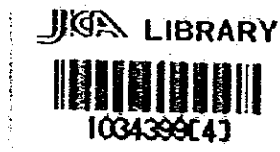


FEASIBILITY STUDY REPORT
ON
COASTAL RADIO COMMUNICATIONS
IN
THE REPUBLIC OF INDONESIA



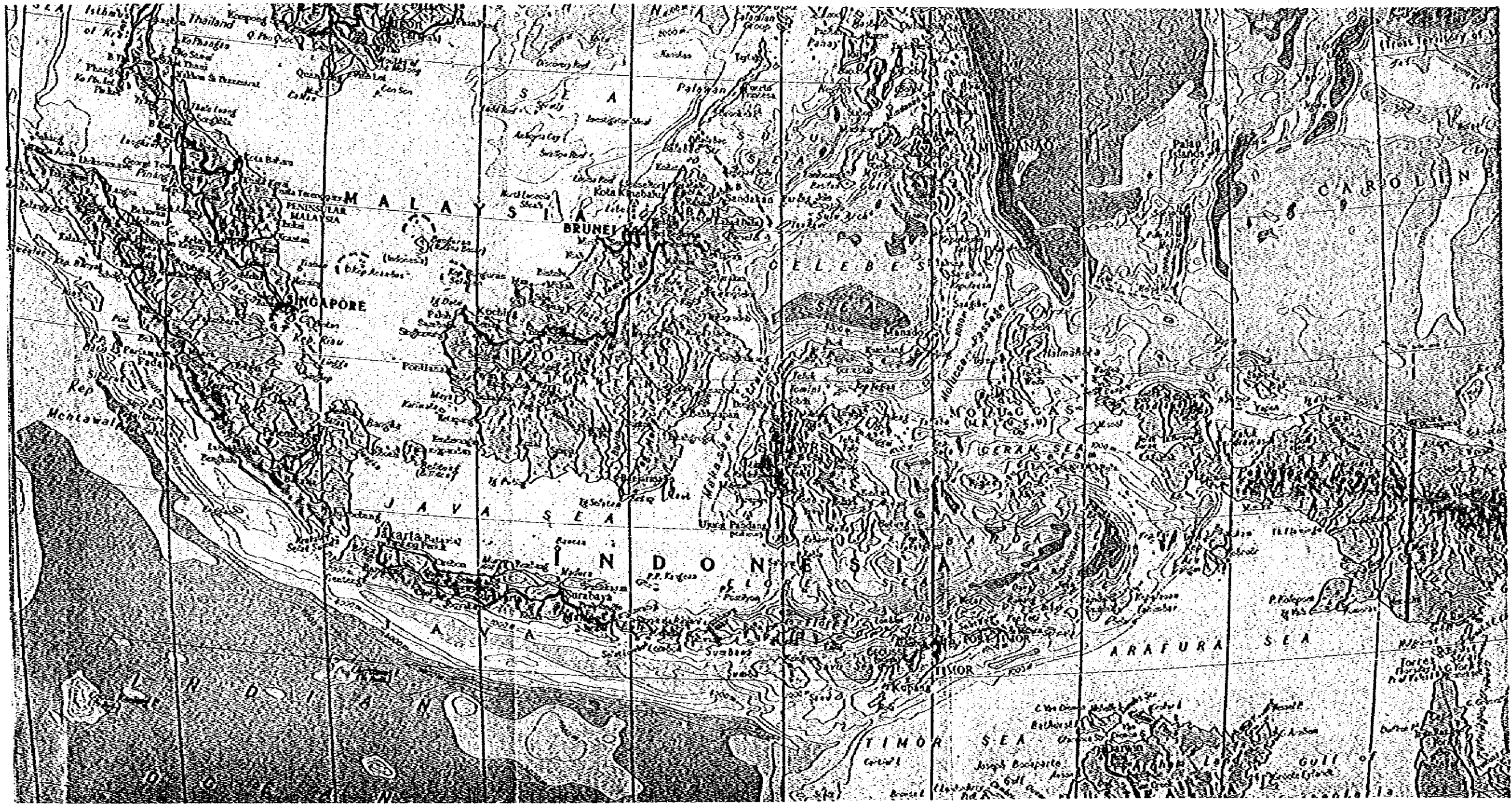
March 1981

Japan International Cooperation Agency

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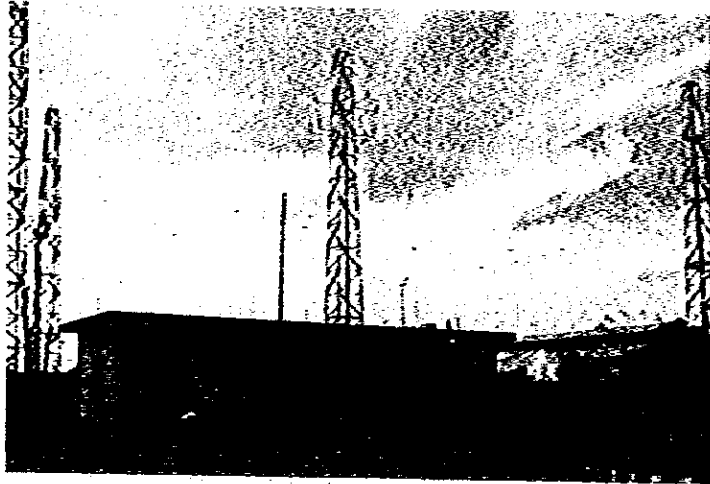




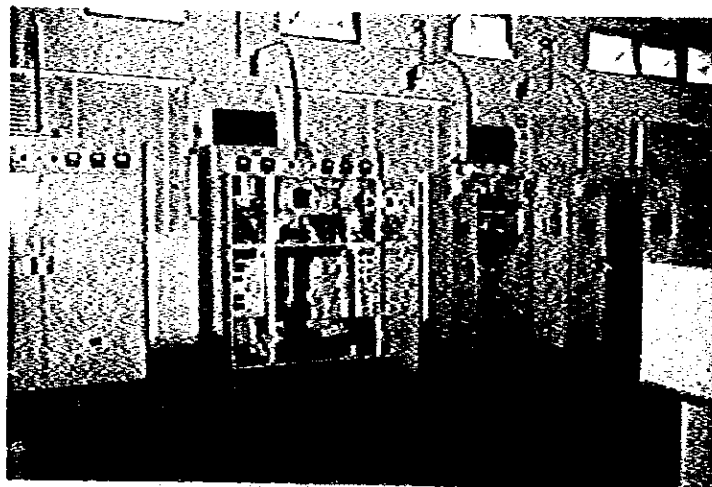
Panoramic view of new JAKARTA receiving station site



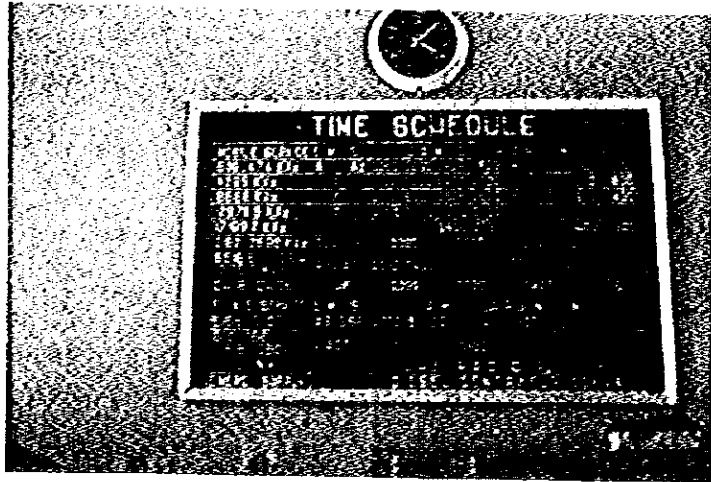
Channelized Receivers in JAKARTA Receiving Station



SURABAYA Receiving Station



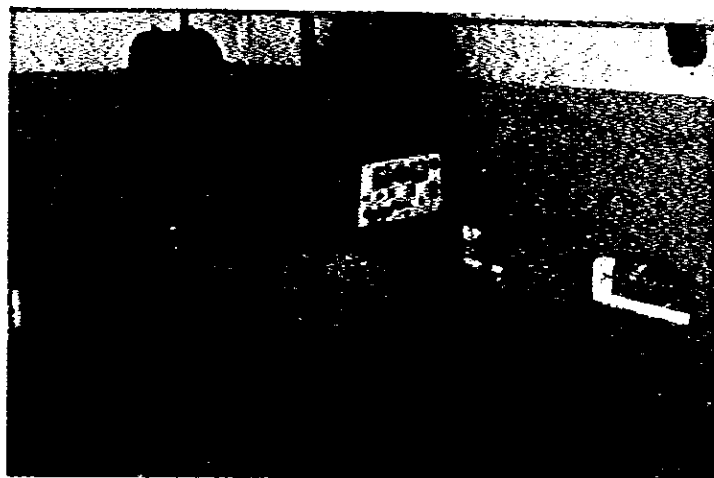
UJUNG PANDANG Transmitting Station



TIME SCHEDULE



BITUNG Receiving Station



Diesel Engine Generator in BITUNG Receiving Station

PREFACE

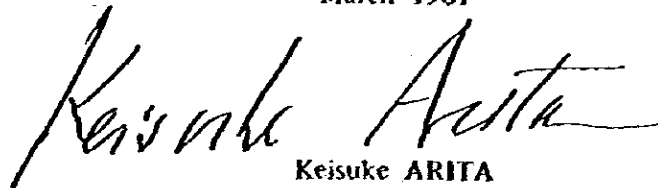
In response to a request of the Government of the Republic of Indonesia, the Government of Japan decided to make a feasibility study on coastal radio communications and entrusted the work to the Japan International Cooperation Agency. The J.I.C.A. sent to Indonesia a 7-man survey team headed by Mr. Yoichi KOBAYASHI, Deputy Director, Aeronautical and Maritime Division, Radio Communications Department, Radio Regulatory Bureau, Ministry of Posts and Telecommunications, from January 31 to February 20, 1981.

The team had discussions with the officials concerned of the Government of Indonesia, Directorate General of Sea Communications and conducted a site survey on coastal radio stations. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of Indonesia for their close cooperation extended to the team.

March 1981



Keisuke ARITA
President

Japan International Cooperation Agency

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I Results of The Study

Results of the study are summarized as follows:

1. The maritime transportation is very important measures in Indonesia.
2. The volume of Export and Import handled in Indonesia shows the outstanding growth in these ten years.
3. The volume of maritime communications has increased remarkably in recent years.
4. Particular attention shall be drawn for 24-hour watch of Distress, Urgent and Safety signal, but the equipment of each station is not sufficient.
5. Jakarta receiving station suffers from man-made noise interference, other communications disturbance and overflow in rainy season.
6. The volume of the traffic at Semarang 3rd class station increased remarkably.
7. Communication system and equipment of each coast station are not sufficient to cope with the rapid increase of traffic and to maintain the efficient operation.
8. Link between the transmitting station and the receiving station requires very high reliability, but a number of station have no protection against a failure in the working link. And some of the UHF link equipment in use does not work satisfactorily.
9. In a number of station, the remote control equipment of the transmitter from the receiving station does not work satisfactorily.

II Conclusion and Recommendation

Basing on the results of the studies the following conclusion has been reached.

1. It is imminent to improve and modernize the coastal radio communication system in the Republic of Indonesia considering that the maritime transportation is vitally important for economical and social activities in Indonesia, yet the present facilities of the coastal radio communication system contain a significant number of outdated, unreliable or deficient equipments.
2. The improvement and modernization plan of the coastal radio communication system shall be regarded as a starting point of the long-term development plan which will cover the period until the year 2000.

In the long-term development plan an account will be taken for introduction of a latest technology in search and rescue and telecommunication services.

3. The main equipments to be procured as urgent countermeasure for improvement and modernization of the coastal radio communication system are listed on Appendix II.

Following are brief explanations to this table.

3-1 Transmitter

- Reinforcement of transmitting capability in Jakarta with 5 Kw MF telegraph transmitters and 5 Kw HF telegraph and telephone transmitters is necessary.

But no procurement of p-p (point to point) HF ISB transmitters is considered since the p-p communication can be gradually transferred to PALAPA satellite system.

- Reinforcement of s-s (ship to shore) telegraph and telephone communication services with 1 Kw MF/HF transmitter is necessary for all the stations except SORONG and MERAUKE.
- One set of 100 w HF tranceiver is required for JAYAPURA.

3-2 Receiver

- To reinforce capabilities of s-s watch and communication five (5) to thirteen (13) sets of all wave receivers with an appropriate number of preset units and scanning units are required for all the stations except SORONG and MERAUKE.
- Also to be added for p-p communication are 11 sets of all wave receivers each of which is equipped with preset unit for JAKARTA while 1 to 2 sets of the same for stations other than JAKARTA, SORONG and MERAUKE to improve the efficiency of communications.

3-3 ARQ

To cope with the demand for p-p telex and telegraph, seven (7) sets of ARQ equipment are required for JAKARTA and one (1) set of ARQ equipment is required each for other 1st class stations.

3-4 VODAS and LINCOMPEX

- Two (2) sets of VODAS for JAKARTA and one (1) set each for Ujung Pandang, Bitung and Jayapura are required for improved telephone communication.
- Seven (7) sets of LINCOMPEX for JAKARTA and one (1) set each for other 1st class stations are required for improvement of the quality of telephone communication.

3-5 Antenna System

One (1) set of Antenna system is necessary to cope with the addition of the equipment for each 1st class station and Semarang, Sorong and Merauke and to replace the defective Antenna System for some of these stations.

3-6 Operation Position

Supervisory Console, Control Console with Remote Control equipment and/or Control Desk are necessary for all the mentioned stations for improvement of operating efficiency.

3-7 Monitor Console

To cope with ITU Radio Regulation 1979, SOLAS 1974 and Maritime Search and Rescue 1979, one (1) set of Monitor Console, 500 KHZ and 2,182 KHZ Auto Alarm Receiver, Direction Finder, All Wave Receiver, Scanning Unit and Tape Recorder are necessary for each 1st class station and Semarang, and 500 KHZ and 2,182 KHZ Auto Alarm Receivers are necessary for Sorong and Merauke.

4. The total cost required for implementation of the above-mentioned development and modernization is estimated as;

- | | | |
|-----------------------------|------|---------------|
| 1) Foreign Currency Portion | US\$ | 10 million |
| 2) Local Currency Portion | Rp. | 895.7 million |

SECTION I GENERAL

1. Objective of The Study

The objective of this study is to investigate the feasibility of the improvement and modernization of the Coastal Radio Communications as the first stage of long term development plan of maritime communications project in Indonesia.

Stations to be studied are:

- Jakarta Central Coast Station;
- First class coast stations at Surabaya, Belawan, Ujung Pandang, Ambon, Dumai, Bitung, and Jayapura;
- Third class coast stations at Semarang, Sorong and Merauke.

The studies were made for;

- a. present status of coastal radio communication network, coast station facilities and services
- b. coastal radio communication development plan
- c. technical standards of coast station facilities
- d. relevant laws and regulations
- e. overall system configuration
- f. procurement & installation costs of the facilities and the operation and maintenance costs
- g. effect of the project

These studies have been made through;

- interview with relevant Government departments and Agencies
- field survey of the relevant coast stations, i.e. Jakarta, Belawan, Semarang, Surabaya, Ujung Pandang, Bitung, and Ambon
- reviewing and analysing the relevant collected data

2. Background

The coast station network concept covering the whole territories of Indonesia was established in 1967.

According to this network concept, the whole territory of Indonesia was divided into nine (9) maritime areas and in each maritime area the main station and several substations were established in principle as shown in Fig. 1.

The main station and sub-stations are connected by the ISB and SSB system telephone, telegraph and/or telex systems. The main stations and Jakarta Central Station are connected by the telegraph, telex and telephone system. Since 1968, the Indonesia coast station rehabilitation project has been proceeded under the Development Aid from both Japanese and Netherland Governments.

In the scheme of the first five year development program, more than fifty (50) coast stations were implemented amounting ¥ 1.2 Billion from Japan and NFL 11 Million from Netherland.

Recently, however, the volume of maritime communications have shown a spiral growth, but the present facilities are timeworn and not sufficient to meet such demand and also there arises urgent need to improve and modernize the facilities in accordance with the ITU Radio Regulation 1979, SOLAS 1974 and the Maritime Search and Rescue Convention 1979.

In such conditions the Government of Japan decided in response to the request of Government of Indonesia to conduct a feasibility study on Coastal Radio Communications. Japan International Cooperation Agency (JICA) despatched a survey team to carry out the study.

3. Organization of the Study Team

Member	In Charge of	Affiliated to
Yoichi KOBAYASHI	General Leader	Deputy Director, Aeronautical & Maritime Division, Radio Communications Department, Radio Regulatory Bureau, Ministry of Posts & Telecommunications
Masataka KAWAUCHI	Station plan	Engineer, Technical Investigation Division, Radio Regulatory Bureau, Ministry of Posts & Telecommunications
Michitoshi TANAKA	Network Plan	Senior Engineer, International Cooperation Department, Kokusai Denshin Denwa Co., Ltd.
Koji TOMODA	Operation Plan	Staff Engineer, International Affairs Bureau, Nippon Telegraph & Telephone Public Corporation
Haruo ISHIZUKA	Facility Plan	Chief Engineer, International Operation Division, The Nippon Telecommunications Consulting Co., Ltd.
Tetsuo INOUE	System Design	Senior Engineer, International Operation Division, The Nippon Telecommunications Consulting Co., Ltd.
Norimoto OHTAKE	Coordinator	Special Assistant to Director, Social Development Cooperation Department, Japan International Cooperation Agency

4. Itinerary

Date	Group A	Group B
Feb. 10(Tue)	Mr. TOMODA, Mr. ISHIZUKA, Mr. INOUE arrive Jakarta by JL711	
11(Wed)	Site survey on Belawan Coastal Station	Site survey on Ambon Coastal Station
12(Thu)	"	Site survey on Ambon Coastal Station, Ujung Pandang Coastal Station
13(Fri)	Site survey on Semarang Coastal Station	Site survey on Ujung Pandang Coastal Station, Bitung Coastal Station
14(Sat)	"	Site survey on Bitung Coastal Station
15(Sun)	Collection of Data	Collection of Data
16(Mon)	Site survey on Sumarang Coastal Station	Site survey on Bena Coastal Station
17(Tue)	Draft Report Making	
18(Wed)	"	
19(Thu)	Report to Sea Comm, Japanese Embassy, JICA and OECF	
20(Fri)	Leave Jakarta 08:00, CX710/CX500 arrive Tokyo 21:15	

SECTION II PRESENT STATUS OF COASTAL RADIO COMMUNICATION NETWORK, COAST STATION FACILITIES AND SERVICES

1. Existing Coast Stations

The total number of the existing stations at present is 93 as listed below and in Appendix 1. (Refer to Fig. 1)

<u>Station Class</u>	<u>No. of Stations</u>
Central (1st)	1
1st	8
2nd	2
3rd	12
4th A	14
4th B	56
Total	93

The definition of the station classes is given in Appendix 2. All the main stations are connected to Jakarta Central Station by telegraph, telex and telephone.

The most important objectives of the maritime communication system are to ensure the safety of life at sea and to improve the maritime transportation efficiency.

2. Volume of Export and Import Cargoes

Number of ships that have made port at Jakarta is given in Table 2.

Table 2 Number of ships that made port at Jakarta

<u>Year</u>	<u>More than 500 M³</u>	<u>Less than 500 M³</u>	<u>Total</u>
1977	4,506	6,207	10,713
1978	4,557	6,124	10,681
1979	4,704	6,271	10,975

The volumes of export and import cargoes handled at main Indonesian ports in the past ten (10) years are tabulated in Appendixes 3 and 4.

These tables show that the total volumes of import and export cargoes have grown up to approximately 4 times and 2.9 times respectively.

3. Communication Services

3-1 Telgraph and Telex

The telegraph and telex services handled at Jakarta in the past 10 years are given in the table below.

<u>Year</u>	<u>Fixed Services</u>	<u>Mobile Services</u>	<u>Total</u>
1969	22,900	23,200	46,100
1970	20,300	25,600	45,900
1971	27,010	30,972	57,982
1972	28,694	34,246	62,940
1973	24,640	46,653	71,293
1974	30,606	41,404	72,010
1975	32,111	47,784	79,895
1976	33,616	54,164	87,780
1977	30,480	56,076	86,556
1978	24,408	61,236	85,644

As clearly seen in this table, the mobile services have grown up to 2.6 times during the past ten (10) years while the growth of the fixed service is not so significant due to insufficient capacities of telegraph and telex facilities.

Ship-to-shore telegram service is provided by MF and HP.

All the public telegrams destined to addressees in Indonesia and foreign countries are forwarded to the local telegraph office. Telegrams destined to shipping companies are admitted to be delivered directly by telex or telephone from the coast station.

Distress, urgency and safety telegrams would be delivered directly to the authorities concerned through the coast stations and message center.

Meteorological telegrams from ships would be delivered through the coast stations to the nearest Indonesia Meteorological Agency.

No telex service is provided between coast and ship stations.

Telex is used only for communication with:

- local telegraph offices
- offices of the Directorate General of Sea Communications
- local shipping companies, for delivery and accepting radio telegrams from and to ship stations.

3-2 Telephone Service

Ship-to-shore communication is provided by MF, HF and VHF.

Public telephone service is made from the coast station to:

- a telephone subscriber in the telephone area of the coast station by direct dialing
- other telephone subscriber in Indonesia through the operator (admitted only from Jakarta radio and Surabaya radio)
- a subscriber in abroad by Intelsat through the operator in Jakarta (admitted only from Jakarta radio and Surabaya radio)

3-3 Emergency Call

The emergency call may originate from:

- ships in distress through other ships or coast stations
- S.A.R. Headquarters relating aircraft in distress
- other government officials (Port Authorities, etc.)

The emergency call is made by telegram, telex or telephone.

Organizations concerned with the emergency call are:

- S.A.R. Headquarters at Halim Perdonakusumah Airport
- Indonesian Navy
- Directorate General of Sea Communications
- Directorate General of Air Communications
- Port Authorities

3-4 Present situation of existing marine radio-communication stations is given in the respective tables in the appendixes as follows:

- Appendix 5 Operation Hours of Maritime Mobile Services and Point to Point Communication Network
- Appendix 6 Station Site Layout Including Antenna Position
- Appendix 7 Equipment Layout
- Appendix 8 Existing Land and Building Spaces
- Appendix 9 Organization of Directorate General of Sea Communications
- Appendix 10 Chart of Organization and Personnel of Coast Station

3-5 Organization and O & M Staff

(1) Directorate General of Sea Communications

The organization of Directorate General of Sea Communication is shown in Appendix 9.

The Sub Directorate for Marine Electronics and Telecommunications is responsible for the establishment and development of the maritime telecommunication system to support the operation of the merchant fleet, the government vessels of the Directorate General of Sea Communications and

fishery vessels, and to promote the marine telecommunication services in accordance with the international regulations. For the execution of the above-mentioned tasks the following functions are carried out:

- a. To provide the radio communication services by telephone, telegraph and telex for the Directorate General of Sea Communications.
- b. To control the use of the marine telecommunication and electronic equipment.
- c. To manage the use of coastal radio communication and shipborne equipment and the electronic navigation aids on board ships and on shore.
- d. To establish and control the electronic workshop and mainstorage of the Directorate General of Sea Communications.
- e. To operate and control the coast station.

The Sub Directorate for Marine Electronics and Telecommunication consists of:

- a. Planning and development sections
- b. Maritime Telecommunication Management section
- c. Technical section
- d. Marine traffic accounting section

(2) Organization of Stations and O & M Staff

The organization charts of the first class and the third class coast stations are given in Appendix 10.

According to Appendix 10, the total number of staff to be allocated for the stations as the standard formation amounts to 568 persons in total while the total number of staff actually assigned is 384 persons.

SECTION III DEVELOPMENT PLAN OF COASTAL RADIO COMMUNICATIONS

The improvement and modernization plan of the coastal radio communications will constitute the first stage of the long term development plan of maritime communications in Indonesia.

Therefore smooth proceeding of the long term plan shall be taken into account.

In preparing the improvement and modernization plan, the following points have been taken into consideration as far as possible.

1. The systems which do not meet the latest technical requirements of the international standards, such as ITU Radio Regulation 1976, Solas 1974 and Maritime Search and Rescue 1979 shall be graded up or replaced.

Particular attention should be drawn to the facilities for 24-hour watching of the distress, urgent and safety signal and for transferring messages to SAR.

2. Uniformity in type or system of facilities should be pursued.
3. Any station should be moved to an appropriate location if the station suffers from noise interferences by various noise sources near the station.
4. Attention shall be paid for good coordination between maritime coast station and other government owned communication agencies i.e., Perum Telekomunikasi, Meteorological and Geophysic Institute, Search and Rescue Agency.

5. Acting in concert with Semarang Port Improvement Project which is now in engineering stage, Semarang Coast Station should be upgraded from 3rd class to 2nd class.
6. Adequate training program for operators and maintenance technicians for efficient operation shall be established.

SECTION IV APPROACH TO IMPROVEMENT AND MODERNIZATION OF COASTAL RADIO COMMUNICATIONS

As the results of the field survey, it has been considered necessary to replace obsolete or defective equipments with new equipments of improved performance and/or to procure new additional equipments to improve or expand the coastal radio communication services and to reorganize shore to ship communication system in accordance with provision of the latest ITU Radio Regulation, SOLAS and Maritime Search and Rescue as follows.

1. Equipments and Materials

Equipments and materials to be procured are listed in Appendix 11.

2. MF and HF Transmitters and Receivers

The lists of existing transmitters and receivers to be scrapped, removed, used continuously as a working unit or a standby unit and newly procured equipment are given in Appendix 12.

3. Relocation of Jakarta Receiving Station

Relocation of Jakarta Receiving Station is necessary from the following reasons.

- Present Jakarta Receiving Station is now suffering from severe city noises generated by various sources as a result of recent urbanization of the surrounding area.
- Present site is liable to be flooded during rainy season due to low ground level of the site area.
- The floor space of the operation room became insufficient to accommodate additional equipment.

The new receiving station site has been selected out of several different sites taking into account various factors, i.e., radio wave propagation both for MF/HF communication services and for UHF link to/from the transmitting station and the message center, environmental noises, mains power supply, topographical conditions, accessibility, etc.

In particular, the measurement of the environmental noise has been made by Indonesian Side to confirm that the amount of the noises is within an acceptable level.

The new site is at Komplek BPP Rt. 003/Rw. 08 Kramat Tunggak Kelurahan Tugu Kecamatan Koja Tanjung Priok, Jakarta Utara as shown in Appendix 13.

The proposed new site is 3.5 Km from the transmitting station and 12.4 Km from the message center.

For this receiving station site, acquisition and improvement of the land of 20,000 m², construction of main building and power generating building and erection of antenna towers are necessary.

4. Grade-up of Semarang Third Class Coastal Radio Station

Grade-up of Semarang third class coastal radio station to the second class station in conjunction with the growth of the demand by the development plan of the Semarang Port.

For up-grading the facilities, refer to Appendixes 11 and 12.

5. Improvement of Sorong and Merauke Coast Stations

Two third class coastal radio stations, i.e., Sorong and Merauke should be improved in compliance with the requirement of the continuous watch on the emergency

frequencies for telephone and telegraph. For equipment to be provided to these two (2) stations, refer to Appendixes 11 and 12.

6. Training

Training of the senior radio officers and radio technicians shall take place in the factory. These senior trainees will be appointed as the instructor for the radio operators and radio technicians.

Number of trainee are 23 persons in total as follows.

5 persons for Jakarta Radio

2 persons each for Belawan, Dumai, Surabaya, Semarang,
(16 persons in total) Ujung Pandang, Bitung, Ambon
and Jayapura

1 person each for Sorong and Merauke

(2 persons in total)

23 persons in Total

Training period is two (2) months.

Training subjects should include;

- Basic theory
- Principle of operation of equipment and system
- Method of adjustments
- Fault correction
- Method of preventive maintenance
- Instruction to test equipment to be used
- Practices of operation and test of the equipment to be delivered
- Observation trip to typical coast station and radio navigation aid stations, etc.

7. Employment of Consultant

To manage the project implementation, employment of a competent consultant is required.

Responsibilities of the consultant should include;

- (1) Study and recommendation with regard to the plan prepared by the Directorate General of Sea Communications
- (2) System design of coastal radio communications
- (3) Preparation of tender documents
- (4) Assistance for evaluation of tender proposals
- (5) Assistance for contract negotiations
- (6) Preparation of inspection specifications
- (7) Execution of witness-inspection at factory
- (8) Submission of inspection report and issuance of inspection certificate
- (9) Check and review of installation drawings
- (10) Control and adjustment of overall project progress
- (11) Examination of installation design and schedule
- (12) Supervision of installation
- (13) Witness to acceptance test
- (14) Presentation of monthly progress report

8. Implementation Time Schedule

Proposed implementation time schedule is attached as Appendix 14.

9. Miscellaneous

- (1) Particular attention should be drawn for execution of the improvement and modernization as follows.
 - a. New buildings to be built from now on for coast stations shall be constructed taking into account the protection from high humidity and salty wind from the sea.
 - b. For existing coast station buildings, suitable protection from high humidity and salty wind from the sea should also be considered.

- c. ARQ equipment and Lincompex equipment that are procured should comply with the specifications of Recommendations on CCIR SG-8 (Maritime Mobile Services).
 - d. ISB receivers that are procured for improvement of the point to point communications should be able to use for the ship to shore communications by simple modifications in future.
 - e. Effective re-allocation of the removed equipment to 2nd-4th class stations should be considered.
- (2) Suitable maintenance plan should be prepared in order to always maintain the function of coast stations at a satisfactory level.
- (3) Point to point telephone communication between 1st class stations should be possible by duplex operation within a same frequency band.

SECTION V COST ESTIMATION

Cost estimation for the improvement and modernization plan is summarized in Table 1.

Through accomplishing this improvement and modernization plan, a number of problems pointed out and summarized in para. II, Result of The Study of SUMMARY OF FEASIBILITY STUDY, Conclusion and Recommendation will be solved.

This will insure the safety of life at sea in the event of emergency leading to return of indirect economical and social benefits to the people of Indonesia. The scope of estimation is described below.

Thus, the implementation of this plan will facilitate a steady expansion of marine transportation and contribute to prosperity of local society.

1. Scope of Estimation in Foreign Currency

1-1 Equipment

Cost for equipment includes:

- C.I.F. equipment cost (for list of equipment to be provided, refer to Appendix 11);
- Cost for spare parts or units for three (3) year operation.

1-2 Training

Cost for training for 23 trainees includes:

- Return air flight fare (Jakarta and Tokyo);
- Personnel expenses for manufacturer's instructors;
- Living cost for trainees in Japan for two (2) months;
- Cost for text books and training materials;
- Travelling cost in Japan.

1-3 Consultancy services

Cost for consultant includes:

- Payroll;
- Overhead Charges;
- Engineering fee;
- Flight fare;
- Printing fee.

1-4 Contingency

2. Scope of Estimation in Local Currency

2-1 Contractor

- (1) Cost for installation including the cost for installation material, domestic flight fare and local transportation, antenna and tower.
- (2) Testing fee.
- (3) Office expenses.
- (4) Living allowances.
- (5) Communication fee.
- (6) Vehicle maintenance fee and fuel charge.

2-2 Consultant

- (1) Living allowance
- (2) Domestic flight fare
- (3) Local transportation
- (4) Office rent share
- (5) Communication fee
- (6) Office supply and printing fare
- (7) Electricity and city water charge.
- (8) Bilingual Secretary
- (9) Labourer Fee
- (10) Sales tax 2.5 %

BREAKDOWN OF ESTIMATED-PROJECT COST

<u>1. COST FOR EQUIPMENT</u>	<u>CIF JAKARTA</u> <u>(JAPANESE YEN)</u>
(1) JAKARTA CENTRAL STATION	
a) TRANSMITTER STATION	¥ 428,330,000.-
b) RECEIVING STATION	¥ 353,980,000.-
c) MESSAGE CENTER	¥ 34,590,000.-
d) MEASUREING INSTRUMENTS & TOOLS	¥ 22,280,000.-
Sub-total (1) : CIF JAKARTA	¥ 839,180,000.-
(2) LOCAL STATIONS	
a) UJUNG PANDANG STATION	¥ 202,600,000.-
b) SURABAYA STATION	¥ 91,310,000.-
c) BELAWAN STATION	¥ 108,050,000.-
d) DUMAI STATION	¥ 91,310,000.-
e) BITUNG STATION	¥ 158,520,000.-
f) JAYAPURA STATION	¥ 162,100,000.-
g) AMBON STATION	¥ 79,990,000.-
h) SEMARANG STATION	¥ 153,700,000.-
i) SORONG/MERAUKE STATIONS	¥ 4,400,000.-
j) MEASURING INSTRUMENTS	¥ 34,640,000.-
k) LOCAL ADMINISTRATION LINKS	¥ 98,200,000.-
Sub-total (2) : CIF JAKARTA	¥1,184,820,000.-
TOTAL (1) + (2) : CIF JAKARTA	¥2,024,000,000.-
 2. TRAINING	 ¥ 46,000,000.-
3. CONSULTANT FEE	¥ 138,000,000.-
4. CONTINGENCY	¥ 92,000,000.-
GRAND TOTAL	¥ 2,300,000,000.- (US\$ 10,000,000.-)

SECTION VI EFFECT OF INVESTMENT

As is well known, economic activities in Indonesia largely depend on maritime transportation since her territory lies over an extensive water area of approx. 5,000 Km from east to west and approx. 2,000 Km from south to north.

Safety of maritime transportation can be guaranteed by an appropriate coastal radio communication system and an associated and efficient organization to control it.

With a view to establishing a satisfactory system and organization, a long-term development programme of coastal radio communications covering the period up to the year 2000 is now under planning.

At this moment, however, most of the existing equipments in 9 first class coast stations which constitute a backbone of the coastal radio communications system in Indonesia are timeworn, obsolete, or defective. In order to ensure the successful implementation of the long-term development programme, such equipments should be replaced and the system should be improved and modernized before starting the programme.

Also from the standpoint of new international requirements prescribed in ITU Radio Regulations, SOLAS and SAR, the system must be improved and modernized urgently.

When a new project is taken up for study with respect to the effect of investment, it is necessary to make a thorough examination as to whether or not:

- (1) the invested capital will be returned within a reasonable period; and
- (2) the invested capital is properly allotted in view of both technical and economical standpoints.

For this project, however, Item (1) above cannot be applied, because this is a national project, of which first aim is to ensure safety of human life and navigation and not to gain the maximum benefit from the system completed.

It follows that, even if the invested capital is not likely to be returned within a reasonable period, the system should be established and operated with the support of the national budget.

Note: There will be some amount of income from users of public communication services over this coastal radio communications system. However, such income will be too small to be deemed as a return of investment.

With respect to Item (2), a careful study must be made in consideration of the long-term development plan to be implemented before long. That is, the equipments that may become useless before completing their useful lives when the long-term programme is implemented should not be provided under this project. In other words, effective use of equipments even after the implementation of the long-term programme should be ensured.

The coastal radio communications system will be reinforced step by step, and the use of domestic satellite for this system will be realized several years from the completion of this project.

Under the above circumstances, effective use of the existing and newly installed equipments will be achieved as follows:

- (1) Some of the existing equipments to be replaced by the newly installed equipments will be re-used for another services which require less grade of quality. In this way, they can be used up to their useful lives.
- (2) All the equipments newly installed under this project will be used up to their useful lives.

Scrapping of the equipments after their useful lives will be justified.

In the following is given a comparison between the point-to-point communication system by the own HF radio facilities and that by PERUMTEL terrestrial microwave or domestic satellite system.

- Quality

Assuming that PERUMTEL channel is the terrestrial microwave or the domestic satellite system, PERUMTEL channel in general, presents a better quality than the own HF channel.

- Stability

HF radio channel is liable to undergo the static noise, electromagnetic disturbances and signal fading owing to instability of the ionosphere, while the domestic satellite or the terrestrial microwave link presents superior stability.

- Availability

In HF radio channel, 24-hour continuous operation is not possible due to instability of the ionosphere, while in PERUMTEL channel, 24-hour continuous operation is possible, in principle.

- Frequency assignment

Frequency assignment on HF band is necessary for the own HF channel.

- Cost

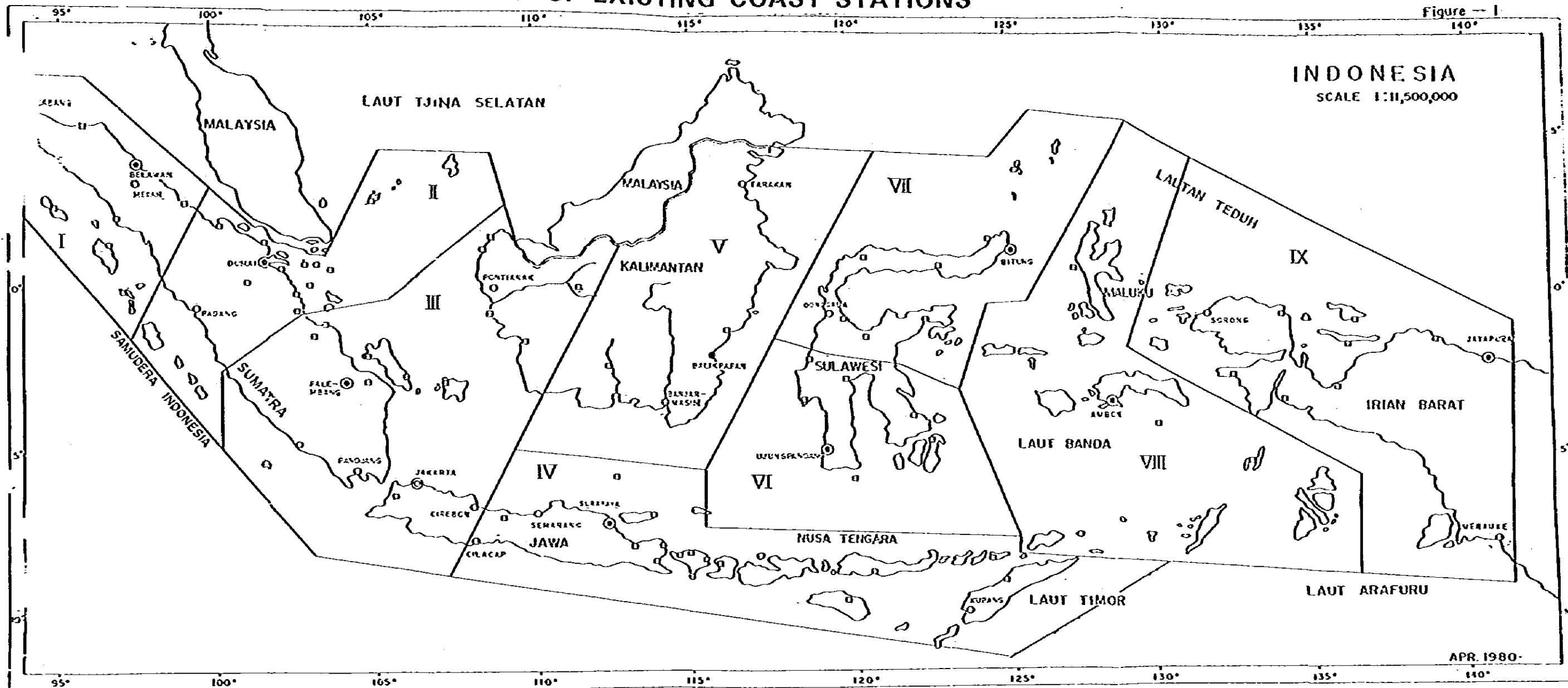
The cost for using the own HF radio channel is lower than that for PERUMTEL channel, but the difference is not so significant in case the actual circuits use period (chargeable time) is short, i.e., one or two hours a day.

In addition, it should be noted that according to the national policy on telecommunications of Indonesia, the point-to-point communications between the first class coast stations shall use PERUMTEL channels, in principle, wherever they are available, to avoid unnecessary double investment.

This policy together with the above-mentioned advantages of the PERUMTEL channels over the exclusively used channels owned by the coastal communication system, will undoubtedly justify the use of PERUMTEL channels.

MAP OF EXISTING COAST STATIONS

Figure -- I



- | | |
|---------------------|---------------------|
| ⊙ CENTRAL STATION | ○ 3RD CLASS STATION |
| ⊕ 1ST CLASS STATION | ◐ 4TH CLASS STATION |
| ● 2ND CLASS STATION | |

LIST OF COAST STATIONS IN INDONESIA

APPENDIX -1
APRIL, 1980

	Station Name	Class	Call Sign		Area	Remarks
			Mobile	Fixed		
1	Belawan	I	PKB	8A1	I	
2	Dumai	I	PKP	8A0	II	
3	Palembang	I	PKC	8AB	III	
4	Jakarta (Tg. Priok)	I	PKI	8AA	III	Central St.
5	Surabaya	I	PKD	8AD	IV	
6	Ujung Pandang	I	PKP	8AP	VI	
7	Bitung	I	PKM	8AS2	VII	
8	Ambon	I	PKE	8AQ	VIII	
9	Jayapura	I	PNK	8AT	IX	
10	Sabang	II	PKA	8A12	I	
11	Balikpapan	II	PKN	8AR	V	
12	Teluk Bayur	III	PKP2	8A02	II	(Padang)
13	Panjang	III	PKC4	8AB2	III	
14	Cirebon	III	PKZ2	8AA2	III	
15	Semarang	III	PKR	8AC	IV	
16	Cilacap	III	PKR3	8AC3	IV	
17	Kupang	III	PKR	8AD2	IV	
18	Pontianak	III	PKS	8AP	III	
19	Banjarmasin	III	PKG	8AN	V	
20	Tarakan	III	PKO	8AG	V	
21	Donggala	III	PKM9	8AS7	VII	
22	Sorong	III	PKY4	8AT4	IX	
23	Merauke	III	PKY5	8AT5	IX	
24	Sibolga	IV/A	PKB3	8AT4	I	
25	Tg. Pinang	"	PKJ2	8AJ	II	
26	Tg. Balai Karimun	"	PKJ4	8AK	II	
27	Tg. Uban	"	PKJ	8AH	II	
28	Jambi	"	PKC3	8AM	III	
29	Benoa	"	PKD5	8AD5	IV	
30	Ampenan	"	PKD3	8AD9	IV	
31	Panarukan	"	PKD2	8AD3	IV	

(to be cont'd)

	Station Name	Class	Call Sign		Area	Remarks
			Mobile	Fixed		
32	Sampit	IV/A	PKG2	8AN7	V	
33	Samarinda	"	PKN3	8AR2	V	
34	Ternate	"	PKE5	8AQ2	VIII	
35	Hanokwari	"	PKY3	8AT3	IX	
36	Biak	"	PKY2	8AT2	IX	
37	Dili	"	PKA5	8AD23	IV	
38	Ule-Lhee	IV/B	PKA5	8A13	I	
39	Gunung Sitoli	"	-	8A15	I	
40	Dabo P. Singkep	"	-	8AJ2	II	
41	Pulau-Sambu	"	PKJ3	8AL	II	
42	Tarempa	"	-	8AM4	II	
43	Tembilahan	"	-	8A03	II	
44	Pekan Baru	"	PKD7	8A04	II	
45	Bagan Siapi-Api	"	-	8A05	II	
46	Selat Panjang	"	PKP3	8A06	II	
47	Reogat	"	-	8A023	II	
48	Bengkalis	"	-	8A024	II	
49	Muara Sabak	"	-	8AM5	III	
50	Bengkulu	"	-	8AB3	III	
51	Pangkalan Balan	"	PKC5	8AB4	III	
52	Muntok	"	-	8AB5	III	
53	Tg. Pandan	"	-	8AB9	III	
54	Tegal	"	PKD21	8AC2	IV	
55	Baweau	"	-	8AC4	IV	
56	Kalianget	"	-	8AC5	IV	
57	Buleleng /Celukan Bawang	"	-	8AC6/8AC22		
58	Padang Bai	"	-	8AC7		
59	Lebdar	"	-	8AC8		
60	Bada	"	-	8AC9		
61	Waingapu	"	-	8AC20	IV	
62	Kalabahi	"	-	8AC21	IV	
63	Bica	"	-	8AD4		

(to be cont'd)

	Station Name	Class	Call Mobile	Sign Fixed	Area	Remarks
64	Probolinggo	IV/B	PKD23	8AD6	IV	
65	Ende	"	PKD20	8AD20	IV	
66	Maumere	"		8AD21		
67	Meneng	"	PKD22	8AD22	IV	
68	Teluk Air	"	-	8AF2		
79	Sintete	"	-	-		
70	Pulau Pisani	"	-	8AN5		
71	Nunukan	"	-	-		
72	Kuara Pegah	"	-	-		
73	Tg. Santan	"	-	-		
74	Kendari	"	PKF3	8AP2	VI	
75	Manado	"	-	8A3	VII	
76	Corontalo	"	PKM8	8AS3	VII	
77	Poso	"	PKM6	8AS4	VII	
78	Luwuk	"	PKM5	8AS5	VII	
89	Toli-Toli	"	PKM7	8AS6	VII	
80	Parigi	"	PKM4	8AS8	VII	
81	Ampean	"	-	8AS9	IV	
82	Tahuna	"	-	8AS20	VII	
83	Kolonedale	"	-	8AS21		
84	Siaur	"	-	8AS22		
85	Tual	"	PKE24	8AQ3	VIII	
86	Banda Neira	"	-	8AQ4	VIII	
87	Amamapare	"	-	8AT6		
88	Kaimana	"	-	8AT7	IX	
99	FAk-Fak	"	-	8AT8	IX	
90	Serui	"	-	8AT9	IX	
91	Nabire	"	-	8AT20	IX	
92	Sarmi	"	-	8AT21	IX	
93	Bintuni	"	-	8AT22		
94	Message Center		-	8AA		

9. DEFINITION OF THE STATION CLASS.

CLASSIFICATION OF COASTAL RADIO STATION'S CRITERIA IDENTIFICATION

CRITERIA OF CLASSIFICATION OF COASTAL RADIO STATION IN INDONESIA BASED ON :

1. Coverage area of distress frequency response.
Coastal Radio Station's ability to receive distress signals from and communicate with ship at sea using its facilities.
2. Traffic density of ship's sailing in the Coastal Radio Station's area.
3. Ship's call frequency in each Harbour in which Coastal Radio Station's is located.
4. Coastal Radio Station's activities i.e. Mobile service, fixed (shore - to-shore) service and other special services.
5. External relation between Coastal Radio Station's with other offices regarding with Coastal Radio Station's activities.
6. Coordination function of Coastal Radio Station's with other Coastal Radio Station's in the same region.

THE CLASSIFICATION OF COASTAL RADIO STATION

NO.	OPERATION AND SERVICES	first	second	third	Fourth class	
		class	class	class	A	B
I.	<u>SERVICE HOUR</u>	24	16	8	Hr	Hr
					less than 8 hours	
II.	<u>MOBILE SERVICES</u>					under
	1. Safety services.	yes	yes	yes	yes	proposal
	2. Communication for SAR Operational	yes	yes	yes	yes	under proposal
	3. Radio Navigation services	yes	yes	yes	yes	- II
	4. Special services	yes	-	-	-	-
	5. Maritime radio services for public correspondence.	yes	yes	yes	yes	-
	6. Port operation service	yes	yes	yes	- II	-
III.	<u>FIXED SERVICES</u>					
	1. Fixed services for voice of command from Head office of District of the Sea Communication to various harbour under his control.	yes	yes	yes	yes	yes II
	2. One way broadcast for official announcement and information from Directorate General of Sea Communication, and Head office of shipping District (Kapel)Madapel	yes	-	-	-	-
	3. Communication service between District Navigation office and light houses and other Aids to navigation operation and maintenance activities.	yes	yes	yes	yes-	-

EXPORTS BY IMPORTANT PORTS (1,000Ton)

APPENDIX - 3

Ports	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAWA and MADURA	1,079.1	1,239.1	2,167.5	4,333.4		10,637.2	7,613.8	10,691.5	12,940.4	11,484.8
Tg. Priok	173.1	160.2	660.8	3,019.1		7,038.2	5,365.6	8,373.1	10,012.3	9,896.5
Surabaya	540.7	710.4	853.3	719.4		996.3	622.2	568.9	535.4	645.1
Semarang	103.8	130.5	126.9	114.4		110.1	60.9	64.5	63.7	58.0
Cirebón	130.8	89.9	127.5	85.3		1,903.9	1,074.8	1,231.7	1,664.8	389.6
Others	130.8	148.1	399.0	395.2		588.7	490.3	453.3	664.2	435.6
SUMATRA	28,985.8	36,964.6	39,757.5	46,104.8		50,853.5	46,444.5	46,248.5	46,623.8	47,111.2
Belawan	549.3	493.0	595.5	651.4		835.3	870.0	933.4	915.3	936.1
Duaai	23,919.7	28,485.7	31,000.9	35,994.7		39,959.9	37,883.6	36,876.3	37,314.2	36,881.7
Pk Susu	1,497.8	2,380.3	1,998.9	2,179.2		2,206.4	1,656.8	1,406.4	1,182.8	1,027.3
Palembang	1,201.8	298.0	262.6	274.9		709.8	459.2	683.2	944.6	891.3
Panjang	241.5	311.9	410.9	583.8		510.7	375.6	281.5	299.8	358.4
Tg. Pinang	374.7	905.2	53.2	54.6		12.8	38.7	22.0	23.0	38.0
Belakang Padang	874.2	314.8	219.8			-	-	-	-	-
Others	1,326.8	3,775.7	5,215.7	6,366.2		6,618.6	5,160.6	6,045.7	5,944.1	6,978.4
KALIMANTAN	3,575.7	4,661.1	5,813.1	8,291.8		15,309.2	15,115.8	21,813.6	29,813.7	33,989.8
Pontianak	523.2	815.7	1,033.0	1,753.9		1,372.2	157.4	156.8	143.0	125.7
Banjarmasin	251.1	158.0	329.1	546.5		784.4	652.1	733.7	949.6	1,167.9
Balikpapan	1,036.8	488.6	562.3	1,416.9		2,255.7	2,568.6	3,852.1	4,657.1	5,920.1
Tarakan	794.2	518.2	716.4	494.6		1,089.0	816.4	1,567.6	2,040.0	2,691.5
Others	970.4	2,686.6	3,172.3	4,072.9		9,807.9	10,621.3	15,503.4	22,054.0	24,084.6
SULAWESI	506.8	616.1	1,045.6	1,161.5		1,486.3	1,119.3	1,231.0	1,339.0	1,229.8
Ujung Pandang	257.7	166.2	402.3	959.0		1,068.0	186.1	183.6	225.9	219.3
Bitung	111.8	82.8	61.9	131.7		102.2	106.0	109.5	81.4	91.9
Others	139.3	367.1	581.4	70.8		316.1	327.2	937.9	1,031.7	918.6
NUSA TENGGARA and MALUKU & IRIAN JAYA	118.8	613.4	918.0	1,299.1		2,605.3	2,921.7	3,737.7	4,555.5	7,451.5
TOTAL	35,268.2	44,094.3	49,701.7	61,183.6	77,762.9	80,891.5	73,215.1	83,722.3	95,302.4	101,267.1

IMPORTS BY IMPORTANT PORTS (1,000Ton)

APPENDIX - 4

Ports	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
JAWA and MADURA	2,165.8	2,470.2	2,743.0	3,844.2	4,928.7	6,641.9	6,051.0	7,722.2	10,341.1	9,719.2
Tg. Priok	1,631.7	1,644.4	1,789.5	2,572.4	3,489.3	4,200.2	3,992.3	4,106.6	4,224.5	4,815.7
Cirebon	6.9	61.7	67.8	89.7	88.2	174.1	103.7	169.7	479.4	420.6
Semarang	23.1	222.2	231.7	273.0	461.1	607.0	567.3	839.8	791.9	971.6
Surabaya	472.7	498.7	635.6	839.9	785.1	1,513.1	1,040.6	2,113.0	1,614.2	1,039.2
Others	31.4	26.2	18.4	69.2	105.0	147.5	347.1	473.1	3,231.1	2,472.1
SUMATRA	1,047.3	1,030.1	1,302.0	1,668.8	2,402.9	2,753.3	2,879.6	2,654.5	2,235.3	2,178.3
Belawan	550.7	508.3	547.5	648.2	992.8	941.1	995.3	1,376.4	1,261.3	1,164.6
Siak Sri Indrapura	1.2	2.7	-	0.9	0.3	-	-	1.1	-	0.8
Dumai	79.1	102.2	5.7	148.2	119.1	155.5	109.4	121.2	82.0	118.0
Jambi	30.9	21.1	11.8	14.0	16.1	15.7	11.6	13.9	8.6	8.0
Palembang	116.4	83.4	116.2	76.1	154.2	124.9	137.1	200.2	172.7	174.2
Belakang Padang	117.9	0.2	-	146.1	31.2	-	-	-	-	-
Others	161.7	312.2	620.8	635.3	1,089.2	1,516.1	1,626.2	941.7	710.7	712.7
KALIMANTAN	52.4	71.4	152.7	294.6	395.6	347.7	650.0	373.7	609.9	503.2
Banjarmasin	10.9	18.9	21.6	17.7	17.2	12.8	19.9	11.7	15.6	11.3
Pontianak	26.7	37.3	19.8	31.1	26.0	41.7	16.2	54.2	74.6	60.0
Balikpapan	5.0	1.4	96.5	227.8	326.0	249.0	584.1	282.3	492.3	390.5
Others	9.8	13.8	14.8	18.0	26.4	44.2	29.8	25.5	27.4	41.4
SULAWESI	88.1	137.1	114.1	158.1	402.6	611.5	701.5	1,143.0	632.5	774.2
Ujung Pandang	47.3	79.1	95.6	96.4	344.0	513.3	550.0	944.0	406.4	602.3
Bitung	39.6	58.0	18.4	58.5	56.4	96.7	107.9	119.8	172.0	138.2
Others	1.2	-	10.1	3.2	2.2	3.5	43.6	79.2	54.1	33.7
NUSA TENGGARA and MALUKU & IRIAN JAYA	1.8	6.0	23.8	64.5	99.3	104.0	114.7	162.1	105.8	173.7
Kupang	0.2	1.5	-	-	5.8	-	0.5	21.6	11.0	3.6
Buleleng	-	-	-	-	-	-	-	-	-	-
Others	1.5	4.5	23.8	64.5	93.5	104.0	114.2	140.5	94.8	170.1
TOTAL	3,355.4	3,714.8	4,335.6	6,030.2	8,229.1	10,458.4	10,396.8	12,055.5	13,924.6	13,348.6

Operation Hours of Maritime Mobile Services and
Point to Point Communication Network

1. JAKARTA (PKI)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/470	A1, A2	24 H
2182/2690	A3H, A3J	- ditto -
8542	A1	0000 - 0700 1130 - 2400
12970.5	A1	0000 - 0230 0700 - 1000
16861.7	A1.	0000 - 0500 0700 - 1300
8753 (8754.4)	A3J	0000 - 1200
VHF CH16, 20, 22, 25, 26, 27, 28	F3	24 H

b. Fixed Services

Jakarta - Surabaya
 - Ujung Paandang
 - Bitung
 - Jayapura
 - Banjarmasin
 - Belawan
 - Dumai
 - Palembang

2. SURABAYA (PKD)

a. Mobile services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/430	A1, A2	24 H
4238	A1	0230 - 0330
8461	A1	0200 - 0330 0730 - 0900
12704.5	A1	0000 - 0100 1100 - 1200
16861.7	A1	0500 - 0600 1300 - 1400
2182	A3A, A3H, A3J	0330 - 0430 1200 - 1300
4379.1 (4380.5)	- ditto -	0330 - 0430
6215.5 (6516.9)	A3A, A3J, A3H	0100 - 0200 0900 - 1000
8796.4/1314.9	A3A, A3J	0100 - 0200 0900 - 1000
VHF CH16, 20, 22 26, 28	F3	24 H

b. Fixed services

Surabaya - Jakarta		TOR
- Jakarta		TOL
- Tg. Priok		TG
- Ujung Pandang		TG
- Banjarmasin		SSB
- Cilacap	- Tegal	TG/SSB
	- Semarang	"
- Tegal	- Cilacap	"
	- Semarang	"
- Semarang	- Tegal	"
	- Cilacap	"
- Probolinggo		TG
- Panarukan		"
- Banyuwangi	- Bawean	SSB
	- Kalianget	"
	- Buleleng	"
	- Bena	"
	- Padangbai	"
	- Ampenan	"
	- Bada	"
	- Bira	"
	- Maumere	"
	- Waingapu	"
Surabaya - Bena	- Bawean	"
	- Kalianget	"
	- Banyuwangi	"
	- Buleleng	"
	- Padangbai	"
	- Ampenan	TG/SSB
Surabaya - Ampenan	- Banyuwangi	SSB
	- Bena	TG/SSB
	- Lembar	SSB
	- Bada	"
	- Bira	"
	- Maumere	"
	- Kalabahi	"
	- Waingapu	"
Surabaya - Kupang		TG

3. BELAWAN (PKB)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/474	A1, A2	0000 - 0200
		0400 - 0600
		0800 - 1000
		1200 - 1700
2182/3180	A3A, A3H, A3J	0000 - 0700
		0800 - 1700
4295	A1	0100 - 0200
		0400 - 0500
		1500 - 1600
8686	- ditto -	0230 - 0300
		0600 - 0630
		1100 - 1200
		1300 - 1400
12970.5	- ditto -	0230 - 0300
		0630 - 0700
16861.7	- ditto -	0600 - 0700
		1400 - 1500
8746.8 (8748.2)	A3A, A3J	0330 - 0400
		1000 - 1030
VHF CH16, 20, 22 26, 28	F3	0000 - 0700
		0800 - 1700

b. Fixed Services

Belawan - Jakarta
 - Tg. Priok
 - Sabang
 - Sibolga
 - Gunung Sitoli

4. UJUNG PANDANG (PKF)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/465	A1, A2	24 H
2182/2690	A3H, A3J	- ditto -
4295	A1	0100 - 0200 0900 - 1000
8686	- ditto -	0200 - 0300
4397.7	A3A, A3J	0800 - 0900 0300 - 0330 0730 - 0800
6215.5	A3A, A3H, A3J	0330 - 0400 1000 - 1030
12682.5	A1	0400 - 0500 1200 - 1300
8802.6	A3A, A3J	0600 - 0630 1030 - 1100
13100.8	- ditto -	0700 - 0730 1330 - 1400
VHF CH16, 20, 26	F3	0000 - 1200

b. Fixed Services

- Ujung Pandang - Kendari
- Baubau
- Mamucu
- Majene
- Selayan
- Palopo

5. DUNAI (PKP)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/448	A1, A2	0000 - 0100 0400 - 0500 0800 - 0900 1200 - 1300
2182/3180	A3A, A3H, A3J	0130 - 0200 0730 - 0800
8457	A1	0100 - 0200 1300 - 1400
8765/8241	A3	0000 - 0100
6215.5	- ditto -	0230 - 0330
12682.5	A1	0230 - 0330 0630 - 0730
17184.8	- ditto -	0500 - 0600
6337	- ditto -	1200 - 1300
VHF CH16, 20, 22 26, 28	F3	

b. Fixed Services

- Dunai - Jakarta
- Tg. Priok
- Teluk Bayur (Padang)
- Tg. Pinang
- Tg. Uban
- Tg. Balai P. Karimun
- P. Sambu
- Tarenpa
- Dabo Singkep
- Teambilahan
- Rengat
- Pekan Baru
- Bagan Siapi-Api
- Selat Panjang
- Bengkalis

6. BITUNG (PKM)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/438	A1, A2	0000 - 0100 0400 - 0500 0800 - 0900
2182/2690	A3A, A3H, A3J	0000 - 0100 0400 - 0500
8694	A1	0100 - 0230 0500 - 0600 0900 - 1030
12704.5	- ditto -	0200 - 0230 1000 - 1030
8803.8 (8810.2)	A3A, A3J	0200 - 0230
VHF CH16, 20, 25	F3	0000 - 0530 0800 - 1030

b. Fixed Services

- Bitung - Tg. Priok
- Donggala
- Manado
- Gorontalo
- Poso
- Luwuk
- Toli-Toli
- Parigi
- Tahuna
- Ujung Pandang

7. ARBON (PKE)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/470	A1, A2	0000 - 0200 0400 - 0500 0800 - 0900 2300 - 2400
2182/2690	A3A, A3H, A3J	0100 - 0200
6215.5 (6216.9)	- ditto -	0700 - 0800

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
8473	A1	0200 - 0300 0900 - 1000
8796.4 (8797.8)	A3A, A3J	0330 - 0430
12682.5	A1	0000 - 0100 0500 - 0600
17184.8	- ditto -	0600 - 0700
VHF CH16, 20, 22, 26 28	F3	24 H

b. Fixed Services

- Ambo - Tg. Priok
- Ternate
- Tual
- Banda Neira

8. JAYAPURA (PNK)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/465	A1, A2	2300 - 0100
2182/3180	A3A, A3H, A3J	2300 - 1000
6221.6/13134.9	A3A, A3J	0000 - 0200 0300 - 0500 0600 - 0800 0900 - 1000
6215.5	A3A, A3H, A3J	2200 - 2300 0700 - 1000
8694	A1	0000 - 0100 0300 - 0500
8802.6	A3A, A3J	0200 - 0300 0500 - 0600 0800 - 1000
12682.5	A1	0100 - 0200 0500 - 1000

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
17074.4	- ditto -	0200 - 0300 0700 - 0900
VHF CH16, 20, 26	F3	2300 - 1000
b. Fixed Services		
Jayapura - Tg. Priok		
- Sorong		
- Merauke		
- Manokwari		
- Biak		
- Kaimana		
- Fak-Fak		
- Serui		
- Nabire		
- Sarai		

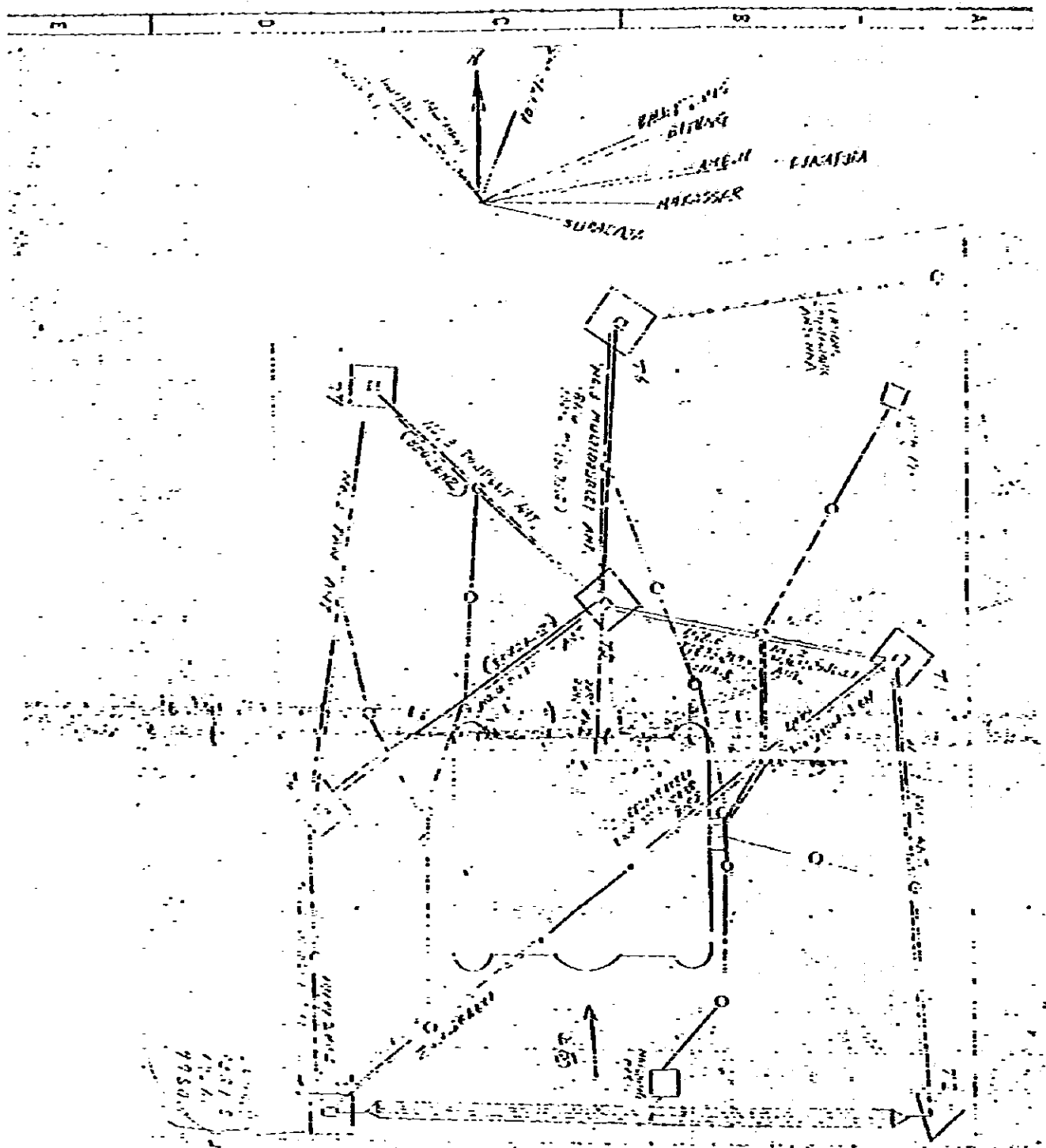
9. SEMARANG (PKR)

a. Mobile Services

FREQUENCY (KHz)	CLASS	HOURS OF SERVICES
500/456	A1, A2	0000 - 0100 0400 - 0500 0800 - 0900 1200 - 1300
2182/3180	A3A, A3J	0100 - 0200
8461	A1	0100 - 0130 0900 - 0930
8802.6/(8804)	A3A, A3J	0200 - 0230 0730 - 0800
VHF CH16, 20, 26	F3	0000 - 0100 0400 - 0500 0800 - 0900 1200 - 1300

b. Fixed Services

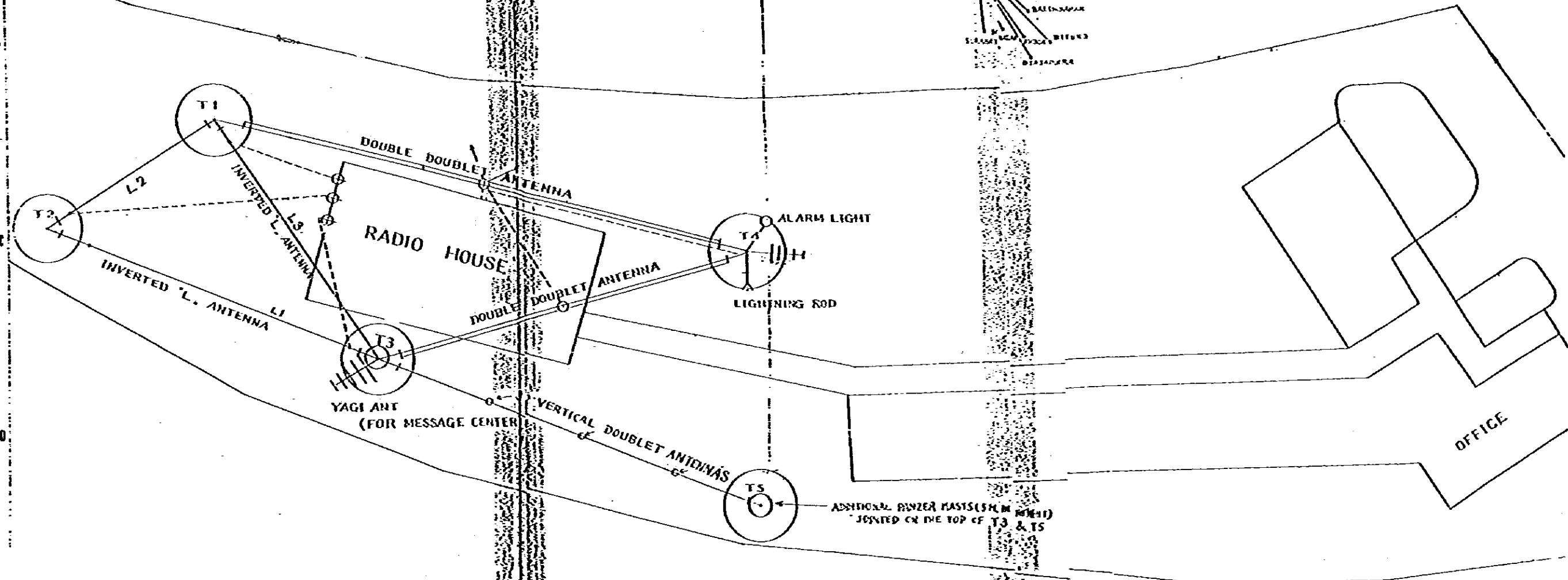
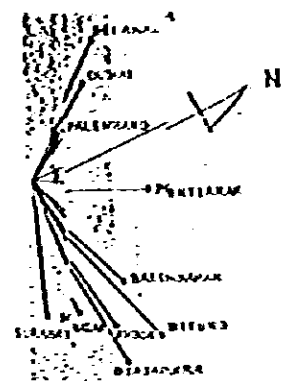
Semarang - P. Mandalika	A3H
- Surabaya	"
- Ngawi	A1
- CLP/Tegal	A3H
- Mapel	A1



TITLE
 MATRUHINA LAJCU
 TROJENSKI ALLOCAT
 OPER. NIT. 11.11.1950

6-1 (P) - JAKARTA

RECEIVING STN. ANTENNA LAYOUT
(TG. PRIOK)



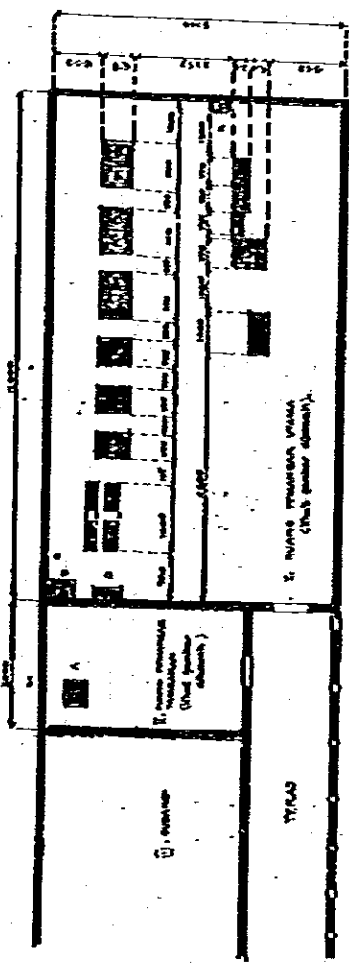
T1 ~ T5 ---- EXISTING TOWER

SWA 12181
IX

6-2(7) : SURABAYA

UTARA

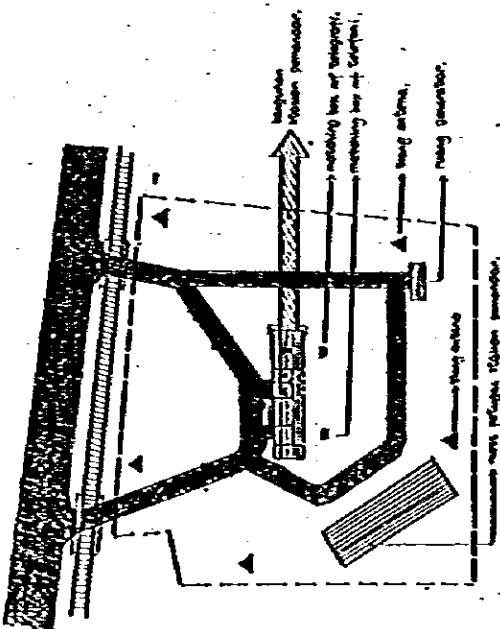
DENAH TATA LETAK PESAWAT



KETERANGAN

1. pemroses tenaga listrik
2. pemroses tenaga listrik
3. pemroses tenaga listrik
4. pemroses tenaga listrik
5. pemroses tenaga listrik
6. pemroses tenaga listrik
7. pemroses tenaga listrik
8. pemroses tenaga listrik
9. pemroses tenaga listrik
10. pemroses tenaga listrik

DENAH BANGUNAN



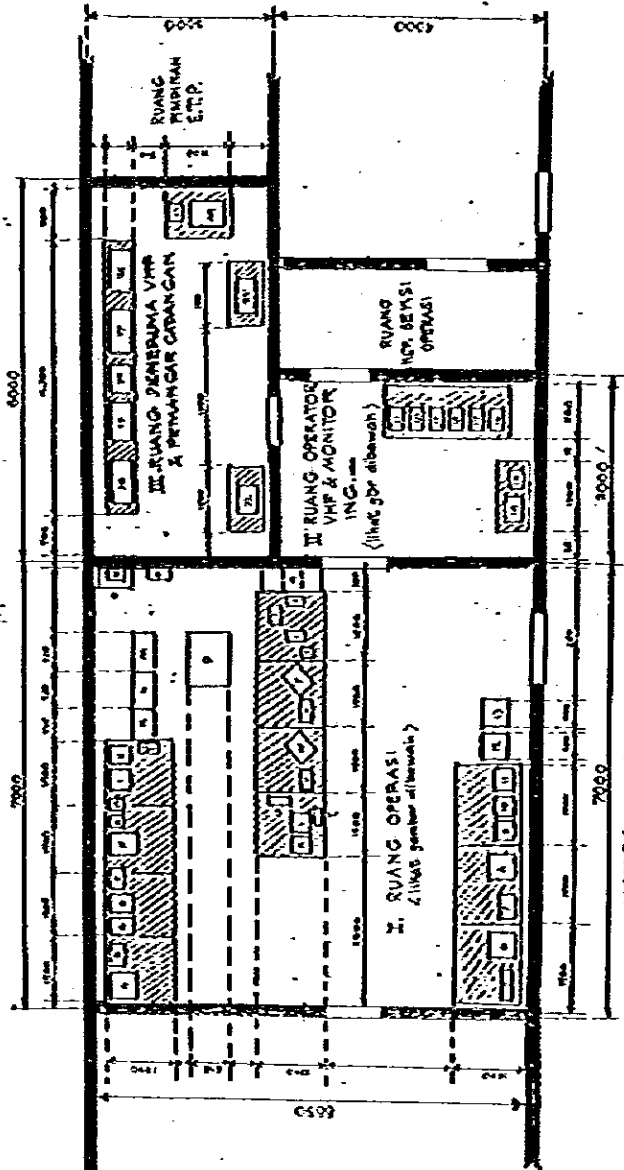
TATA LETAK/JAYOUT PESW. RADIO SDN. PEMANCAR

DIKEMBARAKAN	1000 BRGAS	1000 BRGAS	1000 BRGAS	1000 BRGAS
DIREKTOR	1000 BRGAS	1000 BRGAS	1000 BRGAS	1000 BRGAS
1000 BRGAS	1000 BRGAS	1000 BRGAS	1000 BRGAS	1000 BRGAS

6-2 (R) : SURABAYA

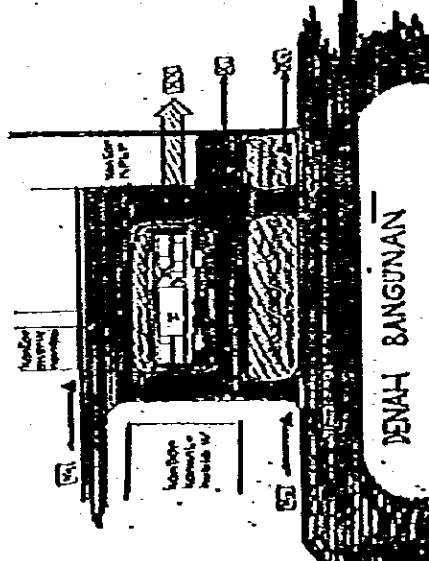
UTARA

DENAH TATA LETAK PESAWAT



KETERANGAN :

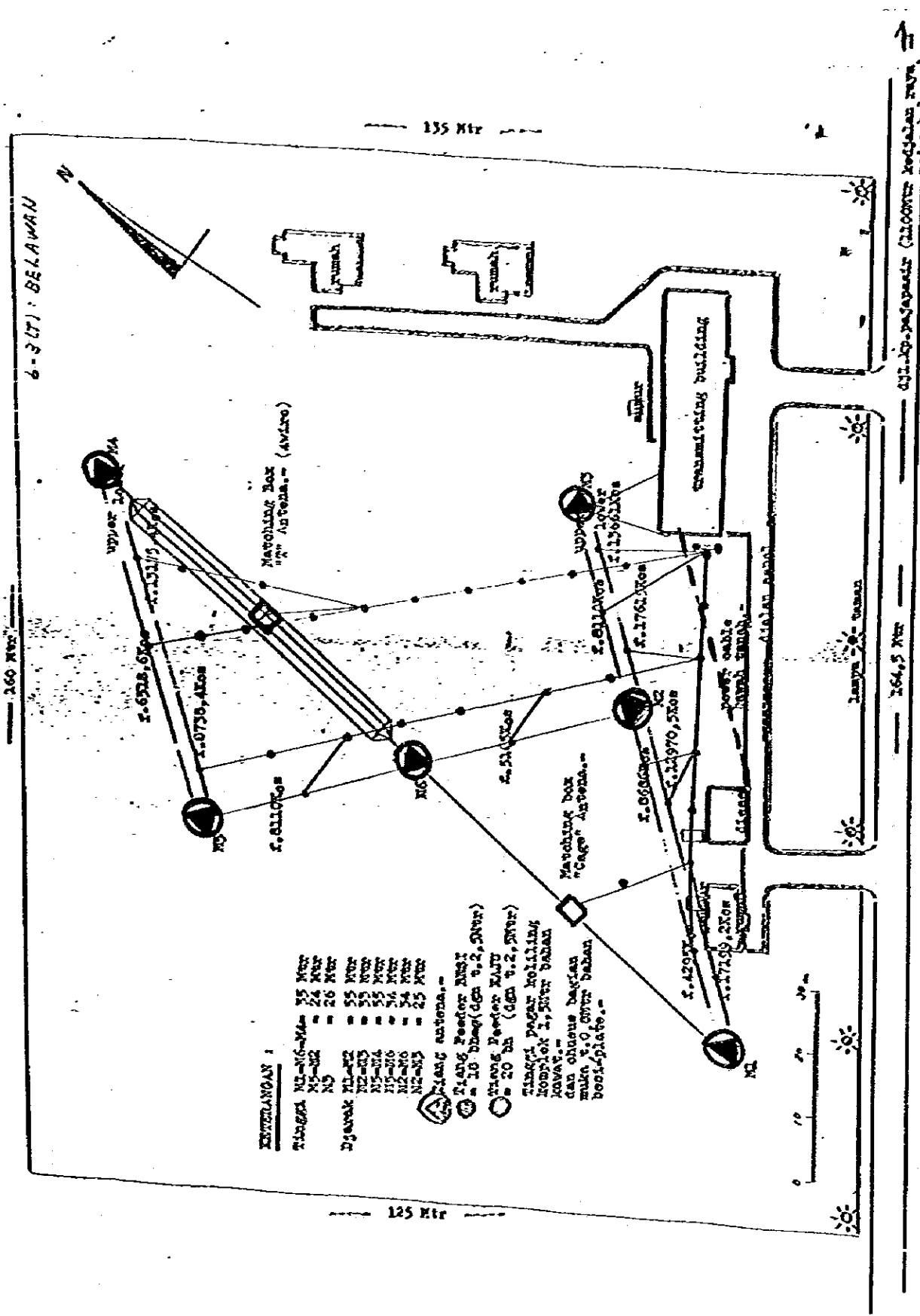
- XX BANGUNAN STASIUN PENERIMA
- XIII TIANG ANTENA



- 1. pemrosesan philips 40 405
- 2. pemrosesan philips 40 405
- 3. pemrosesan philips 40 405
- 4. pemrosesan philips 40 405
- 5. pemrosesan philips 40 405
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- 94. pemrosesan philips 40 405
- 95. pemrosesan philips 40 405
- 96. pemrosesan philips 40 405
- 97. pemrosesan philips 40 405
- 98. pemrosesan philips 40 405
- 99. pemrosesan philips 40 405
- 100. pemrosesan philips 40 405

TATA LETAK/LAY-OUT PSW RADIO STN. PENERIMA

NO. URUT	NO. URUT	NO. URUT	NO. 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	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100



KONTROLAN :

- Tinggi N1-N6-Ma = 35 Mtr
- N5-M2 = 24 Mtr
- N5 = 26 Mtr
- Djarak N1-M2 = 55 Mtr
- N2-M3 = 55 Mtr
- N5-M4 = 55 Mtr
- N5-M6 = 54 Mtr
- N2-M6 = 54 Mtr
- N2-M5 = 25 Mtr

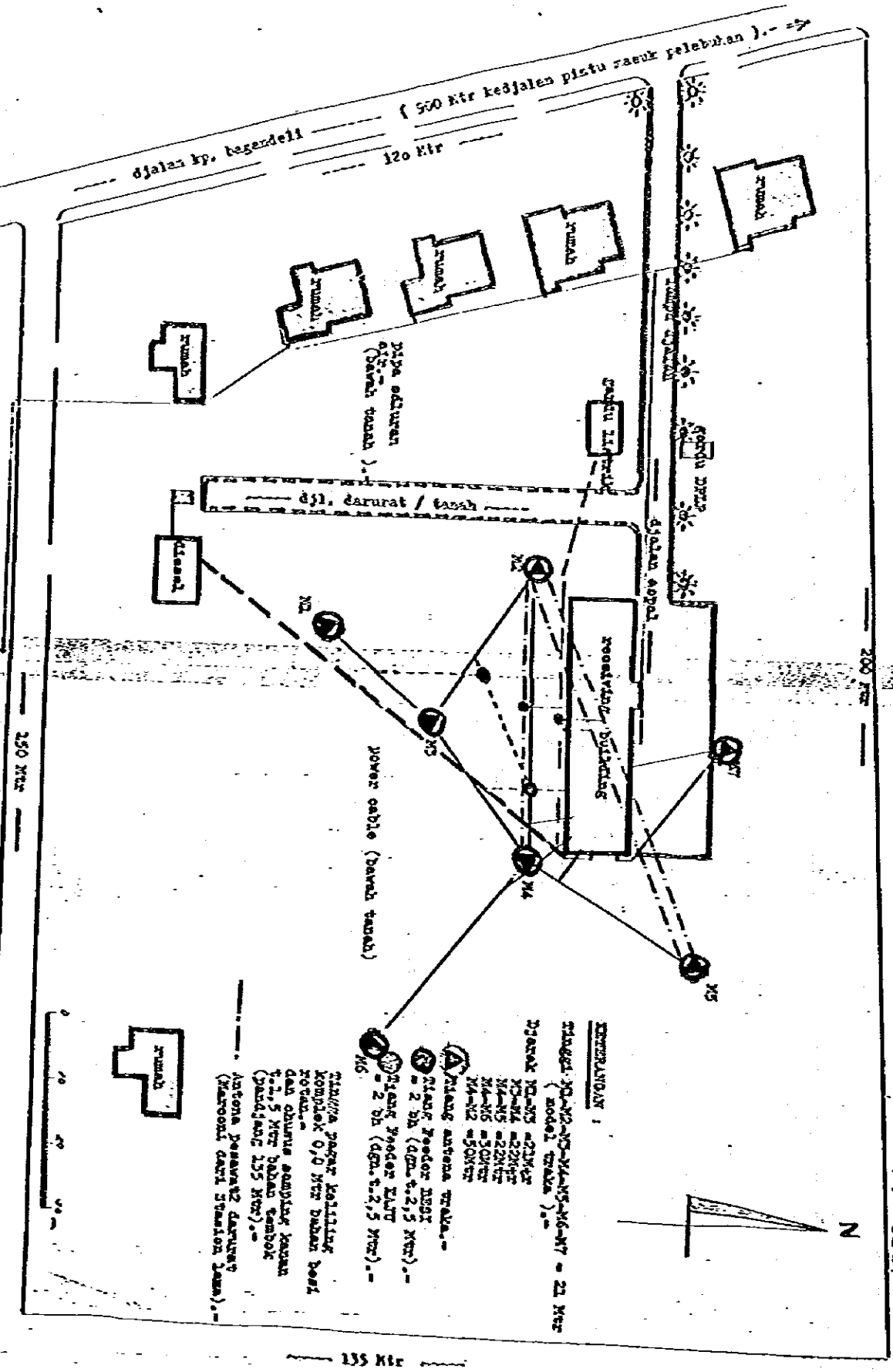
- ⊙ Tiang antenna.
- ⊙ Tiang Feeder RNSI = 10 bh (Gd 4.2, 5Mtr)
- ⊙ Tiang Feeder RUTU = 20 bh (Gd 4.2, 5Mtr)
- ⊙ Tiang pagar keliling Komplek 3, 5Mtr bahan kawat.
- ⊙ dan obseur bakau muka 3.0 meter bahan besi-plate.

TRANSMITTING TERMINAL BELAWAN (PAJAPASAR).

2-PEDR. 1972

RECEIVING TERMINAL BELAWAN (BAGANDELI)

Mh. 10/11/57



6-3001 BELAWAN

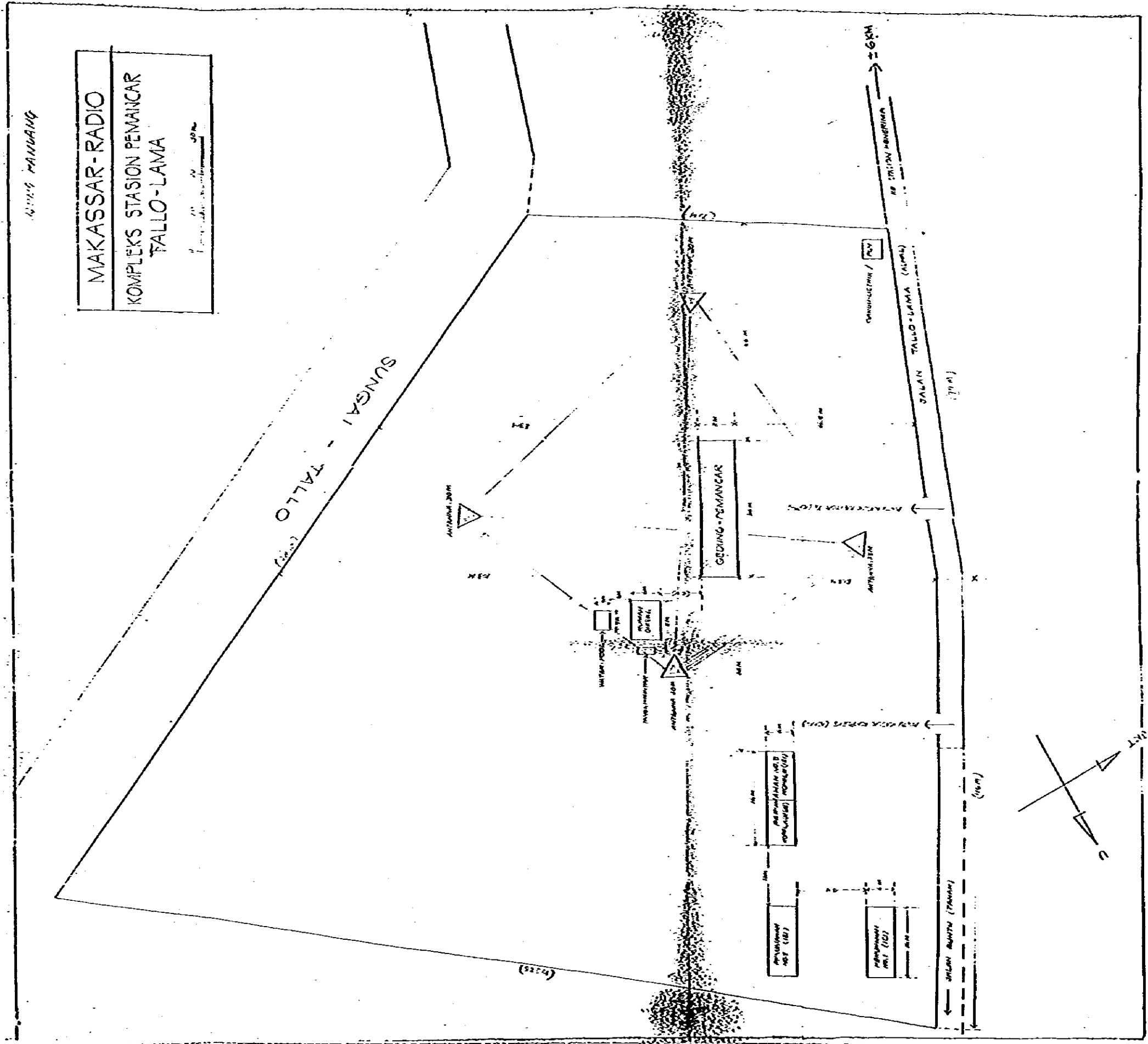
PERANGKATAN :

STANGGI: M1-M2-M3-M4-M5-M6-M7 = 22 Mtr
(model tanah) :-

- STANGGI M1-M2 = 22MTR
- M3-M4 = 22MTR
- M4-M5 = 22MTR
- M4-M6 = 50MTR
- M4-M2 = 50MTR

- ▲ Pajang antenna TRAMA. -
- ⊙ Stang Receiver 100R -
- ⊙ Stang Receiver 100R -
- ⊙ Stang Receiver 100R -
- ⊙ Stang Receiver 100R -
- ⊙ Stang Receiver 100R -
- ⊙ Stang Receiver 100R -

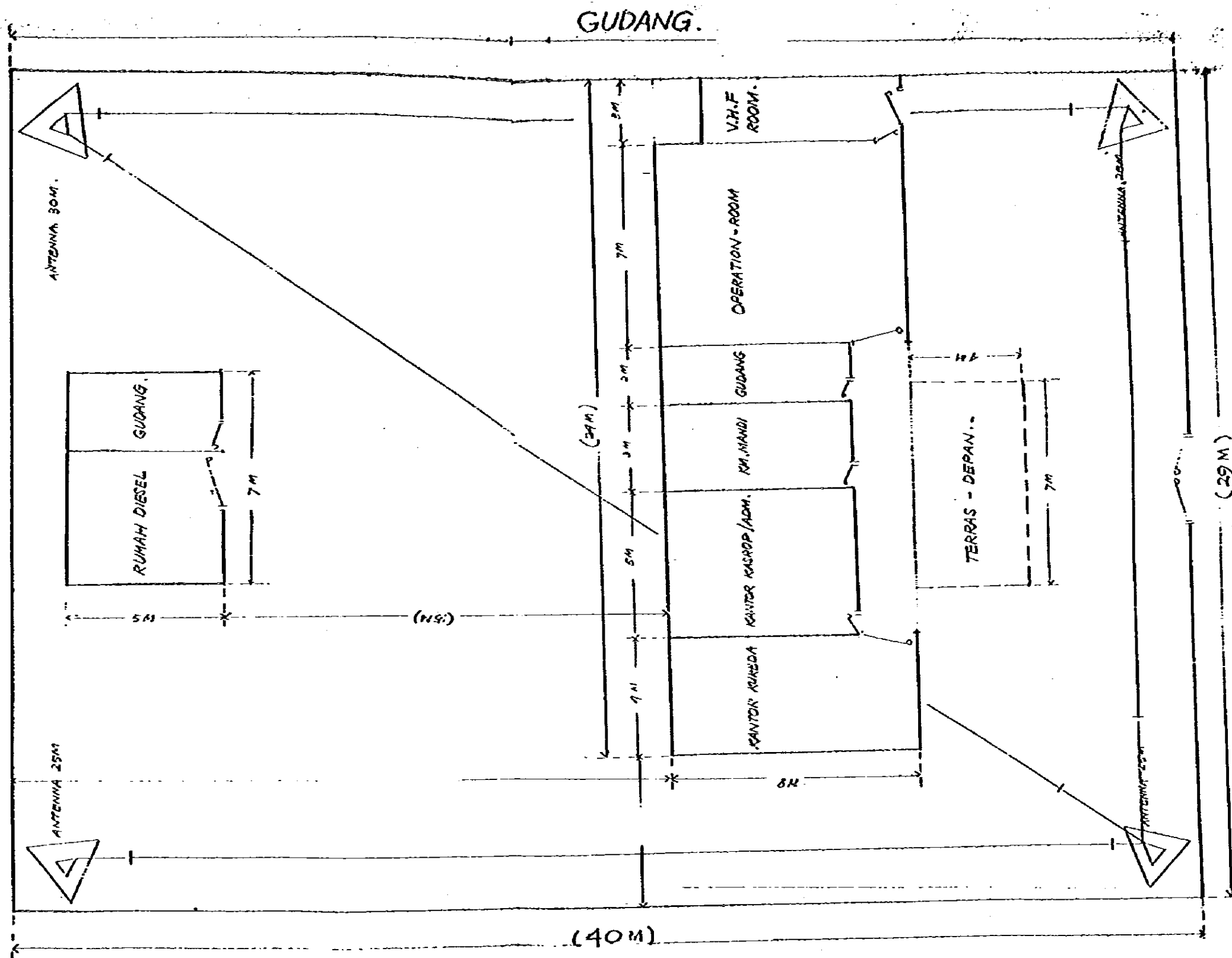
rumah pagar kolong
komplek 0,0 Mtr dalam besi
terak.
dan semua samping jalan
7,5 Mtr dalam tembok
(panjang 125 Mtr).
Antena pesawat 42 darat
(kawat dari stasiun Jawa).
135 Mtr



MAKASSAR - RADIO
KOMPLEKS STASION PEMANCAR
TALLO-LAMA

0 10 20 30 40 50m

JALAN - SUKARNO . -



GUDANG.

ANTENNA 30M.

RUMAH DIESEL
GUDANG.

7M

5M

(NS)

(29M)

(40M)

V.H.F.
ROOM.

OPERATION - ROOM

GUDANG

MAMANDI

KANTOR KASROD/ADM.

RANTOR KAREDA

8M

TERRAS - DEPAN . -

7M

ANTENNA 25M

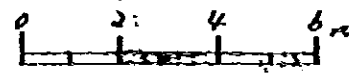
(29M)

JALAN - HATTA . -

GUDANG.

CATATAN :

JARAK KE STASION PEMANCAR 16 KM. .
JARAK KE PERUMAHAN MARKONIS . 2 KM. .



STASION - PENERIMA
MAKASSAR - RADIO
(2500 KHz) : UUNG - BUNDANG

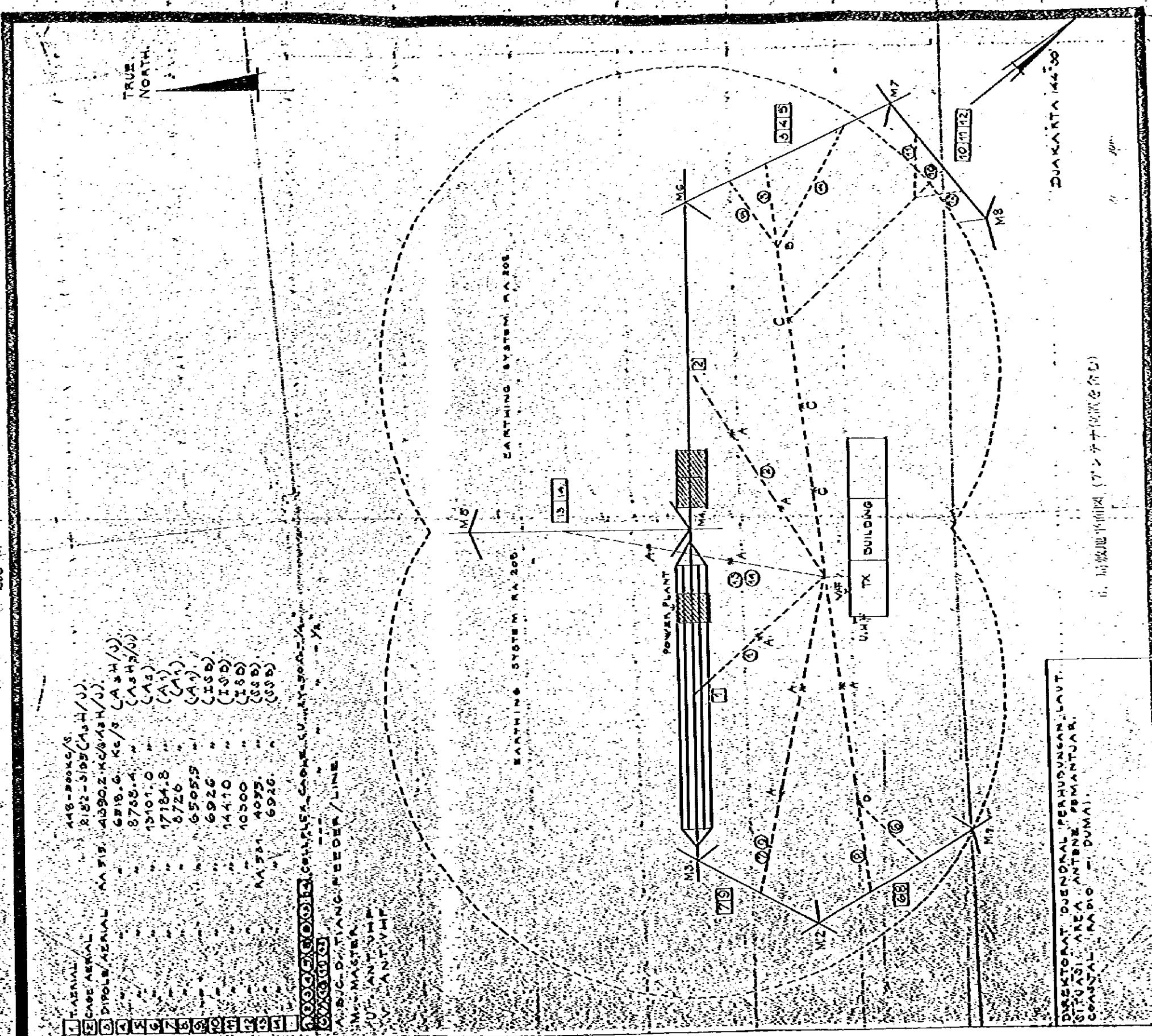
200 M

1	T AERIAL	148-200 KC/S
2	CAGE AERIAL	2182-3193 (A, H, U)
3	DIPOLE AERIAL	NA 719, 4890.2 KC/S (A, H, U)
4	"	6718.6 KC/S (A, H, U)
5	"	8788.4 " (A, H, U)
6	"	13101.0 " (A, H, U)
7	"	17184.8 " (A, H, U)
8	"	8726 " (A, H, U)
9	"	6507.9 " (A, H, U)
10	"	6926 " (ISB)
11	"	14410 " (ISB)
12	"	10500 " (ISB)
13	"	NA 581, 4075 " (ISB)
14	"	NA 581, 6926 " (ISB)

13101.0 KC/S (A, H, U) - NA 581, 4075 - Y2
 17184.8 KC/S (A, H, U) - NA 581, 6926 - Y2

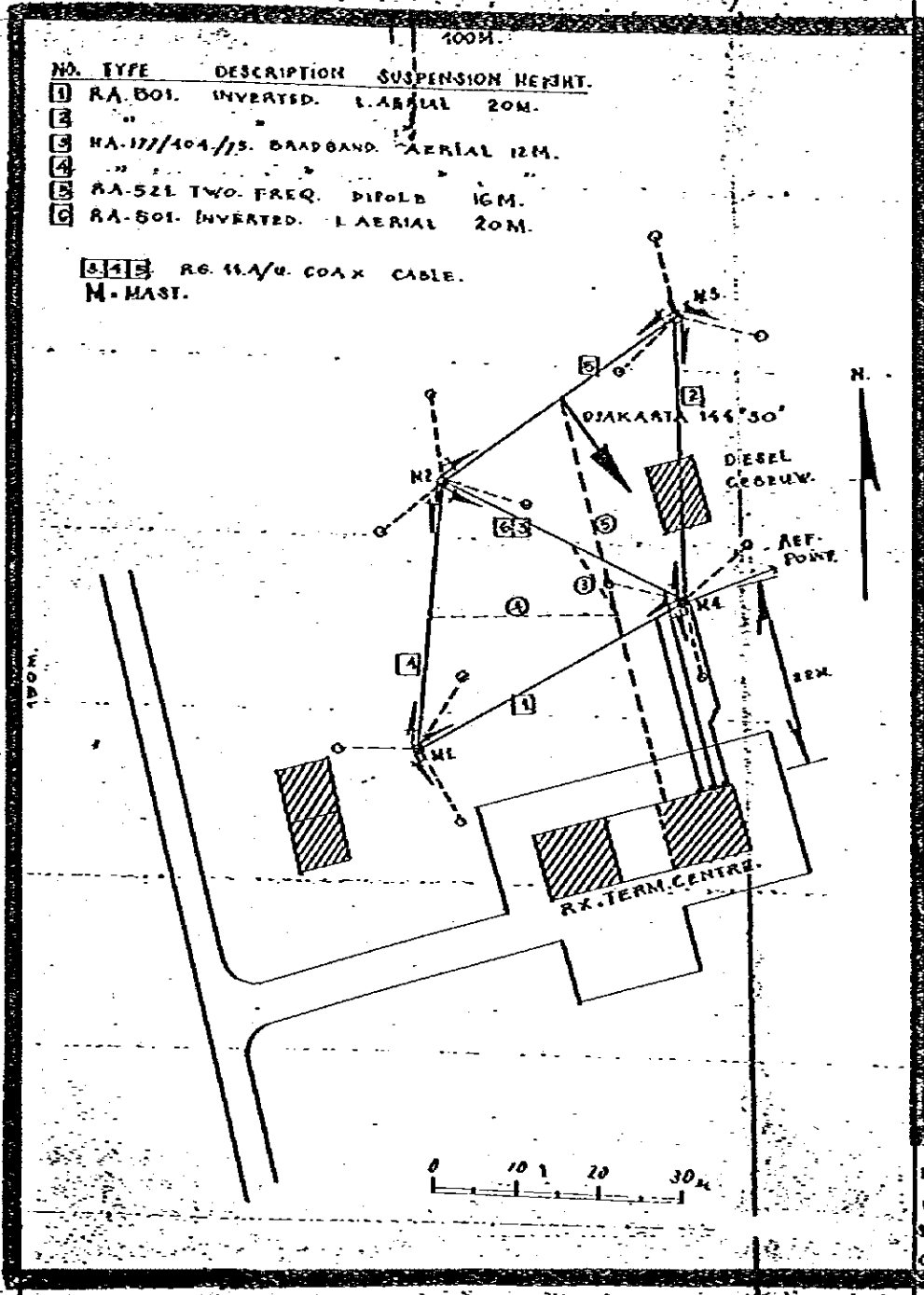
--- DUTYING FEEDER / LINE

M - MASTER
 U - ANT UMP
 V - ANT VMP



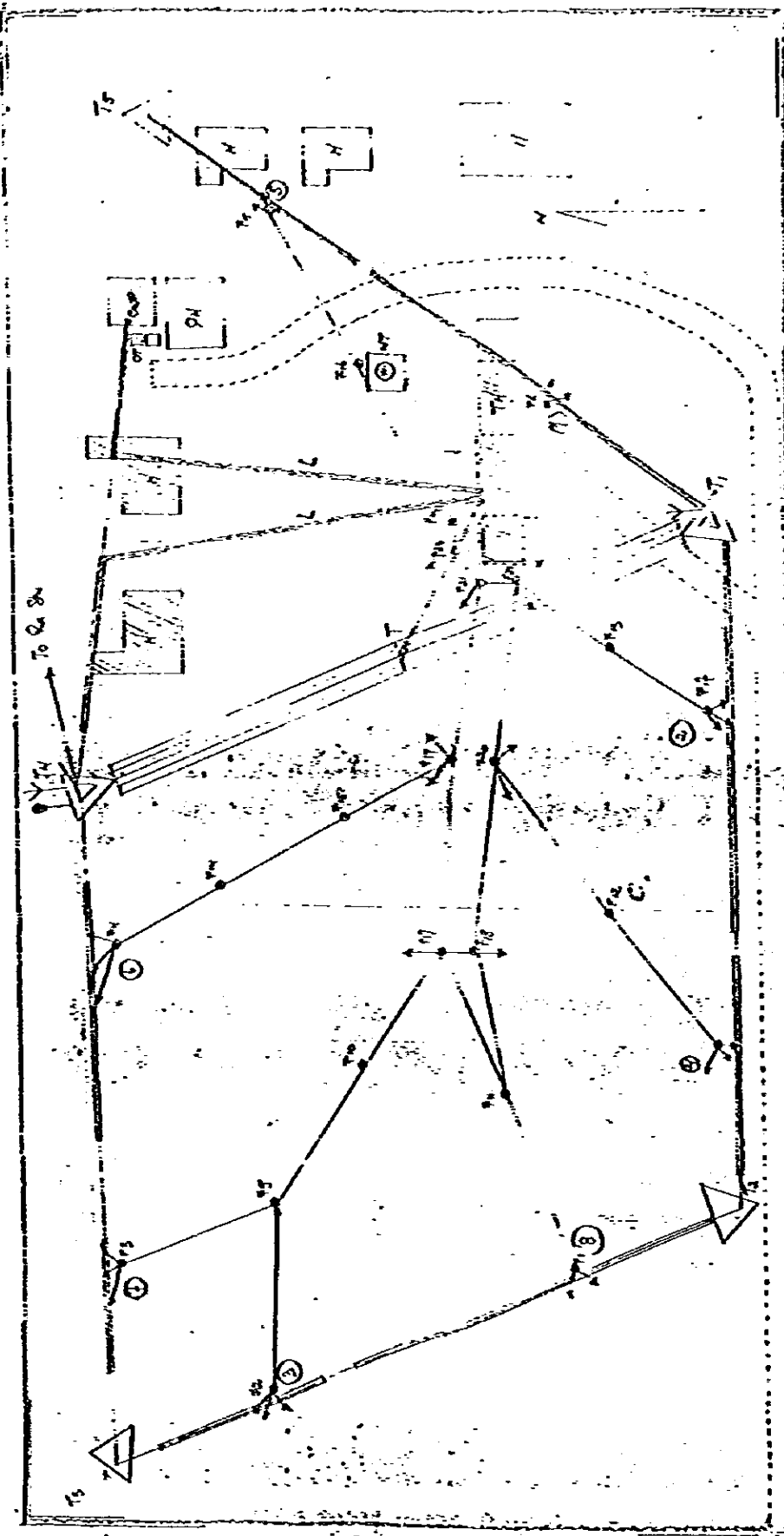
DIREKTORAT JENDERAL PERHUSUNGAN LAUT.
 STASIA AREA ANTENA PEMANTJAN.
 COMBAT RADIO - DUMAI.

6. 局敷地平面図 (アンテナ設置を含む)



LAY. OUT & STA. BITUNG P. D. 10

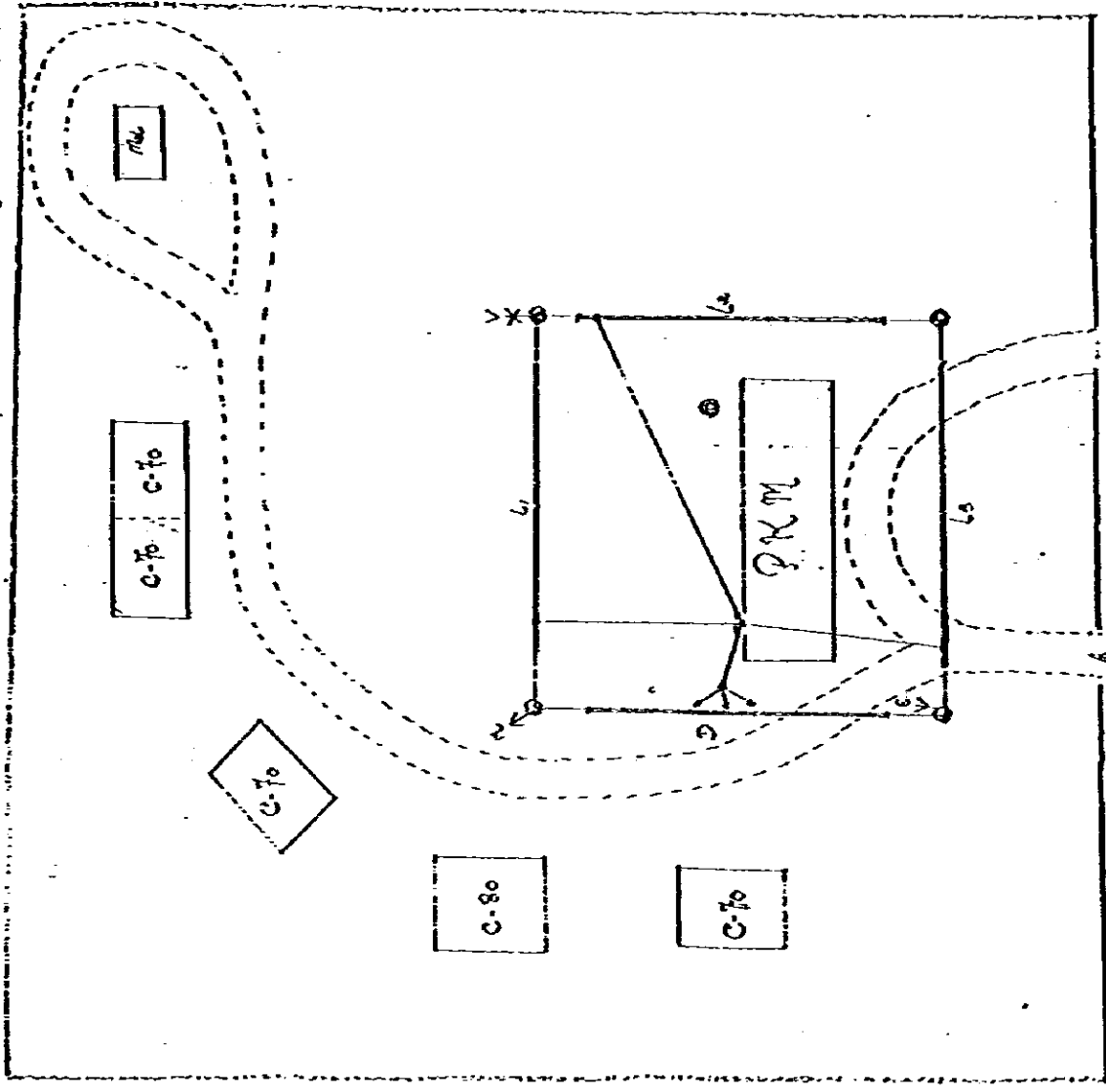
6-6 (T) : BITUNG



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. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.
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. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.
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. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

L1Y OUT RX BUNGDIDIO

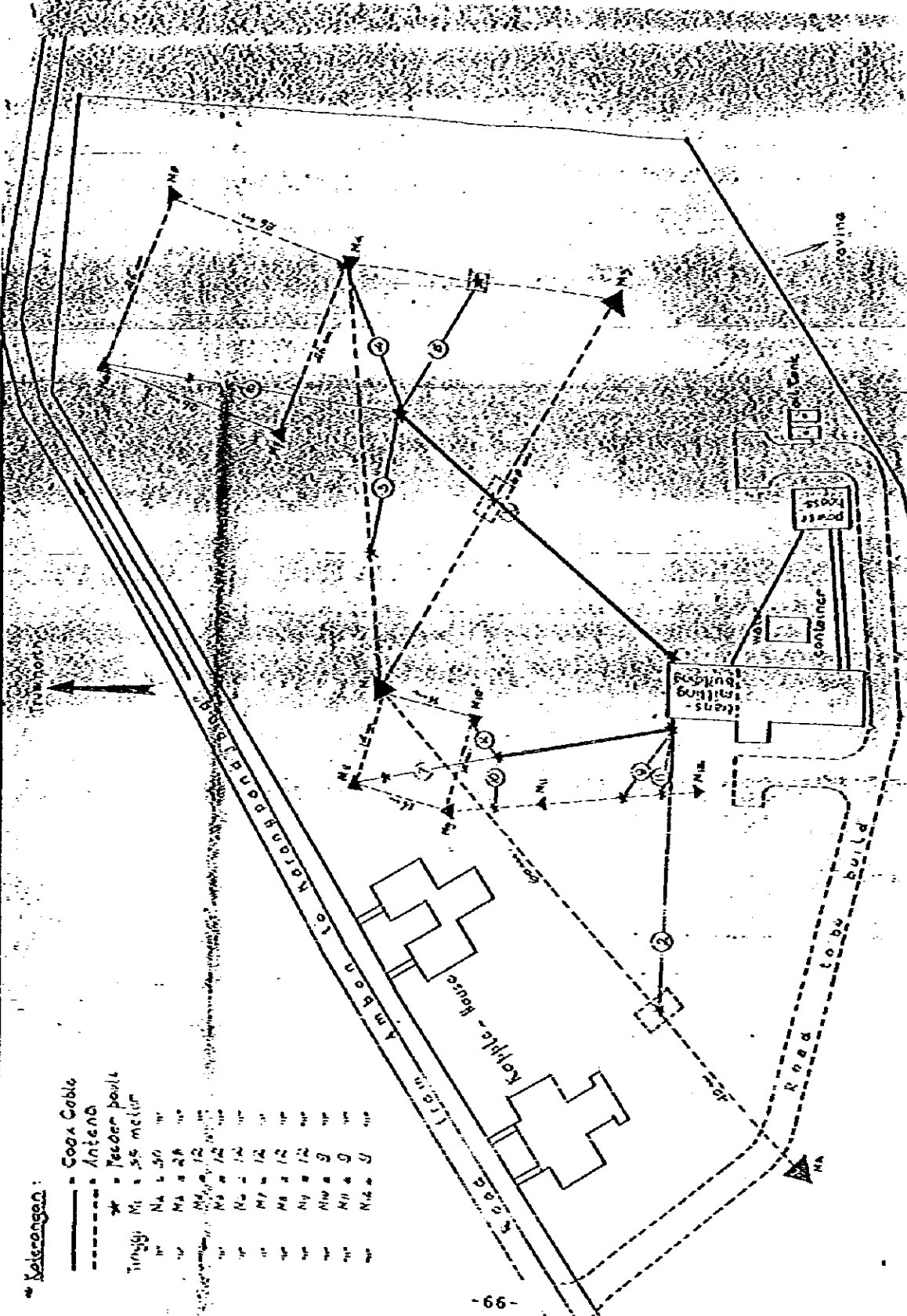
6-6(R):BIT



L_1, L_2, L_3 : distance type
 D : antenna diameter
 U : antenna unit
 M : antenna structure

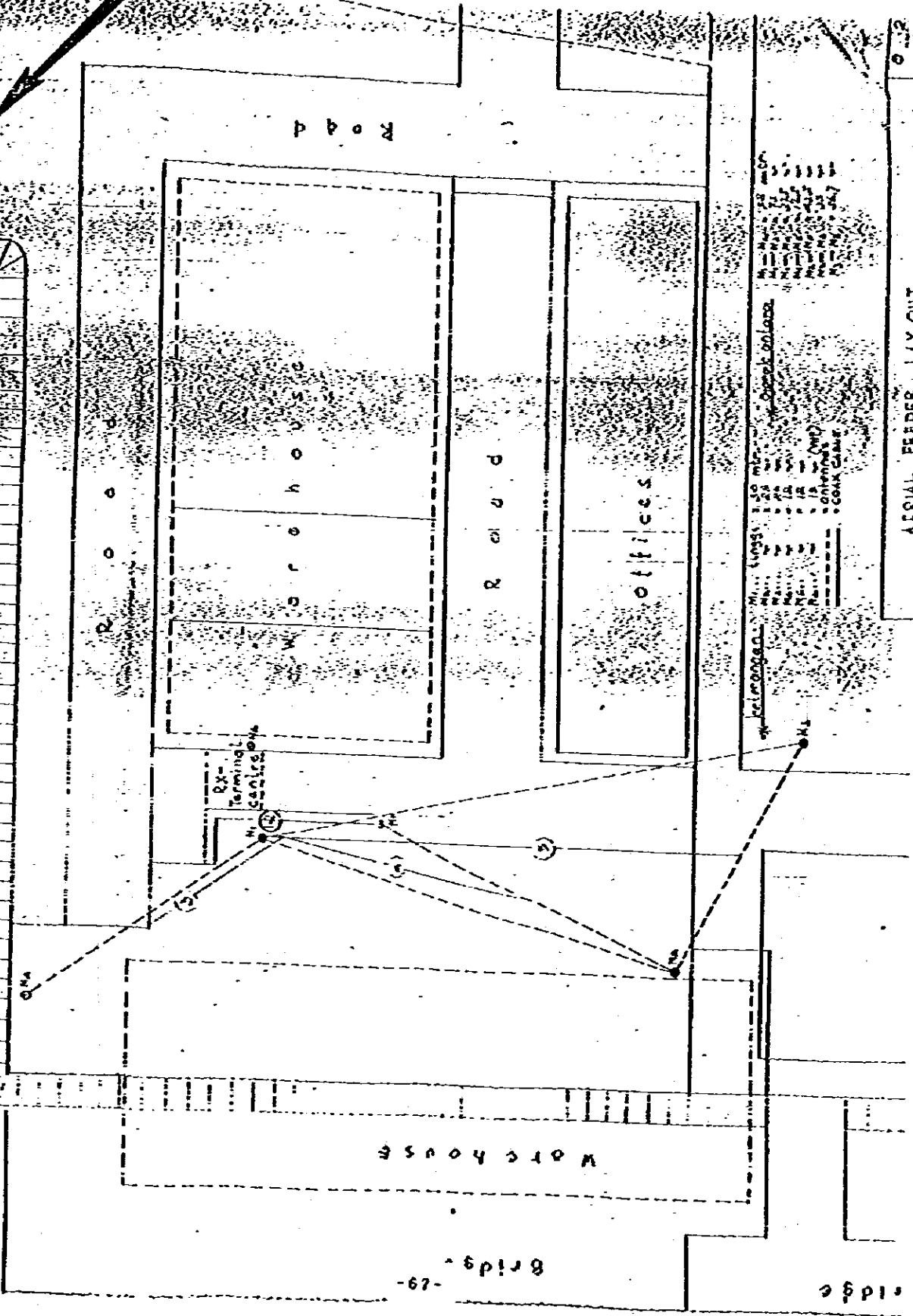
Keterangan :

- Coax Cable
 - - - Antena
 - * - Feeder point
- | Titik | M | N | Antena |
|-------|----|-----|--------|
| M1 | 55 | 10' | |
| M2 | 50 | 10' | |
| M3 | 28 | 10' | |
| M4 | 12 | 10' | |
| M5 | 12 | 10' | |
| M6 | 12 | 10' | |
| M7 | 12 | 10' | |
| M8 | 12 | 10' | |
| M9 | 9 | 10' | |
| M10 | 9 | 10' | |
| M11 | 9 | 10' | |



6-7 (T) : AMBON
 AERIAL FEEDER LAYOUT
 TRANSMITTING SITE AMBON
 CONSTATATIONS INDONESIA
 0 10 20 30 m
 1955-1954

True North



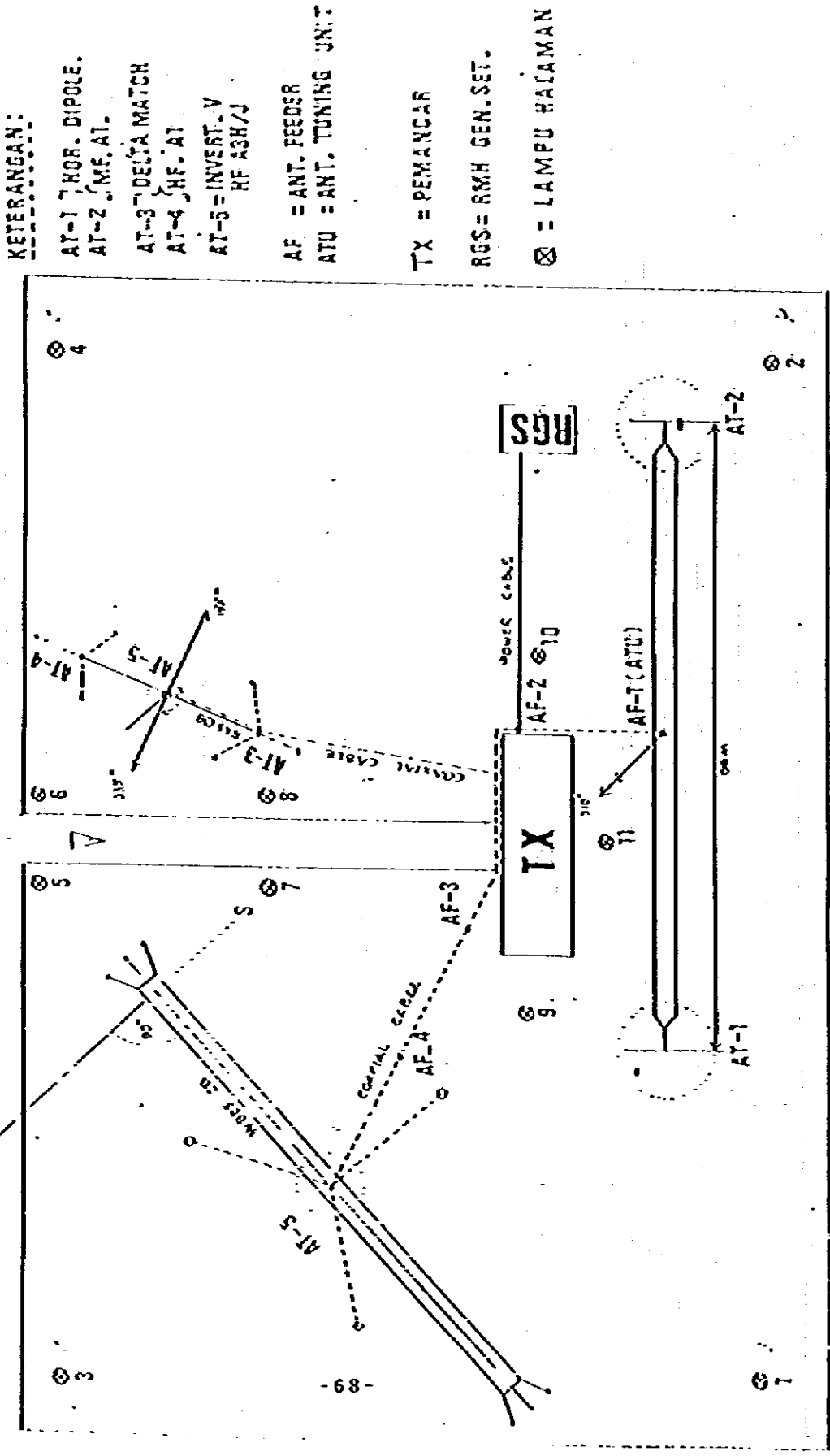
| Item | Quantity | Unit | Notes |
|-----------------------------|----------|------|-------|
| 1. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 2. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 3. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 4. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 5. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 6. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 7. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 8. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 9. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 10. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 11. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 12. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 13. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 14. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 15. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 16. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 17. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 18. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 19. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 20. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 21. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 22. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 23. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 24. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 25. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 26. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 27. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 28. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 29. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 30. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 31. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 32. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 33. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 34. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 35. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 36. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 37. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 38. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 39. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 40. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 41. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 42. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 43. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 44. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 45. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 46. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 47. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 48. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 49. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 50. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 51. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 52. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 53. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 54. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 55. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 56. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 57. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 58. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 59. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 60. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 61. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 62. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 63. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 64. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 65. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 66. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 67. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 68. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 69. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 70. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 71. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 72. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 73. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 74. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 75. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 76. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 77. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 78. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 79. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 80. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 81. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 82. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 83. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 84. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 85. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 86. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 87. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 88. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 89. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 90. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 91. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 92. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 93. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 94. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 95. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 96. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 97. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 98. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 99. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |
| 100. 1/2" x 1/2" x 10' m.p. | 100 | ft. | |

Bridge -79-

Bridge

6-8(T) : SEMARANG

SITUASI ANTENNE SETASUN PEMANCAR
SEMARANG



KETERANGAN:

- AT-1 HOR. DIPOLE.
- AT-2 MF. AT.
- AT-3 DELTA MATCH
- AT-4 HF. AT
- AT-5 INVERT. V
HF 43K/J

- AF = ANT. FEEDER
- ATU = ANT. TUNING UNIT

TX = PEMANCAR

RGS = RMH GEN. SET.

⊗ = LAMPU HALAMAN

6-8 1A1: SEMARANG

SITUASI ANTENNE SETASION PENERIMA

SEMARANG

KETERANGAN

AR1 } HOR. DIPOLE
AR2 }

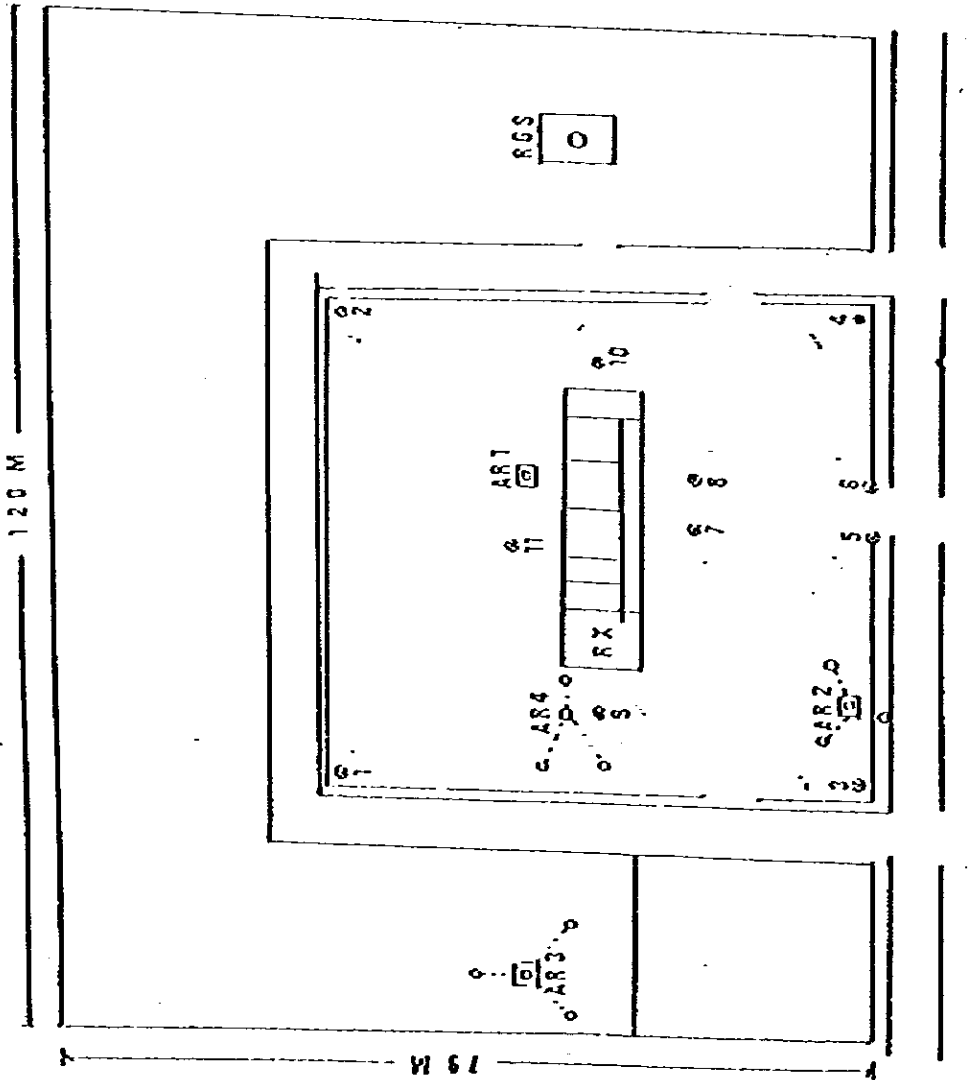
AR1 } T
AR3 }

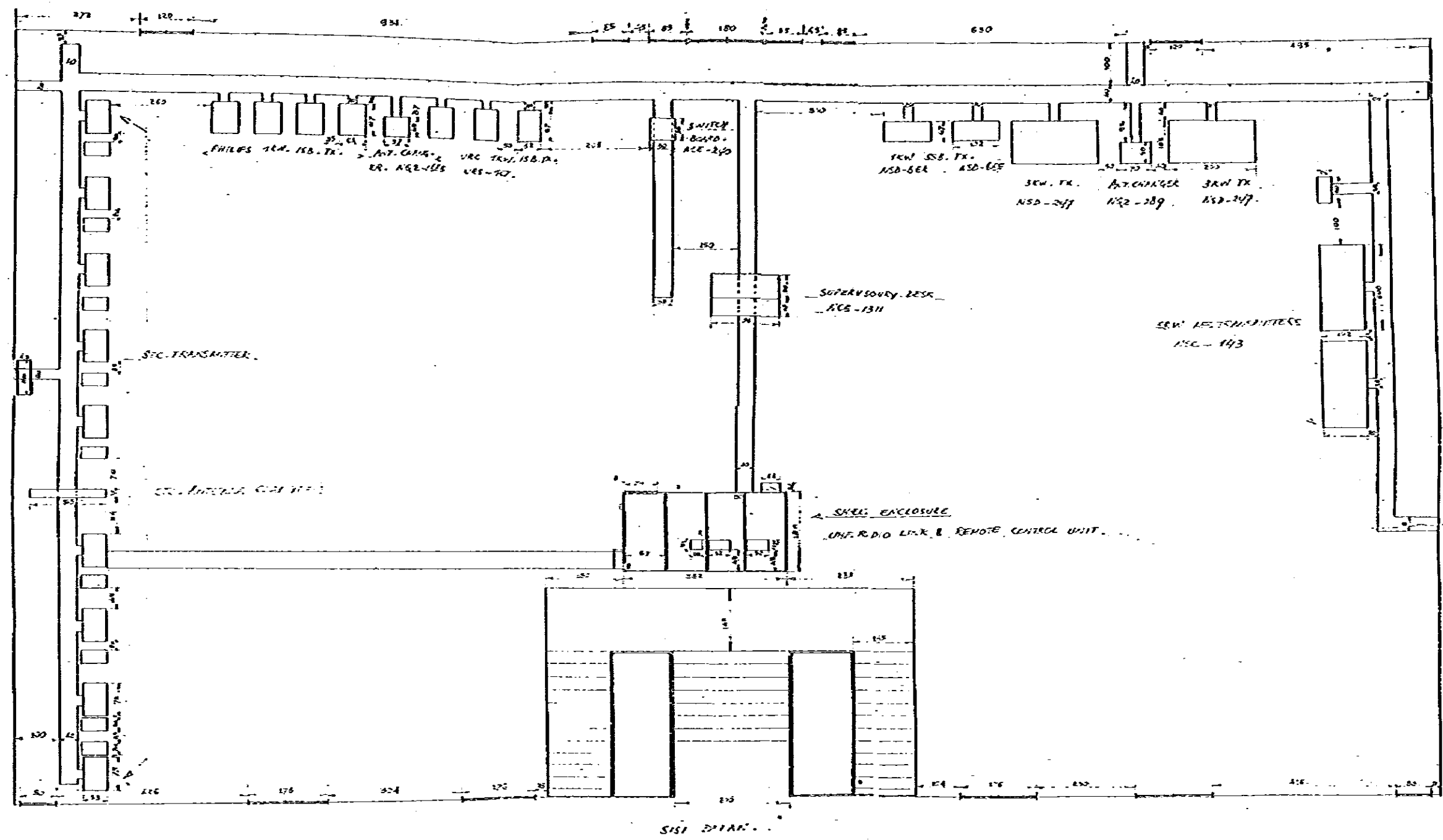
AR4 : WHIP

RX : PENERIMA

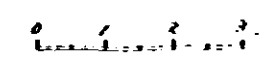
RGS : RUMAH GEN. SET

⊙ : LAMPU HALAMAN

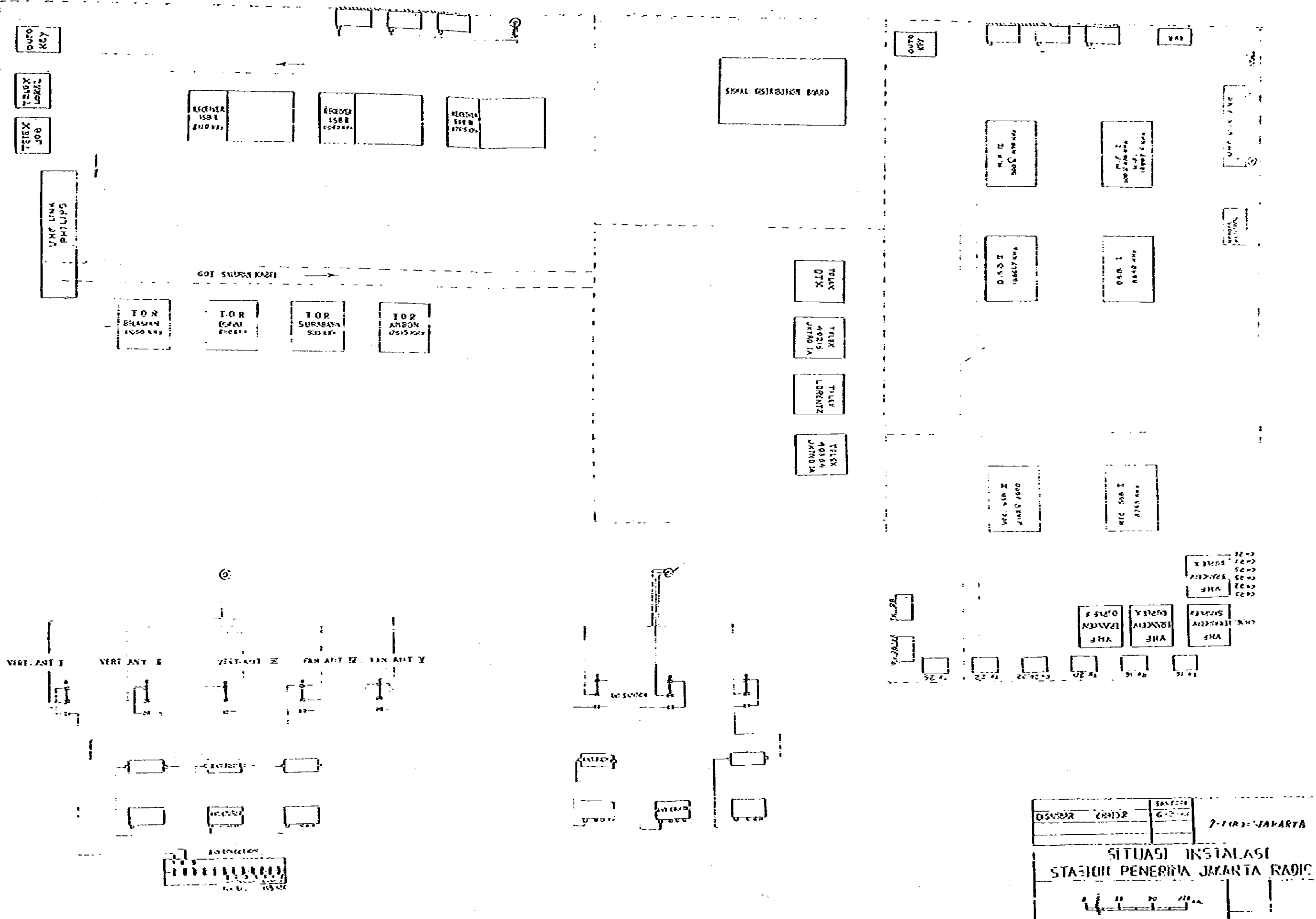




SISI DEPAN



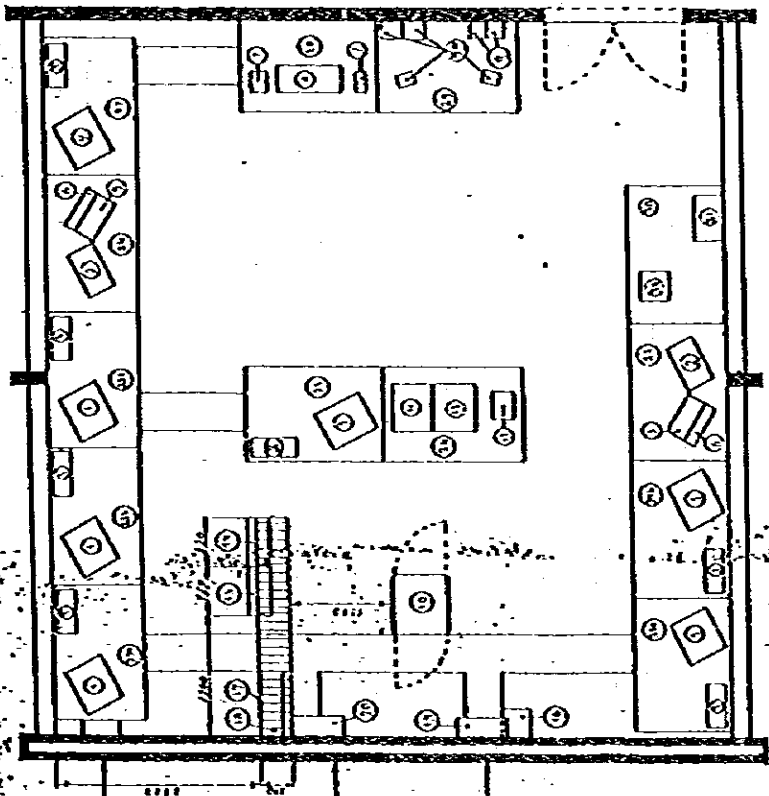
| | |
|---------------------|------------------|
| KEPERINGINAN | |
| DIGANS : A. RIZALD. | EMIKAR |
| JITPESA : | STH. TEMANAR ASD |
| PREMINS : | GLANCING : |
| DR. JEN. PERIA : | |



DISUR 2802
 7-100-JAKARTA
SITUASI INSTALASI
STASIUN PENERIMA JAKARTA RADIC

EQUIPMENT SUPPLIED BY PT.II.

- ① 1X COMMUNICATION RECEIVER QS307
- ② 2X COMMUNICATION RECEIVER QS316
- ③ ZSD RECEIVER AO 338
- ④ 55B RECEIVER AO 353
- ⑤ 8X REMOTE CONTROL PANEL
- ⑥ CONTROL PANEL
- ⑦ 3X MANUAL RADIO TERMINAL RY 738
- ⑧ 3X AUTOMATIC MORSE KEYS/COPE SINGER GNT 113
- ⑨ KEYBOARD PERFORATOR (OFF LINE) GNT 31
- ⑩ 1X VMP RECEIVER TYPE GNY-ZSD
- ⑪ 2X CONTROL UNIT BNU 106/... REPERATOR TELEPHONE GNY.
- ⑫ 15" STANDARD CABINET
- ⑬ PAGE PRINTER LO 133 HO
- ⑭ TAP TRANSMITTER LS 200
- ⑮ KEYBOARD PERFORATOR (OFF LINE) LO 133 MSR
- ⑯ RADIO RELAY 838 A60 (TELETYPE EQUIPMENT 378 1103 CARRIER EQUIPMENT)
- ⑰ POWER TRANSFORMER (110V-220V)
- ⑱ HORIZONTAL OVERHEAD CABLE RUN
- ⑲ VERTICAL OVERHEAD CABLE RUN
- ⑳ POWER SUPPLY SWITCH/PUSH BOX
- ㉑ CABLE TERMINATION BOX
- ㉒ MESSAGE REPEATER TYPE A4-31
- ㉓ remote control unit with microphone type F1
- ㉔ 1X TELETYPE EQUIPMENT
- ㉕ 1X TELETYPE EQUIPMENT
- ㉖ 1X TELETYPE EQUIPMENT
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EQUIPMENT LAYOUT NA/TERMINAL BUILDING

| OPERATOR'S TASK | HF TELEGRAPHY | MF TELEPHONY | HF TELEGRAPHY | MF TELEPHONY | TELETYPE/TELETYPE 150 A. 16 P. DJAKARTA | TELEPRINTS EQUIPMENT |
|-----------------|---------------|--------------|---------------|--------------|---|----------------------|
| ① | | | | | | |
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THE EXISTING LANDSPACE AND BUILDING

| NO. | RADIO STATIONS | LANDSPACE | | BUILDING | | BUILDING FOR GENERATING SET | | EXPLANATION |
|-----|----------------|---------------------|---------|----------------------|-----------------------|-----------------------------|-------------------|--|
| | | TX | RX | TX | RX | TX | RX | |
| 1. | JAKARTA | 2000 M ² | 1.5 Ha | 1800 M ² | 700 M ² | 70 M ² | 35 M ² | 1) TX Building consist of two floor 900 M ² each. |
| 2. | BELAWAN | 1.5 Ha | 2.5 Ha | 304 M ² | 224 M ² | 70 M ² | 28 M ² | 2) Will be removed to new location, land space at new location 2 Ha. |
| 3. | PALLENBANG | 2 Ha | 1.5 Ha | 480 M ² | 300 M ² | 70 M ² | 35 M ² | 3) Planned to removed to new location. |
| 4. | DUMAI | 4 Ha | 2 Ha | 280 M ² | 180 M ² | 42 M ² | 40 M ² | 4) Consist of two floor |
| 5. | SURABAYA | 0.455 Ha | 0.65 Ha | 249 M ² | 472 M ² | 55 M ² | 72 M ² | 5) TX and Rx building in one place |
| 6. | UJUNG PANDANG | 2 Ha | 1.16 Ha | 240 M ² | 180 M ² | 40 M ² | 35 M ² | |
| 7. | BITUNG | 1.62 Ha | - | 100 M ² | 180 M ² | 40 M ² | 35 M ² | |
| 8. | AMBON | 2.8 Ha | 0.3 Ha | 216 M ² | 4) 448 M ² | 48 M ² | 24 M ² | |
| 9. | JAYAPURA | 2.4 Ha | 1.08 Ha | 240 M ² | 180 M ² | 70 M ² | 35 M ² | |
| 10. | SEMARANG | 1 Ha | 1 Ha | 294 M ² | 210 M ² | 40 M ² | 35 M ² | |
| 11. | SORONG | 1000 M ² | - | 5) 76 M ² | - | - | - | |
| 12. | MERAUKE | 600 M ² | - | 5) 76 M ² | - | - | - | |

ORGANIZATION OF DIRECTORATE GENERAL OF SEA COMMUNICATIONS

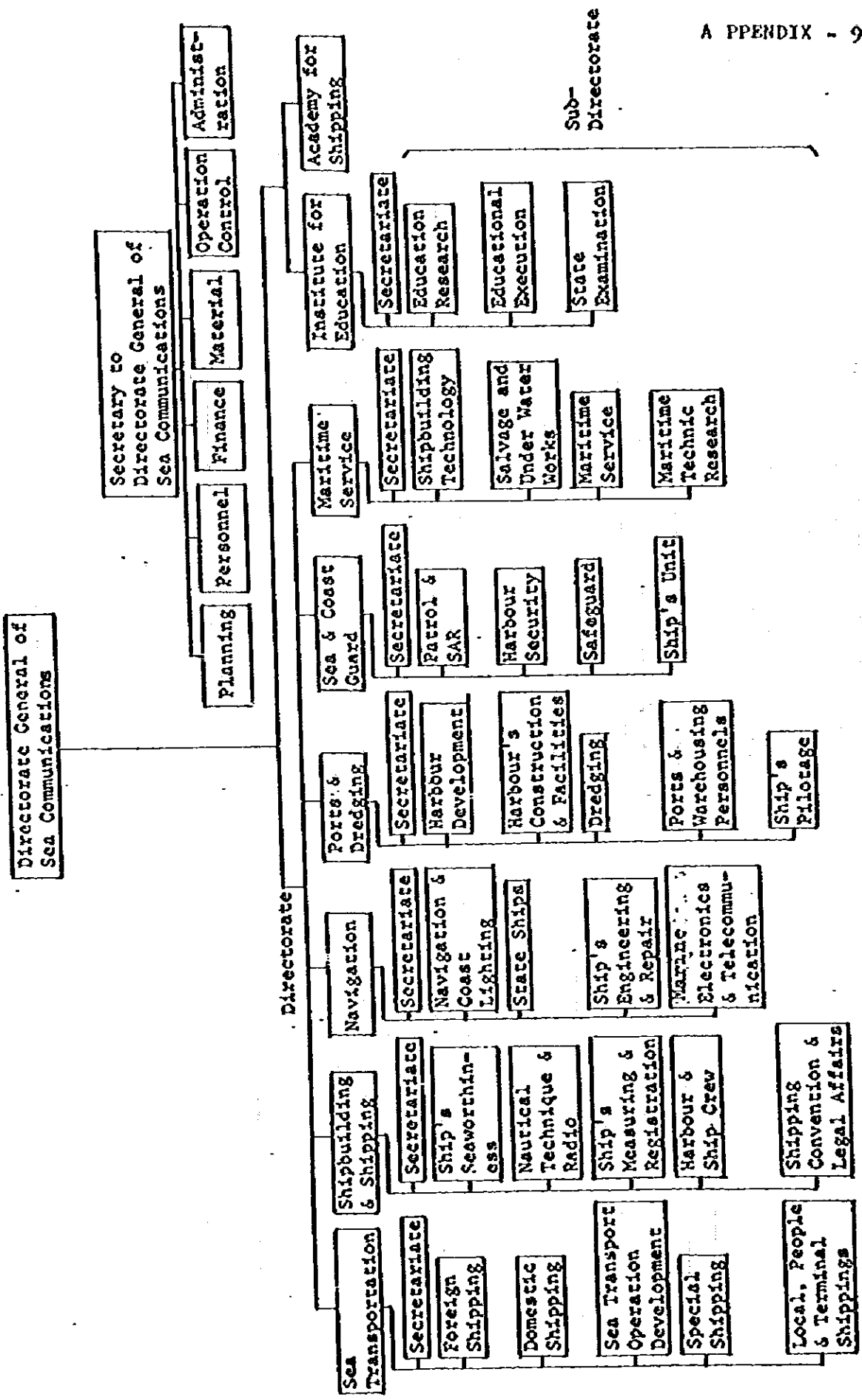


CHART OF ORGANIZATION AND PERSONNEL OF COAST STATION (1/2)

CHART OF ORGANIZATION OF 1ST CLASS
COAST STATION

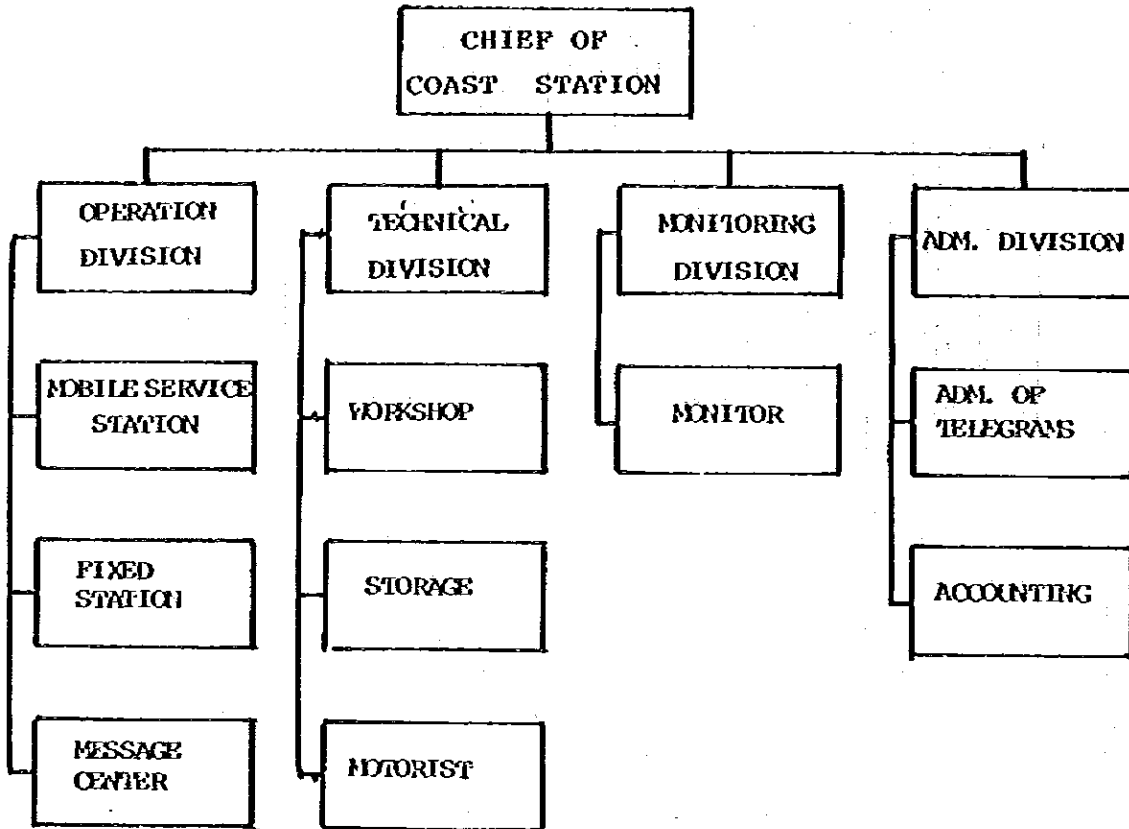
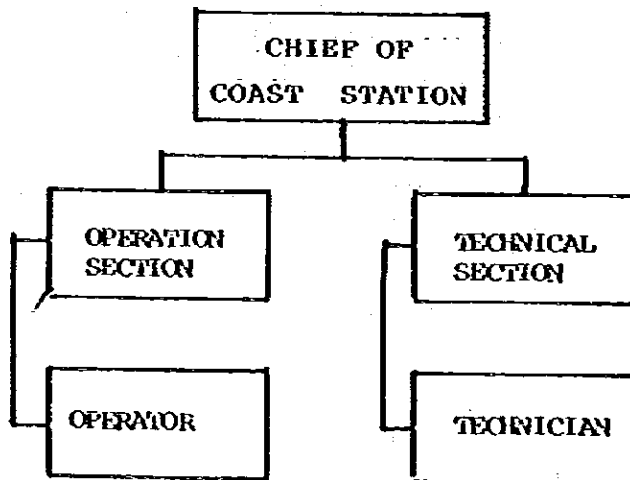


CHART OF ORGANIZATION OF 3RD CLASS
COAST STATION



NUMBER OF STAFF OF THE 1ST AND 3RD COAST STATION

| CLASS | NAME OF THE STATION | STANDARD NUMBER OF STAFF | ACTUAL NUMBER OF STAFF |
|-------|---------------------|--------------------------|------------------------|
| 1st | JAKARTA | 85 | 101 |
| | UJUNG PANDANG | 63 | 34 |
| | SURABAYA | 63 | 87 |
| | BELAWAN | 63 | 38 |
| | DUMAI | 63 | 27 |
| | BITUNG | 60 | 23 |
| | JAYAPURA | 63 | 23 |
| | AHBON | 60 | 23 |
| 3rd | SEMARANG | 16 | 15 |
| | SORONG | 16 | 7 |
| | MERAUKE | 16 | 6 |

| NG | JAYAPURA | | | AMBON | | SBMA-RANG | | SORONG | MBRA UKE | REMARKS | |
|--------------------------------------|----------|--------------------------------------|----|-------|----|----------------------------|----|-----------------------|----------|--|--|
| | RX | TX | RX | AD | TX | RX | TX | RX | TX/RX | | TX/RX |
| | | 3 | 1 | | 1 | | 3 | | | TG : Telegraphy with FS Keyer
TP : Telephony
T/R: Transceiver | |
| 5
3
2
2
2
1
1
1 | | 5
3
2
2
2
1
1
1 | | | | 7
5
2
1
1
1 | | 5
3
2 | | S-S : Ship to shore

P-P : Point to Point | |
| 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | T. : T Type
M.D. : Multi Double
D.D. : Double Doublet
S.D. : Single Doublet | |
| 3 | 1 | 3 | | 1 | | 1 | | 5 | 1 | 1 | Note: Including Remote Control Equipment |
| 1
1
1
1
1 | | 1
1
1
1
1 | | | | 1
1
1
1
1 | | 1
1
1
1
1 | 1
1 | | |

LIST OF MAIN NBWLY PROCURED EQUIPMENT

| STATIONS
EQUIPMENTS | JAKARTA | | | UJUNG PANDANG | | SURABAYA | | BBLAWAN | | | DUMAI | | | BITUNG | | JAYAPURA | | | AMBON | | SEMARANG | | SORONG | MERA UKE | REMARKS | |
|---|---------|------------------|----|---------------|------------------|----------|----|------------------|----|----|------------------|----|----|--------|------------------|----------|----|----|------------------|----|----------|----|--------|----------|---------|--|
| | TX | RX | MC | TX | RX | TX | RX | TX | RX | AD | TX | RX | AD | TX | RX | TX | RX | AD | TX | RX | TX | RX | TX/RX | TX/RX | | |
| TRANSMITTER
- 5 KW MF. TG
- 5 KW HF. TG.TP
- 1 KW MHP/HF TG.TP
- 100 W HF.TP.T/R | 3 | | | | | | | | | | | | | | | | | | | | | | | | | TG : Telegraphy with PS Keyer
TP : Telephony
T/R: Transceiver |
| S-S ALL-WAVE REC.
- PRESET UNIT
- SCANNING UNIT
P-P ALL-WAVE REC.
- PRESET UNIT
A.R.Q. (P-P)
VODAS (S-S)
LINCOMPEX (P-P) | | 13
9
4 | | | 6
4
2 | | | 7
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2 | | | 7
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2 | | | | 5
3
2 | | | | 5
3
2 | | | | | | | S-S : Ship to shore

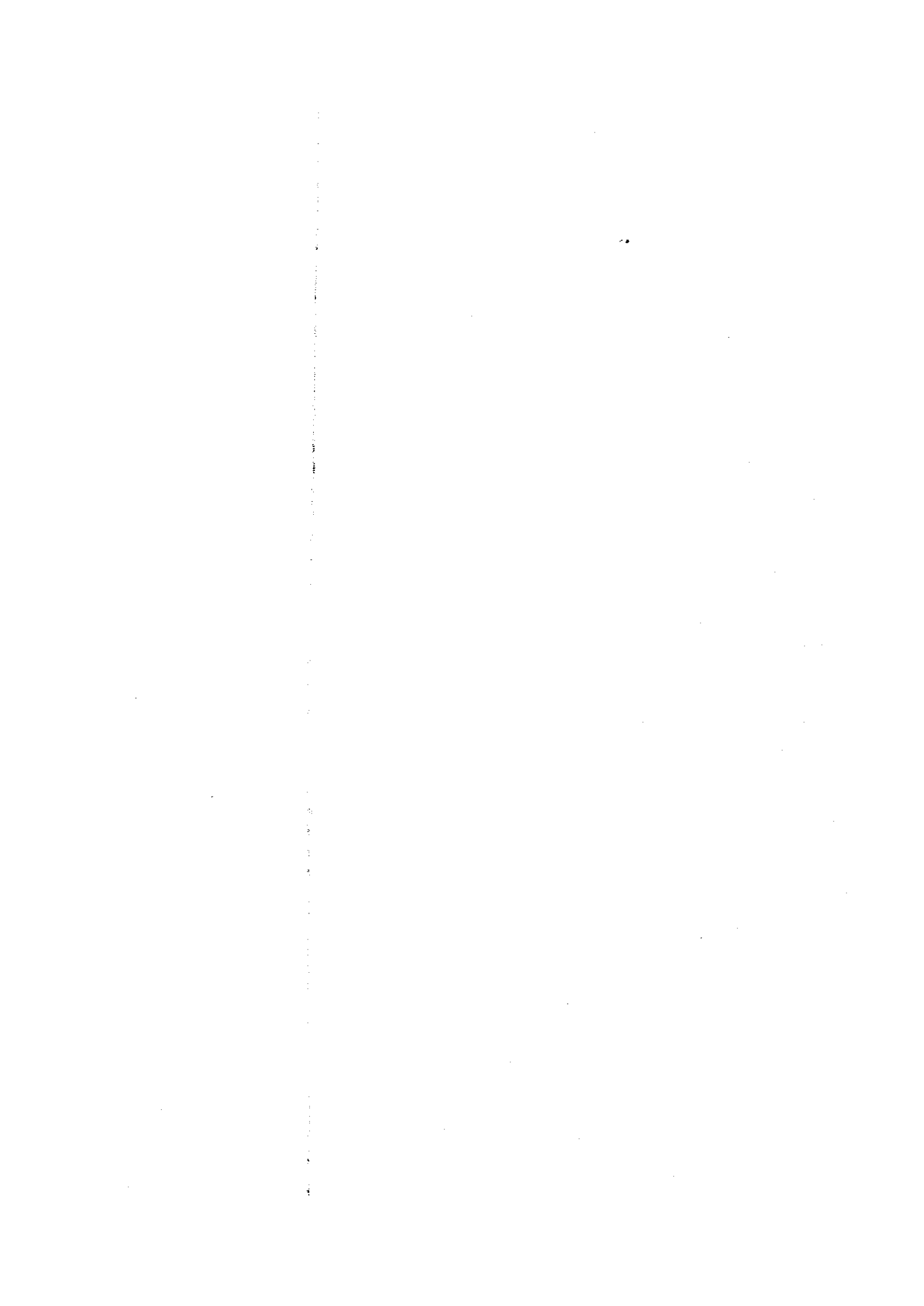
P-P : Point to Point |
| ANTENNA SYSTEM
- T
- M.D.
- D.D.
- S.D.
- FAN
- INV. L
- CAGE
- V. LOG-PBRI
- CONICAL MONO-POLE
- EARTHING
- MATCHING TRANSF.
- MULTI-COUPLER
- ANT. SELECTOR
- TOWER (MAST)
- ANT. EXCHANGER (SWITCH)
- DUMMY LOAD | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | T. : T Type
M.D. : Multi Double
D.D. : Double Doublet
S.D. : Single Doublet |
| OPERATION POSITION
- SUPERVISORY CONSOLE
- CONTROL CONSOLE (Note)
- CONTROL DESK (Note) | 1 | | | 1 | | | | | | | | | | 1 | | 1 | | | 1 | | | | | | | Note: Including Remote Control Equipment |
| MONITOR CONSOLE
- 500 KHZ AUT. ALM. REC
- 2182 KHZ AUT. ALM. REC
- DIRECTION FINDER
- ALL WAVE REC. | | 1
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|--|------------------|------------------|------------------|---|------------------|---|------------------|------------------|------------------|---|------------------|------------------|------------------|------------------|------------------|---|------------------|------------------|--------|---|---|---|---|
| - SCANNING UNIT
- TAPE RECORDER | | 1
1 | | | 1
1 | | 1
1 | | 1
1 | | | 1
1 | | | 1
1 | | 1
1 | | 1
1 | | | | |
| UHF LINK
- RADIO EQUIPMENT
- MULTIPLEX TERMINAL
- V.P.T.
- ANTENNA
- MAST | 1
1
2
1 | 2
2
3
2 | 1
1
1
1 | | 1
1 | | 1
1
2
1 | 2
2
1
2 | 1
1
1
1 | | 1
1
1
1 | 1
1
1
1 | 1
1
1
1 | 1
1
2
2 | 1
1
1
1 | | 1
1
1
1 | 1
1
1
1 | | | | | |
| VHF SYSTEM
- TRANSM/REC.
- ANTENNA
- CONTROL DESK | | 4
4
1 | | | 3
3
1 | | 3
3
1 | 3
3
1 | | | 3
3
1 | 3
3
1 | 3
3
1 | 3
3
1 | 3
3
1 | | 3
3
1 | 3
3
1 | | | | | |
| MISCELLANEOUS
- TELPRINTBR
- TAPE RECORDER
- MORSE TRANSMITTER
- ACCESSORIES | | 2
2
2
1 | 7 | | 1
1
1
1 | | 1
1
1
1 | 1
1
1
1 | 1
1 | | 1
1
1
1 | 1
1
1
1 | 1
1
1
1 | 1
1
1
1 | 1
1
1
1 | | 1
1
1
1 | 1
1
1
1 | | | | | |
| POWER PLANT
- DIESEL E.G.
- A.V.R.
- NO-BREAK POWER WITH PDB
- P.D.B. | | 1
1
1 | | | | | | | | | | | | | | | | 1
1 | 1
1 | | | | |
| MEASURING EQUIPMENT
AND TOOLS | | 1 | | | 1
1 | | 1
1 | 1
1 | | | 1
1 | 1
1 | 1
1 | 1
1 | 1
1 | | 1
1 | 1
1 | | | | | |
| SPARE PARTS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| INSTALLATION MATERIALS | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

ACCESSORIES: Key, microphone, headphone

For 3 years operation

Cables (coax, power, signal, control) wires fixing hardware, etc.



USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: JAKARTAITEM: TRANSMITTERSITE: TRANSMITTING STATION

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|---------------------------|-------------|------------------------|------------------------------|-------------|-----------------------------|-------------------|
| 5kW 405-535KHz | 2 | SCRAP
16 years | 5kW 405-535KHz | 3 | Expansion of Mobile Service | 3 |
| 3kW 1.6-26MHz | 2 | SCRAP
16 years | 5kW 1.6-27MHz
Synthesized | 8 | Expansion of Mobile Service | 8 |
| 1kW 1.6-26MHz
(JRC) | 2 | STAND-BY
10 years | 1kW 1.6-27MHz
Synthesized | 3 | Expansion of Mobile Service | 5 |
| 1kW 1.6-26MHz
(JRC) | 3 | SCRAP
19 years | | | | |
| 1kW 3-30MHz
ISB
SSB | 7 | WORKING
10-13 years | | | | 7 |

ITEM: OPERATION POSITION

| | | | | | | |
|---------------------|---|----------------------|---------------------|---|-----------------------------|---|
| Supervisory Console | 1 | STAND-BY
11 years | Supervisory Console | 1 | Expansion of Mobile Service | 2 |
|---------------------|---|----------------------|---------------------|---|-----------------------------|---|

ITEM: RECEIVERSITE: RECEIVING STATION

| | | | | | | |
|-------------------|---|-----------------------------------|--|----|---|----|
| Allwave (Atlanta) | 2 | SCRAP
20 years | Synthesized
Allwave with
Scanning and
Preset Unit | 13 | Expansion of
Mobile Service | 13 |
| Allwave (JRC) | 8 | STAND-BY
11-14 years | | | | |
| ISB Receiver SSB | 7 | REMOVE OR
STAND-BY
10 years | Synthesized
SSB with
Preset Unit | 11 | Upgrading of
Point-to-Point
Service | 15 |

ITEM: OPERATION POSITION

| | | | | | | |
|--|---|-----------------------------------|-----------------|---|--|---|
| Control Desk
MF TG
HF TG
HF TP | 6 | REMOVE OR
STAND-BY
11 years | Control Console | 4 | Expansion of Mobile Service | 7 |
| Control Desk
HF (ISB, SSB)
TG, TP, TTY | 3 | REMOVE
11 years | Control Console | 4 | Expansion of Point-to-Point Service | 4 |
| | | | Monitor Console | 1 | Expansion of Search and Rescue Service | 1 |

ITEM: UHF LINK

SITE: TRANSMITTING STATION
RECEIVING STATION
MESSAGE CENTER

JKT

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|--------------------|-------------|----------------------|-----------------------|-------------|---|-------------------|
| UHF Radio | 4 | STAND-BY
11 years | UHF Radio | 4 | Upgrading of System
Reliability | 8 |
| Multiplex Terminal | 4 | STAND-BY
11 years | Multiplex Terminal | 4 | Upgrading of
Reliability and
Expansion of
channels | 8 |

ITEM: VHF EQUIPMENT

SITE: RECEIVING STATION

| | | | | | | |
|---------|---|-----------------------|---------|---|--------------------------------|----|
| 50W T/R | 7 | WORKING &
STAND-BY | 50W T/R | 4 | Expansion of Mobile
Service | 11 |
|---------|---|-----------------------|---------|---|--------------------------------|----|

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: BELAVANITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-------------------|-------------|------------------------------------|------------------------------|-------------|--------------------------------|-------------------|
| 1kV
405-535KHz | 2 | WORKING | | | | 2 |
| 1kV
3-30MHz | 6 | WORKING
OR STAND-BY
12 years | 1kV 1.6-27MHz
Synthesized | 1 | Expansion of Mobile
Service | 7 |

ITEM: RECEIVER

| | | | | | | |
|-------------------------|---|-----------------------------------|---|---|---|----|
| Receiver
(Eddystone) | 9 | REMOVE OR
STAND-BY
12 years | Synthesized
Allwave with
Scanning or
Preset Unit | 7 | Upgrading and Expan-
sion of Mobile
Service | 10 |
| Channelized | 1 | STAND-BY | Synthesized
SSB with
Preset Unit | 1 | Upgrading of Point
to Point Service | 2 |

ITEM: OPERATION POSITION

| | | | |
|-----------------|---|---|---|
| Monitor Console | 1 | Expansion of Search
and Rescue Service | 1 |
|-----------------|---|---|---|

ITEM: UHF LINK

| | | | | | | |
|-----------------------|---|----------------------|-----------------------|---|---|---|
| UHF Radio | 2 | STAND-BY
12 years | UHF Radio | 2 | Upgrading of System
Reliability | 4 |
| Multiplex
Terminal | 2 | STAND-BY
12 years | Multiplex
Terminal | 2 | | 4 |
| | | | UHF Radio | 2 | New Link between
Receiving Station
and Administration | 2 |
| | | | Multiplex
Terminal | 2 | Office for Improve-
ment of Mobile and
Point to Point Service | 2 |

ITEM: VHF EQUIPMENT

| | | | | | | |
|---------|---|-----------------------------------|---------|---|--------------------------------|---|
| 50V T/R | 5 | REMOVE OR
STAND-BY
12 years | 50V T/R | 3 | Expansion of Mobile
Service | 6 |
|---------|---|-----------------------------------|---------|---|--------------------------------|---|

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: DUMAIITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-------------------|-------------|------------------------|------------------------------|-------------|--------------------------------|-------------------|
| 1kW
410-525KHz | 2 | WORKING | | | | 2 |
| 1kW
1.6-30MHz | 12 | WORKING
OR STAND-BY | 1kW 1.6-27MHz
Synthesized | 1 | Expansion of Mobile
Service | 13 |

ITEM: RECEIVER

| | | | | | | |
|------------------------|---|------------------------------------|--|---|---|----|
| Receiver
(Edystone) | 9 | REMOVE OR
STAND-BY:
10 years | Synthesized
Allwave with
Scanning and
Preset Unit | 7 | Upgrading and
Expansion of Mobile
Service | 10 |
| Channelized | 1 | STAND-BY
10 Years | Synthesized
SSB With
Preset Unit | 1 | Upgrading of Point
to Point Service | 2 |

ITEM: OPERATION POSITION

| | | | | | | |
|-----------------|---|--|--|--|---|---|
| Monitor Console | 1 | | | | Expansion of Search
and Rescue Service | 1 |
|-----------------|---|--|--|--|---|---|

ITEM: UHF LINK

| | | | | | | |
|------------------------------------|---|----------------------|--|--|--|---|
| UHF Radio
(Philips) | 2 | STAND-BY
10 years | | | | 2 |
| Multiplex
Terminal
(Philips) | 2 | STAND-BY
10 years | | | | 2 |
| UHF Radio
(Granger) | 2 | WORKING | | | | 2 |
| Multiplex
Terminal
(Granger) | 2 | WORKING | | | | 2 |
| UHF Radio | 2 | | | | New Link between | 2 |
| Multiplex
Terminal | 2 | | | | Receiving Station
and Administration
Office for Improvement
of Mobile and Point
to Point Service | 2 |

ITEM: VHF EQUIPMENT

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------|-------------|---------------------|-----------------------|-------------|-----------------------------|-------------------|
| 50W T/R | 5 | REMOVE OR STAND-BY | 50W T/R | 3 | Expansion of Mobile Service | 6 |

SMG

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: SEMARANGITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------|-------------|---------------------|-----------------------|-------------|-----------------------------|-------------------|
| 1kW | 1 | WORKING OR | 1kW, 1.6-27MHz | 3 | Expansion of Mobile Service | 6 |
| 0.25kW | 1 | STAND-BY | Synthesized | | | |
| 0.15kW | 1 | | | | | |

ITEM: RECEIVER

| | | | | | | |
|----------|---|------------------------|--|---|---------------------|---|
| Receiver | 3 | WORKING OR
STAND-BY | Synthesized
Allwave with
Scanning and
Preset Unit | 5 | Expansion of Mobile | 8 |
|----------|---|------------------------|--|---|---------------------|---|

ITEM: OPERATION POSITION

| | | | | | | |
|-----------------|---|--|--|--|--|---|
| Control Desk | 5 | | | | Expansion of Mobile Service | 5 |
| Monitor Console | 1 | | | | Expansion of Search and Rescue Service | 1 |

ITEM: UHF LINK

| | | | | | | |
|-------------------|--|--|--------------------|---|-------------------------------------|---|
| Underground Cable | | | UHF Radio | 2 | Upgrading of System Reliability and | 2 |
| | | | Multiplex Terminal | 2 | Expansion of Mobile Service | 2 |

ITEM: VHF EQUIPMENT

| | | | | | | |
|---------|---|--------|---------|---|-----------------------------|---|
| 10V T/R | 1 | REMOVE | 50V T/R | 3 | Expansion of Mobile Service | 3 |
|---------|---|--------|---------|---|-----------------------------|---|

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: SURABAYAITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------|-------------|------------------------------------|-------------------------------|-------------|--------------------------------|-------------------|
| 1kV, 800V, 300V | 9 | WORKING OR
STAND-BY
13 years | 1KV, 1.6-27MHz
Synthesized | 1 | Expansion of Mobile
Service | 10 |

ITEM: RECEIVER

| | | | | | | |
|-------------------------|---|------------------------------------|---|---|---|----|
| Receivers
(Philips) | 8 | REMOVE OR
STAND-BY
13 years: | Synthesized
Allwave with
Scanning or
Preset Unit | 7 | Upgrading and
Expansion of Mobile
Service | 10 |
| Channelized
Receiver | 1 | STAND-BY | Synthesized SSB
with Preset Unit | 1 | Upgrading of Point
to Point Service | 2 |

ITEM: OPERATION POSITION

| | | | | | | |
|--|--|--|-----------------|---|---|---|
| | | | Monitor Console | 1 | Expansion of Search
and Rescue Service | 1 |
|--|--|--|-----------------|---|---|---|

ITEM: VHF EQUIPMENT

| | | | | | | |
|---------|---|-----------------------|---------|---|--------------------------------|---|
| 50V T/R | 4 | REMOVE
OR STAND-BY | 50V T/R | 3 | Expansion of Mobile
Service | 5 |
|---------|---|-----------------------|---------|---|--------------------------------|---|

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION : UJUNG PANDANGITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|------------------------------|-------------|-------------------------|------------------------------|-------------|--------------------------------|-------------------|
| 1kW
405-535KHz | 2 | WORKING

12 years | | | | 2 |
| 1kW
1.6-26MHz | 3 | STAND-BY
12 years | 1kW Synthesized
1.6-27MHz | 3 | Expansion of
Mobile Service | 6 |
| 1kW
3-30MHz
ISB
SSB | 1 | WORKING
12 years | | | | 1 |

ITEM: RECEIVER

| | | | | | | |
|-------------------------|---|----------------------------------|---|---|--|---|
| 0.1-30MHz | 7 | STAND-BY
OR REMOVE | Synthesized
allwave with
Scanning or
Preset unit | 6 | Expansion of
Mobile Service | 9 |
| 0.1-30MHz
ISB
SSB | 2 | STAND-BY
12 years | Synthesized
SSB with
Preset Unit | 2 | Upgrading of Point
to Point Service | 2 |

ITEM: UHF LINK

| | | | | | | |
|-----------------------|---|---------|--|--|--|---|
| UHF Radio | 2 | WORKING | | | | 2 |
| Multiplex
Terminal | 2 | WORKING | | | | 2 |

ITEM: OPERATION POSITION

| | | | | | | |
|--|---|--|------------------------|---|--------------------------------|---|
| Supervising
Console | 1 | STAND-BY
12 years | Supervisory
Console | 1 | Expansion of Mobile
Service | 2 |
| Control
Desk
HP JG
HP TG
HP TP | 5 | STAND-BY
OR REMOVE
12 years | Control
Console | 3 | Expansion of Mobile
Service | 5 |

UJP 2

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|--|-------------|----------------------|-----------------------|-------------|---|-------------------|
| Control Desk
HP (ISB, SSB)
TG, TP, TTY | 1 | REMOVE
12 years | Control Console | 1 | Upgrading of Point
to Point Service | 1 |
| | | | Monitor Console | 1 | Expansion of Search
and Rescue Service | 1 |
| <u>ITEM: VHF EQUIPMENT</u> | | | | | | |
| 25W T/R | 3 | STAND-BY
12 years | 50W T/R | 3 | Upgrading and
Expansion of Mobile
Service | 6 |

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATION

STATION: BITUNG

ITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|------------------------------|-------------|----------------------|---------------------------------|-------------|--------------------------------|-------------------|
| 1kW
405-535KHz | 2 | WORKING | | | | 2 |
| 1kW
1.6-26MHz | 3 | STAND-BY
13 Years | 1kW
Synthesized
1.6-27MHz | 3 | Expansion of Mobile
Service | 6 |
| 1kW
3-30MHz
ISB
SSB | 1 | WORKING
12 Years | | | | 1 |

ITEM: RECEIVER

| | | | | | | |
|-------------------------|---|------------------------------------|--|---|--------------------------------|---|
| 0.1-30MHz | 7 | STAND-BY OR
WORKING
13 Years | Synthesized
Allwave with
Scanning and
Preset Unit | 5 | Expansion of Mobile
Service | 8 |
| 0.1-30MHz
ISB
SSB | 2 | REMOVE OR
STAND-BY | Synthesized
ISB with Preset
Unit | 1 | | 2 |

ITEM: UHF LINK

| | | | | | | |
|-----------------------|---|----------------------|-----------------------|---|------------------------------------|---|
| UHF Radio | 2 | STAND-BY
13 Years | UHF Radio | 2 | Upgrading of
System Reliability | 4 |
| Multiplex
Terminal | 2 | | Multiplex
Terminal | 2 | | 4 |

ITEM: OPERATION POSITION

| | | | | | | |
|--|---|-----------------------------------|------------------------|---|--|---|
| Supervisory
Console | 1 | STAND-BY
13 Years | Supervisoly
Console | 1 | Expansion of Mobile
Service | 2 |
| Control Desk
HF TG
HF TG
HF TP | 5 | STAND-BY
OR REMOVE
13 Years | Control Console | 2 | Expansion of Mobile
Service | 4 |
| Control Desk
HF (ISB, SSB)
TG, TP, TTY | 1 | Remove
13 Years | Control Console | 1 | Upgrading of Point
to Point Service | 1 |

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|----------------------------|-------------|----------------------|-----------------------|-------------|---|-------------------|
| | | | Monitor Console | 1 | Expansion of Search and Rescue Service | 1 |
| ITEM: VHF EQUIPMENT | | | | | | |
| 25W T/R | 3 | STAND-BY
13 Years | 50W T/R | 3 | Upgrading and Expansion of Mobile Service | 6 |

ABN

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: AMBONITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------------|-------------|------------------------------------|-------------------------------|-------------|--------------------------------|-------------------|
| 1/0.8kW
410-525KHz | 2 | WORKING | | | | 2 |
| 1/0.8kW
1.6-30MHz | 6 | WORKING
OR STAND-BY
13 Years | 1kW, 1.6-27MHz
Synthesized | 1 | Expansion of Mobile
Service | 7 |

ITEM: RECEIVER

| | | | | | | |
|-----------------------|---|-------------------------------------|--|---|---|----|
| Receiver
(Philips) | 9 | REMOVE OR
STAND-BY :
13 Years | Synthesized
Allwave with
Scanning and
Preset Unit | 7 | Upgrading and
Expansion of Mobile
Service | 10 |
| Channelized | 1 | STAND-BY
13 Years | Synthesized
SSB with
Preset Unit | 1 | Upgrading of Point
to Point Service | 2 |

ITEM: OPERATION POSITION

| | | | | | | |
|--|--|--|-----------------|---|---|---|
| | | | Monitor Console | 1 | Expansion of Search
and Rescue Service | 1 |
|--|--|--|-----------------|---|---|---|

ITEM: UHF LINK

| | | | | | | |
|---------------------------------|---|----------------------|--|--|--|---|
| Radio Tx/Rx
(Philips) | 2 | STAND-BY
10 Years | | | | 2 |
| Multiplex
Terminal (Philips) | 2 | STAND-BY
10 Years | | | | 2 |
| Radio Tx/Rx
(Granger) | 2 | WORKING | | | | 2 |
| Multiplex
Terminal (Granger) | 2 | WORKING | | | | 2 |

ITEM: VHF EQUIPMENT

| | | | | | | |
|---------|---|------------------------|---------|---|--------------------------------|---|
| 50W T/R | 5 | STAND-BY
OR WORKING | 50W T/R | 3 | Expansion of Mobile
Service | 5 |
|---------|---|------------------------|---------|---|--------------------------------|---|

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: JAYAPURAITEM: TRANSMITTER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|------------------------------|-------------|----------------------|---------------------------------|-------------|--------------------------------|-------------------|
| 1kW
405-535KHz | 2 | WORKING | | | | 2 |
| 1kW
1.6-26MHz | 3 | STAND-BY
12 Years | 1kW
Synthesized
1.6-27MHz | 3 | Expansion of Mobile
Service | 6 |
| 1kW
3-30MHz
ISB
SSB | 1 | WORKING
12 Years | | | | 1 |

ITEM: RECEIVER

| | | | | | | |
|-----------|---|------------------------------------|--|---|--------------------------------|---|
| 0.1-30MHz | 7 | STAND-BY OR
WORKING
12 Years | Synthesized
Allwave with
Scanning and
Preset Unit | 5 | Expansion of Mobile
Service | 8 |
|-----------|---|------------------------------------|--|---|--------------------------------|---|

ITEM: UHF LINK

| | | | | | | |
|-----------------------|---|----------------------|-----------------------|---|--|---|
| UHF Radio | 2 | STAND-BY
12 Years | UHF Radio | 2 | Upgrading of System
Reliability | 4 |
| Multiplex
Terminal | 2 | | Multiplex
Terminal | 2 | | 4 |
| | | | UHF Radio | 2 | New Link between | 2 |
| | | | Multiplex
Terminal | 2 | Receiving Station and
Administration Office
for Improvement of
Mobile and Point to
Point Service | 2 |

ITEM: OPERATION POSITION

| | | | | | | |
|---|---|-----------------------------------|------------------------|---|--------------------------------|---|
| Supervisory
Console | 1 | STAND-BY
12 Years | Supervisory
Console | 1 | Expansion of Mobile
Service | 2 |
| Control Desk
MP TG
HP TG
HP TP | 5 | STAND-BY OR
REMOVE
12 Years | Control Console | 2 | Expansion of Mobile
Service | 4 |

JIP 2

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|--|-------------|----------------------|-----------------------|-------------|---|-------------------|
| Control Desk
HP (ISB, SSB)
TG, TP, TTY | 1 | REMOVE
12 Years | Control Console | 1 | Upgrading of Point
to Point Service | 1 |
| | | | Monitor Console | 1 | Expansion of Search
and Rescue Service | 1 |
| <u>ITEM: VHP EQUIPMENT</u> | | | | | | |
| 25W T/R | 3 | STAND-BY
12 Years | 50W T/R | 3 | Upgrading and
Expansion of Mobile
Service | 6 |

SRG

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: SORONGITEM: AUTO-ALARM RECEIVER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------|-------------|---------------------|-----------------------|-------------|---|-------------------|
| | | | 500kHz
AUTO-ALARM | 1 | Expansion of Search
and Rescue Service | 1 |
| | | | 2182kHz
AUTO-ALARM | 1 | | 1 |

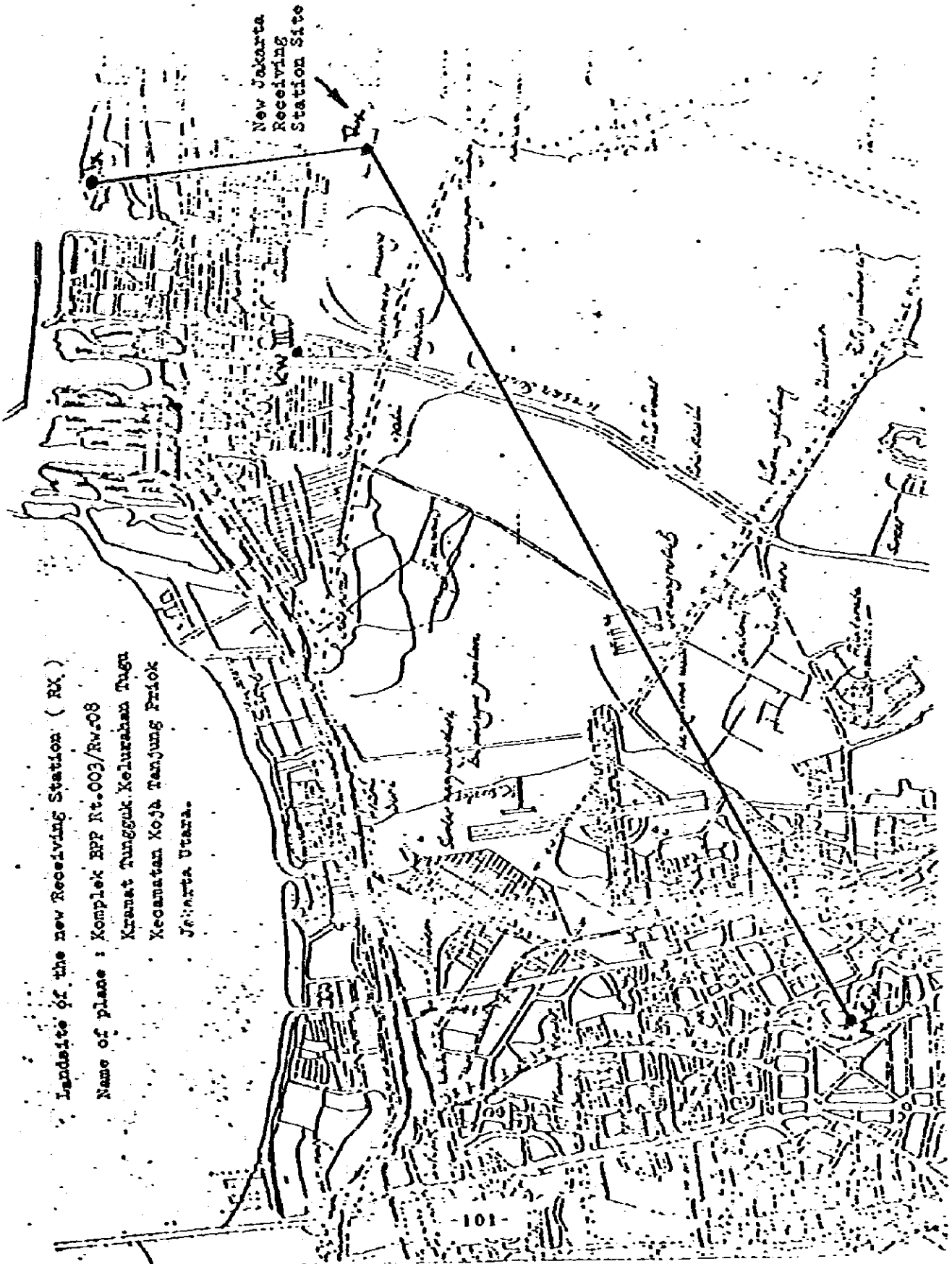
MRK

USAGE OF EXISTING EQUIPMENT AFTER NEW INSTALLATIONSTATION: MERAUKEITEM: AUTO-ALARM RECEIVER

| <u>Existing</u> | <u>Q'ty</u> | <u>Usage Reason</u> | <u>Newly Procured</u> | <u>Q'ty</u> | <u>Purpose of Addition</u> | <u>Final Q'ty</u> |
|-----------------|-------------|---------------------|-----------------------|-------------|---|-------------------|
| | | | 500kHz
AUTO ALARM | 1 | Expansion of Search
and Rescue Service | 1 |
| | | | 2182kHz
AUTO ALARM | 1 | | 1 |

Landsite of the new Receiving Station (RX)

Name of place : Komplek RPP Rt.003/Rv.08
Kramat Tunggal Kelurahan Tugu
Kecamatan Kojak Tanjung Priok
Jakarta Utara.



IMPLEMENTATION TIME SCHEDULE

| Item | Number of Month | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|-----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| | 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 | | |
| 1 Preparatory Work | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Site Survey | | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 Preparation of Tender Specification | | | — | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 Tender Announcement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 Tender Evaluation and Contract | | | | | | | | | — | — | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 CIVIL Works & Building | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 Equipment Manufacturing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 Review of Installation Drawings | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 Marine Transportation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 Installation and Tests | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

APPENDIX - 14

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