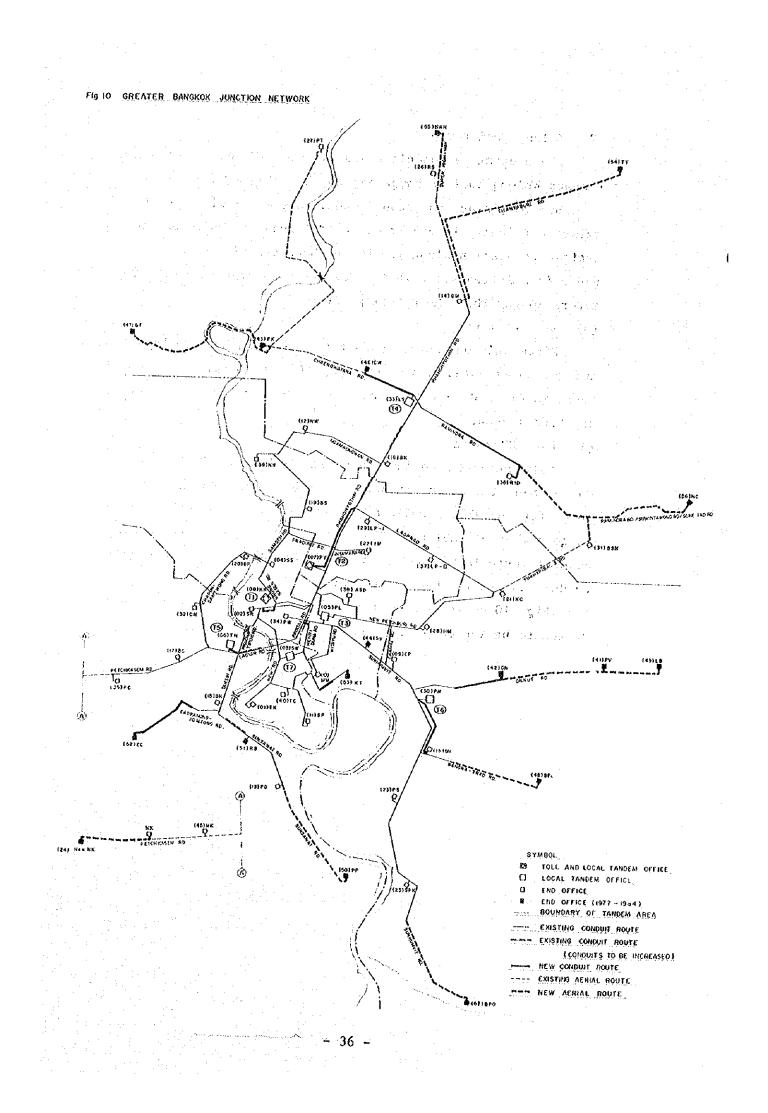
(3) KK - PL route

Since only one spare conduit is available between PL No. 32 and No. 58 manholes on the existing KK - PL route, a new conduit route is planned between PL No. 63 and No. 147 manholes along the Rama I road.

(4) KK - SR route

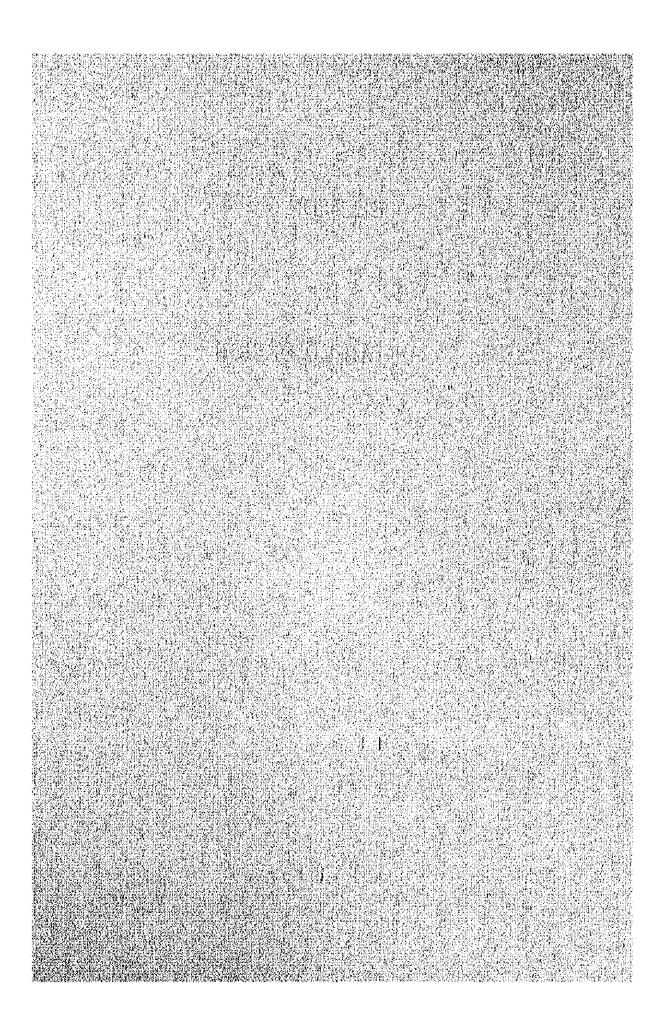
Only one spare conduit is available between KK No. 46 and No. 50 manholes on the existing KK - SR route, and there is no space for installing coils and repeaters in manholes because a large number of cables run in this section. Therefore, a new conduit route is planned from KK No. 128 manhole to the existing conduit in Chakra Phad Phong road.

(5) Fig. 10 shows the new conduits routes, the existing conduit routes to be increased and the new aerial cable routes.



# **SECTION 5**

## DETAILED DESIGN



SECTION 5. DETAILED DESIGN

5-1 Loading Layout

The loading layout is arranged by type H-88 loading system which the TOT employs as the standard loading system.

The design principles of loading system are as follows:

5-1-1 Number of Loaded Pairs

The number of loaded pairs will meet the requirement in 1984.

5-1-2 Loading Spacing

(1) The starting point of loading spacing is the higher ranking exchange, such as toll or tandem exchange in principle.

(2) In case the new exchange site is undecided, the starting point of loading spacing is the existing exchange, and rearrangement of loading spacing is made at the new exchange site when

the site is determined.

5-1-3 Compensation for Loading Spacing

(1) Compensation for full loading spacing section

Should the standard loading spacing not satisfy the allowable minimum values, then it must be compensated by the capacitance equivalent to the required length of cable.

(2) Compensation for half loading spacing section

In case of a non-active circuit, should the end section be smaller than So/4, the Building-Out-Capacitor (B.O.C.) is inserted and should it be larger than  $3/4 \cdot So$ , the compensating network is inserted.

The active circuit is inserted with either the B.O.C. or compensating network in order to maintain a complete half section. (3) Loading layout for toll PEF-P cable

Since the mutual capacitance of ASP cable is 52 nF/km while that of toll PEF-P cable is 38.5 nF/km, the loading spacing of toll PEF-P cable differs from that of ASP cable. The standards are as follows:

Inductance of loading coil 88 mH
 Standard loading spacing (So) 2470 m
 Half loading spacing (So/2) 1235 m
 Deviation from standard loading spacing

(So-S)/So x 100 ----- within ±2%

 $(S-Si)/S \times 100$  ----- within  $\pm 2\%$ 

Where, S: average loading spacing

Si: individual loading spacing

5-1-4 Data for Determining Loading Spacing

The study data for loading layout for each section are given in the annexed sheets.

5-2 Cable Design for PCM System

TOT adopts the PCM-24 channel system in the Bangkok junction network as one of the transmission media. Therefore, in this detailed design, the same system applies to new and existing sections.

The design principles for the PCM system are as follows:

#### 5-2-1 Application of PCM System

(1) Use of existing system

For the existing PCM system sections, the effective use of PCM circuits is considered.

(2) Application to 0 dB circuit

The PCM 2W - 4W circuit is applied to the 0 dB circuit linking LS, TH and PN tandem exchanges and KK and PY Toll exchanges. (3) Application to other circuits

The PCM circuit is adopted to keep the transmission loss and line resistance within the limits (2,000 ohm) in consideration of the existing junction cables and PCM circuits, as well as the economy of new junction cables installed for newly planned exchanges.

40 -

5-2-2 Repeater Spacing

The repeater spacing is arranged in consideration of the kind of cable, type of junction cable and number of PCM systems required 15 years hence, as well as the following points:

(1) Existing PCM system cable

As for the existing PCM system cable, the repeater spacing is not changed in principle.

In case the number of systems required 15 years hence cannot be accommodated without alteration of existing repeater spacing and the cable pairs for PCM operation are insufficient, the required PCM systems are planned to be operated by use of other existing cables or new cables.

(2) New PCM operated cable

Some allowance is provided in the repeater spacing in consideration of the change in the number of PCM systems required 15 years hence and the condition that the new exchange sites remain undecided.

5-2-3 Line Assignment for PCM System

(1) ASP cable

Line assignment for PCM system is made from the first pair of each unit placed in the central layer, but the units in outer-most layer are not used.

The line assignments of the west to east group and the east to west group are arranged in different units separated as far as possible.

(2) Toll PEF-P cable

Line assignments are made for the west to east group from the No. 1 quad of the center layer. For the east to west group, considerations are made on the number of systems, number of loaded pairs, etc. required 15 years hence. A shielding layer is provided between the two groups.

In case the line assignments are made in the same layer for east to west and west to east groups, more than 2 quads are provided as shielding quad between groups. 5-2-4 Calculation of Number of PCM Systems

(1) The required number of systems is calculated according to the equation below:

X = C/24 (Fractions to be raised to next round number) where, X: No. of PCM systems C: No. of circuits

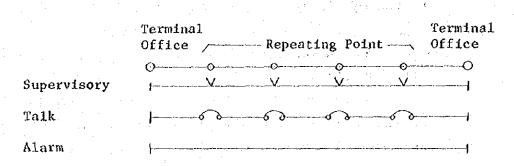
(2) Spare system

1 spare system is provided in each PCM operated cable section.

In case the PCM systems are operated by use of more than 2 cables in 1 section, the number of spare systems is equal to the number of cables.

(3) Maintenance pairs

The maintenance pairs for supervisory, talk and alarm (in case of unattended office) are provided according to the diagram shown below:



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5-3 Comments on the Cable Routes

In this detailed design, aerial cables are provided in the sections listed below. In case the conduits are required for the local network designed by TOT, alteration to underground cable is needed.

(1)	DM exchange	- TY exchange	From DM exchange
(2)	BSN exchange	- NC exchange	From BSN exchange
(3)	ON exchange	- PV exchange	From ON exchange
(4)	PD exchange	- PP exchange	From PD exchange
(5)	RID exchange	- BSN exchange	From RID. exchange

5-4 Design for Gas Pressurization of Cables

New underground and aerial cables will be all gas pressurized cables, as the existing junction cables are.

For this purpose, test valves, gas dams, by-pass valves and contactors will have to be installed on the junction cables.

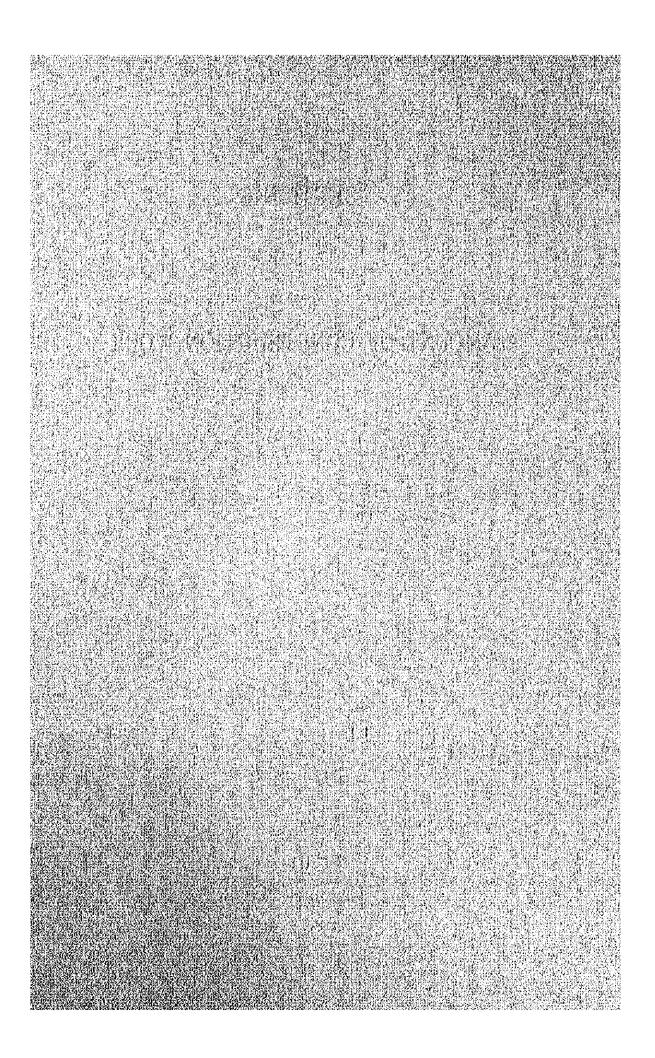
However, since the equipments in the exchange offices, such as air dryer equipment, etc., will be used jointly with the subscribers cables, they are excluded from this project.

5-5 Engineering Data

Engineering data concerning the design of this project are attached hereto.

# SECTION 6

# AMOUNT OF CONSTRUCTION WORK



	Åmount of	Constri	ection Wor	rk Han har
SECTION	UNIT DESIGNATION	UNIT	NO. OF UNITS'	REMARKS
			or	
	Δ - 7	ea,	86 108	
A .	$\begin{array}{r} \mathbf{A} \ - \ 8 \\ \mathbf{A} \ - \ 12 \end{array}$	н	108 `44	Joint-Pole
	Section "A" Total	lan <b>H</b> arang Santarang Santarang	238	
	Aina		34	
	BÍBS	ea II		
	B1CS B1DS	u U	63 13	
В				
	B2BS	100 - 100 -	14	
	Section "B" Total	U.	124	e sign to such a sign of the state of the source of the
			建气油 化晶合铁 化晶合铁	
			0	
	C1 - 2A	ea	34	
	<b>C1 - 1A</b>		53	
c	C2 - 1A	17	13	
	C3 - 1A	11	5	
	Section "C" Total	la e <b>ti</b> e conse la consecutiva	105	
an Hurr (Herricken) Status		, 1÷		
	E 100 , 9 B1	100 m	46	
	E 200 9 B1		2	
	E 50 . 65 PEF 1	1 <b>n</b>	218	
	E 100 . 65 PEF 1	1.11	132	
i n <b>B</b> ringe	E 50.9 PEF 1	н	541	
	E 100, 9 PEF 1		49	
B	E 150 . 9 PEF 1	11 11	94	
	E 300 . 9 PEF 1	n	80	

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SECTION	UNIT DESIGNATION	UNIT	NO. OF UNITS	REMARKS
	F 50, 9 PEF 1	100 in	3	}Submarine-Cable
F	F 300 . 9 PEF 1	· • • •	6	Jupitar me-capte
	Section "F" Total	11	9	
		1		
:				
	G 1800 , 5 Bl		41	
	G 600 . 65 Bl	Ħ.,	80	
	G 900 . 65 Bl	e II j	87	
G	G 1200 . 65 B1	u î	232	
	G 300 9 B1	11,	25	
		- <b>11</b>		
·   · · · ·		<b>11</b>		and the second
	G 600, 9 PBF 1		123	
	Section "G" Total	1)	2,041	
			:	
	J 100 . 5 P	10 m	\$ · •	( ) No. of termination cable
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	J 300 . 5 P	. 14		-
	J 400 . 5 P	3 <b>)</b> 1	5(8)	
	J 50, 65(PEF)	H.	2(2)	· •
J		i ni i		
		11		
				· ·
	<ul> <li>A second s</li></ul>			
	Section "J" Total	11 · · · ·	183(236)	
			1 . '	
	F	F       50, 9       PEF 1         F       300, 9       PEF 1         Section "F" Total         C       900, 5       B1         G       1200, 5       B1         G       1500, 5       B1         G       1800, 5       B1         G       600, 65       B1         G       600, 65       B1         G       1200, 65       B1         G       300, 9       B1         G       300, 9       B1         G       600, 9       9         G       50, 9       9         J       100, 5       9         J       100, 5       9         J       200, 5       9         J       300, 5       9         J       400, 5       9         J       50, 65 (PEF)       50	F 50, 9 PEF 1 100 m $F 300.9 PEF 1 "$ Section "F" Total " $G 900.5 B1 100 m$ $G 1200.5 B1 100 m$ $G 1200.5 B1 100 m$ $G 1500.5 B1 100 G$ $G 600.65 B1 100 G$ $G 1200.65 B1 100 G$ $G 1200.9 B1 100 G$ $G 1200.9 B1 100 G$ $G 1000.9 B1 100 G$ $G 1000.9 PEF 1 100 G$ $G 1000.5 P$ $J 1000.5 P$ $J 3000.5 P$ $J 3000.5 P$ $J 300.5 P$ $J 300.5 P$ $J 300.5 P$ $J 1000.65 (PEF)$ $J 1000.9 (PEF)$ $J 1000.9 (PEF)$ $J 1000.9 (PEF)$ $J 1000.9 (PEF)$	SECTION         UNIT DESIGNATION         UNIT         UNITS           F         50,9         PEF 1         100 m         3           F         300.9         PEF 1         "         6           Section "F" Total         "         9           G         900.5         B1         "         9           G         100 m         41         100 m         41           G         1200.5         B1         "         22           G         1500.5         B1         "         3           G         1800.5         5         "         30           G         1800.65         B1         "         31           G         600.65         B1         "         80           G         300.9         B1         "         232           G         300.9         B1         "         1,262           G         50.9         PEF 1         "         11           G         600.9         PEF 1         "         123           Section "G" Tota1         "         2,041         130(166)           J         100.5         "         130(166)

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SECTI	ON	UNIT D	esiçn	ATION	UNIT	NO U	. OF NITS		REMAR	KS	
		M 1 A	р		еа		52				
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		S 150	)		n		13				
		S 200	<b>)</b>		11		18				
		S 250	<b>)</b>		- 11		2				
S		s 300	)		F8		16				
•		S 350	)		н.		5				
		S 400	)		· H		12				
		s 450	)		FI	5. <sup>1</sup> .	15 ··				
		S 500	)		11		14				

- 49 -

		· ·		
SECTION	UNIT DESIGNATION	UNIT	NO. OF UNITS	REMARKS
•	S 600	ea u	1.5	
	S 700		8	
	S 900	it U	2	
	S 1200		1	
	S 8 (44mH)	<b>.</b>	2	4Q Sleeve coil
	S 100 (44mH)	9	3	
	S 200 (44mH)	- 11	4.	
	S 300 (44mH)	11	3	
	S 350 (44mH)	11	1	
	S 400 (44mH)	11	2	
	S 450 (44mH)		2	
	S 500 (44mH)	0 <sup>2</sup> .	3	
· . · ·	S 550 (44mH)	11	- 1	
S	S 700 (44mH)	18	3	
	s 50 - 007	U	1	
	s 50 - 040		1	
	S 100 ~ 005	11	1	
	S 100 - 019	·· • • • •	1	
	s 150 ~ 008	11	1	
	S 150 - 027	tt -	1	
, · · · ·	S 150 - 060	. <del>1</del>	1	
	s 200 - 006	· • • • •	1	
	S 200 - 010	11	1	
	S 200 - 022	EE .	1	
n de la sete Alg	S 200 - 025	£1	1	ч
	s 300 - 006	ं स	1 -	· · · ·
	S 300 - 011		1	
	s 300 - 033	EF .	1	
	s 300 - 060	11	1	
	S 300 ~ 066	11	1	
an an taon taon 1910 - Anna Ang	s 300 - 072		1	
	S 400 - 005		1	

SECTION	UNIT DESIGNATION	UNIT	NO. OF UNITS	REMARKS
	s 400 - 036 s 450 - 041	ea 11	1	
	S 450 - 069	E E	1	
	s 450 - 073	11	1	
	S 500 - 016	11	1	
an a	s 500 - 033	11	1	
	s 550 - 011	· 11	1	
	S 550 - 015	11	. 1	
	s 550 - 030	11	1	
	s 600 - 005	17	2	
	S 600 - 016	11	1.	
ter and the second second	s 600 - 041	1.0	1	
S	s 700 - 030	11	2	
	S 900 - 011	. <b>H</b>	2	
	s 900 - 033	· 'II	2	
	S 1200 - 011	11	1	
	s 1200 - 033	Ð	1	
	Section "S" Total		229	
	s 300	ea	1	Removing
	S 900	. 11	2	n
	S 1200	н	1	н
	S 200 - 019	a	].	11
	S 300 - 059	и.	1	10
	s 900 - 059	- 11	2	11
	S 1200 - 059	11	1	11
	Negative imped- ance repeater	ea	870	Include removed sets
T	Negative Imped- ance repeater	17	97	Removing

SECTION	UNIT DESIGNATION	UNIT	NO. OF UNITS	REMARKS
V	Impedance Matching Coil	ea	24,330	Include removed sets
	Impedance Matching Coil	in an an National National	1,720	Removing
	X (1)	System	565	With office
	X (2) X (3)	H 	1,362 586	repeater
X	X (4)	н	445	
	X (4)	11	61	For spare system termination
	X (2)	11	186	Removing
	X (3)	11	<b>6</b> • • • •	Removing

### UNIT DESIGNATION

ECTION	KIND OF WORK	UNIT DESIGNATION	EXPLANATION	UNIT	REMARKS
Α	POLE	A~-8	POLE	EACH	
			LENGTH		
	<u></u>	<b>B</b>   B Ş			
	an e sji	╽┟╌┟╴┠╋╌╌┧	UPPER PORTION OF GUY		
		┃	DOWN GUY (POLE TO ANCHOR)	-	
·	۰ و ۱۰ ۱		STRAIN INSULATOR		
	GUY			EACH	
B	001		DOWN OUY OVERHEAD OUY		
. *			30 " B E		
			45 <sup>m</sup> C F		n de la composición d La composición de la c
			65 ° D G	· · ·	
				÷	
		828	OVERHEAD GUY (POLE TO POLE)		
		C 2-1A			
			LOWER PORTION OF GUY	-	
			2. SCREW		
C j	ANCHOR		3. LOG H	EACH	
			I. 13 # SINGLE-EYE ROD		
			2. 16 Ø DOUBLE-EYE ROD 3. 19 Ø - 4		
· · · •			A. 6FOOT (LENGTH OF ROD)		
			8.7 (	· .	
			C. 8 4 ( 4 47 11 )		
E	AERIAL CABLE	E 50.4 A 2	TYPE OF CABLE LAYING	• ·	
· · · ·		└──┟╍┠╍┾╍┼	NUMBER OF CABLE PAIR		BISTALPETH
	DIRECT BURIED	Land Calanda	DIAMETER OF CONDUCTOR	NOON	A2.4 ALPETH
	CABLE	L.	CONDUCTOR INSULATION	1.4	
	CONDUIT		I PAPER OR PULP		
	CABLE		2. POLYE THYLENE 3. POLYVINYL CLORIDE	1	
[1	TERMINATING			. *	
J	AND	J200.5P3			
	CABLE		TERMINATING CABLE		
			SAME AS ITEM E.F.G.	10 M	

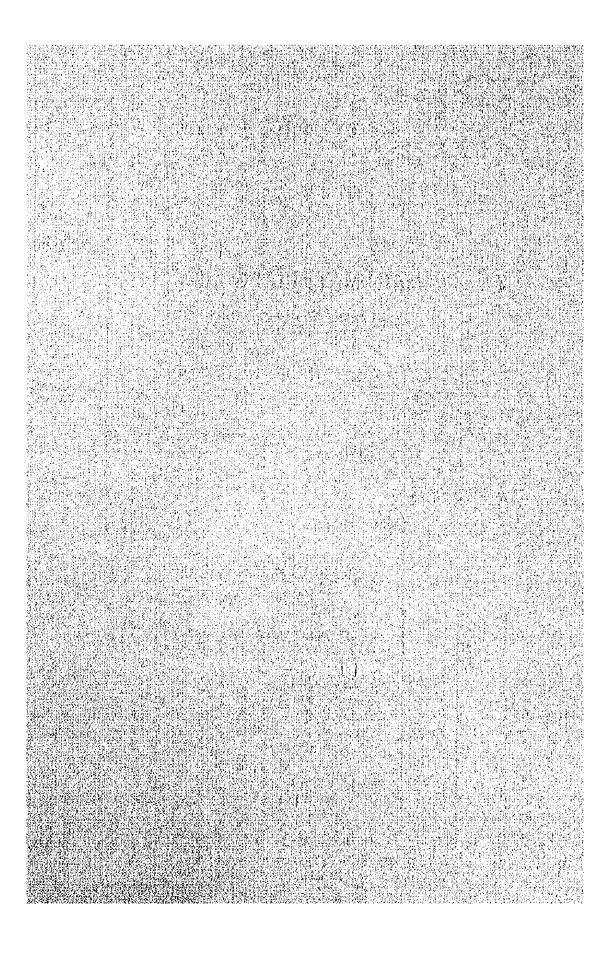
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## UNIT DESIGNATION

ECTION	KIND OF WORK	UNIT	EXPLANATION	UNIT	REMARKS
M	CABLE SPLICE ENCLOSURE		CABLE SPLICE ENCLOSURE TYPE OF CABLE LAYING I. AERIAL 2. DIRECT BURIED 3. CONDUIT 4. TROUGH DIAMETER OF CABLE A. O-1 INCH B. I-2 " C. 2- " (MORE THAN 2 NCH) KIND OF CABLE SHEATH L. LEAD P. POLYETHLENE	ЕАСН	
N	CONDUCTOR SPLICE	N		IOOPAIR	
0	ĜAS SYSTEM	Ŷ_ <u> </u>	GAS SYSTEM I. GAS PIPE IN CABLE VAULT 2. PRESSURE TESTING VALVE 4. BYPASS VALVE 7. CONTACTOR(U.G. TYPE) 8. 4 (AERIAL TYPE) 9. GAS DAM 10 AIR DRYER 11 BONDING RIBBON	ЕАСН	
S	COIL BON	\$ 300 \$75.008	300 PAIR COIL NOMBER OF CAPACITOR VALUE OF CAPACITOR (JF)	EACH	
т	BOTHWAY		NEGATIVE IMPEDANCE REPEATER	EACH	
U	IMPEDANCE compensator	U (1) U (2)	IMPEDANCE COMPENSATOR AND LOW FREQUENCY CORRECTOR IMPEDANCE COMPENSATOR	EACH	
v	MATCHING COIL	۰V	IMPEDANCE MATCHING TRANSFORMER	EACH	
X	PCM	×	<ol> <li>(1) TERMINAL EQUIPMENT</li> <li>(2) MANHOLE TYP REPEATER</li> <li>(3) POLE-MOUNTED TYP REPEATER</li> <li>(4) OFFICE TYPE REPEATER</li> </ol>	SYSTEM	

# SECTION 7

# MAIN MATERIALS LIST



and an ann an Airtean An Airtean Airtean Airtean Airtean Airtean	Main Mater	ials List		
NAME OF	MATERIAL	UNIT	QUANTITY	REMARKS
	NITON CADI P			
	DUCT CABLE	100 m	42	
	900 - 5 ASP 1200 - 5 "	100 M	42	
	1500 - 5 "	I II		
	1800 - 5 "	11	3	
	600 - 65 "	U U	81	
	900 - 65 <sup>11</sup>	η. H	88	
	1200 - 65 "	0	235	
	300 - 9 "	n Lenna H	25	
	400 - 9 <sup>11</sup>	E II	55	
	600 – 9 <sup>II</sup>	н	1,277	
	50 - 9 PEF-P	11	72	
	600 - 9 PEF-P		125	
	Sub Total	н	2,066	
(2)	SUBMARINE CABLE			
	50 - 9 PEF-Sub	100 m	3	
	300 - 9 "	и,	6	
	Sub Total	11	9	
(3)	AERIAL CABLE	100 m	47	
	100 - 9 ASP 200 - 9 "	100 m	47	
	50 - 65 PEF-P	- at -	221	
	100 - 65 "	Ţ,	134	
	50 ~ 9 "	н	462	
	100 - 9 "	11	51	
	150 - 9 "	15	96	
	300 - 9 11	H P	82	$\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right) = \frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right) \left( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \right)$
	50 - 9 PEF-AL	tr -	85	(PD-PP)
	Sub Total	Э.	1,180	
TOTAL		n an	3,255	
101/11				
L		1		

NAME OF MATERIAL	ÚNIT	QUANTITY	REMARKS
TERMINATING CABLE			
100 - 5 P	10 m	14	
200 - 5 "	н 10 ш	154	
	ė.	1,464	
300 - 5 " 400 - 5 "	8	50	
400 - 5 50 - 65 PEF	11	15	1
	1	20	
100 05	0	20 60	
J0 ~ J	18	30	
100 - 9	11	15 <b>1</b> 5	
150 - 5	THE STREET		
300 - 9		188	
TOTÁL	11	2,010	
TERMINATING MATERIAL			
NO 75	Set	14	
NO 100	B B	9	
NO 125	11	11	
NO 150	18	53	
NO 200	11	22	
TOTAL	<b>"</b>	109	
	All		· · · · · ·
CONCRETE POLE 7 MC	ea	86	
и	11	1.52	
н и 5 MC	D	44	For Joint Pole
TOTAL	tt	282	
		n de la gr	
GULVANIZED STEEL STRAND WIRE	kg	21,200	
(6 М) и			
и (r п п п п		7,400	
$\hat{\mathbf{H}}$	u .	4,600	
(16 M)		.,	
<u> </u>	. L	مرد میدوند. برای میدوند میدوند. بر	L

NAME OF N	IATERIAL		UNIT	QUANTITY	REMARKS
DRIVING ANCHOR	13 ¢	•	ea	34	
ANCHOR ROD	13 ¢	- / .	t t	53	
n D	16 ¢		1	13	
11 11 11 11 11 11 11 11 11 11 11 11 11	19 ¢		U U	5	
in order			11	229	
TOTAL				669	
COIL (88mH)	8	P	ea	18	40 Sleeve Coil
	50	P		9	
	100	P	H. S. S.	8	
	150	P	<b>11</b>	13	· .
	200	Р	i i ii	18	· · · ·
	250	P	ir i	2	
	300	Р	n 1	16	
	350	P	E H	. 5	• •
	400	P	II.	12	
	450	Р		1.5	
	500	р	H	14	
	550	q	11	10	
	600	P	<b>H</b> 1945 - 1945	15	
	700	Р		8	
	900	P	<b>1</b> 1 1	2	
	1200	P	ji ji	1	
HALF COIL (44mH)	8	р	ea	2	4Q Sleeve Coil
:	100	P	n nage frit 1 <b>n</b>	3	
	200	Р	Ð	4	I
	300	Р	D D	3	· ·
	350	р	, n	1	1
	400	Р	11	2	
	450	р	11	2	•
	500	Р	ft -	3	
	550	P	57	1	
	700	Р	it.	3	
				}	

BOC $50 P - 7 m\mu F$ $50 P - 40 m\mu F$ $100 P - 5 m\mu F$ $100 P - 19 m\mu F$ $150 P - 8 m\mu F$ $150 P - 27 m\mu F$ $150 P - 60 m\mu F$ $200 P - 60 m\mu F$ $200 P - 6 m\mu F$ $200 P - 10 m\mu F$ $200 P - 22 m\mu F$ $200 P - 25 m\mu F$ $300 P - 6 m\mu F$ $300 P - 6 m\mu F$ $300 P - 60 m\mu F$ $300 P - 5 m\mu F$ $300 P - 5 m\mu F$ $300 P - 5 m\mu F$ $400 P - 5 m\mu F$ $400 P - 5 m\mu F$ $400 P - 36 m\mu F$ $400 P - 36 m\mu F$ $450 P - 41 m\mu F$ $450 P - 73 m\mu F$ $500 P - 16 m\mu F$ $500 P - 16 m\mu F$ $500 P - 15 m\mu F$ $550 P - 15 m\mu F$ $550 P - 15 m\mu F$ $600 P - 5 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 16 m\mu F$ $600 P - 16 m\mu F$ $600 P - 10 m\mu F$	ea h H H H H H H H H H H H H H H H H H H		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
50 P - 40 mJF $100 P - 5 mJF$ $100 P - 19 mJF$ $150 P - 8 mJF$ $150 P - 27 mJF$ $150 P - 60 mJF$ $200 P - 6 mJF$ $200 P - 22 mJF$ $200 P - 22 mJF$ $200 P - 25 mJF$ $300 P - 6 mJF$ $300 P - 6 mJF$ $300 P - 60 mJF$ $300 P - 66 mJF$ $300 P - 72 mJF$ $400 P - 36 mJF$ $400 P - 36 mJF$ $450 P - 41 mJF$ $450 P - 69 mJF$ $450 P - 73 mJF$ $500 P - 16 mJF$ $550 P - 11 mJF$ $550 P - 15 mJF$ $550 P - 30 mJF$ $600 P - 5 mJF$	H H H H H H H H H H H H H H H H H H H		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
$100 P - 5 m\mu F$ $100 P - 19 m\mu F$ $150 P - 8 m\mu F$ $150 P - 27 m\mu F$ $150 P - 60 m\mu F$ $200 P - 6 m\mu F$ $200 P - 22 m\mu F$ $200 P - 22 m\mu F$ $200 P - 25 m\mu F$ $300 P - 6 m\mu F$ $300 P - 6 m\mu F$ $300 P - 11 m\mu F$ $300 P - 33 m\mu F$ $300 P - 60 m\mu F$ $300 P - 66 m\mu F$ $300 P - 72 m\mu F$ $400 P - 5 m\mu F$ $400 P - 36 m\mu F$ $450 P - 41 m\mu F$ $450 P - 69 m\mu F$ $450 P - 73 m\mu F$ $500 P - 16 m\mu F$ $500 P - 11 m\mu F$ $550 P - 11 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
100 P - 19 mµF 150 P - 8 mµF 150 P - 27 mµF 150 P - 60 mµF 200 P - 6 mµF 200 P - 10 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 60 mµF 300 P - 33 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 72 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 69 mµF 500 P - 16 mµF 500 P - 15 mµF 550 P - 15 mµF 550 P - 15 mµF 600 P - 5 mµF	H H H H H H H H H H H H H H H H H H H		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
150 P - 8 mµF 150 P - 27 mµF 150 P - 60 mµF 200 P - 6 mµF 200 P - 10 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 6 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 66 mµF 300 P - 66 mµF 300 P - 72 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 69 mµF 500 P - 16 mµF 500 P - 16 mµF 550 P - 15 mµF 550 P - 15 mµF 550 P - 16 mµF 600 P - 16 mµF			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
150 P - 27 mµF 150 P - 60 mµF 200 P - 6 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 6 mµF 300 P - 60 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 66 mµF 300 P - 72 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 73 mµF 500 P - 16 mµF 550 P - 11 mµF 550 P - 15 mµF 550 P - 30 mµF 600 P - 5 mµF 600 P - 16 mµF	U and a second s		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
150 P - 60 mµF 200 P - 6 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 11 mµF 300 P - 33 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 66 mµF 300 P - 66 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 69 mµF 500 P - 16 mµF 500 P - 15 mµF 550 P - 15 mµF 550 P - 15 mµF 600 P - 5 mµF 600 P - 16 mµF	U B B B B C C C C C C C C C C C C C C C		1 1 1 1 1 1 1 1 1 1 1 1			
200 P - 6 mµF 200 P - 10 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 11 mµF 300 P - 33 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 66 mµF 300 P - 72 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 69 mµF 500 P - 16 mµF 500 P - 16 mµF 550 P - 11 mµF 550 P - 15 mµF 550 P - 30 mµF 600 P - 5 mµF 600 P - 16 mµF	P H H H H H H H H H H H H H		1 1 1 1 1 1 1 1 1 1 1			
200 P - 10 mµF 200 P - 22 mµF 200 P - 25 mµF 300 P - 6 mµF 300 P - 11 mµF 300 P - 33 mµF 300 P - 33 mµF 300 P - 60 mµF 300 P - 66 mµF 300 P - 72 mµF 400 P - 5 mµF 400 P - 36 mµF 450 P - 41 mµF 450 P - 69 mµF 500 P - 16 mµF 500 P - 15 mµF 550 P - 11 mµF 550 P - 15 mµF 550 P - 5 mµF 600 P - 5 mµF 600 P - 16 mµF	H and a second s		1 1 1 1 1 1 1 1 1 1 1			
200 P - 22 mJF 200 P - 25 mJF 300 P - 6 mJF 300 P - 11 mJF 300 P - 33 mJF 300 P - 60 mJF 300 P - 66 mJF 300 P - 72 mJF 400 P - 5 mJF 400 P - 36 mJF 400 P - 36 mJF 450 P - 41 mJF 450 P - 69 mJF 500 P - 16 mJF 500 P - 16 mJF 550 P - 11 mJF 550 P - 15 mJF 550 P - 30 mJF 600 P - 5 mJF	H and a second s		1 1 1 1 1 1 1 1 1 1			
200 P - 25 mJF 300 P - 6 mJF 300 P - 11 mJF 300 P - 33 mJF 300 P - 60 mJF 300 P - 66 mJF 300 P - 72 mJF 400 P - 5 mJF 400 P - 36 mJF 400 P - 36 mJF 450 P - 41 mJF 450 P - 69 mJF 450 P - 73 mJF 500 P - 16 mJF 500 P - 15 mJF 550 P - 15 mJF 550 P - 15 mJF 600 P - 5 mJF 600 P - 16 mJF	H H H H H H H H H H H		1 1 1 1 1 1 1 1 1 1			
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$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	Distance of the second		1 1 1 1 1 1 1			
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	Distance of the second		1 1 1 1 1			
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	0 17 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10		1 1 1 1			
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	н 11 11		1 1 1		.*	- - - -
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	11) - 31 R		1. 1			
$400 P - 5 m\mu F$ $400 P - 36 m\mu F$ $450 P - 41 m\mu F$ $450 P - 69 m\mu F$ $450 P - 73 m\mu F$ $500 P - 16 m\mu F$ $500 P - 16 m\mu F$ $550 P - 11 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$	н	· · · · · · · · · · · · · · · · · · ·	1			
$400 P - 36 m\mu F$ $450 P - 41 m\mu F$ $450 P - 69 m\mu F$ $450 P - 73 m\mu F$ $500 P - 16 m\mu F$ $500 P - 33 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$	н					
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$			1		۰.	
$450 P - 69 m\mu F$ $450 P - 73 m\mu F$ $500 P - 16 m\mu F$ $500 P - 33 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 41 m\mu F$	I.					
$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$			1			•
$500 P - 16 m\mu F$ $500 P - 33 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 41 m\mu F$			1.			
$500 P - 16 m\mu F$ $500 P - 33 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 41 .m\mu F$	11		1			
$500 P - 33 m\mu F$ $550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 41 m\mu F$	<b>1</b> 1		1			÷.
$550 P - 11 m\mu F$ $550 P - 15 m\mu F$ $550 P - 30 m\mu F$ $600 P - 5 m\mu F$ $600 P - 16 m\mu F$ $600 P - 41 m\mu F$	<b>11</b>		1			
550 P ~ 15 mμF 550 P ~ 30 mμF 600 P ~ 5 mμF 600 P ~ 16 mμF 600 P ~ 41 .mμF	1 <b>0</b>					
550 P - 30 mμF 600 P - 5 mμF 600 P - 16 mμF 600 P - 41 .mμF			1			
600 P - 5 mμF 600 P - 16 mμF 600 P - 41 .mμF	11		1	. 1	· .	
600 Р - 16 mµF 600 Р - 41 .mµF	11		1	** · ·		
600 P - 41 .muP	31		2		. •	۰.
600 P - 41 .mµP	15. H		1.			
	u i		1			
$\frac{1}{1}$	6. Sa		2			
900 - 11 muF			2			
900 - 33 mµF			2	:		
1200 - 11 mµF	11	•	1			
1200 - 33 mµF	0	·	1.			
TOTAL		2	29			

		· · · ·	
NAME OF MATERIAL	UNIT	QUANTITY	REMARKS
GAS MATERIAL		a sharin da waa	
GAS VALVE	ea	251	
BY PASS VALVE	H	8	
CONTACTOR	н	59	
MAIN LEAD SLEEVE			
LEAD SLEEVE 60 - 400	ea	1.73	
70 - 500		53	
80 - 500	i in tr ≣	39	
90 - 500	11	37	
100 - 500	· • • •	35	
110 - 500		97	
<b>120 - 500</b>	tt -	68	and the second second
120 - 600	11	33	
130 - 500	1	1.82	
140 - 500	. 0	665	
140 - 600	11	85	
150 - 500	11	18	
150 - 600	1 14	5	tere La sua atas
160 - 500	н	54	
160 - 600	н	23	
170 - 500	11 FF	95	
170 - 600	- 11	16	
180 - 500	11	16	
200 - 600		18	
AUXILIARY LEAD SLEEVE			
30 - 110	ea	104	
50 - 110	н	448	}
60 - 110		4	[
70 - 110	u	102	
80 - 110		222	
60 - 130	14	42	[
70 - 130	11	44	

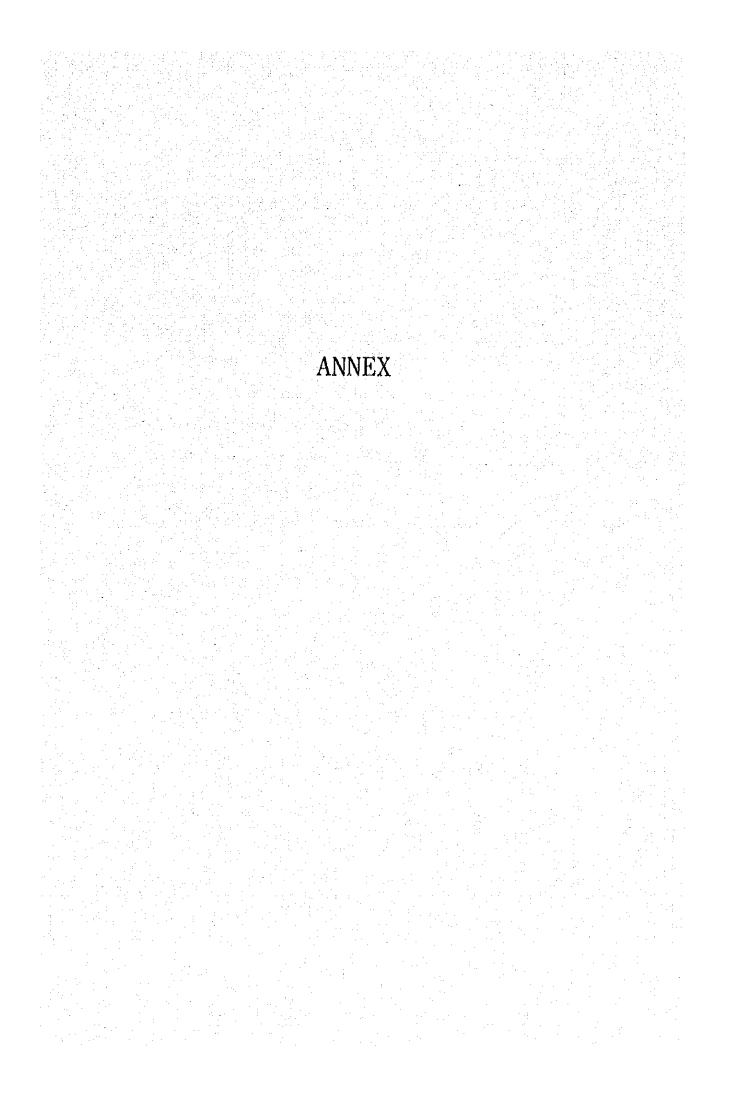
- 61 -

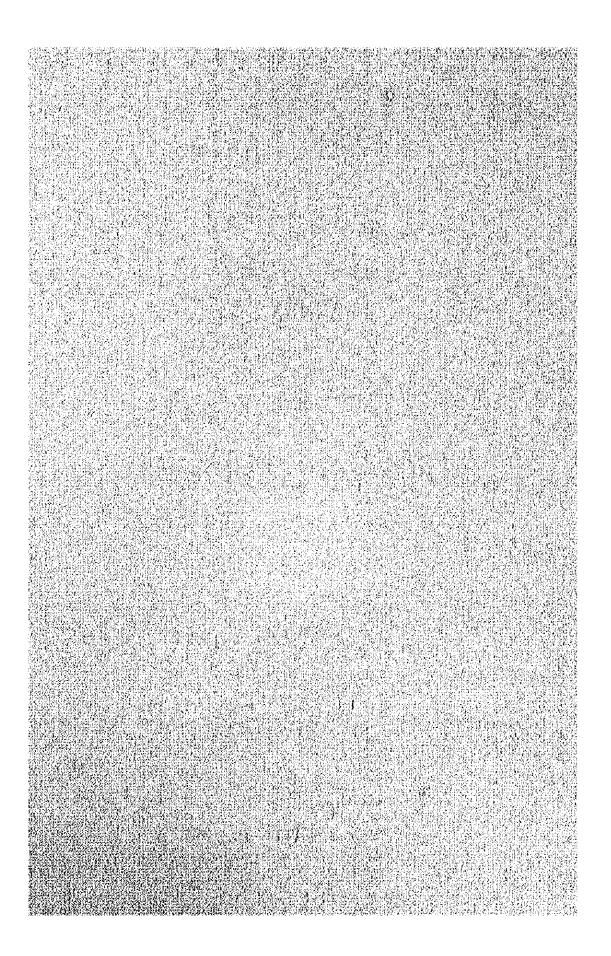
NAME OF MATERIAL	UNIT	QUANTITY	REMARKS
A DAD OT ERIE			
AUXILIARY LEAD SLEEVE		198	
80 - 130	ea . ti	32	
85 - 130 90 - 130	, H	108	
90 - 130 95 - 130	- H	87	
100 - 130	) 	366	
100 - 130 105 - 130	11	1,513	and the second states
		the second second	
TOTAL	11	4,982	
PCM SYSTEM	ł	•	
Terminal Equipment	System	565	
(with office repeater)			
Office Repeater	11	445	For Transit System
Office Repeater.		61	For Spare System
Pole Mounted Type Repeater		580	;
Manhole Type Repeater	<b>U</b> (18)	. 1,176	
Aerial Repeater Housing (12 SYS)	Set	23	
Aerial Repeater Housing (36 SYS)	11	27	
Underground Repeater Housing (12 SYS)	11	3	
Underground Repeater Housing (36 SYS)	<b>D</b>	51	
Terminal Equipment Rack	Rack	62	· · ·
Office Repeater Equipment Rack	H N States A	34	
Signalling Equipment Rack	: 41	· · · · <u>120</u>	
	i.		
推动 위험 성격 비학 위험 가격적	<b> </b>	n de la companya de l La companya de la comp	

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NAME OR MATERIAL	UNIT	QUANTITY	REMARKS
د دو این اور ای این اور این اور			
Impedance Matching Coil Rack	ea	29	
Impedance Matching Coll	1 1 1	22,610	ν <b>μ</b>
Negative Impedance Repeater Rack	Rack	11	NIC
Negative Impedance Repeater	ea	773	
Main Distribution Frame	Vertical	44	MDF
40 Pairs Test Jack	ea	80	•
No, 256-R Terminal Block	<b>1</b>	51	
No. 258-R Terminal Block	H ·	1,269	

· · ·





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THE SCOPE OF WORK FOR THE DETAILED DESIGN OF BANGKOK TELEPHONE NETWORK PROJECT 1977

1.

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Minutes of the Meeting on the Scope of Work for the Detailed Design of Bangkok Telephone Network Project 1977

At the request of the Government of Thailand for a Group of experts, the Government of Japan had sent a preliminary survey teams headed by Mr. Mitsugi Iijima, Counsellor of Telecommunications, Ministry of Posts and Telecommunications, to discuss on the draft of the Scope of Work for the detailed design of Bangkok Telephone Network Project 1977.

Based on this decision, the Japan International Cooperation Agency (JICA), the official agency responsible for the implementations of government of Japan's Technical Cooperation Programmes, will carry out the study in close Cooperation with the Thailand authorities concerned.

The teams held a series of discussions and exchanged views with Thai Authorities Concerned on the Detailed Design study for Junction Network and Local Network of five exchange areas in Bangkok Metropolitan Area.

As a result of the survey and discussions both parties have reached agreement on the draft of the Scope of Work for the Detailed Design of Bangkok Telephone Network Project 1977. Minutes of the discussions and the draft of the Scope of Work are attached herewith.

Bangkok, February 21, 1977.

Mr. Surind Vanichseni Director of The Office of Planning and Project. Telephone Organization of Thailand. Mr. Mitsugi Iijima Counsellor of the Telecommunications, Ministry of the Posts and Telecommunications.

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BANGKOK TELEPHONE NETWORK PROJECT 1977

THE DETAILED DESIGN OF

FOR

SCOPE OF WORK

#### I. INTRODUCTION

The Government of Japan has, in response to the request of the Government of Thailand, decided to conduct a detailed design study for junction network and local network of five (5) exchange areas in Bangkok Metropolitan area, in accordance with laws and regulations in force in Japan.

Based on this decision, the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of Government of Japan's Technical Cooperation Programmes, will carry out the study in close cooperation with the Thailand authorities concerned.

The present document sets forth the Scope of Work for the Study.

- II. OUTLINE OF SURVEY/STUDY
  - 1. Junction Network
    - A. The following field survey with desk work will be undertaken for a period of about four (4) months by the Japanese Survey Team of about seven (7) experts.

(1) Route survey

Cable routes will be decided according to the results obtained from the investigation of the existing facilities, the study of future plans, and the comparison of several proposed routes.

1) Preliminary survey

Proposed routes will be plotted on a map taking the city plans and existing plant records into consideration.

2) General survey

General survey will be conducted at the sections where cables are to cross rivers or railways. 3) Detailed survey

Detailed survey will be made for all the newly proposed cable routes. Study of the existing cables will be made on the basis of the plant records, and if necessary, on-the-spot survey of the existing facilities will be carried out.

(2) Manhole investigation

Ducts to be used will be selected after checking cable placement and location of cable splices in the existing manholes.

(3) Survey of MDF and cable vault

Location of riser cables to MDF and way of cables placement in cable vaults will be investigated.

B. The last stage of the detailed design work, as indicated below, will be undertaken by the Survey Teams in Japan.

- (1) Key Map
- (2) Duct Scheme Plan
- (3) General Junction Cable Plan
- (4) Layout Plan for Junction Equipment
- (5) Junction Cable Terminating Plan at MDF
- (6) Layout Plan for Loading Spacing
- (7) Jointing Diagram
- (8) Junction Cable Construction Detail
- (9) Manhole Racking Diagram
- (10) Gas Pressurization System
- (11) Line Assignment for Junction Network

(12) Computed Transmission Performance and Line Resistance

#### 2. Local Network

A. The following field survey with desk work in the five (5) exchange areas i.e. (Sukhumvit, Phakhanong, Intamara, Klongchan, Ngamwongwan) will be undertaken for a period of about six (6) months by the Survey Team of about eleven (11) experts.

(1) Demand field survey

Subscriber forecasts at the micro-level will be conducted to design the cable distribution network, the final segment of which requires street-by-street forecasts.

(2) Detailed survey

Detailed survey will be made of all the newly proposed duct and cable route.

Study of the existing conduits and cables will be made on the basis of the plant records.

If necessary, on-the-spot survey of the existing facilities will be carried out.

(3) Manhole investigation

Same as II. 1. A. (2).

(4) Selection of new routes

Cable routes will be decided according to the results obtained from investigation of the existing facilities, the study of a future plan, and the comparison of several proposed routes.

(5) Dividing of cabinet area

Dividing of cabinet areas will be carried out according to the cable routes and the results of the demand survey, and then the location of cabinet boxes will be decided.

(6) Survey of MDF and cable vault

Same as II. A. (3).

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#### (7) Field measurement

Field measurement will be conducted on all proposed cable routes and some existing cable routes. Levels and cross-sections of roads will be measured to determine the locations of the new conduits routes.

B. The last stage of the detailed design work, as indicated below, will be undertaken by the Survey Teams in Japan. Cable Work:

(1) Key Plan

(2) Transmission Sheet Resistance Design Method

(3) Primary Cable Plan

(4) Secondary Cable Plan

(5) MDF and Cable Vault Plan

(6) Gas Pressurization Plan

(7) Duct Scheme Plan

(8) Manhole Racking Diagram

(9) Cabinet Jointing Plan

Civil Work:

(1) Guided Map

(2) Conduit Plan

(3) Plane

(4) Cross Section

(5) Manhole Diagram

(6) Special Design (if necessary)

计多合数 医神经营养学校 法保证证券 化加速效应率

III. REPORT

The following documents will be prepared in English and submitted to the Government of Thailand within about four (4) months after completing the field survey for the Junction Network and the Local Networks respectively.

(1) Design Report			20	copies				· ·	
(2)	Drawings		۰.	20	copies	(plus	1 set of	the	original
						Traci	ngs)		

- (3) Amount of work 20 copies (in Assembly Unit)
- (4) List of Main Materials 20 copies

IV. COLLABORATION OF THE GOVERNMENT OF THAILAND

- 1. The Government will exempt the Survey Teams from taxes and duties for machinery, equipment and materials to be brought into Thailand by the Teams as the Government normally extends to the Colombo Plan experts.
- 2. The Government will exempt the members of the Teams from income tax and charges of any kind imposed on or in connection with the living allowances remitted from abroad and will exempt the members from import and export duties imposed on the members' personal effects.
- 3. The Government will prepare necessary permits for the implementation of the outdoor work.
- 4. The Government will assign counterpart personnels to the Teams during the survey period and will arrange necessary number of labourers (employment cost of labourers will be borne by the Teams).
- 5. The Government will provide the Teams with the relevant data, information and materials necessary for the Survey shown in Annex-I. The Government will also make arrangements for the Teams to take these data and materials back to Japan for the preparation of report.

Annex-1

Documents to be supplied by T.O.T.

For Junction Network

- 1) Planning of office establishment programme
- 2) Office ranks
- 3) Routing plan
- Number of trunk lines

   (at the time of service-in, five years and ten years after service-in)

- 5) Transmission loss distribution plan
- 6) Existing leased circuit
- 7) Maps of greater Bangkok
- 8) Long-term plan of conduit lines
- 9) Agreement on joint use between T.O.T. and MEA
- 10) Construction and installation practice of T.O.T.
- 11) City planning in greater Bangkok
- 12) Plant records of existing facilities concerned
- 13) Data and records belonged to the other authorities

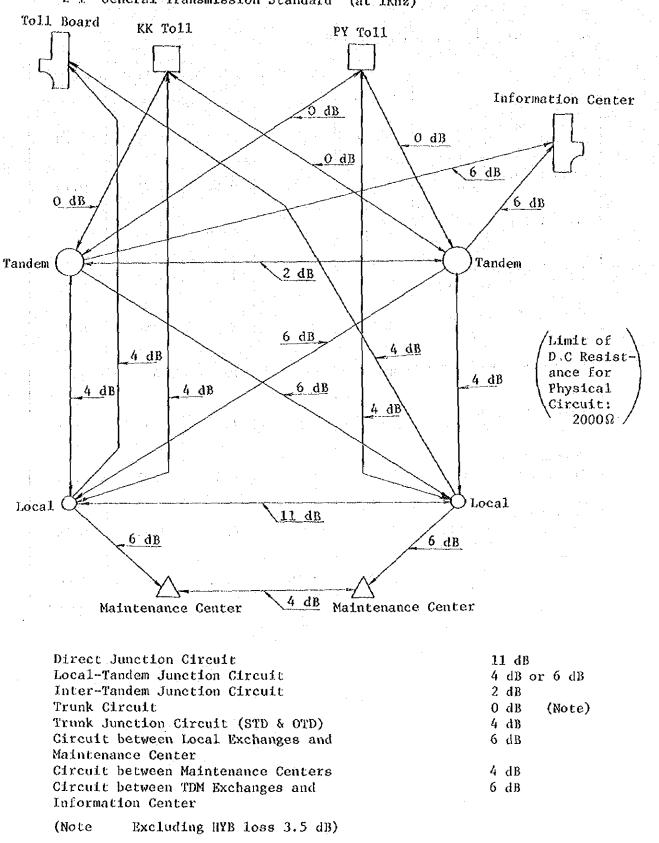
For Local Network

- 1) The bounderies of each ex. area
- 2) The forecast number of subscribers on each ex.
- 3) Layout of the proposed ex. office

the second second second second

- 4) List of waiting subscription and distribution map
- 5) Standard method of local network design
- NOTE: T.O.T. is required to submit the above-mentioned documents for Junction Network by the beginning of March, and those for Local Network by the middle of May.

## 2. ENGINEERING STANDARDS CONCERNING THE DESIGN OF JUNCTION NETWORK



2-1 General Transmission Standard (at 1KHz)

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### 2-2 Cable Characteristics

		ASP CABLE		PEF-P C	ABLE
	0.5 mm	0.65 mm	0.9 mm	0.65 mm	0.9 mm
Line Loop Resistance at 30°C (Ω/km)	187.5	118.7	59.3	118.7	59.3
Mutual Inductance (mH/km)	0.58	0.58	0.58	0.75	0,75
Muturl Capacitance (mµF/km)	52.0	52.0	52.0	38.5	38,5
Leak Resistance (μΩ/km)	1.5	1.5	1.5	0.2	0.2
Load Coil Resistance (Ω)	8.9	8.9	8.9	8.9	8.9
Load Coil Inductance (mH)	88	88	88	88	88
Load Coil Spacing (km)	1.83	1.83	1.83	2.47	2.47
Unloaded Cable Attenuation at 1 kHz (dB/km)	1.52	1.21	0.85	1.04	0.74
Loaded Cable Attenuation at 1 kHz (dB/km)	0.85	0.55	0.29	0.55	0.28
Cut-off Frequency (kHz)	3.46	3.46	3.46	3.44	3.44

### 2-2-1 Table of Cable Characteristics

ана андар анд Андар анд 2-2-2 DC Line Resistance at 30°C

The average temperature in Bangkok is approximately 29°C throughout the year, so that, by using the following formula, DC line resistance at 30°C was calculated;

 $Rt = R_{20} \{1 + \alpha(t - 20)\}$ 

where Rt = Line resistance at t°C

 $(t = 30^{\circ}C)$ 

 $R_{20}$  = Line resistance at 20°C

/ 0.5 mm	cable	•	R <sub>20</sub>	Ħ	180.4	$\Omega/\mathrm{km}$	١
0.65mm	cable	:	R20	CŻ.	114.2	$\Omega/\mathrm{km}$	
0.9 mm			R <sub>20</sub>	==	57.0	$\Omega/km$	1

= Temperature coefficient of copper (0.00393)

2-2-3 Calculation of Image Attenuation

α

(1) Unloaded cable

Image attenuation of unloaded cable is calculated by use of following formula;

$$\alpha = \left(\frac{W \cdot Ro \cdot Co}{2}\right)^{\frac{1}{2}} \qquad (N_p)$$

where  $\alpha = Image$  attenuation in N<sub>p</sub>

 $W = 2\pi f (f = 1 \text{ kHz})$ 

Ro = Line resistance in  $\Omega/km$ 

Co = Mutual capacitance in nF/km

(2) Loaded cable

Image attenuation of loaded cable is calculated by use of following formula;

$$= \frac{1}{So} \left\{ \left[ \frac{So \cdot Ro}{2} \left( 1 - \frac{2}{3} \left( \frac{W}{Wo} \right)^2 \right) + \frac{Rp}{2} \right] \right\} \\ \left( \frac{So \cdot Co}{So \cdot Lo + Lp} \right)^{\frac{1}{2}} + \frac{So \cdot Go}{2} \left( \frac{So \cdot Lo + Lp}{So \cdot Co} \right)^{\frac{1}{2}} \right\} \\ \left\{ 1 - \left( \frac{W}{Wo} \right)^2 \right\}^{-\frac{1}{2}}$$
(Np)

 $\alpha$  = Image attenuation in Np where  $Wo = 2\{So \cdot Co(So \cdot Lo + Lp)\}^{2}$ Ro = Line resistance in  $\Omega/km$ Co = Mutual capacitance in nF/kmLo = Mutual inductance in mH/km Lp = Load coil inductance in mH  $Rp = Load coil resistance in \Omega$ So = Load coil spacing in km Go = Leak resistance in µU/km

2-3 Characteristics of Junction Equipment

2-3-1 Impedance Matching Coil

α

Wo

(1) Transmission frequency band

```
0.3 ∿ 3.4 kHz
```

(2) Impedance ratio

600 Ω : 1,000 Ω

(3) Transmission loss

0.3 kHz - less than 0.8 dB 0.8 kHz - less than 0.3 dB 1.5 kHz - less than 0.25 dB 3.4 kHz - less than 0.25 dB

(4) D.C. resistance

1.64.62

Less than 15  $\Omega$  at 20°C

- 2-3-2 Negative Impedance Repeater
  - (1) Gain grant and grant here a
  - 0.5 dB  $\sim$  6.0 dB at 800 Hz
  - (2) D.C. resistance
    - Less than 60  $\Omega$  at 20°C
- 2-3-3 Building Out Capacitor
  - (1) Capacitance

Nominal value ± 3% at 100 Hz

- 2-3-4 Loading Coil
  - (1) Inductance

88 mH ± 1.5% at 800 Hz, 1 mA

(2) D.C. resistance

Less than 8,9  $\Omega$  at 30°C

- 2-3-5 Impedance Compensating Equipment
  - (1) Coil inductance
    - 44 mH ± 2% at 800 Hz, 1 mA

  - (2) D.C. Resistance

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Less than 9.4  $\Omega$  at 30°C

- 2-4 PCM System
- 2-4-1 Determination of Repeater Spacing

The maximum design line loss in a repeater section should be limited to 42 dB.

Therefore, the following formula will be gained:

 $(1 + \alpha \cdot \Delta t)(1 + 3 \cdot \delta)$  Lod  $\leq 42$  dB

where α \* Temperature co-efficient of cable loss (0.2%/1°C)

- $\Delta t$  : Range of cable temperature change
  - (20°C for underground, 60°C for aerial)

δ : Standard deviation of cable loss
(3%)

Lo : Cable loss/km at 772 kHz, 15°C

0.65	(Toll PEF)	12.5 dB
0.65	(Paper)	19.3 dB
0.9	(Toll REF)	9,2 dB
0.9	(Paper)	13.2 dB

d : Actual repeater spacing

Lod : Line loss per repeater section

The protected repeater units are used with aerial and buried cables as well as underground cable which is not accommodated in mettalic duct, so that 1.8 dB of arrester circuits provided in repeater units should be taken into account.

Calculation of Lod;

Lod for underground cable is obtained as follows:

Lod =  $(42 - 1.8) / (1 + 0.002 \times 20) (1 + 3 \times 0.03)$ = 35.4 dB

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Lod for aerial cable is:

Lod = 
$$(42 - 1.8) / (1 + 0.002 \times 60) (1 + 3 \times 0.03)$$
  
= 32.9 dB

Repeater spacing at the end section is restricted by the office noise. As the error rate assigned to end section is  $2 \times 10^{-7}$ , the additional loss becomes to be 10.2 dB, including arrester 1088.

Hence, Lod 1s:

 $42.0 / (1 + 0.002 \times 20) (1 + 3 \times 0.03) - 10.2 = 26.8 \text{ dB}$ 

which is adopted not only for underground cable and also for aerial cable since the effect due to the cable temperature change is taken into consideration in 10.2 dB.

Maximum Repeater Spacing

	:.		Underground		Aeria	a1	End section	
0.65	mm	(ASP)	1.8	3 km	1.70	km	1.38	km
0.65	mm	(Toll PEF)	2.8	3 km	2.63	km	2.14	km
0.9	mm	(ASP)	2.6	8 km	2,49	km	2.03	km
0.9	mm	(Toll PEF)	3.8	4 km	3.57	km	2.91	km

2-4-2 Restriction of Repeater Spacing Due to Near End Crosstalk Attenuation (NEXT)

> Equivalent NEXT frequency is to be 640 kHz in 24 ch PCM system, and NEXT attenuation VS frequency is at the gradient rate of 4.5 dB/Oct.

> > - 89 -

Hence, for underground cable,

 $M_n + 1.2 - \{(1 + \alpha, \Delta t) \ (1 + 3, \alpha) \ Lod + (10 \ \log n + 2.5)\}$ 

. . . . .

 $+2.33 \circ +28.1 > 0$ 

and for aerial cable,

 $M_n + 1.2 - \{ (1 + \alpha \cdot \Delta t) (1 + 3 \cdot \sigma) \text{ Lod} + (10 \text{ log } n + 2.5) + 2.33 \ \sigma + 30.0 \} > 0$ 

where,	Mn	: NEXT attenuation (mean value) at 772 kHz
••	α	: Temperature co-efficient of cable loss (0.002)
		: Range of cable temperature change (20°C for underground cable, and 60°C for aerial cable)
. ·	đ.	: Pair to pair loss deviation (0.03)
	n	<ul> <li>: Line loss (at 772 KHz) per repeater section</li> <li>: No. of PCM systems</li> <li>: Standard deviation of crosstalk characteristic</li> <li>(2.9 dB)</li> </ul>

Therefore, restriction by NEXT effect in one cable operation is as follows:

for underground cable

dmax =  $(M_n - 10 \log n - 36.2) / 1.14$  Lo

and for aerial cable

 $dmax = (M_n - 10 \log n - 38.1) / 1.23$  Lo

Where : dmax : Maximum repeater spacing

## 2-4-3 Power Feeding

Since the power supply unit at the office has the automatic current regulator (ACR), the out-put current (I) is constant with accuracy of  $\pm$  20%, regardless of the load. The range of the voltage drop which occurs across the ACR in power supply unit is to be up to 235 V. Therefore, the following formula is obtained:

 $\{Rt (1 + \alpha \Delta t) + 2n Ra\}$  Io  $(1 + \beta) + nV = 235$ 

where, Rt : Total of D.C. resistance at 15°C.

 $(0.9 \text{ mm} - 26.9 \Omega/\text{km}, 0.65 \text{ mm} - 51.4 \Omega/\text{km})$ 

α : Temperature co-efficient of cable resistance(0,004)

 $\Delta t$ : Range of cable temperature change (20°C for underground, 60°C for aerial)

Ra : D.C. resistance of arrester circuit (6  $\Omega$ )

Io : Power feeding current (100 mA)

 $\beta$  : Current variation (20%)

n : No. of repeaters

V : Repeater voltage drop (11.2 V per repeater)

Hence, maximum No. of repeaters which can be fed the power from one power supply unit is obtained as follows:

For underground cable,

 $N(max) = 18.59 - 1.03 \text{ Rt } x 10^{-2}$ 

and for aerial cable,

 $N(max) = 18.59 - 1.18 \text{ Rt } x 10^{-2}$ 

## ANNEXED SHEETS

- A-1 JUNCTION MATRIX
- A-2 JUNCTION CIRCUIT TABLE
- B-1 ROUTE MAP

C

- B-2 CIRCUIT ASSEMBLY LIST
- B-3 JUNCTION CIRCUIT IN SECTION
- 8-4 DETERMINING DATA OF CABLE PAIRS
- B-5 PROPOSED-CABLE PLAN IN SECTION
  - LAYOUT PLAN FOR LOADING SPACING

## JUNCTION MATRIX ......

ANNEX

A - 1

10         KK I         KK 2         SR1         SR2         SR3         SR4         8         P PWI         PW2         SS         PYI         PY2         B5         I         L         P         L         P	PROJECT 1977 - 1984 CW TY NWN PT BSN NC TH PD BC DK NK PC MK CN RB EC PP PN CPI CP2 BNI BN2KCI KC2 PS SPK PV ON HM LI 22 9 8 9 13 6 11 11 6 8 6 10 10 22 9 8 9 13 6 11 11 6 8 6 10 10	B BPL DFO SWI SW2SW3SW4 SP TCI TC2 YK TANDEMI TANDEM2 TANDEM3 TANDEM4 TANDEM5 TANDEA6 TANDEA7 OTD 20 20 20 12 11 6 164 14 16 6 20 20 20 12 11 6 164 14 16 6 20 20 20 12 11 6 164 14 16 6
55         76         73         73         73         74         70<	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
39       39       31       31       31       31       31       31       31       11       17       48       52       20       17       17       12       10       10       35       35       22       19       10       17       16       7       9       3       3       1       17 </td <td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td> <td><math display="block"> \begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
19       19       18       10       10       14       29       32       11       10       10       7       7       8       6       35       35       24       14       20       10       19       13       6	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	9         9         9         6         119         23         6           25         26         26         15         11         6         24         20         211         5         5         9         9         9         9         9         15         5         9         15         5         9         15         10         9         11         6         24         20         211         9         9         9         9         15         15         10         7         14         16         195         10         7         14         16         195         6         6         6         6         6         10         7         14         16         195         6         6         6         6         6         6         10         7         14         16         195         6
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
12       12       12       9       10       10       10       10       6       7       6       6       6       11       16       6       5       7       10       10       10       6       7       6       6       6       11       16       5       7       10       10       10       6       7       6       6       6       10	9 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
22 22 22 26 26 26 26 18 24 26 16 13 13 12 7 10 9 16 16 9 12 11 7 6 10 8 9	9 15 20 9 9 104 16 28 26 9 20 11 6 8 10 10 7 9 7 12	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
7       7       7       8       8       7       8       6       6       7       7       7       7       7       7       6       7	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	10         10         10         6         5           9         9         9         9         236         26         6           12         12         12         7         10         200         25         6           85         8         3         200         15         5         5           87         8         3         3         3         3
6         7         9         9         9         9           14         14         14         14         14         14         6         8         7         0         17         17         11         16         11         6         21         14         6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	8         3         3         6           169         13         4           168         13         4           168         13         4           13         13         8         7           13         13         13         6
7     7     7     7     6     7     7     6     8     8     7     7     7     7       9     9     8     8     6     6     8     11     11     10     9     14     9     9     6     6     7     7     6     8     10     12     13       8     8     7     7     7     6     8     6     6     6     7     7     6     8     10     12     13       8     8     7     7     7     6     8     6     6     6     9     9     8     6     7     8	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
11       11       10       10       10       11       8       9       8       9       13       7       14       8       6       9         20       20       24       24       24       24       24       24       24       24       24       24       24       11       23       25       9       10       10       8       7       6       24       24       14       18       11       6       11       16       6       7       9       6		III         III         6         7         7           10         11         6         7         7           10         11         11         6         7
20         20         24         24         24         21         23         25         9         10         10         6         7         6         24         24         14         18         11         6         11         16         8         7         9         6           20         20         24         24         24         24         24         24         24         24         11         23         25         9         10         10         8         7         6         24         24         14         18         11         6         11         16         8         7         9         6           12         12         14         14         14         16         11         16         8         7         9         6           12         12         14         14         14         14         14         16         11         16         8         7         9         6           12         12         14         14         14         14         14         16         11         16         8         7         9         6         6         7 <td< td=""><td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td><td><math display="block">\begin{array}{c ccccccccccccccccccccccccccccccccccc</math></td></td<>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
19         19         31         31         31         31         20         22         19         19         31         31         22         22         27         15         55         55         40         56         52         46         50         23         23         27         16         6         9         26           22         22         26         36         36         36         36         36         36         36         35         33         37         30         26         8         31           23         23	8       7       18       16       22       8       22       17       14       12       17       11       40       30       8       19       16       16       18       31       19       37       27       49       6       30       18       12         3       10       8       14       31       32       29       28       7       20       9       30       17       16       24       16       16       29       19       16       26       30       25       22       16       7         9       13       9       16       50       28       32       29       10       22       22       22       6       21       24       24       26       27       26       33       31       15       5	10         10         10         6         8         19         9         10           8         14         14         12         39         11         13         32         36         46         60         50         77         39           31         31         21         12         19         12         12         12         12         12         13         14         14         12         19         12         13         13         12         13         13         12         12         12         12         12         12         12         12
	6         10         8         11         134         154         159         37         82         37         70         56         53         30         22         37         37         28         16         31         28         21         37         7         7         70         56         53         30         22         37         37         28         16         31         28         21         37         7         7         7         7         76         53         30         22         37         37         28         16         33         28         21         37         7         7         7         76         56         53         30         22         37         37         28         16         33         29         37         37         37         28         16         30	22         22         22         22         13         18         24         14         18         57         42         56         4         65         71         64           31         31         30         24         32         34         54         52         56         84         41           35         39         36         36         35         36         29         30         66         60         62         68         70         75         75
	9 9 9 12 40 33 23 22 9 27 9 25 23 22 21 25 25 30 24 29 21 45 31 23 50 7 	47         47         47         51         52         48         49         50         32         46         32         59         49         80           1         1         1         52         18         19         50         32         46         32         59         49         80           1
926 926 980 980 980 980 980 710 985 1066 712 777 777 710 540 567 573 285 963 963 963 622 720 651 347 602 706 406 621 328 610 603 144 123 575 45 2	16 62 140 126 166 66 1362 722 523 623 115 280 118 515 273 240 65 459 757 757 659 303 594 306 191 345 57 271 669 107	

## JUNCTION CIRCUIT TABLE PAGE ...... I~80

ANNEX

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 		EX. (LOO)	<u> </u>		ningerstation and a second			<i>1</i> 6 1
DESTIN	NATION	<u>0/G</u>	Г <del>.</del>	400 * 00	1/0		VINTON	
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT,	LIMIT	ATION RES (Ω)	NOTI
1	SR	224	11	2000	208	11	2000	
	BP	4 2		"	4 0	"	"	
	PW	150			146		"	·····
	88	30	"	"	36	"	"	
2	РҮ	5 2	"	"	48	"	"	
//	BS	26	"		26	"	"	
11	ΙM	18		"	20			
11	J.P.1	18	"	11	12	"	11	
"	LP2	16	"	. 11	16	"	"	
3	P L	110	//	"	100	"	"	
"	MM	2 0	"	"	1.4	"	"	
	ASD	4 0	"	"	22	"	"	
//	SV	2.6	"	"	20	"	"	
	KT	18		"	16		"	
4	NW	22	U	"	18			
"	DM	16			18			
//	BK	2 2	"	"	2.4	"	#	
#	RID	14	"	"	16		"	 
5	TH	4.4	"		4 4		"	
"	PD.	1.8	11	"	20		"	
"	BC	16			14	"	//	
"	DK	1.8	"		14			
11	ON	2.6	"	"	2 2	"		
6	PN	12						
//	OP	4.4	"		56	11	2000	· · · · · · · · · · · · · · · · · · ·
	BN	12			14		· . // .	
	KC	16			18	<u> </u>	. //	
//	<u>PS</u>	12		"	16		"	
"	НМ	20	"	"	22	"	"	[ 
7	<u>8</u> W	144	"	11	144	"	//	
	TO	3.4			2.0	"	//	
						~	0000	(D) D) M
2	<u> </u>			· · · · · · · · · · · · · · · · · · ·	42	6	2000	T DM
3					46		"	
4		рт мар			4 6		"	
5	<u> </u>				64	"		"
6	PN				72		"	"
7	SW				5.0			
				0.000			0000	mor
2	P Y	32	4	2000	44	4	2000	TOL
							]	

EX. (TDM) T 1 KK

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RES 2000 //	
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KK. EX. (TOLL) (TDM) T1

Na 3

NOTE	ATION	LIMIT	1/C NUMBER OF	ATION	LIMIT	0/G NUMBER OF	ATION	DESTIN
TAO I V		LOSS	CCT.	RES		CCT.	office	TDM.
				2000	6	6	ΡV	6
			 	.11		39	ON	11
				"		18	HM	
				11	"	12	LB	"
	مىنىيىتە بەتتەرىيە					8	BPO	11
	ار بر میانیند کرد.				//	54	SW	
			. •••••	11	11	39	SP	
				11	"	24	TC	"
						32	ΤK	
le plant de								
INF				2000	6	5 7	SW	7
TDM	2000	2	33	2000	2	36	ΡΥ	2
11	"	"	3 2	"	"	46	PL	3
"	"	//	5 7	//		60	LS	4
"	"		34	"		50	TH	5
11	"	11	6 6	11		77	PN	6
"	11		32	11	//	39	SW	7
TOLL	2000	4	96	2000	4	124	SR	1
"	"	11	31	"	"	42	PW	H
"	"		14		"	19	SS	#
11	. //		2 8	11		38	РҮ	2
"	11	11	14	"	11	19	IM	11
"	"	11	64	11		83	PL	3
"		"				19	мм	<i>¥</i>
"	. 11		2 3			31	ASD	u
"	<i>  </i>	"	15			2 0	SV	#
		"	14		"	19	KT	H.
	"		8 5	. // .	11	114	SW	7
"	"	"	9	"		12	SP	#
<u> </u>		"	2.3	"		3 1	TO	R
			9			12	ТK	H
TOLL	2000	0	88	2000	0	105	LS	4
"	<i>II</i> .,	//	85	"	"	95	TH	5
11	"	"	73	"	//	99	PN	6
OTD	2000	4	3 6				S R	1
11	11	11	7				BP	H
"	11	11	14				PW	И
11	- 11	//	6				88	. 11
"	//		12				РҮ	2
"	. 11	"	7				BS	#
11	"		6				IM	"

No. 4

ļ	NATION	NUMBER OF	LIMIT		NUMBER OF	LIMT		NOT
TDM.	OFFICE	CCT.	LOSS (dB)	$\operatorname{RES}_{(\Omega)}$	CCT.		RES (Q)	
2	LP1	•			6	4	2000	ОТ
li .	LP2				6	"	// .	
. 11	NN				6		"	
3	ΡL				2 5		"	
IJ	MM	v4			6	"	"	
. #	ASD				11		"	
ť	SV				7	"		
#	KT				6		"	"
4	LS				5		"	"
Ħ	NW				11	"	"	1 II
#	DM		• · · · · · · · · · · · · · · · · · · ·	· · · · ·	5	".	"	
. #	BK	1			6	"	"	"
#	RS				3	11		11
	PK				3	"		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	RID		· · ·	·	6	"	"	"
	BT				2	"	11	"
	CW				5		"	//
#	<u> </u>		<b>↓</b>		2		"	
# #	TY NWN				3			//
 H	PT				3	1		//
 #	BSN				4			
<i>n</i>	NC				12			
5					6			//
#	PD D	·	·		6	<u> </u>		
	BC					"	"	/
<i>n</i>	DK				6	[		
#	NK				3	"		/
#	PC				5	11		"
"	MK	. +	×		3			
#	<u> </u>				6			
#	RB				4	"		
"	EO				<u> </u>	"		/
# C	PP DN		·		2			
6	PN					"		//
#	OP			•	12			
#	BN			····	11	"		
#	KC				11			
N	PS PS				5		"	/
#	SPK	•						/
8	PV				2		"	/
#	ON	<u></u>			5	"	"	
IJ	HM				7	"	"	
"	LB	••••			2	"	"	
"	BPL				2	"	11	
"	BPO		1.		2		"	

		0/G			17	Ċ		
	IATION OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.		ATION RES (Q)	NOT
			<u>(dB)</u>	<u>(Ω)</u>	34	4	2000	OŤ
7	SW		· · · · ·		5		2000	
	<u>SP</u>					"	11	
	TC TK				11		11 .	
					5			
· · · · · · · · · · · · · · · · · · ·				······································		-		
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<u>KK EX.</u> (MC) <u>T1</u>

DESTI	NATION	0/G	1 . 11470	UNION	1/0			
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
1				$(\Omega)$	20	6	2000	<i>``1 7″</i>
1	SR PW				10	<u> </u>	//	<u> </u>
	j	<b></b>			<u> </u>	"		″ //
	SS	•••• *****************				· · · · · · · · · · · · · · · · · · ·	· • • • • • • • • • • • • • • • • • • •	
3	PL				14			
7	SW		· · · · · · · · · · · · · · · · · · ·		19			
······································		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · · ·			
6	PN	77	4	2000	8	4	2000	MC-MC
5	TH	7	"	. //	6	"		· · · · · · · · · · · · · · · · · · ·
4	LS	7	· // .	"	7	"	11	
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SR EX.

DESPIN	NATION	0/G	· · · · · · · · · · · · · · · · · · ·		1/0	,		
	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
	KK	208	11	2000	224	11	2000	·····
	BP	7 6	"		76	"	"	****
	PW	244	//	: 11	240	11	. //	······
	SS	56	11	"	56		"	
2	РҮ	160	. 11		88		"	
	BS	40	"	. 11	40	"	"	
"	LP1	32	11		28		"	
"	LP2	32	"	"	32		"	
3	PL	208		"	188			
	MM	60		"	48		"	
"	ASD	80	//		72			
	SV	44			32	"	"	······································
"	KT	4.8	"	"	44	11	"	
4	NW	32	//	"	3.6		"	
11	DM	28		"	28		"	
11	BK <sup>+</sup>	28		. 11	36			
	RID	24	"		28			
5	TH	112	//	"	104	"	"	
"	PD	56	. //	"	5 2	"		
	BC	60	11	"	3.2		· ·// · ·	
	DK.	56		"	4.8			
//	<u>CN</u>	60		"	48	//		
6	PN	24	"		•			·
"	СР	96	"	"	112	11	2000	
"	BN	24	//	"				
"	_ко	24		"	3 2	11	2000	·····
-11	<u>PS</u>	2 4			2.8	"	"	······
	HM	10			4.0		"	
7	<u>sw</u>	376			344		"	
	<u> </u>	7 2	"	"	40		"	
				0000				
1	KK	632	4	2000	144	4	2000	TDM
2	<u>PY</u>				84	6	//	
- 3	9.7				60		"	
4	<u>1.S</u> @U		·		88			"
	<u>ТН</u> РN		· · · · · · · · · · · · · · · ·		140	"		"
6					164	"		"
. 7	SW				108		"	//
	КК		k	2000	101	····-	0000	
1	P Y	96	4		124	4	2000	TOPP
2		112		"	144			//
1	<u> </u>	3.6						OTD
	1/1/			0000				
	<u> </u>	2.0	6	2000	·····		·	MO

BP

EX.

<u>T 1</u>

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		0/G			1/0		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
DESTIN	NATION	· · · · · · · · · · · · · · · · · · ·	LIMIT	AT LON		LIMIT	ATION	NOME
TDM.	OFFICE	NUMBER OF CCT	LOSS	RES (Ω)	NUMBER OF CCT.	LOSS	RES	NOTE
		<u> </u>						• • • • • • • • • • • • • • • • • • •
1	<u>KK</u>	40	11	2000	42	11	2000	
	<u>8</u> .R	7 6	. //		76	· //		
	PW	3 2	"		3 2			
11	88	28			28		"	· · · · · · · · · · · · · · · · · · ·
2	<u> </u>	2.6			2 2			· · · · · · · · · · · · · · · · · · ·
"	88	1.4			14	"	"	
11		8	"	"	6	"	"	
"	LP2	77			6		"	<u></u>
3	19	36	"		3 6	"	"	
"	MM	9	"	"	7	"	"	
"	ASD	9	"		9	11	"	
"	S V	7	"		6	11		
	КТ	9	. 11	//	9	11	"	·
4	NW	7		"	7	"	"	
"	BK	8		"		"	"	
"	RID	6	<u>//</u>	"	7		"	· · · · · · · · · · · · · · · · · · ·
5	TH	2 0	"		18		"	, an ang ang ang ang ang ang ang ang ang
	PD	7	"	-	7		"	
	BC	8	)/		8			
<i>"</i>		7						
	DK CN	13	"		1 3	//		
<i>"</i> 6	CP	16			1 4	"		· · · · · · · · · · · · · · · · · · ·
	KC	6			6	. 11		
					6			
	<u> </u>		11	0000				, , , , , , , , , , , , , , , , , , ,
	<u>HM</u>	7		2000			· · · · · · · · · · · · · · · · · · ·	
_7	SW	4 3			4.0		//	
	TO				6	//		
1	KK	172	4	2000	45	4	2000	TDM
2	<u> </u>				23	6		//
3	PL				16			<i>"</i>
4	L8				23	//	"	
5	TH				2.4	"		//
6	<u> </u>				3 6	//		"
	<u></u>				2.0	//		
			:					· · · · · · · · · · · · · · · · · · ·
	TH	27	4	2000	3.6	4	2000	торе
1	KK	7						<u>011</u> 0
			<u>.</u>					
5	тн	5	6	2000				MC
الموجد منصبت		****					*****	NO.8

PW EX.

DESTIN	ATION	0/G		**************************************	1/0			
		NUMBER OF	LIMIT		NUMBER OF		ATION	NOTE
TDM.	OFFICE	CCT.		RES (Q)	CCT.		RES	
1	KK	146	11	2000	150	11	2000	
"	SR	240	11		244	"	"	
#	BP	3.2	.11	"	32	11	11	
	\$S	3.8	"	"	3.8			
2	ΡY	66	"	"	54	"	"	
#	BS	2 3	"		19	11	"	· · · · · · · · · · · · · · · · · · ·
11	ſ M	19		11	17	11	"	· · · · · · · · · · · · · · · · · · ·
H	LP1	21		//	17	11	"	······
#	LP2	19	"		17	11		
3	PL	177	11		160	"	"	
. 11	MM	36	"		27	"	"	
4	ASD	56	"	"	4 3	//	"	
#	SV	33		"	2.7		11	
Ħ	KT	32	"	"	2.8	//	11	
4	LS	6	"	"	·			
#	ŃW	13			15	11	2000	
H	BK	17	11	//	17	"	"	
5	TH	62	11		50	11	#	
//	PD	21	"	"	19	//	"	
11	BC	20	"	"	1 5	"	"	
#	DK	2.5	11	"	21	"	"	
ţţ.	ON	21	"		1 3			
6	PN	17	"	"	1 3	"	"	
"	СР	58	"	"	54	"	"	
"	BN	1 7	"	"	14	"	"	
"	KC_	1.5	"		1.6	"	"	
"	PS	15	11	"	16			
"	HM	2 3		"	21	"		
7	<u></u>	195		"	173	//		
"	ТC	3.8		"	21		"	
"	TK				•			
	<u> </u>	301	4	2000	72	4	2000	T DM
2	<u> </u>	· *			4.4	6		
3	<u> </u>				4.6	"		
4	LS				5 5			//
5	<u></u>				72			
6	<u>PN</u>	·····			<u> </u>	//	//	//
7	<u></u>				6.0	//		
1	КК	3 1	4	2000	4 2	4	2000	TOLL
2	PΥ	37	//	"	4.8	//		//
1	<u>K</u> K	14	4	2000				OTD

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DESTIN	NATION	0/G	LIMIT	ATTION		NOTE		
TDM.	OFFICE	NUMBER OF CCT.	LOSS (dB)	RES (Q)	NUMBER OF CCT.		RES	NOTE
1	KK	10	6	2000	·			мо
				• 				
· · · · · · · · · · · · · · · · · · ·								
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							I.	
		1997 - 19						
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					· · · · · · · · · · · · · · · · · · ·			
			•					
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لسبيب	<u>l</u>	المستخبية فيشينه						NO. 10
			· · · ·	· · · ·				10.10

SS EX.

DESTIN	NATION	0/G	· · · · · · · · · · · · · · · · · · ·		1/0	-		
ļ	T	NUMBER OF	LIMIT		NUMBER OF		TATION	NOTE
TDM.	OFFICE	CCT.	LOSS (dB)	RES (Ω)	CCT.	LOSS	RES	
1	КК	36	11	2000	30	11	2000	
"	SR	56	"	. //	56	11	//	
"	BP	28	11 -	11	28	11	11 -	
11	PW	38		. 11	38	11	"	
2	P Y	32	11	"	30	11	"	
"	BS	18	11	"	19	"	"	
"	IM	9	"	"	8	"	"	
	LPI	8		11				
ii.	LP2	7	"		6	11	2000	
3	<u>PL</u>	31	"		2.8	//	"	
	ASD	9	"	. //		"	"	· · · · · · · · · · · · · · · · · · ·
#	<u>sv</u>	9		"		. //	"	
1	NW	21	11	"	21			
	<u>DM</u>	<u> </u>			12			
	BK	12	//		13			
	RID	6			6	//	11	· · · · · · · · · · · · · · · · · · ·
5	<u>• TH</u>	1 6		//	1 6	//	"	
	<u>PD</u>	6		"	7		//	
"	DK	6		"	6	"		
	ON	12		: 11	1_			
6	<u>OP</u>	12			12		//	
<u> </u>	BN	6		"	6	"	//	· · · · · · · · · · · · · · · · · · ·
<u> </u>	KC	7		. //	11			
	<u> </u>				6			
7	HM SW	<u> </u>	11	2000	8		 	
	TC		"	"	~			
		6						
	КК	170	4	2000	4.9	4	2000	TDM
$\frac{1}{2}$	PY	173		2000	42		//	<i>J. D.</i> M
3	PL				27		"	
4					20			11
5	TH				27	"	"	"
6	PN	·····			36			"
7	SW				28	"		
7								
1	KK	14	4	2000	19	4	2000	TOLL
2	РҮ	16	"	11	2.2	#		11
1	КК	6	4	2000	** -,			OTD
1	KK	5	6	2000				MO
l		]						

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			на на на 1							
	P Y 2	EX. (LOC)	Ť	2				A6. 1		
NDOW TI	NATION	0/G			1/0					
LESTI		NUMBER OF	LIMIT		NUMBER OF	LIMIT		NOTE		
TDM.	OFFICE	CCT.		RES (Q)	CCT.		RES			
1	KK	48	11	2000	52	11	2000			
· #	SR	88	"	"	160	"	"			
	BP	22	"	11	26	"	-11			
11	PW	54	"	"	66					
#	8,8	.30	"	"	3 2	11	"			
2	BS	34	11	. //	36	11.	"			
11	IM	24	"		2 4			· · · ·		
#	LP1	24	"		2.6	"				
P	LP2	16	#	"	1.8	11	"			
3	PL	56	"	11	5 2	"	"			
#	MM	14	"	"	1.2					
#	ASD	36			4 6	"				
"	S.V.	18	"	"	16	#	"			
"	KT				1 4	"	"			
4	NW	16	11	2000	40	"	"			
"	DM	24		. //	3 2	. 11	"			
#	BK	38	"	11	44		"			
	RID				16	11	"			
5	ТН	28	11	2000	26	"	"			
	PD				16	"	"			
»	BC				12	"				
#	DK		······································		1.2		"			
11	ON	-			12	"	"			
6	СР	2.4	11	2000	32	"	"			
#	BN				14	17	"			
"	KC	12	11	2000	3.4	11	"			
"	PS			]	12	"	"			
ti i	HM	14	11	2000	18	11	"			
7	SW	78	11	2000	72	//	"			
 #	TC				12	#	"			
			· · · · · · · · · · · · · · · · · · ·							
1	KK				30	6	2000	T DM		
3	PL				28	#	<i>!!</i>	- 11		
4	LS		······································		3.6	"	"	"		
5	TH				56	"	"	"		
6	PN				6 0	"	"	"		
7	SW				36	"	"	"		
1	KK	28	4	2000	38	4	2000	TOLL		
"	"	12	11	"				OTD		
4	LS	10	. 6	2000				MC		
شعب مشديه			• • • • • • • • • • • • • • • • • • •				· .			

NO 12

	γ	EX. (TDM)	<u> </u>	2				No. 2
DESTID	NATION	0/G			1/0	6	**************************************	
	·	NUMBER OF	1,1MIT		NUMBER OF		ATION	NOTE
TDM.	OFFICE	CCT.	1.088 (48)	RES	CCT		RES (Q)	
1	KK	4 2	6	2000				
"	SR	84	"	"				
11	BP -	23		//		) 		
#	PW	4.4		"				
#	<u> </u>	2.7	"	"				·····
2	BS	1.8	4	"	166	4	2000	
"	I M	56	"		221	11	"	
<i>n</i>	LP1	5.2		"	212		"	
#	LP2	4.6	"	"	148		"	
"	NN	60	"	"	189		"	· · · ·
3	P L.	7.4	6	11				
#	MM	1.7					L	
//	ASD			//				
#	<u></u>	14						
"	<u> </u>	30						
4	<u> </u>	20					· · · · · · · · · · · · · · · · · · ·	
"	NW	42		"				
	DM	27	"	"			·····	
	BK	16	"					
<i>"</i> "	<u>RS</u>							
//	PK	9						
//	RID	26		"				
#	CW	23						
// //	NWN	10	"					
	PT Davi	8	"		·	· • • • • • • • • • •		
5	BSN TH	<u>14</u> 34	//					
	PD	32						
	BC	29		"	·		*****	
и //			"					
	DK	28		·				
	NK P.C					 I		
	MK	209	!!					
		30			4			
"	RB	17	U	U //				
#	WC	16		"				
6	PN	24	"	"				
"	CP	32	"	<i>"</i> <i>!</i> /	·····			
n II	BN	48	"					
"	KC	41	//	/				
#	PS	30	"	"			·	
11	SPK	2 5	"					
"	ON	22				**************************************		
	HM	16			······································		- 4	
"	LB	7	// //	"	,			
	111				Lawara			

		EX. (TDM)	<u> </u>		I/(			<i>N</i> 6. 3
DESTI	NATION	0/G	LIMIT	ATTON	NUMBER OF	A	ATION	NOTE
TDM.	OFFICE	NUMBER OF CCT.	LOSS	RES	CCT.	1055	RES (Q)	NOTE
				(Ω) 2000		(dB)		
7	SW	67	6	2000			}	
// //	<u>SP</u>	23		//				
	TC	46	. //	"				
<u>//</u>	TK KK	21	2	///	36	2	2000	
1	h	33		"	39		// * *	مر می می اور می می اور می می اور می می اور می می می اور می می می اور می
3	PL LO	<u>33</u> 51	"	"	4 2	"		
4		58		<u> </u>	54			
5	TH	70			<u> </u>			
6	PN PN	49	"	"			· · · · · · · · · · · · · · · · · · ·	
7	SW	49			4 6			
7	SW	39	6	2000			[	INF
						<u> </u>	<u> </u>	
1	КК	4 4	4	2000	3 2	4	2000	TOLL
	SR	144	11	"	112	"	"	"
"	PW	48	"	"	37	"	"	
	- 55	22	11	. 11	16	11		
2	IM	22	11		16		"	
3	PL PL	97	11		7 5	"		
<u> </u>	MM	22	//	"	1.6			
11	ASD	36	"		2 6		"	
	SV	23			18		11	U
	KT	22	"	"	16	"	"	<u>//</u>
7	SW	133	"	"	99		11	
······································	SP	100	"		1 0	"	"	11
"	TO	3.6	"		26	"	"	
"	тĸ	14	"		10	"		"
	<u> </u>			·				
4	LS	126	0	2000	104	0	2000	TOLL
5	TH	113	"	.11	102	"	"	
_6	PN	118	<i>II</i> ·	"	86	. 11	14	
		······································						
	[[					) i		
							<b> </b>	
						****		محجوجة والمقصو فحاربين عبط وجربونكم عدى
:							<b> </b> _	
				**;				
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		I	1/0			O∕G	ATION	DESTIN
NOTE	ATION		NUMBER OF		LIMIT	NUMBER OF		
			CCT.	RES (Q)	LOSS	CCT.	OFFICE	TDM.
	2000	11	26	2000	11	26	KK	1
	"	1 11 -	40	"		10	SR	"
	11	11	14	11	11	14	BP	"
	"	"	23	11	"	19	PW	n
	"		18	11	"	19	SS	# .
· · · · · · · · · · · · · · · · · · ·			3 4	11		36	P Y	2
		11	9	11	11	10	IM	H
	11	"	14		//	14	LP1	
	11	H	9		11	9	LP2	H (
	"	11	8	11	11	8	NN	11 -
	. 11		1.4	"		16	PL	3
				"	"	ß	MM	#
	2000	11	10	"	"	8	ASD	"
	"	"	7		11	7	SV	"
	11	"	7	11	11	6	КТ	H
				11	"	7	LS	4
· · · · · · · · · · · · · · · · · · ·	2000	11	36	"	//	3 3	NW	11
	"	"	12	"	"	12	DM	"
	11	"	2 0	11	"	21	BK	"
	//	"	9	"	"	8	RID	"
				"	"	12	TH	5
·	2000	11	7	"	11	7	PD	"
	"		7	11	"	6	BC	<i>31</i>
	"	"	6	11	"	7	DK	#
	"	"	6	"	"	7	ON	#
	11	"	12	//	//	12	GP	6
	11,	11	6	11	11	7	BN	IJ.
	"	"	17	"	"	11	ко	"
	"	"	6				PS	11
,	"	"	8	2000	11	8	HM	.#
	"	"	24	"	"	36	SW	7
	"	"	6	"	"	6	TO	H
ТDМ	2000	6	15				KK	1
"	"	4	4 8	2000	4	166	РҮ	2
"	"	6	26				РЬ	3
"	"	"	21				LS	1
"	"	"	31				TH	5
"	"		38				PN	6
"	"	"	27				SW	7
							Tarbira	
TOLL	2000	4	41	2000	4	31	LS	4
MC				"	6	5	"	//
OTD				11	4	7	КК	1

3	NOTE	ATION	LIMIT	1/C NUMBER OF	ATION	LIMIT	O/G NUMBER OF	ATION	DESTIN
		RES		CCT.	RES (Ω)	LOSS (dB)	CCT.	OFFICE	TDM.
		2000	11	18	2000	11	2 0	KK	1
		//		19	"	11	17	PW	"
		"		9	. 11	. 11	8	88	4
		"	11	24	11		24	PY	2
				10		11	9	BS	
		"	11	15			13	LP.1	"#
	·····	"		9	"	"	8	LP2	Ņ
				14	"	"	14	PL	3
		- 11	. 11.	2 0	"		17	ASD	-11
		"		8	11	11	7	SΥ	
				6				КТ	"
			"	17	2000	11	6	NW	4
			"	6				DM	
				11	2000	.11	9	BK	11
		"	"	8			6	RID	11
 		"		6				PD	5
					2000	11	1 2	CP	6
: 		2000	11	10	. //		8	KC	#
		"	"	9	"	"	7	HM	#
					#	11	18	SW	7
	(1)								
vi 	TDM	2000	6	39				KK	1
			4	5 6	2000	4	221	ΡY	2
			6	18	· ·			PL	3
		//		17				LS	4
· .	"			32				TH	5
•				4 3				PN	6
	//			3.5				SW	7
	TOL	2000	4	19	2000			- VV	
		//	-4 //	22		4	14	KK	1
				66			16	<u> </u>	2
D	OTD				2000	4	6	КК	1
	· · · · · · · · · · · · · · · · · · ·								
	MC			***	2000	6	5	LS	4
			*****						
		<b> </b>		<u></u>					
									•
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N0.16	LN(			and the second	المحجب سيند				
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LP-1 EX.

			I/C			0/G	IATION	DESTIN
NOTE		LIMIT	NUMBER OF		I.IMIT	NUMBER OF	·	اجستي مس
	RES		CCT.	$\frac{\text{RES}}{(\Omega)}$		CCT.	OFFICE	TDM.
	2000	11	18	2000	11	12	KK	1
		11	32	11	"	2.8	SR	"
	11	11	8		11	6	BP	11
	"	"	21	11	"	17	PW	"
	"	11	8				SS	
		"	24	2000	11	26	PY	2
**************************************	11	11	14	"	11	14	BS	11
	"	"	1 3	"	11	15	IM	11
	11		1 3	11		1 3	LP2	
www.eseconder.com v			16	"	11	14	PL	3
		"	6		11	6	MM	11
بيوجيعوا الميويين والمتناويين	11	"	9		11	7	ASD	
		"	6		"	7	SV	"
	11	"	8			6	KT	
	"		6	!!		7	LS	!! Å
	"	"	7	11		7	NW	
<u></u>		"	12	11			BK	"
			9	"		<u> </u>	1	"
						16	RID OP	6
			9			8	KO	
			9					
			21		"		HM SW	7
						27		
T DM	2000	6	16				КК	
		4	52	2000	4	212	PY	1 2
	"	6	22				PL	3
·····	"		2 2				LS	4
	"		39				TH	5
	"	"	36				PN	6
	······		27		}			
							<u></u>	7
TOLL	2000	4	31	2000	4	22	1.8	4
MO				//	6	5	"	"
OTD				2000	4	6	KK	1
	••••••			[				
							·····	
	[			·				
						· · · · · · · · · · · · · · · · · · ·		
-		}						
				·····			·	
							- <u>-</u>	
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 $I_1P-2 = EX$ .

DESTR	NATION	0/G	LIMIT	ATTON		ATION	MAMP		
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	RES	NUMBER OF CCT.	LOSS	RES	NOTE	
1	КК	16	11	2000	16	11	2000		
"	SR	32	"	"	32	11	"		
	BP.	6	"	"	7	11	"		
	PW	17	"11		19	"	"		
"	88	6	"	"	7	"	. 11		
2	PY	1.8	"		1.6				
"	BS	9	11		9	11			
11	IM	9	"		8		11		
	LP1	13	Ú.		13		"		
3	PL	2.6			16		11		
"	MM	8	"		7				
		7			8.				
	ASD SV	9			7	. 11			
	KT		<i></i>		8	"	"		
4	LS	. 7	"						
"	NW	6	"	"	6	11	2000		
"		6							
·	DM DV	1 2			11	11	2000		
	BK	12	"	"	1 2		11		
	RID				9				
_5	TH DD	12		_!!	6		"		
"	PD	6						······	
//	DK PN	<u> </u>		"		·		· · · · · · · · · · · · · · · · · · ·	
6					1 6	11	2000		
//	CP	20	"		10		2000		
"	BN	6			2 2	11	2000		
"	KC	2.2				 //	//		
//	PS	6	"		6				
//	HM	15			14		//	••••••••••••••••••••••••••••••••••••••	
7	SW	27			18	. //	"		
	TC	6							
					17	6	2000	TDM	
1	KK	-		0000				<u>TDM</u> //	
2	PY	148	4	2000	46	4	"		
3	PL				2 5	6			
4	<u>LS</u>				2.6		"	"	
5	TH		÷		3 6	/		//	
6	PN				36			<i>I</i> /	
7	SW				30	!!		//	
				0000			0.000	mori	
4	LS	23	4	2000	3 1	4	2000	TOLL	
"		5	6					MC	
1	KK	6	4	2000				OTD	
							·	<u></u>	

NN EX.

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MAAR	ATION	LIMIT		ATLIAN	LIMIT	0/6	INTION	Trollin
NOTE	RES (Q)	LOSS (dB)	NUMBER OF CCT.		LOSS (4B)	NUMBER OF CCT.	office	TDM.
	2000	11	8	2000	11	8	BS	2
			8	11	//	8	NW	4
· · · · · · · · · · · · · · · · · · ·				.11		6	TH	5
TDM	2000	6	14		····		KK	1
"	11	4	50	2000	4	189	РҮ	2
	11 .	6	2 5				PL	3
	11	"	2 1				LS	4
	11	//	23				ТН	5
		11	25				PN	6
"		"	21				SW	7
								·
TOP	2000	4	20	2000	4	15	1,8	4
MC				#	6	4	"	"
О́Т́D				2000	4	5	KK	1
······································			· · · · · · · · · · · · · · · · · · ·					
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PL EX. (LOC) <u>T 3</u>

16 I

DESTIN	NATION	0/G	r		1/0	· · · · · · · · · · · · · · · · · · ·		
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT	ATION RES (Q)	NOTE
 I	КК	100	11	2000	110	11	2000	
	SR	188	11 .	"	208	, //	"	· · · · · · · · · · · · · · · · · · ·
	BP	36	11		36			******
	PW	160		11	177		11	
	88	28		"	3 1	"	" "	
2	PY	52		11	56	"	"	
11	BS	14	11		16	."	"	
. 11	IM	14			14	"	"	-
"	LPI	16	"	"	14	"	,11	
	LP2	16	11		2 6		11	
3	MM	3 7	11		39			
#	ASD	78		".	78	"	11	- ··-
"	SV	5 0			47	"	"	
"	KT	3 3	"	"	4 2	. 1)	"	
4	NW	1 2	"	//	26		"	
"	DM	12	"	. //	16	. //	11	
	BK	16	"	"	2 6			
"	RID	1 2	"	.11	18	."	11	-
5	ТН	36	11	"	41	"		
	PD	14	"		2.9	. //	"	
	DK	·			14	"		
//	ON	14	11	2000	14	"	"	
6	PN	18	"	"	18	"	"	
//	CP	90	"	"	9 0	"	"	
"	BN	16	"	"	1 6	"	"	
"	ко	14		"	24	"	"	
"	PS	12	.11		18	"	11	
<i>ii</i>	8 P K				12	"	"	
Ŭ,	HM	31	11	2000	34	"	"	
7	SW	241	"	"	223	"	"	
	TC	41	"	"	4.1	"		
							<b>  </b> -	
1	KK				30	6	2000	TDM
2	РҮ				74	<i>11</i> ,		//
4	LS			·	5 6			
5	TH			<u>.</u>	91	// ,		"
6	PN		·····		104	"	"	//
7	SW			·	68	. 11	"	//
								مە <del>جەرەر بىرىر</del> بىر بىرىر
1	KK	64	4	2000	83	4	2000	TOLL
2	РҮ	72			97	//	"	//
<u> </u>	KK	25	. 11	<u>//</u>				OTD
				0000				
1	KK	14	6	2000				MC

NO.20

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an row we are the		<u>EX.</u> (TDM) 0/G		مەلىپ يەتبىيە بېيىرىكى ا	1/0		an a anna an ann a dha a' anna an a		
. <u></u>	NATION OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.	LAMIT LOSS (dB)		NOTE	
	КК	4 6	<u>(((B))</u>	2000	······		<u>(Ω)</u>		
1	SR	60	· · · · · · · · · · · · · · · · · · ·	2000		·[	[		
"							······································	and a second	
<u> </u>	BP PW	<u> </u>							
"	88	27			······································				
				"				<u></u>	
2	PY BS	<u>28</u> 26		"			<b>-</b>		
"	IM	18							
"		22						· · · · · · · · · · · · · · · · · · ·	
						· · · · ·			
*****	<u>L P 2</u>	<u>25</u> 25	<u>  </u> 						
<u>//</u> 3	<u>NN'</u> MM	54	4		196	4	2000		
 //	ASD	103			354		"	, 	
	SV SV	53		"	207	"	"	به همور با دولیم بیونه وییو بیانی ر	
· <u> </u>	KT	51	"		157		11		
4	LS	29	6						
	NW	56		"			•		
	DM	30							
	BK	26	11	"					
	RS	8							
"	PK PK	8	"					· · · · · · · · · · · · · · · · · · ·	
"	RID	3 1		"					
	CW	19	11	"				an a	
11	NWN	13	11	"					
11	PT.	9		"				· .	
	BSN	16	"	"					
5	TH	50	"	"					
//	<sup>°</sup> PD	28	"	"				· · · · · · · · · · · · · · · · · · ·	
//	BC	32	"	"					
"	DK	29	"	"					
	NK	10	"	"	•				
	PC	2.6		"					
"	MK	10			·				
"	ON	22	"	"				· · · · · · · · · · · · · · · · · · ·	
	RB	2.2	//	"		· · · · · ·		· · · · · · · · · · · · · · · · · · ·	
	EC	2.2							
//	<u> p p</u>	6							
6	PN	2 1							
//	<u>op</u>	48	"	"					
	BN	5 2			· · · · · · · · · · · · · · · · · · ·				
"	ко	5 3	//						
"	PS	26	"	"					
"	SPK	33	"	"					
	ON	3 1	//	"					
"	HM	15	"	"					

PL EX. (TDM) T 3

DESTIN	NATION	O∕G	<b>.</b>		1/0			
····	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
6	LB	9	6	2000				••••••••••••••••••••••••••••••••••••••
**		6	<u> </u>					
"	BPO					· · · · · · · · · · · · · · · · · · ·	·····	
7	SW	64						
//	SP	21	11	"				
11	TC	3 3		"				
	тк	21		"				
1	KK	32	2	11	4 6	2	2000	
2	РҮ	39	11	11	33	11 H a A		
4	LS	57	"	11	56			:
5	TH	56	"		52		11	
	PN	69			5 2		"	
6	SW				32	1		
7	·····	35		"	52		· // ·	
7	SW	42	6	2000				INF
					· · ·			
·····							· · · · · · · · · · · · · · · ·	
						·		
<u></u>								
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	2.1							· · · · · · · · · · · · · · · · · · ·
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- 122 -

MM

EX.

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TROUTING TON		0/G	·····		I/C		······	
	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
1	KK	14	11	2000	20	11	2000	
11	SR	48	"	11	60	. 11	"	
	BP	7		"	9	"	"	
"	PW	27	"		36	"	"	
2	P Y	12		. 11	14	11	11	
	BS				6	. 11		
"	LP1	6	11	2000	6	"	"	
"	LP2	7	//	"	8		· //	
3	PL	3 9	"		37	"	. 11	
"	ASD	9	11		9			
	SV	14	"	11	14	"	"	
"	KT	29	//	"	30	"	"	
4	NW				6	"	"	
	BK				7			
11	RID				7	" "	"	
5	<u>TH</u>	12	11	2000	12	"	"	· · · · · · · · · · · · · · · · · · ·
· //	<u> </u>	7		: 11	9	"	"	
	DK	9		//	7	"		
"	<u> </u>	7	//	"				· · · · · · · · · · · · · · · · · · ·
6	<u>PN</u>	7		. 11				
"	<u> </u>	2.8		"	3 2	11	2000	
	BN	7			7 .		"	
	KC				6	"	"	
"	<u> </u>	7	11	2000	8	"	"	
	SPK				6	"	"	
. //	HM	8	11	2000	9			
7	<u>_8W</u>	73	//		65	"		
	<u>SP</u>	8		//	8			
	<u>TC</u>	2.8			2 5	"	"	
"	<u> </u>	7			6	"		
1	KK				7	6	2000	TDM
2	РҮ				1 7	"	"	//
3	P.L.	196	4	2000	54	4	"	//
4	1,8	· مسیحہ میں			20	6	"	
5	TH			····	31		"	11
6	PN				3 2			11
7	SW	· · · · ·			1 3	"	"	
	КК	14	4	2000	19	4	2000	TOLL
	KK	6		//	1.5			OTD
	PY	1 6				4	2000	TOLL
2		10			2.2	-		* 0 11 11
6	PN	6	6	2000	· · · · · · · · · · · · · · · · · · ·			MC
								NO 07

N0.23

ASD

EX.

1 023711	NATION	0/G			1/0	NOTE		
	r	NUMBER OF		ATION	NUMBER OF		LIMITATION	
TDM.	OFFICE	CCT.	LOSS (dB)	RES (A)	CCT.	1,055 (dB)	RES (Q)	
1	КК	22	11	2000	40	11	2000	
	SR	72	"	"	80		"	
	BP	9			9	"	11	
"	PW	4 3			56	"		· · · ·
{		8		"	9	"		
	SS PY	4 6			36			· · · · · · · · · · · · · · · · · · ·
2								
"	BS	10		//			<u> </u>	
. 11	IM	20			17			· · · · · · · · · · · · · · · · · · ·
//	LP 1	9			7		11 -	
	LP 2	8	"	. //	7			
3	P L	78	<u> </u>	"	78		//	· · · · · · · · · · · · · · · · · · ·
"	MM	9	"	"	9			
- 11	SV	11	Ű	"	11	"	"	
"	KT	7	"	"	9	"	//	
4	BK	6	"	"	6	"	"	
5	ТН	11	"	"	11	"	"	
"	PD	·			6	"	"	
	CN	6	11	2000	6	"	"	
6	CP	20	"	"	3 4	"	"	
"	KC	6	"		7		"	
	PS				6		"	
	HM	2 0	11	2000	20		······································	
7	SW	58		//	5 8			
							·	
1	KK				20	6	2000	TDM
					3 7		//	<u> </u>
2	PY							"
3	PL,	354	4	2000	103	4		
4	LS				4 0			
5	TH				5 3			//
6	PN				5 5	. //		
1	SW_	····			37		//	
	Tr tr			0000			0000	TOLL
1	KK	23	4	2000	31		2000	
2	РҮ	6			3 6	"		"
1	KK	1 1				**********		OTD
				0000		·		
6	PN	9	. 6	2000			· •···	MC
				: · ·				·
				-				
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		1 - A - A - A - A - A - A - A - A - A -		. 1/	24 -			

SV EX.

DESTINATION		0/G			I/C			and the second
		NUMBER OF LIMITATION		NUMBER OF LIMITAT			NOTE	
TDM.	OFFICE	сст.	LOSS	RES	сст.		RES ( <sub>Ω</sub> )	
1	KK	20	11	2000	26	11	2000	
11	SR	3 2	.11		4 4	"	"	
	BP	6		11	7	""	"	
"	PW	27			3 3	"	11	
"	SS	7	"	"	9	"	"	
2	РҮ	16	- 11	11	18		"	
"	BS	7	11	- #	7	#	"	
	( M	8	//	11	7	"	"	
"	LP 1	6	. 11	11	7	"		
11	LP 2	7	. 11	11	9	"	""	
3	ЪГ	47	"	"	5 0		"	
"	MM	14	"	"	14	"	"	
"	ASD	11	11	"	11	"	"	
"	KT	13	"	"	15	"	//	المحاديب المحاصرين والمحاد المحاد
4	BK	6	"	"	6	"	"	
"	RID				6	"	"	
5	TH	13	11	2000	12	"	"	
11	РD	7	"	"	8	"	"	
	DK	6	"	"	7	"	"	
6	PN	1 1	"	"	9	"	"	
"	С₽	46	"	"	4 2	"	"	
	BN	10			7	"	"	
11	KC	7	"	н	7	"		
"	ΡS	7	"	11	7	//	"	·
"	HM	15	"	"	14	"	"	
7	SW	4 3		"	4 1	"	"	
	тс	6		"	7	"	. //	
1	КК				10	6	2000	TDM
2	PY .				14	"	11	<i>!!</i>
3	PL	207	4	2000	5 3	4	"	"
4					2 2	6	"	<i></i>
5	ΠŢ				3 7			"
6	<u> </u>	•			3.8			"
	<u>sw</u>	****			19			"
							<b>.</b>	
1	KK	15	4	2000	20	4	2000	TOLL
2	ΡΥ	18			23	. 11	"	11
1	KK	7		"	+r→			OTD
6	ΡN	5	6	2000	•··•			MC
								*******
						, <u></u>	egali vanasse ginteran	NO OF

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		<u> </u>			1/0				
DESTINATION		O/G			· · · · · · · · · · · · · · · · · · ·			NOMD	
TDM.	OFFICE	NUMBER OF CCT.	LIMITATION LOSS RES (dB) (Ω)		NUMBER OF CCT.	LOSS RES (dB) (Q)		NOTE	
1	КК	16	11	2000	18	11	2000		
	SR	4.4			48	"	"		
	BP	9		"	9	"	"		
	PW	28		"	32	11	"		
2	<u>, н</u> РҮ	14		<i>"</i> "					
	BS	7		"	6	11	2000		
	IM	6		"		]			
	LP1	8_		"	6	11	2000		
	LP2	8	"	"	8				
3	PL	4 2		11	33				
		30			29				
//	MM ASD				7				
		9	: <i>"</i>	"	13		 		
	<u>SV</u>	15		//	6				
4	<u>NW</u>	в	11	2000		/////////////////////			
"	BK	. 7	<u> </u>	2000	6				
. //	RID	1 2			7				
5	TH				11				
	<u>PD</u>	9	//		9		//		
	DK	9	. //	· // .	6				
	ON								
6	P N	8		//					
"	CP	30		"	28	11	2000		
"	BN	9	"	<i>"</i>	7		<i>"</i>		
	ко	7		//	6	"			
"	P S	9		"	8	"	//		
	SPK	6	-11	"				· · · · · · · · · · · · · · · · · · ·	
"	HM	10	<i>II</i>	"	8	11	2000		
7	SW	73		"	58	"	"		
	S P	8	"	"	7	"	"		
	TO	2 6	"	"	23	"	"		
"	TK	6	"						
	••••••			·····	·				
1	КК		<u></u>		21	6	2000	TDM	
2	РҮ		·		30	"			
3	P L	157	4	2000	5.1	4			
4	LS				23	6			
5	TH			ا د مىرىيىتى	4 1	"	"		
6	PN				4 2	"	#		
7	SW				2.2	11			
1	KK	1.4	4	2000	1 9	4	2000	TOLL	
2	P Y	1.6	"	//	2 2	"	"	"	
1	КК	6						OTD	
6	PN	5	6	2000				MC	
-			وفيوت معمورين			**************************************		NO.26	

N0.26

YECKETS	ATION	EX. (J.OO) 0/G	·		1/0				1
• • • • • • • • • • • • • • • • • • • •	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)		NUMBER OF CCT.	LIMIT LOSS (aB)	ATION RES (Q)	NOTE	
1	PW	······································			6	11	2000		ļ
2	BS				7	"	"		ľ
#	LP1	6	11	2000	7	"	"		
#	LP2				7	"	"		
4	DM	7	11	2000	7	"	"		1
<i>II</i> .	BK	12	- 11	11	11	"	"		
#	RID	8	"	. //	8	"			•
Н	CW	6	"	"	6	"	"		ł
			· · · ·	· ·····	]				
1	KK				42	6	2000	TDM	ļ
2	РҮ				20				
3	PL				29	11	"	11	ľ
5	TH				24	"	"	"	
6	PN				3 4		"		
7	SW				27	11	"		
									ĺ
1	KK	5	4	2000				OTD	
								-	ŀ
			i		· · · · · · · · · · · · · · · · · · ·			1	
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NO.27

LS EX. (TDM)

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NOTE		LIMT	NUMBER OF	ATION	LIMIT	NUMBER OF	INTION	
محمر چینون میسور می	$\operatorname{RES}_{(\Omega)}$		CCT.	RES (Q)		CCT.	OFFICE	TDM.
×				2000	6	46	KK	1
				//	"	88	SR	
		· · ·			. 11	23	BP	
	Ī			ii.	11	55	PW	И. Г.
				"	"	2.0	SS	"
					11	36	PY	2
				11		21	BS	#
				//	"	17	1 M	#
	Ī			"	. 11	22	LP1	
· · ·					"	26	LP2	"
	1					2 1	NN	#
	Ī			"		56	L PL	3
				"		20	MM	#
					"	4 0	ASD	
				"	"	22	SV	. 11
						23	KT	······ #
	2000	4	308	<u> </u>	4	100	NW	4
	"	"	213	"	4	64	DM	
	//	"	172			60	BK	
	"		84			4 0		<i>"</i> <i>II</i>
			85	"			RS PK	
		"	164			<u>33</u> 53	RID	
		"	38	<i>  </i> <i>  </i>		30		" II
<u></u>			167		{	63	BT CW	
	"	"	46		"	41	TY	13
			102					11
	"		89			41	NWN	
		"	125			3.5	PT BSN	#
	<u>"</u> "					48	************************	
			4 6	"		39	NO	"
					6	50		5
						28	PD	
						25	BC	//
	{			 ]/		23	DK	
			÷	f		6	NK	
		}	••••	"		15	PC	
					"		MK	11
*******						24	ON	
		·}				15	RB	<i>II</i>
					!!	12	EC	#
·				· //	"	15	PN	6
						38	OP	
<u> </u>			•			37	BN	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				"		43	KO	"
		<u>.</u>			"	22	PS	!!
					11	18	SPK	N

<u>LS EX.</u> (TDM) <u>T4</u>

*K*6. 3

DESCIN	NATION	0/G			I/0			
. ، . محمد بالمحمد بالمحمد م	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION BES (Q)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
		محوسه وستحص مرتها سيري ومواجب سيري والمحتمد بريال			مەربەر بىرىدىدەت بىلىكە بەر تىران بارانارىد بارلەت تەربىيە بەر بىلەر	<u>(ab)</u>	<u>(</u> Ω)	
6	ON	18	6	2000				
<i>4</i> ·	IIM	28						: 
#	LB		<i>H</i>	. #				
7	SW	79	H	"				
<i>H</i> .	SP	18	. #	. #				و و با
#	TC	38	#	#.				<u> </u>
"	ТK	18	11		****	[		
1	KK	57	2	"	60	2	2000	
2	PY	42	IJ	H	51	.11	"	
3	PL.	56	ţi .	В	57	"	н.,	
5	ти	65		11	56	"	#	
6	PN -	71	11	"	68	#	. #	
7	SW	64	#		59		11	
•		······						
1	KK	88	0	2000	105	0	2000	TOLL
2	PY	104			126	"		//
- <del></del>						· · ·		
4	NW	54	4	2000	40	4	2000	TOLL
"	DM	26	"		19			//
4	BK	34		. 11	25			
//	RS	11	"		8			#
	PK	11	"	"	8		#	//
"	RID	34	#	11	25			//
	BT	5			4		 #	
// //	CW	20		u u	15	"		
	TY	5			4			#
"	NWN	11		" "	8			# #
	PT				8			#
		11		"			#	
#	NC	5	#		4	//	"	//
2	BS	41			31	//		#
#	LP1	31	#		22	"		"
#	LP2	31		<i>II</i>	23	<i>"</i>		# 
	NN	20	#	"	15	"		"
								<u> </u>
7	SW	40	6	2000				INF
							· ····	
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<u>LS EX.</u> (MO) <u>T4</u>

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NOTI	TION	LIMIT	NUMBER OF	TION	LIMIT/	NOMBER OF	ATION	
	RES (Q)	LOSS	CCT.	$\mathop{\rm RES}_{(\Omega)}$		CCT.	OFFICE	TDM.
<u>* 17 //</u>	2000	6	10				PY.	2
	"	#	5		10		BS	"
	"	"	5				IM	"
<i>II</i> -	. "		5				LP1	"
			5	1			LP2	"
"	"		4				NN	"
"	"	" :	9				NW	4
"	"	"	4		· ·		DM	<i>ii</i>
"	"	"	5				BK	"
	"	"	3				ns	
"	. 11		3				PK	
	"	"	5				RID	"
	"	"	4				CW	
	"	"	2					"
			3				TY	
			3				NWN	
			J				РТ	
	0000							
MO	2000		. 7	2000	4	7	KK	1
	."		6		"	7	TH	5
		#	8		"	7	PN.	6
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DESTIN	JATION	0/G			1/0			1
	r	NUMBER OF	LIMIT		NUMBER OF	LIMIT		NOTE
TDM.	OFFICE	CCT.		$\mathop{\rm RES}_{(\Omega)}$	CCT.		RES (Q)	-
1	KK	18	11	2000	22	11	2000	
11	SR.	3 6	"	"	3.2	"	"	
- <i>1</i> 1	BP	7		"	7			
"	PW	15			13	11	11	
"	SS	21	"	11	21		11	
2	P.Y	40	11	11	16	"	"	
· //	BS	36		"	33	"		
"	I M	17	"		6			
"	LP1	7		"	7		"	
"	LP2	6			6	"	. //	
н	NN	8		"	8		11	
3	PL	26		"	12	"		
"	MM	6		"	<u>+ p</u>	·		<b></b>
"	KT	6		"				
4	- DM	10			9	11	2000	
"	BK	31		"	24		"	······································
"	RID	7		"	7	"	//	g
5	TH	21	/	11	6		"	
	PD	7					· · · · · · · · · · · · · · · · · · ·	
"	BC	7		"				
	DK	?	"	"				······································
6	0P	1.2		"				· · ·
	KO	9			8	11	2000	· · · · · · · · · · · · · · · · · · ·
-7	SW	4 0	"	· // //	24		//	
					······			
-1	KK	—			6 1	6	2000	TDM
2	ΡY				4 2	"	11	11
3	ΡL				5 6		"	11
4	LS	308	4	2000	100	4	"	//
5					54	6	"	
6	PN				67		"	
	SW				58			
	···	······			· · · · ·			
	LS	4 0	- 4	2000	5.4	4	2000	TOLL
"	"	9	6	"				мо
1	КК	1 1	4	2000				OTD
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DESTIN	ATION	0/G			1/0	1		
	OFFICE	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
1 1 1 1 1 1 1 1 1 1	OFFICE	CCT.	LOSS (dB)	RES (Ω)	CCT.	LOSS	RES	
1	KK	18	11	2000	16	11	2000	
"	SR	28	"	"	28		"	
"	SS	12		. 11	11	"	"	
2	РҮ	32	11		24	"	"	
"	BS	12	11		12		"	
"	IM	.6	"					· · · · · · · · · · · · · · · · · · ·
"	LP2				6	11	2000	
3	PL	16	11	2000	12	11	"	
4		7		//	7	"	"	
	NW	9			10		"	<u></u>
	BK	15			15			
	RS			·	6			
"	RID	8	11	2000	8			
5	TH	9		//	10	"		·
	PD	6	"		6	11	"	
6	CP	16	"	"	12	"	//	
11	KC	8	"	"	10	"		
7	SW	36	#	H.	21	11	"	
1	KK				28	6	2000	T DM
2	PY				27	"	11	"
3	PL				30	"	"	"
4	LS	213	4	2000	64	4	"	
5	TH			·	39	6	"	"
6	PN				3 6	11	"	11
7	SW				28	"	"	1/
			·····					
	Ia	1.0	4	2000	26	4	2000	TOLL
4	LS	19					2000	MC
	"	4	6		·			
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1	KK	5	4	2000				OTD
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L.,								NO.32

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DESTIN	VATION	0/G	······		I/C	T		ļ
	·	NUMBER OF	LIMIT		NUMBER OF		ATION	NOTE
TOM.	OFFICE	CCT.		RES (Ω)	CCT.		RES (Q)	
1	KK	24	11	2000	22	11	2000	
11	SR	36	11	"	28		"	
11	BP	7	"	"	. 8	11	11	
11	PW	17	11	"	17	"	11	
11	88	13	"	"	1.2	"	11	
2	PY	44	"	"	38	"	"	
11	BŚ	20	"	11	21	11	11	
11	IM	11		. 11	9	"	"	· · · · · · · · · · · · · · · · · · ·
//	LP 1	1 2	"	"	1 5	"	"	
"	LP2	1 1		"	12	"	"	······
3	PL	26	"		16		"	
"	MM	7	"	"				
	ASD	6			6	11	2000	
"	SV	6	"		6	 //	//	
	KT KT	6	"	······································	6	"	"	
4		11	 //	// //	12		""	
	NW	24			31			
	DM	15			15			·
"	RID	10	"		11	"		
							·	
		10		<i></i>				
	<u>PD</u>				6			
	BC	6	11	2000	6			· · · · · · · · · · · · · · · · · · ·
	DK	6						L <u></u>
6	CP	18			12		2000	· · · · · · · · · · · · · · · · · · ·
	BN	6					0.000	· · · · · · · · · · · · · · · · · · ·
"	KC	20		"	18		2000	
	HM	7			8		//	
	SW	47			27			
1	KK				18	6	2000	TDM
2	PY				16			
3	<u>PL</u>				26			"
4		172	4	2000	60	4		
5	TH				3 2	6		11
6	PN				37	"		
7	SW	•··			33	"	"	"
					· · · · ·			
4	LS	2 5	1	2000	3 4	4	2000	TOLL
"	"	5	6	"				MC
		:						
1	KK	6	1	2000	•			OTD
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DESTI	NATION	O/G NUMBER OF	LIMIT	ATION	I/C NUMBER OF	·	ATION	NOTE
TDM.	OFFICE	CCT.	LOSS		CCT.			
4	DM	6	11	2000				
	VV.	·			12	6	2000	TDM
1 2	KK PY				8	"	"	
3					8	"	"	"
4	LS	84	4	2000	40	4	"	
5	TH				7	6		"
66	PN				10	"		
7	S.W	·			8	//	"	
				2000	11	4	2000	TOL
4	LS //	8	4	2000				MC
		3	6			<b></b>		
1	KK	3	4	2000	· · · · · · · · · · · · · · · · · · ·			OTD
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	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.		ATION RES (Q)	NOTE
1	KK				14	6	2000	T DM
2	PΥ				9	"	"	"
3	19	·			8		11	"
4	1.8	85	4	2000	33	4	"	"
5	TH				7	6		
6	PN_				9	"	"	
7	SW				8	"	"	
4	LS	8	4	2000	1 1	4 :	2000	TOLL
"	<u> </u>	3	6	"				МС
		· · · · · · · · · · · · · · · · · · ·						
1	<u> </u>	3	4	2000			·	OTD
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ESLIC	ATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT		NOTE
TDM.	OFFICE	CCT.		RES (Ω)	CCT.		$\mathbb{RES}_{(\Omega)}$	
1	KK	16	11	2000	14	11	2000	
11	SR	28	11	"	24	"	"	
//	BP	7	. 11	"	6		"	
"	88	6	11 -	"	6	"	11	
2	PY	16		"				· · ·
//	BS	9	"	11	8	11	2000	
"	IM	8	11	"	6	"	"	
"	LP1	9	.11,	"	.8	"	11	· · ·
11	LP2	12		11	12	"	11	
3	ΡL	1.8	"		12	"	11	
"	MM	7	"	//			·	
"	SV	6	"	"				
"	KT	7	"	"	7	11	2000	
4	LS	8	"		8			
"	NW	7	"		77		//	
"	DM	8	"	"	8	″	"	
"	BK	11	"	"	10			
5	TH	10	"	"	9	"	11	
6	PN	6	"	"				
//	CP	18		"	12	11	2000	
"	BN	7		"	•• ••			
. //	KC	2.0			2 0	11	2000	·····
	PS	6						<u> </u>
	HM	10	"		9	11	2000	
7	SW	36		"	18			- «بربیب کا نقافت ، میکند اور میکند» -
"	TC	6	//					
					0.5	6	2000	TDM
1	KK				<u>25</u> 26	<u>6</u> "	2000	//
2	PY PL				3.1			
3		164	4	2000	53	6	""	
			, <del>x</del>	2000	38	6	"	
5 6					41			
7	SW				32			
3								
4	LS	25	4	2000	3 4	4	2000	TOLL
11	"	5	6	"				MC
								999 yugani (ayu, to buyo , mga With to bu yo
1	KK	6	4	2000				ODT
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NOTE	ATION	LIMIT		NUMBER	ATTON	LIMIT	O/G	ATION	DESTR
NUTIS	RES (Q)		Ϋ́Υ.	NOMBER	RES (Ω)	1.0\$8 (dB)	NUMBER OF CCT.	OFFICE	TDM.
TDM	2000	4		30	2000	4	38	1.5	4
TOLL	2000	4		55	2000	4	4	LS	4
MC	· · · · · · · · · · · ·			<u></u>	2000	6	2	TH	5
OTD				۰	2000	4	2	<u> </u>	
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		E	1/0		0/G	INTION	DESTIN
NOTE	ATION RES (Q)		NUMBER OF CCT.	LIMITATION	NUMBER OF	OFFICE	
				OSS RES dB) (Ω)	CCT.		
	2000	11	6	11 2000	6	<u> </u>	4
TDM	2000	6	28			КК	1
			23			PY	2
	11	11	19			P L	3
"		4	63	4 2000	167	LS	4
"	11	6	16			TH	- <u>4</u>
11	11	11	21		:	PN	6
	11		19			SW	7
·····							
TOLL	"	4	2 0	4 2000	15	LS	4
MC				6 //	4	11	//
<u> </u>				4 //	. 5	KK	1
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DESTIN	NATION	0/G			1/0		· · · · · · · · · ·	l Barresser and Barresser
		NUMBER OF CCT.	LIMIT	IMITATION NUMBER OF			ATION	NOTE
TDM.	OFFICE	CCT.		$\begin{array}{c} \operatorname{RES} \\ \langle \Omega \rangle \end{array}$	CCT.	LOSS (dB)	$RES (\Omega)$	
1	KK				7	6	2000	TDM
4		46		2000	41	· · · · · · · · · · · · · · · · · · ·		
}	1.5	40	4	2000	· · · · · · · · · · · · · · · · · · ·	4		
4	LS	4	4	2000	5	4	2000	TOLL
"	"	2	6	"			:	MO
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	VATION	0/G			I/C			
	OFFICE	NUMBER OF	LIMIT	ATION RES	NUMBER OF CCT.	LOSS	ATION RES (Q)	NOTE
	0771019	CCT.		RES (Q)				(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
1 :	KK				18	6	2000	T DM
2	PY.	······································	· · · · · · · · · · · · · · · · · · ·		10			//
3	PL.	•			1 3	"		
4	LS	102	4	2000	4 1	4		
5	TH			·	10	6	"	
6	PN				13			
7	<u>\$W</u>				9	"	"	
4	LS	8	4	2000	11	4	2000	TOPP
//		3	6	"				MC
1	КК	3	4	"	· · · · ·			OT D
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DESTIN	NATION	0∕Q			1/0	محمد ومخصصه وتحضي ل		Hata an I
	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.	LIMIT LOSS (aB)		NOTE
1	КК				16	6	2000	TDM
2	РҮ			•÷• •• •• •• ••	8		"	
3	PL				9	. 11	"	
4	LS	89	4	2000	3 5	4	11	
5	TH				8	6	11	"
6	PN			· · · · · · · · · · · · · · · · · · ·	1 1		"	"
7	SW				8	11		"
			•···					
4	LS	8	4	2000	1.1	4	"	TOLL
11		3	6			. <b></b>		MO
· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·					
1	KK	3	4	2000			· ·	OTD
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DESTIN	IATION OFFICE	NUMBER OF	LIMIT		NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
T Diar		CCT.		RES ( <sub>Ω</sub> )				/0124
1	KK				22	6	2000	TDM //
2	ΡΥ			 	14	<i>"</i>		
3	PT -				16			"
4	LS	125	4	2000	4.8	4		"
5	тн				11	6		
6	<u>PN</u>	B			19	"		11
7	<u>SW</u>			· · · · · · · · · · · · · · · · · · ·	12			
		· · · · · · · · · · · · · · · · · · ·						
6	PN	11	4	2000	15	4		TOLL
		3	6	"		ļ		MO
								: 
1	КК	4	4	2000		<u> </u>		OTD
		· · · · · · · · · · · · · · · · · · ·						
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	NATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT		NOTE
TDM.	OFFICE	CCT.		RES (Ω)	ССТ.		$\begin{array}{c} \operatorname{RES} \\ (\Omega) \end{array}$	
1	KK				8	6	2000	TDM
4	LS	46	4	2000	39	4		11
6	PN				5	6	11	
4	LS	4	4	2000	5	4	"	TOLL
6	PN	2	6	2000				MO
					······		·	
1	KK	4	4	2000	······	f		OTD
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	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT,	LIMIT. LOSS (dB)	RES (Q)	NOTE
	КК	44	11	2000	44	11	2000	
	SR	104		11	112		. 11.	
	BP	18			20	"	"	
	PW	50			62		11	
	SS	16			16	"		
2	PY	2 6			28	"	"	
	BS	12			12	· //	"	
"	IM	7	11		7	"	"	
	LPI	10	. 11		10		"	· · · · · · · · · · · · · · · · · · ·
	LP2	9			12	".	"	
	NN	6				1	11.	
3	PL	41		 //`	36	"		
	MM	1 2			12	"	"	
	ASD	11	"	""	11	"	"	
	SV	12		"	1 3	"	"	······
	KT	11			1 2	"	11	
4	LS	7		"	7	"	"	
	NW	6		"	21	"	"	
	DM	10	"	"	9	"	"	
"	BK	8		"	10	"	11	
	RID	9	"		10	"	"	
5	PD	16	"	"	16	11	"	
	BC	28	"	11	28	"	11	
	DK	28	"	"	28	"	"	
//	PC	9	"	"	9	"	"	
	CN	20	"	11	22	. 11	"	
11	RB	11	"	"	12	"	"	
"	EC	6	"	11	6	"	"	
6	PN	8	"	"	9	"	"	
11	СР	20	"	"	2 0	"	"	
"	BN				7	"	"	
	KC	7	11	2000	18	11	"	
"	PS	9	//	"	1 2	"	"	
//	НМ	12	"	"	14	"	"	میں برے بے انہوں پر بیٹی کی کہ
"	SPK	7	- //	"	8	"	"	
7	SW	8 6	"	"	7 8	"	"	مەنبە يېرىپى مەنبەتلى بىرىغى بىرىغ
"	TC	27	//	"	27	"		
"	TK	8						
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	OFFICE	NUMBER OF CCT,	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)		NOTE
1	KK		(ab)	(32)	22	<u>(ab)</u> 6	2000	T DM
2	PY				34		"	//
<del>_4</del> 3	PL				50			
4					50	"	"	
6	PN				68	"		
						{		
7	<u> </u>				40		"	
1	KK	12	4	2000				OTD
						· · · · · · · · · · · · · · · · · · ·		
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EX. (TDM) T5

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DESTIN	NATION	0/G			1/0				
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	RES (Q)	NUMBER OF CCT.	LIMIT LOSS (4B)	RES (Q)	NOTE	
1	KK	64	6	2000					
	SR	140	11	"					
	BP	2.4		"					
	PŴ	7 2	11	11					
	SS	27		"					
2	рү	56		· // · ·					
11	BS	31			······································				
	IM	32							
	LP1	39		11					
	LP 2	36	11	"	anding				
11	NN	23	11	· · · · · · · · · · · · · · · · · · ·		 			
3	PL	91							
	MM	31	"				· · · · · · · · · · · · · · · · · · ·		
"	ASD	5 3	"						
	SV	3 7							
	KT	41						·····	
4		24				· · · · ·		· · ·	
*	NW	54				· · · · · · · · · · · · · · · · · · ·			
		39							
	DM BK	39				·			
		7	"					······	
	RS	7			•			·	
	PK							· · · · · · · · · · · · · · · · · · ·	
	RID	38		"					
	CW	16							
"	NWN	10			****			······	
	PT	8							
//	BSN	11			••••		0000		
5	PD	63	4		169	4	2000	· · · · · · · · · · · · · · · · · · ·	
// *	BC	66	"	"	236	"			
17	DK	59	#7	11	207	"	"		
"	NK	3.7	"	"	85	"	"		
11	PC	62	"	11	205	"	**		
. 11	MK	37	"	"	87		<i></i>		
"	CN	70	"	11	226	"	11		
"	RB	56	"		169	"			
. 11	EC	53	"	"	168	"	"		
11:	PP	30	"		46	"	"		
6	PN	22	6	- 11					
	СР	74							
"	BN	4.4	"	"			•		
	KC	5 3	"	. //					
	PS	37	11	11					
"	SPK	28	"	<u> </u>					
·	ÓN	21							
	HM	37	. //					· · · · · · · · · · · · · · · · · · ·	
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TH EX. (TDM) TS

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No. 1					<u>T (</u>	EX. (TOLL)	<u>'[]</u>	
		· · · · · · · · · · · · · · · · · · ·	1/0			0/G	INTION	DESTIN
NOTE		LIMT	NUMBER OF		LIMIT	NUMBER OF	·····	
	RES (Q)	LOSS (dB)	CCT.	$\operatorname{RES}_{(\Omega)}$		сст.	OFFICE	TDM.
			•	2000	6	7	LB	6
					//	123	SW	7
				Ű	11	24	SP .	K
				. 11	#	63	TC	4
····· ··· ····························			· · · · · · · · · · · · · · · · · · ·	11.	11	29	ТК	11
	2000	2	50	"	2	34	KK	<u>i</u>
	- 11		58	"	//	54	ΡY	2
	#	li i	56	11	"	52	PL	3
·			65	tt.		56	LS	
			70			84	PN	 6
	<u></u>		49				<b>}</b>	
		·····	43			41	SW	7
TALES	[		<u> </u>	0000			aw	
INF				2000	6	45	SW	7
TOLL	2000	0	95	2000		0.5	1/17	
		<b> </b>			0	85	KK	1
"			113			102	РҮ	2
		·····						
TOLL	2000	4	27	2000	4	36	BP	1
· #	11	11	25	<i>n</i>	<i>N</i>	34	PD	5
#	"	//	25	<i>H</i>	"	34	BC	R.
<i>II</i>	"	#	25	11	"	34	DK	11
#	11		8	"	"	11	NK	H
"	"	#	15	"	"	20	PC	11
\$	Ħ	<i>#</i>	8	11	n	- 11	MK	17
"	IJ	#	23	11	"	31	CN	R
"	"	#	13	"	"	18	RB	ļ!
//	"	"	13		"	18	EC	11
	"	"	4		"	5	PP	"
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TH EX. (MC)

		0/G			1/0				
DESTIN	ATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE	
TDM.	OFFICE	CCT.		RES (Q)	CCT.		$\mathbb{R}^{ES}_{(\Omega)}$	NOID	
1	BP				5	6	2000	×17#	
4	BT				2	"	#	U	
5	PD				5		#	R	
"	BC			·····	5	11	#	¥	
	DK				5	#	H	11	
n	NK			· · · · · · · · · · · · · · · · · · ·	3	U.	IJ	#	
11	PC				4	"	#	#	
	MK				3		H	#	
	CN				5			#	
	RB				3		"	//	
	EC				3	11			
	<u>66</u>			<u>-</u>	2		#		
· //	PP								
1	KK	6	4	2000	7	4	2000	МС	
		6	- <u>+</u> //	#	7			//	
4	PN	6			8		ij		
0	PN	U						······································	
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NO. 48

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PD

EX.

14:027 11	NATION	0/0	LIMIT	ATION		LIMIT	ATION	11.4.00 -
TDM.	OFFICE	NUMBER OF CCT.	LOSS	RES (Ω)	NUMBER OF CCT.	LOSS	RES (Q)	NOTI
1	KK	2 0	11	2,000	18	11	2,000	
	SR	52		"	5 6	"	"	
"	BP	7	"	"	7	-11	. 11	
"	PW	19	"	"	21	"		
"	SS	7		"	6		"	
2	P Y	16	<i>H</i>	1.11				
"	BS	7			7	11	2000	
"	E M	6	"	"				
• 11	J, P-2	6	"	"	6	11	2,000	
3	PL.	29	.11	"	14	IJ	"	
	MM	9	. 11	11	7	ii ii	"	
11	ASD	6	"	"				
"#	S V.	8	"	"	7	11	2,000	
"	KŢ	9	"	"	9	// _	"	· · · ·
4	NW				7	"	"	
"	DM	6	11	2,000	6	"	"	
"	BK	6	"	ji -				
5	TH	16	#		16	11	2,000	
<i>u</i>	BC	9		"	8	"		
ij	DK	24	"	"	24	"	"	
"	RB	12		11	13	"	"	
6	PN	6	8	#				
"	CP	14						
"	BN	6	"	"			1	
11	KC	6	"	"				
#	PS	9		11	9	11	2,000	
11	SPK	6	"	"	6	"	"	
"	HM	8	"	"	7	"	"	
7	SW	36	#	"	24	"	"	
"	TO	9	"	"	8	"	"	
1	КК				17	6	2,000	TDM
2	РY				32	"	".	"
3	P1,				28	"	"	"
4	LS				28	"	"	"
5	T11	169	4	2,000	63	4	17	"
6	PN				50	6	"	11
7	SW				33	"		"
5	ΤĪ	2 5	1	2,000	34	4	2000	TOLL
"	"	5	6	"	·			MO
1	КК	6	1	2,000				OTD

BO EX.

1			0/G		······	I/C			
	DESTIN	NATION.		LIMIT	ATION		LIMIT	ATION	NOTE
	TDM.	OFFICE	NUMBER OF CCT.	LOSS	RES (Ω)	NUMBER OF CCT.	LOSS	RES	NOTE
	1	KK	14	13	2,000	16	33	2,000	
	"	SR	32	"	11	60	<i>''</i>	"	
.		BP	8	"	"	8		11	
l		PW	15	#	"	20	"	"	
	2	ΡΥ	12	11					
1		BS	7			6	11	2,000	
	4	NW				7	11	"	
		BK	6	11	2,000	6			
	5	TH	28	11		2.8	11	11	
		PD	8		"	9			
		DK	14		"	1 3	"	"	
		PO	7			7	//	"	
		CN	10	"		10	"	"	1
	7	SW	27	Ĥ		27	11-		
		TO				6			
		КК				14	6	2,000	ΤĎΜ
	. 1	PY				29		//	//
	2						 jj		"
	3	PL				32	"		
	4	1,8			0000	25			
	5	TH	236	4	2,000			"	
	6	PN OW		·		42	6		"
	7	SW		·		23			
								0000	TOLL
	5	ТН	25	4	2,000	3 4	4	2,000	MG
			5	6					
									0/8.0
	1 .	КК	6	4	2,000				OTD
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DK EX.

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NOTE	$\begin{array}{c} \text{ATION} \\ \text{RES} \\ (\Omega) \end{array}$	LIMIT LOSS (dB)	NUMBER OF CCT.	ATION RES (Q)	LIMIT LOSS (dB)	NUMBER OF CCT.	OFFICE	TDM.
	2,000	11	18	2,000	11	14	КК	1
	//		56	- 2,000		18	S R	
		"	7		"	7	BP	"
	"	"	2 5	"		21	PW	"
			6			6	SS	
				"	11	12	PY	2
	2,000	11	7	· //		6	BS	
	//		6			~~~~	J.P-2	"
				2,000	11	14	PL	3.
	2,000	11	9	//	· · · ·	7	MM	"
	//		6			7	SV	
	"		9	"		6	KT	
······································		11	7		 		NW	4
	"		6				BK	-4 
·····		 ]]	28	2,000	11	2 8	- <u>0</u> 代 - 7日	5
			2 4	2,000	 //	2 4	PD	
	"	"	14			13	BO	"
·		"	7			7	CN CN	
			19		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	19	RB	
			6			6	NO NO	"
	"		Q		11	6	PN	6
	2,000	11	6				PS	"
······································	//		6	2,000	<b>I</b> 1	6	HM	
	"	11	39	17	11	4 3	SW	7
		"	10		 //	10	TO	
			<u>_</u>			10		
TDM	2,000	6	12				КК	1
	"	"	28				P Y	2
	"	"	29				PI.	3
	"		23	·			LS	4
		4	59	2,000		207		5
"	"	6	4 5	2,0 0 V			PN	6
	"		22				SW	7
·····		···· ··· ·						
TOLL	2,000	4	34	2,000	4	2 5	TH	5
MO				"	6	5	"	"
		}						
OTD	<b>F</b>			2,000	4	6	КК	1
								}
	1							
		1	1			1	-	

N	(K _ )	EX.	T	5		مىرىمىرىمىرىمىر 1		16, 1
DESTIN	INTION	0/G		1051051	1/0		ATION	
TDM.	OFFICE	NUMBER OF CCT,	LIMIT LOSS (dB)	RES	NUMBER OF CCT		RES (Q)	NOTE
	КК		<u>(dB)</u>	(0)	17	<u>(dB)</u> 6	2000	TDM
1 2	PY		· · · · · · · · · · · · · · · · · · ·		17			"
3	PL				10	11	11	
4	LS				6			
5	TH	8 5	4	2000	37	4	"	
6	PN				11	6	11	· · · · · · · · · · · · · · · · · · ·
7	SW		· · · · · · · · · · · · · · · · · · ·		9	11	"	
			······					
5	тн	8	4	2000	11	4	2000	TOLL
. //		3	6					MO
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1	КК	3	4.	"				OTD
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المشتشومية	أبعضتصيبين				نوان ۵ که مادی پې کې تو نو که کې ور پې سار سار ۲۰ دی. او			N0,5:

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(Insen)	VATION	0/G			1/0	(1/1/10-1)///1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/		]
		NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT		NOTE
TDM.	OFFICE	CCT.		RES (Ω)	CCT.		RES (Q)	
5	TH	9	11	2000	9	11	2000	
11	BC	7	"	"	7	"	"	
11	EC	11			10	11	11	
					• • •			
··	. WW				47	6	2000	TDM
1	KK						·····	
2	PY	****			20			
3	PL -	-			26		"	H and the
4	LS		•		15			
5	ТИ	205	4	2000	62	4	"	"
6	PN				28	6		
7	SW	·	· · · · · · · · · · · · · · · · · · ·		27	"	"	"
						L: [		
5	ТН	15	4	2000	2 0	4	2000	TOLL
	"	4	6	"	****			MC
1	KK	5	4	2000				OTD
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	NATION	O/G NUMBER OF	LIMIT	ATION	1/C NUMBER OF	LIMIT	ATION	NOTE
TDM,	OFFICE	CCT.	1.988 (JB)	$\operatorname{RES}_{(\Omega)}$	CCT.		RES (Q)	
1	КК			· · · · · · · · · · · · · · · · · · ·	17	6	2000	TDM
2	PY				9			"
3	PL.				10	"		
	LS				6	"		
5	TH	87	4	2000	37			
6	PN				10	6		"
	SW			· · · ·	9			"
						4	0.000	TOLL
5	TH	8		2000	11		2000	MO
"		3	6	//				
			·				_ <del>.</del>	OTD
	<u>KK</u>	3	4					010
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		T	I/C	····		0/G	NATION	DESTIN
NOTE	TION RES (Q)	LIMIT LOSS (dB)	NUMBER OF CCT.	ATION RES (Ω)	LIMIT LOSS (dB)	NUMBER OF CCT.	OFFICE	
	2,000		2.6	2,000	11	22	KK	1
·····	"	"	60			48	SR	"
	"		13		······································	13	BP	"
		"	21	"		13	PW	
	"	"	12			11	SS	
······································				"	. ] ]	12	PY.	2
	2,000	]]	7	"		6	BS	"
	"	11	14	"		14	5F	.3
	"	"	7				MM	
		11	6	2,000	11	6	ASD	ii ii
		"	8				КТ	: <i>II</i>
	"	11	20	2000	11	22	TH	5
	"	"	10	"	"	10	BC	"
	"	"	7	."	"	7	DK	"
	"	11	27	"	11	24	SW	7
TDM	2,000	6	11				KK	1
"	"		3.0				P Y	2
"	"	"	22				P L	3
"	"	"	24	f		·	LS	4
"	"	4	7.0	2,000	4	226	ŤН	5
"	"	6	43				PN	6
"	"	"	2 5				SW	7
TOLL	2,000	4	3 1	2,000	4	2 3	TH.	5
MC				"	6	5		
OTD				2,000	4	6	KK	1
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	NATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	CCT.		$\operatorname{RES}_{\Omega}$	CCT.		RES	
5	TH	12	11	2000	11	11	2000	
[	PD	13			1 2			
	DK	19		"	19	"		
	1717	1 3				• : *		
1	КК				4 0	6	2000	TDM
}	РҮ				17		11	
2	PL		i		2.2			
3					15	11	//	1. II. 11
4	LS			2000				////////////////////////////
5	<u></u>	169	4	2000	56	4		
6	PN	······		· · · · · · · · · · · · · · · · · · ·	24	6		//
7	<u>\$W</u>				2 5		<u> </u>	"
				0.000				WOLL
5	TH	13	4	2000	18	4	2000	TOLL
"		3	6	"				MC
		······································						
1	KK	4	4					OTD
					·			
<u> </u>								
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								· · · · · · · · · · · · · · · · · · ·
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نوسهو مذمد مدم د.		NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	сст.		RES	CCT.		$\left( \begin{array}{c} \operatorname{RES} \\ \left( \begin{array}{c} \Omega \end{array} \right) \end{array} \right)$	
5	TH	6	11	2000	6	11	2000	
11	DK	6			6	11	"	
"	PC	10	11	"	1 1			
			·					
1	KK				38	6	2000	TDM
2	PY				16	"	"	
3	P L				22			
4	LS				1 2	"		"
5	TH	168	- 1	2000	5 3	4	"	
6	PN				23	6		
7	SW				22	"		"
				·				
5	TH	13	4	2000	18	4	"	TOLL
"	"	3	6	11				MC
1	KK	4	4	2000				OTD
					······································			·
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DESTIN	NATION		LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	NUMBER OF CCT.	LOSS (dB)	RES	CCT.	LOSS	RES (Q)	NOIE
	КК		(aB)	(0)		6	2000	TDM
1					8			
3	P L			0000	6			
5	TH	4.6	4	2000	30	4		
6	<u>PN</u>	·			7	66	"	
5	TH	4	4	2000	5	4	2000	TOLL
#	"	2	6	"		·		MC
1	KK	2	4	"				OT D
		· · · · · · · · · · · · · · · · · · ·						······································
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EX. (LOC) <u>T6</u>

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DESTIN	NATION		LIMIT	ATTECN		LIMIT		Magan
TDM.	OFF1CE	NUMBER OF CCT.	LOSS (dB)	RES	NUMBER OF CCT.	LOSS	$\frac{\text{RES}}{\langle \Omega \rangle}$	NOTE
1	KK				12	11	2000	
"	SR				24	"	11 -	
11	PW	13	11	2000	17	"	"	
2	LP2				6	"	11	
3	PL	18	11	2000	18	"	11	
"	MM				7		#	
"	sv	9	11	2000	11	11	"	
"	KT		· · · · · · · · · · · · · · · · · · ·		8	"		······
4	RID	•			6	"	"	
5	TH	9	11	2000	8			······································
"	PD		·····		6			
"	DK				6		"	
6	CP	32	11	2000	30			
"	BN	9	"	//	9	"	//	
"	PS	6			7	"		
"	HM	9			10		"	······
7	SW				18		"	
{								
1	KK				19	6	2000	TDM
					24			
2. 3	PY DI				24			//
}					1 5		 //	"
4 5	LS TH				22			//
7	SW				21			
				·····				
1	KK	6	4	2000				OTD
				2000				
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<u>PN EX.</u> (TDM) <u>T6</u>

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DESTIN	NATION	0/G	<b></b>		1/0	P		
	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
	VV	72	<u>(ab)</u> 6	2,000		<u>Sup</u> z	<u>\</u>	
1	KK SR	164		//	, 	<u>}</u>		
"	BP	36						
	PW	68						
	frimming worker	36						
"	88			+				
2	PY DO	60	#		<u> </u>			
	BS	38						
	IM.	4 3						
	LP1	3 6						
"	LP2	3 6	"		·		]	
"	NN	2.5						
3	P L	104	#	"	··			
"	MM	32	· // ·	"			·	
	ASD	5 5	"	"				
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.87	38						
, 11	KT	4 2	"	"				
4	LS	3 4	u	"				······
"	NW	67	"	"				
÷ //	DM	36	"	"				
"	BK	37		"				
	RS	10	. 11	"		i i		· · _ · · · · · · · · · · · · · · · · ·
"	РК	9		"	·			
11.	RID	41		"				
	CW	2 1	"	"				
"	NWN	13						
	PT	11		"				
	BSN	19		"				
L	NO	5		"	· · · · · · · · · · · · · · · · · · ·			
"	<b>└────ि</b>			i				
5	TH	68						
	P D	50						
"	BC	42	"					
	DK	4 5	"					
"	NK	11	"					
	PO	28						
""	MK	10		<u> </u>				
	ON	4 3	<i>II</i> .		· · · · · · · · · · · · · · · · · · ·			
	RB	24			·			
"	EC	23	"	"	۴۰۰۰۰۰ چه مد در از مان مدین با از می مان می می می از می			·
"	РР	7	"	"	• 			
6	C P	126	1	"	412	-4	2,000	·····
	BN	168	11	#	413	ţI.	11	
"	KC	118	"	"	334	"	"	
"	PS	61	"	"	154	"	11	
"	SPK	79	11		218	"	11	
	ΡV	38	"		41	• //	"	

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DESTIN	ATION	EX. (TDM) (TOLL 0/G		**************************************	I/C			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
		NUMBER OF	LIMIT		NUMBER OF	LIMIT		NOTE
TDM,	OFFICE	CCT.	LOSS	BES (Q)	CCT.		$RES \\ (\Omega)$	
6	ON	85	4	2,000	212	4	2000	
#	HM	68	"	"	173	"	"	
Ц	LB	38	"	. 11	7 5	"	"	
n	BPL	35		"	42	11	"	
# :	BPO	39	"	. "	51	"	"	
7	SW	141	6					
Ĥ.	SP	3 5	"	. 11				
#	ΤC	65	"	"				
11	TK	30						
1	KK	66	2	2,000	77	2	2,000	
2	РҮ	60	"	. //	7 0	"	"	
3	P I.	5 2	"	"	6.9	"	"	
4	LS	68	"	"	7 1	"	"	
5	TH	7 0	"	."	84	"	"	
7	SW	75		"	8 0	"	"	
		·						
1	КK	73	0	2,000	9.9	0	2000	TOLL
2	ΡY	86	"	"	11.8	"	"	//
······								
4	BSN.	15	4	2000	11	4	2,000	TOLL
6	O P	68	"		5 0		"	"
"	BN	5 4		"	4.0	"	"	"
	KC	54	"		40	"		
<i></i>	PS	2.6	"		19		"	<i>!!</i>
""	SPK	20		"	1 5		"	"
"	<u> </u>	.5				"	"	"
"	ON	20			15		"	"
	HM	39			29			
	LB	5		"	4	"		
	BP1,	5		"	4	"	u	u
	BPO	5			4			
				0000				x X133
7	SW	51	6	2000				INF
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EX. (MC) PN

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	OFFICE	NUMBER OF CCT.	LIMIT. LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE	
3	MM			(34)	5	6	2,000	N17#	
<u> </u>	ASD				9	"	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<i>"</i>	
	SV SV				5	11	"		
	КТ				5	"	11		
4	BSN				3	11			
	NO		· · · · · · · · · · · · · · · · · · ·		2				
	OP			····	1.0			"	
6	BN			·	9	"			
					9				
"	KC				····				
	PS	••••			1	"			
	<u>S PK</u>				4			<i></i>	
"	PΥ	`			2		<i>"</i>	"	
	ON	·			4	"	"		
	HM				5	"		"	
	I,B				2				
"	BPL				2				
	BPO			·····	2			"	
7	SP	·			1	"		"	
"	TC				9	"	"	"	
"	ТK	·			1			"	
					·				
. 1	КК	8	4	2,000	7	4	2,000	MC	
4	LS	8	"	"	7	"	"	"	
	TH	8	"	"	6	"	"		
		······							
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DESTR	VATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	CCT,	LOSS (dB)	RES	CCT	LOSS	RES (Q)	NOTE
1	KK	5 6	(aB)	2000	4.4	<u>(ab)</u>	2000	
	SR	112		2000	96		2000	
					16	·····		· · · · · · · · · · · · · · · · · · ·
//	BP DW	14						
	PW	54			58	"		
	SS	12			12			
2	PY	32	"	// *	24			
	BS	·····		"	12	"		
	IM	•		0.000	12	<i>II</i> .•		
	LP1	14	11	2000	16			
	LP 2	16		"	2 0			
3	PL.	90	. // .	. //	90			
	MM	32			28	//		·
	ASD	3 4	//		20		//	
	SV	42	"	//	4 6		"	
	<u>KT</u>	28	"	"	30			· · · · · · · · · · · · · · · · · · ·
4	NW				12			
"	DM	12	11	2000	16			,
	BK	12	"	"	18	"	"	
	RID	12	"		18	"	"	
5	TH	20	"	"	20	"		
	PD				14	"		
6	PN	3 0	11	2000	32	"		
"	BN	42	"	"	4 2	"	"	
"	KC	38	//	11	36	"	"	
"	PS	16	"	"	18	"	"	
"	ON				12	"	"	
	IIM	34	11	2000	36		"	
7	SW	94	"	"	92	"	"	
"	SP				1 2	"	"	
"	TC	14	11	2000	16	"	"	
1	KK				36	6	2000	T DM
2	ЪЛ				3 2	"	"	"
3	PL				48	"	"	//
4	LS	4 ~~			38	"	"	"
5	TH				74	"	11	"
6	PN	412	4	2000	126	4	"	· //
7	SW				50	6	"	11
6	PN	50	4	2000	68	4	2000	TOLL
1	KK	12	· //					OTD
6	PN	10	6	2000				MC
		······						·
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DESTIN	NATION	0/G		· · · · · · · · · · · · · · · · · · ·	1/0	T		
	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
	VV	14	( <u>a</u> B) 11	20 00	12		2000	
1	KK	19	11	2000	24			
	SP		······································	0.000	17			······
	PW	14	11	2000	6			· · · · · · · · · · · · · · · · · · ·
	88	6		"				
2	РҮ	14			•••••			
	BS	6			7	11	2000	
. // .	LP2			·	6			·
3	PL	16	11	2000	16			
11	MM	77			7	"	<u><u> </u></u>	
"	sv	7	"	"	10			
	KT	7	"	"	9			
4	BK	<del></del>		н., установания Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Политика Поли	6			
"	RID				7	"	"	
5	TH	7	11	2000				
"	PD	r			6	11	2000	
6	P N	9	11	20.00	9		11	
"	CP	4 2			4 2	11.	"	······································
	KC	7			7	"	"	······································
//	PS	2.2		· · //	23	. 11		
	SPK	7			7	11		
	HM	8			8			
7	SW	30			21			
	DW							
1	KK	· · · · · · · · · · · · · · · · · · ·			4 9	6	2000	TDM
1					48	//		//
2	PY DI				5 2			//
3	PL							
4	LS				44			
5	TH						·····	
6	PN	413	4	2000	168	4		"
7	SW	· · · · · · · · · · · · · · · · · · ·			54	6		//
							0.5.6.1	
6	P N	40	4	2 000	54	4	2000	TOLL
1	KK	11	// .					OTD
6	PN	9	6	2000	· · · · · · · · · · · · · · · · · · ·			MC
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			I/C		a 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199	0/G	VATION	
NOTE		LIMIT	NUMBER OF		LIMIT	NUMBER OF		
	$\frac{\text{RES}}{(\Omega)}$		CCT.	RES (Ω)		CCT.	OFFICE	TDM.
<u></u>	2000	1,1	16	2000	11	18	KK	1
	"	. #	24	"	"	32	SR	#
	"	11	6	"	. 18	6	BP	Ħ
	#	. 11	15	4	"	16	PW	11
	"	li I	7	11	"	11	SS	H
	H	H	12	"	11	34	РҮ	2
	Ħ	H	11	#	.4	17	BS	#
	IJ	#	8	"	"	10	IM	H
•	IJ	n	8	#	11	9	LP1	H
	11	17	22		"	22	LP2	#
· · · · · · · · · · · · · · · · · · ·	"	#	14	"	N	24	PL	3
				"	. 11	6	MM	"
	2000	11	6	"	"	7	ASD	"
	"	"	7	"	11	7	SV	11
·	#	H	7	#	11	6	КТ	Ħ
	H	"	9	11	"	8	NW	4
	#	#	8	"	"	10	DM	#
	H		20	# 3	"	18	BK	#
	11	H.	20	"	#	20	RID	#
	"		7	#	.#	18	ΤH	5
	2000	11	6				PD	r
	#	#	38	2000	11	36	CP	6
	"	"	7	"	, n	7	BN	#
	II.	"	6				PS	"
	11	"	22	2000	11	22	HM	"
	#		18	"	"	36	SW	7
DM	2000	6	56				KK	1
#	"	11	41	· .			PΥ	2
//	11	"	53				PL	3
//	"	ţ?	43				LS	4
//	"	fl	53				TH	5
ff	"	4	118	2000	4	334	PN	6
//	<i>W</i>	6	50				SW	7
011	2000	4	54	2000	4	40	PN	6
TD				#		11	K K	1
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				·····				
2				2000	6	9	PN	6
			·······					
				·				
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DESTIN	UNION	0/G			I/C			
DESTIN	ATTON	NUMBER OF	LIMIT		NUMBER OF	LIMIT	and the second se	NOTE
TDM.	OFFICE	CCT.		RES (Q)	ССТ.		RES (Q)	
1	KK	16	11	2000	12	11	2000	
<u>я</u>	SR	28		11	14	11	IJ	
·//	BP	6	"		······································			· · · · · · · · · · · · · · · · · · ·
1)	PW	16	IJ	U.	15	11	2000	······································
n I	SS	6		"				
2	PY	12	#	11				
"	BS	6		IJ		- <u> </u>		·····
u.	LP2	6	#		6	11	2000	······
	PL	18			12	11	"	
	MM	8			7	····· //	11	
				4	·····	·		······
ii	ASD SV	<u> </u>	#		7	11	2000	
"		8			9			
	KT RID	•		<i> </i>	6	#	"	
4	<b> </b>		11	2000	9			
5		12		#	9		"	
Н.	PD -	9	"					
"	DK	6		#	6	11	2000	·
6	PN	7	"				2000 U	
#	CP	18	<i>n</i>	11	16	"		
#	BN	23	<i></i>	"	22			
//	KC	6	"				2000	
<i>N</i>	SPK	9		#	9	11		
n	HM	7	"	"	6	//		
7	SW	27				·		
<i>11</i>	TC	6	"					
1	КК				27	<u>6</u>	2000	TDM
2	РҮ			{	30	#	#	4
	PL				26		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	"
					22	#		ft
4 5	TH				37	11	"	
$\frac{5}{6}$	PN	154	4	2000	61			"
7	SW				45	6		
	N 99							· · · · · · · · · · · · · · · · · · ·
6	PN	19	4	2000	26	4	2000	TOLL
	KK	5						OTD
6	PN	4	6	2000	a			MC
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			1/0	IN YOU		0/G	ATION	DESTIN
NOTE	RES (Q)	LIMITA LOSS (dB)	NUMBER OF CCT.	ATION RES (Q)	LIMIT LOSS (dB)	NUMBER OF CCT.	OFFICE	TDM.
				2000	11	12	PL	3
				"	11	6	MM	11
	2000	. 1 1	6				КT	
	11	"	7	20 00	11	8	TH	5
	11	"	6	"	17	6	PD	#
	11	11	7	"	"	7	BN	6
·	"	//	9			9	PS	"
·				"		18	SW	7
								·····
TDM	20 00	6	49	·····			<u> </u>	1
			2 5		· · · · · · · · · · · · · · · · · · ·		РҮ	2
			33				P L	3
	"		18	}				4
"			28			Press,	TH	5
	"	4	79	2000	4	218	PN	6
"		6	31				SW	7
TOLL	2000	4	20	2000	4	15	 PN	6
OTD				11		5	KK	1
					·····			
MC				2000	6	4	PN	6
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CHOOP D	NATION	0/G			I/C			
		NUMBER OF	LIMIT	ATION	NUMBER OF	ATION	NOTE	
TDM.	OFFICE	CCT.		$\operatorname{RES}_{(\Omega)}$	CCT.		$RES (\Omega)$	
1	KK		<u>, , , , , , , , , , , , , , , , , , , </u>		6	6	2000	TDM
6	PN	41	- 4	2000	38	4	11	"
	1-15			- 000				
6		A		2000	5	4	2000	TOLL
6	PN .	4		2000				OT D
1	КК	2	//					
						·		110
6	<u>PN</u>	2	6	//				MC
					· · · · · · · · · · · · · · · · · · ·			
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f	TRACED I N	VATION	0/G		******	1/0			1
		······	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT		NOTE
l	TOM.	OFFICE	CCT.		BES (Ω)	CCT.		$\mathop{\rm RES}_{(\Omega)}$	
ł	6	OP	12	11	2000				
ĺ		<u>`</u>		<b>:</b>				· · · ·	
ł	1	KK		 		39	6	2000	TDM
ł	2	РҮ	·			22		11	11
ł	3	P [,	·			31	"	11	
ł	4	LS				18	11	"11	
ľ	5	TH	B-740			21	"	11	
ľ	6	PN	212	4	2000	85	4	"	"
I	7	SW				2 3	6	"	"
	6	PN	15	4	2000	20	4	2000	TOPP
	1	KK	5	"	"				OTD
•	6	PN	4	6	"	······			MC
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DESTIN	NATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	CCT.	LOSS	RES	CCT.		RES (Q)	
1	КК	22	11	2000	20	11	2000	
	SR	40	H	U	10	"	li -	
11	·BP	7	#	"	7	"	11	
, #	PW	21	.#	IJ	23	11	. 11	
H	SS	8	, tt	U ·	8	11	H.	
2	PY	18	#	#	14	11	. 11	
	BS	8	<i>II</i>	11	8	11	#	
#	IM	9	Į,	H	7		#	
"	LP1	.9	H	· . #	9	#	#	
#	LP2	14	//	ij	15	11	"	
3	PL	34	#	<i>II</i>	31	"	"	
14	MM	9	#	H. T	8	"	"	
#	ASD	20		. 11	20	"	IJ	
<i>N</i>	sv	14	IJ.	11	15	11	11	
#	KT	8	H	11	10	11	H	
4	BK	8	, ti	ť	7	R.	IJ	
	RID	9	#	H	10	#	,#	
5	тн	14	"	"	12		"	
n	PD	7	Ħ	ß	8	. 11	11	
 //	DK	6	#	11	6	#	#	
6	PN	10	11	H	9	11	"	; ;
#	СР	36	#	#	34	11	11	
#	BN	8	11	"	8	11	H	
#	КС	22	<i>!!</i>	"	22		#	
	PS	6	u	#	7	"	11	
7	SW	39	ü	#	24	#	11	
11	TC	7	H	U .	6	11	11	
1	КК				18	6	2000	TDM
2	РҮ				16	#	IJ	#
3	PL				15	#	IJ	"
4	LS	- <u></u>			28	ij	#	//
5	ТН				37	H	IJ	11
6	PN	173	4	2000	68	4	#	H
7	SW				30	6	11	#
·								
6	PN	29	4	2000	39	4	2000	TOLL
	КК	7	4	"	•••••			OTD
6	PN	5	6	u	· · · · · · · · · · · · · · · · · · ·			MC
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DESTIN	IATION -	O∕G	<b></b>		1/0	A		
TDM.	OFFI CE	NUMBER OF CCT.	LIMIT LOSS (4B)	ATION RES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
1	KK			(32)	12	<u>(ab)</u> 6	2000	TDM
2	P Y			<b> </b>	7	"	"	//
				· · · · · · · · · · · · · · · · · · ·				"
34					9 6			
	LS					"		
5	<u></u> TH			0000	7		//	
6	<u>PN</u>	75	. 4	2000	38	4	//	
7	SW				7	6	2000	"
				0000			· 	
6	PN	4	4	2000	5	4	2000	TOLL
1	KK	2	//		· · · · · · · · · · · · · · · · · · ·			ОТД
		~						
6	<u>PN</u>	2	6	2000		·		MO
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	NATION OFFICE	NUMBER OF	LIMIT LOSS (dB)	ATION	NUMBER OF CCT.		ATION RES (Q)	NOTE
6	PN	42	4	2000	35	4	2000	TDM
· · · · · · · · · · · · · · · · · ·							2000	
6	PN	4	4	2000	5	4	2000	TOLL OTD
1	КК							
6	PN	2	6	2000				MO
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PESCONT	NATION	0/G	<b>1987 - 1997 - 1997 - 1997 - 1997 - 1997</b>	947999957 <sup>9</sup> 879379799799799	1/0	1 		
[	·······	NIMBER OF	LIMIT	ATION	NUMBER OF	LIMIT	ATION	NOTE
TDM.	OFFICE	CCT.	LOSS	RES ( <sub>Ω</sub> )	CCT.		RES	
1	KK			1	8	6	2000	TDM
3	PL				6		11	
6	PN	51	4	2000	39	4		
	·			2000				
6	PN	4	4	2000	5	4	2000	TOLL
1	KK	2		"				OTD
						<b> </b>		010
6	PN PN	2	6	"				NO
			0		· · · · · · · · · · · · · · · · · · ·		·	<u>MC</u>
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DESTIN	IATION	0/G	LIMIT	ATION		LIMIT	ATION	NAME
TDM.	OFFICE	NUMBER OF CCT.	LOSS (dB)	RES (Ω)	NUMBER OF CCT.	LOSS	RES	NOTE
1	KK	144	11	2000	144	11	2000	
(1	SR	344	11	"	376	#	#	
"	BP	10	"	11	43	#	U.	
11	PW	173		"	195	"	"	
11	SS	27	"	"	36	"	"	
2	PΥ	72	. #	- 11	78	11	11	
#	BS	24	#	11	36	"	11.	
#	IM				18	"	11	
"	LP1	21	11	2000	27	H	A .	
	LP2	18	11		27	#	"	
3	PL	223	H		241	, H	11	· · ·
	MM	.65	#	H	73	R	11	
11	ASD	58	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ħ	58	11	B	
#	sv	41		17	43	"	IJ	
"	КТ	5.8	#	"	73	#	11	
4	NW	24	H	#	40	¥	IJ	·
//	DM	21	H	"	36	tt.	#	
11	BK	27	11	"	47	"		
	RID	18	11		36	ţ!	H.	· · ·
5	TH	78			86	11	#	
	PD	24		#	36	N	#	
	BC	27	"	11	2.7	#	ii ii	
"	DK	39	11	11	43	"	n	
a	CN	27		11	24	"	"	
6	PN	18		11				
H	CP	92	 11	#	94	11	2000	
	BN	21	#	//	30	"	"	
11	KC	18	"	"	36	H	<i>II</i>	
, II	PS				27	"	H	·
	SPK	······································			18	#	#	
#	HM	24	11	2000	39	#		· · · · · · · · · · · · · · · · · · ·
7	SP	18	N	11	18	11	Ħ	
ii	TC	88	"	11	88	ij	il	
"	TK	33	#	H	36	<i>i</i> /	11	
					· · · · · · · · · · · · · · · · · · ·			
1	КК				54	6	2000	TDM
2	PY				67	H	"	11
3	PL				64	H	ij	II.
4	LS				79	u	H	//
5	TH				123	11	11	II .
6	PN				141	11	H	#
					۱۹۹۰ - باب ماند کر ویونو مشت ویونو میکنو میکونو ۱			······································
1	КК	85	4	2000	114	4	2000	TOLL
2	PY	99	#	ļ	133	#	11	#
1	KK	34		ţ!		*****		OTD

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<u>EX.</u> (LOC) <u>T7</u>

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	NATION	0/G		121.200 <sup>0000</sup> 000000000000000000000000000000	I/O			The second s
	OFFICE	NUMBED OF		ATION BES (Ω)	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
1	KK	19	<u>(ab)</u>	2000			[	мс
·······				2000		<u> </u>		
						<b>]</b>	}	
****			}			}	}	<b></b>
		·····	<b> </b>	}			 	·····
					[			
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n and a second a	UNION	$\frac{OA}{O/Q}$		an a	1/(	1 /		
	NATION OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NUMBER OF CCT	LIMIT. LOSS (dB)	ATION RES (Q)	NOTE
1	KK	50	6	2000				
	SR	108		11	 #		<b>*</b>	اللار المالية الله الله الله الم الم الم الم الم الله الم الله الم الله الم الله الله
	BP	20		//	•	·}		·
#	PW	60				•••••••••••••••••••••••••••••••••••••••		
	\$S	28	#	"			·	
2	PY	36	#	11	<del>نه در در بر بر</del>			
 //	BS	27	"					·
	IM	35						
	LP1	27				· · · · ·		
#	LP2	30	11					
	NN NN	21		·//				
	PL	68			······································		·	
<u>3</u> 	MM	13				+		
	ASD	37	 #	1		· [		· ·
#	SV	19						· · · · · · · · · · · · · · · · · · ·
	KT KT	22						
						+		
4		27						
<i>n</i>	NW	58	<i>st</i>	<i>tt</i>				
"	DM	28	<i>II</i>	#				
<i>H</i>	BK	33	<i>"</i>	# 	مىدىمە مەربىيە بىرىمەرمەر مەربىيە بىرىمەر مەربىيە بىرىمەر مەربىيە بىرىمەر مەربىيە بىرىمەر مەربىيە بىرىمەر مەربىيە بىر			
<i>11</i>	RS	8	#f	K				
	PK	8	"	//	·····			
#	RID	32	#	<i>"</i>				
11	CW	19	#			<b>]</b>		
"	NWN	9	<i>"</i>					·
#	РТ	8	<i>"</i>					
"	BSN	12	#					
5	ТН	40	"					
ti	PD	33	"	//				·····
H	BC	23	"	#	·····			
11	DK	22	и	"				· •
#	NK	9	"	"		[ <u></u>		
#	PC	27	"	"				
Ħ	MK	9	<i>n</i>	"				
N	CN	25	//	"			, <b></b>	······
fi .	RB	25	"	"				
H	EC	22	"	11				
6	PN	21	"	//	** **			
"	СР	50	N	11				
"	BN	54	ų.	11		][		
Ħ	KC	50	ť	u				
11	PS	45	"	Ń				
#	SPK	31	. ()	11	• • • • • • • • • • • • • • • • • • •			
	ON	23	tt.					
ti i	НМ	30		. 11	,	[		، ۵۰ مه مختلف سیار اینیا و دواه برین است.
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<u>EX.</u> (TDM) \_\_\_\_\_ <u>T 7</u>

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		**		-real particulations	T	<u> (TDM)</u>	-	
<b>)</b>			1/0			0/G	NATION	DESTIN
NOTE	ATION RES (Q)	LIMIT LOSS (dB)	NUMBER OF CCT.	ATION RES (Ω)	LIMIT LOSS (dB)	NUMBER OF CCT.	OFFICE	TDM.
			·····	2000	<u>(ab)</u> 6	7	LB	6
	2000	4	184	#		52	SP	7
	2000	4 	386			97	TC	
		· · · · · · · · · · · · · · · · · · ·						·····
	<u>n</u>	11	194	"		50	ТК	#
						· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
	2000	2	39	2000	2	32	KK	1
	fl .	¥	49	#	<i>#</i>	46	РҮ	2
	#		35	<i>n</i>	<i>II</i>	32	PL	3
	//	17	64	"	<i>n</i>	59	LS	4
	Ħ	"	41	"	"	49	TH	5
 	"	#	75	#	2	80	PN	6.
INF	2000	6	57				KK	1
4	#	<i>u</i>	39				РҮ	2
U.	H	H	42				PL	3
"	u	11	40			·	LS	4
11	4	și -	45				ŤН	5
st	в	iš	51				PN	6
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DESTIN	VATION	NUMBER OF	LIMIT	ATION	NUMBER OF	LIMIT		NOTE
TDM.	OFFICE	CCT.		BES (Q)	CCT.	LOSS	RES (Q)	
3	MM	8	11	2000	8	11	2000	
11	KT	7	"	"	8	"	11	
6	CP	1 2	"					
7	SŴ	18	"	"	18	11	2000	
11	то	9	"	"	10		"	
. 1	KK				39	6	2000	TDM
2	<u>PY</u>	· · · · · · · · · · · · · · · · · · ·			23			"
3	P L	· · · · ·			21	"	"	
4	LS	-	· · · · ·		18	"		
5	TH				24			//
6	PN_				35	"		
7	<u>SW_</u>	184	1	2000	5.2	4		· //
1	KK	9		2000	1 2	4	2000	TOLL
2	PY	10		//	1 4		"	//
	KK	5						OTD
	<u> </u>							<u> </u>
	PN	4	6	m				MC
6								· · · · · · · · · · · · · · · · · · ·
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DESTI	NATION	0/G	1		1/0	7		
TDM.	OFFICE	NUMBER OF CCT.	LIMIT LOSS (dB)		NUMBER OF CCT.	LIMIT LOSS (dB)	ATION RES (Q)	NOTE
1	KK	20	11	2000	34	11	2000	
11	SR	40	"	11	72	#	"	······
<i>II</i>	BP	6		"	6	"	"	
	PW	21			38	"	#	
#	SS				6	"		
2	PY	12	11	2000				
#	BS	6	//		6		2000	
	LP2			÷	6		N	
3	PL		11	2000	41	#		
	MM	25			28		ŧł .	
 ll	SV	7			6			
tt.	KT	23	11		26	"	#	
4	RID				6			
	TH	27	11	2000	27	"	"	
	PD	8		// //	9	//	Î.	L_:
	BC	6		#				
	DK	10	#	#	01	11	2000	· · · · · · · · · · · · · · · · · · ·
6	CP	16			10		//	
						"	 11	
	PS UM	6	1 1	0000	6 7	"		
"	HM SW	88	<u> </u>	2000	88			
. 7			" 		9			
"	SP TK	10	р П			"		
	<u> </u>							
1	KK				24	6	2000	TDM
2	ΡY				46	11	<i>!!</i>	#
3	P L	~			33	11	H	11
4	LS				38	11	ţ,	#
5	TH	·			63	#	11	Û.
6	PN				65	11	ıl.	n
7	SW	386	4	2000	97	#	¥	<i>[1</i>
	КК	23		2000	31		2000	TOLL
<u> </u> 2	PY	20	//	#	36		//	//
	KK	11						OTD
6	PN	9	6	2000				MC
								*
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	ATLON	LIMIT	1/0	ATTON	1 13/100	0/G	IATION	DESTIN
NOTE	$\frac{RES}{\langle \Omega \rangle}$		NUMBER OF CCT.	RES (Q)	LIMIT LOSS (dB)	NUMBER OF CCT.	OFFICE	TDM.
	2000	11	1 2	1965	(40)		PW	1
		"	7	2000	11	6	MM	3
	"		6				КТ	
	"		8	2000	11	8		5
		"	33	"		36	SW	7
		"	8	"		8	TC	
					·	······	<u> </u>	
TDM	2000	6	32			~~~	KK	1
"	"	11	21				PY	2
		"	21				PL	3
<i></i>		11	29				TH	5
- 11			30				PN	6
		4	5 0	2000	4	194	SW	7
						101		
TOLL	2000	4	1 2	2000	4	9	KK	1
			14		"	10	РҮ	2
OTD						5	KK	1
011			· · · · · · · · · · · · · · · · · · ·					1
MC		<u></u>			6	4	PN	6
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