E.C. No. 47

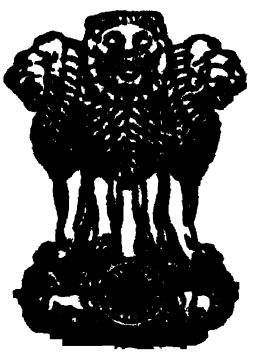
ESTIMATES COMMITTEE

1956—57

FIFTY-FIRST REPORT

THE MINISTRY OF TRANSPORT

INTERMEDIATE AND MINOR PORTS



LOK SABHA SECRETARIAT
NEW DELHI
March, 1957

C O R R I G E N D A

'IFTY-FIRST REPORT OF THE ESTIMATES COMMITTEE ON HE MINISTRY OF TRANSPORT.

Page (iv), Introduction, lines 3&4: read 'Intermediate' for 'intermediate'
Page 2, para 4, line 17: read 'or' for 'of'
Page 3, para 5, line 18, read 'Honavar' for 'Monavar'
Page 5, para 12, line 5: read 'procuring' for 'procurring'
Page 7,para 16 (x), line 13: read 'Bombay' for 'bombay'
Page 8,para 16(xi), line 1: insert ',' after 'upkeep'
Page 8,para 16(xii)(iii),line 1: read 'statistics' for 'statistic'
Page 9, para 19, line 29: read 'occurred' for 'occured'
Page 13,para 30, line 8: read 'division' for 'divisions'
Page 14,para 34, lines 1&4: read 'Kerala' for 'Kerela'
Page 14,para 36, lines 5&6: read 'Kozhikode' for 'Kazhikode'
Page 19,para 49, line 1: delete 'the' after 'firm'
Page 22,para 61, line 18: read 'Intermediate' for 'intermediate' and insert ',' thereafter.
Page 22,para 64, line 6: read 'Figure' for 'figures'
Page 23,para 65 (2), line 2: read 'ft' for 'fit'
Page 69,Appendix II, item (3), line 3: read 'suitable' for 'suitable'
Page 71, Appendix II, line 13,read 'surface' for 'surgace'
Page 71, Appendix II, line 14, read 'sets' for 'stes'
Page 77, Appendix II, item (iv) 1):read 'Servants' for 'Senrcmts'
Page 81, Appendix III, line 3, read '1956' for '1956'
Page 99, Appendix VI, S. No.2, line 1: read 'Ports' for 'ports'
Page 102,Appendix VI, S. No.11, line 15,add 'a' after 'this'

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APPENDICES

MEMBERS OF THE ESTIMATES COMMITTEE—1956-57

1. Shri Balvantray Gopaljee Mehta—*Chairman.*
2. Shri B. S. Murthy
3. Shrimati B. Khongmen.
4. Shri Nageshwar Prasad Sinha
5. Shri B. L. Chandak
6. Shri Amarnath Vidyalankar*
7. Shri Venkatesh Narayan Tivary
8. Shri Satis Chandra Samanta
9. Shri Raghavendrarao Srinivasrao Diwan
10. Shri M. R. Krishna
11. Shri Jethalal Harikrishna Joshi
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13. Shri P. Subba Rao
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20. Pandit Algu Rai Shastri***
21. Shri Abdus Sattar
22. Shri Lakshman Singh Charak
23. Shri N. Rachiah
24. Shri Radheshyam Ramkumar Morarka
25. Shri Mangalagiri Nanadas
26. Shri T. B. Vittal Rao
27. Shri Y. Gadilingana Gowd
28. Shri Jaswantraj Mehta
29. Shri A. E. T. Barrow
30. Shri Choithram Partabrai Gidwani.

SECRETARIAT

Shri S. L. Shakdher—*Joint Secretary.*

Shri H. N. Trivedi—*Deputy Secretary.*

Shri R. P. Kaushik—*Under Secretary.*

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*Resigned with effect from the 20th November, 1956.

**Died on the 6th October, 1956.

***Ceased to be a member upon his election to Rajya Sabha on the 13th December, 1956.

INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the Report on their behalf, present this Fifty-first Report on the Ministry of Transport on the subject 'intermediate and Minor Ports'.

2. The Committee wish to express their thanks to the Secretary and other Officers of the Ministry of Transport for placing before them the material and information that they wanted in connection with the examination of the estimates. They also wish to express their thanks to the representatives of the Scindia Steam Navigation Co. Ltd., Bombay, Messrs P. C. Ray & Co., (India) Private Ltd., Calcutta and Sarvashri M.A. Master and C. A. Buch for giving their evidence and making valuable suggestions to the Committee.

BALVANTRAY G. MEHTA,
Chairman,
Estimates Committee.

NEW DELHI ;
The 2nd March, 1957.

I. INTRODUCTORY

In the Constitution which came into force on the 26th January, 1950, major ports were put in the Union List, whereas minor ports were put in the Concurrent List. Prior to that, the minor ports were regarded as a provincial subject, and were dealt with almost entirely by the respective maritime provinces. Even then, by virtue of their importance in easing the transport problem of the country, the minor ports did attract some attention—howsoever reluctant and meagre—of the Central Government. The first serious move in the direction of development of minor ports was made by the Central Government, by including the following item as one of the terms of reference of the Ports (Technical) Committee appointed in 1946, under the chairmanship of Sir Godfrey Armstrong.

"What steps are necessary to develop minor ports in order to meet probable demands of coastal shipping traffic."

2. In the very opening paragraph, the Armstrong Committee made the following very pertinent general observations regarding the formation of a progressive port policy:

> "Before we proceed with our task we deem it our duty to make one or two general observations. Our terms of reference do not ask us to consider the needs of the whole of India and to recommend the adoption of a port policy which may be most beneficial in the interests of the country. But the economic indivisibility of British India and Indian States, the increasing requirements of their rapidly expanding agriculture and industries, the desirability of the dispersal of industries, the integration and implementation of a comprehensive, well-balanced and efficient policy of transport, and its effective development in all its forms, the routing of trade through ports without being influenced by Customs Policy, the need for a long view in the siting of new ports and the development of existing ones, the evolution of a sound policy of defence for the whole country, the geographical position and importance of India in the Indian Ocean and the strategic importance of India in the development of a world order in the Far East, all these are considerations of vital importance in the establishment and development of suitable ports round the coasts of India and the formulation of an all embracing and progressive port policy for this country....."

3. With the integration of the former princely States with India, the differences of British India and Indian (Princely) States and the artificial customs barriers no longer exist. With the rapid economic development of the country in the Agricultural and Industrial fields, specially during the First Five Year Plan, the other criteria referred to

in the above observations have, however, assumed an added importance. Study of the problems of minor ports during the post-independence period and the steps taken by the Centre so far, in their development has led the Committee to conclude, with regret, that the progressive port policy for India formulated by the Armstrong Committee, as early as in 1946, has not been pursued with sufficient vigour by the Transport Ministry.

4. While considering the future expansion of Indian ports, the Committee would like the Transport Ministry to bear the following remarks of the Armstrong Committee in mind:

> "There may be a stage in every large undertaking when financial considerations are not the only or even the main ones. The value of a port is not solely to be reckoned in terms of economic integrity, and the financial side, though of the highest importance, is not always paramount. Judgement of a port is not made on the basis of a few months or even of a few years' work. It is based, rather, on the service a port renders through decades and centuries, and we must look far ahead in determining the best course of expansion."
>
> "It should not, however, be forgotten that the creation of port capacity in excess of the immediate requirements of the trade is a vital aspect of a sound port policy and is followed by important major ports in British India.
>
> "A minor port is, if you wish, a postern of wicket gate not of so much importance as the main entrances, but yet performing a definite service, and that service clearly dependent on ships on one side of the gate and railway trains and road connections on the other.
>
> "If Government are resolved that the seapath round the coast of India is to be put to its best possible use it is not only necessary that ports, major and minor, should be fitted to pass the trade, but also that steps should be taken to rationalise the means of transport both by sea and land and discourage in the national interests of the country any unfair and uneconomic competition on the part of either.
>
> "Finally ports are vital links in the effective and efficient working of transport both by sea and land. And, while the establishment and expansion of ports will have to be related to the general development of trade and transport in the country, the Committee is convinced that the planning of ports and their construction and the services which they have to provide should, in the national economy of the country, precede the anticipated developments and needs of transport."

5. The Ports (Technical) Committee, 1946, in the comparatively short time at its disposal, decided to concentrate its investigation on the two provinces which were most interested in their littoral sea

trade and where the successful use of the small harbour facilities along the coast is of definite importance to the economic future of the country (*viz.*, Bombay and Madras). After on the spot inspections and discussions with various officers, the Technical Committee suggested the following general proposals, *inter alia,* for improvement of minor ports in the then Bombay province:

(a) It may reasonably be accepted as a matter of long term policy that all minor ports of the Province should eventually be capable of taking close inshore sea-going power launches of maximum 8 foot draft and sailing vessels of maximum 10 foot draft with or without auxiliary engines.

(b) Practically all the minor ports are capable of dealing with craft of the above description or can be enabled to do so at comparatively small expense. Such craft should be able to work their cargoes alongside jetties at Gogha, Kavi, Broach, Surat, Bulsar, Bilimora, Navasari, Dhanu, Bassein, Varsova, Revdanda, Bankot, Dabhol, Ratnagiri, Devgad, Achra, Vengurla, Redi, Karwar, Tadri, Ankola and Monavar. While, however, the works required to meet the above standard are small, they may sometime be necessary and without them coastal traffic is not adequately provided for.

(c) It is desirable that oiling and watering facilities of some kind should in due course be provided at principle minor ports, but this may prove a serious difficulty at some of them and a priority programme of work will need to be drawn up.

6. The above proposals have not been fully implemented, though more than ten years have passed since they were made. The Committee recommend that schemes covering these proposals should be included in the Second Five Year Plan.

7. In regard to the East Coast, the Technical Committee strongly recommended that Vizagapatam should be developed as a sheltered deep sea-port. This recommendation has already been implemented.

8. The next step towards the development of Ports was taken when the Government of India constituted "The West Coast Major Port Development Committee" in 1948. This Committee unanimously recommended that Kandla should be developed into a major port. This recommendation has already been implemented. The following observations of this Committee, while dealing with the "Future of Minor Ports" are worth recording:

> *"Although we recommend the construction of a major port at Kandla, we believe it to be essential to maintain in efficient condition the existing ports in Kathiawar e.g. Navalakhi, Bedi, Okha, Porbunder, Veraval and Bhavnagar. These ports are very necessary for the country's economic life. In one commodity alone, namely, salt, the Government's latest policy is to increase the annual output from* 280,000 *to* 550,000 *tons, so that India may in the course of the next* 5

years be independent of salt imports. Practically, the entire increase will represent additional traffic in the ports of Kathiawar and Kutch. Again, on the transport side, India cannot but encourage the movement of goods along the coast, both in ships and in country craft.

In the event of an emergency, traffic could be diverted to these ports, should the necessity arise, and their continued existence therefore is of considerable importance."

9. The above-mentioned Committee also made the following two specific recommendations for the Development of Bhavnagar Port.

(1) Steps must be taken to improve the dredging so as to obtain at least 28 feet of water at the berths, and keep the entrance channel clear.

(2) Surveys and plans should be prepared for the construction of one additional berth.

10. These proposals have not yet been implemented. The Committee recommend that maintenance of 28 feet of water at the berths and the construction of one or two extra berths should be done during the Second Plan period.

11. One of the Terms of Reference of the West Coast Major Port Development Committee was as under:

"What improvements are necessary in communications to the existing ports: also what other measures should be taken for the development or provision of additional facilities in these ports as may be found necessary or desirable."

12. The following observations of that Committee in connection with this term of reference are worth recording:

"Along this coast line there are many suitable sites for the construction of small ports, or sheltered anchorages for small coastal vessels. At present, coastal shipping practically closes down during the monsoon, on account of the lack of sheltered harbours. As the west coast is separated from the interior by the Western Ghats, the only effective means of transport, in many places, is by sea, and it is a serious deterrent to trade when this form of transport breaks down for several months every year.

"It would appear that there are a number of minor ports on the west coast which could probably be converted into all weather ports if in each case, a channel were dredged into calm water, deep enough to take small coastal steamers. The depth of the channel should be twelve feet at L.W.O.S.T. or thereabouts and if necessary ships could cross the bar taking advantage of the tides. This scheme also visualises the construction of small jetties at which

coastal steamers could tie up and work their cargo. It would be necessary to employ a sea-going dredger probably of the trailer-suction type, as it might have to work in a slight swell, to dredge and maintain these channels. The Madras Government did in fact contemplate procurring a dredger for this purpose but discarded the idea when it was stated that the coastal ship of the future will be a large ship of deep draught.

"Obviously the success of such a scheme would depend entirely on the policy enunciated by the Central Government which has often expressed its keen desire to build up national shipping. It would be in the fitness of things if this policy is now clearly outlined in detail with regard to overseas traffic, and coastal traffic. Whereas the main trade movements between the east and west coast require large ships, there is considerable room for the small coaster of 1,000 to 1,500 ton capacity drawing not more than 14 feet of water, Further there is much to commend the policy of using small ships along this coast as feeder services. Such a policy has been worked to advantage in other countries."

13. The suggestions made in the observations quoted above do not appear to have been given any serious attention.

14. The West Coast Major Port Development Committee also recommended *inter alia* the formation of a Central Harbour Board for coordinating all port matters with industry, commerce, customs, railways, communications and defence. This recommendation was implemented by the Government and the National Harbour Board was formed in 1950. One of the recommendations made by the National Harbour Board at its very first meeting held on the 28th August, 1950 was that an officer should be appointed to conduct a quick inquiry into minor ports, to collect information relating to them and to make proposals regarding the administrative machinery and other improvements necessary. In pursuance of this recommendation the Government of India, Ministry of Tranport, appointed Shri S. Nanjundiah, Port Administrative Officer Vizagapatam Port as Officer on Special Duty for carrying out a survey of the Minor Ports.

15. His Terms of Reference were briefly as follows:

(i) Collection of information relating to the traffic handled by Minor Ports, number and size of ships visiting the ports, existing and potential facilities for handling goods, staff and financial conditions and existing administrative machinery, and

(ii) To make proposals regarding administrative machinery and other improvements necessary to ensure fuller use of these ports."

Shri Nanjundiah submitted his report in May 1951.

16. Some of the important observations and suggestions of Shri Nanjundiah are given below:

(i) In view of the amazing variety in size and functions of the minor ports in India, it was recommended that the minor ports henceforth should be classified into "Intermediate. Minor and Sub-Ports".

(ii) It would be more helpful to the transport economy of the country as a whole to have a few well-equipped Intermediate Ports suitably placed geographically and well maintained.

(iii) The development of some of the leading minor ports into major ports may be considered later if as a result of industrial development the country is able to export and expand its overseas trade and finances permit of such development, Okha, Tuticorin and Bhavnagar may be considered first for such development.

(iv) There is great scope for the improvement and utilization of many of the Intermediate and Minor Ports at comparatively small additional capital outlay. A hydrographic survey of these ports and their approaches, a planned scheme of dredging, provision of modern cargo handling appliances such as jetties, cranes and tugs or launches, amenities for passangers etc., will go a very long way to satisfy immediate needs.

(v) Some of the present minor ports are capable, at not very great capital outlay, of construction of medium sized ports capable of taking coastal ships drawing 15 to 18 ft. (about 3,000 tons). Chandbali, Kakinada, Tuticorin, and Beypore are some of the places which lend themselves easily to such development.

(vi) The justification of such works depends, however, upon the economics and policy with regard to the construction of the future coastal steamers. If ships of small draft and tonnage as are now in use on the Upper West Coast are introduced and used on the East and lower West Coast also—and there is no reason why they should not be—there would be a great stimulus to the coastal trade.

(vii) Another important item, information regarding which is necessary before any scheme of expansion and development of a Port, is undertaken is a hydrographic survey of the approaches to the Port and in some cases the anchorages. Many of the gulfs, creeks and river mouths have also to be surveyed systematically not only for the use of the river or creek ports wherever such exist but also for river conservancy and conservation of the coastline and in some cases with a view to examine the possibility of opening up the Inland water for navigation purposes. The necessity for the survey is not open to question although priorities have to be fixed to draw up a programme.

(viii) To carry out the hydrographic surveys as stated above, within a reasonable time the present Wing under the Indian Navy

will have to be trebled. Two units, it is considered, will be permanently required, one for the Bay of Bengal and one for the Arabian Sea. The third unit would be required for two or three years to attend to initial non-recurring work. Alternatively, the formation of the third unit may be avoided by entrusting a portion of the work to a reputed firm of Hydrographic Surveyers who may be expected to furnish its own equipment for carrying out the Survey.

As regards priorities, the following tentative list has been suggested:

The Gulf of Kutch.
The Gulf of Cambay.
Okha.
Mangalore.
Malpe.
Beypore.
The Khori Creek north of Kutch.
Tuticorin.
Kakinada.
Narsapur.
Pamban and so on.

(ix) It is difficult to make out a full financial justification for the outlay on dredgers but they are essential for the upkeep of the ports. The ports would however be able to pay their operating expenses. The expenditure may be spread over the next three years.

(x) Although it is difficult to forecast the trade that may be expected to pass through the minor ports in future years, there is every prospect of the minor ports continuing to handle a traffic of about four million tons per year. The demand for building materials, firewood and timber is likely to increase and in any case not diminish. The transport of salt from the west-coast ports to Bengal and Assam will also be more or less permanent. The movement of raw materials and foodgrains will continue in the southern Bombay, Saurashtra and Kutch ports as these are the only suitable distributing centres in the absence of good railways and roads. The extent to which ports will be made use of as distribution centres for coal depends upon the rail-*cum*-shipping policy. Cuddalore, Tuticorin, Bhavnagar, Okha and Navalakhi offer scope for utilisation as regular coal distributing ports, especially railway coal. Small bunkering station may also be established at Tuticorin, Bhavnagar and Okha for the convenience of steamers. Many cement works are situated in Saurashtra and there is scope for more. It is likely that cement will continue to move by sea to the big consuming centres like bombay city and Kandla.

(xi) Approximately 40% of the trade of minor ports is carried by sailing vessels. A large number of minor ports depend on the efficient working and operation of the sailing craft for their trade.

Every facility should be given for their upkeep maintenance and repairs and laying up during non-working seasons, at as many ports as possible. In particular, the ports of Kakinada, Cuddalore, Tuticorin, Beypore, Mangalore, Karwar, Bhavanagar, Verawal, Bedi, Navalakhi, Okha and Mandvi may take action to provide such facilities. In Tuticorin and Mandvi (Kutch), boat-building has been going on for decades. The industry is however languishing and must be revived and encouraged. It is in the interests of the Minor Ports themselves to foster this industry.

(xii) Coordination is very essential to get the best out of the limited resources of the country; to exchange information, technical personnel, plant and craft, etc., between Ports and to avoid duplications and uneconomic constructions; to avoid wasteful competition etc. Such co-ordination should be brought about by the Central Government for which purpose a permanent Central Organisation under the Ministry of Transport is necessary. This organisation will, subject to the policies laid down by the Ministry on the advice of the National Harbour Board, be responsible for the following:—

(i) Assisting the National Harbour Board on technical matters.

(ii) Technical Scrutiny of proposals for port works and equipment made by the State Governments and Port authorities.

(iii) Collecting and interchange of information and statistic between Ports.

(iv) Offering expert advice and guidance to minor ports administrations.

(v) Watching action taken on accepted recommendations of Special Committees and investigations.

(vi) Supervision of Ports in Part 'C' and 'D' States which are directly under the Centre.

(vii) Study of Port practice in foreign countries and making recommendations regarding their adoption in India wherever advantageous.

(viii) Technical liaison with technical officers of Railway and Defence Ministries and Directorate of Shipping.

(ix) Responsibility for such obligations as the Central Government may take upon itself such as Surveys, Coast preservation and protection etc.

(x) To study and prepare a scheme for the formation and running of a Towage and Salvage Organisation for India.

(xi) Generally assist the Ministry of Transport and/or the State Governments in Technical matters concerning Ports.

This Central Ports Organisation should be under a Director who should be an Engineer with experience of Ports and Harbour Construction.

17. The Committee regret to note that some of the recommendations of the Officer on Special Duty have not yet been fully implemented despite the fact that more than five years have passed since he submitted his report. The Committee lay particular stress on his suggestion to form a competent Central Ports Organisation under a Director who should be an engineer with experience of ports and harbour constructions. Failure to create such a Central Ports Organisation on receipt of recommendations of O.S.D. has resulted in considerable delay in the formulation of the scheme for the development of minor ports during the Second Five Year Plan.

18. Some of the recommendations of the O.S.D. concerning individual ports were incorporated in the First Five Year Plan and have been or are under implementation.

19. The Officer on Special Duty in his report as early as in May 1951 had rightly pointed out that there was great scope for the improvement and utilization of many of the Intermediate and Minor Ports at comparatively small additional capital outlay. He had further added that a hydrographic survey of these ports and their approaches, a planned scheme of dredging, provision of modern cargo handling appliances such as jetties, cranes, and tugs or launches, amenities for passengers etc. would go a very long way to satisfy immediate needs. This recommendation, however, does not appear to have been given the attention it deserved. It was only in 1955 when the time came for the formulation of the Second Five Year Plan that it was realised that in view of the appreciable traffic handled at Minor Ports, the schemes for each port to be included in the Second Plan should be framed after a careful study had been made of the engineering and economic aspect of development by a technical expert deputed by the Central Government in the light of the traffic needs and potential of each port. Accordingly, in May 1955, four years after the recommendation of the O.S.D. an engineering officer was specially appointed by the Ministry of Transport to go round the various minor ports to make a careful and detailed study of the needs of each port in close consultation with the State authorities concerned and to submit a report giving what in his view were the measures necessary at each port in order to ensure its utilization to the best advantage of the country. This officer has so far been able to visit only 68 minor ports out of some 226 in number spread over the coast line of 2900 miles. The Committee regard the progress in this direction as unsatisfactory. Out of these 226 ports, 150 are working ports. In view of the abnormal delay that has already occured in this vital matter, the Committee hope that no further time will be lost in completing this preliminary survey at least in so far as the 150 working ports are concerned. The Com-

mittee understand that the schemes recommended by this engineering officer are estimated to cost in all Rs. 322·26 lakhs and that all of these have been included in the Second Five Year Plan.

20. The following observations of this engineering officer are worth noting:

> "The minor ports total some 226 in number spread over a coastline of more than 2,900 miles, out of which about 150 are working ports. The ports which are classified as Intermediate number eighteen and those as minor ports sixty-seven, the remaining being sub-ports. In 1951-52 the minor ports handled a cargo of 3,756,000 tons and by 1954-55 the tonnage handled increased to 4,148,000.. During the same year the major ports of Calcutta, Bombay, Madras, Cochin, Vizagapatam and Kandla handled a tonnage of 20,396,400. The minor ports, therefore, handled roughly 1/6th of the total sea borne trade of the Indian Union and almost as much as Cochin, Madras and Vizagapatam put together. During the last few years the minor ports have illustrated that under favourable conditions working a steamer in the roads can yield a daily handling rate comparable to the figure for a major port. The minor ports have also played an important role in relieving pressure on the major ports and the internal transport of the country. With comparatively cheaper port and wharfage charges, the minor ports offer an attractive opportunity to merchants.
>
> "During World War II, the maintenance of the minor ports was largely neglected and restriction placed on their use...."

21. These observations clearly bring out the important role that the minor ports have to play in the transport economy of the country.

22. The Committee, therefore, hope that in future, unlike in the past minor ports will receive more adequate attention by the Ministry of Transport.

II. ADMINISTRATION

23. The mode of administration of minor ports varies from State to State as explained below.

A. Madras State

24. There are at present some 24 working ports in Madras State consisting of the 3 intermediate ports of Cuddalore, Nagapattinam Tuticorin and 11 minor ports, the remainder being sub-ports. With the exception of the intermediate port of Tuticorin which is governed by a statutory Port Trust responsible to the State Government, all the remaining ports are administered by the State Government through a Minor Ports Organisation under the control of a State Port Officer, whose headquarters is in Madras City. Each of the intermediate ports together with the minor and sub-ports in its vicinity is under a qualified Port Officer. A Central Engineering Organisation for minor ports under an experienced Assistant Engineer carries out all engineering works, design, construction and maintenance. The maintenance of mechanical plant and floating craft is undertaken by an Inspecting Dredging Engineer attached to the Minor Ports Organisation. In the Madras Government Secretariat the Public Works Department is in overall charge of the administration of the minor ports.

25. There are Landing and Shipping Fees Committees and Port Conservancy Boards to assist the Port authorities. This Committee functions as follows:—

Where the port is the headquarters of the Collector of District, the Collector, and where the port is the headquarters of the Revenue Divisional Officer, the Revenue Divisional Officer, is the president of the Committee. The Port Officer or the Port Conservator where there is no Port Officer is the Vice President (*ex-officio*). At other ports, the Port Officer or the Port Conservator as the case may be is the President of the Committee (*ex-officio*).

In cases in which no period of office has been fixed, each member of Landing and Shipping Fees Committee holds office for a period of three years and is eligible for reappointment at the end of that period.

The Collector of the district submits to Government through the State Port Officer, his recommendations regarding the members to be nominated. Customs Collectors at Minor Ports are *ex-officio* members of the Local Landing and Shipping Fees Committee.

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Any member absent from the Port for more than 6 months vacates his seat but may be reinstated by the President of the Committee so long as the President of the Committee is a Gazetted Officer and by Government when the President is not a Gazetted Officer.

Non-Official members who absent themselves from three consecutive meetings of the Committee without reasonable excuse cease to be members.

One third of the total number of members subject to a minimum of three form a quorum.

26. The functions of the Landing and Shipping Fees Committee and Constitution and powers of the Port Conservancy Boards are given in Appendix I.

27. The Committee suggest that the feasibility of increasing the elective element in the Landing and Shipping Fees Committees and the Port Conservancy Boards and also of increasing their scope should be examined.

28. The following is a statement showing the constitution of a Port Trust, a Port Conservancy Board and a Landing and Shipping Fees Committee at some of the Minor Ports in the Madras State.

Cuddalore Landing and Shipping Fees Committee.

Ex-Officio.	(3)
The Collector of South Arcot (President).	
The Port Officer, Cuddalore (Vice President).	
The Customs Collector, Cuddalore.	
Nominated Non-Official Members.	(5)
	(8)
	(8)

Nagapattinam Port Conservancy Board.

Ex-Officio.	(4)
The Sub-Collector, Nagapattinam (Chairman).	
The Port Officer, Nagapattinam (Vice-Chairman).	
The Assistant Engineer, P.W.D., Nagapattinam.	
The Superintendent of Central Excise, Nagapattinam.	
Nominated Non-Officials.	(8)
	(12)

Tuticorin Port Trust Board.

1. *Elected Trustees* [Section 6 (2) of the Tuticorin Port Trust Act, 1924].	11
2. *Nominated Trustees.*	
(i) *Official.*	
Sub-Collector or Revenue Divisional Officer, Tuticorin *Ex-Officio* Chairman.	1
Local Superintendent of Customs.	1
Representative of Southern Railway.	1
	3
(ii) *Non-Official.*	
Representative of Labour at the Port.	1
Others.	2
GRAND TOTAL	17

Pondicherry

29. Under arrangement with the Madras Government the Port is now working under a Port Officer of the Madras Minor Port Organisation. So far as the construction of a new pier at the port is concerned, there is a separate Resident Engineer to look after it under the special overall supervision of the officer on special duty (minor Ports), Ministry of Transport.

B. Bombay State

(a) *Saurashtra Ports*

30. There are 29 working ports located in the Gulf of Kutch, Arabian Sea and Gulf of Cambay. These include the five intermediate ports of Bhavnagar, Bedi, Navalakhi, Veraval and Porbandar and the nine minor ports of Mahuva, Talaja, Albert Victor, Jafarabad, Sika, Salaya, Jodiya, Navabunder and Mangrol the reminder being sub-ports (15 in number). For the purpose of administration, these ports are grouped into five divisions with headquarters at each of the intermediate ports. Each divisions is under a Port Officer.

31. The Ports are administered by an Administrative Officer (Ports) with headquarters at Rajkot under the Public Works Department of Bombay State. A project division has recently been formed for carrying out the engineering works proposed under the first and Second Five Year Plans.

(b) *Ports in the former State of Bombay*

32. These number about 88 situated over a coastline of about 650 miles consisting of the 3 intermediate ports of Okha, Broach and Ratanagiri and 40 Minor Ports, the remaining being sub-ports. These ports are administered by the State Government through their Public Works Department. With the exception of the Port of Okha, which is under a Harbour Board responsible to the State Government, the day to day management of the ports is carried out through local officers of the Customs and Central Excise Collectorate. The State Government have recently formed a Marine Division controlled by an executive engineer under the P.W.D. to undertake all engineering works pertaining to ports.

(c) *Kutch Ports*

33. There are five ports Mandvi, Mundra, Jakhau, Lakhpat and Koteswar which are administered by the State Ports Organisation with the Port Commissioner and Harbour Engineer at its head.

C Kerala State

34. The ports of Kerela State are administered by the State Government through a Principal Port Officer with headquarters at Alleppey. The main ports of the State are Alleppey, Quilon, Trivandrum, Kozhikode, Koilthottam and Colachel. Almost all Kerela ports are open roadsteads catering generally to steamer traffic. There is no independent engineering department under the Minor Ports Organisation for carrying out engineering works, maintenance of floating craft and equipment as well as construction and improvement to landing facilities is being carried out through the P.W.D. of the State.

35 There is a State Ports Advisory Committee. The Principal Port Officer is the Chairman of the Committee. The Chief Enginneer (P.W.D.) and Chief Engineer (Electricity) are *ex-officio* members of the Committee. The remaining four members are nominated by Government, one each from the representatives of Shipping and commercial bodies functioning at the various ports. The functions of the Committee are to consider and make specific recommendations to Government for the general working, improvement and development of the Ports in the State.

36. There is a Port Conservancy Board constituted under Section 7 of the Indian Ports Act functioning at Kozhikode Port and there are Landing and Shipping Fees Committees at the Ports of Ponnai, Badagara, Tellicherry, Cannanore and Azhikkal with *ex-officio* members and non-officials. The conservancy Board at Kazhikode is empowered to sanction estimates upto Rs. 500/- in each case. The concurrence of the concerned Landing and Shipping Fees committees is obtained for all estimates under the Landing and Shipping Funds.

D. Andhra Pradesh

37. The State of Andhra Pradesh has under its control six working ports comprising the two intermediate ports of Kakinada and Masulipatnam, the minor ports of Bheemulipatnam and Calingapatnam and the sub-ports of Narasapur and Baruva. These ports are administered by a Minor Ports Organisation with headquarters at Kakinada under a State Port Officer which is on the Madras State Model. The engineering organisation is also modelled on that of Madras with an Assistant Engineer in charge of engineering works. The services of the Inspecting Dredging Engineer from Madras State are still being utilised for the maintenance of floating craft and plant belonging to the ports.

38. The non-official bodies that assist the Port authorities are the Port Conservancy Board at Kakinada and Landing and Shipping fees committee at Masulipatnam. The above committees are to be consulted as regards provision in the budget estimates of items of expenditure against the Landing and Shipping Funds and the expenditure proposed to be incurred by the Port Authorities against the landing and shipping funds is to be referred for the concurrence of the Committee.

E. Orissa State

39. There are at present three working ports in Orissa State, Chandbali, Puri and Gopalpur. These ports are divided into two groups for administrative control. The first consisting of Chandbali and Puri is under the Collectorate of Balasore and the second consisting of Gopalpur is under the Revenue Commissioner of the State. The technical and executive responsibilities pertaining to these ports are vested in a Port Officer with headquarters at Chandbali.

40. There is only one officer designated as the State Port Officer in charge of the Minor Ports of Orissa. At present there is no non-official body or consultative Committee to assist him.

F. Mysore State

41. There are four ports in Mysore, the intermediate port of Mangalore, Karwar and the minor ports of Malpe and Bhatkal. Mangalore is administered by a statutory Port Trust responsible to the State Government. Malpe, Bhatkal Karwar and Hangarkatta are administered by the State Minor Ports Organisation.

42. The Port of Mangalore is under the administrative control of the Mangalore Port Trust Board constituted under the Mangalore Port Trust Act (Madras Act XV of 1953). The Board has been

appointed as conservator of the port under the Indian Ports Act, 1908. The Board consists of fifteen members as noted below:

1. Chairman.

2. Trustees.—1. Representing Southern Railways.
   2. Customs and Central Excise.
   3. Representing Shipping interest or sea-borne trade.

1. Trustee—appointed by Government from a panel consisting of persons elected by Trade Unions of workers at the port which have been registered under the Indian Trade Union Act, 1926.

Elected by local Bodies

1. Trustee—Elected by the Mangalore Municipal Council.

2. —do—Elected by the Western India Tile Manufacturers Association.

3. —do—Elected by the Kanara Chamber of Commerce.

The Vice-Chairman is elected from amongst the Trustees.

43. In respect of all technical matters the Board is assisted by the Intermediate Ports Technical Advisory Committee, Cochin. This Technical Advisory Committee consists of the three officers *viz.*, the Chief Engineer, the Traffic Manager, and the Deputy Conservator. The Advisory Committee has no executive powers and its function is confined to tendering advice on major problems or new major works and not on routine day to day problems. The Committee is expected to render assistance in respect of the following:

(a) Technical advice on problems pertaining to engineering, traffic, and marine matters.

(b) Technical scrutiny of proposals for port works.

(c) Suggestions for improvements in facilities, operation, methods and procedure.

(d) Assistance in the conduct and supervision of investigation and surveys.

There are Landing and Shipping Fees Committees at some of the ports such as Malpe and Hangarkatta.

G. Changes in the present set up of Minor Ports administration

44. From the brief description of the administrative machinery for the management of Minor Ports in the various maritime State Governments, it will be seen that there is wide divergence in this respect. Where as Madras, Andhra and ex-Saurashtra State have permanently established State Port Organisations, in other States the port administration is generally left to the care of the Public Works Department, Municipalities, Central Excise Department or private concerns. Partly due to the lack of well-knit port organisation and

partly due to the limited resources of the maritime State Governments, the development and proper maintenance of Minor Ports have not received adequate attention in the past. The Committee have, therefore, following suggestions to offer in this regard:

(i) As the coast-line of India is very deficient in natural harbours as compared to the foreign maritime countries, the importance of proper maintenance and development of the existing ports of the country cannot be over-emphasised. The question of developing ports all along the coast line of India is essentially a national problem. Rationalisation of export and import traffic through the various ports along the coast line is also similarly a national problem. . Providing the additional facilities such as road and rail-connections is also a subject which can best be dealt with by the centre. In view of these factors, the Committee suggest that the feasibility of transferring the subject of "Minor Ports" from the "Concurrent" List to the "Union" List should be carefully examined in consultation with the maritime State Governments. Pending the examination of this issue, the Committee suggest that the development of 18 intermediate ports should be taken over by the Centre. The State Governments may continue to manage these ports on behalf of the Centre on agency basis.

(ii) As the transfer of the subject of "Minor Ports" from the "Concurrent" List to the "Union" List is likely to take sometime, the Committee suggest that in the meantime, the pattern of port administration followed by the Madras State might be adopted, with advantage, by other maritime State Governments, with such modifications as are considered necessary to suit local conditions.

(iii) Port Advisory Committee should be constituted at each of the 18 intermediate ports with proper representation to the local interests.

(iv) The feasibility of forming Port Trusts on the same lines as at Tuticorin and Mangalore, at the important intermediate ports, should be examined.

(v) Landing and Shipping Fees Committees and Conservancy Boards should be provided at other Intermediate and important Minor Ports as well.

(vi) The entire coast line of India should be divided into a suitable number of zones and each zone should be placed under the jurisdiction of a Major or Intermediate Port for the purpose of proper maintenance and development of the Minor Ports in each zone. The technical skill and equipment at the disposal of such Ports will thus be made available to the Minor Ports also.

III. FIVE YEAR PLANS

A. Introduction

45. With the normal tendency of the British Government towards over centralisation the export and import traffic of the country mainly concentrated on the major ports, and other ports along the coastline suffered from age long neglect. There are many instances of ports which were flourishing at one time, subsequently falling into disuse, due to siltation, lack of modern facilities, inadequacy of road and/or rail connections etc. There are, at present, about 226 minor ports in the country of which only 150 are working ports. The first attempt to plan their development on a co-ordinated basis was made only in 1951, when a special officer, Shri S. Nanjundiah was appointed to go round all the ports and to recommend measures for their improvement where necessary. Shri Nanjundiah in his report, after visiting about 38 ports, recommended in 1951 that the minor ports should be divided into three categories: (i) intermediate ports numbering about 18, handling traffic in excess of 1 lakh tons annually (ii) minor ports handling traffic in excess of 5 thousand tons annually and (iii) sub-ports which handle traffic less than 5 thousand tons annually. He further recommended that future development should be mainly concentrated on the 18 intermediate ports.

46. The broad objective of port development is to secure additional capacity required to meet expansion in sea-borne trade rising out of the developments planned in the various sectors of the economy of the country.

47. In the First Five Year Plan, the State Governments were asked to put forward proposals for the improvement of their respective minor ports on the lines recommended in Shri Nanjundiah's Report. The schemes suggested by them costing about Rs. 2·4 crores were actually included in the First Plan. Out of the total cost of Rs. 2·4 crores involved on the schemes, Rs. 1 crore was to be provided by the Central Government in the form of loans at concessional rates of interest and the rest of money was to be found by the States themselves from their own resources.

48. It is significant to note that the schemes included in the First Plan of rehabilitation, modernisation and expansion of facilities at the major ports were estimated to cost about Rs. 61 crores; whereas the development schemes planned for execution at the minor ports were estimated to cost only Rs. 2·4 crores. When it is remembered that the minor ports handle about 1/6 of the traffic handled by all major ports taken together, it would be apparent that the development of minor ports which are the sentinels of the country, has not received adequate attention during the First Plan.

49. The Ministry of Transport indicated that firm the State-wise figures of the expenditure planned and actually incurred during the First Five Year Plan period are not available with them.

50. Provisional figures given would indicate that only 40% of planned expenditure for development of minor ports could be incurred during the First Plan.

51. Appendix II gives the details of the various schemes for the improvement of Minor Ports, included in the First Plan, and their progress. A perusal of this Appendix would show that the progress of the various schemes has unfortunately, been unsatisfactory, and that in a number of cases, the schemes were still 'under examination'

52. The Committee also note with regret that except in a few isolated cases, no provision has been made for staff quarters. The Committee suggest that this point should be given more attention during the Second Plan.

B. Basis for Central Assistance

53. The maritime State Governments generally have separate Ports Funds to which all revenues of the minor ports in their respective territories are credited and from which all the expenditure in respect of these ports is met. The surplus in the Port Fund Accounts, after meeting the normal maintenance expenditure in minor ports is generally small and it is, therefore, not possible for the State Governments to bear any large expenditure on development works included in the plans from the Port Funds to the extent necessary and the balance is provided by the Government of India in the form of concessional loans. The amounts of these loans are limited to the extent required for the execution of the approved schemes during each year taking into account the actual progress of works and the balances available in the Port Fund Accounts for financing these schemes.

C. Second Five Year Plan

54. A total amount of Rs. 5 crores has been provided for the development of minor ports during the Second Five Year Plan period as shown below:—

	Rs. in lakhs.
1. Kutch	15·60
2. Saurashtra	45·65
3. Madras	43·70
4. Andhra	28·10
5. Travancore-Cochin	33·50
6. Bombay	77·91
7. Orissa.	28·50

8. Andaman Ports	55·00
9. Third Survey Ship	36·00
10. Dredger Pool	100·00
TOTAL ..	458·96
Expenditure on Tuticorin, Sethusamudram and other such projects.	41·04
GRAND TOTAL ..	500·00

55. The funds ear-marked for the development of minor ports (which include intermediate and sub-ports also) are only Rs. 5 crores, against Rs. 81 crores for the major ports. *i.e.* the former are only 1/16th of the latter, despite the fact that amount of traffic handled by the minor ports is about 1/6th of that by the major ports. This disproportionate allocation of funds, in the opinion of the Committee, is partly due to a general unhealthy tendency towards over-centralisation. It is significant to note that the schemes for development of minor ports, as formulated by the maritime State Governments were curtailed on the basis of the recommendations of the Officer on Special Duty.

This Officer has, however, been able to visit only about 70 minor ports against a total of 226 ports. Besides, in a number of cases, he has curtailed the schemes on the ground that 'no work should be taken up till the increase in trade is well established.'

56. The Committee consider this a very unhealthy doctrine. In this connection, the Committtee can do no better than to quote again the following pertinent observations of the Ports (Technical) Committee, 1946:

> "While the establishment and expansion of ports will have to be related to the general development of trade and transport in the country, the Committee is convinced that the planning of ports and their construction and the services which they have to provide should, in the national economy of the country, precede the anticipated developments and needs of transport."

57. The Committee are of the opinion that minor ports can be made to play a much more important role in the transport economy of the country than that which has so far been assigned to them. They, therefore, suggest that the 18 interemediate ports, specially those among them which are all-weather ports and which have berthing facilities, should be developed to the fullest extent possible. They also suggest that not only should additional facilities be given to the working minor ports, (about 150 in number), but also efforts should be made to revive those minor ports which flourished in the past, which have now fallen into dis-use but which have some natural possibilities for development. As it is, the coast-line of India is very much deficient in natural harbours and creeks.

Wherever such natural harbours and creeks exist, special efforts should be made to give facilities for development of ports. By so doing, we shall not be concentrating prosperity in a few major ports, but shall be distributing it all along the coast-line. The Committee, therefore, recommend that the Ministry of Transport should convene a high-level conference with the representatives of the maritime States to review the schemes for development of minor ports. If the funds required exceed Rs. 5 crores as they are likely to be, some adjustment might be made from the funds ear-marked for the major ports. Also, the Committee reiterate their suggestion made in para 47 of their 48th Report that the recommendation made at the Second Meeting of the National Harbour Board to create a Port Development Fund by levying a surcharge of one anna per ton on all goods imported or exported through all ports, should be implemented.

58. Some of the important problems faced by the minor ports, requiring urgent solution on a planned basis are:

(i) Siltation of ports and entrance bars.
(ii) Survey of ports.
(iii) Navigational aids.
(iv) Communications (between the ports and the ships).
(v) Embarking and disembarking arrangements.
(vi) Handling facilities.
(vii) Suitable road and/or rail connections.

Local interests including the steamer companies using the ports may be consulted while drawing up plans of improvement.

D. Traffic Handled

59. Appendix III gives the traffic—imports and exports—handled at some of the minor ports during the years 1950-51 to 1954-55. The names of the Ports and the traffic handled by them during the year 1954-55, where it was more than 2 lakhs of tons are as under:—

Cuddalore	2,16,089
Tuticorin	5,19,670
Bhavnagar	3,10,669
Bedi	2,93,332
Okha	4,49,778
Kozhikode	2,68,768
Kakinada	2,80,280
Mangalore	2,70,217

60. The Committee are of the opinion that with the provision of additional facilities and suitable rationalisation of traffic, the intermediate, minor and sub-ports can successfully handle much more traffic and thus relieve chronic congestions that are occurring at some of the major ports.

IV. INTERMEDIATE PORTS

A. Introduction

61. As mentioned in an earlier Report, the officer on special duty who submitted a Report on the survey of Minor Ports in India in May 1951, suggested a sub-classification of the ports, then coming under the category of Minor Ports, on the following basis:

(1) Intermediate Ports: Ports which handle or have handled in the past one lakh of tons or more of cargo per year or are otherwise important.

(2) Minor Ports: Ports with an annual crago tonnage below one lakh but not less than 1500 tons or which have an importance for any other reason (such as passenger amenity customs or naval requirements etc.)

(3) Sub Ports: All the remaining Ports.

In accordance with this classification there are eighteen ports which have been classified as Intermediate Ports and the Committee propose to deal with each of these briefly. Incidentally, while on the subject, the Committee would reiterate their recommendation made in para 30 of their Forty-eighth Report, that the classification of other than Major Ports into intermediate Minor and Sub Ports should be given statutory recognition.

B. Andhra State

(a) *Kakinada Port*

General

62. The Port of Kakinada is situated on the Kakinada Bay, north of Godavari River. It is roughly 80 miles south of Vizagpatam and 370 miles north of Madras. The shore facilities are located in the Kakinada Canal.

63. The Port was very prosperous and thriving before World War II, the main items of trade being export of groundnuts and the import of petrol and mineral oil.

64. The port was closed to traffic during the war and in the post-war years the trade of the port dwindled to about 60,000 tons per year, roughly 30% of the pre-war figure. This was due to the prohibition placed on the export of groundnuts and the shifting of the oil trade to other ports. Since 1952, however, the port has steadily increased its trade to the imposing figures of 2,34,000 tons in 1954-55. During the current year this extra-ordinary rise is being

maintained. This increase in trade at Kakinada is due entirely to the export of iron ore through this port. Kakinada is favourably located with respect to the ore producing areas of Hospet, Bellary and Bezwada. The ore from areas near Bezwada is capable of being brought by road transport to the canal head at Bezwada and thereafter by inland water transport, to the port itself at cheaper freight rates. In view of the great demand of iron ore in foreign countries there is every reason to believe that this upward trend in ore traffic will be maintained at Kakinada in the immediate future.

Port Facilities

65. (1) Old passenger jetty on screw piles with timber decking, 150 ft. in length, now used as customs examination jetty. Depth alongside 6 ft.

(2) 383 ft. of wharf wall for the workshop constructed with reinforced concrete sheeters. Depth alongside 6 fit.

(3) A dry dock for port craft, length 165 ft. breadth 35 ft. The dry dock is equipped with two dewatering pumps actuated by 2 electric motors of 20 and 10 H.P. the two pumps working together being able to dewater the dry dock in 6 hours.

(4) Canal Water wharf 665 ft. long, depth alongside 3 ft.

(5) A port and customs office.

(6) Approximately 10 old timber jetties at both sides of the canal owned by private parties now being replaced by R. C. wharf wall.

(7) Stacking area for ore served by railway, total area 62,000 sq. ft.

(8) Several transit sheds and storage godowns owned by private parties.

First Five Year Plan

66. Under the First Five Year Plan, works consisting of repairs and replacement of timber jetties, reconstruction and improvement of workshop and the construction of 4 reinforced concrete jetties for ore were sanctioned at an estimated cost of Rs. 5,25,000. Except for the improvements of the workshop, it has not been possible to take up any of the other works. These works have been carried over to the Second Five Year Plan (Rs. 4,00,000) and the actual expenditure incurred was Rs. 49,000 only.

Second Five Year Plan

67. Under the Second Five Year Plan works costing Rs. 14,15,000, designed mainly to increase the ore handling capacity of the port, have been included.

(b) *Masulipatnam Port*

General

68. The port of Masulipatnam in the Andhra State is located about 195 miles north-east of Madras on the Bay of Bengal. The shore facilities are situated on the left bank of a tidal channel known as Salt Creek roughly 6 miles from its mouth. This creek is connected to Krishna River through Masulipatnam Canal. A pair of lock gates near the wharf protects the canal against the entry of salt water from the creek.

69. The port of Masulipatnam was an important trade centre until 1894 when a great tidal wave swept through the town resulting in great damage. During pre-war days export of groundnuts was an important feature at this port but this trade has since dwindled to nothing due to the export restrictions on this commodity. During the last few years, however, an export trade of iron ore amounting to about 60,000 tons has grown up.

Port facilities

70. (1) 2250 ft. of wharfwall of dry stone masonry on concrete foundations, depths alongside being 6″ at low water.

(2) 3 small wharves each 50 ft. in length located in Masulipatnam fresh water canal.

(3) Wide quay space for iron ore served by railway sidings.

(4) A port and customs office.

(5) 6 godowns parallel to the wharf 150′ from the edge of the quay belonging to private parties. Some of these godowns are rented to Government for the storage of grain, the remainder being practically empty.

First Five Year Plan

71. Under the First Five Year Plan the dredging of the bar at Masulipatnam using the suction dredger from Kakinada and the electrification of wharves at Masulipatnam were sanctioned. The former work has since been dropped and it has been decided instead to purchase a grab dredger for this purpose. The proposal for electrification of wharves has not been completed during the plan period, and Rs. 25,000 in respect of this work have been carried over. The actual expenditure incurred was Rs. 56,000 against an estimated expenditure of Rs. 1·75 lakhs.

Second Five Year Plan

72. Under the Second Five Year Plan works costing Rs. 8,95,000 consisting of the survey of the anchorage, improvements to the bar, provision of a tug, reclamation of low lying areas and the shifting of the present lighthouse have been included. In view of the delay

likely to occur for completing the standing works due to the necessity of collecting hydrographic data and undertaking a model study the total expenditure during the plan period is expected to be of the order of Rs. 3,95,000 only.

C. Madras State

(a) *Tuticorin Port*

General

73. Tuticorin, the most important Intermediate Port in the State of Madras, is located on the Gulf of Mannar roughly 100 miles from Cape Comorin. The port is an open roadstead, the anchorage being roughly 5 miles off shore to the east of Hare Island. Cargo is handled by lighters between ship and shore. The bay formed by Hare Island and Devil's point gives ample protection to the vessels from monsoonic weather conditions. The port is open to traffic throughout the year. The unique position of the port of Tuticorin explains why for decades it has been one of the largest ports in South India. It is situated well up the almost land locked Gulf of Mannar which is rarely visited by storm. The harbour itself has the shape of horse shoe with the opening towards the inside of the Gulf. It has, therefore, a fine natural harbour with calm water inshore throughout the year.

74. Though under the Government of Madras, the day to day affairs of the port are carried out by a Port Trust with the assistance of a port Officer and Secretary. The annual trade of the port is in the region of about 5,00,000 tons of cargo. The construction of boats and lighters is a speciality of this place.

Port facilities.

75. (a) One pier on screw piles for landing general cargo 315 ft. long and 37 ft. wide with two lines of metre gauge trolley tracks.

(b) One pier for landing general cargo founded on reinforced concrete piles 478′ long and 40′ wide with reinforced concrete bracings, timber beams and timber decking and provided with 3 lines of metre gauge trolley tracks.

(c) One small pier on screw piles having a length of 38 ft. and a breadth of 20 ft. for landing coal. The pier is not provided with trolley lines.

(d) Steel sheet piled wharf wall 1126 ft. in length along the fore-shore, depth alongside being roughly 10 ft.

(e) 44 Nos. of trolleys of 2½ ton capacity each for conveying goods to and fro between pier and sheds.

(f) Transit sheds having a total floor area of 68,080 sq. ft. and served by railway lines and roads.

(g) 54,000 sq. ft. of stacking area for coal and 70,000 sq. ft. for general cargo.

(h) One fire engine.

First Five Year Plan

76. No expenditure was incurred against the estimated expenditure of Rs. 4·70 lakhs in the First Five Year Plan.

77. The following works were carried out without central assistance directly by Port Trust.

1.	Purchase of a tug of 260 H. P.	Rs.	2,47,000
2.	New quarters for coal labourers	Rs.	3,480
3.	Water tank	Rs.	4,880
4.	A Steel Sheet piled wharf	Rs.	2,58,172
	TOTAL	Rs.	5,13,532

Second Five Year Plan

78. Investigations are now in progress by a Consulting Engineer regarding the feasibility of developing Tuticorin into a 20 ft. harbour. The Officer on Special Duty (Ministry of Transport) has recommended that provisional sum of one crore may be fixed for taking up this work subject to the results of the investigations being satisfactory and the recommendations of the Sethusamudram Committee now examining the feasibility of a ship canal between the Gulf of Mannar and the Palk Strait.

79. One of the first essentials, if the project is to be taken up, will be the purchase of a suitable dipper dredger which is unlikely to be effected within the first two years of the plan period. The dredging of the approach channel and the basin itself in hard rock may easily take up the remainder of the plan period.

Development

80. The National harbour Board in its fourth meeting recommended that the possiblity of developing Tuticorin on the east cost as a major port should be examined. This question of conversion of Tuticorin as a deep sea harbour is linked up with the Sethusamudram Project, which has for its object the construction of a ship canal through the Rameshwaram Island.

81. The proposal of the Madras Government for the construction of the ship canal was received in May, 1955 and in November, 1955 a Committee was set up to report on the feasibility and advantages of this Project. The Committee reported in April, 1956. Its findings were that both the ship canal scheme and Tuticorin deep sea harbour scheme were feasible from the engineering point of view and that the projects were closely interrelated and success of one depended on the other and the projects should be taken up during the Second Plan at a total estimated cost of Rs. 10 crores. The report was considered by the Government and arrangements for carrying out investigation for collecting certain additional data, *viz.* hydrographic survey of the region, boring tests and study of waves, are in hand. Final decision is exepected to be taken after obtaining these data.

82. The Committee are in agreement with the following conclusion of the Officer on Special Duty (Ministry of Transport) regarding development of Tuticorin.

> "In view of the present trade of more than 5,00,000 tons per year, there is every justification of developing Tuticorin into a deep sea port. As most of the coasters and steamers at present draw more than 20 feet a minimum draught of 30 feet will have to be provided."

(b) *Nagapattinam Port*

General

83. The port of Nagapattinam is located at the mouth of the river Kaduvayar in the Bay of Bengal, roughly 165 miles and 70 miles south of Madras and Cuddalore respectively. It is a sheltered lighterge port, the shore facilities being located on the left bank of the river.

84. Nagapattinam is an important port of the Tanjore district, of the Madras State. Prior to the war, the port was of considerable importance. Steamers on the Bombay-Rangoon and Karachi-Calcutta lines called regularly at this port. The Madras-Straits passenger steamers maintained a regular weekly service. At present, however, trade has dwindled to approximately 15,000 tons per year. Passenger service between the Straits and Nagapattinam, however, continues to thrive.

Port facilities

85. (a) 1,500 ft. of wharf wall, 1,000 ft. of which is of reinforced concrete sheet piles and the remainder of mass masonry. Minimum depth alongside is about 6 ft.

(b) 3 transit sheds having a floor area of 12,400 sq. ft.

(c) 2 large ramps for floating timber logs.

(d) Passenger facilities including waiting sheds, disinfecting shed, baggage shed, customs' shed, etc.,

(e) A port and customs office.

(f) Stacking areas for cargo.

First Five Year Plan

86. Under the First Five Year Plan works amounting to Rs. 2,63,000 were approved, but the expenditure incurred during the Plan period was only about Rs. 1,27,000.

In addition to approved works, the Minor Ports Organisation carried out works costing roughly Rs. 2,50,000 in effecting repairs to the damages caused by the cyclone in 1952.

Second Five Year Plan

87. Under the Second Five Year Plan works costing Rs. 20,11,800 have been proposed amongst which the main item is the construction of groynes for the entrance channel. In lieu of this, a revised scheme has been recommended by the Officer on Special Duty (Ministry of Transport) which has been included under the Plan, which incorporates a small pier with a mobile sand pump. This will result in a saving of Rs. 7,00,000 from the original estimate of Rs. 14,00,000. The proposed provision of a tug is also proposed to be deferred till the entrance has been improved. The total cost of recommended work will now be Rs. 10,00,000.

(c) *Cuddalore Port*

General

88. The port of Cuddalore is situated at the confluence of the rivers Paravanar and Gadilam, roughly 115 miles south of Madras. The shore facilities of this port are located along the bank of the Uppanar cross channel which connects the two rivers. The harbour is situated in the back-water which joins the sea at the South end.

89. Cuddalore is one of the most important intermediate ports of Madras State and handles approximately 2,00,000 tons of traffic per year. It is the main port of entry for coal required by the Southern Railway.

Port facilities

90. (i) 3,000 ft. of reinforced concrete sheet piles wharf wall for working lighters alongside; minimum depth 6 ft.

(ii) A dry dock 95'x32'x11' for effecting repairs to the dredger.

(iii) Several godowns belonging to private parties, situated parallel to wharf wall.
(iv) a port and customs' office.
(v) Ample stacking area for coal.

First Five Year Plan

91. Under the First Five Year Plan works amounting to Rs. 1,59,000 were approved, but the expenditure incurred during the plan period was only about Rs. 39,000.

Second Five Year Plan

92. Under the Second Five Year Plan works costing Rs. 29,08,000 have been proposed, amongst which the main item is the construction of groynes for the entrance channel costing Rs. 24,00,000. This work has been considered as necessary by the Officer on Special Duty (Ministry of Transport). An alternative design costing Rs. 15,00,000 has been included in the Plan. In view of the necessity, however, for undertaking investigations and model experiments before the design of the groynes can be finalised, it is estimated that an expenditure of Rs. 7,00,000 may only be incurred during the Plan period under this item.

D. Kerala State

(a) *Kozhikode Port* ....

General

93. The Port of Kozhikode (old name Calicut), an open roadstead, is located on the Arabian Sea roughly 76 miles north of Cochin and 120 miles south of Mangalore. The port of Kozhikode and the sub-port Beypore is administered by a port officer. It is the most important port in the Malabar district and handles roughly 2,50,000 tons of traffic per year. The port is open throughout the year, but during the monsoon in June and July, shipping operations are slack.

94. The port of Kozhikode is also of historical importance. Vasco De Gama landed at this port in 1498 and subsequently the British took possession of the town in 1650 after the Mysore wars.

Port facilities

95. I. *SOUTH PIER*

(1) The South Pier, founded on screw piles and subsequently encased in reinforced concrete is 596 ft. in length, width varying from 52 ft. to 28 ft. This pier is equipped with 3 trolley lines with necessary crossovers. The pier area is enclosed by a boundary wall.

(2) 21 platforms trucks or trolleys of 3 tons capacity each, for transporting cargo between shore and pier.

(3) Two open cargo sheds, seaward sides walled, 162' x 35' and 140' x 35'.

(4) 3 cargo sheds 72' x 37', 56' x 44' and 50' x 35'.

(5) A canteen for the labour by conversion of a portion of one cargo shed.

(6) Stacking areas with concrete paving having a total area of 39,000 sq. feet.

(7) Several store rooms, tally clerks' rooms etc.

II. *NORTH PIER*

(1) The North Pier founded on screw piles and recently encased in reinforced concrete 20 inches square, 532 ft. in length with a width varying from 52 ft to 28 ft. The pier is equipped with 3 sets of trolley lines on the seaward side and 2 sets on the landward stretch.

(2) 21 platform trucks or trolleys of 3 ton capacity for carrying cargo from shore to ship.

(3) Two open cargo sheds one located near the pier and the other behind the port and customs offices, size 60' x 35' and 80' x 35' respectively.

(4) Concrete paved stacking areas 5,900 sq. ft.

(5) Store Rooms.

(6) A small workshop.

(7) Port and customs offices.

(8) A signalling cabin and quarters for light-keepers.

First Five Year Plan

96. Works costing Rs. 3·63 lakhs were included under the First Five Year Plan to be carried out at Kozhikode. The actual expenditure incurred was only Rs. 1·24 lakhs.

97. Several works have been directly carried out by the Minor Ports Organisation though not included in the First Five Year Plan including the strengthening and electrification of both the piers, construction of a new cargo shed and an extension to the stacking area at north pier for a total expenditure of roughly Rs. 5,25,000.

Second Five Year Plan

98. Works costing Rs. 3,80,000 proposed by the Minor Ports Organisation to be carried out under the Second Five Year Plan, have been included in the Plan.

(b) *Alleppey Port*

General

99. The port of Alleppey, an open roadstead on the Arabian sea roughly 45 miles south of Cochin and 40 miles north of Quilon is an important port of Kerala State. The port handles an annual average trade of 23,000 tons.

100. The town of Alleppey is a prominent industrial centre where several coir and oil factories are located. The port is served by a canal and is connected by backwater to Cochin and beyond, upto Badagara in Malabar in the north and upto Trivandrum in the south. The presence of a mud bank off the coast near Alleppey which has the extraordinary property of tranquilising the seas over it, is a great advantage of Alleppey port. In those years when the mud bank which has a tendency to move up and down the coast envelopes the pier, cargo may be handled in complete safety in still waters during the south-west monsoon season, when the rest of the coast is subjected to severe monsoonic gales.

Port facilities

101. (a) A pier 1,270 ft. long, 21 ft. wide, founded on screw piles, with timber decking equipped with 8 pairs of trolley lines and cranes.

(b) 2 cargo sheds located on either side of the pier with 3 sides closed having a total floor area of 20,000 sq. ft.

(c) 2 open cargo sheds having a total floor area of 15,150 sq. ft.

(d) 6 godowns having a total floor area of 21,338 sq. ft. now rented out to the Government for storage of grains.

(e) A port and customs office.

(f) Trolley lines serving the pier, the cargo sheds and godowns with 130 nos. of 3 ton trolleys.

First Five Year Plan

102. Works estimated to cost Rs. 6·91 lakhs were sanctioned to be carried out under the First Five Year Plan. An amount of Rs. 1·07 lakhs has only been spent.

Second Five Year Plan

103. Under the Second Five Year Plan, a proposal for constructing a boat basin on the Alleppey coast was put forward. On examination this scheme was found to be economically not feasible. A total amount of Rs. 5,00,000 has been recommended by the Officer on Special Duty (Ministry of Transport) for inclusion under the Second Five Year Plan for extension and repairs to the pier and for providing devices for the safety of lighters during rough weather.

E. Mysore State

(a) *Mangalore Port*

General

104. Mangalore is one of the most important ports in the Mysore State. It is located on the Arabian sea roughly 196 miles south of Mormugao and 190 miles north of Cochin at the confluence of the rivers Netravati and Gurpur.

105. Ships lie in the open roadstead over one mile off shore and the port is closed during the monsoon.

106. The port was considered by the West Coast Major Port Development Committee as a possible site for a major port between Mormugao and Cochin. It was, however, not favoured mainly due to certain doubts regarding the possibility of maintaining a dredged approach channel at a reasonable cost. In view of the established trade at present at Mangalore and the prospects of the port, in serving the important Bhadravati district of Mysore, the Government of India referred the problem of the feasibility of maintaining a dredged channel to the Hydro-dynamic Research Station at Poona.

Port facilities

107. (1) Wharf walls with suitable ramps, having a total length of 4,050 ft. built of stone masonry.

(2) 3 transit sheds having a floor area of roughly 8,000 sq. ft.

(3) A dry dock for carrying out repairs of the suction dredgers.

(4) A workshop building, recently constructed.

(5) A passenger shed with latrines and other facilities.

(6) Port and Customs Offices.

(7) Concrete stacking areas for salt.

First Five Year Plan

108. Very little work has been done during the period of the First Five Year Plan at Mangalore, the expenditure incurred being only Rs. 25,000 against the estimated expenditure of Rs. 55,000. This was mainly due to the fact that decision had not yet been taken whether Mangalore was to be developed into a major port or not. Even as an important intermediate Port, it has to be developed. Facilities with this aim could, therefore, have been extended during the First Plan.

109. Several works not included in the Five Year Plan have been carried out directly by the Minor Ports Organisation, important items being the construction of a passenger shed, electrification of the North Reclamation area, and the survey required in connection with the model experiments.

Second Five Year Plan

110. Since no decision had been taken as to the future of Mangalore Port, which depended on the outcome of the model experiments undertaken at Poona, only those schemes which might be of benefit even if Mangalore is to be developed into a Major port have been recommended by the Officer on Special Duty (Ministry of Transport).

Development

111. The National Harbour Board in its fourth meeting recommended that the development of Malpe or Mangalore on the West Coast should be examined. The question was deferred till the results of the model experiments being carried out at the Central Water and Power Research Station, Poona were received and studied.

112. The report of the Poona Research Station on Mangalore which has been recently received, has indicated that the port of Mangalore can be developed into an all-weather port to admit steamships with draft upto 24 ft. by providing two groynes, 2000 ft. long placed 1250 ft. apart and that the channel, if dredged to an initial depth of 29·5 ft. would maintain sufficient depth to admit ships upto 24 ft. draft to enter and leave the port throughout the year and that the berthing facilities for steamships can be provided along the banks of Gurpur and Netravati rivers.

113. On a scrutiny of the results of the model experiments, the Development Adviser has suggested another design of the breakwaters etc. for experiments to the C.W. & P.C. Research Station Poona as he feels that this design may give even better results. While the Committee have no objection to further model experiments regarding the superior designs, they are of the opinion that since the feasibility of developing this port as an all-weather port to admit steamships with draft upto 24 ft. has been established, the scheme for adequate development of this port should be included during the Second Plan period. Much time has already been lost in preliminaries. Prompt steps should, therefore, be taken for carrying out necessary development works.

(b) *Karwar Port*

General

114. The port of Karwar is located on the southern end of Karwar Bay in the shelter of Karwar head in the Arabian sea. It is approximately 40 miles south of Marmugao. The West Coast Major Port Development Committee in 1949 investigated Karwar as a possible site for a major port between Marmugao and Cochin. Although Karwar has many features to commend it from the engineering point of view that Committee did not recommend Karwar due to several reasons amongst which were the probable dredging here of some magnitude, its geographical position in relation to the hinterland and the longer railway haul from centres of industry.

115. At present Karwar is a minor port which handles a cargo of about 5,000 tons per annum. It is also a port of call for the coastal steamers from Bombay to Cochin. Approximately 5,000 passengers pass through this port every year. The port is closed from 1st June to 15th September every year due to monsoon.

Port facilities

116. (i) A wharf wall constructed in stone masonry 800 ft. long located on the eastern side of Baitkol Cove, depths alongside varying from 3 ft. on the southern end of the wharf to 4'—6" at the northern end.

(ii) A jetty for landing passengers 90'x40' constructed in 1955 in reinforced concrete as a replacement to the old screw piled jetty.

(iii) Stacking area between the main road and the wharf wall ronghly 800'x100'.

(iv) An open customs shed.

(v) A passenger shed under construction for third class passengers, both for men and women and a canteen.

(vi) A customs and excise office which is also used as a port office.

First Five Year Plan

117. Works proposed under the First Five Year Plan estimated to cost Rs. 75,000 consisted of the provision of navigational aids and improving facilities for passengers. The latter work is now nearing completion. The provision of navigational aids, however, is being scrutinised by the Engineer-in-Chief, Lighthouse Department. The total carry over to the period of Second Five Year Plan is Rs. 62,500.

Second Five Year Plan

118. Works under the Second Five Year Plan include the construction of a transit shed for an estimated amount of Rs. 20,000.

119. The Committee suggest that the feasibility of converting this port into an all-weather port should be examined.

F. Bombay State

(a) *Okha Port*

General

120. Port Okha is situated at the mouth of the Gulf of Kutch on the north-western tip of former Saurashtra State and was the most important port in the ex-Bombay State; in fact the most developed minor port in the whole of India. Steamers of 27 ft. draught can be worked alongside the wharf at all stages of the tide. In spite of its close proximity to the Arbian Sea it is protected from the south west

monsoon and can be worked all the year around. Though endowed with natural features for the making of a good-harbour, Okha suffers from its unsatisfactory geographical position in relation to the hinterland and the other ports of Saurashtra. The immediate region served by the port is thinly populated and the bulk of the trade is oil and cement from the oil company operating at Okha and the cement works at Dwarka. With the development of the new port at Kandla, there is a move by the oil companies for shifting their field of operations to Kandla. If this scheme is put into effect there is a likelihood of the present oil trade at Okha of the order of about 2,00,000 tons being reduced to about 75,000 tons, this being the quantity that is expected to be required in the immediate hinterland. This will, however, be counter-balanced by the expansion of industries in the vicinity.

Port facilities

121. (1) A reinforced concrete pier capable of berthing at all stages of the tide steamers upto 26 ft. draught and having 27 ft. of water at L.W.O.S.T. This pier is 400 ft. in length and is connected with the main land by an approach road 500 ft. long. The pier is served by two railway tracks and several cranes.

(2) Two stream moorings where vessels of 20' and 16' draught can be berthed.

(3) 6 main sheds having a floor area of 95,000 sq. ft. with railway platforms on both sides and several other sheds including those at lighter wharf having a floor area of 47,700 sq. ft.

(4) A wharf for lighters 800 ft. in length the bed level alongside being 3 ft. above L.W.O.S.T. This wharf is being extended and dredged under the First and Second Five Year Plans.

(5) A mason wharf about 600 ft. long for country craft.

(6) Stacking place and open dumps inside the port estate having an area of 1,88,000 sq. ft.

First Five Year Plan

122. Works amounting to Rs. 20,00,000 were approved for port Okha in accordance with the recommendations made by Shri Nanjundiah in his report on the survey of the minor ports of India. Most of these works were taken up late in the plan period and the expenditure upto the end of the plan was about Rs. 2,00,000 the carry over to the Second Five Year Plan being Rs. 18,00,000.

Second Five Year Plan

123. Under the Second Five Year Plan works of modernisation and improvements estimated to cost Rs. 13,00,000 have been recommended for execution by the Officer on Special Duty.

124. The Committee are in agreement with the following observations of the West Coast Major Port Development Committee:

> "Port Okha will continue to serve its immediate hinterland and for this purpose it is well laid out and efficient port. With the establishment of new and expanding industries in the vicinity, there is no reason in fact why port Okha should not continue to expand."

(b) *Broach Port*

General

125. The port of Broach is located on the Narmada river 32 miles inland from the gulf of Cambay and is about 166 miles coastwise north of Bombay. The annual cargo handled by the Port during 1954-55 was of the order of about 55,000 tons. At present only sailing vessels call at Broach mostly for coastal trade. The port is open throughout the year but during the south-west monsoon period traffic is restricted and limited to ports in the Gulf of Cambay.

Port facilities

126. There is at present no port facilities at Broach, except for the Central Excise and Customs Office which is also used as the port office and a roadway running along the bank, about 12,00 ft. in length.

First Five Year Plan

127. The work of providing reinforced concrete jetty and transit shed is in progress.

Second Five Year Plan

128. No work has been proposed by the State Government under the Second Five Year Plan at Broach. Except the carryover of Rs. 2,50,000 in respect of the construction of a reinforced concrete jetty and transit shed. It is significant to note that the rail route between the West and East Coasts of the Gulf of Cambay is very circuitous and tedious, involving a break of gauge where as the distance by sea is very much less (*i.e.* less than one sixth). The Committee therefore, suggest that the feasibility of establishing a regular ferry service both for passenger and cargo between Bhavnagar and Broach might be examined. If the scheme is found to be workable additional facilities required for the purpose should be provided in the Second Plan.

129. At one time Broach was a very prosperous port. With a few additional facilities, including proper dredging and rationalisation of traffic, it should be possible to restore, at least a part of its past glory.

(c) *Ratnagiri Port*

General

130. The port of Ratnagiri is located on the Arabian sea in Ratnagiri Bay on the northern side of the mouth of Ratnagiri Creek. The

port is about 120 miles south of Bombay coast-wise and is an important terminal for coastal passenger traffic from Bombay. Due to its importance as a passenger terminal, Ratnagiri is classified as an intermediate port. The annual number of passengers passing through the port during 1954-55 was 2,46,000. The port is closed to traffic from June to middle of September every year.

Port facilities

131. (1) A passenger jetty in Ratnagiri Bay, length 1000 ft. width 12 ft. partly founded on piles and partly founded on caissions. The extreme end practically dries at low water, confining the use of the Jetty, to periods other than low tide.

(2) Waiting room for 1st Class, Second Class and Third Class passengers.

(3) Cargo handling beach on the right bank of the Ratnagiri creek near its mouth.

(4) A customs office which is also used as port office.

First Five Year Plan

132. The works proposed under the First Five Year Paln, *viz.*, the provision of a beacon light at Mirya are still being scrutinised by the Engineer-in-Chief, Lighthouse Deptt. and the amount of Rs. 18,000 has been carried over to the Second Five Year Plan.

Second Five Year Plan

133. Under the Second Five Year Plan works designed to improve passenger and cargo handling facilities at an estimated cost of Rs. 3,00,000 have been recommended by the Officer on Special Duty and included in the Plan.

134. It is understood that this port has been showing very peculiar sign of erosion at the shore and Rajiwada Creek, as a result the jetty is silted and even the passenger boats drawing a draught of 1½ feet are not able to go alongside the jetty built for the purpose of embarkation and disembarkation of passengers. The Committee suggest that this problem of erosion should be given prompt attention, causes therefor ascertained and remedial measures taken.

(d) *Bhavnagar Port*

General

135. The port of Bhavnagar is located near the head of the Gulf of Cambay on the west coast. This is one of the most important ports in Saurashtra and is the only port where the deep draught steamers can be worked alongside. The port has developed at two different sites the old port known as the 'Steel Jetty' which is used by country craft and the new port or the 'Concrete Jetty' for deep sea vessels. Both the old and new ports are well equipped with quay cranes and have ample storage and transit space. Export trade comprises oil-seeds, cotton and grain and import trade, wool, cloth, iron and timber.

Port facilities

136. (i) *The new port or the 'Concrete Jetty'*

1. An entrance dredged to 6 ft. below L.W.O.S.T. and having a length of roughly 5,000 ft. and a bottom width of 100 ft. minimum, which is approached by ships at high water slack.

2. A turning circle 500 ft. minimum diameter and dredged to 6 ft. below L.W.O.S.T.

3. The berthing basin having a length of roughly 1000 ft. and width 100 ft. minimum and dredged to roughly 15 ft. below L.W.O.S.T.

4. A reinforced concrete jetty having a length of 882 ft. and width of 42 ft. safe load on jetty 5 cwt. per sq. ft. and 12 ton railway axle load. The jetty is connected to the shore by two approaches 200 feet long and 28ft. wide with railway track.

5. Two loading tracks, flush with the quay 880 ft. each, withdraw off at each end.

6. Two transit sheds with floor at quay level and having no loading platforms. The sheds are constructed in steel framing with corrugated sheet side walling and asbestos cement sheet roofing. The floor is stone paved.

(ii) *The old port or the 'Steel Jetty'*

1. The steel piled jetty built parallel to the bank of the Creek for lighters or small craft upto say 600 tons connected to the shore by trucking and railway approaches. The dredged depth alongside is approximately 12 ft. above L.W.O.S.T. Safe load on jetty 5 cwt. per sq. ft. and 12 tons railway axle load.

2. Transit and storage sheds having a total area of 93,600 sq. ft.

3. Additional 48 sheds in the port area and 3 godowns in the city with a total storage accommodation of 5,99,570 sq. ft.

First Five Year Plan

137. No work was carried out under the First Five Year Plan with central assistance. From the port's own resources several improvement works were executed at Bhavanagar, such as providing hume pipeline from Gogho circle to concrete jetty, gunting the concrete jetty, dredging at Mahuva, timber jetty at Mahuva etc.

Second Five Year Plan

138. At Bhavnagar port works costing Rs. 1,02,50,000 were proposed. Apart from the water pounding scheme, these works can be divided into three broad categories: (i) works of maintenance and replacement, (ii) works of modernisation and improvements, and (iii) schemes designed to provide additional port facilities. Out of these works under item (i) and (ii) are necessary; the cost of maintenance and replacement schemes will, however, be met from the

port's own revenue. The officer on Special Duty (Ministry of Transport) has recommended that central assistance may be given to works of modernisation and improvement to those which are designed for increasing the cargo handling capacity subject to the proviso in the latter case that no work should be taken up till the increase in trade is well established. Any temporary increase in trade can easily be accommodated by the present capacity of the port. The estimated cost of these works is Rs. 9,46,000 under item (i) Rs. 7,06,000 under item (ii) and Rs. 11,28,000 under item (iii).

Development

139. The West Coast Major Port Development Committee after a critical study of the problems of the Bhavnagar port recommended—

(i) Steps must be taken to improve the dredging so as to obtain at least 28 ft. of water at the berths, and keep the entrance channel clear.

(ii) Surveys and plans should be prepared for the construction of one additional berth.

140. In regard to the implementation of these recommendations, the Ministry stated that it has not been possible to get a depth of 28 ft. water by dredging the channels. No action has so far been taken for the construction of berth. The Committee reiterate their earlier suggestion that these recommendations may be given effect to early.

141. There was some misunderstanding in foreign shipping circles regarding the usefulness of the Bhavnagar Port. The following facts, published by the Saurashtra Government about this port are, therefore, of special interest:

> "A few masters are afraid of their ships losing draught, with consequential damage. This fear is confined only to those who are possibly misinformed or who are unacquainted with the physical conditions of the Port. Steamers with 27'—6" draught have safely worked at the Concrete Jetty. However, it is worth-while knowing the basic facts.
>
> The Port with its tidal range upto 34 ft., maintains at the Concrete Jetty about 20 ft. of water at the lowest low tide, which hardly lasts a few minutes. Except for this the water depth is always greater. Again the bottom at the berths consists of slurry flowable silt and soft mud. When, therefore, a deep draught vessel takes her berth, and the tide recedes, she floats with less draught. That this is not a loss in draught amounting to harmful grounding will be clear when it is realised that (i) the vessels can be moved easily and (ii) the reduction in draught is not equal to the fall in tide but is less. At low levels when more buoyancy is available the vessel have less volumetric displacement and hence less draught.

If however, for any reason a vessel of deep draught does not use the Concrete Jetty there is available a sheltered anchorage where vessels, without any draught restrictions, can work at any period of the year. Normally this should not be necessary unless when both the berths of the Concrete Jetty are occupied. During the last four years between April, 1949 to March, 1953, 387 Steamers upto 27'—6" draught, have worked alongside with absolute satisfaction."

142. Continuous and efficient dredging is an important problem facing this port. The following observations of the officer on Special Duty (Ministry of Transport) in his report submitted in 1951 are worth noting.

"Difficult though the problem of dredging and maintaining deep water berths is it can be tackled but the deterioration of the Gulf of Cambay and the approach to the Bhavnagar port are more serious and attention should be focussed on them.

Enough has been said to show the complexity of the problem. The available data should now be studied and correlated and specific recommendations based on such studies and observations made."

143. No serious efforts yet appear to have been made to study and tackle effectively the problem of siltation at this port despite the fact that the above officer in his Report had recommended in 1951, that Okha, Tuticorin and Bhavnagar might be considered for development as major ports, if as a result of industrial development, the country was able to export and expand in overseas trade and finances permitted of such development. This question of development into a major port can be considered only in the Third Plan. In the meantime, the Committee recommend that effective measures based on the advice of properly qualified foreign experts, should be taken to tackle successfully the problem of siltation during the Second Five Year Plan period itself.

In view of the favourable geographical position of this Port on the Gulf of Cambay, and in view of a distinct hinterland which it serves (as indicated in Appendix G of the Report of the West Coast Major Port Development Committee), provision of adequate facilities for the development of this port deserves special attention. In particular the following facilities should be provided expeditiously in consultation with the Administrative Officer (Ports) of ex-Saurashtra State:

(i) Coal berth.
(ii) one or two additional berths for general cargo.
(iii) facilities for handling iron ore.
(iv) development work regarding lock-gates.
(v) reclamation works.
(vi) Improved facilities in the Port workshop for undertaking major repairs to drergers and for building barges.

(e) *Veraval Port*

General

144. The port of Veraval is located on the south-west coast of ex-Saurashtra State on the Arabian sea. The entrance to the harbour is protected by a breakwater on the west side and by main land on the north and east forming an artificial bay. This port is an important fishing centre and is noted for boat building. The lighters from ports in the vicinity take shelter at Veraval during the monsoon season.

Port facilities

145. (1) A breakwater roughly 1650 ft. in length constructed in limestone masonry projecting into the sea which gives shelter to the inner harbour.

(2) Two boat basins having wharfage accommodation for 14 country craft or lighters. At each wharf ramped approaches are also provided.

(3) One dry dock capable of accommodating the harbour craft. The gate is of the lifting type having a weight of 12 tons. Repairs to harbour craft are carried out during the south-west monsoon season.

(4) Several godowns for the storage of cargo, a railway godown for booking goods direct and open transit sheds. The sheds and wharves are served by railways.

(5) An automatic tide recording station.

(6) An outer 'Khadi' and an inner 'Khadi' with a swing bridge for the use of country craft. In the outer 'Khadi' there is accommodation for 6 vessels and in the inner 'Khadi' for 5 vessels.

(7) Godowns for the storage of petroleum products.

(8) A port and customs office building.

(9) Several stacking platforms.

(10) Passenger shed and amenities.

(11) A sea wall extending from the breakwater upto 1,700 ft. on the west side, which gives protection to valuable state property.

First Five Year Plan

146. The works approved under the First Five Year Plan were estimated to cost Rs. 1,77,000. Against this, an expenditure of Rs. 1,87,854 was incurred during the Plan period.

Second Five Year Plan

147. Works costing Rs. 6,28,000 are proposed to be carried out at Veraval Port under the Second Five Year Plan. These works may generally be grouped into four categories:

(a) works of modernisation and improvements;

(b) works of maintenance and replacement;

(c) works designed to increase the cargo handling capacity of the port; and

(d) works relating to the development of facilities for the fishing industry.

The Officer on Special Duty (Ministry of Transport) has recommended that out of these, Central assistance may be given to those works listed under (a) and (c) subject to the proviso that in the latter case, works should be undertaken only if trade is firmly established to any-where near 3,00,000 tons per annum, the estimated cargo handling capacity of the port. The cost of works relating to the development of fisheries should not be met from the provision for minor port development. The works of maintenance and replacement may be carried out through the State's own resources.

148. It does not matter so much whether the funds are allotted from the Centre or by the State. The Committee, however, are of the opinion that works relating to the development of fisheries should be executed during the Second Plan. They also recommend that a special study should be made of the boat building industry at this port as well as other ports where it is well-established, and suitable encouragement given in developing this industry. The Committee propose to deal with this subject again in their subsequent Report. The feasibility of converting Veraval into an All-weather port should be examined.

(f) *Porbandar Port*

General

149. Porbandar, another intermediate port of importance in ex-Saurashtra is located at the mouth of a small creek on the Arabian sea. It is exclusively a lighterage port, the anchorage of deep sea vessels being in the open sea about two miles off shore. The port facilities are built mainly on the left bank of the creek which takes a sweep from the north, flows parallel to the coast and finally enters the sea in southernly direction. An island in the middle of the creek has been formed with reclaimed material. The petroleum godowns are located on the right bank. There is a submerged rock near the entrance marked by buoys. The right bank near the entrance is also of rock with an overlay of sand. The port is closed during the south-west monsoon period from 15th May to 15th September.

Port facilities

150. (1) Wharf wall of lime stone masonry roughly 4200 ft. long for the berthing of country craft. A part of this wall is used by the floating craft belonging to the port. Roughly 1,000 ft. out of the

length is approach wall which cannot be used for berthing. There are 14 ramps from the wharf wall along which country craft can be worked.

(2) Twenty-one transit sheds and godowns inclusive of two petrol godowns served by railways; total area roughly 50,000 sq. ft.

(3) The port office, passenger shed, open stacking ground, timber pond etc.

First Five Year Plan

151. Under the First Five Year Plan, works totalling Rs. 16,90,000 were approved by the Government of India to be carried out with central assistance. The progress made so far has been poor. The amount spent during the First Five Year Plan was only Rs. 3,51,931.

Second Five Year Plan

152. Under the Second Five Year Plan, the State Government has proposed works costing Rs. 18,33,000. These works generally fall into four categories (a) works of modernisation, (b) works of maintenance and replacement, (c) works designed to increase the cargo handling capacity of the port, and (d) works relating to the development of facilities for fishing trade. Works of modernisation have been recommended for inclusion in the plan. The cost of works relating to maintenance and replacement is to be met from the ordinary revenue of the port. Works relating to the development of facilities for the fishing industry have to be examined by the Ministry of Food and Agriculture. With regard to the works designed to increase the cargo handling capacity of the port, it is pointed out that the present trade is 1,60,000 tons, roughly half the capacity of the port. Though these works have been provisionally included in the Plan, it has been specified that none of these should be taken up till the trade has actually increased and firmly established to anywhere near the capacity of the Port. The Committee are of the opinion that trade will follow the facility. New cement factories and a big chemical factory now being established are bound to increase the importance of the Port. Hence, the provisional inclusion of the work in the Second Plan under item (c) should be taken as final.

(g) *Bedi Port*

General

153. The port of Bedi is one of the five most important ports in ex-Saurashtra. It is a well equipped lighterage port, situated near the head of the Bedi Creek on reclaimed ground roughly 4 miles from the Gulf of Kutch. The port is open to traffic throughout the year; but at low tides the port is dry, thereby restricting the movement of tugs, lighters and country craft. Vessels approach the port

at high tides both during the day and night. These vessels sit on roughly 2 ft. of soft mud overlying a hard stratum, during the low tide period. This soft mud acts as a cushion and prevents damage to the vessels.

Port facilities

154. (1) *Jagatjit Dock*

A tidal basin with mud bottom which dries at low water springs, with quay walls of stone masonry.

(a) East quay 992 ft. x 30 ft. wide, served by single loading track 919 ft. long. This can be plumbed by cranes.

(b) West quay 800 ft. x 40 ft. served by 2 loading tracks 700 ft. each with single draw-off and which can be plumbed by cranes.

(c) A centre pier with 1400 ft. of quay. 80 ft. wide and having one loading siding 500 ft. with a single draw-off.

(d) North quay 240 ft. long and 50 ft. wide, served by one 10 ton steam portal crane.

(2) *Country Craft Quay*

On the east side of Jagatjit Dock constructed in stone masonry, length 850 ft. and of variable width, in two stretches at right angles and founded direct on shallow rock. The mud bottom in front of the quay is dry at low tides.

(3) *Oil Berth*

Oil berth situated on the north side of the Jagatjit Dock with quay walls of masonry. The mud bottom in front dries at low water springs. This berth is used for the discharge of edible oils.

(4) *Two dry docks and one barge basin*

One dry dock is used by the Indian Navy and is provided with two pairs of mitre type gates so that it can either be used as a wet or dry dock. The other dry dock and barge basin are fitted with lifting type gates and are used for repairs to port craft.

(5) *Transit sheds and godowns*

Ample transit sheds and godowns with 7 transit godowns, 2 semi-covered transit godowns, having an area of 93,126 sq. ft. and 3,993 sq. ft. respectively and in addition 14 storage godowns with a total area of 2,35,297 sq. ft.

First Five Year Plan

155. Under the First Five Year Plan works costing Rs. 6,58,000 were approved by the Government of India to be carried out with

central assistance at Port Bedi. This amount excludes the cost of one dredger and hopper barges and the dredging required to be carried out at Bedi. The progress so far obtained has been poor, expenditure incurred during the Plan period being Rs. 2,92,293.

Second Five Year Plan

156. Under the Second Five Year Plan works costing Rs. 29,56,000 have been proposed by the State Government to be undertaken at Bedi. These works generally may be classified into three categories; (a) works of maintenance and repairs (b) works of modernisation, and (c) works designed to increase the cargo handling capacity of the port. It has been proposed that the works of maintenance and replacement under item (a) above should be carried out from the ordinary revenue of the port. The Officer on Special Duty (Ministry of Transport) has recommended that central assistance may be given to those works under items (b) and (c) subject to the proviso that in the latter case, the works should be undertaken only if trade is firmly established to anywhere near the maximum of about 5 lakh tons per annum, the estimated cargo handling capacity of the port. In the rapidly developing economy of the country, this idea of delaying the provision of additional facilities till 'trade is firmly established', does not appeal to the Committee. The trend of traffic handled during the last few years, and the increase of industrial activities in the hinterland should be regarded as a sufficient indication.

(b) *Navlakhi Port*

General

157. The port of Navlakhi is situated at the junction of Sui and Versamedi Creeks and is another important intermediate port of ex-Saurashtra State. It is essentially a lighterage port, the steamer anchorage being in Hansthal Creek, at the head of the inner Gulf of Kutch. The port is roughly 27 miles north east of Bedi and 30 miles from the port of Kandla. A regular ferry service runs between Kandla and Navlakhi.

158. The port has been developed both in the Sui and Versamedi Creeks, the former site being generally used by country craft and passenger launches and the latter by port craft and lighters.

Port facilities

159. (1) *Sui Side*

10 timber piled jetties with low tide approaches for the use of the country craft, except one which is exclusively reserved for passenger traffic between Kandla and Navlakhi. These jetties are served by railways.

(2) *Versamedi Side.*

(a) A steel sheet-piled lighter wharf equipped with cranes and railways for lighters.

(b) Slipway and works for the repair of port craft.

Transit sheds and godowns

(a) Transit sheds and godowns, well-built with steel framing and asbestos cement roofing, having a floor area of approximately 2,66,000 sq. ft.

(b) An open tenement adjacent to lighter berth having a floor area of 4,40,000 sq. ft.

First Five Year Plan

160. Under the First Five Year Plan works costing Rs. 1,22,500 were approved to be carried out with central assistance. These works have been completed.

Second Five Year Plan

161. The State Government proposed works costing Rs. 1,59,700 to be carried out at the port of Navlakhi during the period of the Second Five Year Plan. These works may generally be grouped in three categories: (a) works of modernisation and improvements, (b) works of maintenance and replacement, and (c) works designed to increase the cargo handling capacity of the port.

162. The works of maintenance and replacement are likely to be carried out through the port's own revenues. As far as works designed to increase the cargo handling capacity of the port are concerned, the Officer on Special Duty (Ministry of Transport) felt that there is no justification at present with the steadily falling trade at this port, for carrying out any such work. He recommended the works relating to modernisation only for inclusion in the Plan. The Committee suggest that the feasibility of utilising Navlakhi as a transhipment port for Kandla should be carefully examined.

(i) *Mandvi Port*

General

163. Mandvi Harbour opened to traffic in 1882 is situated on the west bank of the River Rukmavti where it debouches into the Gulf of Kutch. The harbour is protected from heavy seas by a breakwater jutting into the sea. Due to inadequate land communications in the interior, the port serves as a distributing centre. It was the most important minor port in the ex-Kutch State.

Port facilities

164. (1) A breakwater 1600 ft. in length from the shore jutting into the sea, the first 1150 ft. being of gravity type wall and the remaining stretch made up of walls pitched side by side.

(2) A groyne of loose rubble masonry on the east side of the approach, projecting into the sea.

(3) A wharf wall of mass stone masonry on the west side for berthing country craft.

(4) An open transit shed roughly 20 ft. x 15 ft.

(5) Two covered storage godowns 70' x 29' and 100' x 50'.

(6) Port and Customs Offices and an Observatory located on the roof of the office building.

(7) A new passenger shed recently built.

(8) Amenities for passengers including canteen, latrines, etc.

First Five Year Plan

165. Out of the sanctioned amount of Rs. 2,65,000 for Mandvi, the expenditure actually incurred was only Rs. 80,000.

Second Five Year Plan

166. Out of the works proposed for Mandvi under the Second Five Year Plan for Rs. 14,00,000, works costing Rs. 7,10,000 have been approved for inclusion in the Plan.

G. Development of Intermediate Ports into Major Ports.

167. Development of ports to cope with the expanding export and import traffic, and encouraging coastal trade to relieve the transport bottleneck is essentially a national problem. This is the reason why the Committee have suggested earlier that the development of Intermediate ports should be taken over by the Centre. There is no doubt that at least three major ports in the country *viz.* Calcutta, Bombay and Madras are working under heavy pressure. Hold ups to ships and cargo are quite a frequent occurrence. One day's hold up of a ship means a loss of approximately Rs. 5,000 to 8,000. The annual loss on this account would probably work out to several crores of rupees. Proper development of Intermediate ports and intelligent and well-planned rationalisation of traffic between major and intermediate ports would, therefore, be in the interest of the major ports themselves, as also in the National interest. During the course of discussions which the sub-Committee of the Estimates Committee had with the Chairman, Bombay Port Trust, the latter agreed with these views. He cited a few instances, where due to lack of proper rationalisation, cargo which should have gone to other ports had come to Bombay.

168. In the expanding economy of the country, the demand for additional port facilities is bound to increase. It would, therefore, be advisable to plan steps for converting some of the more important intermediate ports into major ports. Due to limited funds available, such a programme can only be included in the Third Plan. In this connection the Committee are in agreement with the recom-

mendation of Shri Nanjundiah, Officer on Special Duty (Ministry of Transport) that Okha, Tuticorin and Bhavnagar may be considered first for such development. The Committee would also suggest that the port of Paradip be added to this list. In regard to Bhavnagar, the Committee reiterate their earlier recommendation made in their Seventeenth Report that it should be provided with a B.G. rail connection, so that it can play its role effectively as an important port, and relieve pressure on Bombay. The Committee suggest that a B.G. rail link should also be provided to Bedi.

169. The Committee further recommend that the list of Minor ports should be examined carefully periodically, and more important of them should be brought in the list of intermediate ports.

170. One facility that should be invariably given to intermediate and some of the minor ports is that they should be connected with a National Highway by a pucca road.

H. Rationalisation of Traffic amongst different major, intermediate and minor ports

171. Congestion at Major Ports has, of late, been a frequent occurrence and is caused by a variety of factors such as:

(i) bunching of ship arrivals;

(ii) labour troubles;

(iii) limitation in rail and road transport for movement of goods to and from ports;

(iv) weather and tidal conditions; and

(v) Inadequate berthing, handling and stacking facilities.

172. As a long term measure, port capacity is being increased by the execution of various development works under the First and Second Five Year Plans. The somewhat difficult conditions which recently prevailed are mainly due to the sudden increase in imports in recent months, particularly of iron and steel and heavy machinery—a type of cargo which is difficult to handle. Various administrative and operational measures have been taken to deal with the situation. These include the establishment by the Port Trusts of dumps in Bombay and Calcutta for the reception of iron and steel which cannot be cleared and moved rapidly to their ultimate destinations, appointment of special traffic officers to co-ordinate and control all work relating to the quick clearance of docks and quay sides, rationalising customs and other documentary procedure and the provision of mechanical handling appliances such as fork lifts and mobile cranes. The Director of Rail Movements, Calcutta has been appointed as a co-ordinating officer to watch the arrivals of iron and steel, cement and food cargoes at all the ports and programme their movement to their destinations. Even with these measures already taken, periodical congestions continue to occur. The country, thus, faces the paradoxical situation wherein some of the major ports

suffer congestuons resulting in hold up to ships and cargoes, whereas the port capacity of some of other ports like Cochin, Kandla, Bhavnagar, Okha etc. is not fully utilised.

173. The Committee have, therefore, come to the conclusion that the Ministry of Transport has not yet given much serious thought to the diversion of traffic from the congested Major Ports to the Intermediate and the Minor Ports which can easily handle the traffic with a little increase in the existing facilities or even by providing a few additional facilities. The Committee, therefore, recommend that the Ministry of Transport should give top priority to the rationalisation of traffic amongst different Major, Intermediate and Minor Ports and take concrete measures for diversion of traffic to ports which can easily handle them. Some intermediate Ports like Bhavnagar and Bedi can handle much bigger traffic, if B.G. rail connection is provided. This will add considerably to our Port capacity and will greatly reduce congestion at the Port of Bombay. Special facilities should be provided at some of the Ports like Kandla and Bhavnagar where iron ore is being handled in an increasing measure recently.

V. MISCELLANEOUS

A. Hydrographic Surveys and Conservation of the Coast line

174. The following pertinent observations of the Ports (Technical) Committee, 1946, regarding the conservation of the coast line are worth recording:

> "The Bombay minor ports, some of them, suffer severely from silting or erosion. For instance, the Committee saw a clear example of the former at Vengurla where the old Customs Cargo jetty is no longer accessible to cargo boats except at high tide owing to the silting up of the bay. Of the latter, that is erosion, they saw a striking example at Ratnagiri where rapid incursion of the sea aided by the river is taking place and fallen trees and ruins of walls and buildings litter the either the one or the other steps have been taken to arrest either the one or the other and it is clear from the 1937 report on the minor ports that several other ports similarly affected by the Natural changes.
>
> "The Committee feels that this is a matter of some importance, greater perhaps than should be left to Provincial Governments who may or may not be fortunate enough to have at their service expert engineering advice and other resources which will enable them to deal correctly with their coastal silting and erosion problems. The matter left in inexperienced hands can easily become disastrous as it bids fair to do at Ratnagiri unless something is done without delay.
>
> "It would, therefore, venture to suggest that the transference to the Centre of this subject of coast-protection might well be considered by the Central Government with the Provincial and Maritime State Governments. As a matter of fact the Committee would recommend that the conservation of the coast line of India should be the direct concern of the Central Government."

175. The above valuable observations of the Ports (Technical) Committee do not appear to have received any attention. A proper hydrographic survey is a prerequisite for the conservation of the coast line as also for the development of minor ports. This point was again stressed by the Officer on Special Duty, Ministry of Transport, who submitted his report on the survey of minor ports in India in May, 1951 in the following terms:

"Another important item, information regarding which is necessary before any scheme of expansion and development of a Port, is undertaken is a hydrographic survey of the approaches to the Port and in some cases the anchorages. Many of the gulfs, creeks and river mouths have also to be surveyed systematically not only for the use of the river or Creek Ports wherever such exist but also for the river conservancy and conservation of the coastline and in some cases with a view to examine the possibility of opening up the Inland water for navigation purposes".

176. The survey programme of Hydrographic Branch of Indian Navy for the last 9 financial years is given in Appendix IV.

177. The surveys are carried on by season *i.e.*, October to April. The following surveys are expected to be progressed in the next five years:—

Gulf of Kutch Gulf of Cambay Malabar coast Gulf of Mannar Palk Strait Andamans & Nicobars	Plus various project surveys which are put up from time to time by State Govts. and the Ministry of Transport.

In the 1955-56 Survey season, the under-mentioned surveys were carried out:

(1) Gulf of Kutch—Navinar to Takra (Triangulation only).

(2) Pondicherry Anchorage.

(3) Gulf of Cambay.

(4) Vizagapatam Harbour (Work has been completed this year).

(5) Cuddalore.

(6) Ports in Andaman Islands.

178. The Committee understand that the following surveys will be carried out during the 1956-57 season:

(a) Progress Surveys in the Gulf of Kutch;

(b) Full survey of the Port of Jaghau (Godia Creek);

(c) Survey in Palk Strait, working towards the area required to be surveyed in respect of the Sethusamudram Project;

(d) Survey of Port Meadows in the Andamans;

(e) Survey of Beypore;

(f) Survey of Badagara;

(g) Completion of Surveys in Bombay Harbour of areas left over in the previous surveys; and

(h) Progress surveys in the Gulf of Cambay.

179. Marine Surveys were carried out on various dates from 1829 onwards and marine survey of the coast line of India is a continuous and unceasing process. The annual survey progress is decided upon by the Hydrographic Survey sub-Committee of the National Harbour Board taking into consideration the operational requirements and requirements of the Ministry of Transport.

180. In the last meeting of the Hydrographic Survey sub-Committee, the Chief Hydrographer was asked to prepare a detailed memorandum in consultation with the Nautical Adviser to the Government of India setting forth the additional number of survey ships required, their rough cost, the additional number of personnel, the exact training to be imparted etc.

181. The Committee regret to note that the hydrographic survey of the coast line of India is progressing at a snail's pace. At the present rate it would take several decades before the survey of the entire coast line is completed.

182. The Committee consider this very unsatisfactory and recommend that suitable measures should be taken to complete the hydrographic survey of the entire coastline of India within a period of ten years. The Committee also recommend that the conservation of the coastline should henceforth be the responsibility of the Union Government as recommended by the Ports (Technical) Committee, 1946.

B. Dredging

183. Dredging of Ports and approaches is a problem common to many ports in India. This problem can be classified into three types:

(i) Simple dredging of silt and sand or droppings in the inner harbours and alongside wharves and in comparatively calm approach channels;

(ii) The dredging of sand bars at the sea entrace to the ports such as Masulipatam, Mangalore, Mandvi etc.;

(iii) Dredging in alluvial soil and very fine silt which comes with the flow tide.

184. Shri Nanjundiah in his Report had observed in 1951 that the creation of a pool of dredgers for minor ports was a sound idea. Despite its limitations, specially the shortage of dredgers and their limited mobility, he had suggested formation of two dredgers pools; (i) one for Madras Port (ii) one for the Saurashtra and Bombay Ports.

185. He had rightly stressed that it was difficult to make out a full financial justification for the outlay on dredgers, but that they were essential for the upkeep of the Ports.

186. The United Nations Technical Administration at the instance of the Government of India deputed two dredgers experts for examining the problems of siltation of minor ports and advising the Government on measures to be taken to solve the problems. The terms of reference suggested were as under:

> "The experts will have to visit the important ports examine in detail the problem of dredging in all its aspects and make recommendations as regards the steps to be taken. The experts will also have to advise as regards dredging requirements and whether pooling of dredgers for Indian ports will be possible".

The experts arrived at New Delhi on 21-2-1953, completed the survey on 8-5-1953 and submitted the report prior to their departure from India on 17-5-53. The recommendations made by the experts are given in Appendix V. The report of the experts was examined by the Ministry, and it was felt that the recommendations were not precise or complete, in the absence of reliable technical data, and that action on the lines suggested by them would involve prohibitive expenditure. At the suggestion of the National Harbour Board Meeting held in November, 1955, another expert Committee of State Port Officers, the O.S.D. (Minor Ports) etc., was set up to examine the feasibility of one or two dredger pools for the use of minor ports. While on the subject, the Committee would like to draw special attention of the Ministry of Transport to the following observations and recommendations of the U.N. experts' Committee:

(i) The National Harbour Board should have permanently at its service, a technical organisation with representatives of the Board;

(ii) In connection with dredging, immediate attention should be given to the following recommendations made in a recent Report on the Minor Ports of India:

(a) That the existing ports be classified under Intermediate, Minor and sub-ports.

(b) That a decision be reached as to the size of the ships that would use the ports.

(c) That some ports be closed and that the Ministry of Transport be consulted before new ports are opened.

(d) That hydrographic surveys be made where required.

(e) That technical advice should be secured by the creation of a Central Ports Organisation.

(iii) While some definite recommendations were made by Shri Nanjundiah in his Report of 1951, as to the purchase of the equipment and execution of ports works, the main subject of the Report was the establishment of the policy for minor Port operation. The attitude of the Central Government, the National Harbour Board or the State Organisations towards the Report is not known but it is believed that very few of the measures suggested have been adopted, and in the absence of any definite object, the task of reporting on country-wide projects in connection with any particular phase of port development is extremely difficult and can only lead to suggestive rather than positive recommendations.

(iv) *Bombay State*: should have a proper port department; much surveying required at Okha for the present. Dredging of port Okha should be given first priority; the purchase or rental of a suitable seaworthy bucket ladder dredger and the ancillary machinery is the only equipment required.

(v) *Saurashtra State*: Improvement of mechanical shop facilities at Bhavnagar. Reconditioning of the equipment available at present. The purchase of a 24 inch cutter hydraulic pipe line dredger should be considered for Bhavnagar. If a new machine is purchased either the "Reclaimer" or the "Sudharu" should be entirely rebuilt and sent to Bedi or Navlakhi on the Gulf of Kutch.

(vi) In the future, if new (dredging) equipment is purchased digging depth capacity should be given due attention. .....There is no reason why dredging equipment should not be operated on a 24 hour day basis rather than on 8 hours, as generally practised throughout India.

The Committee recommend that the suggestion given under item (v) above should be implemented straightaway.

187. The summary of the recommendations of the Expert Committee in regard to the creation of the "Dredger Pools" is as under:

"A pool of dredger consisting of two suction dredgers and one bucket dredger with the necessary auxiliary equipment and crafts. It should be purchased and maintained by the Government of India. The total cost of the above unit is estimated to Rs. 1·9 crores.

This pool of dredgers would undertake all the other harbour dredging in the minor ports.

In some minor ports where conditions are favourable, the internal dredging may be carried out by these dredgers.

At all other minor ports, internal dredging should be carried out by smaller units stationed in the ports themselves under the direct control of the respective port Officers who will be in a position to evolve the specifications for these units.

For the dredging carried out, in the adjustment of cost between the Centre and the respective Ports, only the operational cost should be taken into account without providing for the capital and depreciation cost of the plant. The operational cost of the three dredging units per annum is anticipated to Rs. 9 lakhs.

For the operation of the dredging pool, an organisation may be set up under the Ministry of Transport. This organisation will be headed by one marine engineering superintendent who will be responsible for the maintenance of the craft and for drawing up a programme of priorities for dredging in consultation with the respective State Governments.

These three units should be based at the ports of Visakhapatnam, Bombay and Kandla respectively.

The dredger which is proposed for the minor ports in the gulf of Kutch may also be utilised for the dredging on the bar at Kandla if it becomes necessary. . . ."

188. The expert Committee also examined the feasibility of dredging the fishing ports. They have stated that the number of ports, exclusively for fishing is not high and that therefore this dredging could also be undertaken by the pool of dredgers already recommended.

189. The Committee are glad that, at long last, the decision to form a nucleus dredger pool for minor ports has been taken and that a sum of Rs. 1 crore has been set apart in the Second Plan for this purpose. They hope that the question of the purchase of dredgers and formation of the pool will be pursued vigorously and that the benefit from the pool will accrue to the minor ports during the Second Plan period itself. The question of suitably expanding the pool to meet the requirements adequately should be reviewed periodically. The feasibility of stationing a unit at one of the intermediate ports of Saurashtra which may have proper technical personnel and advice available for the purpose should be carefully examined in view of the number of Ports on the Saurashtra coastline.

C. Problems of development of certain Ports

(a) *Geonkhali Port*

190. The case for the establishment of a subsidiary port at Geonkhali near Calcutta has been advanced and considered more than once since 1953, when Shri P. E. Mehta, consulting Engineer

(Geology Mining) Calcutta, prepared a memorandum on Geonkhali development project and submitted to the Ministry of Transport. While submitting this memorandum the following advantages of Geonkhali were enumerated:

(i) An average draft of 45 ft. throughout the year.

(ii) It is an all-weather port, not affected by the monsoonic storms.

(iii) It is not affected by bore tides, as Calcutta.

(iv) Only two bars (Balari and Auckland) have to be negotiated before anchoring at Saugor.

(v) It would remove the congestion of the railway traffic at Calcutta.

(vi) It would be best suited for export of minerals from Bihar, Bengal and Orissa.

(vii) A new mechanically loading port can be developed at this site at a much lower cost than a new port in any other place.

(viii) Larger ships can come to Geonkhali than at Calcutta, and there are good natural facilities for dry docks and other installations.

(ix) The new port will avoid the dangerous sandy deposits (11 bars) of the Upper Hooghly which are a constant danger to navigation.

(x) The time of loading and the outward journey to the sea will be much less than at Calcutta.

(xi) Little maintenance as to dredging will be necessary at the new port, as the current at its site is advantageous and very little silting will take place.

191. Early in 1953, the Scheme was discussed at a Conference presided over by the Chief Minister of West Bengal and attended by the representatives of Ships and Steamer Companies. The consensus of opinion of that Conference was that the consideration of the scheme should await the results of the development plans of the port. The scheme was again considered at a meeting held in the Planning Commission in April 1955 when it was decided not to proceed with it for the following reasons:

> "In the first place the Geonkhali port, if developed, could be expected only to handle export traffic in iron ore and coal. There was no prospect of any return cargo from Geonkhali to the interior. Secondly, the problem at Geonkhali is that of building up entirely new port facilities and this would involve heavy capital costs. It would be necessary to go in for an expansive dock system and for loading and unloading equipment which will involve works on a scale much higher than that included in the development

programme at Calcutta Port works which are designed to meet all the anticipated traffic requirements of the hinterland of Calcutta Port. Thirdly, there is the question of providing special rail facilities to cater for Geonkhali. So far as the Kharagpur line is concerned, the Railways would be required to put a third line and additional junction arrangements. Moreover, traffic from B.N. Railways expected to be carried to Geonkhali would have to pass through the Liloöah bottleneck and would thus create a difficult situation. It is true that some years back the B.N. Railways were in favour of development of Geonkhali Port but with the proposed development of steel plants, the coal from Bengal-Nagpur region could be expected to be utilised by these plants and, therefore, there would be a little export coal available for Geonkhali from this region. All coal for export would have to be railed through the existing dock system. As an alternative to Geonkhali Port, therefore, it would be advisable to develop the Vzagapatam Port and increase further the capacity at the Calcutta Port with an investment of Rs. 4 or 5 crores. This would save an expenditure of Rs. 15 crores what was then roughly estimated as the cost of development of Geonkhali. Present indications are that this will be very much an under estimate."

192. The reasons given above need a careful reconsideration. For instance originally when this scheme was considered there was no possibility of return cargo in the immediate future. In view of the changed circumstances of the heavy industrialisation programme, the import of cement, steel and capital goods might be able to offer return cargo partially at least. Similarly, in the case of ores for export, the Lilooah bottleneck does not come in. The coal from Jharia can come in *via* Adra thus avoiding the Lilooah bottleneck. In case of coal from Ranigunj, which has to pass through Lilooah, the Durgapur canal can be utilised, and thus Lilooah bottleneck avoided.

193. The Bengal National Chamber of Commerce submitted a memorandum to the Secretary, the Ministry of Transport, New Delhi as recently as on the 29th October, 1956, suggesting that the question of development of a subsidiary port at Geonkhali be investigated in detail by an expert committee. The following new arguments offered in support of this scheme by the Chamber merit careful consideration:

"As a result of Partition of India and except for the export of Jute and Tea, a very large percentage of traffic that has now to be handled by the Calcutta Port either originate, or is destined to be delivered, on the west side of the Hooghly. The docks and jetties of the Calcutta Port are on the other hand all situated on the eastern side of the

river. As a result, severe strain is likely to be felt by the Calcutta Port Commissioners Railway and the Eastern Railway in handling all this traffic. Any further increase in the capacity of the Port should, therefore, be made preferably on the west side, and the scope for providing additional facilities on the west of the river should be examined and all avenues for expanding the Calcutta Port in this direction should be first explored".

194. The following observations of the World Bank Mission, who recently visited the country, in their report on the "Current Economic Position and Prospects of India", are worth recording:

> "It might be particularly worthwhile to investigate the feasibility of establishing a fully mechanised ore and coal handling port on the lower Hooghly below Calcutta. This might provide facilities more easily accessible to coal and iron ore mines more than those of Visakhapatnam, through which it is now planned to direct much of the increase in ore export".

195. The Committee are glad to note that it has since been agreed that it would be worthwhile asking the American Expert Team to visit Geonkhali for further investigations and submit a preliminary report on the lines they had done for the Railway system in India. If the preliminary report shows that the scheme of having a subsidiary port at Geonkhali is feasible, the Committee would suggest that steps might be taken for a detailed survey of the scheme being undertaken for the inclusion of the scheme in the third Five Year Plan. The Committee were given to understand that Geonkhali would also eventually serve as a suitable site for locating a shipbuilding yard.

(b) *Paradip*

196. The Orissa Government have for the past few years been considering the possibility of constructing a new major port in their State. At their instance, during 1948-49, the Central Water and Power Commission carried out surveys at the mouth of the Dhamra River (the northern arm of the Mahanadi delta) for suitable site for a Port. Subsequent surveys at the middle (Mahanadi River) and southern arm (Devi River) indicated a better site at Paradip at the mouth of the Mahanadi River.

197. In 1950, the Central Water and Power Commission requested a group of French Consulting Engineers to send a Mission to India to advise *inter alia* on the choice of the most suitable site for a deep sea Port at the mouth of the Mahanadi. This Mission, after necessary investigation, agreed with the Central Water and Power Commission that the Mahanadi mouth was the only suitable site on the East Coast of India for the development of a new major port. This Mission estimated the cost of a Port there at Rs 7:35 crores, inclusive

of the cost of 2,000 tons dredger, construction of breakwaters, two berths and two sheds, dredging of channels through the bar and between breakwater, rectification of padding of the river, but exclusive of the cost of construction of a railway line between Cuttack and Paradip and deepening of existing navigation canals. The annual maintenance cost was estimated at Rs. 10 lakhs for dredging, maintenance of breakwaters and port working expenses. The Mission considered it essential, before the construction of the port was taken in hand, to construct models for deciding on the best alignment of breakwaters, location of Port, prevention of wave action in the Harbour and prevention of accumulation of sand by littoral drift at the entrance of the harbour. They estimated the cost of these model tests at Rs. 10 lakhs and the time these tests would take, at about two years.

198. Surveys and model studies as recommended by the French Experts are in progress. Towards the cost of these, the Central Government promised the State Government loans upto Rs. 11.12 lakhs. A loan of Rs. 7.30 lakhs has already been given to the State Government upto 31-3-56. The State Government has incurred an expenditure of Rs. 7.50 lakhs upto the 31st March, 1956.

199. Recently, the Orissa Government have entered into an agreement with Kinoshita and Co. Ltd., of Japan with a view to preparing a project report *inter alia* for the development of Paradip Port in order to facilitate the export of iron ore from that port. The Japanese Company who have sponsored the survey work are bearing the cost of the survey which is without any commitment from the State Government. The Japanese Experts will submit their project report to the Orissa Government for their consideration. The State Government will in turn show the report to the Government of India. If the report is found acceptable, the question of development of the port will be considered by the State Government in consultation with the Government of India.

200. The Officer-on-Special-Duty (Minor Ports) of the Ministry of Transport recently visited the Orissa Minor Ports and has recommended certain schemes for the Orissa Minor Ports including Paradip at an estimated cost of Rs. 23.50 lakhs under the Second Five Year Plan. So far as Paradip is concerned, the scheme includes provision of jetties or quay walls for lighter cranes; trolleys and ore tubes; water supply, electricity, road approaches from Paradip Port site, acquisition of land and levelling and filling at an estimated cost of Rs. 20 lakhs.

(c) *Pondicherry Port*

201. The design, drawings and estimates for the new pier at Pondicherry Port have been prepared and financial sanction for Rs. 29.42 lakhs for the project issued. The pier will be enlarged and improved in about 2 years or less and then the Port will be able to handle 2 or 3 lakhs of tons of traffic per year.

(d) *Point Calemere*

202. The Committee were given to understand that Point Calemere on the South-East Coast is a suitable site for the development of a port and that this site being only about 30 miles from the nearest point in Ceylon would serve as a useful outlet for trade with Ceylon. The Committee suggest that a quick traffic survey may be worked out for this site, and if the trade prospects are bright, suitable facilities may be provided for handling the traffic that could legitimately come to this port.

D. Standardisation of Port Dues

203. One of the recommendations of the Officer-on-Special-Duty, in his report on "survey of Minor Ports in India", 1951, was that a certain measure of uniformity in Port dues may be brought about. The Committee were informed by the Ministry that necessary data on the subject has been collected and the work of processing has been entrusted to the Special Officer at Cochin Port. In view of the delay that has already occurred, the Committee suggest that this question may be finalised expeditiously.

NEW DELHI;
The 2nd March, 1957.

BALVANTRAY G. MEHTA,
Chairman,
Estimates Committee.

APPENDIX 1

The functions of the Landing & Shipping Fees Committee and constitution and powers of the Port Conservancy Boards in the Madras State are:

Functions of the Landing & Shipping Fees Committee

1. They will recommend the rates at which Landing and Shipping fees should be levied.
2. They will sanction refunds of Landing and Shipping Fees if they are satisfied that the refund claims are in order.
3. They may incur contingent charges within the sanctioned allotments for the year provided such orders are consistent with the orders of Government for the time being in force relating to any special items of expenditure.
4. They will be consulted as regards provision in the budget estimates for items of expenditure against any Landing and Shipping Fund.
5. Any expenditure proposed to be incurred by the port authorities against the Landing & Shipping Fund will be referred for concurrence to the Landing and Shipping Fees Committee.
6. The proceedings of the Landing and Shipping Fees Committee will be published in the District Gazette free of charge.

Constitution & Powers of the Port Conservancy Boards

1. Under Section 7 (i) of the Indian Ports Act, 1908 (Act XV of 1908) the Government can appoint some officers or body of persons to be the Conservator of a Port. The Board as the Conservator of the port exercises all the powers specified in Sections 8 to 16 of the Indian Ports Act 1908 and it is administratively subordinate to the State Port Officer.
2. The Port Officer will be the Dy. Conservator of the Port and the Board may from time to time delegate to him any of its powers as conservator and may also modify or withdraw such delegation. In cases of emergency the Dy. Conservator may in his discretion exercise any of the powers conferred by law as the conservator though the same has not been delegated to him. He should however report his action for the approval of the Board at its next meeting.

3. The following rules govern the constitution of these Boards:

(a) Nominated members will hold office for a period of three years and will be eligible for reappointment at the end of that period provided other suitable persons who have not previously served on the Board are not available. The Collector of the District will submit to Government through the State Port Officer his recommendations regarding the members to be nominated.

(b) Any non-official member who is absent for six consecutive meetings will vacate his seat but can be reinstated by the Chairman of the Board concerned.

(c) Four members will form a quorum.

(d) The Collector or sub-Collector at the Port, as the case may be, shall be the Chairman of the Board and the Port Officer, its Vice-Chairman.

(e) The Board shall meet at least once in a month for the transaction of ordinary business and a copy of the proceedings of each meeting with a transaction of the same in the language of the district shall be forwarded within 3 days to the Collector of the District for publication in the District Gazette at the cost of the Board.

4. The Port Conservancy Board exercises the function of Landing & Shipping Fees Committees at the Ports of Nagapattinam and Kozhikode.

(a) They supervise all works such as maintenance and dredging carried out at the cost either of the local Landing and Shipping Fund or of the Minor Ports Fund not specially entrusted to Public Works Department.

(b) The State Port Officer will consult the Boards before framing his budget proposals in regard to the Minor Ports Fund and will endeavour to embody its recommendations in the budget as far as possible.

(c) They can sanction estimates for original works and repairs to buildings, docks and other property of the local Landing and Shipping Fund with the exception of dredgers, launches, barges, punts and boats upto a limit of Rs. 500 in each case provided that allotment for the expenditure in question exists in the budget or that a reappropriation is made under proper sanction to meet it and provided also, in the case of buildings, that they are not borne on the books of the Public Works Department.

(d) Proposals regarding repairs and improvement to dredgers, launches, barges, punts and boats should be submitted by the Board for the approval of the State Port Officer and the Government.

(e) They can enter into contracts for the purchase and supply of stores and materials paid for from the Landing and Shipping Fund.

(f) They may on the recommendation of the Port Officer sanction the appointment or removal of menials such as peons, lascars etc. paid for from the local Landing and Shipping Fund in cases where the appointment is non-pensionable and maximum pay does not exceed Rs. 18 per month.

APPENDIX II

Schemes for Development of Minor Ports during the First Five Year Plan

Brief particulars of the various schemes, contemplated during the First Plan, for development of Minor Ports are given below:—

(a) Madras State

Under the First Five Year Plan, improvement works costing Rs. 8,82,000/- were approved by the Government of India to be carried out with Central assistance. Those works related to the ports of Cuddalore, Nagapattinam, Kozhikode, Mangalore and Badagara. Most of these works are now under execution. Details in regard to each individual port are given below:—

(i) *Cuddalore*

(1) *Construction of jetties for handling coal along the coal creek*

At present coal is being handled along the main wharves in the Uppanar Channel which is roughly 2000 ft. away from the coal stacking areas. The proposal is to construct 9 reinforced concrete jetties jutting into the coal creek at an estimated cost of Rs. 80,000/. The work is expected to be commenced in the near future.

(2) *Provision of a small workshop with equipment*

The proposal is to set up a workshop at an estimated cost of Rs. 97,500/- for undertaking repair works of the port craft and shore gear at Cuddalore as well as the manufacture of spare parts etc. for the various other minor ports of the State. The work is expected to be commenced shortly.

(3) *Improved lighting facilities for night work*

The work was completed at a cost of Rs. 10,833/-

(4) *Construction of slipway for hauling of pontoons*

A slipway for the handling of the small steel pipe line pontoons used for reclamation work is proposed to be constructed alongside the existing dry dock. Tenders have been invited for the work. The estimated cost of the work is Rs. 30,000/-. During the First Five Year

Plan period the following works were carried out at the port directly by the State Minor Ports Organisation without Central assistance:—

(a) *Repairs to dry dock.*—The sole floor was renovated with suitable slopes and a sum pit; the gates were also thoroughly repaired and new planks and copper sheets fixed. The expenditure incurred is Rs. 12,448/ (Estimated amounted Rs. 13,000/-).

(b) *Repairs to Wharf Wall.*—The wharf wall had no fendering arrangements. The southern portion of the wall has now been protected with wooden fender piles and beams. Roughly Rs. 8,500/ had been expended on this work.

(ii) *Nagapattinam*

SANCTIONED WORKS UNDER THE FIRST FIVE YEAR PLAN WITH CENTRAL ASSISTANCE

(1) *Provision of a seaface wall and diversion groyne*

The Kudavayar before its entry into the sea runs for a distance of ½ mile parallel to the coast after taking a short bend. This stretch of the river near the bend was orginally open to the sea. During the occurrence of cyclonic weather conditions in the sea coupled with floods in the river, there is a tendency for the sand spit to breach. By the cyclone in November 1952 this spit was completely breached resulting in damage to vessels berthed in the inner harbour. The present proposal is to construct an adequate sea wall to prevent such an occurrence in the future. The work is estimated to cost Rs. 4 lakhs. Tenders are being invited and work is likely to be commenced by the beginning of the next year.

(2) *Replacement of south groyne after cyclone*

The proposal involves the reconstruction of a portion of the south groyne using steel sheet piles which collapsed during the 1953 cyclone. The work was completed in 1953. (Estimated cost is Rs. 69,000/-).

(3) *Realignment of displaced steel sheet piles in the south groyne*

The restoration work described in item (2) above was wrecked during the north-east monsoon. This estimate provides for the removal of those dislocated and damaged piles and the driving of new piles along another alignment. This work has been completed. (Estimated cost Rs. 60,000/-).

(4) *Electrification of wharves*

This proposal provided for electric lighters in the wharf area and has since been completed at a cost of Rs. 4,700/-.

(5) *Provision of covered shelter for visitors*

Work is in progress. Probable expenditure is Rs. 9,200/-. No works were carried out at the port directly by the Minor Ports Organisation without Central assistance during the First Five Year Plan period.

(iii) *Tuticorin*

No works were carried out with Central assistance under the First Five Year Plan at Tuticorin. The following works were carried out without Central assistance under the First Five Year Plan directly by the Port Trust:—

(1) A tug of 260 H.P. was purchased recently for towing lighters to and fro between anchorage and the piers. Expenditure incurred is Rs. 2,47,000/-.

(2) New quarters for coal labourers were completed for an expenditure of Rs. 3,480/-.

(3) A water tank in the port area was constructed during 1953-54 at a cost of Rs. 4,880/-.

(4) A steel sheet piled wharf on the southern side of the pier was completed in 1954-55 at a cost of Rs. 2,58,172/-.

(iv) *Coondapur*

No works were proposed under the First Five Year Plan. Several construction works have, however, been carried out by the Minor Ports Organisation outside the Five Year Plan up to a value of Rs. 1,30,000/-.

In case of Hangarkatta, Pamban and Dhanushkodi Ports, no work was proposed under the First Five Year Plan.

(v) *Ponnai*

No improvements to the port were contemplated under the First Five Year Plan. The Minor Ports Organisation has, however, carried out certain works which were not included in the Plan *viz.*, the construction of a stone groyne 1400 ft. long, a well, latrine etc. for a total cost of Rs. 56,000/-.

(b) Mysore State

(i) *Mangalore*

Following are the details of the works sanctioned under the First Five Year Plan with Central assistance and the present position in regard to them:—

(1) *Construction of workshop and improvement of equipment*

Estimated amount is Rs. 40,000/-. Workshop buildings have already been put up near the site of the dry dock. Purchase of equipment had, however, been deferred till such time as a decision was made with regard to the development of Mangalore as a major port.

(2) *Lighting the reclamation area*

The estimated cost is Rs. 15,000/-. Tenders have been called for this work which is expected to be commenced in the near future.

(3) *Realignment and reconstruction of north wharf wall*

This work is estimated to cost Rs. 2½ lakhs. The work has been deferred till the outcome of the model experiment now being conducted at Poona is known. This work will not be necessary if a decision is made to develop Mangalore into a major port.

(4) *Shifting of Lighthouse*

The estimated cost of the work is Rs. 25,000/-. The work has been deferred until a decision is taken to develop Mangalore as a major port.

Several works not included in the First Five Year Plan have been carried out directly by the Minor Ports Organisation, important items of which are the construction of a passenger shed, electrification of the North Reclamation Area and the survey required in connection with the model experiments at Poona.

(ii) *Malpe*

No work was carried out under the First Five Year Plan. A total amount of nearly Rs. 50,000/- was, however, spent by the Minor Ports Organisation for the construction of a reinforced concrete passenger jetty, extension of passenger shed, provision of groynes in the boat channel and extension of the Port Office building.

(iii) *Karwar*

The works carried out with Central assistance at the Port of Karwar include construction of passenger shed, waiting room, improvement to Koney lighthouse and Provision of lighted buoys. Construction of passenger shed at an estimated cost of Rs. 18,000/- is nearing completion. The improvements to Koney lighthouse and the provision of lighted buoys estimated to cost of Rs. 75,000/- and 50,000/- respectively and these schemes are under the scrutiny of the Engineer-in-Chief, Lighthouses.

(iv) *Bhatkal*

At Bhatkal the schemes proposed are the construction of passenger shed at a cost of Rs. 20,000/- the necessary land for which has been acquired and the work is about to commence and a provision of lighted buoy estimated to cost Rs. 80,000/- is still under the scrutiny of the Engineer-in-Chief, Lighthouses.

The improvements in the minor ports of Kumata and Honavar Schemes included provision of bearing light on shore and eonstruction of Transit Shed respectively, the former being under scrutiny and the latter is nearing completion.

It may be mentioned here that except in the case of Mangalore and Malpe where works have been carried out by the States from their own resources, no other work has been carried out by the State at other ports.

(c) Ex-Saurashtra State

(i) *Bhavnagar*

No work was carried out under the First Five Year Plan with Central assistance. From the port's own resources, several improvement works were executed at Bhavnagar. Details of important works are given below:

Name of work	Estimated cost	Progress
	Rs.	
Special repairs to fender bars	9,000	Work completed.
Repairs to Bund	10,000	do
Gunting the concrete jetty	70,000	do
Special repairs to Barge Basin at Bhavnagar	87,300	Work in progress.
Provision of 9" diameter 'C' class hume pipeline from Gogho circle to concrete jetty	2,66,200	Work completed.

(ii) *Bedi*

The following works were sanctioned under the First Five Year Plan with Central assistance:

Labour quarters.—The estimated cost of the work is Rs. 2,50,000 and the work is in progress.

Shifting of wireless station to a place within the port limits.—Estimated to cost Rs. 10,000. Work has been completed.

Crane track along dry dock.—Estimated cost is Rs. 12,000. The proposal involves the extension of the crane track alongside the dry dock to enable the crane which is now used for lifting the gate, also to lift the machinery etc. out of the boats under repair. This work is kept pending till the surfacing of the adjoining roadway with stone sets, now in progress is completed.

Stone pitched pavement roads.—Estimated cost is Rs. 42,000. The work has since been completed.

OVER-HEAD WATER STORAGE TANK WITH NECESSARY HYDRANTS AND PIPELINE

Estimated cost is Rs. 92,000. The proposal involves the construction of a 20,000-gallon overhead tank at an elevation of 27' above ground level. The supply will be procured from the corporation. The water from this tank, in addition to its use for firefighting will also be used for drinking. The contract has been awarded and the work is in progress.

TRANSIT AND STORAGE GODOWN RENOVATION

Estimated cost is Rs. 2½ lakhs. The proposal involves through renovation of two transit sheds which were built 30 years ago. The work has not yet been completed.

The following works were carried out by the State Minor Ports Organisation directly from the resources of the States.

Work of filling in timber pond estimated to cost Rs. 48,000 has been completed and the extension of railway sidings estimated to cost Rs. 44,000 involving the extension of railway sidings to the petroleum godowns, is being negotiated with the Railway authorities. A dry dock gate costing Rs. 54,000 has been completed.

(iii) *Veraval*

The following works were sanctioned with Central assistance under the First Five Year Plan:

(1) *Removal of boulders*

Estimated cost is Rs. 25,000. The boulders are a source of danger to navigation. It was therefore decided to remove the boulders and demarcate the channel by providing guide marks. Work is in progress.

(2) Improvements to sailing craft beaching facilities were estimated to cost Rs. 24,450 and the work is nearing completion.

(3) The proposal to provide a stone pitched payment costing Rs. 61,000 involves the paying of the present roads with granite stones sets, which are very cuitable for heavy traffic. The works is in progress.

(4) An open shed at a cost of Rs. 17,500 has been completed in June, 1955.

(5) Provision of storm warning signals at Veraval was estimated to cost Rs. 1,166. The work proposed includes the modernisation of existing storm signals at the port in accordance with the instructions of the Meteorological Department. Major portion of the work has been completed.

The following works were carried out without Central assistance under the First Five Year Plan directly by the Minor Ports Organisation:

The proposal involves the construction of a sea wall or wharf wall in the inner Khadi to give additional wharfage accommodation and beaching facilities for country craft.

The building of the retaining wall at an estimated cost of Rs. 1,01,000 on the outer Khadi to prevent the beach slipping in, has been taken up and completed.

Rock cutting from the bed of the harbour involving an expenditure of Rs. 5,234 has been carried out.

The port has purchased machinery worth Rs. 10,986.

A moulding shed has been constructed at an expenditure of Rs. 5,937.

An automatic tidal gauge cabin has been constructed near the breakwater for Rs. 3,037.

(iv) *Navlakhi*

Sanctioned works under the First Five Year Plan with Central assistance are as follows:

Provision of two grab buckets for the crane for silt removal—

Estimated cost is Rs. 35,000. Work is in progress.

Dredging in the creak:

Estimated to cost Rs. 87,500.

The dredging work is in progress.

Works carried out without Central assistance under the First Five Year Plan directly by the Minor Ports Organisation are:

The barge is intended for the supply of coal and water to steamers. An order has already been placed for the barge. The estimated cost is Rs. 80,000.

Six double type quarters at an estimated cost of Rs. 1,04,000 are now complete.

The three old electric generators were insufficient and accordingly two new generators are proposed to be installed at the Port. Estimated cost is Rs. 1,13,000.

Water pumping set, estimated to cost Rs. 10,000, has already been ordered. Replacement of passenger launch engine, estimated to cost Rs. 40,000, is expected to be completed shortly. Reviewing, pipe line for water supply arrangements are in hand.

(v) *Porbandar*

Sanctioned works under the First Five Year Plan with Central assistance:

(1) Deepening channel by rock blasting, at the cost of Rs. 1,50,000 was included and the work is in progress.

(2) Stone pitched pavement, *i.e.*, surfacing of kutcha roads within the port area with stone sets, estimated to cost Rs. 42,000, was sanctioned and work is expected to start shortly.

(3) Construction of new godown at the cost of Rs. 40,000 is expected to start in the near future.

(4) Amenities to passengers for and from Africa include water supply, sanitary arrangements, provision of latrines, electric lights etc. Estimated cost is Rs. 6,000. Work is nearing completion.

(5) Construction of Sea wall (Wharf wall for country craft) costing Rs. 2½ lakhs is in progress.

(6) Order has been placed for one 100-ton dumb steel barge, the estimated cost of which is Rs. 1,50,000.

(7) Order has been placed for one 300 H.P. Motor tug, estimated to cost Rs. 6,75,000.

The following works were carried out without central assistance under the First Five Year Plan directly by the Minor Ports Organisation:

(1) *Overhauling of dredger and change of hull.*

Estimated cost is Rs. 2,00,000. The proposal has since been abandoned and the possibility of purchasing a new dredger is under examination.

() Stone-pitched pavement—Estimated cost of Rs. 11,000. The proposal is to surgace the roadway from the jetties to the godowns with stone stes.

(3) *Hopper barge*

Estimated to cost Rs. 1,35,000 was purchased in 1952.

(4) *Additional lighters*

Estimated to cost Rs. 38,000. Orders have been placed for the lighters.

(vi) *Mahuva*

(1) Works of extension of the wharf for another 400' is nearing completion. Estimated cost is Rs. 90,000.

(2) Stone-pitched pavement estimated cost is Rs. 11,000. The proposal is to surface the roadway from the jetties to the godowns with stone sets.

Work is nearing completion.

(3) Protection works on the opposite bank consist of training the creek opposite the jetties for obtaining a deeper channel.

Estimated cost is Rs. 20,000. Work is in progress.

(4) Improvements to navigational marks is nearing completion. Estimated cost is Rs. 2000.

(vii) *Sika*

In Sika Port navigational improvements and lighting work were carried out with central assistance under the First Five Year Plan, the cost of work was Rs. 12,000.

(viii) *Salaya*

In Salaya Port improvements in landing facilities, a wharf wall, provision of transit shed, approach Road and Railway siding were included in the First Five Year Plan. The works have been partially completed; the Estimated cost of the works is Rs. 92,000.

(ix) *Mangrol*

Sanctioned works under First Five Year Plan with central assistance were:

(1) Removal of sand and rock at the entrance of the harbour, and Estimated to cost Rs. 24,000, has been completed.

(2) Compound wall at Mangrol Port on Western side of the port near petrol godown, which has been completed. Without central assistance, the following works were executed during the First Five Year Plan.

(1) Order has been placed for new Engine for Jyoti launch estimated cost of which is Rs. 15,000.

(2) Rock cutting work estimated to cost Rs. 8,000 has been completed.

(d) Ex-Bombay State

(i) *Okha*

(1) Electric power supply. The original proposal envisaged the provision of two 150 k.w. generators to provide more electric power to the port. The work is no longer necessary as the power house belonging to the port has since been transferred to the Electricity Board which has undertaken to provide additional power to Port Okha.

(2) Wharf for lighters. Estimated cost is Rs. 4,00,000.

(3) Work regarding the strengthening of pier has been completed at the cost of Rs. 60,000.

(4) The work of dredging could not be taken up due to non-availability of suitable dredger. Work is therefore to be carried over to the Second Five Year Plan. Estimated cost is Rs. 4,00,000.

(5) Schemes regarding Water supply are not likely to be completed in the near future. Estimated cost is Rs. 40,000.

(6) An order for two electric cranes as replacement to the existing equipment has been placed with the D.G.S. & D, estimated cost of which is Rs. 3,05,000.

(5) The proposal for having workshop equipment envisages the replacement and modernisation of the existing machinery at the port to enable effective repairs to be carried out on items of mechanical equipment and floating craft owned by the port.

(8) Procurement of 18 second hand wagons from Western Railway has so far been possible. An indent for diesel shunting locomotive has been placed with the D.G.S. & D. Work to the value of Rs. 50,000 is likely to be carried over to Second Five Year Plan.

(9) Contract for the construction of two steel lighters has been let out. One of these lighters is now nearing completion. An order for a motor launch and a barge for supplying water to the ships have been placed with the D.G.S. & D. Estimated cost is Rs. 4,80,000.

(ii) *Cambay*

SANCTIONED WORKS UNDER THE FIRST FIVE YEAR PLAN WITH CENTRAL ASSISTANCE

(1) Special repairs to Cambay Jetty. Estimated cost is Rs. 1,00,000. Work is in progress but is unlikely to be completed during the Plan period. Carry over of Rs. 40,000 to Second Plan is expected.

(2) One front and one rear light and one fore-shore light at Gangwa Village. Estimated cost is Rs. 78,018. These works are designed as navigational aids at Cambay Port and are under examination of the Engineer-in-Chief Lighthouses.

(iii) *Broach*

In the Port of Broach, work providing reinforced concrete with jetty and transit shed is in progress and is likely to be carried over to the Second Plan. The estimated cost of the work is Rs. 3,50,000.

(iv) *Surat*

Special repairs to R.C.C. jetty and construction of transit shed at Surat are in progress and have been carried over to Second Plan. Its estimated cost is Rs. 1,50,000.

(v) *Bilimora*

Sanctioned works under the First Five Year Plan with central assistance were (a) Landing and wharfage facilities with cranes and jetty, and (b) Provision of a light at the entrance of the Ambica River. The work in respect of both the items are in progress. The estimated cost of the former is Rs. 3 lakhs and the latter Rs. 9,845.

(vi) *Bulsar*

Tender for the work have been received for special repairs to groynes and the contract is to be awarded. Estimated cost is Rs. 1 lakh.

The work of improvements to existing lights consists of the erection of new beacon in structural steel to exhibit an Aga light at an elevation of 40 ft. The foundation of this beacon has since been constructed. The State Government has applied for the approval of the Engineer-in-Chief Lighthouses for the installation of suitable light. Estimated cost is Rs. 23,278.

(vii) *Umbergaon*

Sanctioned works under the First Five Year Plan with Central assistance were for the provision of a ramp for the handling of timber and provision of a lighted beacon at Umbergaon. The work in the case of former is expected to commence shortly and as regards the latter the foundation work for the beacon will commence as soon as Engineer-in-Chief Lighthouses approves the erection. The estimated cost of the two works are Rs. 50,000 and Rs. 24,278 respectively.

(viii) *Dahanu*

In port of Dahanu sanctioned work under the First Five Year Plan with central assistance was provision of beacon and flashing light at the entrance to Khanda Creek which is expected to commence shortly. The estimated cost is Rs. 30,000.

(ix) *Satpati*

Sanctioned works under the First Five Year Plan with central assistance were for the improvement to existing light and 3 beacons. The estimated cost is Rs. 23,385. The matter is still under consideration of the Engineer-in-Chief Lighthouses.

(x) *Versova*

Sanctioned work for the First Five Year Plan with central assistance included shifting of present Aga light from customs house near Madh Fort facing the sea and the suggestions for the work have been submitted to the Engineer-in-Chief Lighthouses and are under his consideration. The estimated cost is Rs. 5,000.

(xi) *Elephanta*

Sanctioned work under the First Five Year Plan with central assistance was extension of jetty at Elephanta and this is estimated to cost Rs. 2,50,000 but work has not yet commenced.

(xii) *Revdanda*

Work sanctioned under the First Five Year Plan with central assistance for the provision of lighted beacon at Revdanda was estimated to cost Rs. 20,388. The proposal is under consideration of the Engineer-in-Chief Lighthouses.

(xiii) *Shriwardhan*

Work sanctioned under the First Plan with the central assistance is for the provision of beacon light, which is estimated to cost Rs. 16,885. The scheme is under scrutiny of Engineer-in-Chief Lighthouses.

(xiv) *Dabhol*

Sanctioned works under the First Five Year Plan with central assistance are:—

(1) Extension of the present wharf estimated to cost Rs. 1,95,092. The work is in progress.

(2) Marking navigational channel between Karbone and Govalkot estimated to cost Rs. 8,720. The work is in progress; and

(3) The provision of lighted buoys at entrance of the port is estimated to cost Rs. 50,000. The last scheme is under scrutiny of the Engineer-in-Chief Lighthouses.

(xv) *Boria*

Sanctioned works under the First Five Year Plan with central assistance are:

(1) Provision of lighted beacon. Estimated cost Rs. 9,845. The proposals are under examination of Engineer-in-Chief Lighthouses.

(2) Construction of a stepped jetty at Boria. Estimated to cost Rs. 1,50,000. Tenders for the work were accepted and the work commenced in March, 1956.

(xvi) *Jaigad*

Sanctioned works under the First Five Year Plan with central assistance are:

(1) Provision of a beacon light at Dhanankol;

(2) Improvement to present lighthouse; and

(3) Two lighted buoys for marking Jaigad bar and Mora Sand Banks. All these schemes are now under the scrutiny of the Engineer-in-Chief of Lighthouses Deptt.

(xvii) *Ratnagiri*

Provision of beacon light at Mirya in Kalbadevi Bay, is estimated to cost Rs. 20,388. The proposal is under scrutiny of Engineer-in-Chief Lighthouses. Foundation of the light is complete.

(xviii) *Malwan*

The works sanctioned under the First Plan with central assistance are:

(1) Malwan jetty extension, which is estimated to cost Rs. 1,40,000. The work was started in Feb. 1956 and is in progress.

(2) Lighted beacon on Perch Rock, which is estimated to cost Rs. 1,92,500. Tenders for the work have been invited and the work is being finalised.

(3) Construction of first class passenger shed which is estimated to cost Rs. 16,000. Tenders for the work have been invited.

(xix) *Deogad.*

Construction of jetty is estimated to cost Rs. 2,00,000/-. Tenders have been called for. (No work was carried out without the central assistance).

(e) Ex-Kutch State

(i) *Mandvi.*

Schemes for providing open space enclosures, passenger sheds have been completed. The works in progress or under examination are the following:

(1) Clearing of sand dunes etc. at the mouth of Mandvi Port.

(2) Extension of wharf wall and reclamation. This work has been given up for technical reasons and it has been decided to carry out certain minor repairs to the existing break-water which is in a dilapidated state. The proposal is estimated to cost Rs. 62,500/- and the work is in progress.

(3) Water supply at Mandvi Port. Estimated cost of the work is Rs. 75,000/-. The work has not yet been started as certain alternative methods are under investigation.

Works carried out without central assistance are lights in the port area, godowns, workshop and repairs to wharf wall and jetty etc.

(ii) *Mundra*

Following schemes have been included in the First Five Year Plan with the Central assistance:

(1) Link road from Nundra town to new jetty on Bocha creek has been completed in 1952 and the expenditure incurred is Rs. 1,39,328.

(2) Water supply arrangement—The salt company situated near the port propose to lay a new water main for their works. It is proposed to obtain a connection for this main for port purposes at an estimated cost of Rs. 5,000/- as against the original sanctioned amount of Rs. 25,000/-. Work has been kept pending till the mains proposed by the salt works are laid.

(3) Construction of Timber jetty has yet to be completed.

(4) Extension of Reclamation—This is designed to provide additional stacking ground for the port and access to the proposed jetty. The work is estimated to cost Rs. 25,000/- and has yet to be completed.

(5) Plans and estimates for an open transit shed and a covered warehouse are ready and are expected to be submitted to Government for sanction.

(6) Proposal for construction of additional quarters estimated to cost Rs. 50,000/- is being reconsidered.

Works carried out without central assistance directly by the Minor Ports Organisation are:—

(1) Repairs to jetty.

(2) Construction of cross drainage works on link road.

(3) Office quarters and godown.

(4) Staff quarters.

(5) Enclosure to port area and Tide guage cabin.

(iii) *Jakhau*

Sanctioned works with the central assistance include:

(1) Timper jetty at New Port—plans and estimates for which have been prepared; work has, however, yet to be started. Estimated cost is Rs 11,00,000/-.

(2) Link road from town to New Port work has been completed.

(3) Reclamation for the Port area.— The possibility of reducing the length of reclamation from 280′ to 220′ with a corresponding increase in the length of the jetty is under investigation by the Port Commissioner and Harbour Engineer. Estimated cost is Rs. 25,000/-.

(4) Construction of office quarters and other port structures.—Work has been almost completed. Estimated cost is Rs. 25,000/-.

(5) Water supply arrangements.—The proposal is dependent on the completion of the water main proposed to be laid by the salt works. Work has yet to be completed.

(6) Plans and estimates are under preparation, for additional staff quarters (Estimated amount Rs. 30,000/-).

(7) Proposals for providing Navigational aids are under examination of the Lighthouses Department.

Works carried out without central assistance directly by the Minor Ports Organisation are causeway on the link road, enclosure to the port area, construction of cross drainage works.

(iv) *Koteshwar*

Sanctioned works with central assistance were:

(1) Road from Narayan Sarowar to Koteshwar; and

(2) Reclamation of port area. Both these works are yet to be completed. Estimated cost is Rs. 50,000/-.

(3) Plans and estimates are ready for the extension of landing ground. This work is not likely to be completed in near future.

(4) Senrcants quarters, office premises and godown are nearing completion. Estimated cost is Rs. 25,000/-.

(f) *Kerala State*

(i) Kozhikode

All the works were carried out with central assistance and none directly by the Minor Ports Organisation from its own resources. Details of the works are as under:—

(1) Extension of trolley lines.—This work involves the extension of the trolley lines with necessary twin tables at South Pier to serve the two cargo sheds on the west

side of the road. Work has not yet commenced due to the non-availability of 30 lbs. rails required for the trolley lines. The work is estimated to cost Rs. 50,000/-.

(2) Fencing North Pier.—Barbed wire fencing at the North Pier with concrete posts has been provided at a cost of Rs. 8,000/-.

(3) Provision of water supply.—The proposal envisages the tapping of a municipal water main near the South Pier for water supply in that area at an estimated cost of Rs. 5,000/-. The work is in progress.

(4) Purchase of a tug.—A tug for towage of lighters was purchased at a cost of Rs. 1,03,000/-.

(5) Construction of a slipway at Beypore for hauling up of tugs.—This is estimated to cost Rs. 80,000/-. The work has yet to be completed.

(6) Provision of Aga Light buoy.—The provision of an Aga Light Buoy is being under-taken by the Lighthouses Department. The work is estimated to cost Rs. 20,000/-.

(ii) *Cannanore*

No work has been carried out under the First Five Year Plan. The Minor Ports Organisation has commenced the construction of a cargo shed 61′ × 23′ which is not included in the First Five Year Plan.

(iii) *Badagara*

Only one work *viz.* the provision of Aga Light on the flagstaff was included under the First Five Year Plan. This work is being carried out by the Lighthouses Department. The work is estimated to cost Rs. 9,000/-.

The Minor Ports Organisation has carried out certain works which were not included in the First Five Year Plan *viz.* the construction of a signal station, a road-way along the beach etc. costing roughly Rs. 11,000/-.

(iv) *Tellicherry*

No work has been carried out at this port under the First Five Year Plan. The Minor Ports Organisation has, however, carried out certain renewal work to the pier costing Rs. 50,000/-.

(v) *Alleppey*

Sanctioned works with central assistance include:

(1) Repairs to pier.—Estimated cost is Rs. 3,89,000/-. Work is in progress.

(2) Installation of additional diesel and electric cranes on pier.—The cranes have been purchased. The installation of the cranes has, however, been held over pending completion of repairs to the pier.

(3) Improvements to port and pier workshop.—Estimated cost is Rs. 2½ lakhs. Work has yet to be commenced.

(4) Concrete flooring of storage sheds.—Estimated cost is Rs. 50,000/-. Work is nearing completion.

(5) Provision of light singnalling apparatus.—Estimated cost is Rs. 2,000/-. This work has been completed.

(vi) *Quilon*

In Port of Quilon the Scheme for providing night signalling apparatus work has been deferred till the site of the new Pier is selected. Estimated cost is Rs. 2,000/-

(vii) *Trivandrum*

Sanctioned work with central assistance include:

(1) Reconstruction of pier of Trivandrum is nearing completion. The work is estimated to cost Rs. 12 lakhs.

(2) Erection of cranes and provision of lights on pier.—Five cranes have been acquired by Government. As soon as the pier is completed, the cranes will be installed. Estimated cost is Rs. 4½ lakhs.

(3) Provision of cargo shed near the pier.—The work is nearing completion. Estimated cost is Rs. 50,000/-.

(g) *Andhra Pradesh*

(i) *Kakinada*

Sanctioned works with central assistance include:

(1) Repairs and replacement of timber jetties.—Work is expected to commence shortly. Estimated cost is Rs. 2½ lakhs.

(2) Reconstruction and improvement of workshop.—Work is nearing completion. Estimated cost is Rs. 75,000/-.

(3) Construction of reinforced concrete jetties for ore.—Designs for the jetties have been finalised. Work will be taken up only during the Second Plan period and is estimated to cost Rs. 2 lakhs.

(ii) *Masulipatnam*

Sanctioned works with central assistance include:

(1) Dredging bar channed.—Estimated cost is Rs. 1¼ lakhs. Originally the work envisaged the dredging of the bar channel at Masulipatnam using the suction dredger "Akhanda Godavari". The scheme has since been changed to the purchase of 1 ton grab and 2 mud punts. Orders have been placed for the vessels.

(2) Electrification of wharves.—Estimated cost is Rs. 25,000/- Work has yet to be started.

(h) *Orissa State*

(i) *Chandbali*

Sanctioned works with central assistance are the following:

(1) Certain improvement works estimated to cost Rs. 4 lakhs were approved for the port but these works have been shelved and the amount sanctioned therefor transferred towards the investigation in connection with the development of Paradip port.

(ii) *Gopalpur*

It was proposed to survey the backwater at Gopalpur as recommended by Shri Nanjundiah in his report on the survey of Minor Ports in India. The Orissa Government has, however, decided not to proceed with the survey and has diverted the money for carrying out surveys in connection with Paradip Port Development.

APPENDIX III

Statement showing the traffic handled at some of the minor ports during the period between 1950 and 1956

Year	Imports (in tons)	Exports (in tons)	Total (in tons)
1	2	3	4
MADRAS STATE			
Cuddalore			
1950-51	70,920	71,789	1,42,709
1951-52	93,142	46,952	1,40,094
1952-53	1,88,944	25,858	2,14,802
1953-54	1,70,821	42,104	2,12,925
1954-55	1,79,167	36,922	2,16,089
Nagapattinam			
1950-51	4,463	3,512	7,975
1951-52	3,814	9,661	13,475
1952-53	7,325	11,181	18,406
1953-54	1,185	5,496	6,681
1954-55	9,018	8,681	17,700
Tuticorin			
1950-51	2,90,837	2,28,017	5,18,854
1951-52	2,70,032	2,45,462	5,15,494
1952-53	2,80,482	2,42,660	5,23,142
1953-54	2,54,468	2,08,091	4,62,559
1954-55	2,27,082	2,92,588	5,19,670
Ponnai			
1950-51	13,688	11,323	25,011
1951-52	17,501	10,438	27,939
1952-53	17,338	9,121	26,459
1953-54	16,036	6,196	22,232
1954-55	19,084	7,701	26,785

1	2	3	4
Coondapur			
1950-51	7,067	31,611	38,678
1951-52	6,881	25,174	32,055
1952-53	8,778	25,710	34,488
1953-54	8,805	20,008	28,813
1954-55	9,248	23,106	32,354
Hangarkatta			
1950-51	3,144	8,766	11,910
1951-52	2,309	4,769	7,078
1952-53	2,159	4,597	6,756
1953-54	1,744	5,290	7,034
1954-55	3,024	3,155	6,139
Pamban			
1950-51	223	2,828	3,051
1951-52	244	1,966	2,210
1952-53	56	3,478	3,534
1953-54	26	2,505	2,531
1954-55	175	2,528	2,703
Dhanushkodi			
1950-51	4,881	13,998	18,879
1951-52	5,057	10,628	15,685
1952-53	2,725	11,046	13,771
1953-54	2,103	11,457	13,560
1954-55	966	10,080	11,046
BOMBAY STATE:			
Mandvi			
1950-51	..	..	..
1951-52	3,779	115	3,894
1952-53	5,300	124	5,424
1953-54	3,900	3,062	6,963
1954-55	4,451	13,323	17,774
Jakhau			
1950-51	..	..	..
1951-52	609	14	623
1952-53	691	4,044	4,735
1953-54	335	13,038	13,373
1954-55	891	16,517	17,408

1	2	3	4
Koteshwar			
1950-51	..	..	..
1951-52	1	109	110
1952-53	Nil	40	40
1953-54	373	Nil	373
1954-55	629	66	695
Lakhpat			
1950-51	..	..	..
1951-52	Nil	150	150
1952-53	55	240	295
1953-54	117	66	183
1954-55	30	74	104
Bhavnagar			
1950-51	1,90,609	98,502	2,89,111
1951-52	1,83,199	1,09,322	2,92,521
1952-53	1,08,084	1,35,012	2,43,096
1953-54	93,883	1,25,015	2,18,898
1954-55	2,04,260	1,06,409	3,10,669
Bedi			
1950-51	55,764	1,14,038	1,69,802
1951-52	71,705	1,42,751	2,14,456
1952-53	64,019	1,79,966	2,43,985
1953-54	40,509	2,56,317	2,96,826
1954-55	60,240	2,38,092	2,93,332
Veraval			
1950-51	66,780	40,738	1,07,718
1951-52	80,572	34,037	1,14,609
1952-53	52,828	58,002	1,10,830
1953-54	66,743	80,332	1,47,075
1954-55	88,326	87,089	1,75,415
Navlakhi			
1950-51	69,743	65,935	1,35,678
1951-52	2,06,360	77,365	2,83,925
1952-53	80,087	1,10,803	1,90,890
1953-54	25,850	1,01,246	1,27,096
1954-55	18,120	76,333	94,453

1	2	3	4
Porbander			
1950-51	45,780	1,11,932	1,57,712
1951-52	54,418	1,01,929	1,56,347
1952-53	34,752	1,20,977	1,55,729
1953-54	46,221	1,09,939	1,56,160
1954-55	55,957	1,04,832	1,60,789
Siha			
1950-51	1,435	43,388	44,823
1951-52	1,422	52,499	53,921
1952-53	4,400	53,017	57,417
1953-54	2,089	1,01,104	1,03,193
1954-55	3,204	1,25,297	1,28,501
Salaya			
1950-51	4,881	3,862	8,743
1951-52	4,643	9,122	13,765
1952-53	2,953	10,432	13,385
1953-54	2,453	16,930	19,383
1954-55	2,717	21,076	23,793
Bherai			
1950-51	167	771	938
1951-52	184	17,424	17,608
1952-53	22	829	851
1953-54	174	16,753	16,927
1954-55	166	1,559	1,715
Jafrabad			
1950-51	3,433	37,535	40,968
1951-52	3,083	52,200	55,283
1952-53	3,425	63,767	67,192
1953-54	4,092	51,450	55,542
1954-55	4,478	43,129	47,607
Mangrol			
1950-51	2,725	6,638	9,363
1951-52	1,824	7,027	8,851
1952-53	1,798	3,934	5,732
1953-54	2,360	2,660	5,020
1954-55	2,905	3,010	5,915

1	2	3	4
Sartanpur			
1950-51	1,893	7,945	9,838
1951-52	1,906	3,894	5,800
1952-53	2,704	3,266	5,970
1953-54	2,741	4,855	7,596
1954-55	3,067	8,635	11,702
Albert Victor			
1950-51	1,936	1,037	2,973
1951-52	1,630	1,503	3,133
1952-53	1,100	2,054	3,154
1953-54	1,152	1,292	2,444
1954-55	1,351	1,651	3,002
Okha			
1950-51	1,87,580	1,80,607	3,68,187
1951-52	2,83,667	2,04,975	4,88,642
1952-53	2,15,680	1,88,353	4,04,033
1953-54	2,29,213	1,91,130	4,20,343
1954-55	2,78,039	1,71,739	4,49,778
Cambay			
1950-51	2,520	270	2,790
1951-52	2,846	384	3,230
1952-53	1,432	38	1,470
1953-54	2,069	226	2,295
1954-55	2,195	153	2,348
Broach			
1950-51	17,699	19,517	37,216
1951-52	22,849	16,339	39,188
1952-53	16,754	23,973	40,727
1953-54	21,669	21,075	42,744
1954-55	27,216	28,005	55,221
Surat			
1950-51	10,260	8,680	18,940
1951-52	10,758	10,730	21,488
1952-53	10,600	10,098	20,698
1953-54	10,852	9,380	20,232
1954-55	11,152	6,888	18,040

1	2	3	4
Bilimora			
1950-51	4,331	15,225	19,556
1951-52	4,704	12,474	17,178
1952-53	2,131	9,976	11,107
1953-54	4,491	17,710	22,201
1954-55	16,537	22,669	39,206
Bulsar			
1950-51	1,569	3,972	5,541
1951-52	3,332	5,664	8,996
1952-53	2,801	5,097	7,898
1953-54	4,629	2,544	7,173
1954-55	5,285	14,306	19,591
Umbergaon			
1950-51	4,100	280	4,380
1951-52	2,097	162	2,259
1952-53	4,429	36	4,465
1953-54	3,918	320	4,238
1954-55	928	108	1,036
Dahanu			
1950-51	993	6,844	7,837
1951-52	1,342	15,763	17,105
1952-53	820	8,033	8,853
1953-54	975	10,140	11,115
1954-55	967	5,698	16,665
Satpati			
1950-51	177	44	221
1951-52	152	25	177
1952-53	171	22	193
1953-54	132	496	628
1954-55	166	7	173
Versova			
1950-51	7,771	1,970	9,741
1951-52	4,731	1,572	6,303
1952-53	5,153	905	6,058
1953-54	2,005	2,425	4,430
1954-55	4,893	1,188	6,081

1	2	3	4
Revidanda			
1950-51	2,707	8,897	11,604
1951-52	2,830	8,436	11,266
1952-53	2,409	7,802	10,211
1953-54	2,322	7,783	10,105
1954-55	2,927	5,014	7,311
Shriwardan			
1950-51	5,444	5,435	10,879
1951-52	3,264	4,066	7,330
1952-53	4,501	4,294	8,795
1953-54	4,720	3,016	7,736
1954-55	3,258	3,965	7,218
Dabhol			
1950-51	8,638	1,472	10,110
1951-52	13,751	2,125	15,876
1952-53	13,934	1,508	15,432
1953-54	10,915	5,903	16,818
1954-55	10,784	8,603	19,387
Jaigad			
1950-51	42,264	1,895	44,159
1951-52	32,267	2,065	34,332
1952-53	31,567	2,295	33,862
1953-54	34,500	1,160	35,660
1954-55	31,150	2,305	33,755
Ratnagiri			
1950-51	19,290	4,280	23,570
1951-52	19,176	4,287	23,463
1952-53	20,190	5,160	25,350
1953-54	29,996	6,835	27,831
1954-55	34,881	6,719	41,719
Vijayadurg			
1950-51	1,558	5,695	7,253
1951-52	8,988	3,752	12,740
1952-53	8,632	2,490	11,122
1953-54	8,842	4,035	12,877
1954-55	8,697	3,652	12,349

1	2	3	4
Malvan			
1950-51	5,120	3,012	8,133
1951-52	5,969	2,037	8,066
1952-53	4,890	2,431	7,321
1953-54	5,360	1,855	7,215
1954-55	4,490	1,268	5,758
Deogad			
1950-51	6,943	9,413	16,356
1951-52	6,149	1,066	7,215
1952-53	6,888	1,067	7,955
1953-54	5,909	1,449	7,358
1954-55	2,723	2,014	4,764
Vengurla			
1950-51	24,545	8,440	32,985
1951-52	32,516	7,316	39,832
1952-53	22,607	5,641	28,248
1953-54	11,050	5,657	16,706
1954-55	6,054	14,122	20,176
Redi			
1950-51	6,413	5,093	11,506
1951-52	2,914	6,510	9,424
1952-53	2,473	2,337	4,810
1953-54	3,127	2,534	5,661
1954-55	2,716	11,427	14,143
Kumta			
1950-51	3,204	1,869	5,073
1951-52	1,142	1,779	2,921
1952-53	1,512	2,231	3,745
1953-54	1,185	1,669	2,854
1954-55	1,071	2,090	3,161
cnevar			
1950-51	5,246	3,048	8,294
1951-52	6,086	5,574	11,660
1952-53	5,336	4,039	9,375
1953-54	5,369	5,487	10,856
1954-55	4,545	5,934	10,479

1	2	3	4
KERALA STATE			
Alleppey			
1950-51	1,034	31,124	32,158
1951-52	1,034	17,003	18,037
1952-53	545	22,447	23,292
1953-54	486	20,816	21,302
1954-55	651	19,806	20,457
Quilon			
1950-51	20,296	4,816	25,112
1951-52	15,299	1,862	17,161
1952-53	3,379	711	4,091
1953-54	45,114	1,377	46,491
1954-55	15,301	2,405	19,206
Kozhikode			
1950-51	49,342	1,41,212	1,90,554
1951-52	96,057	1,41,562	2,37,618
1952-53	58,066	1,70,608	2,28,674
1953-54	75,324	1,91,151	2,66,475
1954-55	71,700	1,97,068	2,68,768
Badagara			
1950-51	3,304	11,524	14,828
1951-52	2,571	10,316	12,887
1952-53	2,967	16,512	19,479
1953-54	3,624	16,739	20,363
1954-55	2,997	10,155	13,152
Tellicherry			
1950-51	8,889	6,162	15,001
1951-52	8,273	5,465	13,738
1952-53	12,466	6,020	18,486
1953-54	10,737	8,798	19,535
1954-55	7,840	8,326	16,166
Cannanore			
1950-51	8,471	2,721	11,192
1951-52	5,575	3,173	8,748
1952-53	9,796	3,938	13,729
1953-54	9,696	2,339	12,035
1954-55	8,433	2,710	11,143

1	2	3	4
Azhikkal			
1950-51	5,494	14,532	20,026
1951-52	6,838	16,090	33,928
1952-53	7,711	16,551	24,292
1953-54	6,213	17,529	23,742
1954-55	4,369	19,128	23,497
ANDHRA PRADESH			
Kakinada			
1950-51	1,543	63,633	65,176
1951-52	23,636	77,357	1,00,993
1952-53	19,417	69,521	88,938
1953-54	15,544	1,40,171	1,55,715
1954-55	4,469	2,75,811	2,80,280
Masulipatnam			
1950-51	Nil	15,016	15,016
1951-52	Nil	16,515	16,515
1952-53	5	47,180	47,185
1953-54	Nil	46,323	46,323
1954-55	1	66,315	66,316
Narsapur			
1950-51	Nil	Nil	Nil
1951-52	Nil	23	23
1952-53	Nil	212	212
1953-54	Nil	333	333
1954-55	Nil	214	214
Bommulipatnam			
1950-51	Nil	723	723
1951-52	Nil	4,540	4,540
1952-53	Nil	1242	1242
1953-54	Nil	818	818
1954-55	Nil	893	893
Calingapatnam			
1950-51	Nil	Nil	Nil
1951-52	Nil	2,370	2,370
1952-53	Nil	Nil	Nil
1953-54	Nil	Nil	Nil
1954-55	Nil	Nil	Nil

1	2	3	4
ORISSA STATE			
Chandbali			
1950-51	2,461	7,069	9,530
1951-52	4,326	112	4,438
1952-53	3,204	9,655	12,859
1953-54	2,866	26,917	29,783
1954-55	465	9,928	10,393
MYSORE STATE			
Mangalore			
1950-51	81,278	2,10,522	2,91,800
1951-52	67,582	1,70,540	2,98,122
1952-53	76,656	1,94,868	2,71,524
1953-54	85,397	1,31,863	2,17,260
1954-55	91,225	1,68,992	2,70,217
Malpe			
1950-51	8,570	8,432	17,002
1951-52	9,954	6,428	16,382
1952-53	7,266	7,254	14,520
1953-54	8,210	9,120	17,390
1954-55	6,894	6,417	13,311
Karwar			
1950-51	2,590	488	3,078
1951-52	3,010	694	3,704
1952-53	3,763	509	4,272
1953-54	3,208	714	3,922
1954-55	4,052	792	4,844
Bhatkal			
1950-51	3,472	542	4,014
1951-52	3,342	564	3,906
1952-53	2,303	231	4,534
1953-54	5,098	278	5,376
1954-55	3,060	245	3,305
Pondicherry			
1950-51	40,000	8,000	48,000
1951-52	33,000	9,000	42,000
1952-53	15,000	10,000	25,000
1953-54	14,000	8,000	22,000
1954-55	14,000	8,000	22,000

APPENDIX IV

Survey Programme of Hydrographic Branch of Indian Navy for the last 9 Financial Years

1947 OSMARA—Baluchistan Coast.
1947 Reserve Fleet Anchorage (Bombay).
1948 Sacramento Shoal (Coromandel Coast).
1949 Bhatkal (West Coast)—(Jan. to March 1949.) .
1949 Malpe -do- -do-
1949 Mangalore -do- -(March to April 1949.)
1949 Kandla Bar (Gulf of Kutch).
1949 Kandla Creek.
1949-50 Kandla Bar (Dec. 1949 to January 1950).
1950 Approaches to Kandla & Navlakhi (October 1950).
1950 Hanstal Creek & Navlakhi (November 1950).
1950 Approaches to Kandla & Navlakhi (Southern Sheet).
1951-52 Mandvi & Ranwara Shoals (November 51 to February 1952).
1951 Duncan Passage (Andamans) (February to April 1951).
1952 Phoenix Bay (Andamans).
1952-53 Mandvi to Navinal (Gulf of Kutch).
1952-53 Godia Creek (Gulf of Kutch)—(December '52 to January '53).
1952-53 False Point—Approaches to Mahanadi River (October '52 to February 1953)
1952-52 -do- (Northern Sheet) (October '52 to February '53).
1952-53 -do- (Southern Sheet) (October '52 to February '53).
1952-53 Port Blair (Andamans)—(April '52 & February to April 1953).
1953 Elikalpani (Laccadive) (October 1953).
1953-54 Kori Creek (Gulf of Kutch) (November '53 to January '54).
1954 Port of Bombay (October to December, 1954).
1954-55 Approaches to Bombay Harbour (December '54 to March '55).
1953-54 Elphinstone Harbour (December '53 to April '54).
1954 Rongat Bay (Andamans). (April 1954)
1955 Port of Bombay (Northern Sheet). (January to April, 1955).
1954-55 Approaches to Madras (November '54 to March '55).

1954-55 Madras Roadstead (November '54 to March 1955).

1955 Tuticorin Roadstead and Harbour (March to April 1955).

1955-56 Gulf of Cambay—Gopinath to Sultanpur Shoal.

1955-56 Vizagpatnam Harbour.

1955-56 Approaches to Vizagpatnam.

1955-56 Coconada Bay.

1955-56 Nankauri Harbour and Entrance.

1955-56 Stewart Sound (Maya Bunder Harbour and Entrance Andamans).

1955-56 Pondicherry Roadstead.

1955-56 Cuddalore Roadstead.

APPENDIX V

Statement showing the recommendations of the U.N. Experts regarding dredging of minor Ports of India

1. "Planning is of primary importance for the development of ports. Dredging is a subdivision of port engineering; it is recommended that port development in all its aspects should be considered first before adopting measures to make improvements by dredging".

While dredging generally assumes a position of secondary importance in the development of ports this is not exactly true of the ports of India where due to the nature of coastal sand drift and large amounts of alluvial deposits from rivers, periodical if not yearly or continuous maintenance dredging is necessary and frequently the yearly maintenance practically equals the amounts of capital dredging that was necessary for the establishment of a port. The result of the above situation is that dredging is regarded as the governing factor for port development in India; while this may be right the general attitude that dredging is the answer to all problems is a wrong conception and the mere fact that navigable channels and basin can be dredged does not mean that nothing else is necessary for port development. Dredging is one phase of the work connected with port development and operation; it is believed (at present) that it is second in importance, as far as urgency is concerned, to port planning in the case of minor ports of India.

2. "If the Central government is to contribute to minor port development, the National Harbour Board should have permanently at its service a technical organisation with representatives on the board".

As a first step towards the improvement of minor ports the Government of India has recently constituted a National Harbour Board to advise the maritime states on important port matters. This is considered as a very essential agency if the Central government is to contribute to minor port development; the present board is constituted of non-technical men who must rely for their decisions on data obtained from the more or less reliable sources of the state port organisations or from hired consultants on specific duties. It is, therefore, recommended that the National Harbour Board should have permanently at its service a technical organization with representatives on the board. Such an organisation could probably be set up as a subdivision of the major port administration; it should consist of a capable port engineer, a marine officer assisted by a hydrographic surveyor and dredging master. The main duties of the organisation would be as follows:

(i) To collect technical information from state organisations to be classified and presented to the board.

(ii) To advise the states through the board on procedures to follow for port administration and development. (In connection with this and particularly with respect to dredging, literature should be obtained from dredging equipment manufacturers and distributed to the various state port departments also published material on port engineering works.)

(iii) To study and report on works to be sanctioned by the board.

(iv) To recommend for specific duties engineers, surveyors or dredge operators to be loaned from the major port organisation to the states.

3. "In connection with dredging, immediate attention should be given to following recommendations made in a recent report on the Minor Ports of India:

(i) That the existing ports be classified under Intermediate, Minor and Sub-Ports.

(ii) That a decision be reached as to the size of ships that would use the ports.

(iii) That some ports be closed and that the Ministry of Transport be consulted before new ports are opened.

(iv) That hydrographic surveys be made where required.

(v) That technical advice should be secured by the creation of a Central Ports Organisation (*i.e.*, recommendation (2) of this report)."

At the first meeting of the National Harbour Board (August 1950) it was recommended that an officer be appointed to collect information relating to minor ports and to make recommendations regarding improvements. Accordingly a port engineer from the major ports organisation undertook a survey of India's minor ports in January, 1951 and submitted a report in May of the same year. This report was considered at the second meeting of the National Harbour Board held in November, 1951, it included some 23 general recommendations which covered port operation in all its aspects. While some definite recommendations were made as to the purchase of the equipment and execution of port works the main subject of the report was the establishment of a policy for minor port operation. The attitude of the Central Government, the National Harbour Board or the State organizations towards the report is not known but it is believed that very few of the measures suggested have been adopted, and in the absence of any definite object, the task of reporting on country wide projects in connection with any particular phase of port development is extremely difficult and can only lead to suggestive rather than positive recommendations.

4. Regarding the various state port organisations the following is a resume of the recommendations made under "GENERAL COMMENTS" in parts I to VI of the present report:

(i) *Bombay State*

Should have a proper port department, much survey is required, improvement of port facilities principally at Okha for the present

Dredging of port Okha should be given first priority; the purchase or rental of a suitable seaworthy (1 cubic yard size) bucket ladder dredge and ancilliary machinery is the only equipment required.

(ii) *Saurashtra State*

Improvement of mechanical shop facilities principally at Bhavnagar. Reconditioning of the equipment available at present. The purchase of a 24 inch cutter hydraulic pipe line dredge should be considered for Bhavnagar. If a new machine is purchased either the "RECLAIMER" or the "SUDHARU" should be entirely rebuilt and sent to Bedi or Navlakhi on the gulf of Kutch.

(iii) *Kutch State*

Should depend on services of the bucket ladder dredge recommended for Okha.

(iv) *Madras State*

Should decide on the extent of work to be done in the future. For the present strengthen the "backwaters" dredging fleet by reconditioning the equipment available and improving technical repair facilities. The purchase of two portable 9 to 12 inches cutter hydraulic pipe line dredges is recommended (to strengthen and as replacement) also, but less important, two small portable clamshell derricks and hopper barges. If any work is to be done at sea for medium size ports (*i.e.* channel depths of 15 to 18 feet) the purchase of seaworthy 20/24 inches cutter hydraulic pipe line dredges should be considered; experimental channels should be tried first possibly with the "TUTICORIN" to determine the rate of siltation. It is recommended to proceed very cautiously if major developments are to be made.

(v) *Travancore-Cochin State*

Should rely on services of either the major port of Cochin or the Madras State port organisation for dredging requirements.

(vi) *Orissa State*

Should set up a minor port organisation. The purchase of a portable 10 to 12 inches cutter hydraulic should be considered. The question of major port development would require a high capital outlay and should be studied in detail before taking a decision.

The above recommendations have been discussed in detail in the area reports and need no further comments.

5. "Where operation over entrance bars and outer approach channels is necessary, seaworthy equipment should be used; for 'backwater' work 'portable' equipment is recommended".

Seaworthiness is the first requisite for equipment which is to be used for operation over entrance bars and outer approach channels. It will be found that in most cases, especially for port development, approach channels will have to be dredged from the outside due to the shallowness of the water and while dredging is

still in progress it will not be possible to take the machinery inside the ports for shelter in case of storms. Also it will be necessary to take out this equipment at sea either for work at several places or for periodical repairs at a shipyard. Portable equipment is recommended for backwater work because it is more flexible. Small equipment cannot be towed at sea and when purchased it has to be assembled on the work site; it would be an advantage if it was designed for that purpose as the assembly could be done more readily and without ship-building facilities. Also portable equipment can be dismantled and transported by rail or road to other sites if necessary. Manufacturers produce standardized portable machinery and can offer replacement parts from stock generally at a lower cost than for custom built machines.

6. "Dredging equipment should be designed for continuous operation regardless of tides".

It has been noticed, particularly in Saurashtra, that some of the equipment available at present has not sufficient digging depth capacity for operation at all stages of the tides. This is a serious disadvantage which greatly reduces the output of a dredge and in the future, if new equipment is purchased, digging depth capacity should be given due attention. In connection with the above, there is no reason why dredging equipment should not be operated on a 24 hour-day basis rather than on eight hours, as generally practised throughout India.

7. "The cutter hydraulic pipe line type of dredge should be used as much as possible for dredging at sea and in backwaters of the minor ports of India. Where this machine is not suitable the bucket ladder type with hopper scows is recommended."

For maintenance and development of ports in India it has been found that generally the materials to be dredged consist largely of sand and silt. The cutter hydraulic pipe line is the most efficient type of machine for the dredging and disposal of these materials. Other types of hydraulics, particularly the "hopper" dredges, are not very efficient, especially in light materials where it is never possible to fill the hopper even with overflowing. Where weather conditions do not permit, or where the use of a pipe line is not possible either because of traffic or length required; the bucket ladder type dredge with hopper scows should be used. (See Part I "Port Okha", Part III "Kutch State" general, Part IV "Tuticorin Port".) Clamshell derricks or "grab" dredges have a very low rate of production compared with the small hydraulics and should only be used for very minor works as alongside wharves jetties etc. and in narrow places where the other types of machines cannot operate. The advantages of the hydraulic pipe line dredge for port development and maintenance have been demonstrated in the past in connection with the development of major ports at Vishakapatnam and Cochin.

8. "Pooling of dredging equipment is not considered possible at present".

The possibility of pooling dredging equipment for the minor ports of India has often been suggested in the past, the object being to provide a source of equipment upon which needy ports could draw

when required. The creation of dredge pools would be identical to the formation of state-owned dredging contractor firms. At present most of the equipment available is permanently needed for operation at one site and there would not be any advantage in changing ownership. Surplus equipment would be necessary for the creation of pools, *i.e.* equipment that could be used at more than one site during a season or over a period of years. At present major and minor ports administrations are reluctant to rent what machinery they have available even if this could be done occasionally, the reason is that they only have the bare essentials for their requirements and cannot risk to lose or unduly wear the machinery which is old and must be spared until replacement is possible.

9. "Pooling of dredging equipment is a sound idea and should be kept in mind if new machinery is purchased for the Minor Ports of India. At least two pools would be necessary one for ports north of Bombay on the west coast and one for ports south of Bombay and the east coast".

While for the present it would be advisable to strengthen the existing dredging fleets before creating pools of dredgers the principle is sound and should be given due consideration in planning improvements for the minor ports of India. It has been noted that a new dredge for port "Okha" could also be used for the ports of Kutch State, also the same type of hydraulic machine could be used at Bhavnagar and in Bombay State for ports north of Bombay. Identical machines could be used for ports south of Bombay, in Bombay, and on the east and west coasts of Madras State. The portable hydraulics recommended for Madras could also be used at more than one site and would be very useful tools to include in the formation of a pool for Madras State ports.

APPENDIX VI

Statement showing the summary of conclusions/recommendations

Serial No.	Ref. to para No.	Summary of Conclusions/Recommendations
1	2	3
1	3	Study of the problems of minor ports during the post-Independence period and the steps taken by the Centre so far in their development has led the Committee to conclude, that the progressive port policy for India formulated by the Armstrong Committee, as early as in 1946, has not been pursued with sufficient vigour by the Transport Ministry.
2	4	While considering the future expansion of Indian ports, the Committee would like the Transport Ministry to bear in mind the observations of the ports (Technical) Committee 1946 referred to in para 4 of this Report.
3	6	The Committee note that the proposals put forward by the Ports (Technical) Committee regarding the improvement of minor ports in the then Bombay Province have not been fully implemented and they recommend that schemes covering these proposals should be included in the Second Five Year Plan.
4	10	The Committee note that the recommendations of the West Coast Major Ports Development Committee regarding the development of Bhavnagar Port, (referred to in para 9), have not been implemented. The Committee recommend that the maintenance of 28 ft. of water at the berths and the construction of one or two extra berths should be done during the Second Plan period.
5	13	The suggestions made by the West Coast Major Port Development Committee referred to in para 12 do not appear to have been given any serious attention.

1	2	3
6	17	The Committee regret to note that some of the recommendations of the Officer on Special Duty (Shri Nanjundiah) have not yet been fully implemented despite the fact that more than five years have passed since he submitted his Report. The Committee lay particular stress on his suggestion to form a competent Central Ports Organisation under a Director who should be an engineer with experience of ports and harbour constructions. Failure to create such a Central Ports Organisation on receipt of recommendations of the O.S.D. has resulted in considerable delay in the formulation of the schemes for the development of minor ports during the Second Five Year Plan.
7	19	The Committee regard the progress of preliminary Survey of Minor Ports as unsatisfactory. The Committee hope that no further time will be lost in completing the preliminary survey at least in so far as the 150 working minor ports are concerned.
8	22	The Committee hope that in future, unlike in the past, minor ports will receive more adequate attention by the Ministry of Transport.
9	27	The Committee suggest that the feasibility of increasing the elective element in the Landing and Shipping Fees Committees and the Port Conservancy Boards and also of increasing their scope should be examined.
10	44	The Committee note that there is a wide divergence in the administrative machinery for the management of Minor Ports in the various maritime States. Partly due to the lack of well-knit organisation and partly due to the limited resources of maritime State Governments the development and proper maintenance of minor ports have not received adequate attention in the past. The Committee have, therefore, following suggestions to offer in this regard :—
		(i) The feasibility of transferring the subject of minor ports from the 'Concurrent' List to the 'Union List' should be carefully ex-

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		amined in consultation with the Maritime State Governments. Pending the examination of this issue, the Committee suggest that the development of the 18 Intermediate ports should be taken over by the Centre. The State Governments may, continue to manage these ports on behalf of the Centre on agency basis.
		(*ii*) As the transfer of the subject of 'Minor Ports' from the 'Concurrent' list to the 'Union' list is likely to take sometime, the Committee suggest that in the meantime, the pattern of port administration followed by the Madras State might be adopted, with advantage, by other maritime State Governments , with such modifications as are considered necessary to suit local conditions..
		(*iii*) Port Advisory Committee should be constituted at each of the 18 intermediate ports with proper representation to the local interests.
		(*iv*) The feasibility of forming Port Trusts on the same lines as at Tuticorin and Mangalore, at the important Intermediate Ports should be examined.
		(*v*) Landing and Shipping Fees Committees and Conservancy Boards should be provided at other Intermediate and important minor ports as well.
		(*vi*) The entire coast line of India should be divided into a suitable number of zones and each zone should be placed under the jurisdiction of a Major or Intermediate Port for the purpose of proper maintenance and development of such Ports in each zone. The technical skill and equipment at the disposal of the Major Ports will thus be made available to the Minor Ports also.
11	48	The amount allocated for the development of minor ports in the First Five Year Plan was only Rs. 2·4 crores, whereas the amount allocated for the development of major ports was

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		Rs. 61 crores. When it is remembered that the minor ports handle about 1/6th of the traffic handled by all the major ports taken together it would be apparent that the development of minor ports which are sentinels of the country has not received adequate allocation during the First Plan.
12	51	The Committee note that the progress of the schemes for development of minor ports included in the First Five Year Plan has been unsatisfactory, and that in a number of cases, the schemes were still 'under examination'.
13	52	The Committee also note, with regret, that except in a few isolated cases, no provision has been made for staff quarters. The Committee suggest that this point should be given more attention during the Second Plan.
14	55—56	The disproportionate allocation of funds between major and minor ports, in the opinion of the Committee, is partly due to a general unhealthy tendency towards over-centralisation. It is significant to note that the schemes for development of minor ports included in the Second Plan were curtailed on the basis of recommendations of the Officer on Special Duty (Ministry of Transport). This officer has, however, been able to visit only about 70 minor ports against a total of 226 ports. Besides, in a number of cases, he has curtailed the schemes on the ground that 'no work should be taken up till the increase in trade is well established'. The Committee consider this very unhealthy doctrine. In this connection, the Committee can do no better than to quote again the following pertinent observations of the Ports (Technical) Committee, 1946: "While the establishment and expansion of ports will have to be related to the general development of trade and transport in the country the Committee is convinced that the planning of ports and their construction and the services which they have to provide should, in the national economy of the country, precede the anticipated developments and needs of transport".

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15	57	The Committee are of the opinion that minor ports can be made to play a much more important role in the transport economy of the country than that which has so far been assigned to them. They, therefore, suggest that the 18 intermediate ports, specially those among them which are all-weather ports and which have berthing facilities, should be developed to the fullest extent possible. They also suggest that not only should additional facilities be given to the working minor ports, (about 150 in number), but also efforts should be made to revive those minor ports which flourished in the past, which have now fallen into disuse, but which have some natural possibilities for development. As it is, the Coast line of India is very much deficient in natural harbours and creeks. Wherever such natural harbours and creeks exist, special efforts should be made to give facilities for development of ports. By so doing, we shall not be concentrating prosperity in a few major ports, but shall be distributing it all along the coast-line. The Committee, therefore recommend that the Ministry of Transport should convene a high level conference with the representatives of the maritime States to review the schemes for development of minor ports. If the funds required exceed Rs. 5 crores as they are likely to be some adjustment might be made from the funds earmarked for the major ports. Also, the Committee reiterate their suggestion made in para 47 of their 48th Report that the recommendation made at the Second Meeting of the National Harbour Board to create a Port Development Fund by levying a surchage of one anna per ton on all goods imported or exported through all ports, should be implemented.
16	58	Local interests including Steamer Companies using the ports may be consulted while drawing up plans of improvement.
17	60	The Committee are of the opinion that with the provision of additional facilities and suitable rationalisation of traffic, the intermediate, minor and sub-ports can successfully handle much more traffic and thus relieve chronic congestions that are occurring at some of the major ports.

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18	61	The Committee reiterate their recommendation made in para 30 of their 48th Report, that the classification of other than Major Ports into Intermediate, Minor and Sub-Ports should be given statutory recognition.
19	82	The Committee are in agreement with the following conclusion of the Officer on Special Duty : (Ministry of Transport regarding development of Tuticorin). "In view of the present trade of more than 5,00,000 tons per year, there is every justification of developing Tuticorin into a deep sea port. As most of the coasters and steamers at present draw more than 20 ft. a minimum draught of 30 ft. will have to be provided."
20	108	Very little work has been done at Mangalore during the period of the First Five Year Plan due to the fact that decision had not yet been taken whether the Port was to be developed into Major Port or not. Even as an important intermediate Port, it has to be developed. Facilities with this view, could, therefore, have been extended, during the First Plan.
21	113	While the Committee have no objection to further model experiments regarding the superior designs for developing Mangalore into an all-weather port, they are of the opinion that since the feasibility of developing this port as an all-weather port to admit steamships with draught up to 24 ft. has been established, the scheme for adequate development of this port should be included during the Second Plan period. Much time has already been lost in preliminaries. Prompt steps should, therefore, be taken for carrying out necessary development works.
22	119	The Committee suggest that the feasibility of converting the Karwar Port into an all-weather port should be examined.
23	124	The Committee are in agreement with the following observations of the West Coast Major Port Development Committee : "Port Okha will continue to serve its immediate hinterland and for this purpose it is well laid out and efficient port. With the establish-

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		ment of new and expanding industries in the vicinity, there is no reason in fact why port Okha should not continue to expand."
24	128	It is significant to note that the rail route between the west and east coasts of the Gulf of Cambay is very circuitous and tedious involving a break of guage whereas the distance by sea is very much less(*i.e.*, less than one sixth). The Committee, therefore, suggest that the feasibility of establishing a regular ferry service both for passenger and cargo between Bhavnagar and Broach might be examined. If the scheme is found to be workable additional facilities required for the purpose should be provided in the Second Plan.
25	134	The Committee suggest that the problem of erosion at Ratnagiri port, should be given prompt attention, causes therefor ascertained and remedial measures taken.
26	140	The Committee recommend that the recommendations made by the West Coast Major Port Development Committee regarding the Bhavnagar Port may be given effect to early.
27	143	No serious efforts appear to have been made to study and tackle effectively the problem of siltation at Bhavnagar port despite the fact that the officer on Special Duty (Shri Nanjundiah) in his Report had recommended in 1951 that Okha, Tuticorin and Bhavnagar might be considered later for development as major ports. This question of development into a major port can be considered only in the Third Plan. In the meantime the Committee recommend that effective measures based on the advice of properly qualified foreign experts should be taken to tackle successfully the problem of siltation during the Second Five Year Plan period. In view of the favourable geographical position of this Port on the Gulf of Cambay and in view of a distinct hinterland which it serves provision of adequate facilities for the development of this Port deserves special attention. In particular the following facilities should

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		be provided expeditiously in consultation with the Administrative Officer (Ports) of *ex*-Saurashtra State :— (*i*) coal berth (*ii*) one or two additional berths for general cargo (*iii*) facilities for handling iron ore (*iv*) development work regarding lock gates (*v*) reclamation works (*vi*) improved facilities in the Port workshop for undertaking major repairs to Dredgers and for building barges.
28	148	The Committee are of the opinion that works relating to the development of fisheries at Veraval Port should be executed during the Second Plan. They also recommend that a special study should be made of the boat building industry at this port as well as other ports where it is well-established and suitable encouragement given in developing this industry. The feasibility of converting Veraval into an all-weather Port should be examined.
29	152	The Committee are of the opinion that trade will follow the facilities. New cement factories and a big chemical factory now being established are bound to increase the importance of Porbander Port. Hence the provisional inclusion of the works in item (*c*) in the Second Plan referred to in para 152 should be taken as final.
30	156	In the rapidly developing economy of the country this idea of delaying the provision of additional facilities at Bedi Port till "trade is firmly established" does not appeal to the Committee. The trend of traffic handled during the last few years and the increase of industrial activities in the hinterland should be regarded as a sufficient indication for the purpose.
31	162	The Committee suggest that the feasibility of utilising Navalakhi as a transhipment Port for Kandla should be carefully examined.
32	168	In the expanding economy of the country the demand for additional port facilities is bound to increase. It would therefore be advisable

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		to plan steps for converting some of the more important intermediate ports into major ports. Due to limited funds available such a programme can only be included in the Third Plan. In this connection the Committee are in agreement with the recommendations of Shri Nanjundiah, Officer on Special Duty (Ministry of Transport) that Okha, Tuticorin and Bhavnagar may be considered first for such development. The Committee would also suggest that the port of Paradip should be added to this list. In regard to Bhavnagar the Committee reiterate their earlier recommendation made in their Seventeenth Report that it should be provided with a B.G. rail connection, so that it can play its role effectively as an important port and relieve pressure on Bombay. The Committee suggest that a B.G. rail link should also be provided to Bedi.
33	169	The Committee further recommend that the list of Minor Ports should be examined carefully, periodically and more important of them should be brought in the list of Intermediate Ports.
34	170	One facility that should be invariably given to intermediate and some of the minor ports is that they should be connected with a National Highway by a *pucca* road.
35	173	The Committee have, come to the conclusion that the Ministry of Transport has not yet given much serious thought to the diversion of traffic from the congested Major Ports to the Intermediate and the Minor Ports which can easily handle the traffic with a little increase in the existing facilities or even by providing a few additional facilities. The Committee, therefore recommend that the Ministry of Transport should give top priority to the rationalisation of traffic amongst different Major, Intermediate and Minor Ports and take concrete measures for diversion of traffic to ports which can easily handle them. Some intermediate ports like Bhavnagar and Bedi can handle much bigger traffic, if B.G. rail connection is provided. This will add considerably to our Port capacity and will greatly reduce congestion at the Port of Bombay. Special facilities should be provided at

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		some of the Ports like Kandla and Bhavnagar where iron ore is being handled in an increasing measure recently.
36	175	The valuable observations of the Ports (Technical) Committee referred to in para 174 of this Report do not appear to have received any attention.
37	181—182	The Committee regret to note that the hydrographic survey of the coast line of India is progressing at a snail's pace. At the present rate it would take several decades before the survey of the entire coastline is completed. The Committee consider this very unsatisfactory and recommend that suitable measures should be taken to complete the hydrographic survey of the entire coastline of India within a period of ten years. The Committee also recommend that the conservation of the coastline should henceforth be the responsibility of the Union Government as recommended by the Ports (Technical) Committee, 1946.
38	186	The Committee would like to draw special attention of the Ministry of Transport to the observations of the U.N. Experts' Committee reproduced in para 186 of the Report and recommend that the suggestions given in item (*v*) therein should be implemented straightaway.
39	189	The Committee hope that the question of the purchase of dredgers and formation of the Dredger Pool proposed in the Second Plan, will be pursued vigorously and that the benefits from the pool will accrue to the Minor Ports during the Second Plan period itself. The question of suitably expanding the pool to meet the requirements adequately should be reviewed periodically. The feasibility of stationing a unit at one of the intermediate ports of Saurashtra which may have proper technical personnel and advice available for the purpose should be carefully examined in view of the number of Ports on the Saurashtra coastline.
40	195	The Committee are glad to note that it has since been agreed that it would be worthwhile asking the American Expert Team to visit Geonkhali for further investigations and submit a preliminary report on the lines they had done for the Railway

1	2	3
		system in India. If the Preliminary report shows that the scheme of having a subsidiary port at Geonkhali is feasible, the Committee would suggest that steps might be taken for a detailed survey of the scheme being undertaken for the inclusion of the scheme in the Third Five Year Plan. The Committee were given to understand that Geonkhali would also eventually serve as a suitable site for locating a ship-building yard.
41	202	The Committee suggest that a quick traffic survey may be worked out for the purpose of examining the feasibility of developing point Calemere as a port and if the trade prospects are bright, suitable facilities may be provided for handling the traffic that could legitimately come to this port.
42	203	The Committee suggest that in view of the delay that has occurred in bringing out the uniformity in Port dues as suggested by the Officer on Special Duty (Shri Nanjundiah), the question may be finalised expeditiously.

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