Table 33. PENGETESAN TRUNK - REPEATER (AUe)

DT.2. Hal : 033.

TMK-9 SYSTEM :	1	2	3	4	5	6

HARI / TGL. :

Lembar ke :

KANTOR :

JAM :.....s/d.....

ITEM \ AUe.																									KETERANGAN
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	Penangkapan AUe , ⊗AT																									
2	Fungsi Out - Going																									
3	Alarm Trunk - Line																									
5	Fungsi Incoming																									
6	Service Signal - OCC																									
	Service Signal - NA																									
	Service Signal - ABS																									
	Service Signal - INF																									
	Service Signal - HB																									
	Service Signal - HC																									
	Service Signal - BER																									

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

Table 34.

- P E N G E T E S A N -

METERING PULSE SELECTOR (ZIC)

TMK-9 SYSTEM : 1 2 3 4 5 6

KANTOR :

Lembar ke : 1 2 3 4

HARI / TGL. :

JAM :.....s/d.....

ZIC / ZONE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	KETERANGAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
I																										
II																										
III																										
IV																										
Putar 0																										

NOTE: Isilah kolom 2 s/d 25
dengan waktu-zone.

DIKETAHUI :			
TGL.	N A M A	JABATAN	PARAF

CATATAN :

	PETUGAS	PARAF
1		
2		

Table 35. PENGETESAN LINK NETWORK (EK - ZK - MKA).

-θ SYSTEM :	1	2	3	4	5	6

NTOR :

HARI / TGL. :

JAM :.....s/d.....

NOMOR - URUT.	LINK-NETWORK YANG TERGANGGU.						KETERANGAN.
	Group TA ke....	TA Nomor	EK....	ZK...	MKA ke...	AUe ke...	
1	2	3	4	5	6	7	8

DIKETAHUI :			
TGL.	NAMA	JABATAN	PARAF

CATATAN :

PETUGAS		PARAF
1		
2		

Table 36. PENGETESAN LINK NETWORK (ZK - ZK - MKO)

TMK-9 SYSTEM : 1 2 3 4 5 6

KANTOR :

HARI / TGL. :

JAM :.....s/d.....

NO R - URUT	LINK-NETWORK YANG TERGANGGU.								MKO ke...	OUe ke...	KETERANGAN
	PEMANGGIL				YANG DIPANGGIL						
	Group TA ke....	TA Nomor	EK...	ZK...	Group TA ke...	TA Nomor	EK...	ZK...			
1	2	3	4	5	6	7	8	9	10	11	12

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

DT.6. Hal : 077.

Table 37.

– P E N G E T E S A N –

STORAGE LINK NETWORK WSP-KA

TWK-9 SYSTEM :	1	2	3	4	5	6

KANTOR :

Lembar ke : | 1 | 2 |

HARI / TGL. :

JAM :............s/d.............

WSP-KA / AUe / WSP.																																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1																																										
2																																										
3																																										
4																																										
5																																										
6																																										
7																																										
8																																										
9																																										
10																																										

NOTE : Beri tanda,
V = keadaan normal
X = keadaan tidak normal .

D I K E T A H U I :			
TGL.	N A M A	JABATAN	PARAF

CATATAN :

P E T U G A S		PARAF
1		
2		

Table 38.

- P E N G E S A H A N -

TWK-9 SYSTEM : 1 2 3 4 5 6

KANTOR :

- WSP - KO -

HARI / TGL. :

JAM :.....s/d.....

WSP-KO / OUe / WSP	1			2			3			4			5			6			KETERANGAN
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

NOTE : Beri tanda,
V = keadaan normal
X = keadaan tidak normal .

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

Table 39.

P E N G E T E S A N - Z O N I N G

T/K-9 SYSTEM :	1	2	3	4	5	6

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

Tabel.A.

Dari Sentral \ Ke Sentral	Sm.	Yk.	Pg.	Bd.	Ptk.	Sb.Sol	Sb,Ut	Dpr.	Bpp.	Smr.	Bjm.	JakII	Jak.I	Gbr.	Gbr.	Gbr.	Kbb.	Jtng.	Cph.	Mdn.	Bna.	Pd.	Pbr.	Tpi.	Up.	Ab.	Mo.	Pal.	Jap.	Sor.	KETERANGAN
	22	25	27	28	29	31	33	35	37	38	39	41	42	44	45	46	47	48	49	51	54	55	56	57	71	73	74	75	76	77	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Tabel.B.

Dari Sentral \ Ke No.	12	20	21	23	24	26	29	30	32	34	36	40	43	50	52	53	58	59	60	70	72	78	79	80	KETERANGAN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

NOTE : 1.Untuk Tabel A,isi kolom dengan waktu zone .
2.Untuk Tabel B,isi kolom dengan "na" / "nc" .

D I K E T A H U I :				CATATAN :	P E T U G A S		PARAF
TGL.	N A M A	JABATAN	PARAF		1		
					2		

Table 40. PENGETESAN PEMBANDING KELAS

PT.10. Hal : 095.

TJK-9 SYSTEM :	1	2	3	4	5	6

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

ITEM \ NOMOR URUT.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	KETERANGAN
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
C.O.S.	Pemanggil																										
	Dipanggil																										
Program Perbandingan	O.K.																										
	N A																										
Hasil Perbandingan	Normal																										
	Tidak Normal									—																	

DIKETAHUI :			
TGL.	N A M A	JABATAN	PARAF

CATATAN :

	PETUGAS	PARAF
1		
2		

Table 41. PENGETESAN PRINTED SERVICE SIGNAL

TWK-9 SYSTEM :	1	2	3	4	5'	6

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

No.Urut	Program pada B-Bw (2A-1268).			PRINTED SERVICE SIGNAL	KEADAAN		DISTORSI (%)				KETERANGAN
	T1	T2	T3		Normal	Tidak Normal	Bias	St.- Sp.	Fort.	Chrc.	
1	2	3	4	5	6	7	8	9	10	11	12
1	X	-	-	O C C							
2	X	X	-	A B S							
3	X	X	X	I N F							
4	-	X	-	N A							
5	X	-	X	N P							
6	-	-	-	N C							
7	-	-	-	D E R							

NOTE : 1.Isi kolom 6 dan 7 dengan tanda, V=normal dan X=tidak normal
2.Isi kolom 8 s/d 11,dengan besarnya distorsi .

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

Table 42. PENGETESAN TA DAN RATE - METER DT.12. Hal : 120.

T/K-9 SYSTEM :	1	2	3	4	5	6

Lembar ke :

HARI / TGL.

KANTOR :

JAM :.....s/d.....

ITEM / NOMOR TA.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	KETERANGAN 27
1	FUNGSI OUT-GOING																										
2	RATE - METER.																										

NOTE : 1.Isi kolom "NOMOR TA" dengan nomor langganan

2.Beri tanda,
V = keadaan normal
X = keadaan tidak normal .

GROUP :

NOMOR LANGGANAN :

.....s/d.....

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

Table 43. PENGATURAN ARUS SALURAN DAN DISTORSI LANGGANAN

TMK-9 SYSTEM :	1	2	3	4	5	6

HARI / TGL. :

KANTOR :

Lembar ke :

JAM :.....s/d.....

Item / Nomor Langganan	Program TA Incoming	ARUS-DIAM (mA)				ARUS-KERJA (mA)				DISTORSI (%)				KETERANGAN
		Sebelum diatur		Sesudah diatur		Sebelum diatur		Sesudah diatur						
		kirim	terima	kirim	terima	kirim	terima	kirim	terima	Bias	St-Sp	Fort.	Chrc.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

DIKETAHUI :			
TGL.	NAMA	JABATAN	PARAF

CATATAN :

PETUGAS		PARAF
1		
2		

Table 44. PENGETESAN ALARM YANG TERGANGGU .

DT.14. Hal : 121.

T.E-9 SYSTEM : | 1 | 2 | 3 | 4 | 5 | 6 |

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

Nomor-Urut.	Kabinet	S.S.E HSL....	Supervision Common Module	MODULE						GEJALA - GANGGUAN .								KETERANGAN
										BEL			LAMPU					
				LF 2A 1070	SB-A 2A 1258	SB-B 2A 1259	SB-C 2A 1266	SB-D 2A 1267	SB-E 2A 1278	Tidak Bordering	Bordering setiap 5 detik	Bordering terus - menerus .	⊗ BA tidak menyala.	⊗ biru 1 tidak menyala	⊗ biru 2 tidak menyala	⊗ hijau tidak menyala	⊗ merah tidak menyala.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

NOTE: 1. Isi kolom 3 s/d 10 dengan unit yang terganggu .

2. Kolom 11 s/d 18 beri tanda ,V, sesuai dengan gangguannya .

DIKETAHUI :				CATATAN :	PETUGAS		PARAF
TGL.	NAMA	JABATAN	PARAF		1		
					2		

Table 45. PENGETESAN TIME - OUT CIRCUIT

TWK-9 SYSTEM	1	2	3	4	5	6

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

TIME OUT CIRCUIT	NORMAL	TIDAK-NORMAL	KETERANGAN
1	2	3	4
COMMON - CONTROL (G-Est).			
DIAL - EVALUATOR (W-Bw).			

NOTE : Beri tanda,
V = keadaan normal
X = keadaan tidak normal .

DIKETAHUI :			
TGL.	N A M	JABATAN	PARAF

CATATAN :

PETUGAS		PARAF
1		
2		

Table 46. - PENGETESAN TEGANGAN SENTRAL -

TWK-9 SYSTEM : 1 2 3 4 5 6

HARI / TGL. :

KANTOR :

JAM :.....s/d.....

Item \ Tegangan Operasi	Kabinet 1.		Kabinet 2.		Kabinet 3.		Kabinet 4.		Kabinet 5.		Kabinet 6.		Kabinet 7.		Kabinet 8.		KETERANGAN
	+48V	-48V	+48V	-48V	+48V	-48V	+48V	-48V	+48V	-48V	+48V	-48V	+48V	-48V	+48V	-48V	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Besarnya Tegangan .																	

NOTE : Isi kolom 2 s/d 17, dengan besarnya hasil dari pengukuran .

D I K E T A H U I :				CATATAN :	P E T U G A S	PARAF
TGL.	N A M A	JABATAN	PARAF		1	
					2	

Table 47. **U R A I A N - G A N G G U A N**

DTU. Hal : 130 / -

TWE-9 SYSTEM : 1 2 3 4 5 6

KANTOR :

HARI / TGL. :

JAM :.....s/d.....

NO.	PENGETESAN	GANGGUAN		KETERANGAN
		BAB	POINT	
1	2	3	4	5

DISERAHKAN KEPADA			
	NAMA	JABATAN	PARAF

CATATAN :

PETUGAS		PARAF
1		
2		

Table 48. EVALUASI PENUNJUKAN COUNTER

O.	COUNTER	PROGRAM YANG HARUS DIPERIKSA	K E T E R A N G A N
1.	G - Est B	EB PROGRAM	
		AB PROGRAM	
		IV PROGRAM	
2.	W - Sw A	IV PROGRAM	
		ZU PROGRAM	
		WE - KT/AB PROGRAM	
		WE - KT/IV PROGRAM	
		WE - KT/SA PROGRAM	
3.	C-TA-M / G W-Su	EK - ZK - MKA	
		EK - ZK - MKO	

CATATAN :

Table 49.

MTC-20

KARTU PEMELIHARAAN PESAWAT TERMINAL TOP.	PEMELIHARAAN OLEH	PERIODS	No. URUT

P E M I L I K	A L A M A T	No. TIP

JENIS PESAWAT	TYPE	NOMOR	PABRIK	A T T A C H M E N T	TYPE	NOMOR

TGL	PREVENTIVE MAINTENANCE					MTC 10	KODE		KETERANGAN	PARAF
	JENIS	COUNTER	DIST TD	DIST-KB	MARGIN		C	D		

MTC 20

TGL	PREVENTIVE MAINTENANCE					MTC 10	KODE		KETERANGAN	PARAF
	JENIS	COUNTER	DIST TD	DIST KB	MARGIN		C	D		

Table 50

KARTU PEMELIHARAAN PES. TRANSMISSI TELEGRAP	MLI OP.	JENIS/TYPE PABRIK/NR.	NR. URUT

NOMOR KANAL	JURUSAN	NAMA SISTIM	NOMOR KANAL	JURUSAN	NAMA SISTIM

TGL	DIST.	MTC 10	KODE C	KODE D	K E T E R A N G A N	PARAP

MTC 40

TGL	DIST.	MTC 10	KODE C	KODE D	K E T E R A N G A N	PARAP

Table 51.

KARTU LANGGANAN TELEX / GENTEX	PEMELIHARAAN OLEH	TGL MLI	MTC-20	No TLP

NAMA LANGGANAN	A L A M A T	ANSWERBACK CODE	No TLP

JENIS PESAWAT	TYPE	NOMOR	PABRIK	A T T A C H M E N T	TYPE	NOMOR

TGL	PREVENTIVE MAINTENANCE					MTC 10	KODE GANGG.			KETERANGAN	PARAP
	ARUSDIAP	CALL	DIST T	DIST KP	MARGIN		B	C	D		

MTC-60

TGL	PREVENTIVE MAINTENANCE					MTC 10	KODE GANGG.			KETERANGAN	PARAP
	ARUSDIAP	CALL	DIST TD	DIST KP	MARGIN		B	C	D		

Table 52. Buku laporan gangguan.

No. Urut	Tanggal Lapor	Tanggal Mulai	Nama, Alamat No. Telepon/Telex Pelapor Gangguan	Lokasi gangguan menurut pelapor (Pesawat/saluran)	MACAM GANGGUAN
No. MTC-10	Jam Lapor	Jam ~~Ketahui~~			
1	2	3	4	5	6

MTC - 01

CARA MENGATASI	Nama Petugas	Tanggal selesai / Jam selesai	Lamanya penyelesaian gangguan (menit)	Pemberitahuan pada Pelapor	
				NAMA	JAM
7	8	9	10	11	12

BON GANGGUAN TELEGRAP	BULAN		NOMOR	

TGL	JAM	PELAPORAN DARI	KODE A

TGL	JAM	HASIL PENGETESAN	OLEH

URAIAN GANGGUAN

TGL	JAM	DITERUSKAN KEPADA	OLEH

MTC 1(

P E N Y E L E S A I A N

SISTIM/ PERALATAN YG TERGANGGU	KODE B

LOKASI KESALAHAN	KODE C

CARA MENGATASI GANGGUAN	KODE D

LAIN - LAIN

TGL SELESAI	JAM	LAMA GANGGUAN

PETUGAS PERSAJKA	PARAP

DICATAT PD MTC 01	DICATAT DI KARTU2.

PEMBERI TAHUAN KPD PELAPOR	PARAP

Table 54. LAPORAN GANGGUAN PERHUBUNGAN TELEGRAP

WITEL .....

MTC - 02

KTX/ KTGP		B 1	B 2	B 3	B 4	B 5	B 6	B605-610	B 000
	Jumlah Gangguan	%	%	%	%	%	%		
	Total waktu								
	Jumlah Gangguan	%	%	%	%	%	%		
	Total Waktu								
	Jumlah Gangguan	%	%	%	%	%	%		
	Total Waktu								

Table 55. LAPORAN GANGGUAN PESAWAT TELEGRAP

WITEL .....

MTC - 03

B	C	D	Juml. gangg	Juml peral. yg diop.kan	Jumlah waktu gangg	Kolom 6 / Kolom 4	Kolom 4 / Kolom 5
1	2	3	4	5	6	7	8

PERUM TELEKOMUNIKASI Table 56. NEW MODEL TGP MTC-

Fault Analysis Record & Monthly Maintenance Report of Terminal and Morse Equipment	Station	Month	Writer's signature	Date recorded												
	Total unit	Cause of fault											Total fault	Fault /unit	Total terminal	Fault/ terminal
		Part	Adj-ust	Con-nec	Wire	Con-str	Oil	Mis-ope	TOK	TCC	Un-known	Elec-susp				
Teleprinter T-100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1 Keybord unit															—	—
2 Transmitter unit															—	—
3 Receiver unit															—	—
4 Printer unit															—	—
5 Drive and speed control unit															—	—
6 Special function-key assembly															—	—
Total																
Teleprinter Lo-133	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1 Keybord unit															—	—
2 Transmitter unit															—	—
3 Receiver unit															—	—
4 Printer unit															—	—
5 Drive and speed control unit															—	—
6 Special function-key assembly															—	—
Total																
Terminal Morse	—													—		

PERUM TELEKOMUNIKASI Table 57. NEW MODEL TGP MTC-

Fault Analysis Record & Monthly Maintenance Report of VFT and Circuit WT-1000	Station	Month	Writer's signature	Date recorded

	Total frame cct	Cause of fault										Total fault	Fault /frame	Total cct sys	Fault /cct	Fault /sys
		Panel	Part	Adj-ust	Con-nec	Con-str	Mis-ope	TOK	TCC	Un-known	Elec-susp					
1 Rack terminal panel														—	—	—
2 VFT frames														—	—	—
3 Measuring instrument frame														—	—	—
4 Superimposed telegraph frame														—	—	—
5 Transmitter														—	—	—
6 Receiver														—	—	—
7 Line matching module														—	—	—
8 Service telephone module														—	—	—
9 Level alarm module														—	—	—
10 Power supply module														—	—	—
11 Test signal generator														—	—	—
12 Channel test adapter														—	—	—
Total																
FM VFT NEC																
1 Channel unit														—	—	—
2 Transmitting amplifier														—	—	—
3 Receiving amplifier														—	—	—
4 Group modulation unit														—	—	—
5 Group demodulation unit														—	—	—
6 Oscillator unit														—	—	—
7 Frequency control unit														—	—	—
Total																
Telegraph and Telex circuit																
1 VFT circuit		—	—	—	—	—	—	—	—	—	—		—			
2 Telegraph local circuit		—	—	—	—	—	—	—	—	—	—		—			—
3 Telegraph inter-local circuit		—	—	—	—	—	—	—	—	—	—		—			—
4 Telex local circuit		—	—	—	—	—	—	—	—	—	—		—			—
5 Telex inter-local circuit		—	—	—	—	—	—	—	—	—	—		—			—
Total		—	—	—	—	—	—	—	—	—	—		—			—

Perum Telekomunikasi Table 58.

NEW MODEL TGP MTC-

Fault Analysis Record & Monthly Maintenance Report of Telex Switching Equipment	Station				Month				Writer's signature					Date recorded		
	Total cab	Cause of fault											Total fault	Fault /cab	Total cct	Fault /cct
		Unit	Panel	Part	Adj-ust	Con-nec	Con-str	Mis-ope	TOK	TCC	Un-known	Elec-susp				
TWK-9. Name of cabinet																
1 Line terminating set TA															—	—
2 Trunk repeater Aue															—	—
3 Local repeater Oue															—	—
4 Dial code storage Wsp															—	—
5 Line termination finder TA-Su															—	—
6 Line termination marker TA-An															—	—
7 Line termination identifier TA-Id															—	—
8 Mode evaluator B-Bw															—	—
9 Subscriber classification facilities															—	—
10 Collective number translator Sa-Uw															—	—
11 Trunk repeater finder AUe-Su															—	—
12 Local repeater finder OUe-Su															—	—
13 Storage finder USp-Su															—	—
14 Switching network and storage connecting matrix															—	—
15 Link finder W-Su															—	—
16 Dial code evaluator W-Bw															—	—
17 Common control G-Est															—	—
18 Common timer G-Zt															—	—
19 Electronic pulse generator IG															—	—
20 Rate metering															—	—
21 Subscriber outlet numbering device TA-NG															—	—
22 Code generator Tx-G															—	—
Total																
TWK-D. Name of cabinet															—	—
1 Trunk repeater															—	—
2 Mode evaluator															—	—
3 Register matrix															—	—
4 Register															—	—
5 Repeater matrix															—	—
6 Common control															—	—
Total																

Note: 1) Part: I.C, Transister, Diode, R.C.L, Varister, Lamp, Fuse ,Relay etc.

7. Measuring sets, tools and modules in Telegraph and Telex maintenance.

7.1. Objective.

In the maintenance activity of Telegraph and Telex service, measuring sets and tools are one of important means to find out and to recovery the cause of fault, and to keep the good service.

Therefore, it should be noted that in every Telegraph and Telex Station must have minimum stock measuring sets and tools that must have a suitable performance efficiency, and that keep usually it in good condition.

For this purpose, it is necessary to define a certain standard stock value concerning the kind and number of measuring sets and tools, that is " STANDARD STOCK VALUE OF MEASURING SETS AND TOOLS ".

The measuring sets and tools use be kept in good condition for the preparing to various tests and fault clearance. Periodic tests of measuring sets are carried out in the same way as Telegraph and Telex equipments and apparatus, and it's repair, in the case of fault, is concentrated in work shop and maintenance repair center.

7.2. Standard stocked value of measuring sets and tools.

In Table 59 are shown standard stock value of measuring aets and tools according to the numbers of VFT system and Telex subscriber in Telegraph and Telex station in Indonesia, is only temporary until detailed fault data and repair time are taken.

Table 59. Proposed standard stock value of measuring sets and tools

Name of measuring sets and tools—	No of VFT sys or Telex subs						Terminal
	VFT 51 ∫	TEL 1000 ∫	VFT 16 ∫ 50	TEL 500 ∫ 1000	VFT 1 ∫ 16	TEL 1 ∫ 500	
	or		or		or		
Single cerrent test transmitter	3		2		1		
Telepriter signal generator	3		2		1		
Telegraph distortion measuring set	3		2		1		1
Signal analyzer	2		1		1		1
Frequency counter	1		1				
Cathode ray relay tester	1		1		1		
Level meter	2		1		1		
Impedance meter	1		1				
Margin measuring set	2		1		1		
Impulse tester	2		1		1		
V. A. R meter	3		2		1		1
Attenator	1		1				
Filter	1		1				
Test equipment for checking trunk repeater and line terminator	3		2		1		
Test equipment for checking common control	3		2		1		
Tools for Teleprinter							equal for maintenance personnel
Cleaner	1		1		1		1

7.3. Reserved Telex terminal equipments, modules and units of Telex switching and VFT terminal equipment.

7.3.1. Objective.

To keep good service of Telegraph and Telex must be reserved spare Telex terminal, modules and units of Telex switching and VFT equipment in good condition in each Telegraph and Telex station.

Spare Telex terminal equipments and modules stock requirements are determined by the following factors :

- Number of terminal equipment and module in service.
- MTBF(Mean time between failure) for the equipment.
- How MTBF is distributed between the various integral terminal and module of equipment.
- Repair time is in case of failure
- Distribution of failure over time.
-Whether the spares are divided between several storage points.

Also, it base the operation on the following assumtion :

- Supplies are based on central storage in Jakarta.
- Repair time include several days for the trnsportation.
- Mean time to repair is determined on the maintenance characteristics to the system as regards available equipment for the fault finding and how quikly an engineer can reach the station.

Maintenance time can be divided up as follows :

- Time from the discovery of the failure.
- Waiting time for engineer.
- Waiting time for spare terminal equipment or module.
- Net repair time.
- Time for functional testing.

If number of fault exceed the number of reserved terminal equipment module stocked at Telegraph and Telex station, a fault can not be recovered for the lack of reserved Telex terminals or modules. On the other hand, over-stocking of reserved terminal or modules is not good from the economical point of view.

The number and kind of the reserved modules and units are decided by considering their fault rate, the number of existing equipment, repair time, and influence upon service when fault occures. The most proper number of reserved modules and units must be decided so as to keep the risk rate less than the certain value. The practical determination will be made and informed to Telegraph and Telex station from Telegraph and Telex Divition in PERUM TELEKOMUNIKASI.

7.3.2. Reserved Telex terminal equipment.

Concerning the repair and maintenance of Telex terminal equipment it could say that there are many problems :

- Technical level of the adjustment.
- Transportation of Telex terminal equipment or technical personnel.
- Location of the installation Telex terminal equipment in the subscriber's office.

The standard reserved value of Telex terminal equipment for the maintenance and operation in Telegraph and Telex station in Table 60, is only temporary until fault rate and repair time of Telex terminal equipment are taken.

Table 60. Standard reserved value of Telex terminal equipment and units.

Number of terminal to be maintain in service	Number of reserved terminal	Number of reserved unit
1	1	-
2 - 30	2	1
31 - 60	3	1
61 - 100	4	1
101 - 140	5	1
141 - 180	6	1
181 - 230	7	1
231 - 280	8	2
281 - 340	9	2
341 - 400	10	2
401 - 460	11	2
461 - 530	12	3
531 - 600	13	3
601 - 670	14	3
671 - 740	15	3
741 - 820	16	4
821 - 900	17	4
901 - 980	18	4
981 - 1060	19	4

1.3.3. Reserved modules and units of Telex switching and VFT equipment.

Reserved value of spare module for Telex switching equipment system TWK-9 for 500 subscriber's terminal in each Telegraph and Telex station is shown in Table 61 , also, reserved value of spare components for VFT terminal equipment system WT-1000 for 3 system of VFT in each Telegraph and Telex station is shown in Table 62.

The former is one of from supplier " Siemens Company ", it must be stocked them in good condition, the latter is also one of from same supplier, however, is only spare components, is not provided as the spare modules.

Table 61 . Reserved value of spare module for 500 subscriber's terminal of Telex switching.

Name of module	Number of order	Number of module
1. Dial evaluator,decorder(W-Bw-E)	A1001	1
2. Dial evaluator,processor(W-Bw-A)	A1275	1
3. Line terminating set(C-Ta-M/wSn)	A1274	1
4. Zoner, group A(VZ-A)	A1002	1
5. Zoner, group B(VZ-B)	A1282	1
6. Common control A(G-Est-A)	A1271	1
7. Common control B(G-Est-B)	A1251	1
8. Commontimer(G-Zt)	A1265	1
9. Electric pulse generator(UG-EL-ITG) (basic clock generator)	A1001	1
10. Electric pulse generator(AST-EL-ITG) (out put stage)	E1003	1
11. Electric pulse generator(EL-ITG) (diode card)	E1004	1
12. Electric pulse generator A(IG-A)	A1178	1
13. Electric pulse generator B(IG-B)	A1311	1
14. Series-parallel/Parallel-series converter (SPU/PSU B)	B1098	1
15. Code generator for service signal (TXG-B)	A1283	1
16. COS comparator(KL-VG-A)	A1053	1
17. Commonline termination finder, identifier, marker, common link finder (G-TA-N/w-SU)	A1274	1
18. Storage connecting matrix(local), and storage finder for 4 dial storages (SpKO-Wsp-Su)	A1261	1

Table 62. Reserved value of spare components for 3 system of VFT terminal equipment.

Pos	Nomenclature	Quantity for 1-3 sys
1	BCY 58 V111	5
2	BCY 58 T	2
3	BCY 59 V111	2
4	BCY 65 E V111	2
5	BCY 78 V11	1
6	BCY 78 V111	2
7	BCY 79 V111	1
8	BFX 37	1
9	BSX 45-6	1
10	2N720A	2
11	2N 2896	2
12	2N 2907A	2
13	1N 914	5
14	BZX 97/C5V6	1
15	BZX 97/c6V2	1
16	BZX 97/C6V8	1
17	BAY 41	2
18	BAY 45	2
19	BZX 97/C15	1
20	BAW 75	1
21	D1/400	1
22	BZX 97/C16	1
23	BAW 76	1
24	G	1
25	IC	2
26	Lamp	6
27	Blende	1
28	Lamp cap	1
29	Capot	1
30	Buchse	2
31	Jack	2
32	Stecker	3
33	Plug	1
34	Lamp extrecter	1

At present, spare modules for VFT terminal equipment are not stocked in each Telegraph and Telex station, is only components.

Standard reservedvalue of VFT system WT-1000's spare modules to be stocked in each Telegraph and Telex station in Table 63 , is only temporary until the fault rate and repair times are taken.

Table 63. Standard reserved value of VFT WT-1000 spare modules

Name of VFT module	Number of module
1. FM system transmitter module	1
2. FM system receiver module	1
3. Line maching module	1
4. Service telephon module	1
5. Local alarm module	1
6. Test signal generator module	1
7. Level meter module	1
8. Channel test adapter module	1
9. Volt meter module	1
10. Timer module	1
11. Superimposed telegraph module	1
12. Multiple module	1
13. Power supply module	1

8. Repair works in Telegraph and Telex maintenance.

8.1. Objective.

Repair works in the field of Telegraph and Telex in Indonesia, can be classified for Telex terminal equipment, Telex switching equipment and VFT terminal equipment.

In the case of fault of Terminal equipment, after changing it for the spare terminal equipment repair it's fault terminal equipment at the work shop.

On the other side, in the case of fault of Telex switching and VFT equipment, after testing for looking out the location of fault, immediatelly, must be replaced fault's module or unit, and repair it at the work shop, because basic principle of repair work for Telex switching and VFT terminal equipment, is to consider the minimum interruption of service.

Since the adoption of the plug-in mounted system made possible to introduce plug-in module or unit replacement in repair work, faulty equipment can easily be done quikly if there is proper spare module or unit is available. however, itis not effective to repair the faulty module or unit at the work shop of the each Telegraph and Telex station except for the simple repair.

For this purpose, certain standard reserved value of spare modules and measuring sets, and maintenance repair center are considered and made decition to keep the good Telegraph and Telex service in Indonesia.

8.2. Repair works at the work shop of Telegraph and Telex station.

The easy repair works to recovery to good condition the equipment or module of Telex terminal, Telex switching and VFT equipment normally must be done by own maintenance personnel at the work shop of each Telegraph and Telex station.

It should be carried out immediatelly when faulty equipment or module is found, possible items of this repair work at the repair work shop are shown as follows :

a. Adjustment, decomposition, and easy repair of faulty terminal equipment or it's parts.
b. Replacement of the spare terminal equipment.
c. Replacement of Telex switching module or unit.
d. Replacement of VFT terminal equipment module or unit.
e. Easy repair of faulty Telex module or unit.
f. Easy repair of faulty VFT module or unit.
g. Replacement of fuse, lamp, plug and juck etc.
h. Repair of cord and connector except the internal of equipment.
i. Other easy works.

8.3. Repair of Telex switching and VFT module and unit.

The repair of the faulty modules and units im each Telegraph and Telex station is difficult and inefficient, because of the circuits of Telex switching and VFT equipment becoming complicated particularly Telex switching and VFT equipment has so many kinds for its quantity that repair work was concentrated in maintenance repair center.

The faulty module and unit is sent directly from a Telegraph and Telex station to the maintenance repair center with a note attached describing the fault. Having been repaired there, it is returmed to Telegraph anf Telex station with a repair card entering the items repaired. After the received faulty module and unit has been checked and confirmed to be normal, as a rule, it should be returned to the former place.

Modules and parts that have comperatively frequent fault, such as fuse, thermister, modulator, demodulator and so on, are replaced with spare modules or parts, because they have been desighned originally so as to be replaced easily. These spare modules and parts are always kept in a reasonable number in consideration of the failure rate and frequency of distribution rates.

8.4. Maintenance repair center.

8.4.1. Objective.

As previously mentioned, it must have a central stock of spare module and unit, and for this reason it find it expedient to establish a central maintenance repair center at the same place, and it is better to install them in Gambir Telegraph and Telex station in Jakarta. The organization of this repair center is shown in Fig 4 .

8.4.2. Function of maintenamce repair center.

Repair and maintenance of Telex terminal equipment, Telex switching and VFT terminal equipment are divided between specialist group for each of the following fields :

- Telex terminal equipment.
- Telex switching equipment.
- VFT terminal equipment.

Each of these groups consists of 2 to 4 engineers and technicians, and through their leaders they are responsible for :

- Stocks of spare modules or units.
- Files/indexes of completed repairs, checking and modifications of equipment.
- Fault reports with the information concerning the MTTR and MTBF of the individual sub-modules or units.
- Providing asistance to operations technicians at the Telex switching/VFT terminal station in measurements and repair faults.

The special assignments group is headed by an engineer with long experience of work in the other groups, he is responsible :

- Training of operations technicians in equipment and instrument.
- Preparation of the fault reports.
- Special assignment such as the development of new measuring methods.
- The work shop.
- Supervision of the fitters.

The work shop undertakes work of mechnical nature including repairs.

8.4.3. Organization of Maintenance repair center.

Organization of maintenance repair and stock system is shown in Fig 5 .

Fitters have extensive training inthe installation of Telex switching and VFT terminal equipment. A separate group consisting of non-technical personnel is responsible for :

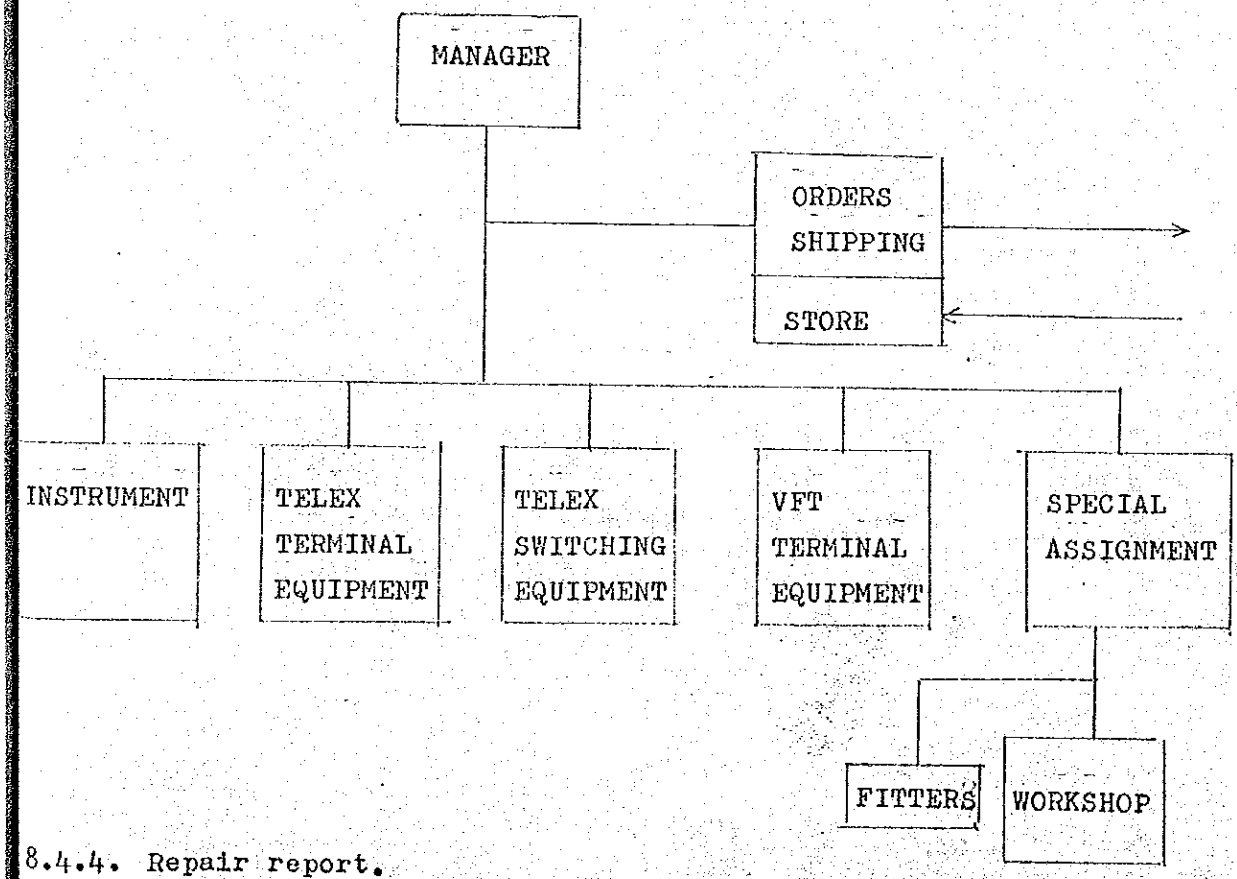
- Orders.
- Receipt of the material
- Packaging
- Despatch of the material

In packing and transportation of the material great importance is attached to the use of special transport cases in order to avoid damage.

In maintenance repair center must be provided to repair and to maintain as follows :

- Measuring set.
- Instrument for the functional testing.
- Machine tools
- Electric gilding set.
- Air conditioning set

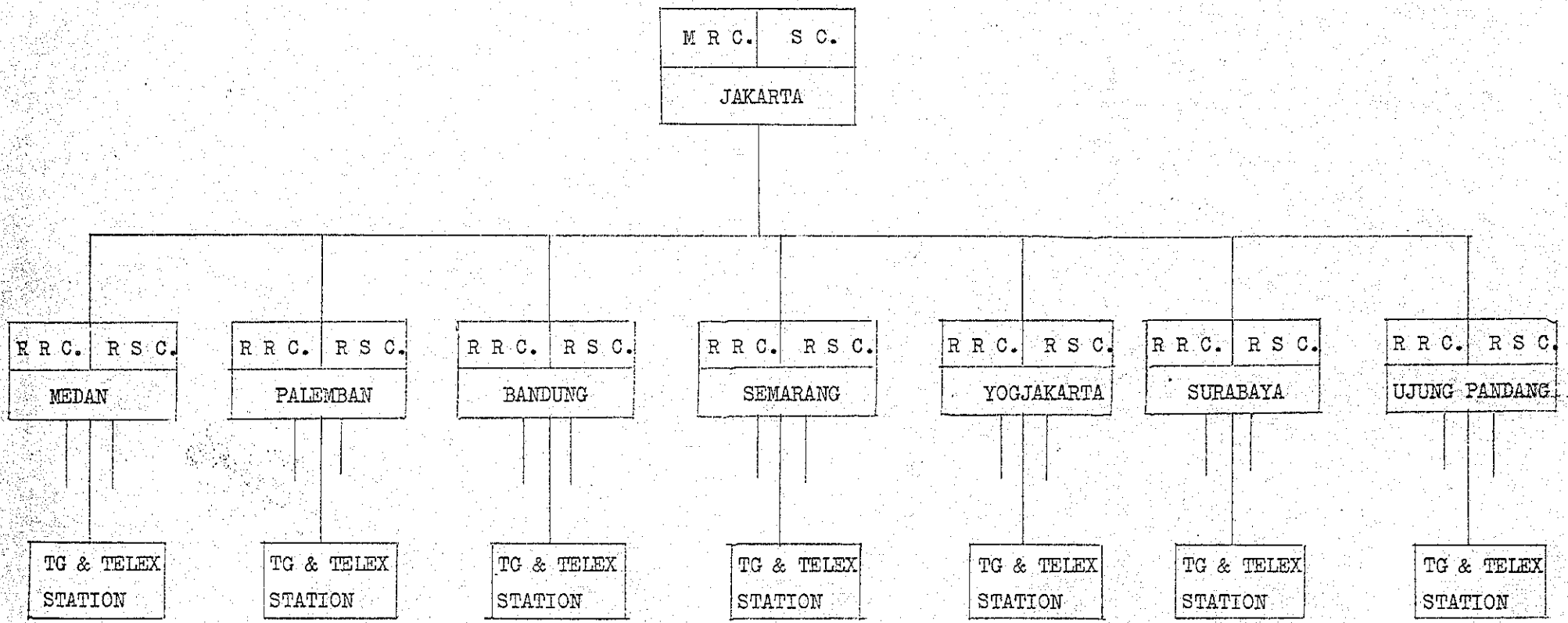
Fig 4 . The organization of the maintenance repair center.



8.4.4. Repair report.

Repair request and repair work report to be used for maintenance repair work in maintenance repair center is shown in Table 64.

. The organization of maintenance repair and stock system



NOTES: MRC MAINTENANCE REPAIR CENTRE
SC STOCK CENTRE
RRC REGIONAL REPAIR CENTRE
RSC REGIONAL STOCK CENTRE

TABLE 64. REPAIR REQUEST AND REPAIR WORK REPORT

PERUM TELEKOMUNIKASI

Station		Order No.	
Issued data		Received data	
Issued by		Received by	
Name, Number and Location module or unit.			
Fault's appearance			
Cause of fault			
Description of repair work			
Description of test result			
Test data	Performed by	Checked by	
Remarks			