5) Pengetesan Matrix ( EK - ZK - MKO ).
   a. Alat ukur            : 2 Pesawat test.
   b. Model                : DT.5
   c. Interval           : 1 tahun
   d. Waktu pengetesan    : Malam hari/ Hari libur.
   d. Petugas           : 2 orang.

6) Pengetesan Matrix ( WSp - KA ).
   a. Alat ukur            : Test H-29
                            Telepriter tanpa RCU
                            Pesawat test
   b. Model                : DT.6
   c. Interval           : 1 tahun
   d. Waktu pengetesan    : Hari libur/Malam hari.
   e. petugas           : 2 orang.

7) Pengetesan Matrix ( WSp - KO )
   a. Alat ukur            : 2 Pesawat test
   b. Model                : DT.7
   c. Interval           : 1 tahun
   d. Waktu pengetesan    : Hari libur/malam hari
   e. Petugas           : 2 orang.

8) Pengetesan Local - Repeater
   a. Alat ukur            : 2 Pesawat test
   b. Model                : DT.8
   c. Interval           : 3 bulan
   d. Waktu pengetesan    : Hari libur/Malam hari/Traffic rendah
   e. Petugas           : 2 orang

9) Pengetesan Zoing
   a. Alat ukur            : Pesawat test

10) Pengetesan Pembanding Kelas
   a. Alat ukur            : Test H-29
                            Teleprinter tanpa RCU
                            Pesawat test
   b. Model                : DT.10
   c. Interval           : 6 bulan
   d. Waktu pengetesan    : Setiap saat
   e. Petugas           : 2 orang

11) Pengetesan Printed Service Signal

    a. Alat ukur             : Test H-29.

                              Teleprinter tanpa RCU

                              Distortion Meter( TG Signal analyser)

    b. Model               : DT.11

    c. Interval           : 6 bulan

    d. Waktu pengetesan    : Setiap saat

    e. Petugas             : 2 orang

12) Pengetesan TA dan Rate - Meter

    a. Alat ukur              : Test H-29

                                Teleprinter tanpa RCU

    b. Model               : DT.12

    c. Interval           : 6 bulan

    d. Waktu pengetesan    : Setiap saat

    e. Petugas             : 3 orang

13) Pengetesan Arus Saluran dan Distorsi Langganan

    a. Alat ukur              : Test H-29

                                Teleprinter tanpa RCU

                                Distortion Meter(TG signal Analyser)

    b. Model               : DT.13

    c. Interval           : 6 bulan

    d. Waktu pengetesan    : Setiap saat

    e. Petugas             : 3 orang

14) Pengetesan Alarm

    a. Alat ukur              : Test H-29

                                Teleprinter tanpa RCU

    b. Model               : DT.14

    c. Interval           : 3 bulan

    d. Waktu pengetesan    : Hari libur/Malam hari

    e. Petugas             : 1 orang

15) Pengetesan Time out - circuit

    a. Alat ukur              : Counter

                                Pesawat test

    b. Model               : DT.15

    c. Interval           : 6 bulan

    d. Waktu pengetesan    : Hari libur/Malam hari

    e. Petugas             : 1 orang

16) Pengetesan Tegangan Sentral
    a. Alat ukur          : Volt meter ( A-V.O Meter)
    b. Model              : DT.16
    c. Interval           : 6 bulan
    d. Waktu pengetesan   : Setiap saat
    e. Petugas            : 1 orang

17) Observation of failure

3.2. Test items of the Preventive maintenance in System WT-1000.

Test items of the Preventive maintenance in System WT-1000 of voice frequenct telegraph in Telegraph and Telex Stations are shown as follows :

a. Pengukuran tegangan catu.

b. Pengukuran output module TSV 1000.

c. Pengukuran tegangan lokal kirim.

d. Pengukuran tegangan lokal terima.

e. Pengukuran signal alarm level.

f. Pengukuran level kirim pada modul TSD 1000.

g. Pengukuran level terima pada modul TSD 1000.

h. Pengukuran distorsi isochronous antar kanal di kedua stasiun tersedia alat-alat ukur.

i. Pengukuran distorsi isochronous antar kanal alat-alat ukur hanya tersedia di satu stasiun.

j. Pengukuran distorsi star-stop antar kanal di kedua stasiun tersedia alat-alat ukur.

k. Pengukuran distorsi star-stop antar kanal alat-alat ukur hanya tersedia di satu stasiun.

l. Pengukuran frekwensi kirim pada modul TSD 1000.

m. Pengukuran frekwensi terima pada modul TSD 1000.

Measuring set, Model, Interval of test and test time for WT-1000
in maintenance tests.

Alat-ukur, Model, Interval, Waktu pengetesan and Petugas in
each preventive maintenance tests are shown as follows:

1) Pengukuran tegangan catu
   a. Selang waktu              : 1 bulan.
   b. Lokasi titik ukur         : Sumbur catu daya pesawat ybs.(diluar pesawat).
   c. Titik ukur                : Soket tegangan catu untuk pesawat yang
                                  bersangkutan.
   d. Alat ukur                 : Voltmeter yang sesuai.
   e. Persiapan                 : Tempatkan Skakelar pemilih tegangan pada
                                  batas ukur yang sesuai.
   f. Pencatatan                : Pada model TGP MTC 44 Lembar-1.

2) Pengukuran tegangan output model TSV 1000
   a. Selang waktu              : 1 bulan
   b. Lokasi titik ukur         : Model Power Supply TSV 1000
   c. Titik ukur                : Soket+B, -B, +T,-T, dan Us
   d. Alat ukur                 : Modul Voltmeter SM 1C00 atau modul Ammeter-
                                  Voltmeter SSM 1000.
   e. Persiapan                 : -
   f. Pencatatan                : Pada model TGP MTC 44 Lembar-1.

3) Pengukuran tegangan lokal kirim
   a. Selang waktu              : 3 bulan
   b. Lokasi titik ukur         : Panel kontrol
   c. Titik ukur                : Soket Y/= (bawah)
   d. Alat ukur                 : Modul Voltmeter SM 1000
   e. Pelaksanaan               : 1. Saat pemakai kanal kirim Ybs. dalam
                                     keadaan istirahat.
                                  2. Saat pemakai kanal kirim ybs. sedang
                                     berhubungan tetapi tidak mengirim signal.
   f. Persiapan                 : -
   g. Pencatatan                : Pada model TGP MTC 44 Lembar-2.

4) Pengukuran tegangan lokal terima
   a. Selang waktu              : 3 bulan
   b. Lokasi titik ukur         : Panel kontrol
   c. Titik ukur                : Soket Y/= (atas)
   d. Pelaksanaan               : 1.Saat pemakai kanal terima ybs. dalam
                                     keadaan istirahat.
                                  2.Saat pemakai kanal terima ybs. sedang
                                     berhubungan tetapi tidak menerima signal.
   e. Persiapan                 : Pindahkan kedudukan Skakelar meter terima
                                  (Pada panel kontrol) pada kedudukan
   f. Pencatatan                : Pada model TGP MTC 44 Lembar-2.

5) Pengetesan signal alarm level
   a. Selang waktu            : 1 bulan
   b. Lokasi lampu-lampu    : Modul FLE 1000-lampu/hijau. Modul PAS 1000-
      alarm                     lampu PAL/hijau.Panel kontrol-lampu SL/putih.
   c. Titik test             : Plug terima(kuning) yang terdapat pada
                          modul FLE 1000 (atas)
   d. Alat test             : -
   e. Persiapan            : -
   F. Pencatatan           : Pada model TGP MTC 44 Lembar-3.

6) Pengukuran level kirim pada modul TSD 1000
   a. Selang waktu            : 1 bulan
   b. Lokasi titik ukur     : Modul transmitter TSD 1000
   c. Titik ukur           : Soket
   d. Alat ukur            : Modul levelmeter PM 1000
   e. Persiapan            : 1. Kalibrasi Levelmeter PM 1000
                        2. Tempatkan kedudukan Skakelar tahanan pe-
                          nutup pada > 10k, dan Skakelar batas ukur
                          pada ledudukan -40 db.kedua Skakelar tsb.
                          terdapat pada modul Levelmeter PM 1000.
   f. Pencatatan           : Pada model TGP MTC 44 Lembar-4.

7) Pengukuran level terima pada Modul TEM 1000
   a. Selang waktu            : 1 bulan
   b. Lokasi titik ukur     : Model Receiver TEM 1000
   c. Titik ukur           : Soket
   d. Alat ukur            : Model Levelmeter PM 1000
   e. Persiapan            : 1. Kalibrasi Levelmeter PM 1000
                        2. Tempatkan kedudukan Skakelar tahanan pe-
                          nutup pada  10 K,dan Skakelar batas ukur
                          pada kedudukan  40 db. Kedua Skakelar tsb.
                          terdapat pada modul Levelmeter PM 1000.
   f. Pencatatan           : Pada model TGP MTC 44 Lembar-4.

8) Pengukuran distorsi isochronous antar kanal di kedua stasiun Tersedia
   alat-alat ukur
   a. Selang waktu            : 3 bulan
   b. Lokasi titik ukur     : Panel kontrol
   c. Titik ukur           : Jurusan kirim - soket ɟ/tengah
                          Jurusan terima - soket ɟ/tengah
   d. Alat-alat ukur        : Telegraph signal generator dan Distortionmeter.
   e. Persiapan            : 1.Kalibrasi alat-alat ukur
                        2.Hubungi stasiun lawan untuk melaksanakan
                        pengukuran bersama-sama.
                        3.Hubungkan soket ɟ/tengah dari kanal ybs.den-
                          gan soket input telegraph distortionmeter.
                        4.Hubungkan soket ɥ/tengah dari kanal ybs.den-
                          gan soket output telegraph signal generator.
   f. Pencatatan           : Pada model TGP MTC 44 Lembar-5.

9) Pengukuran distorsi isochronous antar kanal. Alat-alat ukur hanya
tersedia di satu stasiun

a. Selang waktu            : 3 bulan

b. Pelaksana             : Stasiun yang menpunyai alat-alat ukur distorsi,
dibantu oleh stasiun lawan.

c. Lokasi titik ukur    : Panel kontrol

d. Titik ukur          : Jurusan kirim-soket $\gamma$/tengah
Jurusan terima-soket $\gamma$/tengah

e. Alat-alat ukur      : Telegraph Signal Generator dan Distortionmeter.

f. Persiapan             : 1.Kalibrasi alat-alat ukur

                              2.Hubungi stasiun lawan untuk membantu pelak-
sanaan pengukuran.

                              3.Hubungkan soket $\gamma$/tengah dari kanal ybs den-
gan soket output telegraph Signal Generator.

                              4.Hubungkan saket $\gamma$/tengah dari kanal ybs.den-
soket input Telegraph Distortionmeter.

g. Pencatatan           : Pada model TGP MTC 44 Lembar-5.

10) Pengukuran distorsi start-stop antal kanal dikedua stasiun tersedia
alat-alat ukur

a. Selang waktu            : 3 bulan

b. Lokasi titik ukur    : Panel kontrol

c. Titik ukur          : Jurusan kirim - soket $\gamma$/tengah
Jurusan terima - soket $\gamma$/tengah

d. Alat-alat ukur      : Telegraph Signal Generator dan Distortionmeter.

e. Persiapan             : 1.Kalibrasi alat-alat ukur

                              2.Hubungi stasiun lawan untuk bersama-sama me-
lakukan pengukuran

                              3.Hubungan soket output telegraph signal gene-
rator dengan soket $\gamma$/tengah dari kanal ybs.

                              4.Hubungkan soket input distortionmeter den-
gan soket $\gamma$/tengah dari kanal ybs.

f. Pencatatan           : Pada model TGP MTC 44 Lembar-5.

11) Pengukuran distorsi start-stop antar kanal alat-alat ukur hanya
tersedia di satu stasiun

a. Selang waktu            : 3 bulan

b. Pelaksana              : Stasiun yang mempunyai alat-alat ukur distorsi,
dibantu oleh stasiun lawan.

c. Lokasi titik ukur    : Panel kontrol

d. Titik ukur          : Jurusan kirim -soket $\gamma$/tengah
Jurusan terima -soket $\gamma$/tengah

e. Alat-alat ukur      : Telegraph Signal Generator dan Distortionmeter.

f. Persiapan              : 1.Kalibrasi alat-alat ukur

                              2.Hubungi stasiun lawan untuk membantu pelak-
sanaan pengukuran distorsi start-stop.

                              3.Hubungkan soket $\gamma$/tengah dari kanal ybs. den-
gan soket output telegraph signal generator.

                              4.Hubungkan soket $\gamma$/tengah dari kanal ybs. den-
gan soket input telegraph distortionmeter.

g. Pencatatan           : Pada model TGP MTC 44 Lembar-5.

12) Pengukuran frekwensi kirim pada modul TSD 1000

   a. Selang waktu          : 1 tahun

   b. Lokasi titik ukur    : 1.Modul Transmitter TSD 1000

                           2.Model Level-meter PM 1000

   c. Titik ukur           : 1.Soket $\approx$ pada modul TSD 1000

                           2.Soket $\approx$ pada modul PM 1000

   d. Alat-alat ukur       : Frequency Counter

   e. Persiapan           : 1.Tempatkan kedudukan Skakelar Tahanan-penutup
                            pada $>$ 10 K, dan kedudukan Skakelar batas
                            ukur pada -40 db. Kedua Skakelar tsb. ter-
                            dapat pada modul Level-meter PM 1000.

                           2.Hubungkan soket input Frequency Counter den-
                            gan soket $\rightarrow$ pada modul Level meter PM 1000.

   f. Pencatatan          : Pada model TGP MTC 44 Lembar-6.

13) Pengukuran frekwensi terima pada modul TSD 1000

   a. Selang waktu          : 1 tahun

   b. Lokasi titik ukur    : Modul Receiver TEM 1000

                           Modul Levelmeter PM 1000

   c. Titik ukur           : 1.Soket $\approx$ Pada modul TEM 1000

                           2.Soket $\approx$ pada modul PM 1000

   d. Alat-alat ukur       : Frequency Counter

   e. Persiapan           : 1.Tempatkan kedudukan Skakelar Tahanan-penutup
                            pada $>$ 10 K, dan kedudukan Skakelar batas
                            ukur pada -40 db.Kedua Skakelar tsb. terdapat
                            pada modul Level-meter PM 1000

                           2.Hubungkan soket input frequency Counter den-
                            gan soket $\rightarrow$ pada modul Level-meter PM 1000.

   f. Pencatatan          : Pada model TGP MTC 44 Lembar-6.

Maintenance management for Telegraph and Telex system.

## 5.1. Objective.

This instruction describes the maintenance control method and pre-set standard value. The maintenance control method and pre-set standard value apply to the maintenance of all kinds of the equipment or apparatus in Telegraph, Telex and VFT network. The routine maintenance works in Telegraph and Telex Stations are performed based on this maintenance control method and related Maintenance and operation Procedure.

The objective of maintenance control method is to enable the maintenance effort to be directed so that the pre-set standard of the maintenance performance will be achieved, both in terms of the preservation of the reliability of Telegraph and Telex equipment and of service to the Telex subscriber, in the most economical condition.

## 5.2. Kind of maintenance control.

Maintenance contron is exercised of maintenance service control, Facility qualitative control and Extra-ordinary failure control for Telegraph, Telex and VFT network and equipment.

## 5.3. Maintenance service control.

a. This maintenance control is applied to Telex, and Telegraph and VFT network, and it relates to reported faults of them.
b. The information for the maintenance service control is based from fault report records of Telex, Telegraph and VFT network.
c. Maintenance service control value is determined by Headquarters of PERUM TELEKOMUNIKASI on Telex, Telegraph and VFT, as a service lower limit level in Indonesia.
d. The function of maintenance control :
   i. To evaluated service level in term of the fault rate and fault duration which was detected through Telex and Gentex subscriber's complaints.
   ii. To indicate where the action should be taken to restore standards, in case where standard are not met.
   iii. To convert the results of the analysis into measurable forms of maintenance performance, both in term of the fault rate and fault duration, for the comparison with pre-set standards.

## 5.4. Facility qualitative control.

a. Facility qualitative control is applied to the equipment and apparatus in Telex, Telegraph and VFT network.
b. The information for facility qualitative control is based from the fault tickets, one of which is prepared for Telex and Telegraph equipment and apparatus defect no matter from what source it is observed, e.g. Routine test, Fault report and alarm.
c. Facility qualitative control is determined by Headquarters of PERUM TELEKOMUNIKASI on Telex, Telegraph and VFT equipment and apparatus, as a maintenance lower limit level in Indonesia.
d. The function of facility qualitative control :
   i. To evaluated control level in term of the fault rate which was detected through Telex, Telegraph and VFT equipment and apparatus.
   ii. To indicate where action should be kaken to restore standards, in case where standard are not met.
   iii. To convert the results of the analysis into measurable forms of maintenance performance, in term of the fault rate, for the comparison with pre-set standards.

Measurement of the performance.

a. Service control.

Service control for Telex, Telegraph and VFT network is formed fault rate of complaint per month per 100 Telex suscribers, duration of fault for each subscriber, and recurrence for each subscriber per month. and fault rate of complaint per month per 1 Telegraph and VFT circuit, duration of fault for each Telegraph and VFT circuit, and recurrence of fault for each Telegraph and VFT circuit per 3 months. They are calculated in term of the number of fault included them of Transmission, equipment, and unknown of fault.

b. Facility qualitative control.

Facility qualitative control is formed the fault rate per month per 1 Terminal, 1 system Telegraph and VFT equipment, and 100 subscriber's lines of Telex switching equipment etc.

In Telex, Telex and VFT network, the fault rate is measured separately in respect of the each category of Telex, Terminal and VFT equipment, as applicable. The fault rate is measured in term of fault per specified unit of the equipment per anum.

6. Extra-ordinary failure control.

a. Extra-ordinary failure control value is determined by Headquarters of PERUM TELEKOMUNIKASI, as a maintenance service limit level of PERUM TELEKOMUNIKASI in Indonesia.
b. Definition of extra-ordinary failure is determined by Headquarters based on their extent and duration.
c. Extra-ordinary failure control aims to prevent unusual service outage and protect the Telex, Telegraph and VFT network from recurrence of same of failure.
d. Opearting station informs it's occurrence to the maintenance station and administrative organization, preserve the maximum extent of Telex or Telegraph traffic flow and restores the fault equipment, when extra-ordinary failure occurrence. Administrative organization investigates the cause of fault and take the necessary action for it.

7. Maintenance report for Telegraph and Telex maintenance control.

a. Maintenance station of Telegraph and Telex makes the maintenance reports as shown below, so that the maintenance station, Regional Office and Headquarters give hold of the maintenance level, - fault rate, duration of fault and recurrence, - also, from the comparison of standard control value, exceeding from control value, fault rate, duration of fault and recurrence of the latent faults.

b. The information of this report is the basis both Telegraph and Telex srevice, and Facility qualitative improvement, that is, to support stable Telegraph and Telex service and maintenance in Indonesia.

8. Control and action for Telegraph and Telex maintenance control.

8.1. Control and action for the maintenance service control.

A. Control and action at Maintenance Station.

A. Service control.
a. Supervice the fault occurrence and exceeding of his control circuits, by the fault cause analysis of each circuit and equipment.
b. Supervice the recurrence of reported fault by each control items.
c. Diagramatize the yearly maintenance service results of each control items so as can get hold of their long term trend.
d. Take possible action for the improvement when the monthly service level exceeds the service control value, so that to prevent both the fluctuation of service level through control period and the exceeding at the end of a year control period.
e. The form of control instructions for entry and the practical control method are given in the related Standard maintenance and operation procedure (S.M.O.P.).

B. Reporting.
a. Submit the maintenance report monthly to the Regional Office.
b. Report to the Regional Office by the next month of control period, whenever the exceeding occurred.

C. Determination of the countermeasure.
a. Section in charge of service control, submit the analysis of the exceeding cause to the Regional Office, or submit the proposal to the Regional Office if it needs.
b. Determine then propose to take the action in the Regional Office.

D. Evaluation of the action taken.
Evaluate the improvement of service level comparing to the previous data, after the completion of action.

B. Control and action at the Regional Office.

A. Reporting.
a. Check the maintenance report submitted from the maintenance station, and then send to Headquarters.

B. Determination of the countermeasure.
a. Determine the countermeasure and take the action by analyzing the proposal which is submitted from maintenance station or another Regional Office.
b. Propose to take action to the Regional Office who administrate maintenance station, or submit the proposal to Headquarters.
c. Inform the details of the action planned by the Regional Office and it's result to the maintenance station.

C. Evaluation of the action taken.
Analize and evaluate the monthly and yearly maintenance service level and exceeding within maintenance area by the maintenance report. Evaluate the action results which was dealt with by the Regional Office.

C. Control and action at the Headquarters.

A. Determination of the countermeasure.
a. Analyse the data in the maintenance report, and fix the adquit countermeasure for the problems.
b. Check the proposal which was submitted from Regional Office, then give the instruction on the necessary steps to be taken.
c. Inform the details of countermeasures to the Regional Office when it is decided.

B. Supervision and evaluation of the action.
  a. Evaluation the improvement of service level comparing to previous data.
  b. Supervise the action progress which is being exercised by Head-quarters.

2. Control and action for the facility qualitative control.

A. Control and action at Telegraph and Telex Station.

A. Facility control and action.
  a. Facility control method and action to be exercised on each Teleg-raph and Telex equipment and apparatus are given in the related Standard Maintenance and Operation Procedure.

B. Reporting.
  a. Report the Maintenance report on the Regional Office, summarizing the defect of the equipment and apparatus.
  b. Report the details of Special fault to the Regional Office, whenever it is observed ; type of equipment, situation and condition of fault, and action for it's fault.
  The difinition of special fault is :
  - Fault that can not be repaired by the ordinary method.
  -Case that cause-unknown-fault repeats frequently.
  - Occurres frequently by the same cause or at the same place.

C. Determination of the countermeasure.
  a. Take quikly action for the exceeding that it can be dealt in the station, or propose to take action to the Regional Office.
  b. Take action on the special fault, with the method instructed by the Regional Office.
  c. Section in charge of equipment qualitative control analizes the control results, and then submit to the Regional Office.

D. Supervision of the action.
  Supervise the progress of action, and report it to the Regional Office whenever it is required.

B. Control and action at the Regional Office.

A. Reporting.
  a. Check the maintenance report which is submitted from Telegraph and Telex Station, and then send it to the Headquarters.
  b. Analize the special fault which is reported from Telegraph and Telex Station, then send it to Headquarters whenever it occurred.

B. Determination of the countermeasure.
  a. Analize the equipment and apparatus quality and exceeding within maintenance area, and determine the countermeasure.
  b. Take action when it can be dealt with by the Headquarters, or submit the proposal to the Headquarters when it needs.
  c. Take close contact with Headquarters when the fault cames to the special fault, and then inform the details of action to Telegraph and Telex Station.

C. Supervision and evaluation of the action
  a. Supervise the progrees of action which is being exercised by Regio-nal Office, and report to the Headquarters whenever it is required.
  b. Evaluate the equipment and apparatus quality within maintenance area by the maintenance report.

C. Control and action at the Headquarters.

A. Determination of the countermeasure.
a. Determine the countermeasure for the special fault, then take action, or instruct the Regional Office to take necessary step.
b. Analize the maintenance report, and determine the necessary countermeasure.

B. Supervision and evaluation of the action.
a. Supervise the progress of the action which is being exercised by Regional Office, and report to the Headquarters whenever it is required.
b. Evaluate the equipments and apparatus quality within the maintenance area by the maintenance report.

8.3. Control and action for the Extra-ordinary failure.

A. Control and action at Telegraph and Telex Station.

a. Use telephon for reporting and instruction, whenever extra-ordinary failure occurres.
b. Take the following actions as instructed in S.M.O.P of Telegraph and Telex network maintenance an operation, whenever extra-ordinary failure occurres.
- Report urgently of occurrence.
- Action to preserve the possible extent of Telegraph and Telex traffic flow.
- Restoration of the equipment.
c. Report the details of the failure, when the investigation is requested by the Regional Office.

B. Control and action at the Regional Office.

a. Analize the urgent report from Telegraph and Telex maintenance Station. And propose to Telegraph and Telex Station when it is indespensable for the Regional Office to take hold of more detail situation of the failure.
b. Take action as maximum extent of possible as Regional Office can. Instruct the Telegraph and Telex Station in the restoration of fault equipment or permanent countermeasure to prevent the reccurrence.
c. Supervise the action which is being taken by Telegraph and Telex Station. And propose to Headquarters in taking countermeasures. Which can not be dealt with by Regional Office.
d. Report the details of failure to Headquarters, when it is required. and the action results, which is exercised by the instruction of Headquarters.
e. Summarize the extra-ordinary failure occurred within maintenance area, and fix the permanent countermeasures in maintenance Station.

C. Control and action at the Headquarters.

a. Analize the extra-ordinary failure report which is reported from Telegraph and Telex maintenance station.
b. Exercise the countermeasures by analizing extra-ordinary failure or instruct the Regional Office to take action for preventing the reccurrence.

c. Instruct the Regional Office to make investigation in the case of:
   - Failure which took considerably long period for restoration.
   - Failure of which cause was unknown.
   - Failure caused by mis-operation.
   - Failure of which countermeasure may need wide action.
   - Failure on which Headquarters considers to need investigation.
d. Exercise the action which is proposed by the Regional Office, and analize the extra-ordinary failure occurred, countermeasures taken and their results inthe maintenance station. Determine the counter-measures for possible future failure.
e. Inform those failure within PERUM TELEKOMUNIKASI so as to prevent the future occurrence of extra-ordinary failure.

5.9. Pre-set standard service control value for Telegraph, telex and VFT circuit.

In the present situation, where a proper standard service control value can not be found, from the experimental fault data in the past, but experimental fault data are very scattered, it determine pre-set standard service control value for Telegraph, Telex and VFT circuit, the fact that does not prevent temporary practical usage is suspected.

For the determination fixed standard service control value, more de-tailed data and further investigation is necessary, and they are test trial under the condition to the actual service and maintenance, therefore, in spite of service restoration, these pre-set standard service control value must be study and arrange according to the re-sult of running test trial in the field station , in a future, and must be continue investigating applicability of them.

Pre-set standard service control value for Telex, Telegraph and VFT circuit are shown in Table 7.

Table 7. Pre-set standard service control value for Telex, Telegraph and VFT circuit

| Subject of control | | Pre-set value | | Control unit measured | Control period | Control Station |
|---|---|---|---|---|---|---|
| | | Value | unit | | | |
| Telex & Gentex | Reported fault | 10 | numbers | 100 sub /month | Annual | Telex switching ststion |
| | Fault Duration | 24 | hours | each sub | " | " |
| | Recurrence | 3 | times | each sub /month | " | " |
| Telegraph & VFT circuit | Reported fault | 0.3 | numbers | 1 cct /month | " | Circuit control station |
| | Fault Duration | 60 | minutes | each circuit | " | " |
| | Recurrence | 3 | times | each cct /3 months | " | " |

10. Facility qualitative control.

In a similar way of the thinking of maintenance service control, facility qualitative control for each equipment or apparatus of Telegraph, Telex and VFT is necessary for the Telegraph and Telex maintenance and operation.

However, at present, it does'nt have enough the fault data concerning the equipment and apparatus od Telex, Telegraph and VFT, therefore, maintenance control and administration for the equipment and apparatus of Telex, Telegraph and VFT are not adequate.

In order that the function and operation of Telegraph, Telex and VFT equipment and apparatus, it must gathered more fault data for each equipment and apparatus of Telegraph, Telex and VFT, and must analisis of them, from this results of analisis it must be considered the countermeasure for these faults.

Although, it does'nt have the fault data of the equipment and apparatus of Telegraph, Telex and VFT, pre-set facility qualitative control subject and value are shown in Table 8 .

Table 8. Pre-set facility qualitative control value.

| Classification of facility | | Control value | | Control | Control |
|---|---|---|---|---|---|
| | | Value | Unit | Group | Period |
| VFT | WT - 1000 | 0.12 | 1 sys /month | Station | Annual |
| | FM - VFT - NEC | " | " | " | " |
| | VFT - OKI | " | " | " | " |
| Telex switching | TWK -9 Switching ( 100 T ) | 0.50 | 100 T /month | Station | Annual |
| | TWK -D Switching | | | | |
| Telex terminal | T - 100 | 0.15 | 1 set /month | Station | Annual |
| | Lo - 133 | " | " | " | " |

11. Extra-ordinary failure control.

At a present, Telegraph and Telex maintenance and service situation in Indonesia, are not uniformity from the results of field survey, therefore, it is difficult to give a designation of duration and measure of extra-ordinary failure for Telegraph and Telex service and maintenance in Indonesia.

In regard to the duration and measure of extra-ordinary, in the present situation where a proper countermeasures and designation can not be found for extra-ordinary failure of Telegraph and Telex, it is better to decide fixed designation of duration and measure of extra-ordinary failure for Telegraph and Telex service after gave the fixed standard maintenance control method and value.

However, experimental fault data are very scattered, it determine pre-set designation of duration and measure for extra-ordinary failure for Telegraph and Telex service, the fact that does not prevent temporary practical usage is suspected. Pre-set Designation of Duration and Measure of Extra-ordinary failure are shown in Table 9.

Table 9. Designation of duration and measure of Extra-ordinary failure.

| Department | Degree of trouble | Duration of trouble |
|---|---|---|
| Telex and Telegraph | Inability to achieve Telex communication -outgoing or incoming -over 100 subscribers from total numbers of sub'saccommodated by Telex switching office. | More than 60 minutes |

12. Reporting.

a. Data concerning the fault of Telegraph, Telex and VFT should be written down correctry into the reporting forms, so as to given the unbiased conclution, following to the instruction to the related standard maintenance and operation procedure of Telegraph and Telex.

b. Report should be submitted periocally except for the Extra-ordinary failure of Telegraph and Telex.

Report which put to use in this Telegraph and Telex maintenance control are shown in Teble 10, 11, 12 and 13.

Table 10. Report for Telegraph and Telex maintenance control.

| Report | Telegraph & Telex or Maintenance station | Regional Office | Head-quarters | Period |
|---|---|---|---|---|
| Maintenance service control report | # | # | # | Monthly |
| Facility qualitative control report | # | # | # | Monthly |
| Extra-ordinary failure report | # | # | # | Occasionally |

Table 11. Maintenance service control report

| Station | Month | Date recorded | Signature |
|---|---|---|---|

| | | Control value of fault rate | Number of total fault | Number of Telex subscriber | Fault rate fault/100 sub |
|---|---|---|---|---|---|
| | Fault Rate | 10 numbers | | | |
| Telex & Gentex | Duration of fault | Control value of duration | Total duration of fault | Mean duration of fault | Sub's number & duration exceeding of control value |
| | | 24 hours | | | |
| | Recu- rrence | Control value of recurrence | | | Sub's number & recurrence exceeding of control value |
| | | 3 times | | | |
| | Fault rate | Control value of fault rate | Number of total fault | Number of VFT channel | Fault rate fault/channel |
| | | 0.3 numbers | | | |
| VFT circuit | Duration of fault | Control value of duration | Total duration of fault | Mean duration of fault | Sub's number & duration exceeding of control value |
| | | 60 minutes | | | |
| | Recu- rrence | Control value of recurrence | | | Sub's number & recurrence exceeding of control value |
| | | 3 times | | | |
| | Fault rate | Control value of fault rate | Number of total fault | Number of Telegraph circuit | Fault rate Fault/circuit |
| | | 0.3 numbers | | | |
| Tele- graph circuit | Duration of fault | Control value of duration | Total duration of fault | Mean duration of fault | Sub's number & duration exceeding of control value |
| | | 60 minutes | | | |
| | Recu- rrence | Control value of fault rate | | | Sub's number & recurrence exceeding of control value |
| | | 3 times | | | |

Table 12. Facility qualitative control Report.

| Station | Month | Date recorded | Signature |
|---|---|---|---|

| | Teleprinter | Control value /1 set | Number of fault | Total Terminal in service | Fault rate fault/Terml |
|---|---|---|---|---|---|
| Gentex Terminal | T - 100 | 0.15 | | | |
| | Lo - 133 | 0.15 | | | |
| | T D | 0.15 | | | |
| | Keyboard perforator | 0.15 | | | |
| | | | | | |

| | VFT equipment | Control value / 1 sys | Number of fault | Total system in service | Fault rate Fault/sys |
|---|---|---|---|---|---|
| V F T | WT - 1000 | 0.12 | | | |
| | WT - 100 | 0.12 | | | |
| | VFT - NEC | 0.12 | | | |
| | VFT - OKI | 0.12 | | | |
| | TAN - 100 | 0.12 | | | |
| | TAN - 1000 | 0.12 | | | |
| | | | | | |

| | Telex S. W | Control value / | Number of fault | Number of Subs in service | Fault rate Fault/ |
|---|---|---|---|---|---|
| Telex | TWK - 9 A/D | 0.50 | | | |
| | TWK - D2 A.B | | | | |
| | TW- 39 | | | | |
| | Z A G E | | | | |
| | | | | | |
| | | | | | |

Table 13.

PERUM TELEKOMUNIKASI                                          NEW MODEL TGP MTC-

| Extra-ordinary Fault Record and Report of VFT and Telex | Recorded by |
|---|---|

| Station | Month | Date recorded |
|---|---|---|

| Duration of Fault | Hour Detected | Hour Restored |
|---|---|---|

Fault Circuit or Equipment

    VFT Circuit(System)

    VFT Equipment

    Telex Switching

Condition of Fault or Complaint

Cause of Fault

Action Performed

Comments

    Regional Office              Headquater

    Commentator's Signature         Commentator's Signature

6. Records and reports in Telegraph and Telex maintenance.

6.1. Objective.

Records and reports concerning Telegraph and Telex preventive and corrective maintenance works are extremely important part of the maintenance activities, and are also most important to analysis and to obtain the results of maintenance and operation, and to make the proper action for the good maintenance and operation service.

Therefore, preventive and corrective maintenance being done must be recorded and kept as future reference, also, must be submitted to the Regional Office, and after be arranged them at Regional Office send them to Headquarters. From this reports, effectiveness of maintenance work and standard value of service can be checked, all effort should be made to decrease the number and duration of faults of Telegraph and Telex.

6.2. Necessary factors in the records and reports.

Fault recods is basis for fault reports and statistics, which a necessary factor in improving the maintenance and operation of Terminal equipment, Telex switching and VFT equipment through the modification of equipment and operating routines.

The records and reports are made by Telegraph and Telex station at which the fault occures. The records and reports are arranged to include the necessary data in respect of the faults in Terminal, VFT and Telex switching equipment. In the case of fault at a station which is not rapaired on site, the defective unit is sent to the maintenance center to repair, accompanied with the record.

By these purpose, the following general guideline cover the completion of the records and reports :

- ID is the identification of the form.
- Type of equipment -a code is used to identify the equipment, example : WT-1000, T-100.
- Manufacture- this is indicated by the manufacture's name.
- Line name and number- name, system and channel number on which the fault hsa occured.
- Fault station- signature of the station at which the fault has occured.
- Name and number of subscriber- on the fault of Telex service.
- Date of fault- date on which the fault has occured.
- Pannel/Instrument type and number- code and number of the faulty pannel or instrument.
- Condition of fault- for indication of possible condition of fault.
- Name of applicant and receiver- signature of applicant and receiver.
- Outage time
- Recovered time.
- Duration of fault- in hours to be given as the sum of fault time of the Telegraph and Telex equipment.
- Cause of fault- possible cause of fault, if there are several possible causes the most probable should be indicated.
- Out VFT or Telex switching equipment-date when the panel was removed from the equipment.
- In VFT or Telex switching equipment- date when the panel was replaced in the equipment.
- Action to be taken- a brief description of the action to be taken to repair or to arrange.
- Date of repair and signature- indicate the date of completion of repair and the signature of the engineer or technician who has carried out the repair.
- Fault report- a brief description of the symtoms of the fault.
- Repair report- a brief description of measure taken to repair the fault

6.3. Kind of necessary and typical records and reports.

Records actualy must be recorded based on the fault data and kept as future reference, necessary and typical forms in Telegraph and Telex maintenance and operation are shown below.

a. Fault and complaint registration book.
b. Fault or transaction card(Terminal, VFT, Telex switching).
c. Fault order card(Terminal, VFT, Telex switching)
d. Routine test record(Terminal, VFT, Telex switching)
e. Inspection and special test record(Terminal, VFT, Telex switching).
f. Statistical analysis record(Terminal, VFT, Telex switching).
g. Telex and Gentex subscriber's card Telex ).

Also, report forms are performed from the fault analysis records based on the fault data, and must be submitted in order to use to maintenance management to the Regional Office and which after be arranged them must be submitted to Headquarters.

a. Monthly maintenance statistical report(Terminal, VFT, Telex switching).
b. Maintenance service control report.(Telex, VFT and Telegraph circuit).
c. Facility qualitative control report(Terminal, VFT, Telex switching)
d. Extra-ordinary failure control report(Telex).

6.4. Recording and reporting forms.

Recording and reporting forms to be used in Telegraph and Telex maintenance activities of Telex terminal, VFT and Telex switching equipment and circuit are shown in Table 14 .

Table 14 . Recording and reporting forms to be used in Telegraph
and Telex maintenance activities.

| | | | Maintenance records and reports | Table No. |
|---|---|---|---|---|
| Preventive | Terminal | | a. Kartu pemeliharaan preventip pesawat ter-minal telegrap (MTC-20) | 49 |
| | VFT | Equipment | Pengukuran rutine WT-1000 | |
| | | | a. Pengukuran tegangan catu | 15-1 |
| | | | b. Pengukuran tegangan output module TSV 1000 | 15-1 |
| | | | c. Pengukuran tegangan local kirim | 15-2 |
| | | | d. Pengukuran tegangan local terima | 15-2 |
| | | | e. Pengukuran signal alarm level | 16 |
| | | | f. Pengukuran level kirim pada modul TSD 1000 | 17 |
| | | | g. Pengukuran level terima pada modul TSD 1000 | 17 |
| | | | h. Pengukuran distorsi isochronous antar kanal di kedua stasiun tersedia alat-alat ukur | 18 |
| | | | i. Pengukuran distorsi isochronous antar kanal alat-alat ukur hanya tersedia di satu stasiun | 18 |
| | | | j. Pengukuran distorsi start-stop antar kanal di kedua stasiun tersedia alat-alat ukur | 18 |
| | | | k. Pengukuran distorsi start-stop antar kanal alat-alat ukur hanya tersedia di satu stasiun | 18 |
| | | | l. Pengukuran frekwesi kirim pada modul TSD 1000 | 19 |
| | | | m. Pengukuran frekwensi terima pada modul TSD 1000 | 19 |
| | | | Pengukuran rutine FM VFT-NEC | |
| | | | a. Pengukuran tegangan | 20 |
| | | | b. Pengukuran arus telegrap local | 21 |
| | | | c. Pengukuran tegangan alarm tiap kanal | 22 |
| | | | d. Pengukuran level kirim dan terima tiap 6 kanal | 23 |
| | | | e. Pengukuran level kirim dan terima tiap kanal | 24 |
| | | | f. Pengukuran output level dari group carrier oscillator | 25 |
| | | | g. Pengukuran level pada group modem | 26 |
| | | | h. Pengukuran level pada saluran kirim dan te-rima | 27 |
| | | | i. Pengukuran alarm circuit | 28 |
| | | Circuit | a. Pemeliharaan rutine pengukuran distorsi dan margin pada circuit local hubungan point to point (MTC-82) | 29 |
| | | | b. Pemeliharaan rutine pengukuran distorsi kanal-kanal telegrap sistem VFT (MTC-83) | 30 |

| | | | |
|---|---|---|---|
| eventive | Telex switching | Pengetesan rutine TWK-9 | |
| | | a. Pengetesan dial code storage -incoming- | 31 |
| | | b. Pengetesan dial code storage -outgoing- | 32 |
| | | c. Pengetesan trunk-repeator (AUe) | 33 |
| | | d. Pengetesan metering pulse-selector (ZIG) | 34 |
| | | e. Pengetesan link network (EK-ZK-MKA) | 35 |
| | | f. Pengetesan link network (EK-ZK-MKO) | 36 |
| | | g. Pengetesan storage link network WSP-KA | 37 |
| | | h. Pengetesan storage link network WSP-KO | 38 |
| | | i. Pengetesan zoning | 39 |
| | | j. Pengetesan pembanding kelas | 40 |
| | | k. Pengetesan printed service signal | 41 |
| | | l. Pengetesan TA dan rate-meter | 42 |
| | | m. Pengetesan arus saluran dan distorsi langganan | 43 |
| | | n. Pengetesan alarm yang terganggu | 44 |
| | | o. Pengetesan time-out circuit | 45 |
| | | p. Pengetesan tegangan sentral | 46 |
| | | q. Uraian gangguan. | 47 |
| | | r. Evaluasi penunjukan counter | 48 |
| rrctive | Terminal | a. Kartu pemeliharaan korektip pesawat terminal telegrap (MTC-20) | 49 |
| | VFT | a. Kartu pemeliharaan pesawat transmissi telegrap (MTC-40) | 50 |
| | Telex switching | a. Kartu pemeliharaan pesawat telex switching (MTC-   ) | |
| | | b. Kartu langgunan telex/gentex (MTC-60) | 51 |
| | General | a. Buku laporan gangguan (MTC-01) | 52 |
| | | b. Buku gangguan telegrap (MTC-10) | 53 |
| eneral | Maintenance control | a. Maintenance service control report(MTC-   ) | 11 |
| | | b. Facility qualitative control report(MTC-   ) | 12 |
| | | c. Extra-ordinary failure report(MTC-   ) | 13 |
| | Maintenance gangguan | a. Laporan gangguan perhubungan telegrap(MTC-   ) | 54 |
| | | b. Laporan gangguan pesawat telegrap(MTC-   ) | 55 |
| | Maintenance statistic | a. Laporan gangguan statistic pesawat terminal telegrap(MTC-   ) | 56 |
| | | b. Lporan gangguan statistic pesawat transmissi telegrap(MTC-   ) | 57 |
| | | c. Laporan gangguan statistic pesawat telex switching(MTC-   ) | 58 |

Table 15-1. PENGUKURAN RUTIN TEGANGAN

MODEL TSP MTC 44/1

| TEG.CATU | | DIUKUR OLEH | | TGL. | TEG.CATU | | DIUKUR OLEH | | TGL. | TEG.CATU | | DIUKUR OLEH | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | N A M A | PRP | | 1 | 2 | N A M A | PRP | | 1 | 2 | N A M A | PRP |
| | | | | | | | | | | | | | |
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| C A T A T A N | TGL. | C A T A T A N | TGL. | C A T A T A N |
|---|---|---|---|---|
| | | | | |
| | | | | |
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| | | | | |

| TEGANGAN OUTPUT MODUL TSV 1000 | | | | | | | | | | | | | | DIUKUR OLEH | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| +B | | -B | | △B 0,36V | | +T | | -T | | △T | | Us | | | |
| 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | N A M A | PRP |
| | | | | | | | | | | | | | | | |
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Table 15-2 . PENGUKURAN RUTIN TEGANGAN LOKAL

MODEL TGP MTC 44/2

| NO. TPT NO. KNL | TEGANGAN LOKAL | | | | | | | | NO. TPT NO. KNL | TEGANGAN LOKAL | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | KIRIM | | | | TERIMA | | | | | KIRIM | | | | TERIMA | | | |
| | A | | Z | | A | | Z | | | A | | Z | | A | | Z | |
| | $-(5\to48)V$ | | $+(5\to48)V$ | | $-(5\to30)V$ | | $+(5\to30)V$ | | | $-(5\to48)V$ | | $+(5\to48)V$ | | $-(5\to30)V$ | | $+(5\to30)V$ | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | | | 1 | | | | | | | | |
| 2 | | | | | | | | | 2 | | | | | | | | |
| 3 | | | | | | | | | 3 | | | | | | | | |
| 4 | | | | | | | | | 4 | | | | | | | | |
| 5 | | | | | | | | | 5 | | | | | | | | |
| 6 | | | | | | | | | 6 | | | | | | | | |
| 7 | | | | | | | | | 7 | | | | | | | | |
| 8 | | | | | | | | | 8 | | | | | | | | |
| 9 | | | | | | | | | 9 | | | | | | | | |
| 10 | | | | | | | | | 10 | | | | | | | | |
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| 12 | | | | | | | | | 12 | | | | | | | | |
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| 15 | | | | | | | | | 14 | | | | | | | | |
| 16 | | | | | | | | | 15 | | | | | | | | |
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| 23 | | | | | | | | | 22 | | | | | | | | |
| 24 | | | | | | | | | 23 | | | | | | | | |
| | | | | | | | | | 24 | | | | | | | | |

| DIUKUR OLEH | | | DIUKUR OLEH | | |
|---|---|---|---|---|---|
| TGL | N A M A | PARAP | TGL | N A M A | PARAP |
| | | | | | |
| | | | | | |

KETERANGAN : A - KEADAAN ISTIRAHAT (REST CONDITION).

Z - KEADAAN BEKERJA TETAPI SEDANG TIDAK MENGIRIM/MENERIMA SIGNAL TELEGRAP ( REST WRITTING CONDITION).

Table 16. PENGETESAN RUTIN SIGNAL ALARM LEVEL

MODEL TGP MTC 44/3

| FLE 1000 NOMOR : | | | | PAS 1000 NOMOR : | | | | | | UNTUK JURUSAN | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| TANGGAL | CABUT PLUG TERIMA (→o) DARI FLE | | | TEKAN LAMPU PAL (TOMBOL PAT) PD PAS | | | PASANG PLUG TERIMA (→•) PD FLE LAGI | | | TEKAN LAMPU PAL (TOMBOL PAT) PD PAS | | | DITEST OLEH | |
| | PUL | PAL | SL | PUL | PAL | SL | PUL | PAL | SL | PUL | PAL | SL | | |
| | o | x | o | o | o | o | - | x | - | - | - | - | N A M A | PRP |
| | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | | |
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KETERANGAN : o - LAMPU YBS. MENYALA TERUS
x - LAMPU YBS. MENYALA BERKEDIP-KEDIP
- - LAMPU YBS. PADAM

Table 17. PENGUKURAN RUTIN LEVEL

MODEL TGP MTC 44/4

| NO. TPT | NO. KNL | LEVEL KIRIM | | | | | |
|---|---|---|---|---|---|---|---|
| | | A (-39 5/8 -45)dB | | Z (-39 5/8 -45)dB | | \|A - Z\| ≤ 1,7 dB | |
| | | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
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| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| DIUKUR OLEH | | | | | | | |
| TANGGAL | NAMA | | | | | PARAP | |
| | | | | | | | |

| NO. TPT | NO. KNL | LEVEL TERIMA | | | | | |
|---|---|---|---|---|---|---|---|
| | | A (-39 5/8 -45)dB | | Z (-39 5/8 -45)dB | | \|A - Z\| ≤ 1,7 dB | |
| | | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
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| 22 | | | | | | | |
| 23 | | | | | | | |
| 24 | | | | | | | |
| DIUKUR OLEH | | | | | | | |
| TANGGAL | NAMA | | | | | PARAP | |
| | | | | | | | |

KETERANGAN : |A - Z| - SELISIH LEVEL ANTARA LEVEL FREKWENSI START & STOP

A - LEVEL FREKWENSI START

Z - LEVEL FREKWENSI STOP

Table 18. PENGUKURAN RUTIN DISTORSI

MODEL TGP NTC 44/5

| NOMOR TEMPAT | NOMOR KANAL | DISTORSI ISOCHRONOUS | | | | | | | | DISTORSI START-STOP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q9S + 100% | | | | 1 : 1 | | | | Q9S + 150% | | | |
| | | STASIUN STEMPAT | | STASIUN LAWAN | | STASIUN STEMPAT | | STASIUN LAWAN | | STASIUN STEMPAT | | STASIUN LAWAN | |
| | | MAX. % | | MAX. % | | MAX. % | | MAX. % | | MAXIMUM % | | MAXIMUM % | |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| DIUKUR OLEH | | | | DIUKUR OLEH | | |
|---|---|---|---|---|---|---|
| TGL | N A M A | | PARAP | TGL | N A M A | PARAP |
| | | | | | | |
| | | | | | | |

## Table 19. PENGUKURAN RUTIN FREKWENSI

MODEL TGP MTC 44/6

| NO.<br>TPT<br>NO.<br>KNL | FREKWENSI KIRIM | | | | | | | | NO.<br>TPT<br>NO.<br>KNL | FREKWENSI TERIMA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | fA' | | fZ' | | fA'–fZ' | | fo' | | | fA' | | fZ' | | fA'–fZ' | | fo' | |
| | fA± Hz | | fZ± Hz | | ( )Hz | | fo± Hz | | | fA± Hz | | fZ± Hz | | ( )Hz | | fo± Hz | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | | | 1 | | | | | | | | |
| 2 | | | | | | | | | 2 | | | | | | | | |
| 3 | | | | | | | | | 3 | | | | | | | | |
| 4 | | | | | | | | | 4 | | | | | | | | |
| 5 | | | | | | | | | 5 | | | | | | | | |
| 6 | | | | | | | | | 6 | | | | | | | | |
| 7 | | | | | | | | | 7 | | | | | | | | |
| 8 | | | | | | | | | 8 | | | | | | | | |
| 9 | | | | | | | | | 9 | | | | | | | | |
| 10 | | | | | | | | | 10 | | | | | | | | |
| 11 | | | | | | | | | 11 | | | | | | | | |
| 12 | | | | | | | | | 12 | | | | | | | | |
| 13 | | | | | | | | | 13 | | | | | | | | |
| 14 | | | | | | | | | 14 | | | | | | | | |
| 15 | | | | | | | | | 15 | | | | | | | | |
| 16 | | | | | | | | | 16 | | | | | | | | |
| 17 | | | | | | | | | 17 | | | | | | | | |
| 18 | | | | | | | | | 18 | | | | | | | | |
| 19 | | | | | | | | | 19 | | | | | | | | |
| 20 | | | | | | | | | 20 | | | | | | | | |
| 21 | | | | | | | | | 21 | | | | | | | | |
| 22 | | | | | | | | | 22 | | | | | | | | |
| 23 | | | | | | | | | 23 | | | | | | | | |
| 24 | | | | | | | | | 24 | | | | | | | | |

| DIUKUR OLEH | | | DIUKUR OLEH | | |
|---|---|---|---|---|---|
| TGL | N A M A | PARAP | TGL | N A M A | PARAP |
| | | | | | |
| | | | | | |

KETERANGAN : fA'/fZ' = FREKWENSI START/STOP HASIL PENGUKURAN
fA /fZ = FREKWENSI START/STOP YANG SEHARUSNYA
(LIHAT YANG TERTERA PADA MODUL YBS)

## Table 20. PENGUKURAN RUTIN TEGANGAN

MODEL TGP MTC - 46/ ........

| TGL / N | TEGANGAN MASUK/JALA2 TOLERANSI 10% | | TEGANGAN -21 V ( 21 V ± 4% ) | | TEGANGAN - 21 V MISC ( 21 V ± 4%) | | TEGANGAN TELEGRAP | | | | | | DICATAT OLEH : | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | +60 V ± 4% | | − 60 V ± 4% | | ATB = 2 V | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | NAMA | PARAP |
| 1 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |

| KANAL | NILAI PENGUKURAN ARUS TELEGRAP LOKAL ( 20 mA ± 2 mA ) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | KIRIM | | TERIMA | | KIRIM | | TERIMA | | KIRIM | | TERIMA | | KIRIM | | TERIMA | |
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | |
| ANGGAL | | | | | | | | | | | | | | | | |
| A M A | | | | | | | | | | | | | | | | |
| ARAP | | | | | | | | | | | | | | | | |

Table 22. PENGUKURAN RUTIN TEGANGAN ALRM TIAP KANAL

65

MODEL TGP MTC 46/.........

| KANAL | NILAI PENGUKURAN TEGANGAN ALRM TIAP KANAL (6 V ± 1 V) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | |
| TANGGAL | | | | | | | | | | | | | | | | |
| NAMA | | | | | | | | | | | | | | | | |
| PARAP | | | | | | | | | | | | | | | | |

Table 23. PENGUKURAN RUTIN LEVEL KIRIM TERIMA TIAP 6 KANAL

66

MODEL TGP MTC 46/ .........

| TANGGAL | KANAL / NILAI | CH COM G MOD IN ( −19dBm ± 1dBm ) | | CH COM G DEM OUT ( −16dBm ) | | DIUKUR OLEH : | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | NAMA | PARAP |
| | 1 — 6 | | | | | | |
| | 7 — 12 | | | | | | |
| | 13 — 18 | | | | | | |
| | 19 — 24 | | | | | | |

Table 24. PENGUKURAN RUTIN LEVEL KIRIM TERIMA TIAP KANAL

MODEL TGP MTC 46/............

| KNL / N | LEVEL KIRIM/SF IN ( −9dBm ) | | LEVEL TERIMA/RF OUT ( −25 dBm ± 3dBm ) | | KNL / N | LEVEL KIRIM/SF IN ( −9dBm ) | | LEVEL TERIMA/RF OUT ( −25dBm ± 3dBm ) | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | | 1 | 2 | 1 | 2 |
| 1 | | | | | 13 | | | | |
| 2 | | | | | 14 | | | | |
| 3 | | | | | 15 | | | | |
| 4 | | | | | 16 | | | | |
| 5 | | | | | 17 | | | | |
| 6 | | | | | 18 | | | | |
| 7 | | | | | 19 | | | | |
| 8 | | | | | 20 | | | | |
| 9 | | | | | 21 | | | | |
| 10 | | | | | 22 | | | | |
| 11 | | | | | 23 | | | | |
| 12 | | | | | 24 | | | | |
| TGL | | | | | TGL | | | | |
| NAMA | | | | | NAMA | | | | |
| PARAP | | | | | PARAP | | | | |

| TGL | C LEV G MOD 1 ( −20 dB ± 1 dB) | | C LEV G DEM 1 ( −20 dB ± 1 dB) | | C LEV G MOD 3 ( −20 dB ± 1 dB) | | C LEV G DEM 3 ( −20 dB ± 1 dB) | | DIUKUR OLEH : | |
|---|---|---|---|---|---|---|---|---|---|---|
| N | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | NAMA | PARAP |
| | | | | | | | | | | |
| | | | | | | | | | | |
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## Table 26. PENGUKURAN RUTIN LEVEL PADA GROUP MODEM

MODEL TGP MTC 46/.........

| TGL | G MOD OUT −1 ( −36 dBm) | | G DEM IN −1 ( −34 dBm) | | G MOD OUT −3 ( −36 dBm) | | G DEM IN −3 ( −34 dBm) | | DIUKUR OLEH : | |
|---|---|---|---|---|---|---|---|---|---|---|
| N | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | NAMA | PARAP |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| C LEV G MOD 1 ( −20 dB ± 1 dB) | | C LEV G DEM 1 ( −20 dB ± 1 dB) | | C LEV G MOD 3 ( −20 dB ± 1 dB) | | C LEV G DEM 3 ( −20 dB ± 1 dB) | | | | |

Table 27. PENGUKURAN RUTIN LEVEL PADA SALURAN KIRIM/TERIMA — 68

## Table 27. PENGUKURAN RUTIN LEVEL PADA SALURAN KIRIM/TERIMA

MODEL TGP MTC 46/......

| | KIRIM | | TERIMA | | DIUKUR OLEH | | SA-LURAN | KIRIM | | TERIMA | | DIUKUR OLEH | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EQPT S LINE | | EQPT R LINE | | | | JACK | EQPT S LINE | | EQPT R LINE | | | |
| | +30,5 dBm | | −18,5 dBm | | | | 1—JRS | +30,5 dBm | | −18,5 dBm | | | |
| | +27,5 dBm | | −15,5 dBm | | | | 4—JRS | +27,5 dBm | | −15,5 dBm | | | |
| N | 1 | 2 | 1 | 2 | NAMA | PARAP | TGL N | 1 | 2 | 1 | 2 | NAMA | PARAP |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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## Table 28. PEMERIKSAAN RUTIN ALARM CIRCUIT

MODEL TGP MTC 46/......

| JENIS ALARM YANG TIMBUL KALAU ADA GANGGUAN | | KETERANGAN |
|---|---|---|
| BEL BERDERING LAMPU ALARM PADA ALARM PANEL MENYALA | C. LAMPU ALARM PADA BAGIAN ATAS PESAWAT MENYALA D. LAMPU ALARM PADA SEKERING PADAM | X: Lampu/bel bekerja −: Lampu/bel tak bekerja |

| JENIS GANGGUAN YG MENGAKIBATKAN TIMBULNYA ALARM | A | | B | | C | | D | | A | | B | | C | | D | | A | | B | | C | | D | | A | | B | | C | | D | | A | | B | | C | | D | | A | | B | | C | | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2|1|2 |
| LEVEL TERIMA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN − 21 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN − 21V MISC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN − 21V + TEGANGAN − 21V MISC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN + 60 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN − 60 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TEGANGAN + 60 V + TEGANGAN − 60 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TANGGAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAMA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PARAP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

KANTOR : ...................

Tabla 291 - PEMELIHARAAN RUTIN

## PENGUKURAN DISTORSI DAN MARGIN
## PADA SIRKIT LOKAL HUBUNGAN POINT TO POINT

KECEPATAN MODULASI : ....................

PERIODE PENGUKURAN : ....................

PENGUKURAN BULAN : ....................

### HASIL – HASIL PENGUKURAN

| No | TGL JAM | JURUSAN | JENIS PESAWAT | | JENIS CONVERTER (TR) | DISTORSI START–STOP KIRIM (δ st) | | | | | | | | MARGIN (u) | | | | No KANAL VFT | NAMA PARAF | KETERANGAN |
|----|---------|---------|---------------|---------|------|-----------------------------|---|---|---|---|---|---|---|---------|---|---|---|------|------|-----|
| | | | TRANS | REC | | MANUAL | | | | OTOMAT | | | | V(%) | | N(%) | | | | |
| | | | | | | V(%) | | N(%) | | V(%) | | N(%) | | | | | | | | |
| | | | | | | A | B | A | B | A | B | A | B | A | B | A | B | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| | | | | | | | | | | | | | | | | | | | | |

CATATAN : A = Nilai distorsi sebelum diatur    V = Leading    Lama pengamatan ≥ 30 detik;    (δ st) = Distorsi start-stop dengan text   CCITT R52

            B = Nilai distorsi sesudah diatur    N = Lagging                                (u) = Margin penerima dengan text   CCITT R52

Mengetahui

Kepala Kantor Telegrap/Telex

( .......................... )

.................... 19....

Kepala Dinas Teknik

( .......................... )

Table 30

# PEMELIHARAAN RUTIN
## PENGUKURAN DISTORSI KANAL–KANAL TELEGRAP SISTEM VFT

KANTOR : ...........................

JURUSAN : ...........................
JENIS VFT : ...........................

KECEPATAN MODULASI : ........................... BAUD
MEDIA TRANSMISI : ...........................

PENGUKURAN BULAN : ...........................
PERIODE PENGUKURAN : ...........................

## HASIL – HASIL PENGUKURAN

| No | TANGGAL JAM | No KANAL | DISTORSI KIRIM ($\delta$ is) | | | | DISTORSI TERIMA ($\delta$ is) | | | | PENGGUNAAN KANAL | NAMA/ PARAF | KETERANGAN |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | CCITT TEXT (%) | | REVERSAL 1:1 (%) | | CCITT TEXT (%) | | REVERSAL 1:1 (%) | | | | |
| | | | A | B | A | B | A | B | A | B | | | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 | | | | | | | | | | | | | |

CATATAN: A = Nilai distorsi sebelum diatur.
B = Nilai distorsi sesudah diatur

($\delta$ is) = Distorsi isochron, untuk CCITT text elemen stop = 1 $T_o$
Lama pengamatan $\geq$ 30 detik

Mengetahui
Kepala Kantor Telegrap/Telex

( ........................... )

........................... 19..........
Kepala Dinas Teknik

( ........................... )

70

HARI / TGL. :

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

Table 31

PENGETESAN DIAL CODE STORAGE

- INCOMING -

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

KANTOR :

| ITEM / WSP NOMOR | PENANGKAPAN WSP ⊗ VT | PENGIRIMAN REV.PULSE KE-T/KD.2A | PENIMPANAN COS | | | | | KAPASITAS 100 TA | | KAPASITAS 200-300 TA | | | KAP.500 TA 1xx - 5xx | | | KAP.500 TA 6xx - 0xx | | | WB - KT/AB PROGRAM | TIMB-SUPERV. UNT.TA YG.DSR | KETERANGAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 11 | 22 | 33 | 44 | 77 | 111 | 199 | 144 | 115 | 149 | 291 | 915 | 491 | 149 | 666 | 777 | 888 | | | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 1 | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | |

PENYIMPANAN - DIGIT

NOTE : Kolom 9 s/d 20 diisi menurut kapasitas sentral .

DIKETAHUI :

| NAMA | JABATAN | PARAF |
|---|---|---|
| TGL. | | |

CATATAN :

PETUGAS

| | PARAF |
|---|---|
| 1 | |
| 2 | |

71

HARI / TGL. : .................

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

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

KANTOR : 

## PENGETESAN DIAL CODE STORAGE

Table 32.

- OUT - GOING -

| ITEM / WSP NOMOR | PENANGKAPAN WSP. ⊗ MT | RELAY PENYIMPAN COS + DIGIT | | | | | | | | RELAY PENGAWAS WAKTU | | | | PENGIRIMAN | | | PEMBATALAN PANGGILAN | KETERANGAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C.O.S | | | | | DIGIT | | | REVERTED PULSE I | REVERTED PULSE II | IGN. TIDAK MENDIAL | INTER - DIGIT. | DIGIT COS | KE TWK-D2A / P.T.S. KE IGN. | WG - IV PROGRAM | | |
| | | 11 | 22 | 33 | 44 | 77 | 27 | 56 | 71 | | | | | | | | | |
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17. | 18 | 19 |
| 1 | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7. | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |

NOTE : Kolom 2 s/d 18, beri tanda :  V = normal

X = tidak normal

DIKETAHUI :

| NAMA | JABATAN | PARAF |
|---|---|---|
| TGL. | | |

CATATAN :

PETUGAS

| | PARAF |
|---|---|
| 1 | |
| 2 | |

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