付　属　資　料

1. インドネシア電話線路保全訓練センター（OPMC）プロジェクト概要
2. OPMC関連インドネシア側予算資料
3. Evaluation of OPMC PILOT Project Implementation
   by PERUMTEL (1986—1989)
4. インドネシア電話線路保全訓練センター訪問者一覧
5. OPMC紹介VTR
   ——Shooting Script of OPMC——
6. Joint Report for the Joint Committee, OPMC Project
   ——Progress Report on the Technical Cooperation Program
   (from June 1, 1986 to September 30, 1989) ——

1. インドネシア電話線路保全訓練センター（OPMC）プロジェクト概要

1. 協力の背景

インドネシア政府は，3次にわたる国家開発5カ年計画を実施し，同国電気通信網の拡充及び電気通信サービスレベルの向上を図ってきたが，電気通信サービスの水準は依然として低く，これが同国の健全な社会経済発展の阻害要因の一つになっていることを深く認識した。

この課題に取り組むべく，インドネシア電気通信公社（PERUMTEL）は，我が国が派遣していた電話屋外施設分野の個別派遣専門家の協力を得て，屋外施設保全サービスの向上のため有効に機能している我が国のラインマン（電話線路保全要員）センターと同種の「電話線路メンテナンスセンター構想」を立てた。その後，インドネシア政府は，本構想を積極的に検討・具体化し，第4次5カ年国家開発計画（1984～1988）において電話線路保全サービスの改善を電気通信分野の最優先課題として位置づけた。

係る背景の下で，インドネシア政府は，全国主要都市に電話線路メンテナンスセンターの建設を計画し，これらセンターのモデルセンターをバンドン市に建設することとして，我が国に対して，建物・施設・機材等について無償資金協力を要請するとともに，モデルセンターの運営及び保全関係職員の訓練に関してプロジェクト方式による技術協力を要請してきた。

我が国は，この要請を受けて，要請の背景，内容，規模，協力の可否等について調査するため，1984年6月に事前調査団を派遣した。

同事前調査団の結果を受け，更に詳細な調査を行ない，協力に係るマスタープランの内容をまとめるため，1984年9月17日から10月16日まで長期調査員チームを派遣した。

他方，無償資金協力については，1984年12月から1985年2月にかけて基本設計調査を実施し，1985年7月26日に口上書の交換（E/N，5.57億円）が行なわれた。

その後，我が国はインドネシア政府関係者と協議を重ね，1986年2月に実施協議調査団とインドネシア政府関係者との間で署名交換された討議議事録（R/D）及び暫定実施計画（TSI）に基づき，1986年4月1日から1990年3月31日までの4年間の期間で，インドネシア電話線路保全訓練センター（OPMC）プロジェクト協力を実施することとなった。

2. インドネシア電話線路保全訓練センターの概要

(1) 所在地

インドネシア電話線路保全訓練センターは，PERUMTEL本社所在地のバンドン市に，市内の一等地に位置するバンドン電話局の敷地内に建設されている。土地面積2,880㎡，本棟建物面積延1,920㎡の4階建てビルディングであり，予定どおり1987年3月に完成した。

(2) モデルセンターとしての位置付け

PERUMTELは，屋外施設の保全活動強化のため全国6カ所(ジャカルタ3，スラバヤ，デンパサール及びウジュンパンダン）にメンテナンスセンターの建設を計画しており，本センターを上記6カ所のメンテナンスセンターのモデルとして位置づけている。

(3) センターの目的

① バンドン地区における効率的な保全活動を実施すること

② そのために必要な保全関係職員の訓練を行なうこと

③ 他のメンテナンスセンターの指導者の養成を行なうこと

(4) センターの機能

① 集中管理化による日常保全活動を実施する機能

② 屋外施設保全に関する知識・技術の訓練を行う機能

③ 訓練方法を開発する機能

(5) 活動内容

保全活動の内容には，電話機の新設・移転工事，設備の巡回・点検，外注建設工事の監督，加入者からのクレームによる障害修理等及びこれらに関する各種事務処理業務等があるが，本センターの活動内容は次のとおり。

① 工事用車両の導入による機動力の強化

② 測定器，工具等の機材整備

③ プラントレコード・統計の整備活用

④ 保全管理の強化と予防保全の実施を行なうことにより，保全活動の効率化と障害発生件数の低減・障害修理時間の短縮を図ること

(6) 日常保全活動の改善目標

PERUMTELは，日常保全活動の効率化を図るため本センター（OPMC）プロジェクト終了時点での達成目標を次のとおり掲げている。

日常保全活動の改善目標

項　目	目　標	OPMC前	'89年9月現在
障害率	5件/月・100電話機	6.74件/月・100電話機	5.27件/月・100電話機
作業効率 (故障修理件数)	3件/人・日	1.17件/人・日	1.85件/人・日
修理日数	全故障件数の内	全故障件数の内	全故障件数の内
	70%　1日以内	26.62%　1日以内	59.97%　1日以内
	20%　2日以内	16.61%　3日以内	26.37%　3日以内
	10%　7日以内	48.65%　7日以内	11.86%　7日以内
	0%　7日以上	8.12%　7日以上	1.80%　7日以上

(7)　訓練方法

センターにおける訓練は，電話屋外施設の保全に必要な知識と修理・点検並びに試験の技能，及び障害管理，保全管理の実施に必要な技術等について，下記により修得する。

①　屋外における講義と実習

②　屋外における実習

③　職場訓練

2. OPMC関連インドネシア側予算資料

DAFTAR RENCANA KEGIATAN (D.R.K) DANA PUSAT
ANGGARAN : REINVESTASI TAHUN : 1987
BAGIAN : TEKJARTEL 電話線路技術局

Halaman

MTP : 209.02.05

（単位：千ルピア）

NOMOR D.R.K. DAN KODE PROGRAM	KEGIATAN	LOKASI	ANGGARAN	RENCANA PENYERAPAN DALAM TRIWULAN :				INDEKS
				TRIW. I	TRIW. II	TRIW. III	TRIW. IV	
A2/01/Jar/R /87	Pembangunan/ Pengadaan kelengkapan operasional proyek OPMC di Bandung.	Bandung	100.000	-	-	-	100.000	00000 Ktps 32456
A2/02/Jar/R /87	Rehabilitasi jaringan lokal.	WITEL I	122.959	-	-	122.959	-	00000 Ktps 34456
A2/03/Jar/R /87	Pemetaan lokasi langganan.	Medan dan Palembang	250.000	-	150.000	100.000	-	00000 Ktps 37457
A2/04/Jar/R /87	Pengadaan perkakas/ peralatan penanggulangan gangguan di WITEL I s/d XII.	WITEL I s/d XII / Pusat	216.540	-	-	-	216.540	00000 Ktps 39442
A2/05/Jar/R /87	Pengembangan sulim / Sp.2.	WITEL IV, Bd, Md, Sb.	276.000	-	-	-	276.000	00000 Ktps 35445
A2/06/Jar/R /87	Pastel PENILU.	WITEL I s/d XII.	2.111.709	2.111.709	-	-	-	00000 Ktps 31465
A2/07/Jar/R /87	Kegiatan mendesak. OPMC （訓練関係資機材購入費）	WITEL I s/d XII..	100.000	-	-	100.000	-	00000 Ktps 32465
	JUMLAH	--	3.177.208	2.111.709	150.000	322.959	592.540	

Budget Distribution Program for O.P.M.C.Project,1987

I T E M	THE EXPENDITURE	P A R T I C U L A R
Personnel Expenses	Rp.66,071,000.-	Salaries of C/P & Staff Traveling Expenses
Building Maintenance and Electricity Expenses	Rp.54,000,000.-	Cost of Cleaning Service
The Cost of Maintenance for Vehicles	Rp.108,521,700.-	Fuel,Repair & Servicing
Drilling Deep Well Expenses	Rp.38,000,000.-	To secure water
The Cost of Furnishing Furniture	Rp.38,525,000.-	Filing Cabinet,Sofas,etc
The Cost of Snacks and Drinking Water	Rp.1,101,600.-	
The Cost of Printing New Forms,Brochures,etc.	Rp.37,388,050.-	
The Cost of Purchasing Training Materials	Rp.26,329,500.-	Cable
The Cost for Purchasing Stationery	Rp.10,690,250.-	
The Cost of Opening Ceremony	Rp.12,000,000.-	
T O T A L	Rp.392,627,100.-	

These are the figures for Dec.31,1987.

* The fiscal year of PERUMTEL begins from January.

Budget Distribution Program for OPMC Project in 1988
(PERUMTEL)

Item	Provided Budget(Rp)	Realization (Rp)	Remark
1. The cost of purchasing			SUBDITEK
a. Stationeries	1,500,000	- -	
b. Documentation	-		
c. Printing Textbooks & Model	22,200,000	30,034,950	DOKTEL
2. Building Maintenance & Electricity expenses	51,800,000	~~98,594,708~~ 42.103.317	WITEL V
3. The cost for Maintenance nance for Vehicle	74,260,300	~~36,099,555~~ 39.381.332	WITEL V
4. The Cost of Furnishing Furniture	-	12,245,000	SUBOTORISASI DITKAPTEL
5. The cost of Printing New forms, Brohures, etc	-	-	
6. The cost of Purchasing Training material	16,360,000		
7. The cost of Purchasing Instruments	26,000,000	~~[illegible]~~ -	
8. Travelling Expense	-	~~22,576,800~~ 24.631.418	TEKJARTEL
9. Allowance for Instructor & Lecturer	-	~~3,602,100~~ 3.911.100	
T O T A L	192,120,000	~~143,155,113~~ 152.707.117	

The fiscal year of PERUMTEL begins from January.

There are the figures for Dec, 31, 1988

Table 2

Proposed Budget Distribution Program for O.P.M.C.Project,1988

I T E M	THE EXPENDITURE	
The Cost of Purchasing 1.Stationeries 2.Documentation	 Rp.18,778,500.- Rp.2,960,000.-	
Building Maintenance and Electricity Expenses	Rp.88,220,000.-	
The Cost of Maintenance for Vehicles	Rp.55,600,200.-	
The Cost of Furnishing Furniture	Rp.36,800,000.-	
The Cost of Printing New Forms,Brochures,etc.	Rp.50,000,000.-	
The Cost of Purchasing Training Materials	Rp.16,360,000.-	
The Cost for Purchasing Instruments	Rp.84,410,000.-	
Traveling expenses	Rp.99,372,000.-	
Allowance for Instructors & Lecturer	Rp.19,170,000.-	
T O T A L	Rp.471,670,700.-	

BUDGET DISTRIBUTION PROGRAM FOR OPMC PROJECT IN 1989
(PERUMTEL)

September, 1989

I T E M	PROPOSED BUDGET (RP)	PROVIDED BUDGET (RP)	REALIZATION (RP)	REMARK
1. The cost of purchasing				
a. Stationeries	16.290.000,-	500.000x12= 6.000.000,-	2.500.000,-	SUBDITTEK BUDGET
b. Documentation	-	-	-	DOKTEL BUDGET
c. Printing textbooks/ model	50.000.000,-	34.500.000,-	15.421.000,-	SUBOTORISASI DITOP
2. Building maintenance and electricity expenses	88.220.000,-	51.800.000,-	32.453.842	WITEL V BANDUNG BUDGET
3. The cost of maintenance for vehicles	60.000.000,-	36.000.000,-	27.118.500,-	WITEL V BANDUNG BUDGET
4. The cost of furnishing furniture	-	-	-	SUB-OTORISASI DITKAPTEL
5. Outside plant operational and maintenance	156.000.000,-	159.800.500,-	55.435.411,-	WITEL V BDG/ KANDAPON BDG
6. The cost of purchasing training materials	19.500.000,-	19.500.000,-	19.500.000,-	DITKAP BUDGET
7. The cost for purchasing instruments	-	-	-	
8. Travelling expenses	87.000.000,-	107.492.000,-	27.632.600,-	TEKJARTEL BUDGET
9. Allowance for instructors&lecturers	7.872.000,-	-	961.200,-	PUSDIKLATTEL BUDGET
T O T A L	484.882.000,-	415.092.500,-	181.022.553	

3. Evaluation of OPMC PILOT Project Implementation by PERUMTEL (1986—1989)

I. INTRODUCTION

The OPMC Project in Bandung is the first Grant Aid Project in the Telecommunication field by Japan International Cooperation Agency (JICA) consist of OPMC building constructions , office equipment and machinery , minibus and special vehicles , measuring equipment working tools and computers.
Total amounts of the Grant Aid are Yen 557,000,000,-
The purposes of the Project are being a Pilot Project in the field cable network maintenance centers, to realize efficient outside - plants maintenance activities in the frame of improving telecom - munication services.

II. SCOPE AND IMPLEMENTATION OF THE PROJECT

Several programs of the OPMC Project consist of preparations of hardware and software are required to fulfill the following pro - grams for the purposes clarified in the above.

PROGRAM/SUB PROGRAM	PURPOSES	IMPLEMENTATION
1. Establishing OPMC Building and the facilities.	Centralize management system	- Building was inagurated on March,26,1987.
2. Measuring instrument for outside plant maintenance.	For supporting daily operation and preventive maintenance.	- Used for the net work fault repair and network conditions.
3. Working Tools	ditto	ditto
4. Safety Works facilities.	For safety first.	Used by outside plant staff.

PROGRAM/SUB PROGRAM	PURPOSES	IMPLEMENTATIONS
5. Fault repairing vehicles	Increasing personnel mobility in the repairing fault.	Useful for repairing fault and preventive maintenace activities.
6. Radio Communications	Increasing personnel mobility in the repairing fault and facilitating personnel coordination in the field.	Number of vehicles equipped by radio communications= 5 Unit
7. Faximile	Acceleration of fault information distribution from MDF to OPMC staff.	Adequate to support fault repairing mechanism.
8. OPMC Counterparts Training in Japan	Technology Transfer of Outside Plant maintenance knowledges.	10 ten ~~7 (seven)~~ Counterparts have been trained in Japan.
9 Technical Assistance of OPMC Operational Impletations.		
a. Re-arranging maintenance methods .	Reducing non technical work.	Re-araanging of fault repairing mechanism.
b. Improving fault repairing administration and evaluations forms.	- Easy to fill in. - Efficient - Easy to evaluate.	Dispatch sheet MU-4 and evaluation forms JAR-1 up to JAR-6 have been used.

PROGRAM/SUB PROGRAM	PURPOSES	IMPLEMENTATIONS
C. Improving cable Administration form and filling method .	Facilitating to be updated.	Cable Pair Assignment sheet Tel 30 and Tel 30A forms have been used.
d. Improving fault repairing technical activities and proce dure also cable network preventive maintenance management.	Increasing personnel mobility in fault repairing activities and cable network preventive maintenance.	Procurement of Ready to use materials in vehicle has been implemented. Technician are allowed to drive OPMC operational vehicles which have driving licence.
e. Improving Outside Plant Organization Structures.	Supporting Cable network Operational Maintenance Smoothness.	Up to now still under pro cess by HQ. (For the experiment, in a short time, the implementat ion will be handled by KAWITEL V)

III. TARGET AND ACHIEVEMENT OF THE PROJECT

To evaluate the success of Technical Assistance Activities, some targets are fixed to be achieved during the period of the project implementation.

The targets and achievement are as follows :

ACTIVITIES	OPMC TARGET	Before OPMC Jan-May1987 (average rate)	After OPMC Jan-Sept1989 (average rate)
1. Fault Repairing Time Acceleration.			
Within 1 day	70 %	26.62 %	59.97 %
1- 2 days	20 %	16.61 %	26.37 %
3- 7 days	10 %	48.65 %	11.86 %
More than 7 days	0 %	8.12 %	1.80 %
2. Fault rate decreasing per 100 subs/months	5	6.74	5.27
3. Working productivity of fault repairing/ personnel	3	1.17	1.85

IV. SOME OBSTACLES IN THE IMPLEMENTATION

There are some obstacles in the implementation of OPMC pilot project.

The obstacles are as follows :

Items	Obstacles
1. Outside plant organization structure is in accordance with the proposal discussed with ORTAL	No further confirmation from DITPEGTEL, so that working pattern and mechanism still follows the old structure.
2. For the time being some facilities cannot be used.	Some facilities cannot be used in the operation, among others : - digging tools cannot be used due to inappropriate size.
3. Facsimile (maker : NTT)	No agency in Indonesia to implement the maintenance.
4. Crane Auger vehicle.	Not suitable for PERUMTEL pole size. No maintenance garage for that specific vehicle. The condition of city-water, electricity and gas network without map cause high-risky use of the vehicle.

IV. CONCLUSION

1. From the implementation results, some positive effects are obtained :

   a. For Outside Plant Staff

      (1). Facilitating various implementation of network maintenance activities.
      (2). Facilitating coordination of inter-staff.
      (3). Increasing staff's working spirit.
      (4). Improving sense of belonging and unity.

   b. For PERUMTEL

      (1). Increase of cable network maintenance capability.
      (2). Increase of cable network reliability.
      (3). Increase of cable network services.
      (4). Increase of PERUMTEL's reputation.

2. Necessitate to realize the proposed organization structure immediately to ensure the success of the project.

3. To ensure OPMC operation smoothness, coordination among all involved work units has to be increased

4. Necessitate to add some network maintenance facilities, especially for duct cable maintenance, among others :

   - telemetri gas supervisory
   - pipe camera for duct system
   - cable drum vehicle

5. Addition of communication radio facility is needed to complete the unequipped vehicles.

6. Maintenance agency for facsimile and blue print copy is not available.

6. Further maintenance management increase is needed, especially improving cable administration system, network maintenance planning, in view of rising operation of new technology in network field (optical fiber system).
The implementation can be done during the OPMC project extention after March 1990.

Bandung, October 30, 1989

On behalf of OPMC Coordinator

SOENARSO
NIK.401160

4. インドネシア電話線路保全訓練センター訪問者一覧

28 October 1987

1.	Mr. KENICHIRO TORIGOE (leader - director)	International Cooperation Division, Communication Policy bureau, Ministry of Post and Telecommunications.
2.	Mr. YOJIRO EGUCHI (professor)	Soka University.
3.	Mr. TADAO YAMAGISHI (professor)	Tokai University.
4.	Mr. YOSHIHARU FURUKAWA (researcher)	Research Institute of Telecommunications Policies and Economics.
5.	Mr. ASANO (secretary)	Embassy of Japan (Jakarta)

19 November 1987

1.	Mr. T.S. SUBRAMANIAN	Consultant of Telecommunications and Electronics. I.T.U. (International Telecom. Union)
2.	Mr. P. SODARMADI (consultant)	Bandung - Indonesia.

10 December 1987

1.	Mr. ISHIZUKA	P M C (M)

11 December 1987

1.	Mr. ABE	J I C A

21 September 1988

1. HEADS OF WITELs

19 October 1988

1.	Mr. SOEDJONO KRAMADIBRATA	Secretary General of the Ministry
2.	Mr. ABDUL DJABBAR	Inspector General Tourism, Post and Telecom. Ministry

- 3 July 1989

NTT AFTER-CARE MISSION FOR ASIA :

1. Mr. MAZAKAZU KATOH	Director of Asia & Pasific Div. International Affairs Bureau NTT
2. Mr. HISAO TAKAHASHI	Chief of General Affairs Section IAB NTT

- 1 August 1989

1. Mr. EDAMURA	Japanese Ambassador to Indonesia

- 24 - 31 August 1989

VIDEO SHOOTING TEAM

- 29 August 1989

1. Mr. H. SHINTO	ex President Director of NTT Japan
2. Mr. T. MORIYAMA	Managing Director of New Media Development Organization Inc. Tokyo
3. Mr. M. NAGATA	Director of Administration of Nusantara Systems International JKT
4. Mr. M. NAGAI	Assistant to Representative of Mitsubishi Cooperation in JKT

from PERUMTEL :

1. Mr. A. PURWO,MSc	Director of Operation and Tech.
2. Mr. Ir. HERI PURNOMO	Chief Sub of Telecom. Commerce Directorate BD
3. Mr. ADEK YULIANWAR,BSc	Chief of Operation and Tech. Sectio

- 7 September 1989

1. Mrs. WOERFIENDARTI	Chief of Planning Div.
2. Mr. SUDARDO	

- 13 September 1989

JICA HEALTH CHECK :

1. Dr. H. IWASAKAI
2. Dr. M. SUCHI
3. Mr. TAKADA

- 15 September 1989

WORLD BANK WASHINGTON :

1. Mr. SAMMUGARAJE
2. Mr. TAKAMA

- 20 September 1989

1. Mr. YAGINUMA	N T T
2. Mr. ANDO	N T T
3. Mr. TSUKAMOTO	N T T
4. Mr. TAKASE	P M C

- 26 September 1989

1. Mr. ALBRECHT WALD	West Germany
2. Mr. ISHIGURO	

- 6 October 1989

1. Mr. YANAGI C.ITO.

- 18 October 1989

1. Mr. SHIOTANI	Consul General of Japan, Indonesia

- 24 - 4 Nov 1989 -> EVALUATION MISSION

5. OPMC紹介 VTR

——Shooting Script of OPMC——

SHOOTING SCRIPT OF OPMC

NO	TIME	LOCATION	SHOOTING	R E M A R K S
1.		Jl. Tera	OPMC Building	Bandung Telephone Outside Plant Maintenance and Training Model Center or usually called OPMC which is the first maintenance grant aid project all over Indonesia as the cooperation between the Japan government (JICA) and the Indonesian government in 1986. OPMC building located in Jalan Tera 14A Bandung was finished to be set up in March 1987 with the building square 653.2 M2 and land square 2880 M2.
2.		- ditto	inscription (front yard)	This OPMC building with 4 stories was inaugurated by MINISTER OF TOURISM, POST and TELECOMMUNICATIONS.
3.			Operational cars (parking yard)	One of OPMC facilities in daily operation to solve problems of telecommunications cable network is operational cars consisting of : 1` fault repairing vehicles 8 bucket equipped vehicles 4 personnel vehicles
4.		- ditto	Information Board (Enterance)	Use of interior of the building 1st - 4th floor.
5.		- ditto	Facilities of working, measuring equipment (Outside plant store room is in the 1st fl.)	In the framework of daily operation, working and auxiliary facilities numbering 52 kinds of working equipment and 28 kinds of measuring equipment are arranged and stored in such a way for operational smoothness and equipment reliability.
6.		- ditto	Control Desk (2nd floor)	Control Desk functions as form receiver of fault repairing instruction (called MU 4) sent from MDF to all Automatic Telephone Exchanges in Bandung (6) and later distributed to sector staff responsible to repair immediately. Here the staff are responsible to monitor the repairing work and to receive the repairing work result to inform immediately to the respective MDF where the relevant MU 4 comes from. Information / model is sent by fax. Also equipped by communication radio functioning as Base Station.
7.		- ditto	Work place of Chief sector and staff (2nd floor)	To facilitate the distribution / receiving instruction / MU 4, it is arranged or placed near Control Desk open room equipped by adequate furniture.

NO	TIME	LOCATION	SHOOT	REMARKS
8.		Jl. Tera	Locker room Bath room (2nd F)	Special facility for cable network technicians (sector) to keep the equipment is provided. After finishing working, special bath room for staff is provided to keep cleanliness and health.
9.		Jl. Tera	Working room Planning section (3rd F)	Rooms in 3rd F are special rooms for planning section staff and cable network technique administration organizing equipped by drawing equipment, lightdruct and sufficie cable administration filing.
10.		- ditto	Computer room (3rd F)	Cable network technique/data administration organized by using computer done by OPMC staff.
11.		- ditto	District section working room	Room of technical staff has the capacity of interlocal and local network maintenance in branch office.
12.		- ditto	Room of Chief of Outside Plant (3rd F)	
13.		- ditto	Room of adminis. section (4th F)	
14.		- ditto	Class room (4th F) if students are available	To increase the skill of the staff, room for training is also provided in the form of - theory - practice - discussion
15.		- ditto	Meeting room (4th F)	for the neseccities of meeting.
16.			Practice room (4th F)	Practice to master measuring equipment is carried out in this room.
17.			Experts / counterparts room (4th F)	Until April 1990 OPMC operation is assisted by JICA Expert Team / Japan and PERUMTEL Counterpart in the framework of technology and knowledge transfer through Technical Assistant Program.
18			Site-demonstration using special cars : - Bucket - Anger crane technical staff - at DP - at Manhole	Up to now, the achieved results have positive effects to operation :

Activities	Before OPMC	After OPMC	Remarks
Fault repair. time 1-2	43%	85%	2x more rapid
Number of fault/ 100 subs./month	8	6	decrease 2
Productivity of working,staff/day	1.17	1.45	increase 0.28%

External effects :

- Increasing service to subscribers.
- " staff's profesionalism.

Internal effects :

- Increasing company's income.
- " working spirit.
- " self-confidence.
- " sense of belonging.
- " sense of unity
- Being able to support PERUMTEL programs.

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6. Joint Report for the Joint Committee, OPMC Project
——Progress Report on the Technical Cooperation Program (from June 1, 1986 to September 30, 1989) ——

JOINT REPORT

FOR THE JOINT COMMITTEE
(OPMC PROJECT)

- Progress report on the Technical Cooperation Program
- From June 1 , 1986 to September 30 , 1989

October, 1989

PERUMTEL
JICA TEAM

C O N T E N T S

1. SUMMARY

(1)	PROJECT TITLE	:	O.P.M.C. PROJECT
(2)	PROJECT PURPOSE	:	As a pilot project of establishment of O.P.M.C. in PERUMTEL in the frame of improving the telephone outside plant maintenance services.
(3)	SCOPE OF THE PROJECT	:	Technical assistance for the operation and maintenance of Bandung OPMC.
(4)	FUNCTION OF OPMC IN BANDUNG	:	- To implement daily maintenance through a centralized management system. - To train personnel's knowledge and technique on the telephone outside plant maintenance. - To develop methods and system of the above training.
(5)	ORGANIZATION OF THE PROJECT	:	see Attachment (9)
(6)	PLANNED TARGET OF THE PROJECT	:	see Attachment (10)

(7) JICA EXPERTS TEAM

1.	Mr. KENJI TANAKA	(Chief Advisor) (June 30, 1986 - June 29, 1989)
2.	Mr. SHINICHI SHOJI	(Subscriber Premises and Chief Advisor) (January 19, 1989 - April 1, 1990)
3.	Mr. HAJIME NUKUSHINA	(Maintenance Management) (June 30, 1986 - June 29, 1988)
4.	Mr. HIROAKI ONITSUKA	(Maintenance Management) (June 22, 1988 - April 1, 1990)
5.	Mr. KAKICHI OKABE	(Cable Engineering) (July 31, 1986 - July 30, 1988)
6.	Mr. AKIRA HACHIMARU	(Cable and Civil Engineering) (July 16, 1988 - April 1, 1990)
7.	Mr. KEIZO TAIRA	(Subscriber Premises) (July 31, 1986 - January 30, 1988)
8.	Mr. SHIGERU ABE	(Expert for Civil Engineering) (July 31, 1986 - July 30, 1988)
9.	Mr. CHIAKI MAKINO	(J I C A Coordinator) (June 30, 1986 - June 29, 1988)
10.	Miss TOMOMI IKEDA	(J I C A Coordinator) (July 16, 1988 - May 22, 1989)
11.	Mr. MITSUHIRO TAKAYA	(Software Computer - short term) (November 16, 1988 - April 15, 1989)

(8) PERUMTEL COUNTERPARTS TEAM :

1. Mr. Imam Suyoto,Bc.T.T. (Coordinator)
2. Mr. Soenarso
3. Mr. Surjadi
4. Mr. J.Nugroho
5. Mr. Achmad Manap
6. Mr. Djauhar Arifin

(9) PERUMTEL ADMINISTRATION STAFF :

1. Mr. Aim Supardi
2. Mr. Rijadi
3. Mrs. Euis Suryeti
4. Mr. Pujud
5. Mr. Hari Mardiko
6. Mr. Sukanto (Driver)
7. Mr. Harun (Driver)

(10) PROJECT PERIOD : April, 1986 - March, 1990

(11) OFFICE ADDRESS : Jl. TERA 14A Bandung

Tel. 440012, Fax 440024

2. IMPLEMENTATION SCHEDULE OF THE PROJECT (1)

Nos	Item	Year / Month	1986 1 2 3 4 5 6 7 8 9 10 11 12	1987 1 2 3 4 5 6 7 8 9 10 11 12	1988 1 2 3 4 5 6 7 8 9 10 11 12	1989 1 2 3 4 5 6 7 8 9 10 11 12	1990 1 2 3 4	Implementation
I	GRANT AID SCHEME :							
	1. Contruction of Building		———	———				Finished, April 15, 1987. by Obyashi Co.
	2. Provision of Equipment		———	———				Finished, April 18, 1987. by Mitsubishi Co.
			3					Opening Ceremony of OPMC. March 26, 1987.
II	TECHNICAL COORPORATION SCHEME:							
	1.Term of Technical Coorporation		Apr. ———	———	———	———	Mar.	
			R/D					
	2.Training							
	a. Basic Course :							
	1.Maintenance Management.				3——6			
	2.Subscriber Premises Installation Techniques.				3——6			
	3.Outside Plant Cable Installation Techniques.					10——12		
	4.Maintenance Activities			9——11		10——12		
	b. Advanced Course :							
	1.Maintenance Management.				1-2			
	2.Subscriber Premises Installation Techniques.				1-2			
	3.Outside Plant Cable Installation Techniques.				7——9	1-2		
	4.Maintenance Activities			7-8	7——9	1-2		
	c. Comprehensive Course					7-8		
	d. Instructor Course					11-12		
III	OPERATION OF THE CENTRE :							
	1.. Standardization of System and Management		———	———	———	———		
	2. Development of Manual for Daily Maintenence Activities..		———	———	———	———		
IV	EVALUTION :					—		

2. IMPLEMENTATION SCHEDULE OF THE PROJECT (2)

Nomor	Item	Year / Month	1986 1 2 3 4 5 6 7 8 9 10 11 12	1987 1 2 3 4 5 6 7 8 9 10 11 12	1988 1 2 3 4 5 6 7 8 9 10 11 12	1989 1 2 3 4 5 6 7 8 9 10 11 12	1990 1 2 3 4	Implementation
I	JAPANESE SIDE : Dispatch of Japanese Expert :							
	1. Chief Advisor.							Mr. K. Tanaka / Mr.S.Shoji
	2. Coordinator.							Mr. C. Makino / Miss. T. Ikeda (88.7/6~89.5/5)
	3. Maintenance Management							Mr. H. Mukhusina / Mr. Hiroaki Onitsuka
	4. Installation Techniques							Mr. K. Okabe / Mr. A. Machimaru
	5. Civil Enginering							Mr. S. Abe
	6. Subscriber Premises Techniques							Mr. K. Taira / Mr. S. Shoji
	7. Short Term Expert		(When Necessity Arises)					Mr. M. Takaya For telephone fault control programme
	Provision of Supplemental Equipment other those provided under the grant aid scheme							
	Training of Indonesian Personnel in Japan		— 2(persons)	6-7 2(persons)	6-7 1(person)	8-10 (2 persons)		Th.1985. 3 Counterparts. total up to 1989=10persons
II	INDONESIAN SIDE : Service of Counterpart personnel Administrative Personnel :							
	1. Heads of the Project & Centre							Head of WITEL V(Bandung)
	2. Counterpart Personnel							6 persons
	3. Administrative Personnel							6 persons
	4. Drivers							2 persons
	Budget for the Implementation for the Project							
	Construction of Facilities necessary for implentation of the Project.		5-6 / 6-7					Deep-well construction by WITEL V Bd. , Outdoor and indoor cable installation for training and practise.

3. PROGRESS OF THE TECHNICAL COOPERATION ACTIVITIES

No.	Item	Year / Month	1986 6 7 8 9 10 11 12	1987 1 2 3 4 5 6 7 8 9 10 11 12	1988 1 2 3 4 5 6 7 8 9 10 11 12	1989 1 2 3 4 5 6 7 8 9 10 11 12	
1	Arrival of the first group of 3 Japanese Experts.	6					Mr. Tanaka, Mr.C.Makino, Mr.H.Nukhusina
2	Arrival of the last group of 3 Experts	7					Mr. K. Okabe, Mr. S.Abe, Mr.Taira
3	Preparation of opening the temporary office at Jl.Sukajadi 207 Bandung.	7-8					
4	Survey the telephone office and telecommunication facilities, etc in Banddung .	9	———	1			Finish .
5	Examine the present situation of telephone maintenance service level.	10	———	1			- ditto -
6	Examine the present working procedures in outside plant section, switching section etc	10	———	2			- ditto -
7	Proposal of new organization appropriate to the OPMC			1——4			
8	Making textbooks for training at the OPMC	11	———	———	———	———	Total 43 volume
9	Moving to the OPMC Building			4-5			Expert/Counterparts 16-20/Maret 1987 DL/Distrik staff 6-11/April and 20-25 /April 1987 .
10	Start Training			7	———	———	29-6-1987 starts Advanced Course Group I (18 grade II personnels of DL, PUSDIKLAT and VITEL V).
11	Advice and assistance on operation and administration the OPMC :			7	———	———	
	1. Installation Faximile system among OPMC to 6 exchanges.			3			Finish 25/3/1987, 10 sets faximiles. Configuration see April '87 Monthly Report
	2. Guidance of operation of Faximile, control and new flow of dispatch sheet (MU4)			5			Personnels of Mdf, control desk, chief of sectors .
	3. Preparation of operation of vechicles			4			Finish .
	4. Operation and training of vechicles			5			Finish, delivery of 17 unit Hijet.1000 for daily operation.
	5. Shor while training of special vechicles for 8 drivers .			6			Finish.
12	Sending trainees to Japan	6——8		6-7	6-7	8 - 10	- 3 Counterparts (1985) - 2 Counterparts (1986) - 2 Counterparts (1987) - 1 Counterpart (1988) - 2Counterparts (1989)

4. IMPLEMENTATION OF TRAINING COURSES

(1) Implemention of Training courses up to the present (the end of September 1989)

· Implemention of Training courses up to the end of September 1989 is shown in Table 1. On the way, Implemention of training courses was a little behind the schedule, but now the progress of training courses are almost on original schedule.

The instructors training courses will be finished by the end of December, 1989.

Table 1. Training items and the number of trainees

Training item	Course	Duration	The number of trainees	The total days
(a) Car opretion & Measuring technique Object : Outside plant section only (1 unit : 2 weeks)	Advanced	1987. 7 ~ 1987. 9	4 group 71 persons	48 days
	Basic	1987. 9 ~ 1987.11	5 group 106 persons	60 days
(b) Maintenance Management & Subscriber Premises Object : Including the test section (1 unit : 1 week)	Advanced	1988. 1 ~ 1988. 3	4 group 83 persons	24 days
	Basic	1988. 3 ~ 1988. 6	6 group 122 persons	36 days
(c) Installation technique & Maintenance activities Object : Outside plant section only (1 unit : 2 weeks)	Advanced	1988. 8 ~ 1988. 9	3 group 59 persons	36 days
	Basic	1988.10 ~ 1989. 1	5 group 97 persons	60 days
Total		1987. 7 ~ 1989. 1	27 group 538 persons	264 days
(d) Comprehensive course Object : Section chiefs of each telephone office (1 unit : 2 weeks)		1989. 7 ~ 1989. 8	2 group 44 persons	20 days

· In addition to the existing training courses, in order to set up a 24 hours maintenance service system in central Jakarta (Gambir I, II & Cempaka Putih service area = DINYAN JAKARTE PUSAT) , some training courses were scheduled for the staff of outside plant & related sections.

Namely, one(1) day's training course (5 times, Nov. 8 — Dec. 5, 1988) for the section chiefs of telephone offices in the Capital and Two(2) day's training course (4 times, Nov. 15 — Dec. 7, 1988) for the linemen of telephone offices in Jakarta, were implemented by the counterparts at OPMC.

(次回Doc.No.1)

(2) Training Schedule after October , 1989

Training schedule after October, 1989 is shown in Table 2.

Table 2. Training course and the number of trainees

Training course	Duration	The number of trainees	The total days
Instructor course Object : Instructor of each telephone office (1 unit : 5 weeks)	1989.11~1989.12	2 groups 30 persons	50 days

① Training Contents of INSTRUCTOR COURSES

- The trainees of Instructor course are the chiefs of Outside plant section of telephone offices in West Java and both the chiefs and instructors of outside plant sections of telephone office s where OPMC will be constructed in near future.
- The trainees will study "Measuring technique ", "Operation of special vehicles "and "Maintenance management " through lectures & practices,and master the instructing method for the staff and how to identify problems through actual works on the sites.

② Curriculums of instructor course.

Curriculums of instructor course are shown in Table 3.

(a) Instructor Course Table 3

Training Item	Training Contents	Duration
Measuring Techniques	Almost same as Advanced & Basic Courses	2 days
Operation of Special Vehicle	Safety control (main) & Operation	3 days
Maintenance Management	Instructing Method (main) & Management Techniques	1 week
Maintenance Activities	Check all kinds of repairing method through actual working and investigate the point at issue.	1 week
Instructing Method for the staff (TOC)	Master the Instructing Method for the staff through actual working. 2 trainees and 1 counterpart act all together, and counterpart instructs the trainees.	1 week
Teaching Method	Teaching method in the classroom	1week

(3) Attachment

① List of the training textbooks
② Implementation of the training courses (up to Sep. 1989)
③ Training schedule (after October, 1989)
④ Contents & results of the implemented training courses
⑤ Whole schedule of the training courses (Plan & execution)

5 . PHOTO

Photo ① Mr.Edamura ,The Japanese ambassador to Indonesia Visited OPMC on August 1,1989 receiving an explanation on Control Desk from Mr.Shoji, Chief Advisor.

Photo ② Mr.Edamura receiving an explanation on how to use a bucket equipped vehicle from Mr.Shoji.

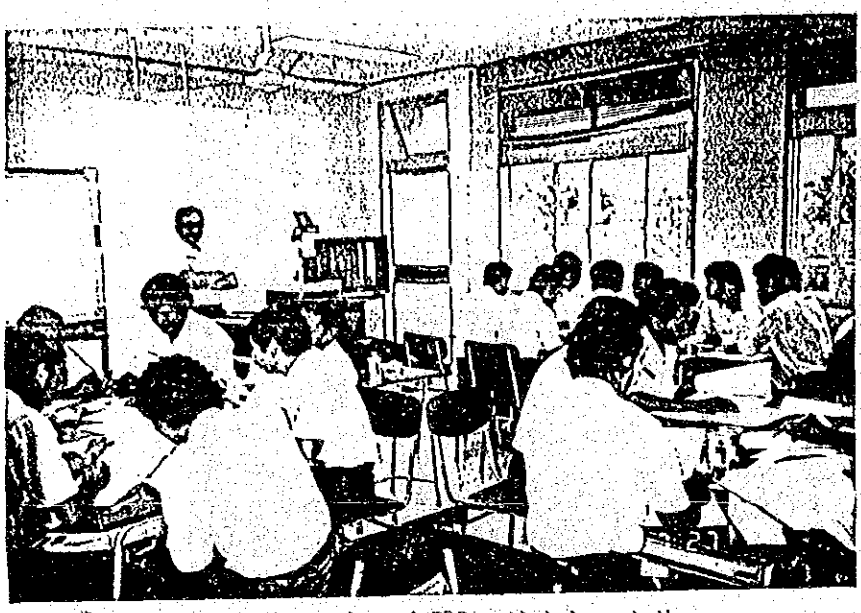


Photo ③ A scene of discussion of TQC activities at the lecture room by groups of Comprehensive course's trainees.

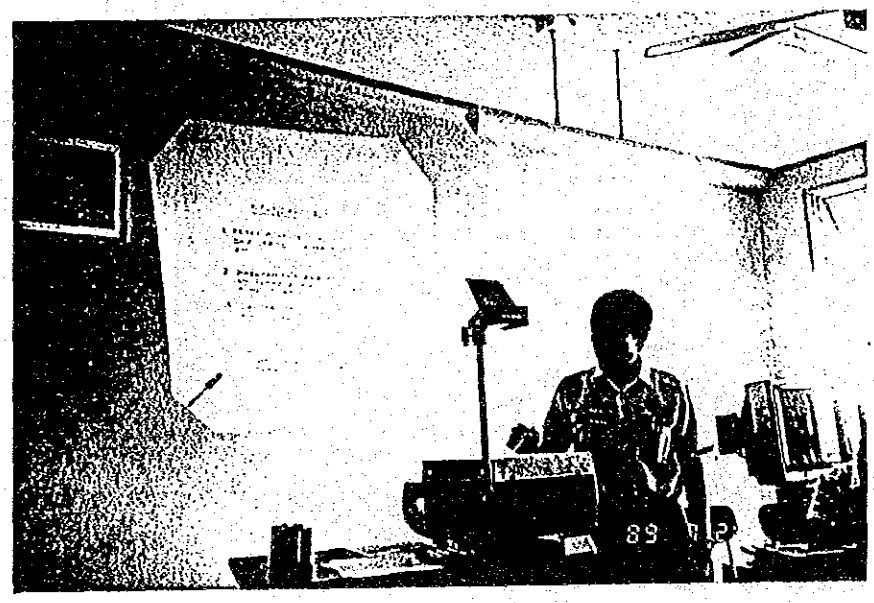


Photo ④ A scene of announcement of TQC activities at the lecture room by a group of Comprehensive course's trainees.

Photo ⑤ NTT video shooting team interviewed Mr.A.Poerwo (Heads of the project : Director of Operation & Technique, PERUNTEL) at his office.

Photo ⑥ 5th technical meeting was held on 16 October, 1989 at OPMC conference room.

Photo ⑦ Mr/s.Shiotani (Consul general of Japan, Indonesia) visited OPMC on 18 October , 1989.

Photo ⑧ Starting to use the radio transceiver on 13 October, 1989 at OPMC.
(By JICA technical cooperration Aid 1989)

6. IMPROVEMENT STATUS OF TELEPHONE MAINTENANCE SERVICES IN BANDUNG SERVICE AREA

(1) General

In telephone maintenance services, there are two main indices, namely ① telephone fault rate, and ② duration of faults (fault repairing time).

Up to the present from the beginning of the OPMC project, PERUMTEL and JICA technical cooperation team have done the following both hard and soft countermeasures to improve telephone maintenance services.

(a) Hard ware
- Setting up a control desk with facsimile equipment
- Concentrated maintenance system of staff, equipment, documents, etc
- Introduction of cars(Hijet 1000, Bucket equipped cars)
- Introduction of measuring equipment and working tools
- Improvement of working environments

(b) Soft ware
- Upgrading the skill of the staff through training
- Modification of existing documents such as MU 4 form, subscriber card, cable pair assignment sheet, etc

As a consequence of the above mentioned countermeasures, there was remarkable improvements especially in the duration of faults. Taking an example, when comparing the average duration of faults before OPMC and after OPMC (Refer to Table 4-5 , Fig. 1-3)you can understand how much the average duration of faults was improved .

But, as for the telephone faults rate (refer to Fig. 4-6), It is not easy to decrease it . Because in order to decrease the fault rate , Rehabilitation of the large amount of deteriorated facilities such as old paper insulated cables, drop wires with deteriorated insulation, house wires with several jointing points, etc must be implemented besides the above mentioned hard & soft countermeasures.

To do rehabilitation efficiently, Catching correct situations of telephone faults is necessary. For this purpose, the Project modified again MU 4 form(Fault dispatch sheet) in June, '88.
Fault analysis data of the attached papers are from newly modified MU 4 form.

(2) Attachment

⑥ New Modified MU 4 form
⑦ Fault analysis data

Table 4

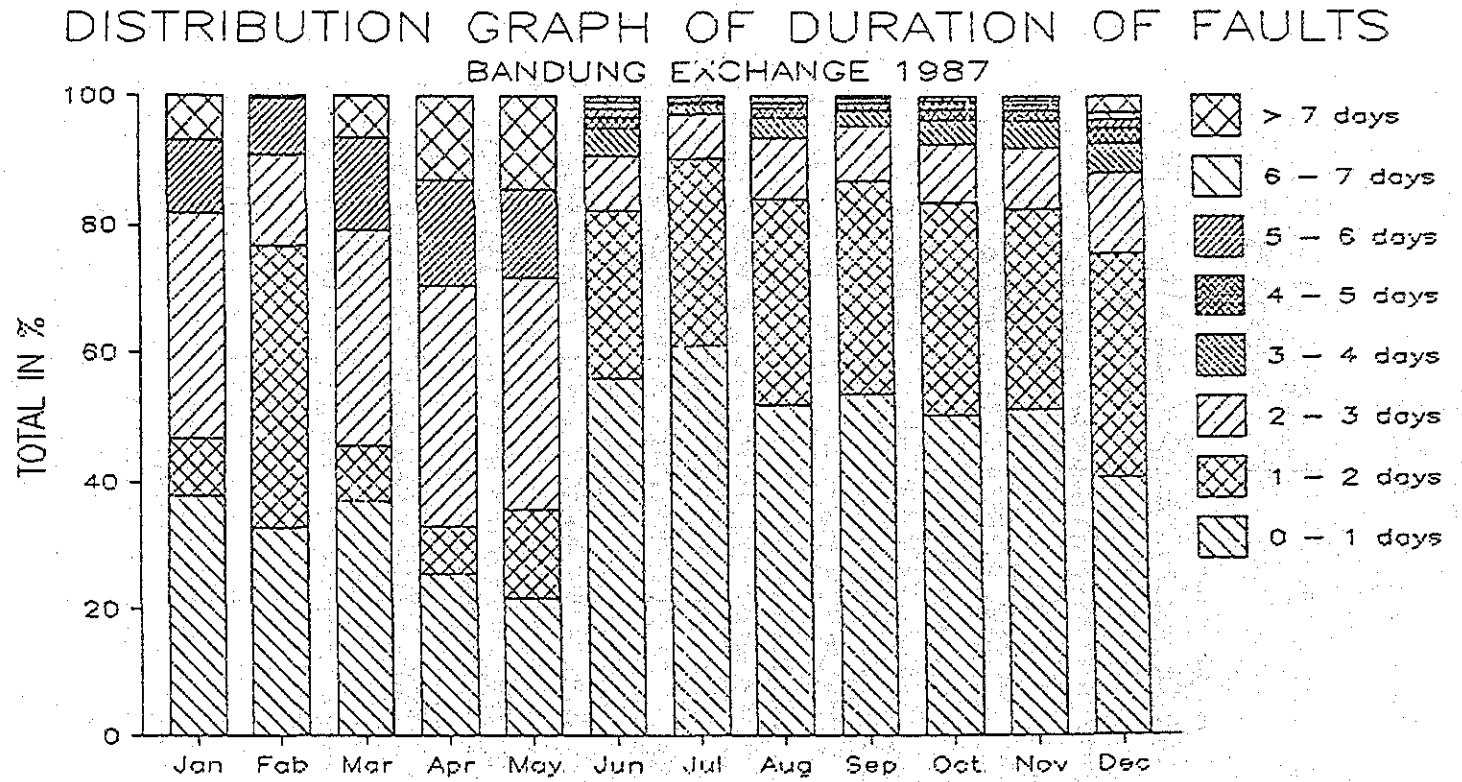
Average Duration of faults before and after OPMC

Duration of faults	Before OPMC Jan-May 1987	After OPMC Jan-Sept'89
1. Within 1 day	26.62 %	59.97 %
2. 1 - 2 days	16.61 %	26.37 %
3. 3 - 7 days	48.65 %	11.86 %
4. > 7 days	8.12 %	1.80 %

Table 5

Duration of Faults by locations (Compare with Standard Value) in Sept'89

Duration	House Wiring	Overhead cable	Underground Cable
1. Within 1 day	69.52 %	69,20 %	52,56 %
2. 1 - 2 days	25,28 %	24,97 %	-
3. > 2 days	5,20 %	5,83 %	-
4. 1 - 3 days	-	-	32,09 %
5. 3 - 7 days	-	-	13,49 %
6. > 7 days	-	-	1,86 %
Standard Value	2 days	2 days	7 days
Deviation	5,20 %	5,83 %	1,86 %

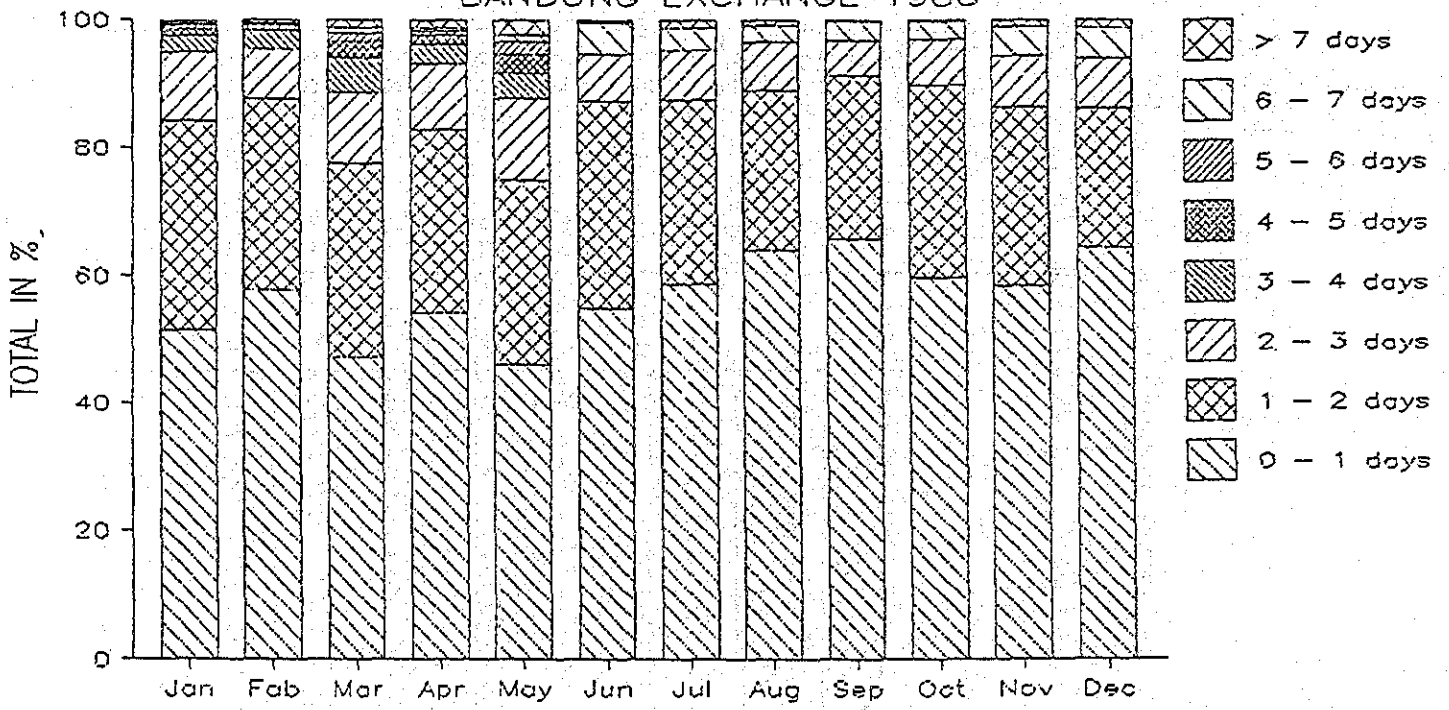


> 7 days	6.87	.30	6.36	12.81	14.26	.87	.74	1.04	.46	.74	.72	2.77
6 - 7 days						1.09	.12	.16	.46	.38	.59	1.08
5 - 6 days	11.21	8.73	14.25	16.66	14.00	1.09	.18	.64	.29	.96	.91	1.21
4 - 5 days						1.72	.41	1.44	1.04	1.77	1.69	2.43
3 - 4 days						4.22	1.27	3.00	2.51	3.56	4.12	4.43
2 - 3 days	35.19	14.07	33.87	37.38	36.08	8.57	6.69	9.44	8.18	9.09	9.41	12.58
1 - 2 days	8.97	44.02	8.59	7.60	13.90	26.51	29.7[illegible]	32.58	33.72	33.21	31.41	34.80
0 - 1 days	37.76	32.88	36.93	25.53	21.76	55.93	60.86	51.70	53.34	50.27	51.11	40.66

Fig. 1

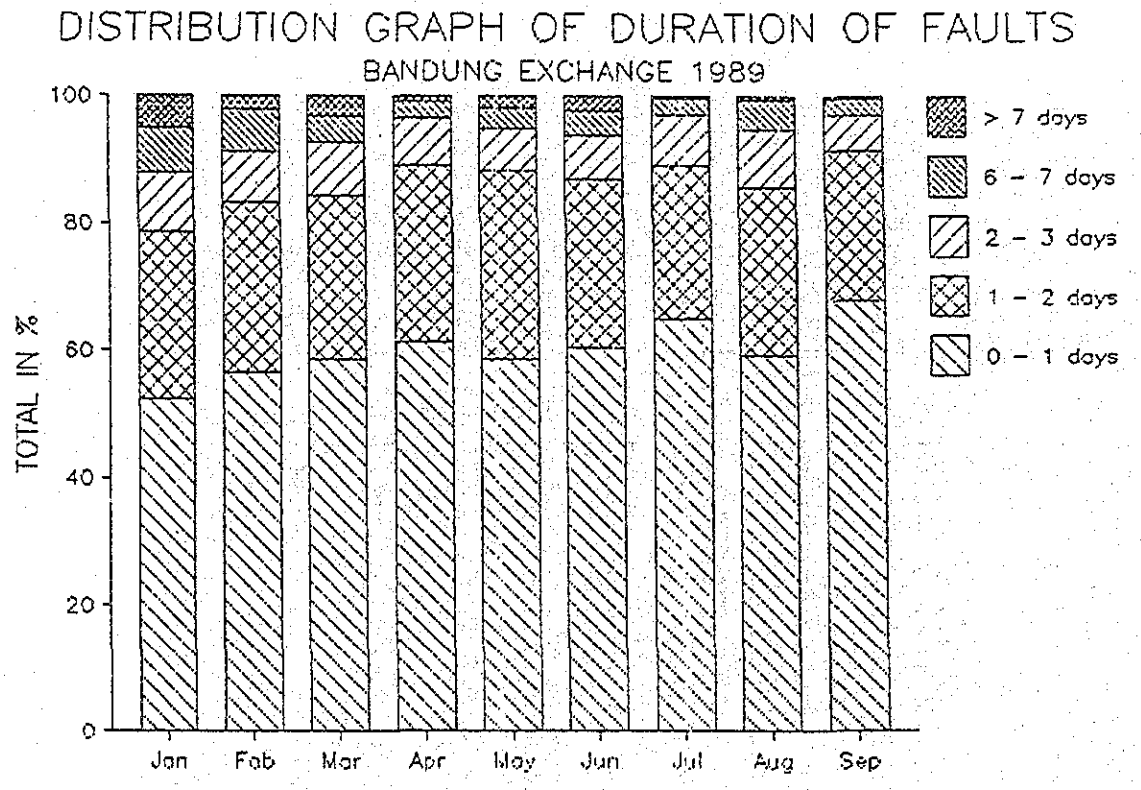
DISTRIBUTION GRAPH OF DURATION OF FAULTS

BANDUNG EXCHANGE 1988



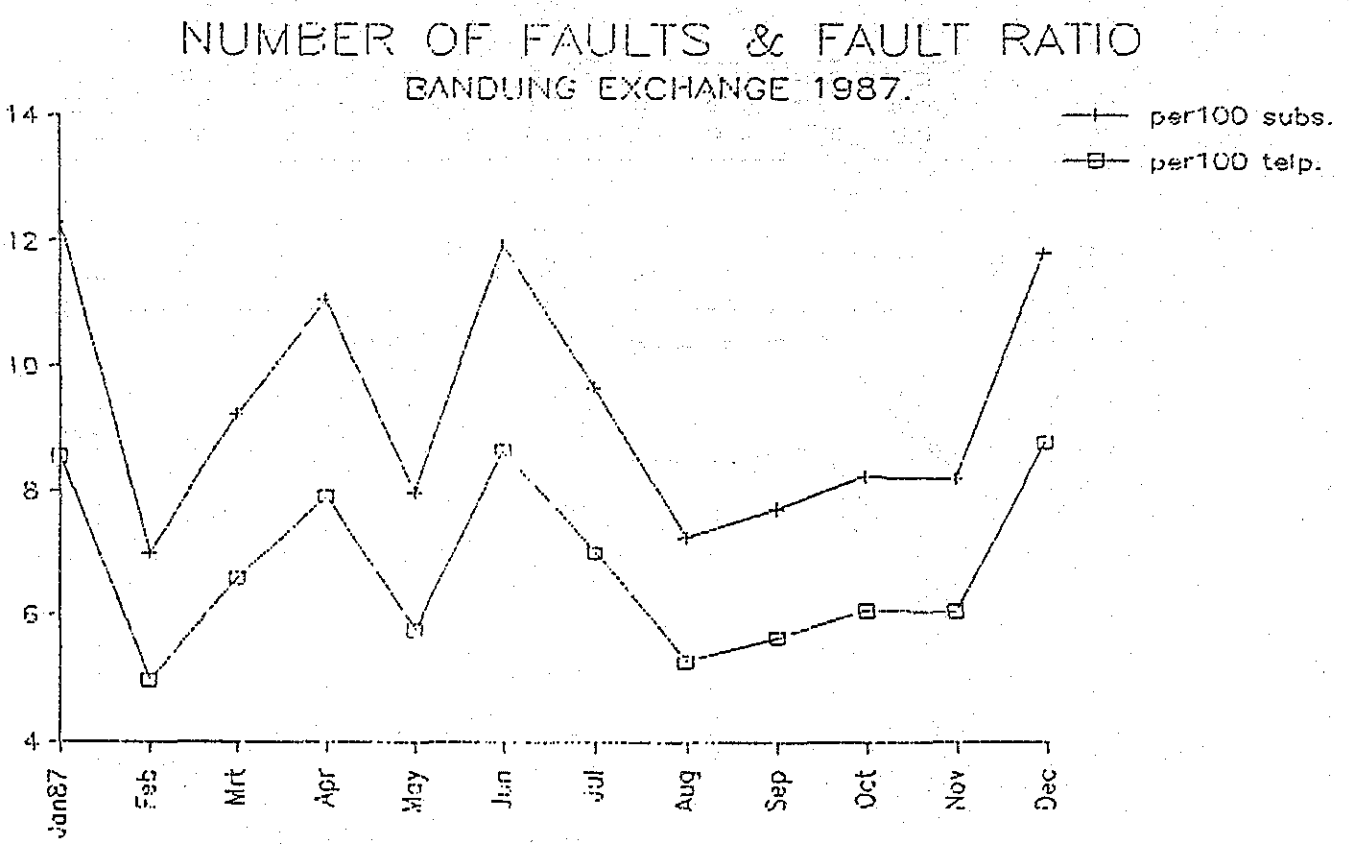
) 7 days	.49	.41	1.18	1.28	2.30	.34	1.12	.86	.26	.23	.96	1.24
6 - 7 days	.21	.09	.83	.42	1.02	5.02	3.55	2.61	2.91	2.80	4.51	4.62
5 - 6 days	.70	.22	1.26	.56	1.86							
4 - 5 days	.99	.95	2.70	1.54	2.99							
3 - 4 days	2.73	2.89	5.22	2.94	4.01							
2 - 3 days	10.56	7.88	11.29	10.25	12.75	7.27	7.66	7.47	5.44	7.01	7.98	7.84
1 - 2 days	32.70	29.89	30.36	28.67	28.90	32.37	28.94	24.88	25.51	30.16	28.04	21.72
0 - 1 days	51.57	57.67	47.18	54.34	46.14	55.00	58.73	64.18	65.88	59.80	58.51	64.58

Fig. 2



> 7 days	5.02	1.98	3.13	.73	1.87	2.30	.40	.48	.37
6 - 7 days	7.03	6.82	4.10	2.61	3.23	3.77	2.60	4.85	2.64
2 - 3 days	9.20	7.94	8.34	7.52	6.65	6.97	7.86	8.99	5.49
1 - 2 days	26.50	26.80	25.97	27.82	29.65	26.41	24.09	26.47	23.63
0 - 1 days	52.25	56.46	58.46	61.32	58.60	60.55	65.05	59.21	67.87

Fig . 3

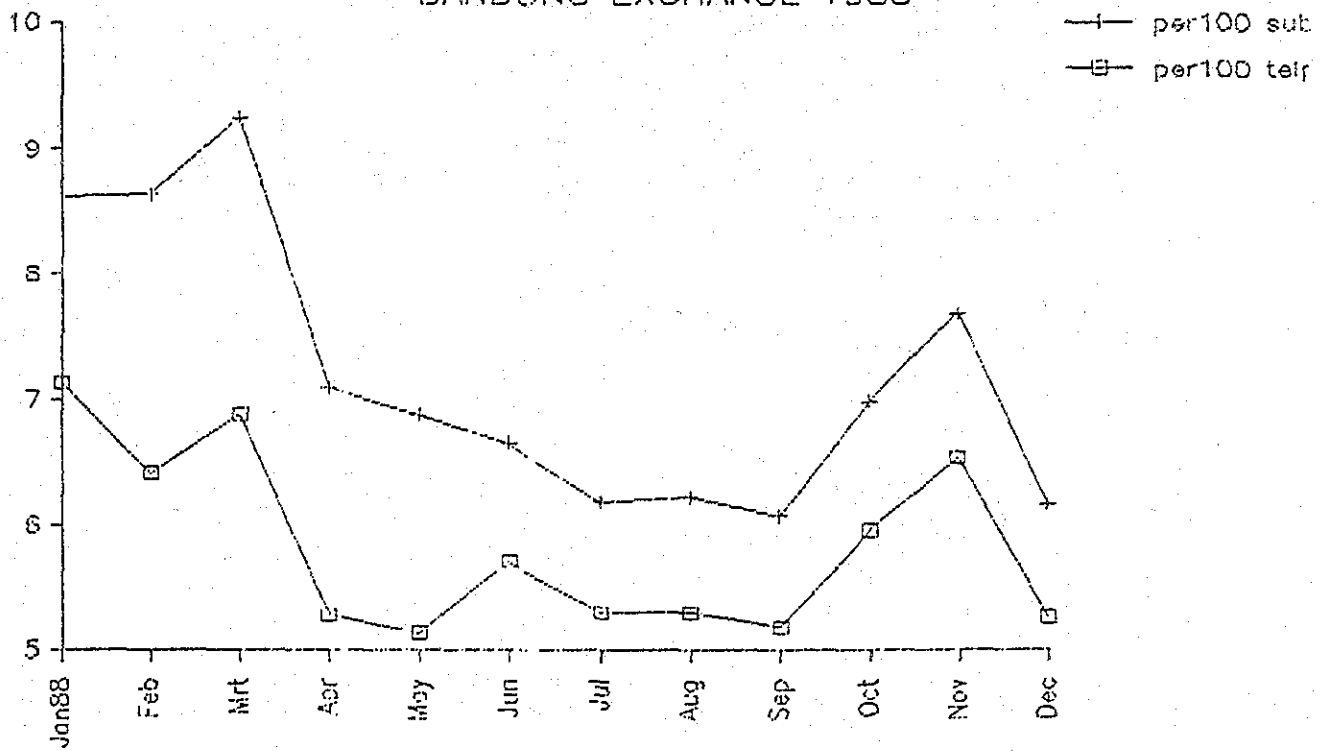


number of faults	4,004	2,341	3,130	3,766	2,841	4,260	3,465	2,619	2,878	3,165	3,196	4,678
number of subscribers	33,261	33,441	33,918	34,052	35,664	35,710	35,758	36,176	37,346	38,446	39,044	39,581
number of telp. sets	44,884	47,072	47,560	47,695	49,336	49,335	49,286	49,819	50,992	52,102	52,763	53,320
Fault ratio :												
per100 subs.	12.30	7.00	9.23	11.05	7.97	11.93	9.66	7.24	7.71	8.23	8.18	11.81
per100 telp sets	8.54	4.97	6.58	7.89	5.76	8.63	7.00	5.26	5.64	6.07	6.05	8.77

Fig. 4

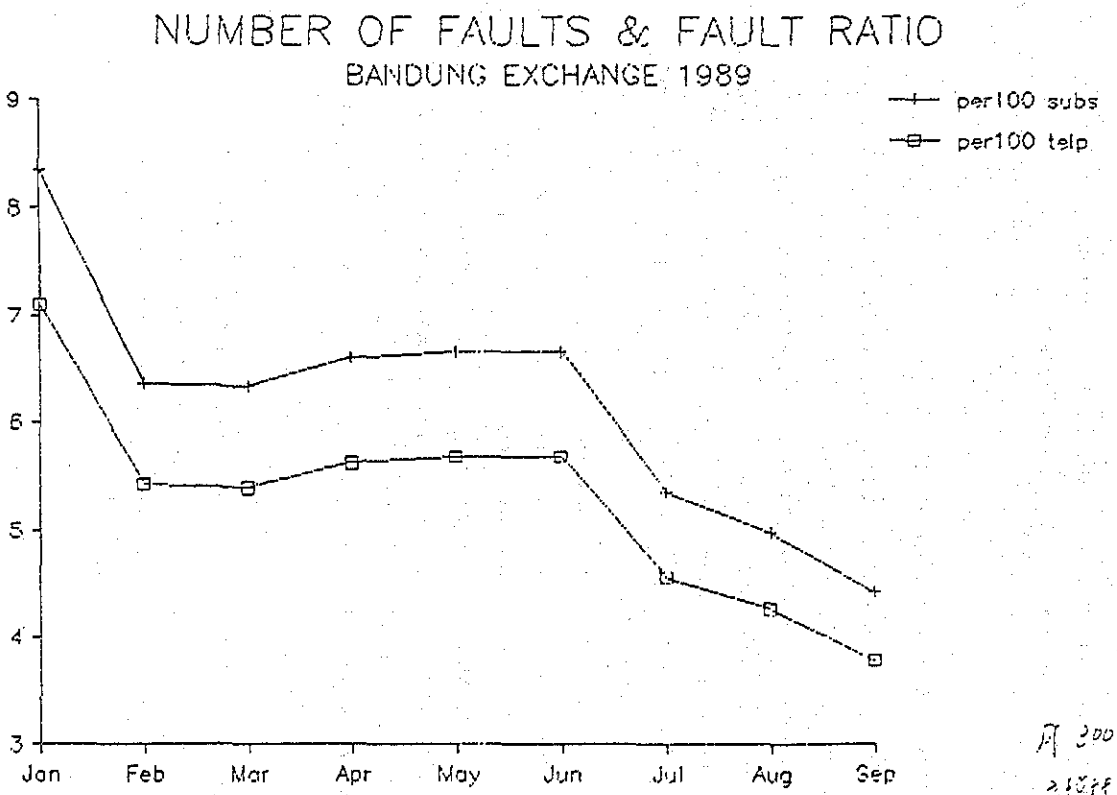
NUMBER OF FAULTS & FAULT RATIO

BANDUNG EXCHANGE 1988



number of faults	3,814	3,450	3,706	2,859	2,782	2,714	2,510	2,531	2,475	2,847	3,126	2,516
number of subscribers	39,680	39,931	40,056	40,297	40,399	40,773	40,344	40,625	40,661	40,676	40,687	40,730
number of telp. sets	53,434	53,692	53,334	54,080	54,185	47,530	47,336	47,669	47,716	47,738	47,750	47,811
Fault ratio :												
per100 subs.	8.61	8.63	9.25	7.09	6.88	6.66	6.19	6.23	6.08	6.99	7.68	6.17
per100 telp sets	7.13	6.42	6.88	5.28	5.13	5.71	5.30	5.30	5.18	5.96	6.54	5.26

Fig. 5



number of fault	3,399	2,594	2,588	2,705	2,734	2,742	2,216	2,081	1,857
number of subscribers	40,778	40,780	40,872	40,939	41,000	41,128	41,406	41,747	42,007
number of telp.sets	47,867	47,875	47,984	48,055	48,119	48,225	48,544	48,889	49,157
Fault ratio :									
per10 subscribers	8.33	6.36	6.33	6.6	6.66	6.66	5.35	4.98	4.42
per100 telp sets	7.1	5.42	5.39	5.62	5.68	5.68	4.56	4.26	3.78

Fig. 6

7. PROPOSAL AND REQUEST ON TECHNICAL COOPERATION

(1) Proposal

~~Decreasing of the number of experts~~

Now 3 experts are engaged in technical cooperation at OPMC. About three and half years have passed since the beginning of the JICA technical cooperation. And most of technical transfers were considered to be done during this period.

The plan of the follow-up Project will be discussed at the Joint Committee.

(2) Request

Quick employment of a new organization appropriate at OPMC.

JICA technical cooperation team recommended a new organization (see Attachment 8) of the Outside Plant Division, Bandung office appropriate to the smooth & efficient operation of the OPMC at the technical meeting held in January 12, 1987. The recommended organization is still under study of PERUMTEL, because PERUMTEL is now studying a new organization of telephone offices with Surabaya, Medan, Semarang, etc.

JICA team can understand well this situation. At the same time, the team worries about inefficient working flows both staff and documents at OPMC. As OPMC in Bandung is a model Center, the team guess PERUMTEL can easily modify the organization without thinking of other telephone offices/ Again, the JICA team would like to ask PERUMTEL to employ a new organization appropriate to the OPMC as soon as possible.

(3) Others

PERUMTEL has dispatched 10 counterparts for JICA OPMC Training in Japan up to 1989. Next year, two counterparts are going to be scheduled to go to Japan for JICA training.

8 3 . MEETING

A. Counterparts Meeting

Members : · Counterparts
· Experts
· Chief of Outside plant Division , Bandung Office
· Other related members

(1)	1st meeting	:	7 August , 1986
(2)	2nd meeting	:	20 October , 1986
(3)	3rd meeting	:	17 November , 1986
(4)	4th meeting	:	1 December , 1986
(5)	5th meeting	:	12 December , 1986
(6)	6th meeting	:	7 January , 1987
(7)	7th meeting	:	3 Febuary , 1987
(8)	8th meeting	:	16 Febuary , 1987
(9)	9th meeting	:	16 March , 1987
(10)	10th meeting	:	4 April , 1987
(11)	11th meeting	:	21 April , 1987
(12)	12th meeting	:	12 May , 1987
(13)	13th meeting	:	7 June , 1987
(14)	14th meeting	:	24 September , 1987
(15)	15th meeting	:	27 October , 1987
(16)	16th meeting	:	3 December , 1987
(17)	17th meeting	:	17 Febuary , 1988
(18)	18th meeting	:	5 April , 1988
(19)	19th meeting	:	24 May , 1988
(20)	20th meeting	:	16 August , 1988
(21)	21st meeting	:	26 September , 1988
(22)	22nd meeting	:	17 Febuary , 1989
(23)	23rd meeting	:	21 July , 1989
(24)	24th meeting	:	25 August , 1989

B. Technical Meeting

Members : · Deputy Directer of Operation & Technique
· Head of WITEL 5
· Counterparts
· Experts
· Other related members

(1)	1st meeting	:	1 November , 1986
(2)	2nd meeting	:	12 January , 1987
(3)	3rd meeting	:	17 Febuary , 1987
(4)	4th meeting	:	24 January , 1989
(5)	5th meeting	:	16 October , 1989

9. BUDGET DISTRIBUTION PROGRAM FOR THE OPMC PROJECT

(1) Budget distribution program in 1989 for OPMC project (PERUMTEL)

(refer to Table 6)

The budget distribution program in 1989 for OPMC project has been handled by PERUMTEL, but there were some difficulties in expensing due to the administrative procedures in PERUMTEL. We have overcome this problem through mutual understanding between Indonesian counterparts and JICA experts.

JICA team requests PERUMTEL to do more simple procedure to expend necessary expense to the project.

(2) JICA Technical Cooperation Aid

(refer to Table 7)

JICA has expent about 5 million Yen every year for assisting technical cooperation activities of the project.

Table 6

BUDGET DISTRIBUTION PROGRAM FOR OPMC PROJECT IN 1989
(PERUMTEL)

September, 1989

I T E M	PROPOSED BUDGET (RP)	PROVIDED BUDGET (RP)	REALIZATION (RP)	REMARK
1. The cost of purchasing				
a. Stationeries	16.290.000,-	500.000x12= 6.000.000,-	2.500.000,-	SUBDITTEK BUDGET
b. Documentation	-	-	-	DOKTEL BUDGET
c. Printing textbooks/ model	50.000.000,-	34.500.000,-	15.421.000,-	SUBOTORISASI DITOP
2. Building maintenance and electricity expenses	88.220.000,-	51.800.000,-	32.453.842	WITEL V BANDUNG BUDGET
3. The cost of maintenance for vehicles	60.000.000,-	36.000.000,-	27.118.500,-	WITEL V BANDUNG BUDGET
4. The cost of furnishing furniture	-	-	-	SUB-OTORISASI DITKAPTEL
5. Outside plant operational and maintenance	156.000.000,-	159.800.500,-	55.435.411,-	WITEL V BDG/ KANDAPON BDG
6. The cost of purchasing training materials	19.500.000,-	19.500.000,-	19.500.000,-	DITKAP BUDGET
7. The cost for purchasing instruments	-	-	-	
8. Travelling expenses	87.000.000,-	107.492.000,-	27.632.600,-	TEKJARTEL BUDGET
9. Allowance for instructors&lecturers	7.872.000,-	-	961.200,-	PUSDIKLATTEL BUDGET
T O T A L	484.882.000,-	415.092.500,-	181.022.553	

Table 7

JICA Technical Cooperation Aid in the fiscal year 1989

I t e m	maker	Expenditure (Million Yen)	R e m a r k s
1. 4 Mini Bus	Mitsubishi	4.7 M Yen	For Worker to move
2. 2 Mini Facsimile equipment	Murata	0.4 M Yen	For Transmitting Fault dispatch sheet
3. 10 Tranceiver	Yaesu	1.8 M Yen	For communication between Vehicle and Control Desk
4. 5 Hand Talky	Yaesu	0.7 M Yen	For communication in a site
5. 1 Video Camera Recorder	Sony	0.2 M Yen	For Training
6. 5 Tool Kit (A)	—	0.6 M Yen	For service order
7. 5 Tool Kit (B)	—	0.4 M Yen	For service order
T O T A L		8.8 M Yen	

Bandung, October 1989

A PURWO MSc
Project Manager
P E R U M T E L

SHINICHI SHOJI
Chief Advisor
O P M C Project

A T T A C H M E N T

① LIST OF THE TRAINING TEXTBOOKS (1)

October, 1989 OPMC Project

ITEM	No.	TEXTBOOK TITLE
① Outline of Outside plan	1A-01	Outline of Outside Plant
	1B-01	Outline of Underground Plant
	1C-01	Outline of Subscriber Premisis
	1D-01	Basic Telecommunication System
② Installation Techniques and Acceptance Test	2A-01	Basic Telephone Set
	2B-01	Installation Techniques of Telephone Set
	2C-01	Installation Techniques of Inside Wire
	2D-01	Installation Techniques of Outside Wire
	2E-01	Installation Techniques of Local Cable
	2F-01	Installation Techniques of Pole & Guy
	2G-01	Cross-connecting Method
	2G-02	Installation Techniques of Terminal Box
	2H-01	Local Cable Jointing Method
	2H-02	Final Acceptance Test
③ Measuring Techniques and Maintenance Activities	3A-01	Insulation Measuring Method
	3A-02	Wheatstone Bridge M.Method
	3A-03	Pulse Echo Tester M.Method
	3A-04	Burried Cable Locator M.M
	3A-05	Grounding Resistance M.M
	3A-06	Portable Circuit Tester Using Method
	3A-07	Cable Pair Checker Using M.
	3A-08	Impedance Bridge M.Method
	3A-09	Cross-Talk Measuring Method
	3A-10	Transmission Measuring Test Set

① LIST OF THE TRAINING TEXTBOOKS (2)

October, 1989 OPMC Project

Items	No.	Textbook Title
③ Measuring Techniques and Maintenance Activities	3A-11	Portable Combination Gas Detector
	3A-21	Digging and Pole Erection Vehicle
	3A-22	Bucket Equipped Vehicle
	3A-23	Bucket Equipped Light Vehicle
	3B-01	Patrol and Repair Method of Overhead Plant
	3C-01	Patrol and Repair Method of Underground Plant
	3D-01	Patrol and Repair Method of Premises Plant
④ Maintenance Management	4A-01	General Discription of Maintenance Control
	4A-02	Fault Repairing
	4B-01	Deteriorated Plant Administration
	4C-01	Material Handing
	4C-02	Control of Maintenance Tool & Instrument
	4C-03	Control of Car Operation
	4D-01	Plant Record Up-dating & Control System
	4D-02	Cable pair assignment Sheet Up-dating & Control System
	4E-01	Preventive Measures from Other works
⑤ Instructong Method for the staff		Methods of Quality Control
		Leadership & Management Techniques
		Maintenance Activity for Telecommunication Outside Plant

⑥ IMPLEMENTATION OF TRAINING(1)

Date	1987																		1988					
	JULY		AUGUST		SEPT		OCT		NOV		DEC		JAN		FEB		MAR	
1	Ke	AD	Sa		Tu	|	Th	|	Su		Tu		Fr		Fq	↰	Tu	AD
2	Th	①	Su		Ke	AD	Fr	|	Fq	↰	Ke		Sa		Tu	AD	Ke	④
3	Fr	|	Fq	↰	Th	④	Sa	↲	Tu	BA	Th		Su		Ke	②	Th	|
4	Sa	↲	Tu	AD	Fr	|	Su		Ke	⑧	Fr		Fq		Th	|	Fr	|
5	Su		Ke	①	Sa	|	Fq	↰	Th	|	Sa		Tu		Fr	|	Sa	↲
6	Fq	↰	Th	|	Su	|	Tu	BA	Fr	|	Su		Ke		Sa	↲	Su	
7	Tu	AD	Fr	|	Fq	|	Ke	⑨	Sa	|	Fq		Th		Su		Fq	
8	Ke	②	Sa	↲	Tu	|	Th	|	Su	|	Tu		Fr		Fq		Tu	
9	Th	|	Su		Ke	|	Fr	|	Fq	|	Ke		Sa		Tu		Ke	
10	Fr	|	Fq	↰	Th	|	Sa	|	Tu	|	Th		Su		Ke		Th	
11	Sa	↲	Tu	AD	Fr	|	Su	|	Ke	|	Fr		Fq		Th		Fr	
12	Su		Ke	②	Sa	↲	Fq	|	Th	|	Sa		Tu		Fr		Sa	
13	Fq	↰	Th	|	Su		Tu	|	Fr	|	Su		We		Sa		Su	
14	Tu	AD	Fr	|	Fq		Ke	|	Sa	↲	Fq		Th		Su		Fq	
15	Ke	③	Sa	↲	Tu		Th	|	Su		Tu		Fr		Fq	↰	Tu	
16	Th	|	Su		Ke		Fr	|	Fq	↰	Ke		Sa		Tu	AD	We	
17	Fr	|	Fq	↰	Th		Sa	↲	Tu	BA	Th		Su		Ke	③	Th	
18	Sa	↲	Tu	AD	Fr		Su		Ke	⑩	Fr		Fq	↰	Th	|	Fr	
19	Su		Ke	③	Sa		Fq	↰	Th	|	Sa		Tu	AD	Fr	|	Sa	
20	Fq		Th	|	Su		Tu	BA	Fr	|	Su		Ke	①	Sa	↲	Su	
21	Tu		Fr	|	Fq	↰	Ke	⑦	Sa	|	Fq		Th	|	Su		Fq	↰
22	Ke		Sa	↲	Tu	BA	Th	|	Su	|	Tu		Fr	|	Fq		Tu	⑤
23	Th		Su		Ke	⑤	Fr	|	Fq	|	Ke		Sa	↲	Tu		We	BA
24	Fr		Fq		Th	|	Sa	|	Tu	|	Th		Su		Ke		Th	|
25	Sa		Tu		Fr	|	Su	|	We	|	Fr		Fq		Th		Fr	|
26	Su		Ke		Sa	|	Fq	|	Th	|	Sa		Tu		Fr		Sa	↲
27	Fq		Th		Su	|	Tu	|	Fr	|	Su		We		Sa		Su	
28	Tu		Fr		Fq	|	Ke	|	Sa	↲	Fq		Th		Su		Fq	
29	Ke		Sa		Tu	|	Th	|	Su		Tu		Fr		Fq	↰	Tu	
30	Th		Su		Ke	|	Fr	|	Fq		We		Sa				We	
31	Fr		Fq				Sa	↲			Th		Su				Th	

←Car operation & Measuring technique →

←Maintenance Management & Subscriber Premises

②IMPLEMENTATION OF TRAINING(2)

Date	1988								
	APRIL	MAY	JUNE	JULY	AUGEST	SEPT	OCT	NOV	DEC
1	Fr	Su	Ke	Fr	▨ ↰	Th |	▨	Tu |	Th
2	▨	▨	Th	▨	Tu ①	Fr |	Su	Ke |	Fr
3	Su	Tu	Fr	Su	Ke AD	▨ ↲	▨ ↰	Th |	▨
4	▨ ↰	Ke	▨	▨	Th |	Su	Tu BA	Fr |	Su
5	Tu ⑪	Th	Su	Tu	Fr |	▨	Ke ④	▨ ↲	▨ ↰
6	Ke BA	Fr	▨ ↰	Ke	▨ |	Tu	Th |	Su	Tu ⑦
7	Th |	▨	Tu ⑰	Th	Su |	Ke	Fr |	▨	Ke BA
8	Fr |	Su	Ke BA	Fr	▨ |	Th	▨ |	Tu	Th |
9	▨ ↲	▨	Th |	▨	Tu |	Fr	Su |	Ke	Fr |
10	Su	Tu	Fr |	Su	Ke |	▨	▨ |	Th	▨ |
11	▨	Ke	▨ ↲	▨	Th |	Su	Tu |	Fr	Su |
12	Tu	Th	Su	Tu	Fr |	▨ ↰	Ke |	▨	▨ |
13	Ke	Fr	▨ ↰	Ke	▨ ↲	Tu ③	Th |	Su	Tu |
14	Th	▨	Tu ⑬	Th	Su	Ke AD	Fr |	▨ ↰	Ke |
15	Fr	Su	Ke BA	Fr	▨	Th |	▨ ↲	Tu ⑯	Th |
16	▨	▨	Th |	▨	Tu	Fr |	Su	Ke BA	Fr |
17	Su	Tu	Fr |	Su	Ke	▨ |	▨	Th |	▨ ↲
18	▨ ↰	Ke	▨ ↲	▨	Th	Su |	Tu	Fr |	Su
19	Tu ⑦	Th	Su	Tu	Fr	▨ |	Ke	▨ |	▨
20	Ke BA	Fr	▨ ↰	Ke	▨	Tu |	Th	Su |	Tu
21	Th |	▨	Tu ⑭	Th	Su	Ke |	Fr	▨ |	Ke
22	Fr |	Su	Ke BA	Fr	▨ ↰	Th |	▨	Tu |	Th
23	▨ ↲	▨	Th |	▨	Tu ②	Fr |	Su	Ke |	Fr
24	Su	Tu	Fr |	Su	Ke AD	▨ ↲	▨ ↰	Th |	▨
25	▨	Ke	▨ ↲	▨	Th |	Su	Tu ⑤	Fr |	Su
26	Tu	Th	Su	Tu	Fr |	▨	Ke BA	▨ ↲	▨
27	Ke	Fr	▨	Ke	▨ |	Tu	Th |	Su	Tu
28	Th	▨	Tu	Th	Su |	Ke	Fr |	▨	Ke
29	Fr	Su	Ke	Fr	▨ |	Th	▨ |	Tu	Th
30	▨	▨	Th	▨	Tu |	Fr	Su |	Ke	Fr
31		Tu		Su	Ke |		▨ |		▨

Maintenance Management & Subscriber Premises →

← Installation techniques & Maintenance activities

③IMPLEMENTATION OF TRAINING(3)

16 Dec. 1989

OPMC Project

Date	1989								
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep
1	Su	We	We	Sa	Ho	Th	Sa	Tu	Fr
2	Ho	Th	Th	Su	Tu	Fr	Su	We	Sa
3	Tu	Fr	Fr	Ho	We	Sa	Ho	Th	Su
4	We	Sa	Sa	Tu	Th	Su	Tu	Fr	Ho
5	Th	Su	Su	We	Fr	Ho	We	Sa	Tu
6	Fr	Ho	Ho	Th	Sa	Tu	Th	Su	We
7	Sa	Tu	Tu	Fr	Su	We	Fr	Ho	Th
8	Su	We	We	Sa	Ho	Tu	Sa	Tu	Fr
9	Ho	Th	Th	Su	Tu	Fr	Su	We	Sa
10	Tu ④	Fr	Fr	Ho	We	Sa	Ho	Th	Su
11	We BA	Sa	Sa	Tu	Th	Su	Tu	Fr	Ho
12	Th	Su	Su	We	Fr	Ho	We	Sa	Tu
13	Fr	Ho	Ho	Th	Sa	Tu	Th	Su	We
14	Sa	Tu	Tu	Fr	Su	We	Fr	Ho	Th
15	Su	We	We	Sa	Ho	Th	Sa	Tu Co	Fr
16	Ho	Th	Th	Su	Tu	Fr	Su	We ②	Sa
17	Tu	Fr	Fr	Ho	We	Sa	Ho	Th	Su
18	We	Sa	Sa	Tu	Th	Su	Tu	Fr	Ho
19	Th	Su	Su	We	Fr	Ho	We	Sa	Tu
20	Fr	Ho	Ho	Th	Sa	Tu	Th	Su	We
21	Sa	Tu	Tu	Fr	Su	We	Fr	Ho	Th
22	Su	We	We	Sa	Ho	Th	Sa	Tu	Fr
23	Ho	Th	Th	Su	Tu	Fr	Su	We	Sa
24	Tu	Fr	Fr	Ho	We	Sa	Ho	Th	Su
25	We	Sa	Sa	Tu	Th	Su	Tu Co	Fr	Ho
26	Th	Su	Su	We	Fr	Ho	We ①	Sa	Tu
27	Fr	Ho	Ho	Th	Sa	Tu	Th	Su	We
28	Sa	Tu	Tu	Fr	Su	We	Fr	Ho	Th
29	Su		We	Sa	Ho	Th	Sa	Tu	Fr
30	Ho		Th	Su	Tu	Fr	Su	We	Sa
31	Tu		Fr		We		Ho	Th	

Basic course

Comprehensive

③TRAINING SCHEDULE (1989.10 ～1990 3)(1)

16 Oct. 1989

OPEC Project

Date	1989			1990		
	Oct	Nov	Dec	Jan	Feb	Mar
1	Su	We	Fr	Mo	Th	Th
2	Mo	Th	Sa	Tu	Fr	Fr
3	Tu	Fr	Su	We	Sa	Sa
4	We	Sa	Mo	Th	Su	Su
5	Th	Su	Tu	Fr	Mo	Mo
6	Fr	Mo	We	Sa	Tu	Tu
7	Sa	Tu	Th	Su	We	We
8	Su	We	Fr	Mo	Th	Th
9	Mo	Th	Sa	Tu	Fr	Fr
10	Tu	Fr	Su	We	Sa	Sa
11	We	Sa	Mo	Th	Su	Su
12	Th	Su	Tu	Fr	Mo	Mo
13	Fr	Mo	We	Sa	Tu	Tu
14	Sa	Tu In	Th	Su	We	We
15	Su	We①	Fr	Mo	Th	Th
16	Mo	Th	Sa	Tu	Fr	Fr
17	Tu	Fr	Su	We	Sa	Sa
18	We	Sa	Mo	Th	Su	Su
19	Th	Su	Tu	Fr	Mo	Mo
20	Fr	Mo	We	Sa	Tu	Tu
21	Sa	Tu	Th	Su	We	We
22	Su	We	Fr	Mo	Th	Th
23	Mo	Th	Sa	Tu	Fr	Fr
24	Tu	Fr	Su	We	Sa	Sa
25	We	Sa	Mo	Th	Su	Su
26	Th	Su	Tu	Fr	Mo	Mo
27	Fr	Mo	We	Sa	Tu	Tu
28	Sa	Tu In	Th	Su	We	We
29	Su	We ②	Fr	Mo		Th
30	Mo	Th	Sa	Tu		Fr
31	Tu		Su	We		Sa

Instructor

③CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (1)

PERIOD	COURSE	NUMBER OF TRANIEE	RESULTS					TRAINING ITEMS
			A	B	C	D	E	
29-06 → 03-07 03-08 → 08-08 1987	Advanced ①	16			10	6		◆Digging & Pole erection v. ◆Bucket equipped v. ◆Bucket equipped light v. ◆Wheatstone Bridge Measuring Method ◆Pulse Echo Tester M.M. ◆Cable Pair Checker U.M ◆Insulation Portable Tester M.M. ◆Gas Detector & Burried Cable Locator M.M.
06-07 → 11-07 10-08 → 15-08 1987	Advanced ②	17			13	4		The same as above
13-07 → 18-07 18-08 → 22-08 1987	Advanced ③	18			7	11		The same as above
31-08 → 12-09 1987	Advanced ④	20	2	7	10	1		The same as above
21-09 → 03-10 1987	Basic ⑤	20		3	15	2		The same as above
05-10 → 17-10 1987	Basic ⑥	20		8	9	3		The same as above
19-10 → 31-10 1987	Basic ⑦	20			20			The same as above

Note A : 90≦ X EXCELLENT
B : 80≦ X <90 VERY GOOD
C : 65≦ X <80 GOOD
D : 60≦ X <65 FAIR
E : X <60 NOT ENOUGH

③CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (2)

PERIOD	COURSE	NUMBER OF TRANIEE	RESULTS					TRAINING ITEMS
			A	B	C	D	E	
02-11 → 14-11 1987	Basic ⑧	22			22			◆Digging & Pole erection v. ◆Bucket equipped v. ◆Bucket equipped light v. ◆Wheatstone Bridge Measuring Method ◆Pulse Echo Tester M.M. ◆Cable Pair Checker U.M ◆Insulation Portable Tester M.M. ◆Gas Detector & Burried Cable Locator M.M.
16-11 → 28-11 1987	Basic ⑨	24			24			The same as above
18-01 → 23-01 1988	Advanced ①	20			10	10		◆General Discription of Maintenance Control ◆Fault Repairing & Control ◆Material Handling ◆Deteriorated Plant Administration ◆Control Of Maintenance Tools & Instruments ◆Car Operation & Control ◆Cable Pair Number sheet Up-dating & Control ◆Preventive Measures from Other Work ◆Outline of Subscriber Premises ◆Installation Technique of Inside & Outside Wire ◆Installation Technique of Telephone set ◆Basic Telephone set
01-02 → 06-02 1988	Advanced ②	21			16	5		The same as above
15-02 → 20-02 1988	Advanced ③	21			8	13		The same as above
29-02 → 05-03 1988	Advanced ④	21			7	14		The same as above

Note A : 90≤ X EXCELLENT
B : 80≤ X <90 VERY GOOD
C : 65≤ X <80 GOOD
D : 60≤ X <65 FAIR
E : X <60 NOT ENOUGH

⑨CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (3)

PERIOD	COURSE	NUMBER OF TRAINEE	RESULTS					TRAINING ITEMS
			A	B	C	D	E	
21 03 — 26 03 1988	Basic ⑮	21			6	15		◆General Discription of Maintenance Control ◆Fault Repairing & Control ◆Material Handling ◆Deteriorated Plant Administration ◆Control Of Maintenance Tools & Instruments ◆Car Operation & Control ◆Cable Pair Number sheet Up-dating & Control ◆Preventive Measures from Other Work ◆Outline of Subscriber Premises ◆Installation Technique of Inside & Outside Wire ◆Installation Technique of Telephone set ◆Basic Telecommunication
04 04 — 09 04 1988	Basic ⑯	21			7	14		The same as above
18 04 — 23 04 1988	Basic ⑰	20			9	11		The same as above
06 06 — 11 06 1988	Basic ⑱	21			6	15		The same as above
13 06 — 18 06 1988	Basic ⑲	20			7	12	1	The same as above
20 06 — 25 06 1988	Basic ⑳	19			2	17		The same as above

Note A : 90≤ X EXCELLENT
B : 80≤ X <90 VERY GOOD
C : 65≤ X <80 GOOD
D : 60≤ X <65 FAIR
E : X <60 NOT ENOUGH

⑥CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (4)

PERIOD	COURSE	NUMBER OF TRAINEE	RESELTS					TRAINING ITEMS
			A	B	C	D	E	
[illegible] — 17 08 1988	Advanced [illegible]	20			11	9		◆Outline of Line Plant ◆Plant Record Control ◆Outline of Underground Plant ◆Local cable Pole and Guy ◆Cross connecting and terminal box ◆Local cable jointing ◆Overhead Plant Maintenance ◆Underground Plant Maintenace ◆Premises Plant Maintenance ◆Final Acceptance Test ◆Impedance Bridge M.M. ◆Cross Talk Measuring Method ◆Grounding Resistance M.M.
22 08 — 07 09 1988	Advanced (2)	20			6	14		The same as above
12 09 — 27 09 1988	Advanced (3)	19			6	13		The same as above
03 10 — 14 10 1988	Basic (4)	20			9	11		The same as above
24 10 — 04 11 1988	Basic (5)	20			7	13		The same as above
14 11 — 25 11 1988	Basic (6)	19			8	11		The same as above

Note: A : 90< X EXCELLENT
B : 80< X <90 VERY GOOD
C : 65< X <80 GOOD
D : 60< X <65 FAIR
E : X <60 NOT ENOUGH

CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (5)

PERIOD	COURSE	NUMBER OF TRAINEE	RESULTS A	B	C	D	E	TRAINING ITEMS
05 12 16 12 1988	Basic ⑦	18			11	7		◆Outline of Line Plant ◆Plant Record Control ◆Outline of Underground Plant ◆Local cable Pole and Guy ◆Cross connecting and terminal box ◆Local cable jointing ◆Overhead Plant Maintenance ◆Underground Plant Maintenace ◆Premises Plant Maintenance ◆Final Acceptance Test ◆Impedance Bridge M.M. ◆Cross Talk Measuring Method ◆Grounding Resistance M.M.
05 01 ~ 20 01 1989	Basic ⑧	20			5	14	1	The same as above

			A	B	C	D	E	
Total	Advanced 11 Basic 16	538	2	18	271	245	2	

Note A : 90≦ X EXCELLENT
B : 80≦ X <90 VERY GOOD
C : 65≦ X <80 GOOD
D : 60≦ X <65 FAIR
E : X <60 NOT ENOUGH

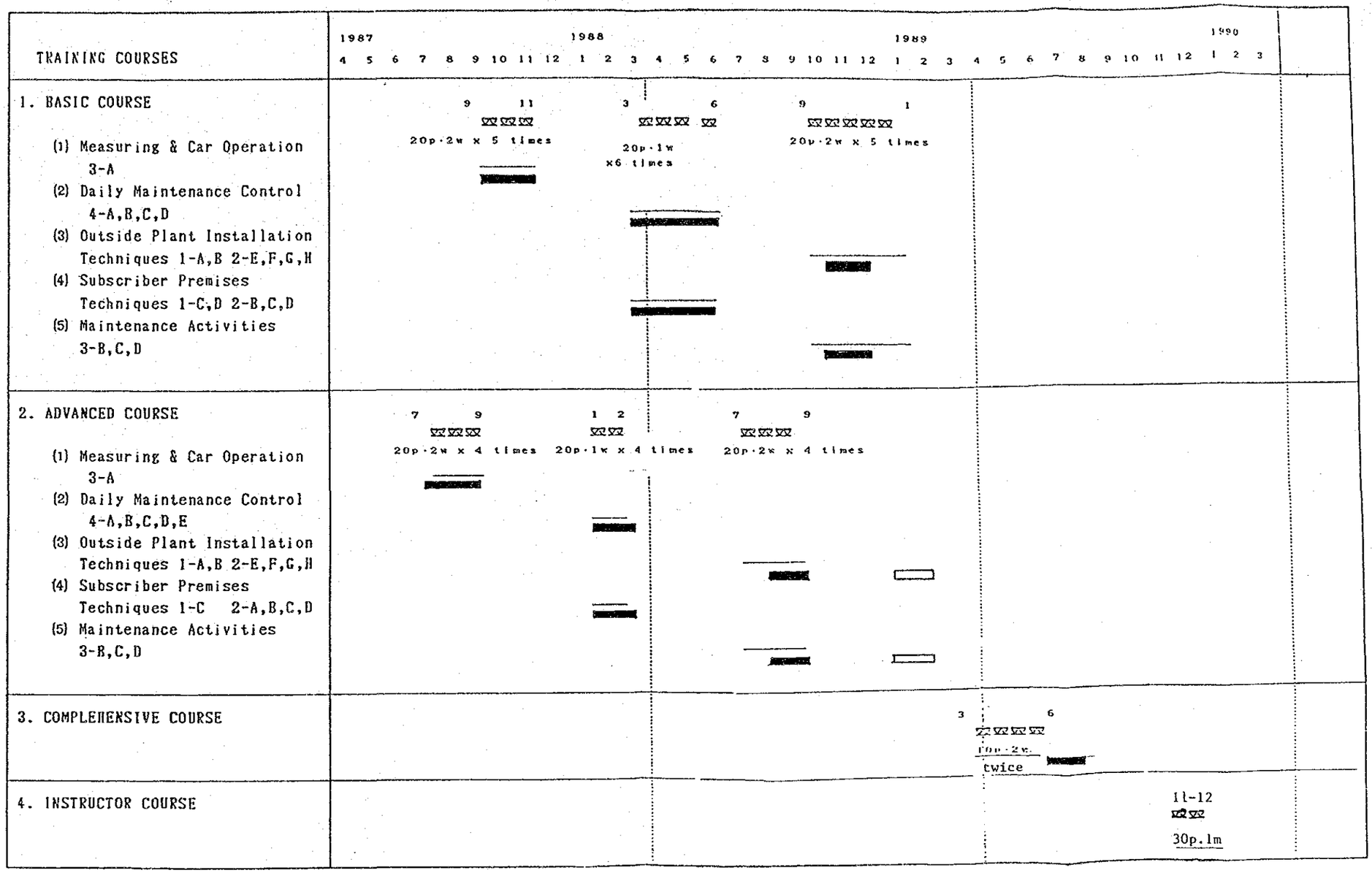
(CONTENTS & RESULTS OF IMPLEMENTED TRAINING COURSES (6)

PERIOD	COURSE	NUMBER OF TRAINEE	RESULTS A	B	C	D	E	TRAINING ITEMS
21 07 · 04 08 (68)	Compre hensive ①	22			14	8		◆Outline of cable network ◆Planning of cable network maintenance ◆Operation of cable network maintenance ◆Supervision of cable network maintenance ◆Outline of OPMC ◆Leadership ◆TOC & QCC ◆Practice ・OPMC specific cars ・OPMC measurement tools ・Working tools
21 08 · 28 08 (69)	Compre hensive ②	22			19	3		The same as above
Total		44			33	11		

Note A : 90 ≤ X EXCELLENT
B : 80 ≤ X < 90 VERY GOOD
C : 65 ≤ X < 80 GOOD
D : 60 ≤ X < 65 FAIR
F : X < 60 NOT ENOUGH

⑤ WHOLE SCEDULE OF THE TRAINING COURSES

Plan ——
Execution ▬▬ October, 1989 OPMC Project



⑥ New Modified MU4 form

FAULT DISPATCH SHEET

MU-4

EXCHANG OFFICE: _____

DATE: ___/___/___

A. NO. TEL. TLS	B. NAME AND ADRESS	D. KINDS OF SUBSCRIBERS
	REPORTER:	1. POS 4. PUBLIC TELEPHONE 2. SINGLE LINE 3. PARTY LINE 5. OTHERS (LDS/TLS/LC)
	SUBSCRIBER:	

C. TELECOMMUNICATION SERVICE USER REPORT	E. FAULT COMPLAINT
1. DIS-CONNECTION 2. INTERRUPTION TONE 3. NOISY 4. TELEPHONE SET 5. CALL OUT ONLY 6. RECEIVE ONLY 7. BAD BELL 8. CROSS TALK 9. OTHERS	ACTIVITY / DATE / TIME / SIGNITURE REPORT RECEIVING

F. MDF - TEST DESK MEASUREMENT RESULT			G. MEASUREMENT RESULT & CONCLUSION	H. TEST DESK (MDF)			
	BEFORE REPAIR	AFTER REPAIR		ACTIVITY	DATE	TIME	SIGNITURE
1. DIAL PULSE			1. INSULATION	RECEIVING FROM TET			
2. L1-E	____ M. OHM	____ M. OHM	2. CONTACT				
3. L2-E	____ M. OHM	____ M. OHM	3. GROUNDED	MU-4 IS DELIVERED TO CENTRAL/DL/TRA			
4. L1-L2	____ M. OHM	____ M. OHM	4. EXTERNAL VOLTAGE				
5. EXTERNAL VOLTAGE L1	____ VOLT	____ VOLT	5. ESCHANGE				
6. EXTERNAL VOLTAGE L2	____ VOLT	____ VOLT	6. TELEPHONE SET CHECKING				
7. CAPACITY	____ uF	____ uF					

I. CABLE DATA									J. FAULT REPAIR CONTROL			
PRIMARY CABLE		TRUNK CABLE		CABINET	SECONDARY CABLE		D P		ACTIVITY	DATE	TIME	SIGNITURE
NAME	NO. PAIR	NAME	NO. PAIR		NAME	NO. PAIR	NAME	NO. PAIR	RECEIVING MU-4			

K. CABLE DATA MUTATION									L. FAULT AND CABLE DATA		
									NAME OF RECORDER	DATE	SIGNATURE

M. FAULT LOCATION				N. SECTOR			
1. PRIMARY CABLE	2. CABEL SEAMDER	3. OFFICE INSTALLATION		ACTIVITY	DATE	TIME	SIGNITURE
a. CABLE PE/PAPER b. CONNECTION OF CABLES c. DUCT d. DIRECT BURIED	a. CABLE PE/PAPER b. CONNECTION OF CABLES c. OVERHEAD d. UNDERGROUND e. DIRECT BURIED	a. JUMPER WIRE b. FUSE c. CABLE BETWEEN MDF-CENTRAL		RECEIVING MU-4			
				TOR			
				RETURN TO FAULT			
				REPAIR SUPERVISOR			

4. DROP WIRE	5. SUBSCRIBER PREMISES	6. CABINET	7. D P	O. FAULT REPAIR CONTROL			
a. JOINT POINT (Q. H.) b. EXCEPT JOINT POINT (Q. H.) c. JOINT POINT (L. C.) d. EXCEPT JOINT POINT (L. C.)	a. TERMINAL BLOCK b. HOUSE WIRING c. ROSET d. TELEPHONE CORD e. TELEPHONE SET f. FILTER g. BATTERY	a. TERMINAL b. JUMPER WIRE c. CABLE PAIR	a. TERMINAL b. CABLE PAIR	ACTIVITY	DATE	TIME	SIGNITURE
				RECEIVING MU-4			
				SECTOR			
				RETURN TO MDF			

P. FAULT SITUATION	Q. CAUSE OF FAULT	R. DURATION		
1. CUT 2. CORROSION 3. CONTACT (CABLE PAIR) 4. SCREW LOOSING 5. WORK (TELEPHONE SET) 6. FUNCTION DETERIORATION	1. VEHICLE 2. INSECT 3. NATURAL DETERIORATION 4. CARELESSNESS 5. OTHER CONSTRUCTION 6. CONTACT WITH OTHERS 7. BAD REPAIRING 8. BAD INSTALLATION METHOD 9. KITES	D A Y	T I M E	SIGNITURE

S. REPAIRING METHOD	T. N O T E
1. RE-CONNECTION 2. REVISION/ADJUSTMENT 3. CHANGE OF TELEPHONE SET 4. CHANGE OF DROP WIRE ____ M 5. CHANGE OF HOUSE WIRING ____ M 6. CHANGE OF OTHER EQUIPMENT 7. CHANGE OF CABLE PAIR	

(7) FAULT ANALYSIS DATA

(Bandung telephone office)

(From January to September 1989)

(1) Kinds of faults (Outside plant only)

(2) Fault location - 1

(3) Fault location - 2

(4) Fault situation

(5) Fault causes

(6) Repairing method

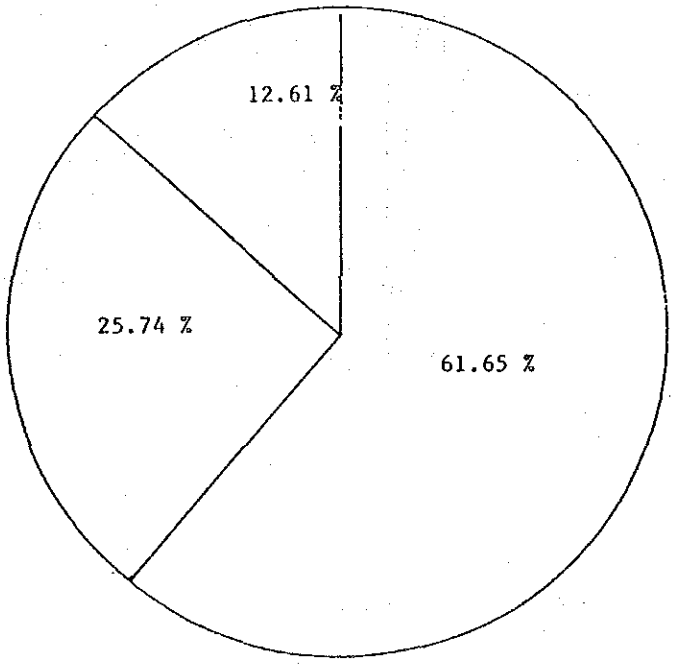
(7) Change of cable pair

(8) Cable faults

KIND OF FAULTS
(outside only)

exchange Bandung
month January 89
September 8

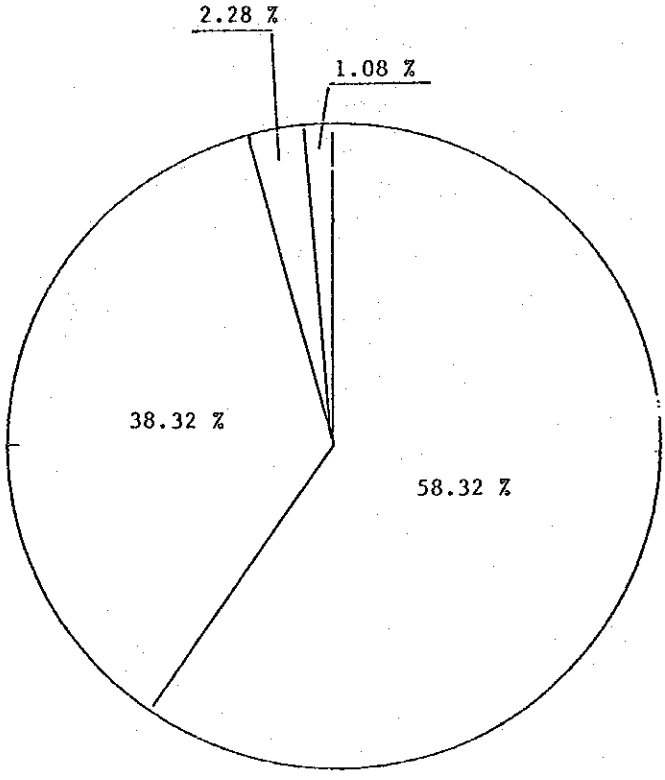
	ordinary	change of cable pair	T.O.K	cable fault	total
number of faults	14108	2886	5891	-	22885
% —	61.65 %	12.61 %	25.74 %		100 %



exchange Bandung
month January 89
September 8

LOCATION-1

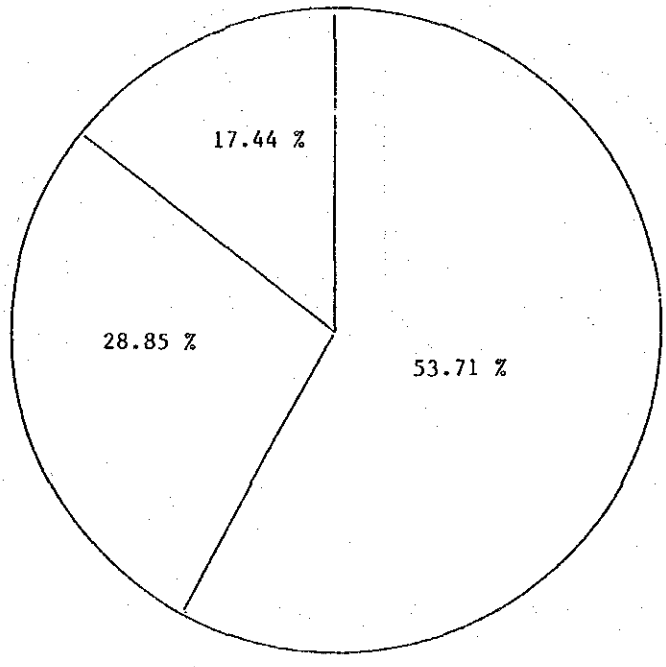
	cabinet	D.P.	drop wire	house installation	total
number of faults	149	323	8229	5407	14108
%	1.08 %	2.28 %	58.32 %	38.32 %	100 %



exchange Bandung
month Janusry 89
September 89

LOCATION-2
(cabinet)

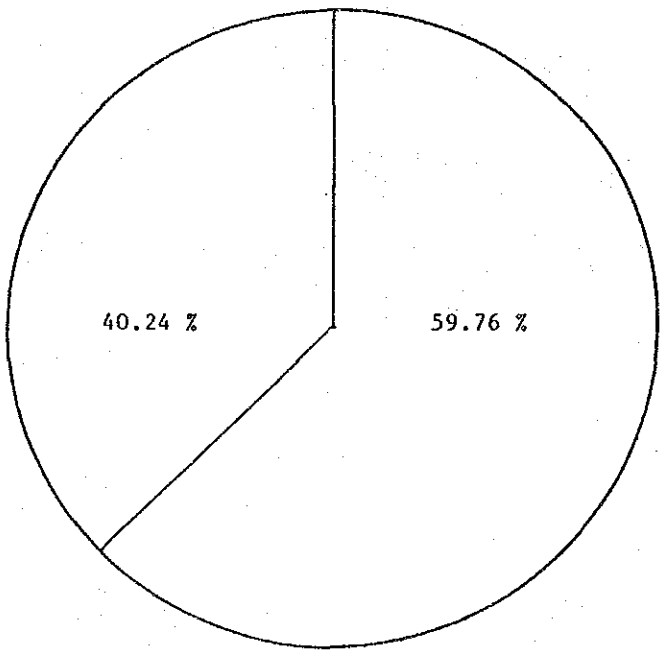
	terminal	jumpering	cable pair		total
number of faults	80	26	43		149
%	53.71	17.44 %	28.85		100 %



exchange Bandung
month January 89
September 89

LOCATION-2
(D.P.)

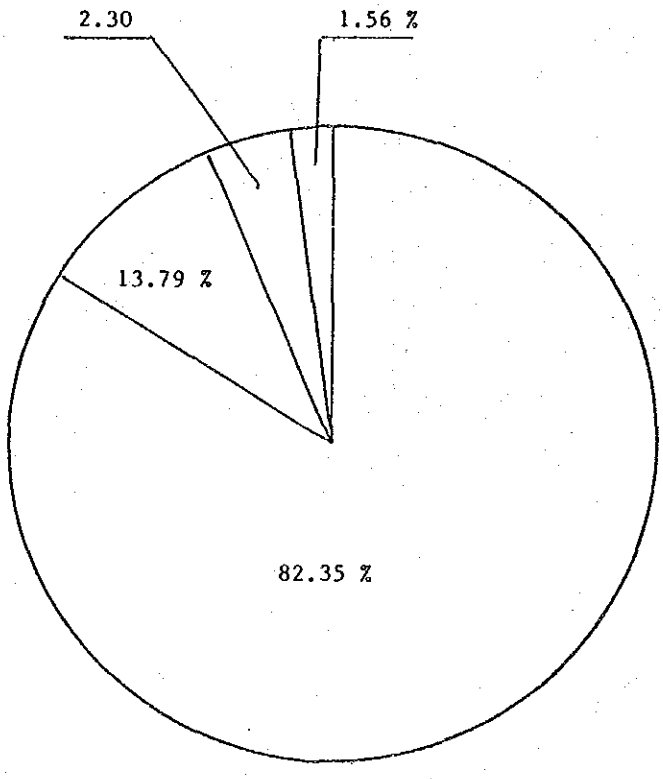
	terminal	cable pair			total
number of faults	193	130			323
%	59.76	40.24			100 %



exchange Bandung
month January 89
September 89

LOCATION-2
(dropwire)

	jointpoint (overhead)	overhead(except joint)	jointpoint(underground)	underground(exept joint)	total
number of faults	1135	6777	190	127	8229
%	13.79	82.35	2.30	1.56	100 %

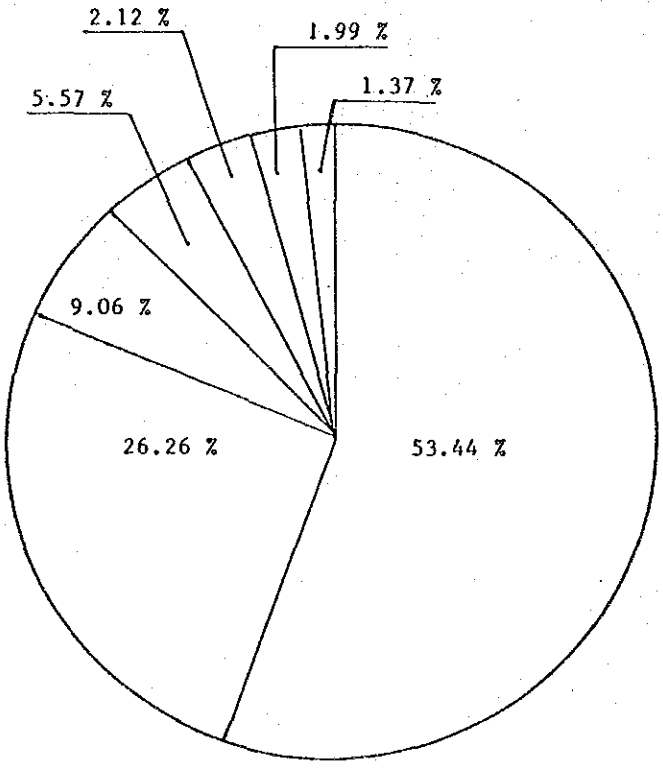


exchange Bandung
month January 89
September 89

LOCATION-2
(house installation)

	terminal block	house wire(house cable)	rosette	telephone cord	telephone set
number of faults	115	2890	490	108	1431
%	2.12	53.44	9.06	1.99	26.26

	filter	battery			total
number of faults	72	301			5407
%	1.37	5.57			100 %

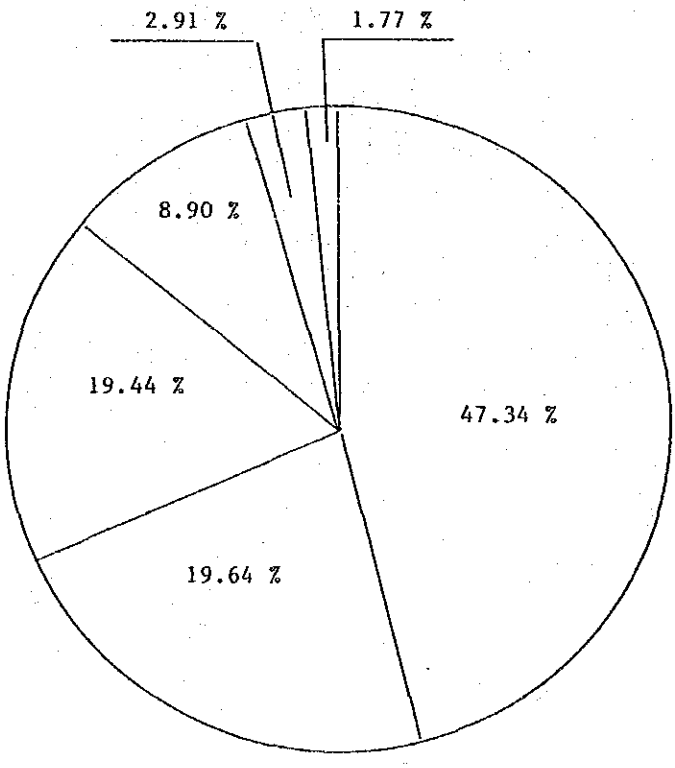


SITUATION

exchange Bandung
month January 89-
September 89

	cut	corrosion	contact	screw loosing	break(telephone set,)
number of faults	6680	2743	2771	251	1257
%	47.34 %	19.44 %	19.64 %	1.77 %	8.90 %

	function deterioration				total
number of faults	406				14108
%	2.91 %				100 %

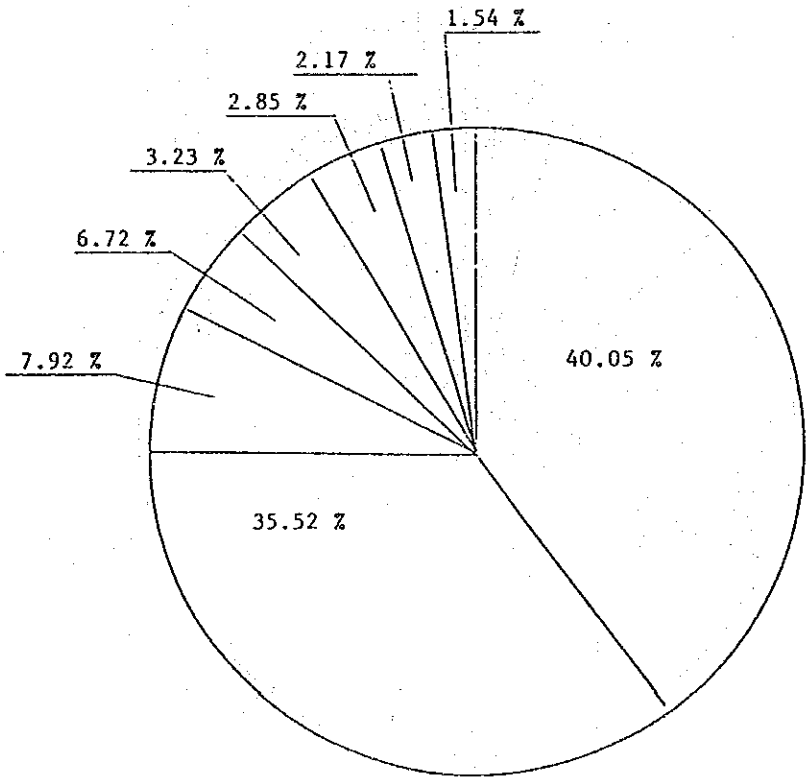


exchange Bandung
month January 89
September 89

CAUSE

	vihicle	insect	natural deterioration	human carelessness	other construction
number of faults	211	949	5651	5012	1118
%	1.54 %	6.72 %	40.05 %	35.52 %	7.92 %

	contact with others	incorrect method	incorrect instalation		total
numoer of faults	403	457	307		14108
%	2.85 %	3.23 %	2.17 %		100 %

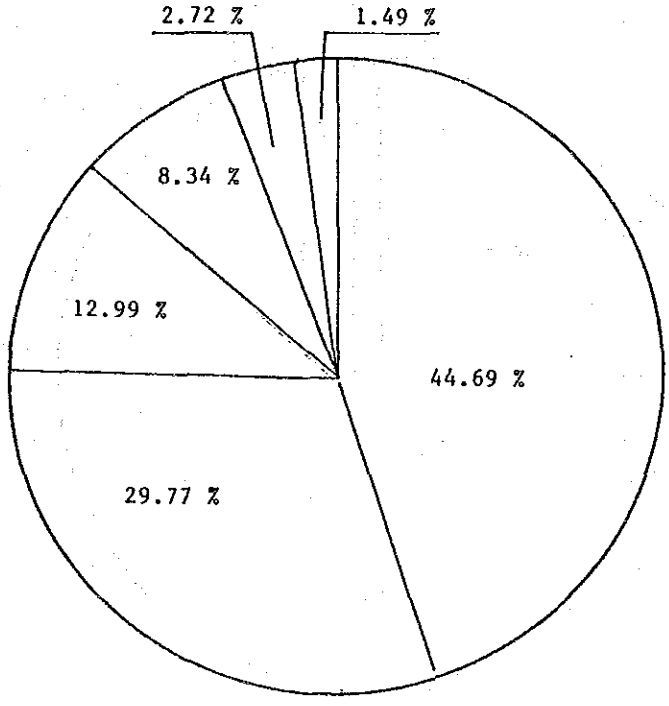


exchange Bandung
month January 89
September '89

REPAIR METHOD

	reconnect	adjustment	change of telephoneset	change of dropwire	change of house wire
number of faults	4200	6305	384	1834	207
%	29.77 %	44.69 %	2.72 %	12.99 %	1.49 %

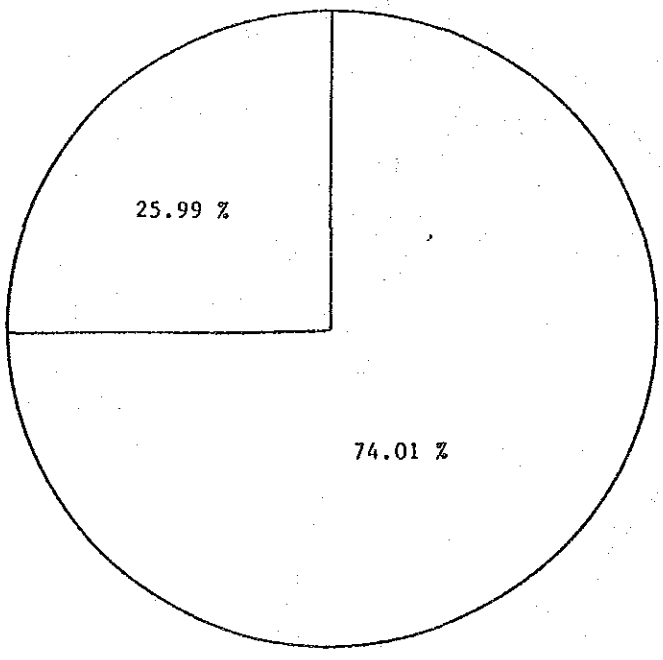
	change of others				total
number of faults	1178				14,108
%	8.34 %				100 %



exchange Bandung
month January 89
September 89

CHANGE OF CABLE PAIR

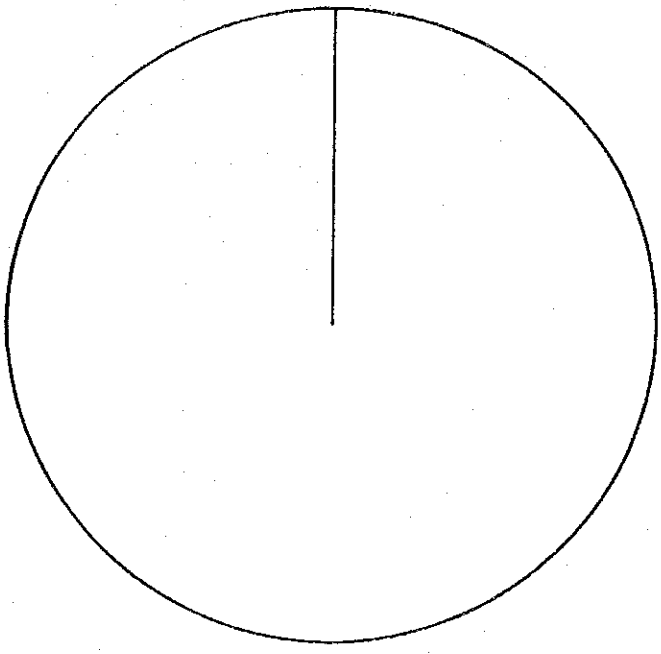
	primary cable	secondary cable	direct cable		total
number of faults	750	2136			2886
%	25.99 %	74.01 %			



exchange
month

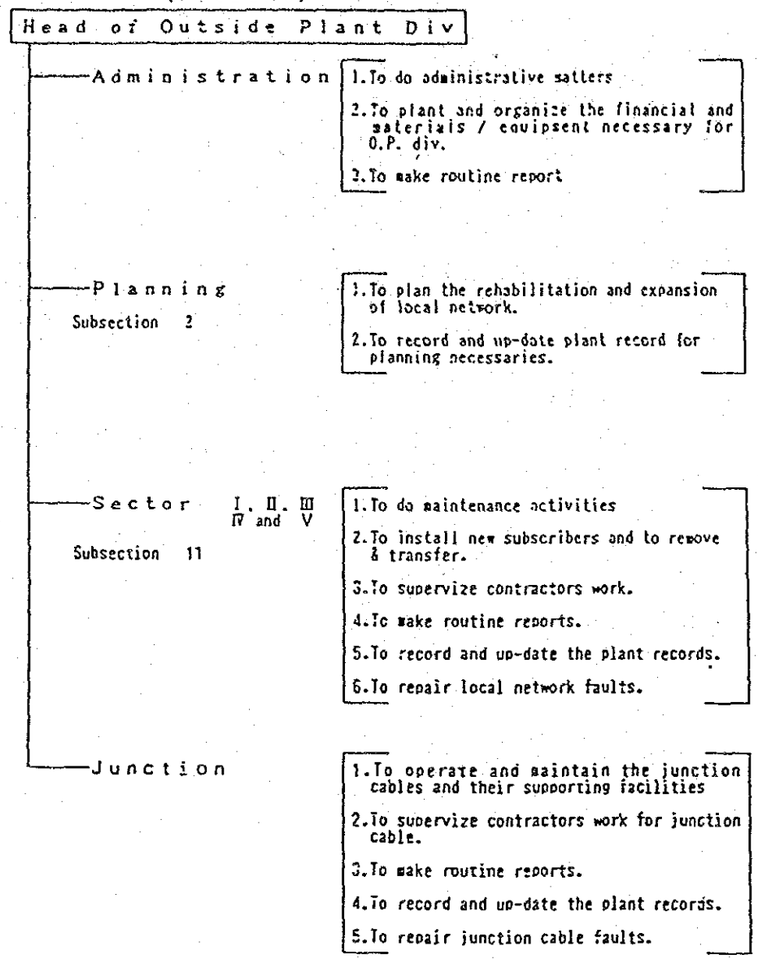
CABLE FAULTS

	primary cable	secondary cable	direct cable		total
number of faults					
%					



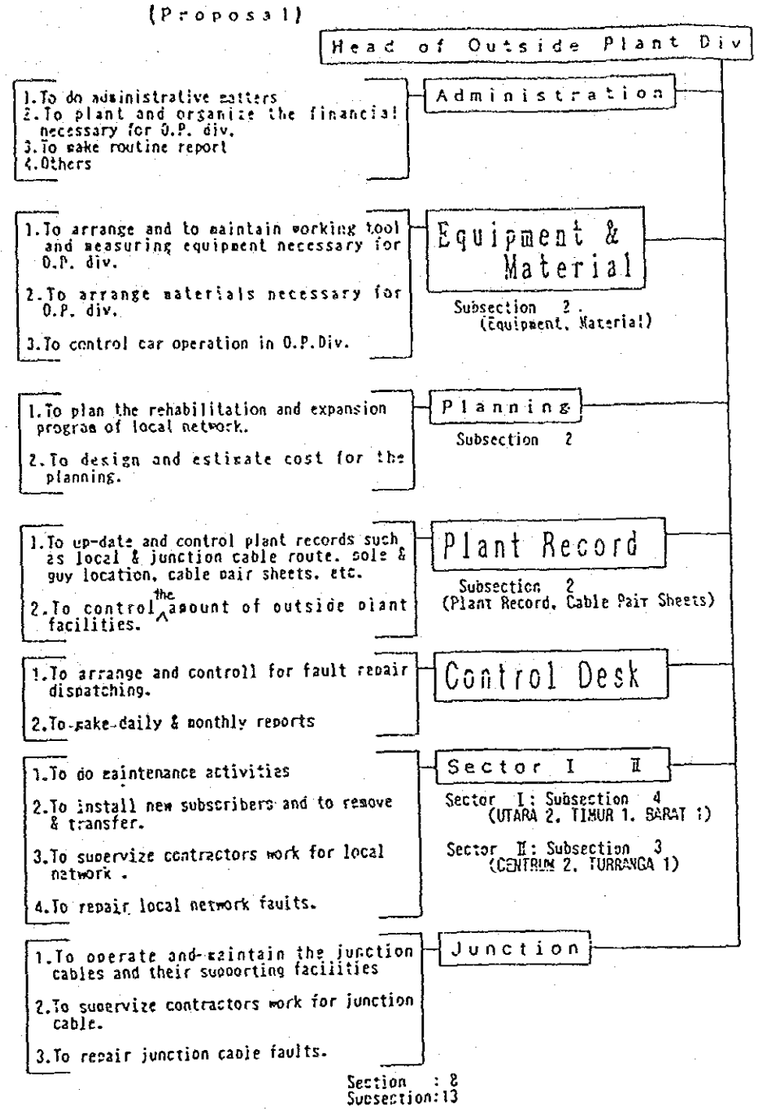
⑭ NEW PROPOSED ORGANIZATION OF OUTSIDE PLANT DIVISION, BANDUNG OFFICE

(Present)



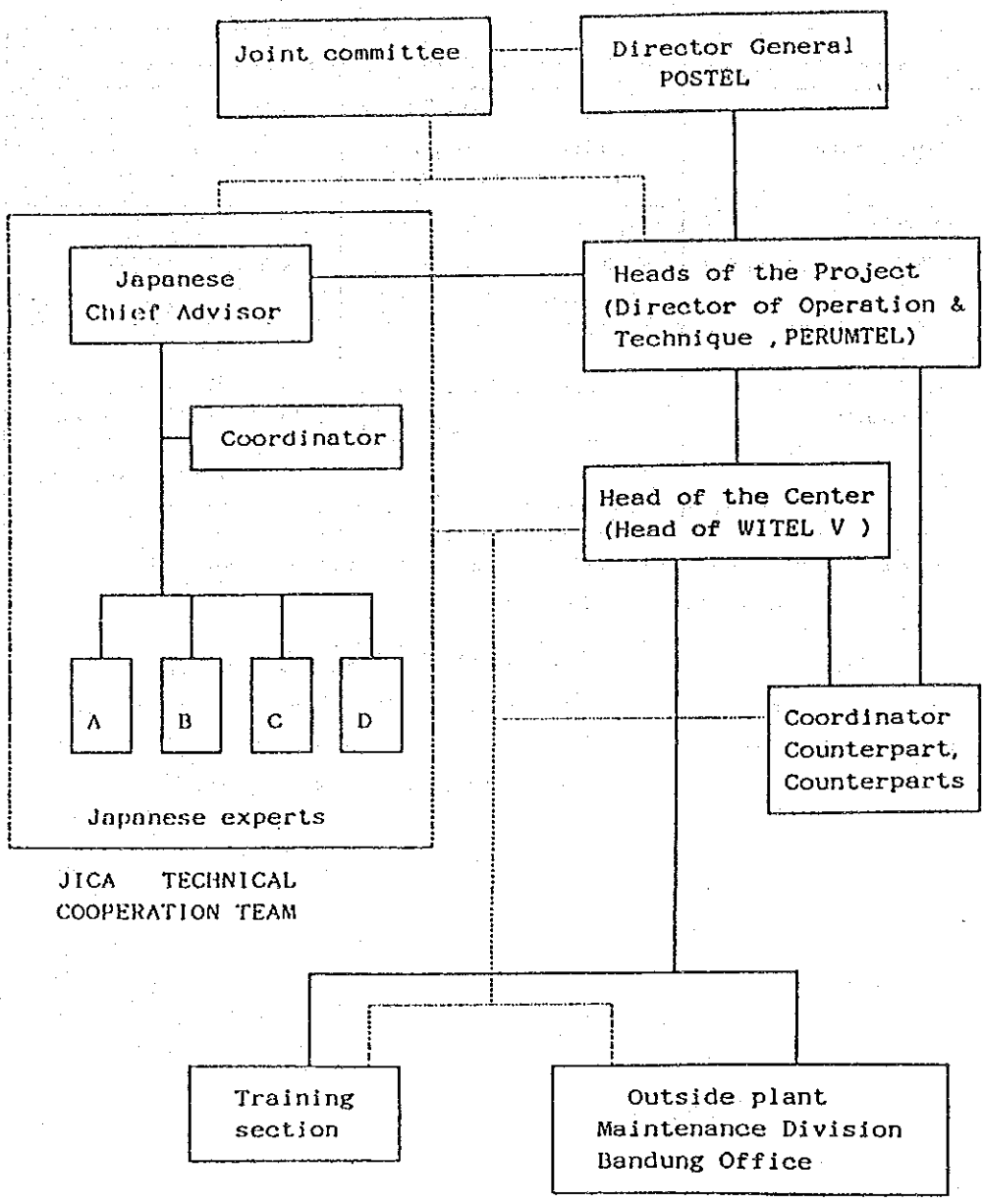
Section : 8
Subsection: 13

(Proposal)



Section : 8
Subsection: 13

⑨ ORGANIZATION OF THE OPMC PROJECT



⑩ PLANNED TARGET OF THE PROJECT

Item	Current condition	Future target
1. Fault rate	8 faults / (month· 100 telephone sets)	5 NTT 2~3
2. Working efficiency	1.17 faults repaired / man·days	3 NTT 6
3. Repairing time of faults	Average 6 days	NTT 2~3H. 70 % -within 1 day 20 % -within 3 days 10 % -within 1 week more than a week 0 %

~~* These targets are for all telephone offices in Indonesia~~

本目標は Bandung管内のみ
'88 J/C で指摘された件なり.

(11) OFFICIAL REPORT OF HANDING OVER

On this date, Friday, 13th October 1989 taking place at Bandung Telephone Office, signing as follows :

1. Mr. SHINICHI SHOJI as Chief Advisor of OPMC Project for and on behalf of JICA Indonesia hereinafter referred to as FIRST SIDE.

2. Mr.Ir.EFFENDI SUTANTO as Head Project Pilot of OPMC Bandung hereinafter referred to as SECOND SIDE.

conducting handing over which the terms are mentioned below.

ARTICLE 1

FIRST SIDE hands over to SECOND SIDE the auxiliary facilities of inventory equipment of OPMC Grant Aid Project as mentioned in the Attachment 1, hereinafter to be utilized in the operational assignment of OPMC Bandung Telephone Office.

ARTICLE 2

SECOND SIDE agrees the above mentioned of Article 1 and utilization will be conducted in the operational assignment of OPMC Bandung Telephone Office.

ARTICLE 3

The signing of the attached inventory list is part of this Official Report.

ARTICLE 4

In the case of any mistakes in this Official Report, it can be re-reviewed.

Bandung, 13th October 1989

SECOND SIDE

Ir. EFFENDI SUTANTO
NIK : 460757

FIRST SIDE

SHINICHI SHOJI
Chief Advisor


JICA