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THE STAGE OF MANUFACTURE OF TELECOMMUNICATION EQUIPMENT IN INDIA 1/

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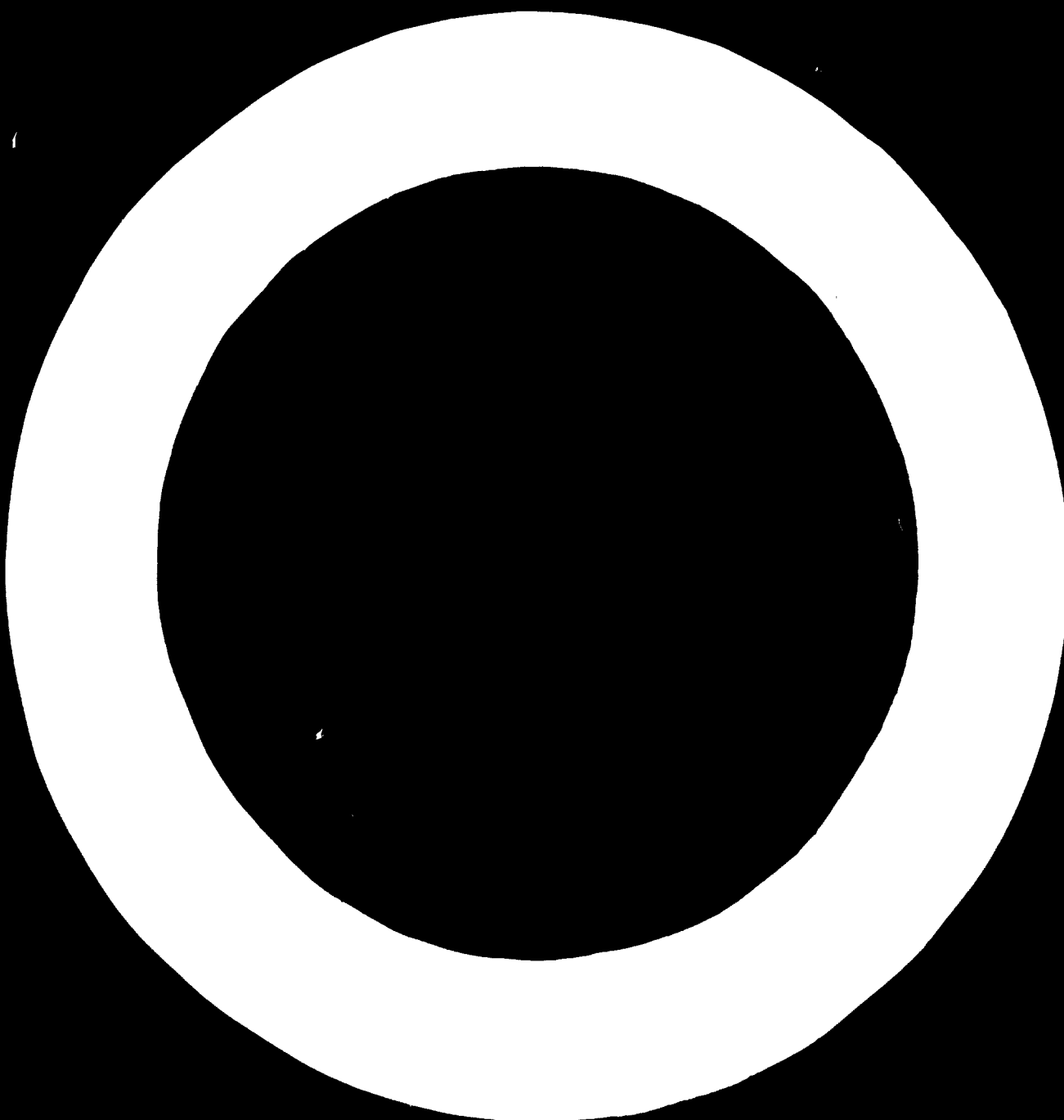


1. [illegible]

1.1.1. [illegible]

(a) [illegible]

(b) [illegible]

(c) [illegible]

1.1.2. [illegible]

1.2.1. [illegible]

1.2.2. [illegible]

1.2.3 [illegible]

1.2.4. The [illegible] communication equipment like telephone, telephone switching equipment etc. and also items like cables, [illegible] telecommunication, and telemeters.

1.2.5. The Government has decided that products that would be developed primarily for [illegible] equipment, equipment, instruments etc.

1.3 Capital [illegible]: [illegible] which gives the production trends, the turnover expected to be as well as the estimated investment is given in Annexure II. [illegible] manufacture of basic and raw materials and substitution of indigenous available raw materials, for the manufacture of components etc. have been envisaged.

1.4. [illegible] actions in being taken towards the implementation of the recommendations made in this committee so that self-sufficiency is achieved in the foreseeable future.

2. [illegible] agencies in charge of matters concerning electronics.

2.1 Administrative efforts made by the Government.

2.1.1. In India the electronics activities are handled both by the Government and the private enterprises. The Government runs the telephone and telegraph services and the overseas communications services. The entire telecommunication equipment including switching equipment, telephone instruments, channelling equipment, carrier equipment and cables, [illegible] and long line trunk as well as teleprinters are made in factories owned by Government. Most of the electronic equipment required for the strategic needs are also made in Government owned factories.

2.1.2. The Government plans the development of the electronics industry in the country and regulates the industrial licensing for the manufacture of all electronic items.

2.1.3. One of the important measures undertaken by Government recently was to invite manufacturers to submit proposals for establishing additional capacity for the manufacture of the total quantities of components that would be required by 1973, which would be of the order of Rs. [illegible] crores, i.e. Rs. [illegible] million, per annum. The response has been excellent and this target is expected to be fully reached.

2.2 Civil and Industrial sectors:

2.2.1 Private industries primarily engaged in the manufacture of electronic components, radios, television sets and testing instruments. The private factories manufacturing all types of components and most of the manufacturing units are manufacturing these components on the basis of the technical know-how obtained from manufacturers in foreign countries. Number of manufacturers all over the world in Europe, America and Japan have all collaboration arrangements with Indian manufacturers.

2.2.2 The manufacturing units have founded associations for promoting the development of the industry. Some of the important associations are the Radio and Television Manufacturers' Association, Electronic Components Industries Association, the All India Radio Merchants Association, Federation of All India Industries Associations etc. Amongst the Professional Institutions concerned with electronics are the Institution of Telecommunication Engineers, Institution of Electronics and Radio Engineers etc.

2.3 Research and Development: Research and Development organizations active in the field of electronics in India can be classified under four major heads -

(i) National Laboratories like -

National Physical Laboratory, Central Electronics Engineering Research Institute, [illegible] and Metallurgical Engineering, Central Electrochemical Research Laboratory, etc.

(ii) Laboratories connected with [illegible] -

Telecommunications Research Centre, Defence Electronics Research Laboratory, Naval Physical and Oceanographic Laboratory, Electronics and Radar Development Establishment, Defence Science Laboratory, etc. Note giving briefly the activities of these laboratories and Telecommunications Research Centre, Defence Electronics Research Laboratory, Naval Physical and Oceanographic Laboratory, Electronics and Radar Development Establishment, Defence Science Laboratory, etc.

(iii) Laboratories connected with [illegible] educational institutions such as -

Indian Institute of Science, Bangalore, [illegible] Physics, Electronics, Physical Research Laboratory and Indian Institute of Technology.

(iv) Laboratories with [illegible] -

Research and Development Centres of Bharat Electronics, Indian Telephone Industries and [illegible] Hindustan Cables Ltd. in the public sector and other [illegible] manufacturing industries.

2.4 Developmental work:

2.4.1 The National Laboratories are carrying out applied research in the area of Electronics and with short term objectives. Some of the fields are instrumentation, electronic computer technology, microwave electronics, television receivers. Specialised equipment being developed are microwave components, microwave tubes, silicon devices and integrated circuits.

2.4.2 Laboratories attached with universities are engaged in developing a number of items of specialized equipment such as communication equipment for rural areas including optical links, microwave radio relay links, digital transmission techniques, electronic switching equipment for control and instrumentation purposes and basic solid state studies. Electronics Division of the National Physical Laboratory has developed electronic instruments for analog computers, telemetering and data reduction etc.

2.4.3 [illegible] are engaged in fundamental studies in areas such as propagation of electromagnetic waves, microwave tubes, microwave integrated circuits, solid state devices, semiconductor physics, tropospheric scatter, ionospheric propagation, satellite communications, [illegible] being set up in the country. Courses in electronics engineering are being conducted in the Institutes of Technology at Kharagpur, Madras, Kanpur, Bombay, Roorkee, Jadavpur University and Indian Institute of Science, Bangalore.

2.4.4 Research is aimed to bring about improvement in the quality of the products, higher productivity and reliability of [illegible].

2.3.5 [illegible] industry in the [illegible] industrial [illegible] manufacturers are beginning to [illegible]

2.3.6 [illegible] fostering of development [illegible]

2.4. [illegible]

2.4.1 [illegible]

2.4.1.1. [illegible]

2.4.1.2. [illegible]

2.4.1.3. [illegible]

2.5.1.4 Telegraph service. [illegible] 3.5 [illegible] telegraph [illegible] link [illegible] ever will go in India for telegraph service. For setting up the telegraph [illegible], we [illegible] switching (TX) [illegible] centre.

2.5.1.5 Telex [illegible] we [illegible] linked [illegible] 1973, we [illegible] exchanges [illegible] wide [illegible] , we have [illegible] the number [illegible] to 10,[illegible] telex lines [illegible] 1972.

2.5.2 [illegible]

2.5.2.1 [illegible] direct [illegible] 3 [illegible] channel, 3 [illegible] telegraph [illegible] , [illegible] hot circuits. [illegible] , [illegible] over [illegible] of the world.

2.5.2.2. [illegible] Indian [illegible] satellite. [illegible] 1978.

2.5.2.3 [illegible] with [illegible] [illegible] technology.

2.5.3. Traffic

2.5.3.1 [illegible] as follows:-

(a) [illegible]
(b) [illegible]
(c) [illegible]
(d) [illegible]
(e) [illegible]
(f) [illegible]

2.5.3.2 [illegible] nearly 7 million [illegible] of medium [illegible] present [illegible] bring [illegible]

2.5.3.3. [illegible] Television [illegible] two [illegible] three [illegible] however, [illegible]

2.5. [illegible] industries [illegible] , [illegible] , [illegible] . [illegible] electronics [illegible] computer [illegible] ted [illegible] , [illegible] , [illegible] Elliott [illegible] , [illegible] , [illegible] computers [illegible] three [illegible].

2.[illegible] [illegible] electronics [illegible] electronic [illegible] playing an important role in the [illegible] of the [illegible] in India. With the [illegible] of [illegible] and the [illegible] of [illegible] quantities of [illegible] electronic [illegible], it is expected that [illegible] in the [illegible].

2.[illegible] [illegible]

2.[illegible].1 [illegible] communications: The use of [illegible], improvement and [illegible] public telecommunications [illegible] in India. But [illegible] in public telecommunications [illegible] provide [illegible] for [illegible]. [illegible] in public telecommunications [illegible] the [illegible] equipment.

2.[illegible].2 [illegible]: [illegible] the [illegible] by, [illegible] [illegible] from [illegible], [illegible] [illegible] international regulations, [illegible] etc. [illegible]. [illegible], 12 [illegible] [illegible] are [illegible]. The [illegible] is the [illegible] of [illegible] and [illegible].

2.[illegible] [illegible] of Electronic Industries

The [illegible] of [illegible] industries [illegible] by the Committee [illegible] the [illegible]. [illegible] is given in [illegible]. The [illegible] regarding the [illegible] of electronic [illegible] is given below:

2.[illegible].1 Electronics [illegible]: [illegible] of electronic [illegible] in included [illegible] the [illegible] industries by the Government. The present [illegible] being licensed is given in [illegible] 3. Efforts [illegible] to [illegible] additional [illegible] for the [illegible] of electronic equipment to keep [illegible] with the [illegible] indicated in the [illegible]. With the [illegible] envisaged the [illegible] of electronic equipment will increase to [illegible] ([illegible]) in 1974. Production is expected to [illegible] ([illegible]) in 1978.

2.[illegible].2 Short [illegible]: [illegible], the present production of 3 [illegible] is [illegible] meeting [illegible] 4 to 5 [illegible] receivers in the next few [illegible]. The 3 [illegible] radio receivers of current production, 2.5 [illegible] receivers [illegible], 3 [illegible] are five [illegible] receivers. The number of [illegible] produced in short [illegible] of the total production of 3 [illegible] receivers [illegible]. A receiver industry has been set up with indigenous know-how and it will [illegible] with the production of 10.1 receivers this year, [illegible] 3.7 receivers next year. In addition, India is producing public [illegible], [illegible], [illegible], [illegible] and [illegible].

2.[illegible].3 [illegible]: The [illegible] electronic equipment [illegible] the [illegible] used [illegible] mainly catering to [illegible]. Most [illegible] products [illegible] [illegible] like [illegible], [illegible], etc. [illegible] of [illegible] communication equipment. The [illegible] public [illegible] [illegible] in the [illegible] telephone [illegible] which [illegible] [illegible] the [illegible] equipment like [illegible] switching equipment, [illegible] telephones, [illegible] telephone [illegible], carrier cable [illegible], [illegible], [illegible] etc. The [illegible] production is [illegible] of the order of [illegible]. Teleprinters [illegible] are obtained by [illegible] Teleprinter [illegible] present production is 3,[illegible] which [illegible] which is being planned to be [illegible] in the course of the next four [illegible].

2.6.1 Guidelines: Guidelines for development of the electronic industr
have been given for ele el i the
is actively engaged in identi
therein. The
industr in. pr

2.6.5 Foreign Investment:
up joint ventures in the
of electr
electr
not precluded
co
technol
Existing foreign
to
large
new item
Thus
U.K.

2. Foreign Collaboration:
in
equipments etc.
The foreign collaborations
technical
some
generally not subject to
general guidelines
of the items and the
date of signing whichever is earlier.
There are general guidelines but
application
higher
for
to
percentage is
want of
terms are
share their

2.7 Growth Pattern of the Industry:

2.7.1 Under the
the State Government.
of four Central Universities
.

2.7.2 The
the technical
of facilities
by
being laid
.

2.7.3 The enrolment target for the Third Plan was 25,000 for the Degree Courses and 5,000 for the Diploma course. To meet this target, 12 Degree Institutions and 27 Institutions of Diploma level have been started. This excludes Girls Polytechnics. An incremental expansion is expected during the fourth Five Year Plan. By 1974 - 75, student wings admitted in the degree level and 55,000 at the diploma level.

2.7.4 By the end of the Fourth Plan, 5 centres have been started for post graduate education and research in technical education.

3. International Co-operation provided by the Government

3.1 India has been actively participating in the conference of International Telecommunication Union (ITU), International Consultative Committee on Telegraphy, Telephony (CCITT) dealing with telecommunications. We have also been participating actively in the electronics and telecommunication conference of the ECAFE, UNESCO and the electronics instrumentation unit of the International Scientific Organisations. India is a member of the International Electronics Union.

3.2 There is unexhausted scope of specialists in the fields of electronics and telecommunications between India and other countries especially in Africa and Asia. There are rich scientists pool lying orphaned between India and the advanced countries. India is also participating in the Colombo Plan, Asian Development Plan and other bilateral programmes. The facilities at the experimental Satellite Communication Station could be made available to the trainees of the countries in this region.

ANNEXE II

[illegible]

[illegible]

[illegible]

Figure [illegible]

Equipement ité	[illegible]	[illegible]	[illegible]	[illegible]
1. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]

ANNEXURE 'A'

Telecommunication research centre [illegible] and telegraphs

Telecommunication research centre [illegible] and telegraphs department and is entrusted with equipment for use in the country. The development work done in the C.T.R.I. has been utilised extensively for developing and designing the communication equipment for the Second and the Third five Year Plans. The principal research activities have been in the fields of carrier systems, electro-acoustical [illegible] equipment, electronic measuring equipment and power plant etc. Original research done in the field of microwave and [illegible] equipment design will be in the design of analog and digital transmission. During the fourth five year plan the work in the above fields will continue with effort to develop these equipment and services continuously. Indigenous material and components are becoming available and design efforts are required to make use of these to the maximum extent possible thereby saving foreign exchange. The other fields where new work have to be started in telephone and telegraph transmission, picture, facsimile, T.V. transmission, subscriber equipment, external plant etc. are to provide new services and new facilities.

The main items of work in the field of electronics are:

(1) design and development transistorised type 27 channels system for large tube capacity cables.

(2) design of transistorised type 5/10 channel system for small tube capacity cables.

(3) re-design of the existing multiplexing equipment to accommodate indigenous components.

(4) picture and facsimile transmission.

(5) electronic measuring instruments of various types.

(6) design of solid state 960 channel microwave system in the new 4/6 Gc/s range.

(7) design of solid state 60 and 300 channels microwave systems in the 7/8 Gc/s range.

(8) design of solid state heterodyne 300 channels microwave systems 2/2.5 Gc/s range.

(9) design of T.V. transmission facilities.

(10) design of low power units for scatter and satellite communications.

(11) [illegible]

(12) [illegible]

(13) [illegible]

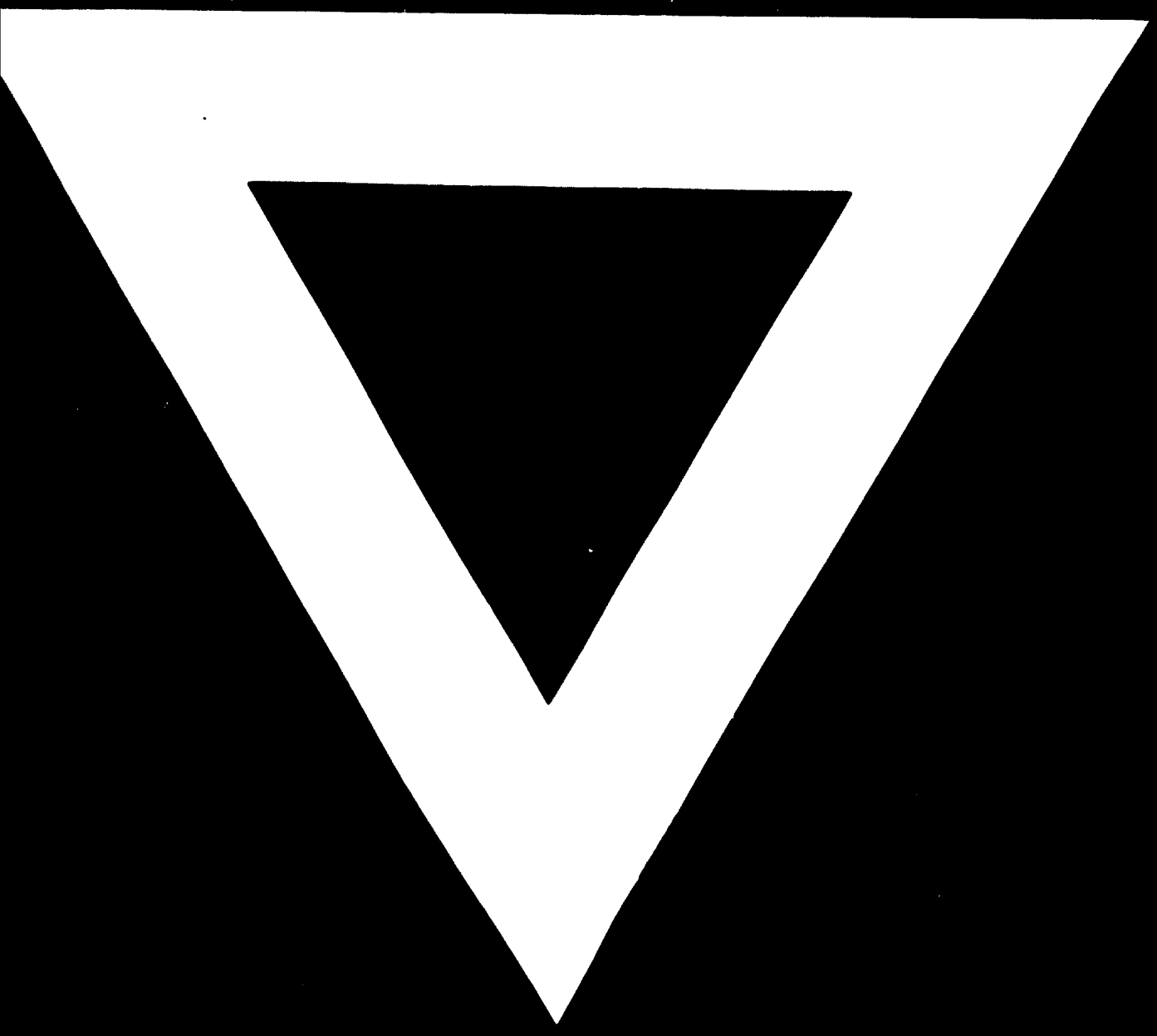
(14) [illegible]

(15) [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (no. [illegible])	[illegible] lines	[illegible] lines	[illegible]
[illegible]	[illegible]	2,[illegible]	[illegible]
[illegible] ([illegible])	[illegible]	[illegible]	12[illegible]
[illegible] w[illegible] ([illegible])	22[illegible]	12,[illegible]	[illegible]
[illegible] carrier [illegible] (no. of [illegible])	[illegible]	2,[illegible]	[illegible]
[illegible] wire carrier systems (no. of [illegible])	[illegible]213	5,[illegible]	8[illegible]
[illegible] wire lines (route km)	244,000	37,[illegible]	15
[illegible] ([illegible])	[illegible] lines	12,[illegible]	2[illegible]1
[illegible] systems ([illegible])	32[illegible]	2,[illegible]	32
Public C[illegible]ll [illegible]	3[illegible]	2,[illegible]	[illegible]
Combined [illegible] Telegraph Offices	[illegible]	2,[illegible]	23

Sr.	Item			
1.	[illegible] (Carbon Including Graphite)	[illegible]	[illegible]	[illegible]
2.	[illegible]	12.0	[illegible]	[illegible]
3.	Potentiometers (Value Wise)	[illegible]	[illegible]	[illegible]
4.	[illegible]	[illegible]	[illegible]	[illegible]
5.	[illegible]	[illegible]	[illegible]	[illegible]
6.	[illegible]	[illegible]	[illegible]	[illegible]
7.	[illegible]	[illegible]	[illegible]	[illegible]
8.	[illegible]	[illegible]	[illegible]	[illegible]
9.	[illegible]	[illegible]	[illegible]	[illegible]
10.	[illegible]	[illegible]	[illegible]	[illegible]
11.	[illegible]	[illegible]	[illegible]	[illegible]
12.	[illegible]	—	[illegible]	[illegible]

[redacted]



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