

**COMMITTEE ON PUBLIC
UNDERTAKINGS
(1981-82)**

(SEVENTH LOK SABHA)

THIRTY-EIGHTH REPORT

ON

**INDIAN TELEPHONE INDUSTRIES LTD.—RESEARCH &
DEVELOPMENT AND NEW PROJECTS**

(MINISTRY OF COMMUNICATIONS)

Presented to Lok Sabha on

Laid in Rajya Sabha on



**LOK SABHA SECRETARIAT
NEW DELHI**

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CORRIGENDA
TO

THE 38TH REPORT OF THE COMMITTEE ON PUBLIC
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LTD. - R & D AND NEW PROJECTS

<u>Page</u>	<u>Para</u>	<u>Line</u>	<u>For</u>	<u>Read</u>
2	3	7	de.ciciencies	deficiencies
2	3	9	Add the word 'are' after 'there'	
2	4	12-13	Delete the words 'change it and'	
2	5	11	given	give
4	8	5	factory	factor
5	11	1	Meero	Macro
6	15	3	'have been following in up by request- ing the various units to furnish us pro- time '	The R&D units under the Ministry of Communica- tions can continue
6	15	6	as	are
13	33	3	nee	need
13	35	9	ben	been
14	38	1	Delete the word 'to'	
14	38	7	Put the words 'for produc- tional' within brackets	
15	40	7	P&F Board	I.T.I. Board
15	41	3	dealing	negotiating
15	42	5 from	out	out
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16	42	8	for approval	must be approved
		(item iv)		
17	46	12	than	then
17	47	6 from	what	at
		bottom		
23	64	5	saved	served
24	67	2	CMO	CMD
25	69	12	of	to
25	70.	2	Production lines	Product- lines
25	70	10	manufacturers	manufactures
27	2	14	60 percent	50 percent
	(Part II)			
29	9	5	onfident	confident
	11	7	adopt	adapt

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(1981-82)

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*Ceased to be a Member consequent on his appointments as a Deputy Minister on 15 January, 1982.

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**STUDY GROUP II ON NATIONAL TEXTILE CORPORATION,
MINERALS & METALS TRADING CORPORATION AND CERTAIN
ASPECTS OF INDIAN TELEPHONE INDUSTRIES LTD., HINDUS-
TAN TELEPRINTERS LTD., AND ELECTRONIC & TECHNOLOGY
DEVELOPMENT CORPORATION LTD.**

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5. Shri Phooj Chand Verma

*Ceased to be a Member consequent on his appointment as a Deputy Minister on 15th January, 1982.

INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present this Thirty-Eighth Report on Indian Telephone Industries Ltd.—Research & Development and New Projects.

2. The Committee took evidence of the representatives of Indian Telephone Industries Ltd. on 21 August, 1981 and Ministry of Communications and Department of Electronics on 27 August and 2 September, 1981.

3. The Committee considered and adopted the Report at their sitting held on 1 April, 1982.

4. The Committee wish to express their thanks to the Ministry of Communications, Department of Electronics and the Indian Telephone Industries Ltd. for placing before them the material and information they wanted in connection with the examination of the subject. They also wish to thank in particular the representatives of the Ministry of Communications, Department of Electronics and the Indian Telephone Industries Ltd. who gave evidence and placed their considered view before the Committee.

NEW DELHI;

April 7, 1982

Chitra 17, 1904 (S)

BANSI LAL

Chairman,

Committee on Public Unertakings.

BACKGROUND ANALYSIS

I. General

1. The ITI was set up in July 1948 as a Departmental Undertaking and was later incorporated as a Company on 25 January, 1950. The present R&D organisation in ITI consists of three Divisions at Bangalore and one at Naini, Allahabad. The division of work among these is based on products manufactured at Bangalore and Naini. The activities of R&D units of ITI began around 1952 in the field of Transmission and these were gradually extended to other areas. A separate unit of R&D, however, came into existence in Bangalore in 1965-66 followed by a unit at Naini in 1972. The Tele-communication Research Centre of P&T has been there for a longer period.

2. The Committee pointed out that in spite of R&D efforts of ITI there had been a variety of complaints regarding the working of telephone system in the country. They wanted to know as to what extent these complaints were relatable to technological deficiencies and manufacturing defects in telephone instruments, switching equipments (exchanges) and transmission systems and what specific assignments were undertaken by the R&D units to overcome such deficiencies and defects and with what improvements. The ITI informed that complaints regarding working of telephone systems in the country were not solely due to the equipment. Condition of the external plant, man made disturbances to the same, shortage of equipment, availability of trained manpower, extent of loading of available equipment etc., were some of the major factors. Those which could be attributed to equipment alone, mostly related to technological deficiencies and not to any manufacturing defects. In respect of Switching equipment, specifically, the complaints related to the functioning of the Cross-bar Exchange of the Pentaconta System manufactured to the collaborator's design. As a result of R&D efforts, the deficiencies in this system had been fully identified and debugged in the new ICP System jointly developed by ITI with Telecommunication Research Centre of P&T and the system had since been selected for regular manufacture in the Rae Bareilly Switching factory. Defects in the Telephone Instruments related mainly to Switch-hook faults, dial striking and failures of coiled cords. These had since been got over through improved designs (677 telephone). The deficiencies in respect of Transmission Systems were mainly attributable to the use of indigenous components and raw materials which were not of quality comparable to those available abroad. According to ITI, till the infrastructure of reliable

professional grade electronic components was set up on a firm basis in the country, this problem would continue to be faced in some measure.

3. The Committee asked whether the Ministry agreed with the views of the ITI that there were no manufacturing defects in telephone instruments, switching equipments (exchanges) and transmission system. The Secretary, Ministry of Communications stated: "Honesty speaking, I am unable to agree fully with this statement though it is a fact that the defects in the tele-communication system as a whole are not due only to defects in the equipment. There may be deficiencies in switching equipment or transmission equipment, there may be other defects—human failures....

But I am not in a position to aver that there no manufacturing defects in switching equipment, telephone instrument or transmission equipment which are part of telecommunication system."

4. According to the CMD, ITI no equipment went out of ITI to P&T unless it was passed by P&T. Asked about the reasons for the defects in the telephone system in spite of inspection by P&T, the Secretary of the Ministry stated:—

"Everything passes before installation, through our T&D Circle which does, what is known as 'acceptance testing'. But it so happens that if the officers of that Circle rigidly adhere to the specifications laid down, then much of the equipment will not pass, will have to be rejected, and that will mean that the applicants waiting for telephones will not get their connections, we will not be able to fulfil our plan targets, our revenues will not start coming. . . . We have been telling the ITI to change it and improve quality."

5. The Committee enquired about the action taken by the ITI in the matter. The Secretary of the Ministry stated:—

"They are trying but they are unable to introduce a new ethos in their factory, in their work culture. We are saying, 'do not concentrate your deliveries of products in the last quarter of the year; deliver your products more or less evenly throughout the year; in the first quarter, you may not do 25 per cent, but do 15 per cent at least; go on like that so that proper attention can be given to the quality of the product even by your own internal quality control, so that our quality control acceptance testing does not have to given relaxation in order to adhere to the targets of new connections etc. But they say that our specifications are too rigid; also that the quality of the raw material

like steel etc. in our country is not so high that these rigid specifications can be strictly adhered to."

6. Asked whether it was a deliberate policy of the Department to accept sub-standard supplies from the ITI knowing fully well that the telephone system would not give satisfactory service which the subscribers were entitled to get, the Secretary of the Ministry stated, "I will not concede that it is a deliberate policy. It is done only under compelling circumstances."

7. The percentage rejection of equipment manufactured by I.T.I. on inspection by P&T during 1979-82 as furnished by the Ministry is as follows:—

	1979-80	1980-81	1981-82
I. Telephone Instruments :			
(a) Percentage of rejection, Naini	24.2	17.7	Figures not available.
(b) Percentage of rejection, Bangalore	11.57	12.82	Figures not available.
II. Crossbar Equipment of Bangalore :			
(a) Percentage of rejection of :			
(i) Selector Frame	21.9	21.9	24.7
(ii) Junctor	35.00	29.4	27.8
(iii) Register	42.00	37.00	25.4
III. Strouger Equipment, Bangalore :			
Percentage of rejection	6.5	28.7	11.5
IV. Transmission Equipment, Bangalore :			
Percentage of rejection	11.4	0.3	12.00

NOTE:—The rejected equipments are repaired/re-adjusted and offered for inspection again.

8. As regards other reasons for unsatisfactory telephone service, the Secretary of the Ministry stated "The major problem is the condition of the external plant, that is, cables etc., particularly in the big cities. In the rural areas, there are overhead wires and that causes other problems. In the cities, there are under-ground cables. The condition of the Cables System in the cities is generally poor except in some cities." The Committee were informed

that in the past cables were not laid at proper depth, not protected adequately and not laid strictly according to their own standards in many cases. Improper maintenance of these switching equipment inside the exchanges in some particular cases also caused defects in the system. In many cases, human factory was responsible for subscribers' dissatisfaction.

9. Dealing with remedial step, the Secretary deposed:

"We have said that all these primary cables and secondary cables and the junction cables should be gas-pressurised. The work has already started. But there are thousands of Kilometres to be pressurised and pressurisation has to be done carefully by experts. Our own experts are needed for that. We will take about three years to complete the work, Secondly we have decided that junction cables which provide junctions between exchanges should for the sake of protection all be put in ducts in the major cities and also in the big State Capitals. As it happens now our cables are not ducted. We have also decided to use jelly filled cables for the distribution cables which go into the premises of the subscribers. Adequate production of such cable is not there in the country. We are importing some and the Hindustan Cables Ltd., under the Ministry of Industry have been asked to start production on large scale within the country within the next couple of years. They will soon start production of jelly cables on large scale. The cable faults account on an average for about 50 per cent of the defects. Then, we come to the equipment in subscribers' premises. It means telephone instrument and other fittings. Telephone instruments according to our computation accounts for 15 to 20 per cent of the defect of the telephone system. So, we have decided to go in for foreign collaboration to manufacture really good type of telephone instruments taking advantage of upto date technology. ITI invited global tender and the matter is in the final stage of decision making".

10. Asked about the percentage of faults attributable to the exchanges, the Secretary informed "I would not know the latest figure of every exchange. But it will vary from exchange to exchange. According to me the average would be at the most about 10 per cent of the total number of faults in the system at any point of time."

11. The Committee asked whether he agreed that the telephone system in the country as a whole was deteriorating. The Secretary replied: "For

some areas it is not correct. But taking a macro view this statement may be correct for several areas."

12. The Estimates Committee have suggested *inter alia* in their 11th Report (1980-81) *Pro rata* rebate on the rental for the period when the telephone service was not available for no fault of the subscriber. Enquired whether the Ministry gave some allowance to the subscribers for the wrong calls, the Secretary stated, "That we do not do. But if there are any genuine complaints of wrong billing, and there are many cases, we do reduce the charge." Asked as to how much did the Ministry earn on account of wrong calls every year, the Secretary informed that according to a sample calculation made by them, they earned Rs. 26 lakhs in a year. The Committee asked whether the Ministry considered increasing the free local calls per quarter for the subscribers to compensate for getting wrong numbers, he stated, "We shall consider this certainly since this is coming from a Parliamentary Committee."

II. Menon Committee on Research and Development

13. In 1972 the Government of India appointed a High Level Experts Committee under the Chairmanship of Prof. M. G. K. Menon to review the research and development work done in the field of tele-communications by various organisations under the Ministry of Communications. The Committee submitted its report only in 1978.

14. Enquired about the reasons for the delay in submission of the report by Menon Committee, the Ministry informed that the time limit originally fixed for submission of the Report by the Tele-communications Research Review Committee was 30th September, 1972. In early October, 1972, the Member-Secretary of the Committee stated that in order to enable the Committee to give comprehensive recommendations on all the terms of reference, the time limit for submission of the report might be extended upto 31st December, 1972. Accordingly, with the approval of the then Secretary (C), the time limit for submission of the report was extended upto 31st December, 1972. On expiry of the above mentioned period, in early January 1973, the Member-Secretary of the Committee stated that the work of the Committee would be completed only by the end of January 1973 and the report submitted soon after. He also stated that he had discussed the matter with the then Secretary(C) who had agreed to the extension. Accordingly, the period for submission of the report was extended upto the 31st of January, 1973. The Committee did not submit the report even after the 31st January. As the report of the Committee was not forthcoming, despite several reminders at various levels, a note was submitted by Secretary(C) to Minister(C) on 9-6-1975 for information. After Minister(C) saw this note a DO was sent by Secretary(C) to Prof. Menon.

On 20th June, 1975 stating that the Minister(C) felt very much concerned about the delay in the submission of the report. Prof. Menon was urged to submit the report at the earliest. As the report was not still forthcoming, despite several reminders, Shri J. A. Dave, the then Secretary(C) spoke to Prof. Menon over telephone on 24.10.1977. Prof. Menon stated that the report was almost finalised quite some time back, but since on policies of promotions and recruitments, he was having discussions with the Chairman, Union Public Service Commission, he was not able to finalise the report on that aspect. Prof. Menon wrote to Secretary(C) on 13.11.1977 apologising for the extraordinary delay in the submission of report and indicating the reasons thereof requested that the period of submission of the report be extended upto 31st January, 1978. The delay was stated to be mainly due to the fact that the issue relating to personnel policies had not been resolved. This was submitted to the Minister(C), who desired that Prof. Menon might discuss the matter with him. This discussion took place on 3-12-1977 and Minister(C) approved extension of the time for submission of the report upto the end of January, 1978. The report was finally submitted by Prof. Menon on 30th January, 1978.

15. The Menon Committee report dealt with the following in relation to the ITI:

have been following it up by requesting the various units to furnish us pro-
-tinue to remain as part of their parent Departments/Under-
-takings with the provision that the necessary changes in admini-
-strative, financial and personnel policies as applied.

2. A user R&D unit like TRC should lay greater stress on system engineering and development of techniques, while the R&D units of the manufacturers like ITI should concentrate on engineering.
3. Steps for reducing the gap between customer needs and the indigenous know-how.
4. Steps for reducing the gap between indigenous know-how and production.
5. Approach for reducing technology gap between India and abroad.
6. Programme of work for the R&D units of ITI for the next five years covering 11 broad areas of telecommunication equipment and production.
7. Support facilities for R&D units of ITI.

8. Financial support for R&D work in ITI. The expenditure on R&D should be kept to at least 5 per cent of the sales.

9. Changes in administrative and personnel policies applicable to R&D units of ITI.

16. From the information furnished by the ITI in regard to action taken on the recommendations made by the Menon Committee, it was noticed that the follow-up action on some of the recommendations was not yet complete. For instance the changes relating to R&D Administrative and Personnel Policies were yet to be considered by the Board of ITI for implementations. The Committee wanted to know whether the Ministry followed up the action on the Menon Committee's recommendations and if so, how. The Addl. Secretary Communications in reply stated "We have been following it up by requesting the various units to furnish us progress reports and this has been done on an annual basis. We have been receiving reports as far as report implementation is concerned." When pointed out that recommendations relating to the R&D's administrative and personnel policies were yet to be considered by the Board of ITI for implementation, the Addl. Secretary Communications stated. "When a Committee report is approved at the Ministry's level, I doubt whether the Board of the Company has again to approve it."

III. Major Research Areas

(A) *Switching Equipment*

17. The major areas in which the development work was taken up by ITI in regard to switching equipment are stated to be in the field of Electronic Switching, improvements in the existing Strowger and Cross-bar systems and independent development of some items in strowger and cross-bar to meet the specific requirements of P&T.

(i) *Strowger Switching System*

18. The strowger system is an old system imported in 1948. A Standing Committee for Improvement of Strowger System was constituted in October, 1974. According to the terms of reference, the Committee was to finalise and recommend improvements to be incorporated in the Strowger equipment and to standardise the equipment to be manufactured at Rae Bareilly Factory. The Committee desired to know the recommendations of the Strowger Improvement Committee and the extent to which the recom-

recommendations had been implemented. The ITI intimated the position in this regard as follows:—

Recommendations	Implemented	Pending
(a) Rationalisation and standardisation of Selector and Relay Sets.		
(b) Wrapped Connections		Awaiting completion of field trial.
(c) Circuit improvements (Total 16)	(Total 14)	2 recommendations are awaiting completion of field trial—Meter Pulse rack with electronic components. CLI facility cleared recently in 1980.
(d) Better maintenance/test facilities (Total 8)	(Total 5)	Of 3 pending, one was finalised in April 81. The other two are under implementation.
(e) Improvements in piece, parts components and raw materials (Total 8)	(Total 6)	Use of Nickel Silver Banks for Group Selectors decided upon in 1981. Will be implemented by 1983-84. The other relates to purchased item wrapping Gun.
(f) Revised construction practice		Partly implemented, partly pending, awaiting completion of field trial report. (Rack type IDF, Mech. coupling).

19. The Committee enquired as to why the Ministry had taken 25 years to appoint a Committee for improvement of strowger system which was with them since 1948. The Additional Secretary, Ministry of Communications, explained:

“We obtained this technology in 1948. It was a type of automatic system which was relevant at that time. But once we had brought something into the country, we had gone in for substitution of some of the imported components which are necessary so that it will save foreign exchange, as far as raw material are concerned. And as technology got improved, we also had to see how we can reduce the cost and improve the performance.”

20. The Committee pointed out that from the details of action taken on the recommendations of the Strowger Improvement Committee furnished by the ITI, it was seen that a number of recommendations were still await-

ing implementation. They wanted to know as to when did this Committee report. The Secretary, Communications informed that the functions of this Committee were of a continuous nature. The first report came in October 1975.

21. The Committee wanted to know as to what extent the implementation of the recommendations made by Strowger Improvement Committee and other development work of the ITI had resulted in improvement of the working of the Strowger system. The ITI informed that the performance had generally improved. Asked whether the technology now in use was superior to what was obtained from ATE (U.K.) a representative of ITI stated in evidence, "of course, yes. It is better than what we originally obtained...."

22. The Committee asked whether the Ministry shared the view of ITI that the performance of the Strowger Exchanges had improved and that the technology now in use was superior to what was obtained in 1948 from ATE, U.K. The Secretary of the Ministry did not share this view of the ITI. He stated:

"We are not in a position to give this technical advice to the Committee on behalf of the Ministry. I am also not in a position to share this view in such categorical terms. But...over the years some import substitution took place and the performance of those import substituted materials and components was worse than what was originally imported. But the present performance with further improvements in the quality of those substituted components and materials is better. But it may or may not be better than the performance of the imported components and materials."

(ii) *Crossbar Switching System*

23. According to ITI, it has encountered serious difficulties with the design and use in Indian environment of crossbar switching equipment, for which the know-how was obtained from M/s. BTM (Belgium). The Committee wanted to know as to what were the difficulties encountered in crossbar telephone switching equipments manufactured to the design of B.T.M. The ITI intimated that the deficiencies noticed were as follows:—

- (a) Corrosion
- (b) Contact failure
- (c) Loss of mechanical adjustments.
- (d) Component failure
- (e) Circuit deficiencies

- (f) High call failure rate and delays in service due to selective congestion and fault.
- (g) Inadequate traffic measuring arrangements for analysing abnormal situation.
- (h) Long installation times.
- (i) Increased maintenance effort
- (j) High cost.

24. Enquired as to whether the ITI was able to rectify the deficiencies, the General Manager, ITI stated "Based on contractual obligations, the supplier was to rectify the deficiencies. When the supplier took too much time in rectifying the deficiencies completely, we formed a Task Force. Up to a limit we are trying the improvements to be effected by the supplier. We have now fully solved the problem in the crossbar project."

25. The Committee wanted to know the recommendations of the Task Force in regard to crossbar switching system. The ITI summarised the main recommendations of the Task Force as follows:—

- (1) Corrosion . Increasing the thickness of the plated parts and lacquering of components used in the non-magnetic items, increasing the drying time of plated parts rigid process and quality control.
- (2) Contact Failures . Provision of adequate spark quenching Relay contacts to be loaded only upto rated capacity by suitable circuit re-design; adopting principle of "dry switching", increasing the contact dome size; use of plug-in type arrangement for relays frequently used.
- (3) Loss of mechanical adjustment . Addition of holding spring at the bottom spring pile of relays, pricking of core at both ends, use of high tensile screws, structured manufacturing tolerance, use of ball bearing for horizontal bars, etc.
- (4) Component failure . Use of materialised polyester capacitors in place of paper capacitors, use of carbon resistors in place of film resistors, pot cores in place of torroidal cores etc.
- (5) Circuit deficiencies . Introduction of positive battery metering, improvements in MFC signalling, introduction of more rigid components and raw materials, better quality control etc.
- (6) High Call failure Rate . With the improvements suggested for overcoming contact failure, loss of mechanical adjustments, components failures and circuit deficiencies it was hoped that the failure rate and delays in service would have been considerably reduced.

26. During examination of the Ministry, the Committee enquired as to when the Task Force was appointed and when it reported. The Ministry of Communications intimated that the Task Force for improving the Pentaconta Crossbar System was formed in October, 1971. Since the problems met with needed immediate attention, the Task Force was authorised to implement the changes as considered necessary without waiting for a formal approval by the P&T Board. The ITI implemented the first recommendation of the Task Force in 1971 itself. The final recommendations of the Task Force were available in August 1974. M/s. ITI introduced all these changes in their products progressively. Apart from introducing the improvements in the production item at the ITI, a programme for updating the crossbar exchanges manufactured to the earlier specifications and were under installation or working, was taken up. A major portion of the upgradation of the crossbar exchanges in the field which were produced before the implementation of the recommendations of the Task Force at the production stage itself had been completed.

27. The Committee pointed out that the crossbar technology was obtained from the BTM, Belgium in May, 1964. They wanted to know the reasons for the delay in identifying the problems connected with this system and overcoming them. The Addl. Secy. of the Ministry explained:—

“Unfortunately part of the equipment which was shipped was impounded at Karachi and as a result of which it got damaged a bit during storage. After reaching here, there were certain problems like contact sparking etc. Immediate action had to be taken to overcome the defects. A cross bar upgradation group was set up in 1968. . . . They tried to rectify the defects. The collaborator also supplied substantial quantities of equipment for replacement. In 1971 we noticed that even with the repairs that were carried out, there was not much improvement and we found that the equipment had some basic defects. We tried the system based on the Pentaconta design but we found that it was not quite suitable for Indian conditions. As a result of that we had to set up a Task Force.”

28. Enquired as to what extent did the technical collaborators fulfill the commitment. The Addl. Secy. informed that the agreement was that they would pass on the know-how as was available with them. But the difficulty was that some of the equipment had defects and the warranty clause was applied. The collaborators had paid them about Rs. 76 lakhs for the replacement. He further informed that the cost of the entire project was a few crores of rupees.

29. The Committee asked whether the Ministry had fixed any responsibility on anybody for selecting this technology on which several crores of rupees were spent. The Secretary, Communications stated as follows:—

“Everybody took part in the decisions. The fixation of responsibility is done when a particular person takes a decision. Here everybody was involved in the decision making process. It was a decision of the Government as a whole.”

30. Asked whether the Exchanges with equipment incorporating the improvements were working satisfactorily, the Addl. Secy. of the Ministry stated in evidence:

“As far as Janpath I Exchanges in Delhi is concerned, the equipments were imported and installed. This was upgraded according to the recommendation of the working group. In June, 1973 before upgradation, there were 403 mechanical faults. After upgradation in December, 1976, the faults have come down to 237. Similarly, another performance parameter is fault per 100 lines. The percentage is less after upgradation, that is 4.3 per hundred lines. This indicates that the fault position has come down very substantially... In Janpath IV which was a fully upgraded exchange, the percentage of failure was only half per cent after a few years. This clearly shows better performance.”

(iii) *Indian Crossbar Project*

31. The Government set up a combined group of P&T and ITI in June, 1974 to study the entire crossbar system and to make it suitable for working in the Indian environment to improve its reliability and traffic handling capacity and to effect economies wherever possible. The combined group called the Indian Crossbar Project redesigned manufactured and sent for field trial a complete local exchange and one Trunk Automatic Exchange. The first trial exchange (local) of the ICP was installed and tested during 1977-78. It was commissioned into service in October, 1978. The ICP Trunk Automatic Exchange at Rae Bareilly was commissioned in June, 1980.

32. Asked as to when the ITI hoped to establish production of Indian crossbar exchanges. The ITI informed that local system to ICP designs was earmarked for production at Rae Bareilly and the first supplies were expected from 1982-83 onward. Supplies from Bangalore Unit were expected from 1983-84 onward.

33. Asked whether there was any foreign collaboration to productionise this design, the Secretary, Communications stated:—

“We need productionising collaboration because it has been our experience not only in this field but in many other fields also, that even when we design the product, say, electro-mechanical switching equipment, we do not have the expertise to manufacture the necessary tools to productionise this design. So, we are going in for collaboration for productionising purpose, ITI is still manufacturing the Pentaconta switching equipment in the Bangalore factory. But the improved design will be indigenous. In so far as productionising collaboration is concerned, we are entering into an agreement, with Messrs. B. T. M. of Belgium.*

34. Asked further whether the production of BTM equipments as modified would continue even after the establishment of the Indian crossbar equipments. The ITI in reply stated, “Yes, for extension of exchanges installed to BTM design where the building capacity already utilised was above 70 per cent (of floor area).

35. The Committee enquired from the Ministry the justification for continuance of production of BTM equipment as modified even after establishing production of the Indian Crossbar equipments. The Addl. Secy. of the Ministry stated:

“At present the equipment which they manufacture in the cross bar Division of the Bangalore Unit is of the old design modified to the Task Force level. With the ICP Designs we have put two exchanges, one is Janpath V and the other is Bareilly Trunk Auto Exchange. A decision has been taken that Rae Bareilly Unit of ITI also will manufacture ICP Exchange equipment. There are several exchanges in the country which are working on the old designs. The standard unit of a crossbar exchange has 10,000 lines and if it is only partly equipped, say to 4000 lines, it has to be expanded with the same type of equipment.”

36. Asked whether the Ministry was satisfied with the performance of the ICP design. The Secy. of the Ministry stated: “We cannot say that all our technical experts are fully satisfied that no further improvement is possible. So we have not yet disbanded the group. It is continuing the work of improvement.” He added that there was a Committee of technical experts and that according to that Committee, the performance of the Janpath V exchange, even though it was not manufactured in ideal conditions, was quite acceptable to the Indian system.

B. Telephone Instruments

37. The Committee enquired whether the Ministry agreed with the claim of ITI that the improved design of 677 telephone was free from all defects. The Secretary, Communications stated in reply.—

“No, I do not; the Department does not. Even ITI does not. The instrument that you see mostly now-a-days is of a variety known as 671. 677 is an improvement, we all claim, on 671. Now we are in the process of manufacturing 677 with an improved dial which is a Japanese dial, a very good dial. It will be an improvement on 671, but still it will not be free from some major defects. The defects are in the receiver and transmitter which are inside the telephone. If they do not perform properly as they should, the telephone instrument cannot be said to be free from defects. That is why we floated the global tenders. In fact, the ITI floated that tender with the approval of the Ministry to manufacture a really modern type of telephone instruments with the help of foreign know-how.”

38. The Committee enquired about the reasons for the ITI not being able to develop a fault free telephone instrument even after 30 years of its working. The representative of the Ministry stated—“We don't have the expertise in a sense. This telephone equipment was imported way back in the 40s. Since then some improvements have been made. We were not able to make improvements in the three elements (dial, transmitter and receiver). It is all due to lack of capability for productionisation* in the country itself not particularly in the ITI”.

39. In reply to a question as to why the Ministry/ITI did not go in earlier for technical collaboration to improve the major defects, the witness stated that the decision to go in for a telephone know-how transfer for manufacture was taken in December, 1977. As regards the action taken after taking the decision to go in for technical collaboration, the representative of the Ministry explained:—

“We evaluated some of these equipment made by well-known manufacturers to see whether these are suitable for Indian network. We got about 100 instruments from the manufacturers who were ultimately willing to pass on the know-how to us. This was to be put through accelerated tests and proper field trials. We evaluated all these parameters and we found out such of those equipment which would satisfy the requirements. Ultimately we had to call for tenders and for collaborative manufacture, various approvals had also to be obtained. All these formalities took us some time.”

*Indicated by the Ministry at the time of factual verification.

40. In a note furnished after evidence, the Ministry intimated the developments regarding the proposals for manufacture of a modern telephone instruments. According to the note tender notification inviting technical offers and samples for new Telephone Instruments was issued by ITI on 16 August, 1978, four firms were shortlisted on 5 March, 1979, tender enquiries were floated for proposal of manufacture on 31 May, 1979. Selection and approval of technology by P&T Board were done on 23 January, 1981. Feasibility Report was submitted to the Ministry on 28 April, 1981 and Pre-PIB meeting was held on 22 January, 1982. The proposal thus still awaits the approval of Government.

IV. Updating of Technology

41. The fields of electronics, telecommunications and Computers are the fastest changing areas of technology. The ITI had informed that it is currently engaged in dating almost all of its product-lines to bring it in line with contemporary technology in advanced countries. There is a gap of a decade between the technology of equipment currently in use or in manufacture and the contemporary technology in advanced countries. Limited resources for R&D, unreliability of components and sub-systems and lack of product engineering expertise are reported to have hindered rapid development of new systems and reaching a stage of self-reliance in technology. It has, however, been stated that most of the product-lines currently being manufactured in ITI, would be replaced by entirely modern and reliable ones within the next 5 and 6 years' time.

42. The Committee wanted to know whether there were any constraints to modernisation. The ITI stated in a note that they had already made comprehensive plans for changing over the technology of the product-lines to more modern designs. These could be expected to go into production and made available in bulk provided the following conditions were satisfied:

- (i) The projects as conceived and projected by ITI should be approved by Government expeditiously and the resources allocated. At present the procedures are time-consuming as several agencies are involved in granting approval.
- (ii) In a few specific areas where gaps have been identified in ITI expertise for product engineering, a technical collaboration has been proposed with firms who have long years of experience in such work. This collaboration must be approved in time along with products so that these gaps in ITI are bridged.
- (iii) Dependence on import of components must necessarily be out down with time. This is only possible if indigenous components of right quality and long term reliability are available to substitute for imported components. Such availability does not exist at the moment and this would probably be the most im-

portant constraint in ITI's change over to modern technology, if at the same time its dependence on foreign imported components is to be reduced.

- (iv) The largest of the product lines in this change over to modern technology relate to electronic switching both local exchange equipment and trunk exchange equipment and PABXs. ITI's proposal for setting up manufacturing capacity for this equipment for approval by Government, without which the Bangalore Complex will continue to manufacture products of obsolete technology which has no future and will face serious problems of survival as an industry.

43. In the course of examination of the Ministry, the Committee asked whether the Ministry shared the view that they were very much behind the present stage of technology. The Secretary, Communications stated:

" It is admitted that if you take into account the latest developments in advanced countries, we are lagging far behind and we have not yet reached a stage that obtained in advanced countries like U.S.A. and Japan even 10 years back."

44. When the Committee pointed out that the responsibility for not reaching anywhere near the current level of development lay with the Ministry, the Secretary Communications, admitted that it was of course a matter of regret that they had not reached the stage of development and the responsibility for the same lay with the Ministry.

45. Referring to the observations of ITI that at present the procedures in regard to approval of projects and allocation of resources were time-consuming as several agencies were involved in granting approval, the Committee enquired the views of the Ministry in this regard. The Secretary, Communications, stated, " The Government in their wisdom have laid down various authorities like the Planning Commission (Appraisal Division), Ministry of Finance (Départment of Economic Affairs), Bureau of Public Enterprises (Production Division), Department of Industrial Development and the Department of Electronics for scrutiny of projects. If any Project from the ITI or from any other public sector undertaking has to go through, it has to go through the process of consultation with these authorities. In several cases, the Cabinet approval has also to be obtained."

46. Enquired as to how many years under the existing procedure it would take to approve a proposal from the date of receipt in the Ministry, the Secretary, Communications stated that recently, they had the Rail Bareilly crossbar Project which got the approval in one year and four months. The Committee asked whether it was possible to cut down the time taken by the

Government in scrutinising and approving the project proposals of the public undertakings. The Secretary, Communications stated:

“...in the Ministry I am not saying that delays never took place in the past. But now, every possible attempt is made to cut down the delays....

In the last few months many important proposals have come from ITI and we have cut down the delay by using telephones and stipulating time limits. Thereby we have cut down delays to the maximum extent possible. If external authorities take some time, we are helpless. Supposing PIB cannot come to a decision—they say we will have another meeting to consider—than we are helpless.”

47. The Committee pointed out that according to ITI, its proposals for setting up manufacturing capacity for electronic local exchange equipment and trunk exchange equipment as well as PABXs be approved by Government without which the Bangalore Complex will continue to manufacture products of obsolete technology which had no future and would face serious problems of survival as an industry and wanted to know about the details of the proposal received by the Ministry from the ITI in this regard and the action taken by the Ministry for their approval together with reasons for delay. In a note furnished, the Ministry informed that the Indian Telephone Industries Ltd. as part of their proposals for the Sixth Five Year Plan had suggested that two large electronic switching systems factories might be set up as Units of the Company. These proposals were drawn up by the ITI in June 1980. The Cabinet Committee on Economic Affairs had separately directed the Ministry of Communications to prepare schemes for setting up two factories for manufacturing electronic switching equipment in August 1980. A Policy Paper regarding introduction of electronic switching in the country's telecommunication network and the setting up of two new factories and expanding the existing Unit of ITI at Palghat for indigenous manufacture of electronic switching equipment was drawn by the Ministry of Communications and circulated to other concerned Ministries on 2-8-1980. On the basis of the comments of the Ministries, a Policy Paper dated 1st December, 1980 was placed before the Cabinet that their meeting held on 24th December, 1980. In this Policy Paper, the following proposals were, *inter-alia*, made:

- (i) The first ESS Factory should be under a Corporate entity, separate from ITI, to be established under the Ministry of Communications.

- (ii) The allocation of the second ESS Factory as also production Units for switching equipment that may be required to be set up in future between ITI and the proposed new Public Undertaking would be decided later.

In the meanwhile, a provision of Rs. 40 crores was made under the Ministry of Communications in the Draft Sixth Five Year Plan for the first ESS Factory. As regards the second ESS Factory, a provision of Rs. 10 crores had been made in the ITI's schemes for the Sixth Five Year Plan. However, a final decision whether the second ESS Factory would be under the ITI or under the proposed new Corporate entity would be taken later. In addition to the above, ITI had sent a copy of their note to the BPE, justifying that all new switching factories, being set up, should be under the ITI. The Ministry was keeping their views in mind, taking note of the need to rehabilitate the existing staff with the phasing out of the manufacture of certain types of equipment, quantum of new projects under execution by ITI and proper management of the Telecom. Industry etc.

48. According to ITI, limited resources of R and D was one of the Factors hindering development. The Chairman and Managing Director, ITI stated before the Committee:

“.....we are really making a small investment on R and D compared to what other countries do. We have only invested Rs. 10 crores in ITI and 80 per cent of this has been invested in the last 5 years only. We are trying to be self-reliant and when we are trying to be self-reliant, we take time and may make mistakes. We have to cover a certain leeway and we have probably passed a major portion of it.”

49. The expenditure *vis-a-vis* approved outlay on R and D during each of the last five years was as follows:—

(Rs. in lakhs)

Year	Approved outlay in R&D		Actual Expenditure	
	Capital	Revenue	Capital	Revenue
1976-77	150	375	104	372
1977-78	210	450	180	450
1978-79	200	550	184	562
1979-80	287	700	223	733
1980-81	275	781	135	674
	TOTAL	1122	826	2791

50. The Committee enquired the reasons for the considerable shortfall in expenditure as compared to approved outlay. The Secretary of the Ministry stated in this connection as follows :—

“Delays in payment take place. In some years it is because they could not make full payments during the year for equipment. About Rs. 70 lakhs worth of instruments were to be imported from the U.S.A. (1980-81). But the American Government imposed some restrictions which were not relaxed in time....”

51. When pointed out that right from 1976-77 to 1980-81, there was shortfall in utilisation, the Secretary, Communications stated, “this year (1981-82) it has come down. There was a prolonged strike last year. A part of the allocation is in some years built up of the carry over.....”. In reply to a question, he however, agreed that there was no financial constraint and ITI must utilise the amount allotted to them.

V. Import of Electronic Exchange Equipment

52. According to the information furnished by the Department of Electronics and reported in the 11th Report of the Estimates Committee (1980-81), Trunk Exchanges, Telex Exchanges and local exchanges were going to be imported and that production facilities would be established after fixing the collaborator. The Committee asked whether it was not desirable to import these from collaborator after selection of the collaborator. The Chairman and Managing Director, ITI stated in evidence “although ITI is not a party to these imports yet there is no doubt that that would be a necessary strategy.”

53. The Committee asked the views of the Ministry in this connection. The Ministry intimated that Government had already decided to set up manufacture of digital electronic trunk automatic exchange equipment in the Palghat Unit of ITI. Tenders for this equipment had already been floated by the ITI, quotations had been received from a few intending collaborators and were being evaluated. The earliest period by which the supplies of exchange equipment against this tender could commence was nine months after a decision regarding the collaborator was taken and orders were placed. In the meantime, in order to tide over the substantial shortfall in the availability of trunk automatic exchanges/exchange equipment in the country, a decision was taken in 1978 to import 15,000 lines of such equipment consisting of four exchanges. These exchanges, all of the same type, were expected to be supplied during 1981-82 and 1982-83, thereby giving substantial relief to the National Trunk Dialling Network. Extensions of these four exchanges by 9000 lines had also been ordered. Regarding the setting up of manufacture of Electronic Switching

Systems for local exchanges the Cabinet had decided that two large Electronic Exchange Equipment Factories with a capacity of 500,000 lines should be set up under the Ministry of Communications for the manufacture of electronic switching equipment. The P and T Directorate, in consultation with the ITI and Department of Electronics had accordingly drawn up a specification for the type of equipment to be manufactured in the Factories and had invited tenders from the manufacturers. This provided for the manufacture of analogue/or digital switching equipment and had indicated 30th September, 1981, as the last date for the submission of tenders. Subsequently, while accepting a recommendation of the Committee on Telecommunications, a decision had been taken to limit the tender offers to the manufacture of only digital type of switching equipment. All parties concerned had been informed accordingly. The last date for the submission of these tenders had now been extended to 31st March, 1982. In the meanwhile, in order to bridge the gap between the demand and supply, Government had been resorting to import of switching equipment to meet the urgent demands, at least partially.

54. The Ministry further informed that there was no proposal at present for setting up of manufacture of electronic telex exchange equipment. The Telex Switching system would have a lot of similarity with the other type of switching systems and it was expected that when the collaborative manufacture of trunk automatic and local exchange equipment was set up, the designs of the telex exchanges would also evolve as a fall-out. Here again, to tide over the shortage of telex exchange, it had been decided to import four transit electronic telex exchanges of the same type having a total capacity of 10,400 lines. Planning was also being finalised to expand these exchanges for provision of 6500 telex subscribers' lines.

55. According to the Ministry, though the systems imported might be different from those which would be manufactured within the country, there would be considerable similarity between the different electronic exchange systems. The induction of a few electronic exchanges would actually provide opportunities for the staff to get used to its engineering, installation and maintenance.

56. Asked as to when the Government would be in a position to manufacture these equipments in the country, the Ministry informed that the indigenous manufacture of trunk automatic exchange equipment was expected to commence during the year 1983-84. The first ESS Factory manufacturing digital local automatic exchange equipment was expected to commence production in 1984-85.

57. The Committee wanted to know whether the ITI would be able to achieve transfer of reliable and proven technology for large Digital

Electronic Exchanges which were stated to be still under development abroad. The ITI informed that it was proposing to achieve transfer of know-how for digital electronic transit exchange with associated direct supply of equipment to P and T for 22,500 lines. Commercially proved systems were available and currently the offers of three firms viz., CSF-Thomson of France, BTM of Belgium and NEC of Japan were under evaluation. As part of the evaluation, a System Study Team had visited working exchanges, had had detailed discussions with Company/Administrations which were using such exchanges.

58. Asked whether the ITI had enough educational and training facilities in the country to switch over to the production and operations of new technology of electronic switching system. The ITI informed that adequate qualified man power were available within ITI and outside ITI in the country, to switch-over to production of electronic switching systems. Suitable training programmes were envisaged as part of the transfer of know-how. For operation of the exchanges, P and T was envisaging similar training of its large pool of technically qualified man power.

VI. Coordination

59. The Committee pointed out that according to ITI, the deficiencies in respect of transmission system were attributed mainly to the use of indigenous components and raw materials which were not of quality comparable to those available abroad and till the infrastructure of reliable professional grade electronic components was set up on a firm basis in the country this problem would continue to be faced in some measure. They wanted to know whether this matter was ever brought to the notice of the Ministry by the ITI and whether there was any coordination with the Deptt. of Electronics, Industrial Development etc. to ensure the availability of reliable professional and electronic components required by ITI. The Ministry of Communications intimated as follows:—

“Where performance requirements permit, indigenous components are used by ITI even though their long-term reliability may not be as good as the imported equivalents. This problem has been brought over the years to the notice of various forums which have looked into the problems of ITI and has also been clearly mentioned in the First Corporate Plan prepared by ITI in 1974. In fact, it had been suggested that ITI must seriously consider in-house manufacture of professional grade components. Variations in specifications and reliability of indigenous components have been observed in respect of capacitors, connectors, phenolic-based printed circuit board, etc. No specific report has been-

prepared by ITI in this regard and sent to this Ministry for taking up the matter with the Deptt. of Electronics and Director General, Technical Development, with a view to evolving general policy for indigenous manufacture of quality components. However, the non-availability of indigenous electronic components of the right quality and reliability has been informally brought to the notice of and discussed with the Department of Electronics, DGTD, etc."

60. The Committee desired to know as to what were the components which the Deptt. of Electronics had developed for ITI on a long term basis. The Secretary, Department of Electronics stated that they had not developed any components specifically for ITI. Asked whether the ITI brought to the notice of Department of Electronics the basic need of correcting the deficiencies in the electronic components and if so, what action was taken. The Secretary, Deptt. of Electronics stated, "...to my mind, no attention has been specifically drawn to the DOE that there is deficiency in the components."

61. The Committee enquired whether there was no duplication of efforts between ITI, HTL, ECIL, BEL etc. in the matter of development of and establishment of production capacity for control equipment, private communication equipment, electronic components etc. The ITI intimated:—

"The ITI does not manufacture electronic components but only sub-systems and total systems. These are custom made to suit telecommunication equipment designed in ITI. ITI also does not make Key Telephone Instruments for private connections but makes only Switching equipment from 10 lines to 400 lines capacity. This equipment is not manufactured by HTL, ECIL or BEL. Control equipment is of many types. ITI makes Remote Supervisory Control equipment for Railways which, to the best of ITI's knowledge, is not made by HTL, ECIL or BEL. Similarly telecontrol equipment is manufactured in ITI for civilian application, but not in HTL. ITI is not aware whether this is manufactured in BEL or ECIL for some other application."

62. Asked about the coordination at present to avoid duplication, the ITI stated that there was no formal coordination at present to review development programme in the various institutions. Development programme was generally undertaken on the basis of licensing, specific customer needs etc. If there was any duplication in effort it might usually result in different type of designs specially adopted for specific applications.

63. During evidence of the Ministry the Committee desired to know as to what was the assessment of the Department of Electronics in regard to duplication in production and what were their views in regard to the need for coordination. The Secretary, Department of Electronics stated, "There is a great need for coordination. we do not think there is too much duplication in production. Occasionally, in specific instances, of course, as second sources, the same product may be made by two companies because there is a bulk requirement of an item and one company may not be able to make it. So there are cases where ITI and Bharat Electronics are making the same equipment because in the time frame required, this is necessary for the various requirements to be met."

64. Menon Committee had recommended setting up of a Technical Co-ordination Authority. The ITI however informed the Committee that the expertise in the field of the telecommunication was at present essentially confined to the user, development and production agencies and little purpose might be saved in general by getting independent experts.

65. In reply to a question, the Secretary Deptt, of Electronics agreed that "Research and Development is not coordinated on a national basis. There is no one coordinating agency which is keeping all inputs about all R&D projects in the country. The Departments of Electronics is aware of most things which are happening but not in a formal manner. For instance, there is no national electronic research and development coordination council which get all inputs and then take decisions." Asked whether such a co-ordinating agency was desirable, the Secretary, Deptt. of Electronics stated:-

"I think that it would be very useful to take a broad view. For instance, on a smaller scale, we have an organisation called the National Radar Council. All projects relating to Radar are cleared by them. So an over-all Coordinating Council should be set up and then it could have specific Sub-Committees for various equipments set. I think that would be very desirable in this very very high technology area."

66. The ITI had informed that till 1973, the activities connected with both Production Co-ordination and Development Co-ordination was being reviewed by Technical Co-ordination Committee. Considering the complex nature of each of these areas, two separate bodies viz., Development Co-ordination Committee and Production Co-ordination Committee were constituted in 1974. The Committee asked about the scope of those Committees. The Ministry furnished the information as follows:—

(i) *Development Co-ordination Committee*

Scope: This Committee was set up to review the progress in the development work undertaken by the Indian Telephone Industries to meet the requirements of the P&T.

Composition: The Development Coordination Committee consists of the Technical Members of the P&T Board, Director, Telecommunication Research Centre and other concerned officers from the P&T, Chairman-cum-Managing Director, ITI, General Manager (R&D), Executive Director (Bangalore Complex) and other senior officers from the R&D Wing of the ITI.

Time Schedule: The Development Coordination Committee meetings may be held at least three times in a year—April, August and December.

(ii) *Production Co-ordination Committee*

Scope: The business transacted by the Production Coordination Committee are:—

- (i) review of the supplies of P&T against promises made by ITI.
- (ii) changes in the priority that may be mutually discussed and decided.
- (iii) policy decisions such as introduction of package programmes, customers' Inspection etc.
- (iv) quality assurance problem from the P&T side.
- (v) sorting out of technical problems concerning either changes in design or improvement required in performance etc.
- (vi) finalisation of the production programme of the ITI for succeeding year.

Composition: The Production Coordination Committee consists of the concerned Deputy Directors—General and Directors from the P&T Directorate; Executive Director (Bangalore Complex), General Managers of other Production Units and other senior officers from the Production side of ITI like Divisional Managers, Production Managers etc.

Time Schedule: Two meetings every year—once in January and the second meeting at the end of September or early October.

The Production Coordination Committee had held 20 meetings since its constitution in January, 1974.

67. The Committee enquired about the number of meetings held by Development Coordination Committee. The CMO, ITI stated that it had held, since its inception in 1974, eight meetings in addition to a review in September, 1980. These 8 meetings were held on 8-2-1975, 6-2-1976, 31-7-1976, 9-2-1977, 10-9-1977, 14-2-1978, 17-6-1978 and 19/20-2-1980.

68. The Committee pointed out that DOC was bifurcated so that more attention could be given to review the developmental work done by ITI and

therefore more frequent meetings were needed. The Secretary, Communications stated: 'DCC is at higher level. It has not been meeting as frequently as it should.'

69. Asked whether it was not desirable to associate with this Committee the representatives of the allied public undertakings and the Department of Electronics, the ITI stated that the expertise in the field of telecommunication was essentially confined to the user, development and production agencies and little purpose might be served in general by associating other agencies/departments not directly connected. The Secretary, Department of Electronics however stated, "we do feel that their association was very valuable in terms of total coordination and in terms of production to some extent. We do feel that their involvement in these two Committees is very essential." When the Committee pointed out that the association of Department of Electronics and other allied public undertakings with the DCC could be of great advantage of the Ministry, the Secretary Communications said "if the Committee so recommends, we will certainly give our deepest consideration to it."

70. According to ITI, it was at present only getting forecast demands for major production-lines in terms of the volume of requirements for plan periods, though to formulate R&D development, projection in terms of technology oriented product requirement was also to be made. The Committee wanted to know the reasons as to why the P&T did not make projections in terms of technology oriented product requirements, although since 1971-72, the system engineering and technique development had become the responsibility of the TRC. The Addl. Secretary, Communications stated, "As far as the regular production goes, ITI are getting regular forecast demands for the items it manufacturers. So far as new product area is concerned, in which R&D is consulted, there has been dialogue between TRC of P&T and the ITI through various meetings of the Development Coordination Committee.

VII. Performance Review

71. The Committee desired to know as to how many times during the years 1977-78 to 1979-80 did the Ministry take ITI's performance appraisal meetings associating the representatives of the BPE and the Planning Commission. They were informed that earlier the Ministry used to convene at periodical intervals performance appraisal meetings. Regular Quarterly Performance Appraisal Meetings were now being convened in accordance with the instructions issued by BPE, associating the representatives of BPE and Planning Commission. During the Calender year 1980, three such meetings in respect of ITI had been held on 21-1-1980, 11-4-1980 and 12-9-1980.

72. Asked as to what steps were taken or directions given by the Ministry to the ITI arising out of such meetings to improve the working of the undertaking. The Ministry informed that a few areas where suggestions were made to ITI were:

- (a) to increase the captive power generation capacity to partly mitigate the power shortage problem; and
- (b) to even out the production in all the four quarters of the financial year for ensuring better quality control measures.

73. Asked whether the Ministry reviewed the R&D activities of the ITI as part of the performance of the undertaking at any time. If so, what were the findings and what directions were given to the ITI to improve matters. They were informed that "The Ministry undertakes Performance Review Meetings at intervals to review all aspects of the performance of ITI. No exclusive review of R&D activities has been undertaken by the Ministry so far."

PART II

CONCLUSIONS AND RECOMMENDATIONS OF THE COMMITTEE

1. The telephone system in the country has rightly come in for criticism from several quarters. The phenomenon of dead telephones, wrong calls, crosstalks and other disturbances not to speak of overbilling, is a common occurrence. The system seems to have deteriorated steadily. It was in this context the Committee reviewed the quality of the products of I.T.I. and its R&D activities as well as new projects to upgrade the technology.

2. According to the ITI the faults in the system are not solely due to equipment and those which can be attributed to equipment alone, mostly relate to technological deficiencies and not to any manufacturing defect. The Communications Secretary, however, is not in a position to aver that there are no manufacturing defects in switching equipment, telephone instrument and transaction equipment, which are part of telecommunication system in the country. The Committee have been informed by him that although the P&T Department subjects the supplies of the ITI to "acceptance test" it had to willy-nilly accept sub-standard supplies in order to adhere to targets of new telephone connections. Nevertheless, the rate of rejection as reported to the Committee is fairly high. The Secretary further stated that in case the laid-down specifications are rigidly enforced by the Department, much of the equipment will have to be rejected. Of the defects in the telephone system, 60 per cent is reported to be accounted for by cable faults, 15 to 20 per cent by the faulty telephone instruments, 10 per cent by the faults in switching equipment and the rest by a variety of other factors including the human element. There is no doubt that the production, engineering and quality control in the ITI are not sound. This calls for concerted R&D effort to make improvements in coordination with the TRC. Further the ITI should regulate its production so as to even out its supplies throughout the year rather than rush them largely during the last quarter as is reportedly happening now.

3. Incidentally, the Estimates Committee have suggested inter alia in their 11th Report (1980-81) pro rata rebate to the subscriber on the rental for the period when the telephone service is not available for no fault of his. When the Committee on Public Undertakings raised the question of increasing the free local calls allowed to the subscriber to compensate for getting wrong numbers the Secretary promised to consider it. The Com-

mittee desire that this should be considered for appropriate relief to the subscriber early.

4. In 1972 a High level Experts Committee under the Chairmanship of Prof. M. G. K. Menon was appointed to review the research and development work in the field of telecommunications. The Experts Committee was expected to submit its report by 30 September 1972. Unfortunately it took more than 5 years and submitted its report only in January 1978. The follow-up action on the report also seems tardy. Thus a beginning towards comprehensive improvements in the systems and upgrading of technology was badly delayed. The Committee desire that the Ministry should ensure that such follow-up action as is still pending is taken expeditiously and that there are no constraints in implementing the accepted suggestions of the Menon Committee.

5. The strowger switching system is an old system imported from ATE, U.K. in 1948. Over the years some import substitution is reported to have taken place and the performance of the indigenous materials and components was worse than what was originally imported. A Standing Committee for Improvement of the Strowger System was constituted in 1974. Although according to the ITI, with the implementation of the recommendations of the Standing Committee the technology of the system is better than what was imported, all that the Communications Secretary could say was that the quality of the indigenous materials and components has improved. The Committee trust that the Standing Committee would take note of this observation and direct their further efforts to achieving better results as per international standards so long as the strowger system continues in the country.

6. The technology of cross-bar switching system imported from BTM, Belgium in 1964 was found unsuitable to Indian conditions. The collaborator having failed to rectify the deficiencies in time, a task force was set up in 1971 which finally reported in 1974. Despite the ITI's claim that the problems have been fully solved, the Committee received an impression after hearing the representatives of Ministry of Communications that though the system is now less faulty it is not quite satisfactory. As the manufacture of the system would continue alongside the Indian cross-bar system which was developed by the P&T and the ITI and which would go into production in 1982-83, the Committee desire that attempts should be made to make the system foolproof. /

7. The Committee understand that in order to productionise the Indian cross-bar system, the ITI is entering into an agreement with the BTM of Belgium. The Committee, taking note of the unhappy past experience with the foreign collaborator, wish to caution that adequate care should

be taken to see that the ITI or the P&T Department does not run into any difficulty. The agreement to be entered into with the collaborator should provide for suitable safeguards in this regard.

8. It is pity that during the last more than 30 years the ITI could not perfect even the telephone instrument. The latest design (677) with the Japanese dial, though an improvement over the present design (671), is not reportedly free from some major defects associated with the receiver and the transmitter. A decision taken in December 1977 to import know-how for the manufacture of telephone is yet to be carried out. The Committee would urge that there should be no further delay in the import of technology, which seems inevitable.

9. With the rapid change in technology there is regrettably a gap of at least a decade between our country and abroad. Limited resources of R&D, unreliability of components and sub-systems and lack of product engineering expertise are reported to have hindered our development. ITI, however, seems confident of replacing most of its product lines by entirely modern and reliable ones within the next 5-6 years' time provided its products and collaboration proposals are cleared speedily. The Committee trust that the Ministry would approach this task with a sense of urgency that it deserves.

10. The ITI are of the view that facilities for manufacture of large electronic switching systems should be established under it to replace the products of obsolete technology manufactured in its Bangalore complex. The Ministry has, however, proposed that the first factory of this kind should be under a separate corporate entity. Having regard to the need to rehabilitate the employees of ITI with the phasing out of manufacture of obsolete equipment, the Committee suggest that adequate facilities for the manufacture of electronic switching systems should be established in the ITI early.

11. The Committee are not impressed by the current level of investment in the R&D activities of the ITI. A capital investment of only Rs. 10 crores has been made so far and 80 per cent of this has been made during the last 5 years. This is obviously insignificant compared to the outlay in R&D in advanced countries. The Committee feel strongly that the R&D outlay should be stepped up consistent with the need to absorb and adopt imported know-how in various fields, now being obtained. In view of the importance of updating of technology the Ministry should specially cover in its performance appraisal meetings, the activities of the R&D of the ITI as well as the implementation of the suggestions of various committees, taskforces etc.

12. At present there is communication gap and lack of coordination in the R&D activities in the field of telecommunication in general and in the development of reliable electronic components in particular. Though the ITI has complained about the lack of infrastructure of reliable professional grade electronic components in the country, which according to it, would probably be the most important constraint in its change-over to modern technology, it has not drawn attention of the Department of Electronics to the serious deficiency. The Secretary, Department of Electronics shared the views of the Committee that there is a great need for coordination for telecommunication research and development at the national level. The Development Coordination Committee consisting of the representatives of P&T Department and the ITI set up in 1974, has remained almost dormant for more than 3 years since 1978. This is indeed deplorable. The Committee would urge that other related public undertakings and the Department of Electronics should be associated with the Development Coordination Committee and it should be activated in order not only to review and guide the development work in the field of telecommunication but also to assess and project periodically technology oriented product requirement to set targets for the production units concerned.

NEW DELHI;
April 7, 1982

BANSI LAL,
Chairman,

Chaitra 17, 1904 (S)

Committee on Public Undertakings.