E. C. No. 653

ESTIMATES COMMITTEE

(1969-70)

(FOURTH LOK SABHA)

HUNDRED AND TWENTY-FOURTH REPORT

MINISTRY OF IRRIGATION AND POWER

FARAKKA BARRAGE PROJECT

LOK SABHA SECRETARIAT

NEW DELHI

April, 1970/*Vaisakha*, 1892 (*Saka*)

Price : Rs. 1.10 Paise

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CORRIGENDA

to

Hundred and twenty-fourth Report of Estimates Committee (Fourth Lok Sabha) on the Ministry of Irrigation & Power - Farakka Barrage Project.

Page 3, line 22, for "glaxy"
read "galaxy"

Page 6,(foot note), line 7 from below,
for "shushy"
read "slushy"

Page 10, line 13, for "exrcised"
read "exercised"

Page 20, line 3 from below,
for "GaGa and %etig Breted"
read "Gate and Gate Bridge"

Page 31,line 1, for "with".
read "with them".

Page 36,(i) line 4, for "known"
read "know"

(ii) line 27, for "manufacture"
read "manufacturer"

(iii) line 33, for "Jermany"
read "Germany"

Page 67,(i) line 20, for "randered"
read "rendered"

(ii) line 2 from below,
for "cos" read "cost"

Page 70, line 24, for "unhappy observe"
read "unhappy to observe"

Page 77, line 15, for "improvment"
read "improvement"

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(1969-70)

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INTRODUCTION

I, the Chairman, Estimates Committee, having been authorised by the Committee to submit the report on their behalf, present this Hundred and Twenty-fourth Report on the Ministry of Irrigation & Power—Farakka Barrage Project.

2. The Committee took evidence of the representatives of the Ministry of Irrigation & Power on the 27th and 28th November, 1969. The Committee wish to express their thanks to the Secretary and Joint Secretary, Ministry of Irrigation & Power, Chairman, Calcutta Port Commissioners, Calcutta, Chairman, Central Water & Power Commission, General Manager, Farakka Barrage Project and other Officers of the Ministry of Irrigation & Power for placing before them the material and information they wanted in connection with the examination of the estimates.

3. The report was considered and adopted by the Committee on the 4th April, 1970.

4. A statement showing the analysis of recommendations contained in the report is also appended to the Report (Appendix VII).

NEW DELHI;
April 13, 1970
Chaitra 23, 1892 (*Saka*)

M. THIRUMALA RAO,
Chairman,
Estimates Committee.

CHAPTER I

INTRODUCTORY

A. What the Project is

The Project is located in Murshidabad District of West Bengal State. It comprises the following works :—

(a) A Barrage at Farakka with the road-*cum*-rail bridge over it, a Head Regulator on the right bank of the Farakka Barrage. It consists of 109 bays. The length of the barrage between abutments is 7,366 feet;

(b) A Barrage across the Bhagirathi at Jangipur;

(c) A Feeder Canal about 25 miles long taking off from the Head Regulator and tailing into the Bhagirathi on the downstream side of the Jangipur Barrage on the Bhagirathi; and

(d) Four navigation locks—one on the upstream of the Farakka Barrage, the second on the downstream side of it and the third on the Feeder Canal at its tail end—to facilitate navigation between Bhagirathi and the Ganga *via.* Feeder Canal, and also along the Ganga across the Farakka Barrage and the fourth at the Jangipur Barrage.

1.2. The Project after completion will enable the diversion of 40,000 cubic feet per second of water from the Ganga into the Bhagirathi. This, with the normal discharges going down the Bhagirathi when the level of Ganga is high, will set right the hydraulic balance of the bores in the Hooghly and check the threat posed to the port. The frequency of the tide will be reduced, and normal navigability will be restored. Besides, the Scheme will yield the following additional benefits :—

(a) Communications—

The Rail and Road Bridges to be built over the Barrage will establish a direct link between places on the two banks of the Ganga—a communication link which is most vital from the strategic point of view;

(b) Water Supply to Calcutta—

The water supply to the city of Calcutta is made from the Hooghly through a pumping plant situated upstream of Calcutta at Palta. Originally this water was free from salinity. But of late due to the deterioration of the Bhagirathi supplies, salinity intrusion has become a great problem threatening the water supply

system to this metropolitan city and to its industrial environments. With added fresh water supply from Ganga on completion of the Project the salinity will be reduced and the quality of water supply will be improved;

(c) Inland Navigation—

On account of a continuous supply of upland water, on completion of the scheme, the navigability of the upper reaches will improve and it would be possible to provide an all water direct link, between the port and the other States like Bihar, UP, Assam; etc.; and

(d) Improvement in drainage—

Progressive deterioration of the drainage channels and reduction in the capacity of the Bhagirathi and othe rivers of West Bengal have resulted in a series of stagnant water-pools which have become rich breeding grounds for malarial mosquitoes. The fertility of the area has gone down. Sanitary conditions have become very unwholesome. With the ensured upland supply on completion of the Project, drainage, sanitation and public health of the entire area will improve. Flood hazards will also be reduced with the improvement of Bhagirathi which is the principal drainage channel in the area.

B. Genesis

1.3. The idea of the Farakka Barrage Project has been before the nation for quite a long time. The need for such a project was envisaged as far back as the middle of last century. Investigations were undertaken, and committees of the best engineering experts were appointed from time to time to formulate measures to maintain the Hooghly in good condition. Several experts and expert committees had been appointed prior to the partitioning of the Indian sub-continent. They all arrived at the same conclusion—that the head waters (the waters of the Ganga flowing into the Bhagirathi and of other spills which fall into the Bhagirathi itself) were of the utmost importance for keeping the waterway from Calcutta to the sea, safe for navigation.

1.4. As early as 1858, a barrage across the Ganga at Rajmahal was planned by Sir Arthur Cotton, the British engineering expert who came to India and was primarily responsible for some of the largest irrigation projects in the country during the last century. According to Sir Arthur Cotton, 'if additional water were thrown in to the Hooghly and kept flowing down it during the dry season, such an additional scour might just make the difference of preventing the Hooghly from silting up'.

1.5. This opinion was repeated again and again by other engineers of world. For instance, the Stevenson Moore Committee (1919) after examining a mass of evidence, concluded that it was necessary to take immediate steps for the conservation of the head water supplies.

Again Sir William Willcocks, a British engineer, (1930) felt that the maintaining of a good supply of river water in winter and summer would mean so much to the Hooghly, and was convinced that 'the Barrage on the Ganges will be needed in the time to come'.

Mr. T. M. Oag, Deputy River Surveyor, Calcutta Port Commissioners (1939) observed that 'it is essential to obtain control over the feed water entering the Hooghly not only to provide supply during the dry season but to regulate its flow.....'.

In 1946, Mr. A. Webster, Chief Engineer, Calcutta Port Commissioners, recommended that 'a strong representation be made to Government regarding the need for improving the headwater supply to the river Hooghly'.

Recently (1957), Dr. Walter Hensen, an expert German Engineer, reiterated this position when he declared "I am of the opinion that the proposal for the construction of a barrage across the Ganga is the best technical solution of the problem. It is the most purposeful measure with which the long-term deterioration in the Bhagirathi-Hooghly can be stopped and possibly converted into a gradual improvement."

1.6. Thus a glaxy of engineers who devoted their thought to the problem of the Bhagirathi-Hooghly for more than a century have unanimously asserted the same view.

C. Objectives

1.7 As is evident from above, the primary objective of the Farakka Barrage Project is to improve the navigability of the Calcutta Port and to save it from a process of sure extinction. The importance of the Project can be visualised only when the importance of Calcutta Port and the imperative necessity of saving it from being lost is properly understood.

1.8. Calcutta is a premier Indian Port, situated inland, on the banks of the Hooghly which is also known as the Bhagirathi in the upper reaches. Hundreds of merchant ships, flying almost every flag in the world, call at Calcutta port every year, bringing valuable cargo from abroad for India and taking back Indian tea, jute and scores of other goods which are in great demand overseas. The Bhagirathi-Hooghly Waterway, through which these ships gain access to Calcutta Port (a distance of 125 miles), is sustained by supplies of water from the Ganga, or the Ganges, as the river is known throughout the world. These supplies have dwindled over the years; the sea-tides are gaining an upper hand along the Hooghly; the waterway to Calcutta is silting up at an alarming rate; and Calcutta Port is threatened

with extinction. The loss of Calcutta Port would be a major world catastrophe in every sense of the word. It has to be averted speedily and with determination. This can only be done by letting in adequate quantities of fresh water into the Bhagirathi-Hooghly system. This is what the Farakka Barrage Project seeks to do.

1.9 Calcutta is the largest and most important commercial city in India, the second largest in Commonwealth and amongst the first ten in the world. It is also an important Port surrounding a large area of hinterland—larger than the UK and France put together—rich in natural resources. In view of the fast growing Iron and Steel Industry, the hinterland of Calcutta is now referred to as the future of 'Ruhr' of India.

1.10 The Port of Calcutta is by far the most important port in the north-eastern part of India. The history of this port dates back to the 17th Century, when Calcutta was founded by the East India Company. Being the main outlet for Indian coal, jute and tea which formed the bulk of trade in this part of the country, the Port has gradually developed and in spite of its limitation as a river port 125 miles away from the sea, it has risen to its position of eminence. Even with the establishment of other ports in the coastal region, the Port of Calcutta occupies a unique position among the major ports in the East.

1.11 By virtue of its position, the Calcutta Port is important for exports as well as imports for the rich industrial States of Bihar, Uttar Pradesh, Madhya Pradesh, West Bengal, Orissa and Assam. It is served by a network of railways and roadways as well as by waterway and airway. The chief exports are jute, gunnies, hemp, tea, linseed, oil, coal, pig iron, manganese, and iron ore, milk, carpets, hides and skin. The principal items of import are salt, food-grains, petroleum, machineries, provisions and other manufactured and consumer goods. About 50 per cent of India's exports are dependent on the Port of Calcutta.

1.12 After attainment of Independence, India is being rapidly industrialised and the standard of living of the people is rising. With even a small increase in the standard of living, there would be a large increase in the volume of trade and of the shipping that would be necessary for it. The rapid development of Calcutta Port for handling large volume of exports and imports has thus become absolutely essential. Unfortunately, there has been progressive deterioration of the Port of Calcutta resulting from deterioration of its navigable approaches from the sea. Whereas ships with drafts of 26 feet could come to Calcutta for a number of days throughout the year before 1948, they can now come up only for a few days in the year under favourable tidal conditions. This deterioration is continuing unabated, threatening eventual extinction of the Port in not too distant future. It is, therefore, imperative to take immediate effective long-term measures to arrest this deterioration of the navigable approaches to the Port in order to ensure

retention of its position as a first class international Port and also to cater to the anticipated increase in trade due to rapid industrialisation of the country.

1.13 That the health of the approaches to a riverine port is dependent upon the head waters is a universally acknowledged fact. This is true of Calcutta also. During the years in which plenty of water flows through the Bhagirathi from the Ganga, the approaches to Calcutta are much healthier and easier for navigation than during other years. Ganga is the most precious of Indian rivers. Indian civilisation through the centuries has been built on its banks. Till three hundred years ago, the Ganga was flowing mainly through the Bhagirathi-Hooghly past Calcutta. Thereafter, the river developed a tendency to flow through its other branch, the Padma, which later on developed as a major branch. The Bhagirathi became a spill channel receiving water for only three months when the Ganga was in flood. The other spill channels, the Jalangi and the Mathabhanga deteriorated to a very great extent and drew very little flow. The fresh water brought by these sources is extremely important for moving silt and sand out into the sea so that the navigation channels may be kept open.

1.14 During the period when there is no upland discharge, the tides continuously push sand farther and farther up the river, and make the river shallower and shallower. The result has been a marked increase in the strength and frequency of the 'bores'. Bore tides are a devastating phenomenon; the tide rises suddenly, and a gigantic wall of water, so to speak, 4 to 6 feet height, rushes up the river at great speed spelling death or destruction all along. When a bore tide passes, mooring chains are known to give way, exposing ships to the danger of capsizing; jetties are known to have been twisted and uprooted under their impact. Because of all this, Port property suffers severe damages and shipping is severely restricted.

1.15 An increase in the bore tide is a direct indication that the tidal propagation is obstructed and the navigational channel would continue to silt up further and further. The frequency of these bore tides have greatly increased in recent years. Now they occur on 160—170 days in a year while in 1947 they occurred on about 70 days.

1.16 It is, therefore, obvious that the minimum that must be done to keep the Bhagirathi-Hooghly healthy and safe for navigation is to take mesaures to provide fresh water from the Ganga into Bhagirathi. This is the object of the Farakka Barrage Project.

D. Delay in starting the work

1.17 Although the necessity of the Farakka Barrage Project was felt more than 100 years ago for saving the Calcutta Port, the preliminaries were started in 1960 and the actual work on the Project could only start in

1963-64. About the reasons for delay in starting the work on the Project, the representative of the Ministry of Irrigation and Power stated during evidence that "In so far as the position before Independence is concerned, it can be said that in those days, there were so many big schemes—many of them were not taken up with enthusiasm. But after Independence, there has been a continuous attempt at bringing out this Project as indicated by a few dates. In 1948, the West Bengal Government started investigation and this was taken over later on by the Central Water and Power Commission in 1950. Two barrage sites were selected one at Farakka and another at Raj Mahal. From the point of view of suitability, Farakka site was chosen. In October, 1952 there was an Expert Committee which went into the matter and recommended construction of a barrage across the Ganga. Again, in 1957, the Government of India invited Prof. Hensen from Germany, Director of a Research Institute in Hydraulics and Foundation Structure Engineering to examine the problems of the Calcutta Port, of the Hooghly and the river Bhagirathi. After examining various things concerning that, Prof. Hensen made his proposal. Preliminaries were actually started in 1960 and a Project Report was first brought out in 1960 and later on, it had to be revised because this was completely a new work for us. Actually, the work was started from about 1963. Therefore, we can say that it was continuously under consideration of Government. Therefore, delay cannot be attributed to government in this regard. After Independence the work was in full swing". The representative of the Ministry of Irrigation and Power further stated that, "For a work of this magnitude, a considerable amount of examination was necessary. So there was of course a good deal of delay in that. Of course, if we wanted that could have shortened a little more. I do not think that there was too much avoidable delay."

1.18 The Committee have been informed that the original estimate of the Project was administratively approved in April, 1960. The expenditure sanction to the Project was, however, issued only in 1962. Even after the work on the Project was started, in the initial years much progress could not be achieved and it was only in 1965 when the Farakka Barrage Control Board made a complete review and decided that the work of the Project should be divided into three units so that the progress of work could be accelerated.*

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"The work was started from the working season of 1963-64. But, in the initial years much progress could not be achieved due to various reasons such as shushy nature of soil, unsatisfactory performance of Batching and Crushing Plant, shortage of well point equipment and pile driving hammers etc. The progress improved after these bottle-necks were overcome. In 1965, the Farakka Barrage Control Board made a review of the construction programme keeping in view the limitations in regard to the resources available for the Project and decided that the work of the Project should be divided into three units".

1.19. The Committee note that the investigations about the details of the Project, which were started by the West Bengal Government in 1948, were later on taken over by the Central Water and Power Commission, the administrative sanction to the Project was given in 1962 and the work was started only by 1963. They further note that even after that for two or three years the work on the Project was not started in right earnest. Although the importance of the Project was realised long ago it was delayed for a long time.

The Committee are constrained to observe that this delay, apart from resulting in loss of hundreds of crores and increase in cost, has deprived the country from the anticipated benefits of the Project. The Committee have been informed that the Farakka Barrage Project will enable the diversion of 40,000 cusecs of water from the Ganga into Bhagirathi which will set right the hydraulic balance of the tidal bores in the Hooghly, check the threat posed to the Calcutta Port and restore normal navigation in river Hooghly. The Committee understand that with the reduction in frequency of tides, salinity in the water will be reduced which in turn will solve the problem of water supply to the city of Calcutta and Calcutta Metropolitan District. The Committee note that Farakka Barrage will also bring the improvement in the communication system and remove the drainage congestion.

CHAPTER II

ORGANIZATIONAL SET-UP

A. Administrative set-up

(i) *Ganga-Basin Commissioner*

2.1. The Commissioner (Ganga-Basin) *ex-officio* Joint Secretary in the Ministry of Irrigation and Power, who functions under the overall control of the Secretary in the Ministry, is responsible for the work, direction and policy decisions in respect of the Farakka Barrage Project. The Commissioner is assisted by an Under Secretary and the Farakka Barrage Project Section. While the Section is exclusively handling cases relating to the construction of the Farakka Barrage Project, the officers are also concerned with cases other than those relating to the Project.

(ii) *Farakka Barrage Control Board* :

2.2. With a view to ensure efficient, economical and early execution of the Farakka Barrage Project, the Government of India, in consultation with the State Government of West Bengal, set up in April, 1961 the Farakka Barrage Control Board to be in overall charge of the Project, including its technical and financial aspects, under the general supervision of the Ministry of Irrigation and Power. The composition of the Farakka Barrage Control Board is as follows :—

(1) Minister of State of Irrigation & Power, Government of India—Chairman.

(2) Chairman, Calcutta Port Commissioners—Vice-Chairman.

(3) Deputy Minister of Irrigation & Power, Government of India—Member.

(4) Minister for Irrigation & Waterways, Government of West Bengal—Member.

(5) Secretary to the Government of India, Ministry of Irrigation & Power—Member.

(6) Secretary to the Government of India, Ministry of Transport & Shipping (Deptt. of Transport) or his representative—Member.

(7) Chairman, Central Water and Power Commission or his representative—Member.

(8) Commissioner, Ganga-Basin and Joint Secretary to Government of India, Ministry of Irrigation & Power—Member.

(9) Joint Secretary to Government of India, Ministry of Finance (Department of Expenditure) or his representative—Member

(10) Additional Member (Works) Ministry of Railways (Railway Board)—Member.

(11) Development Adviser Ministry of Transport & Shipping (Department of Transport)—Member.

(12) Secretary to the Government of West Bengal, Irrigation and Waterways—Member.

(13) General Manager, Farakka Barrage Project—Member.

2.3. The Board is assisted by a full-time Secretary of the rank of Superintending Engineer and a Financial Adviser and Chief Accounts Officer. The Secretary of the Board has under him a small section comprising the ministerial staff and an Office Superintendent. The functions of the Farakka Barrage Control Board are to :—

(i) scrutinise the estimates of the Project, advise necessary modifications and recommend the estimate for administrative approval of the Government of India;

(ii) examine and decide all proposals for preparation of designs and for obtaining expert advice;

(iii) examine and approve from time to time the delegation of such powers, both technical and financial, as it may deem necessary, for the efficient execution of the Project to the Chief Engineer and other Officers concerned with the execution of the Project;

(iv) examine and where necessary, lay down specifications and schedule of rates for various classes of work with a view to sound and efficient execution of the Project;

(v) approve all sub-estimates and contracts, the cost of which exceeds the powers of sanction of the Chief Engineer;

(vi) approve all proposals for award of work of supplies on contract which are beyond the powers of the Chief Engineer of the Project;

(vii) frame rules as to delegation of powers and procedure for the purposes of carrying out its business;

(viii) decide the programme of construction of different parts of the Project keeping in view the funds available, the economics of the Project and the desirability of obtaining quick results;

(ix) decide on the withdrawals of water from the pond during the construction period for preservation of the Bhagirathi, Hooghly and the Port of Calcutta and the reduction of salinity of the city water supply with a view to securing the best use of the water available;

(x) receive such progress reports as it may prescribe both as to works and expenditure in the prescribed form from the Chief

Engineer and other Officers, review the progress of different units of the Project and lay down steps to be taken to expedite the work;

(xi) fix responsibility and recommend suitable disciplinary action in the case of the Officers of the Project.

(iii) *Powers of the General Manager* :

2.4. The actual work of the construction of the Farakka Barrage Project is carried out by the Chief Engineer, Farakka Barrage Project a full-time officer, who has been re-designated as General Manager. The General Manager exercises the same powers as were exercised by him as Chief Engineer. The General Manager has been declared Head of the Department for purposes of F.Rs. and S.Rs. and General Financial Rules and has also been delegated the same powers as are exrcised by his counterpart in the Central Public Works Department. The General Manager and other officers of the Project have also been delegated specific powers relating to work etc. of the Farakka Barrage Project.

2.5. About his specific powers, the General Manager has stated during evidence, "We can accept the lowest tender up to the value of Rs. 50 lakhs in consultation with the Financial Adviser and the Chief Accounts Officer. If the items are already provided in the Project estimate, in consultation with the Financial Adviser, we can accord technical sanction to an estimate up to Rs. 50 lakhs".

2.6. In the case of works of emergent or unforeseen nature, the need for 'emergency' is determined by the General Manager himself and under intimation to the Financial Adviser and Chief Accounts Officer, the lower Officers are empowered to allot work with the approval of the next higher officer up to the limits of the powers of the latter. For according sanction in cases exceeding these powers, there is a 'Local Committee' to decide emergent matters that brook no delay, up to the delegated powers of the Ministry of Irrigation and Power. For unforeseen requirements of ordinary and special Tools and Plant, the General Manager is authorised to exercise his own powers as Head of Department in the case of real emergency. Further, for emergent purchases, the General Manager has full powers.

Urgent matters beyond the powers of the 'Local Committee' and the Project authorities, are processed under emergency procedure of the Control Board and decision/approval conveyed forthwith to the General Manager for implementation. Such decisions taken by the 'Local Committee' or conveyed under emergency procedure of the Control Board are later confirmed/ratified by the Control Board at its regular meeting.

2.7. Asked whether in November, 1968, the General Maganer suggested to the Control Board 'now that the real battle with Ganga has commenced and we are making no headway, it is strongly felt that the decision making authority must be based at site to take on the spot decisions', the represen-

tative of the Ministry of Irrigation and Power has stated during evidence, 'On this, we had some discussions and settled the matter to satisfaction.... ..... As the work gathered tempo there was some labour trouble, and the General Manager was faced with a difficult situation. He wanted that he be given more powers. In that very context it was not possible to give him more powers. But whatever the trouble was there, it was solved.' The General Manager, Farakka Barrage Project elucidating the reply has stated, 'In 1968 November, when we were constructing the coffer dam, in that context, it was said that if we cannot complete the coffer dam, the whole work may fail..... The labour trouble was there because they were demanding overtime wages. I had to get the Ministry's sanction over the telephone. And the things were settled.' Asked whether by shifting the decision-making authority to the site, the progress of the work would be much more expedited, the representative of the Ministry of Irrigation and Power replied, "Generally yes".

2.8. The Committee feel that there is some force in the argument that the decision making authority should be based at site to take on the spot decisions. They are of the view that it would be useful if sufficient powers are delegated to the highest officer on the spot so that it may be possible for him to take quick decisions as and when unforeseen situations arise. The Committee, therefore, recommend that the entire position may be reviewed in consultation with the Ministry of Finance at an early date.

(iv) *Liaison Office at Delhi* :

2.9. The Farakka Barrage Project has a Liaison Office at Delhi, whose function is to contact personally the concerned Officers in the various Ministries, Departments of Government, Firms, Iron and Steel Controller, Directorate General of Supplies and Disposals, Director General of Technical Development and Chief Controller of Imports and Exports for pursuing cases relating to the sanction of foreign exchange, obtaining import licences, arranging equipment from other Projects expediting import and deliveries of spare parts for the machinery etc. etc. and to get the things done expeditiously.

2.10. The staff employed in the Liaison Office at Delhi up to 7-3-1968 was one Liaison Officer, one Stenographer, a peon and a driver. The expenses for the maintenance of the Office at Delhi during the years 1965-66, 1966-67, 1967-68 were Rs. 21,757.35, Rs. 21,744.65 and Rs. 30,912.99 respectively. The Committee have been informed that after the retirement of the Liaison Officer w.e.f. 7-3-1968, the liaison work relating to the Project is being done by the Office of the Control Board and that the post of Stenographer attached to the Liaison Officer has also been abolished.*

*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"This was done as the procurement of most of the capital equipment for the project was over by then and for the subsequent work of procurement of spares etc. a separate liaison office was not considered necessary."

2.11. Asked when the General Manager had sufficient powers to accept tenders and Financial Adviser and Chief Accounts Officer had also got sufficient powers to make payments, what type of work was done by the Liaison Officer, the General Manager, Farakka Barrage Project stated, 'He has to expedite cases involving import licence and to get foreign exchange released.' The General Manager also stated that he was a non-technical man and a Class-I Officer.

2.12. The Committee fail to understand why the liaison work in Delhi could not be done by the office of the Farakka Barrage Control Board earlier also as is being done now. They cannot help drawing the inference that there was no justification for setting up Liaison Office at Delhi.

(v) *Surplus Staff* :

2.13. Regarding strength of engineers and labourers employed in the Department, the representative of the Ministry of Irrigation and Power stated "The strength of the engineers and labourers belonging to the Department in 1968 was : engineers about 120 and labourers 3000."

2.14. In view of the fact that the Farakka Barrage Project is going to be completed in February, 1971, one year ahead of the schedule, many persons would be rendered surplus after completion of the Project. During evidence the representative of the Ministry of Irrigation and Power stated : "Attempts are now being made to absorb as many people as possible who are rendered surplus in other government departments. We had a discussion with the representatives of the employees. There was a meeting held a couple of days ago with the Ministry of Irrigation and Power and it has been explained to them as to what we are doing in order to help them..... An Expert Committee will go into this to find out how many of them will be required even after the completion of the Project for the purpose of maintenance. After that is determined, the surplus will be utilised elsewhere. Then only we can say in what possible manner help can be given to them for securing jobs elsewhere. One thing we have done is that in Central Water and Power Commission which is under the Irrigation and Power Ministry, whenever the vacancies occur they will be filled up from among the people from this Project waiving the formalities to register themselves with the Employment Exchanges..... A special cell to deal with absorption of surplus personnel of the Farakka Project will be created at Calcutta under the Department of Labour and Employment. This would be headed by an Officer on Special Duty of appropriate rank who would be drawn from the cadre of the West Bengal Government. The names and particulars of all the regular work-charged and muster-roll staff working in the Project would be sent by the Project Administrator to the Employment Exchange at Farakka for registration who would forward the same to the Officer on Special Duty in this special cell. The deputationists would revert to their parent departments according to a

phased programme. For such of the staff as are likely to be absorbed in the organisations of the Ministry of Irrigation and Power, the procedure to get the names sponsored through the Employment Exchange will be dispensed. The pay last drawn is to be protected as far as possible as per the rules.

The Ministry of Railways, Ministry of Petroleum and Chemicals, Ministry of Home Affairs, Ministry of Labour and Employment and Rehabilitation and Ministry of Health, Family Planning, Works, Housing and Urban Development, Calcutta Port Commissioners and the West Bengal Government have been addressed requesting them to consider absorbing the suitable employees from the Farakka Barrage Project who can be rendered surplus there while filling in vacancies in their departments and undertakings.

The Ministry of Petroleum and Chemicals and Mines and Metals had desired that details of the surplus staff of the Project may be sent to the Chairman and Managing Director of Engineers (India) Ltd., who are doing the engineering job in Haldia. Particulars of the staff are being sent to the Ministry for considering their names in the Haldia Industrial Complex. The Ministry of Health, Family Planning, Works and so on has issued instructions to the organisations under them to give preference to such surplus staff.

The Ministry of Irrigation and Power will write to the Ministry of Transport and Chairman, Inland Water Transport Committee to investigate the possibilities of development of inland water transport in the Farakka Complex. These people will be taken there. The Ministry of Irrigation and Power will write to the Ministry of Industrial Development for considering the possibility of utilising the well-equipped workshop at Farakka for running it on a commercial basis. After the completion of the Project, the position regarding employment of surplus personnel will be reviewed periodically.'

2.15. The Committee note the measures being taken by the Government for absorption of the personnel who may be rendered surplus after the completion of the Farakka Barrage Project. The Committee would, however, suggest that the Government should prepare an integrated programme to provide alternative employment to the Project personnel who will be rendered surplus on completion of the Project, thereby saving them from undue hardship and sufferings.

2.16. The Committee hope that the possibilities of development of inland water transport in the Farakka Complex (referred to in para 2.14) have by now been investigated by the Ministry of Transport and the Chairman, Inland Water Transport Committee. The Committee also suggest that in view of the importance of absorption of surplus staff after the completion of the Farakka Barrage Project, the feasibility of developing a base workshop for inland water transport in Farakka Complex may be examined by Government.

B. Budget

2.17. The original estimate of the Farakka Barrage Project was drawn up in 1959. The cost of the Project then estimated at Rs. 56.40 crores was administratively approved by the Ministry of Transport in April, 1960. Expenditure sanction to the Project was, however, issued in the year 1962 for Rs. 68.59 crores, the increase in the cost having been made on an *ad hoc* basis, considering the upward trend of rise in prices which had already been observed. The sanctioned Project envisaged the construction of—

(i) A barrage across the Ganga at Farakka with a rail-*cum*-road bridge over it.

(ii) A feeder Canal taking off from the head regulator on the right bank of the Ganga just upstream of the Farakka Barrage and having its outfall into Bhagirathi river below Jangipur Barrage,

(iii) A barrage across the Bhagirathi at Jangipur above the Feeder Canal outfall.

(iv) Tail and Bye-Pass Head Regulator.

(v) Three Navigation Locks; one upstream of the Farakka Barrage, another downstream of it and the third at the tail end of the Feeder Canal with connecting lock channels.

2.18. The Committee have been informed that this estimate was prepared on the basis of limited data, preliminary designs and on the rates prevalent in the locality for works of common nature which were strictly not comparable with the special and complicated type of works required for the construction of a Project of this magnitude. The Committee have been further informed that since the sanctioning of the Project estimate, there has been considerable increase in the rate structure as also in the cost of materials. The scope of the Project had also been increased, with the provision for future widening of the Railway Bridge to four-lane, the provision of a fish ladder bay in the barrage and widening of the navigation locks to accommodate the vessels expected to ply in the canal. All these factors necessitated a further revision of the Project estimate.

2.19. Keeping in view the limitations in regard to the resources that may be available for the Project during the Fourth Plan period *vis-a-vis* the main objective to be achieved, namely to ensure regulated upland supplies into the Bhagirathi-Hooghly and to establish a communication system across the Ganga, the Control Board in October, 1965, decided that the Project works should be split into the following units :—

Unit I

Farakka Barrage with Road-*cum*-Rail Bridge over it,
Head Regulator,
Right Afflux Bundh,
40% of Right Guide Bundh,

Left Guide Bundh,
65% of Left Afflux Bundh,
Feeder Canal,
Jangipur Barrage,
Navigation Lock & Bye-Pass
Channel at Jangipur Barrage,
Bagmari Syphon,
Kanoli Inlet and other diversion works,
Road Bridges over Feeder Canal—2 Nos.
(Work on Upstream Lock at Farakka which has already been started has to be suspended after bringing it to safe stage and the balance works to be taken up under Unit II).
These works are to be completed by 1970-71.

Unit II

34% of Left Afflux Bundh,
60% of Right Guide Bundh,
Tail Regulator and Regulator on Bye-Pass Channel,
Bye-Pass Channel,
Additional Bridges over Feeder Canal.
These works could be taken up after 1970-71 if funds for the same are not available during the Fourth Plan.

Unit III

Comprises the works required for Navigation. This would be taken up in the Fifth Plan after completion of Unit I works.

2.20. In April, 1968, the Control Board approved the revised estimate of Farakka Barrage Project amounting to Rs. 156.293 crores which was sanctioned by the Ministry of Irrigation and Power in February, 1969. The break-up of expenditure under different units of the Project is as under :—

Unit I	. . . . .	Rs. 132·794 crores
Unit II	. . . . .	Rs. 8·640 crores
Unit III	. . . . .	Rs. 14·859 crores
		Rs. 156·293 crores

2.21. Regarding reasons for increase in the estimated cost of the Project, the Committee have been informed that the reasons for increase in the Project estimate can be classified broadly under the following categories :—

1. Increase in rate structure;
2. Increase in scope of work;
3. Insufficient provision for certain items.

2.22. A table showing the comparative rates adopted in the two estimates for important items is given below :—

Item of work	Unit	Rate adopted in the Project after *ad-hoc* increase in Original estimate.	Rate adopted in revised estimate
1. Land			
(*a*) homesteads acre and cultivable lands	acre	Rs. 1,950·00	Rs. 3,500·00
(*b*) Pond area	acre	55·84	1,600·00
2. Earthwork			
(*a*) Barrage	% cft	59·65	193·00
(*b*) Canal	% cft	50·00	113·00
3. Concrete	% cft	287·00	565·00
4. Sheet Piles	per M.T.	716·05	2,264·00
5. Stone protection	% cft	86·85	156·00
6. Filter	% cft	88·60	193·00

2.23. The following statement indicates the amount and percentage increase separately due to (i) increase in rate, (ii) increase in scope of the work and (iii) inadequate provisions :—

	I. Head Works	II. Main Canal including Jangipur Barrage	Total
1. Original sanctioned estimate	Rs. 36·255 crores	Rs. 29·688 crores	Rs. 65·943 crores
2. Revised estimate	Rs. 89·824 crores	Rs. 66·468 crores	Rs. 156·292 crores
3. Increase due to—			
(*i*) Rate structure	Rs. 22·241 crores (61·3%)	Rs. 24·872 crores (84%)	Rs. 47·113 crores (71·5%)
(*ii*) Scope	Rs. 2·838 crores (7·7%)	Rs. 6·591 crores (22·2)%	Rs. 9·429 crores (14·3)%
(*iii*) Inadequate provision	Rs. 22·799 crores (63%)	Rs. 5·316 crores (17·8%)	Rs. 28·115 crores (42·7%)
(*iv*) Design change	Rs. 5·691 crores (16%)	Rs. —	Rs. 5·691 crores (8·5%)
4. Total increase	Rs. 53·569 crores (148%)	Rs. 36·78 crores (124%)	Rs. 90·349 crores (138%)

2.24. Regarding reasons for the increase in the estimate, the representative of the Ministry of Irrigation and Power has stated during evidence : "The reasons are—first, increase in rate structure; second, increase in the scope of work; and third due to insufficient provision for certain items.... With regard to rate structure, we expected that land compensation would be paid at the rate of Rs. 1950 per acre. Actually it is Rs. 3000 per acre. With regard to the earth work, originally it was thought to be Rs. 59.65 per 100 cft; actually on the basis of tender it was found to be Rs. 193 per 100 cft. For concrete it was estimated at Rs. 287 for 100 cft; actually the amount came to Rs. 565 per 100 cft. Then with regard to the second *viz.* increase in the scope of work, there was no fish lock in the original estimate, provision has been made in the revised estimate; then originally a double-lane road approach was thought of, in the revised estimate four lanes were provided. Third, in the original estimate there was only one divide wall but a second divide wall has been put in the revised estimate. The size of the lock was originally 490'×65'. This has been increased to 495'×82.5'. There was a provision of three locks. Now one additional lock at Jangipur Barrage complex is found to be necessary. There was no provision of lock channels for upstream and downstream but detailed investigations have now shown that regulators would be necessary at the off-take of river Kalandari. Previously there was no structure. So, scope of the work has increased.

There is also third item—increase due to inadequate provision. The original estimates were based on preliminary investigations and design without detailed design. After completion of investigations it was found that the provisions made in some of the major items—land, de-watering, coffer dam, excavation, re-inforcement, guide bunds, afflux bunds and regulators were found inadequate. Hence, increase due to inadequate provision had to be made. Initially the design did not cater for high seismic considerations which considerably altered the volume of work. These are the three important factors which contributed to the increase'.

2.25. Asked whether time-lag between the sanction of two estimates or the fact that the original estimate was not based on a realistic basis but only on a rough estimate contributed towards 200% to 300% increase in the estimate, the representative of the Ministry of Irrigation and Power in his evidence has stated, "All the three factors. Because of passage of time prices of steel and cement had gone up; because this was unfamiliar work; the original estimate was based on rough rates whereas the actual rates were different; and there was change in the scope of the Project."

The Committee desired to know whether it would not have been possible to prepare more realistic original estimate, the represntative of the Ministry of Irrigation and Power stated, 'With the existing know-how that was the best that we could do at that time.'

2.26. In reply to a question whether the Ministry contemplate further increase in the estimates, the representative of the Ministry of Irrigation and Power stated, 'Nature has been kind to us and a considerable amount of money on cofferdam has been saved because we advanced the work by one season. Even though the cost of material may go up further, we do hope that the savings will off-set the increase'. Taking into consideration the remaining work upto 1973-74 and the money at their disposal, the Committee desired to know whether there was a necessity of further revision of estimates. The representative of the Ministry of Irrigation and Power stated, 'At the moment we have got estimates sanctioned in February, 1969 and we are not thinking of putting up a revision.'

2.27. The Committee are unhappy to note that the cost of the Project which was originally estimated at Rs. 56.40 crores in April, 1960 has now been estimated at Rs. 156.293 crores i.e. an increase of about 180 per cent. The Committee are constrained to observe that by the time the original estimate of the Project in 1960 was prepared, the Government had an experience of atleast fifteen years of preparing designs and estimates of river valley projects. It is, therefore, strange that within a short period of six years, the estimate should have increased enormously. The Committee are of the opinion that sharp increase in the Project estimate vitiates the economics of the Project and also disrupts the allocation of precious resources of the country for different projects.

2.28. The Committee have been informed that increase in rate, increase in scope of the work, inadequate provision for the works were largely responsible for enormous increase in the estimates. The Committee feel that had the project estimate been initially prepared after full investigations instead of being prepared on limited data and preliminary designs, as has been done in the present case, this enormous increase in the revised estimate of the Project could have been obviated.

2.29. The Committee would like to draw the attention to the recommendations made in their Report on the Gandak Project and to stress again that the reasons for the enormous increases in the estimates of most of the river projects in the country should be examined fully by the Government and steps taken to avoid increases of such dimensions in future.

CHAPTER III

COMPONENTS OF THE PROJECT

A. Farakka Barrage

The Farakka Barrage Project envisages construction of a barrage across the river Ganga at Farakka with a road-*cum*-rail bridge over it and necessary afflux and guide bunds. The barrage with a length of 7,366 feet between abutments will have 109 bays.

3.2. The work relating to the Farakka Barrage is mainly being executed through contractors. The work regarding construction of Head-Regulator, Right Abutment of Farakka Barrage and 1-12 bays including 1st Divide Wall and from bays 13-20 has been awarded to M/s. National Projects Construction Corporation (M/s. NPCC). The work regarding construction of Left Abutment of Farakka Barrage and 57 bays on the left bank and 32 bays from the right bank beyond 20th bay has been given to M/s. Hindustan Construction Company. The ancilliary works like the erection and manufacture of barrage gates have been entrusted to M/s. Jessop and Company, the work regarding Left Guide Bund has been awarded to M/s. Construction and Trading Corporation and the work regarding Left an Afflux Bunds have been given to petty contractors.

3.3. The Committee have been informed through a written note that the contracts were awarded by inviting open tenders. However, the work of 1-12 bays of the barrage and the upstream navigation lock had been awarded to M/s. National Projects Construction Corporation on a negotiation basis with a view to make an immediate start in the work. When asked about the considerations for giving work to M/s. N.P.C.C. on cost plus basis, the General Manager, Farakka Barrage Project stated during evidence "We had such a contract, because that work was unfamiliar to the contractor. They also could not take a risk, and we also did not have sufficient data on designs, specifications, etc. Without designs, how could we insist on a firm price ? And it is usual in such cases." In a subsequent note furnished to the Committee, the Ministry of Irrigation & Power have stated that the contract was negotiated with M/s. N.P.C.C. on cost plus basis. The work for construction of first 12 bays and the Head-Regulator was allotted to National Projects Construction Corporation on 22-10-63 with target date of completion by June, 1965. However, due to slushy nature of the soil, power breakdowns, frequent labour troubles, unsatisfactory performance of Batching and Crushing plants and shortage of wellpoint equipment, pile driving hammers, an extension was granted to complete the work by June, 1969, and this was done.

3.4. The original estimate of the Farakka Barrage excluding Guide Bund, Afflux Bunds, Gates and Bridge was Rs. 16.846 crores but the revised

estimate has increased to Rs. 53.426 crores. The Committee have also been informed that upto September, 1969, 93% of the work has been completed and an expenditure of Rs. 40.56 crores have been incurred on the Barrage.

3.5. The following table indicates the details of original, revised estimates and the expenditure incurred on the Farakka Barrage :—

Name of works	Original estimate (Rs. in crores)	Revised estimate (Rs. in crores)	Expenditure incurred upto 1969 (Rs. in crores)	Balance (Rs. in crores)
1	2	3	4	5
(*a*) Construction of bays Head-Regulator and Silt Excluders, including dewatering, Coff-erdam etc.	16·846	53·4260	40·5644	12·8616
(*b*) Gates & Gate Bridge over Barrage and Head Regulator .	2·75	3·4458	2·0183	0·4275
(*c*) Road Bridge over Barrage .	1·00	1·1950	0·4200	0·7750
(*d*) Railway Bridge over Barrage* .	0·50	1·5000	—	1·5000
(*e*) Left Guide Bundh and Afflux Bundh	3·54	5·2430	2·0908	3·1522
(*f*) Right Guide Bundh and Afflux Bundh	—	1·7600	0·6127	1·1473

(*This work is being done by Railways.)

3.6. The details of the estimated quantity of work on the Farakka Barrage and the percentage of work done upto August, 1969 are given below :—

Description of Work	Estimated quantity	Percentage of work done upto 8/69
1	2	3
(*a*) Barrage and Head Regulator .	Excavation (L. cft) 1241	Complete
	Sheet Piling (M.T.) 19100	Complete
	Concrete (L. cft) 317	95%
	Rip-rap (L. cft) 124	Complete
(*b*) GaGa and %etig Breted .	109 Nos. gates	53
(*i*) Barrage .	. 11 Nos. gates	—
(*ii*) Head Regulator		

1	2	3
(c) Road Bridge—		
(i) Barrage	109 spans	48%
(ii) Head Regulator	11 spans	Almost complete
(d) Left Guide Bundh	Excavation (L. cft) 558	70%
	Rip-rap (L. cft) 120	69%
	Concrete (L. cft) 4·13	75·7%
(e) Right Guide Bundh	Excavation (L. cft) 1034	43%
	Rip-rap (L. cft) 147	15%
(f) Left Afflux Bundh	Earth work (L. cft) 1135	49%
(g) Right Afflux Bundh	Earth work (L. cft) 302	76%

3.7. The Committee have been informed that originally the Farakka Barrage was to be completed by 1968 but under the revised programme the target date for completion of the barrage has been fixed as 1970-71 working season.

3.8. The target date for completing the various bays of the Farakka Barrage and the achievements attained so far are given in the statement below :—

Item of	Target date for completion (working season)	Achievements
1	2	3
FARRAKA BARRAGE—		
1-12	1967-68	—Foundation and raising upto 55-60 RL complete.
13-32	1968-69	—Completed except raising of some piers.
33-52	1969-70	—Completed in 1968-69 except raising of piers to full height
53-79	1967-68	—Completed except raising of some piers
80-109	1966-67	—Completed except raising of some piers to full height
Raising of Piers and lowered crests	1970-71	—Expected to be completed in 1969-70.

3.9. Asked whether there had been delay in the completion of the works, the Ministry have informed in a written note that 'in a major river bed construction of this kind in the alluvial plains of the mighty river alike the Ganga, the execution of works in any season depends upon the river conditions actually obtaining after each flood season. The construction programme was accordingly being reviewed from time to time by the Technical Advisory Committee of the Control Board'. In October, 1966 the Technical Advisory Committee had recommended two alternative programmes. The first programme envisaged construction from the left bank and completing it in 1972-73 and the second envisaged construction from both the banks and completing it by 1971-72. It has further been stated by the Ministry that the 'feasibility of squeezing in the construction programme further so as complete the barrage earlier by a year or so, was, however, being constantly examined keeping in view the river conditions after floods of each season *vis-a-vis* the progress of work. Finally after the floods of 1968, by taking full advantage of the favourable river conditions, an earthen cofferdam enclosing all the remaining 40 bays of the barrage, was successfully completed. It was then decided by the Control Board that the construction of all the remaining bays of the barrage should be taken up for construction and completed in the 1968-69 season itself. Accordingly, by mobilising all available resources and by concentrating all efforts on this job, it was possible to complete all the bays with the piers raised to safe levels before the onset of monsoon of 1969. The remaining portion of the barrage including the gates and the Railway Bridge is expected to be completed by the end of 1970. Thus the Barrage work has progressed ahead of schedule."

When further asked whether the river conditions were favourable only in 1968-69, the Ministry have stated that the river conditions were particularly favourable in 1968-69.

3.10. Asked whether it was a fact that in 1963-64, the programme to construct the first spans on the right bank of the barrage was started on a faulty planning with the result that not a single pier could be raised on the right bank as against good progress made on the left bank (Khejuriaghat end), the representative of the Ministry has stated that, "it is not correct. The technical advice was in favour of starting work on the right bank...It was not objection to the right bank. It is only a question which is the proper place where it should be started. The then Chief Engineer (of Farakka Barrage Project) had some views, but the Technical Advisory Committee had their own views and it is in accordance with the views of the Technical Advisory Committee that this programme was undertaken."

The Ministry of Irrigation and Power in a subsequent note furnished to the Committee have, however, stated that 'the work on the Right Bank of Barrage was allotted on the 22nd October, 1963. The first pier was raised on the Right Bank in the working season of 1967-68'.

3.11. The Committee are unhappy to note that while the work on the right bank of the Farakka Barrage was allotted to M/s. National Projects Construction Corporation in October, 1963, the first pier on it could only be raised after four years i.e., **in the working season of 1967-68.**

3.12. The Committee feel that the inordinate delay in completion of the work by M/s. National Projects Construction Corporation has contributed to increase in the cost of the Farakka Barrage. In view of the poor performance of the M/s. National Projects Construction Corporation on the right bank of the Farakka Barrage the Committee urge the Government to go into the matter of allotment of work on 1-12 bays of the Farakka Barrage to M/s. National Projects Construction Corporation on the cost plus basis.

Upstream Navigation Lock at Farakka

3.13. The work on the construction of Upstream Navigation Lock at Farakka was allotted to M/s. N.P.C.C. in May, 1963 by negotiations on cost plus basis and the work on the construction of the Lock was started in November, 1963. The original date of completion of the work was June, 1966, but as the funds available for the Project works were limited, the construction programme as planned earlier had to be reviewed by the Farakka Barrage Control Board. Considering the limited availability of funds *vis-a-vis* the main objectives of the Project to be achieved the Control Board decided that essential components of the Project works, *viz.*, the main barrage, the rail-*cum*-road bridge over it, the Feeder Canal and the Jangipur Barrage, should be undertaken so as to ensure their completion by 1970-71, and the navigation works would be undertaken after the completion of the above works. In accordance with the decision of the Board, the work on the Upstream Navigation Lock was suspended in April, 1966 after bringing it to a safe level (above R.L. 70).

3.14. In a subsequent note furnished by the Ministry (February, 1970), the Committee have been informed that the work on the navigation lock is being started from the working season of 1969-70 and is scheduled to be completed in 1970-71 working season.

3.15. The estimated cost of the Upstream Navigation Lock as per original project estimates was Rs. 0.87 crores and the cost as per revised project estimate is Rs. 2.83 crores. The Committee have been informed that the expenditure incurred at the time of suspension of work was Rs. 0.88 crores (approx.).

3.16. In reply to the question whether it was a fact that in the initial stages, inspite of the Chief Engineer referring to certain difficulties in the commencement of the construction of the Navigation Lock, the Control Board had stressed the paramount importance of the construction of the Lock speedily, the Ministry have stated that the work on the Lock had to be taken up for some special reasons. The Ministry of Irrigation and Power

have also admitted that the Ministry of Transport wanted it to be completed earlier to synchronise with the completion of the Farakka Barrage and the Feeder Canal. It has also been admitted that the General Manager, Farakka Barrage Project, pointed out to the Control Board that if the construction of the Lock was not taken up and completed alongwith other components of the Farakka Barrage by 1970-71, the marine crafts lying upstream side of the barrage would remain blocked up for want of suitable passage to take them through Feeder Canal and it would affect their repairs also.

3.17. With regard to the impact of suspension of work on the total cost of the Lock, the Ministry have stated that there would be some increase in the cost of this work, but this increase could not have been avoided in the total cost of the project, because the cost of works held up for undertaking the Navigation Lock works would have also increased on account of rise in cost of labour and material.*

3.18. The Committee are surprised to note that after incurring an expenditure of Rs. 0.88 crores on the construction of Upstream Navigation Lock, taken up in November, 1963 on a priority basis, the work on it was suspended in April, 1966, only three months before the target date of completion in June, 1966, due to paucity of funds.

3.19. The Committee further note that the estimate of the Navigation Lock has increased from Rs. 0.87 crores to Rs. 2.83 crores. The Committee are of the view that the estimate had not been properly worked out. Had it been properly prepared, the work on the Navigation Lock would have been completed or substantially completed within the original estimate. The Committee are constrained to observe that the project authorities had not carefully examined the necessity of the Navigation Lock and assessed the immediate requirement vis-a-vis available resources before taking up its construction. They feel that with proper planning this could have been avoided.

B. Feeder Canal

3.20 The Farakka Barrage Project provides for 25 mile long Feeder Canal taking off from the Head Regulator on the right bank of the Ganga river just upstream of the Farakka Barrage and having its outfall into Bhagirathi river below Jangipur Barrage. The Feeder Canal is designed to carry a discharge of 40,000 cusecs. The width of the Canal at the base and at water surface will be 499 feet and 600 feet approximately.

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"In other words, if on account of re-scheduling of works due to limitation of resources, the construction of some other works of the Project were deferred instead of the upstream navigation lock, the cost of such deferred work would also have increased due to the increase in cost of labour and material in the intervening period. Therefore, by not postponing the construction of the lock an increase in total cost could not have been avoided."

3.21 The original estimate of the Feeder Canal was Rs. 10.83 crores and the revised estimate is Rs. 18.77 crores.

3.22 The Canal involves excavation of 155.43 crore cubic feet of earth. Originally the Canal was to be completed by 1968 but according to the revised programme it is scheduled to be completed by June 1971. The following table furnished by the Ministry indicates the year-wise targets and the actual achievements against targets in respect of the Canal :

Year	Target (Crore cft)	Achievement (crore cft)
1963-64	0·5	1·9
1964-65	2·00	1·38
1965-66	18·00	17·38
1966-67	20·00	21·43
1967-68	28·00	15·92
1968-69	29·50	17·24
1969-70	29·50	0·26 —*Upto October*, 1969.
1970-71	28·00	—
	155·50	75·51

3.23 The Committee have been informed that the shortfalls in the excavation of the Feeder Canal is due to delay in the procurement of equipment by the contracters, the unsatisfactory performance of equipment and the failure of a contractor.

3.24. The Committee note with concern that the work on the Feeder Canal could not be completed inter alia **due to the failure of the contractor. The Committee hope that the Government would take appropriate action against the contractor for his failure to complete his contract so that the Government is not put to any loss.**

3.25 The Committee are unhappy to note that the targets fixed for excavation of the Feeder Canal could not be achieved except during the years 1963-64 and 1966-67. Unless the work on the Feeder Canal is completed before the Farakka Barrage is completed, the objective of the whole project will remain unfulfilled. The Committee, therefore, stress that every effort should be made by the Government to synchronise the completion of the Feeder Canal with the commissioning of the Farakka Barrage by June, 1971.

3.26. From the written statement furnished by the Ministry of Irrigation and Power, it is noticed that work of the Canal in the reaches between RD 10-68, RD 68-97 and RD 103-126 have been allotted to M/s Tarapore and Co.; M/s G. S. Atwal and Co., and M/s Arvind Brothers respectively.

3.27. The Committee have been informed that the tenders for allotment of the work in the reach between RD 10-68 were called in January, 1964

and could only be finalised in December, 1964.* The work in this reach was allotted on 15-1-65 with the date of completion by June, 1968. As the work could not be completed due to non-availability of power at the initial stage, non-availability of land in time, difficulties in foreign exchange and equipments and due to allotment of additional work, the firm was granted extension of time to complete the work up to June, 1970. Uptil September, 1969, 71.5% of the work on the portion had been completed.

3.28. The Comittee have also been informed that the work on the Feeder Canal in the reach between RD 10-68 was given to M/s Tarapore and Co. whose offer was the second lowest. During evidence, the representative of the Ministry has stated that quotations from four contractors were received for this work. The lowest one was for Rs. 7.5 crores, the second lowest was from M/s Tarapore and Co. for Rs. 8.62 crores; the third quotation was from Yugoslav concern for Rs. 8.70 crores and the highest was from Marshall Building and Engineering Company for Rs. 10.37 crores. Regarding the considerations for not alloting the work to the lowest tenderer, the representative of the Ministry stated that the lowest tenderer "was not capable of doing the work. He has not got the organisation and even the small portion that was given to him was left undone."

3.29. In reply to a question whether M/s. Tarapore and Co. also had not the requisite machinery and other materials to start the work immediately after entrusting of the work to them or it was started only after importing the machinery, the General Manager, Farakka Barrage Project stated that this was a part of the contract. While tendering they had stated that they will have to be allowed import of certain machineries. The representative of the Ministry also stated during evidence that M/s. Tarapore and Co. were given "a loan of Rs. 50 lakhs interest free and another 50 lakhs bearing interest which was in accordance with the original tender itself. His (contractor's) rates were based on assumption that he would get so much money." In reply to a question whether this machinery worths Rs. 1 crore had been used at Farakka Project and not elsewhere, the General Manager, Farakka Barrage Project has stated that "they have to hypothecate those machineries to the Department against those loans so that all the machineries had to come to the Project site straight". The Committee have also been informed that some of the equipment imported by the contractor from USSR did not work satisfactorily which caused delay on the work of the Feeder Canal.

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"The tenders for the allotment of the work in the reach between RD 10 to 68 were called in January, 1964. This was for dry earth work only with option to quote for under-water work if so desired. These were opened in May, 1964. In August, 1964 when it was considered that it was advantageous to get the full section work done, the tenderers were asked to requote for composite work also. These were received in September, 1964. The tenders were finalised in December, 1964."

3.30. The Committee are unhappy to note that almost a year was taken by the authorities to finalise the contract of the Feeder Canal in the reach between RD 10-68. The Committee note that though the offer of the lowest tenderer was not accepted on the ground that the lowest tenderer was not considered capable of doing the job and the contract was given to the other contractor whose tender was more than one crore higher than the lowest tender, the work on this reach could not be completed in time and an extension of time for two years had to be given to the contractor.

3.31. The excavation work of the Feeder Canal in the reach between RD 68-97 has been allotted to M/s Atwal and Company. The tenders were called on 3-8-1966 and were finalised on 30-11-1967.* The work was allotted on 4-12-1967 with completion date of work by 3-11-1970. The Committee have been informed that the 17.8% of the work on this portion of the canal has so far been completed and the present target for completion of the work is June, 1971. The Ministry have not furnished the reasons for change in the completion date of the work from 3-11-1970 to June 1971.

3.32. The Committee are unhappy to observe that while the work on the Feeder Canal was started in 1963-64, the tenders for this portion of work on the canal were called in August, 1966 and that it took more than a year to finalise the contract. The Committee hope that the matter regarding delay in calling and finalisation of tenders will be looked into and responsibility fixed. The Committee regret to note that only 17.8% of the work has been completed. The Committee hope that the remaining 82.2% of the work will be completed by June, 1971, the target date fixed for it.

3.33. M/s Arvind Brothers have been allotted work on the canal in the reach between RD 103-126. The tenders for this work were called on 3-8-1966 and finalised on 30-11-1967.* The work was allotted to the contractor on 4-12-1967 with the completion date by 3-4-1971. The Committee have been informed that the Farakka Barrage Control Board decided to terminate the contract on account of poor performance by he contractor. So far only 5.7% of the work on this portion of the canal has been completed and the present target date for completion is June, 1971 but is likely to be delayed.

3.34. The Committee are unhappy to note that although the tenders for this portion of the canal were also called in August, 1966, it took more than one year to finalise the contract. The Committee regret to note that

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"The tenders were called on 3rd August, 1966. opened in October, 1966 and after getting required clarifications and conducting negotiations, they were finalised on 30th November, 1967".

only 5.7% of work has been completed. The Committee hope that the remaining 94.3% of the work will be completed by June, 1971, the target date fixed for it.

3.35. The Committee are constrained to observe that after watching the work of the contractor for two years, the Farakka Barrage Control Board had decided to terminate the contract on account of poor performance of the contractor and that the completion of this portion of the canal is likely to be delayed beyond June, 1971, which is the scheduled date for the commissioning of the Farakka Barrage. The Committee would, therefore, urge that whole matter of delay in calling and finalisation of contracts for work on the Feeder Canal and subsequent delay in completion of the work on various portions of the Feeder Canal should be looked into and responsibility should be fixed for lapse on this account.

3.36. The Committee would also urge that the action regarding fresh allotment of work on this portion of the Feeder Canal will be taken by the Government without any further delay and that the work will now be allotted after carefully assessing the capacity of the contractor to complete the work within the time. The Committee hope that a strict watch will be kept on the progress of the work so that the commissioning of the Feeder Canal is done as per programme.

C. Jangipur Barrage

3.37. The third principal work of the Project is the construction of a cross regulator or a barrage across the Bhagirathi river just upstream of the outfall of the Feeder Canal near Jangipur town. The Jangipur barrage has been provided to prevent the feeder canal waters from flowing back into the Ganga and for regulating the direct inflow from Bhagirathi head. It will be 529 feet long.

3.38. Originally the target for completion of the work on Jangipur Barrage was 1968 but the revised programme for completion of the work has been fixed as 1970-71. The tenders for starting the work on the Jangipur barrage were called on 20-11-1967 and the tenders were finalised on 12-7-68. The work on the Jangipur Barrage was allotted on 17-7-68 with a completion date by July, 1969. The Committee have been informed that no extension of time for completion of the work has been granted but the work was deferred for the season 1968-69 for speeding up work on Farakka Barrage and the revised date of completion of work has been fixed as June, 1970.

3.39. The original estimate of the Jangipur barrage was Rs. 2.34 crores and the revised estimate is Rs. 2.848 crores. Rs. 0.13 crores have been spent up to September, 1969.

3.40. With regard to the reasons for giving low priority to this work, the Ministry of Irrigation and Power have stated that priority to this work

was given in accordance with the funds available but it will be completed synchronising with the other main components of the Project.

3.41. Regarding the progress of work made on the Jangipur Barrage, it has been stated that the work has just been taken up and only 1% of the work was completed by September, 1969.

3.42. In reply to the question that while the materials were collected long ago, the work on the site was not started, the Ministry have stated in a written note that some steel materials and stones were collected according to the earlier programme. Some of these materials have already been used elsewhere on the Project.

3.43. The Committee are surprised to note that although there was no plan of starting work on the Jangipur barrage, the materials for construction were collected on the site earlier and thereby a large sum of money was blocked which could otherwise have been utilised on other works of the Project. The Committee feel that with proper planning this could have been avoided.

CHAPTER IV

EXECUTION AND PROGRESS OF WORK

A. Import of Sheet Piles for construction of Cellular Coffer Dam

4.1. The Committee have been informed that for construction of Cellular Coffer Dam 7515.029 tonnes of Yawata Flat Web Sheet Piles were imported from Japan involving foreign exchange amounting to Rs. 93,37,293. Out of this 6,292 tonnes of sheet piles have not been utilised and it is proposed to declare them as surplus. The representative of the Ministry of Irrigation and Power has stated during evidence that value of sheet piles rendered surplus is Rs. 78 to 80 lakhs. The General Manager, Farakka Project in his note to Farakka Barrage Control Board has stated that the value of these sheet piles including 3% storage charges is Rs. 88.68 lakhs (approx.).

4.2. Asked as to why so much quantity of sheet piles had been imported and whether the demand could not be met from indigenous sources, the Ministry have stated that "the total requirement of flat web sheet piles for the construction of the cellular coffer dam had been initially estimated as 30,000 tons. As there was no indigenous manufacture of the flat web sheet piles of required section, an order for about 7,500 tons of sheet piles was placed with a Japanese firm on deferred payment terms under the Yen credit. Meanwhile the question of indigenous manufacture of the sheet piles was taken up with Hindustan Steel Ltd. at their Bhilai works. A suitable section was developed in consultation with the project authorities, design authorities, Research Station and the Bhilai Steel Plant authority. The Bhilai Steel Plant, however, agreed to set up a special rolling mill for the manufacture of sheet piles provided a sizeable order for about 30,000 tons was placed with them. Later, owing to favourable river conditions, it became possible to manage with the earthen coffer dam only which obviated the necessity of going in for cellular coffer dams. Accordingly, the matter for the manufacture of sheet piles was not pursued further with the Bhilai steel plant."

4.3. In reply to a question about the time lag between the placing of order with the Japanese firm and the offer made by the Bhilai Steel Plant, the representative of the Ministry during evidence has stated that 'We invited tenders before we placed order with the Japanese firm for sheet piles. This was done in March-April, 1964. In July, 1964 orders were placed and the supplies started coming after two to three months. In December, 1964, the Hindustan Steel came forward with a letter that they were prepared to consider setting up a rolling mill provided the designs and other particulars

were furnished to them and a sizeable order was placed with. They however did not come forward before we had placed orders with the Japanese firm. In fact, while inviting tenders we had sent an enquiry to all the firms.' In reply to a question whether the order was placed in September, the General Manager, Farakka Barrage stated 'Yes'.

4.4. Regarding the need for sheet piles, the representative of the Ministry of Irrigation and Power has stated 'originally, it was felt by the Technical Advisory Committee that we should build cellular coffer dams, for isolating work areas and as a part of the total programme of 30,000 tonnes, we imported only 7,500 tonnes, but when we actually went into the place to do the work, we found that it could be done without the use of a cellular coffer dam, and with single sheet piles only. So it was wise and prudent to avoid further expenditure incurred on cellular dam and build ordinary coffer dams.'

4.5 Asked whether it had been a case of defect in technical planning, the representative of the Ministry has stated "After they (sheet piles) had been ordered, the actual site had been investigated and it was decided to have a different type of coffer dam. Therefore, there was no occasion to use these 7,000 tonnes. So it was not due to bad planning that we ordered."*

4.6 Asked what were the reasons for which such a large quantity of the sheet piles could not be utilised the Ministry of Irrigation and Power in a written note have stated that "river handling in this Project being a major problem, the Technical Advisory Committee recommended that different types of coffer dams in different seasons should be adopted taking into consideration the river conditions, bed contours, etc., after each flood season. It was originally envisaged that in most of the area, cellular type coffer dam will have to be used. In each working season, the conditions of the river were, however, considered by the Technical Advisory Committee and the type of coffer dam recommended. It has been felt all along that for the central bays, cellular coffer dam would be necessary. But during the last working season (1968-69), the river was luckily very favourable and the coffer dam for the entire remaining 40 bays could be completed with the conventional type of bund only with single line sheet pile at the river side toe and fins at the end, though the construction envisaged the construction of 20 bays. Thus, the cellular coffer dam, as contemplated earlier, was not required. The sheet piles procured for the purpose, therefore, became

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"By actual investigation of site is meant the study of river conditions and behaviour after the floods of each year *vis-a-vis* suitability of any particular type of coffer dam for the next working season."

surplus although considerable saving was effected in the construction of the coffer dam."**

4.7. The General Manager, Farakka Barrage Project informed the Committee during evidence that the sheet piles were in their custody since 1965 and for the disposal of the surplus sheet piles, they have asked the Port authorities, Army Headquarters and Hindustan Steel Ltd. Asked whether any tenders had been invited for their disposal, the General Manager, Farakka Barrage Project has stated that no tenders have been invited. It has been found to be surplus only in the beginning of the year 1969 when they were successful in building the coffer dam without cellular coffer dam.

4.8. The following documents furnished by the Ministry relating to the import of sheet piles are reproduced at Appendix I—IV :—

(i) Copy of note furnished to Minister, Irrigation and Waterways, West Bengal by the Ministry of Irrigation and Power regarding purchase of sheet piles.

(ii) Copy of Chief Engineer, Farakka Barrage Project D.O. letter No. F/NS/DM/367-370, dated 24-2-64 addressed to Shri S. C. Mukherjee, Iron and Steel Controller, Government of India, Calcutta enquiring about the availability of sheet piles in India or from any East European countries.

(iii) Copy of Ministry of Irrigation and Power letter, dated 5th March, 1964 informing about the meeting on 11th March 1964 to consider the release of foreign exchange for the import from U.K. of 5,000 tons of cellular type coffer dam sheet piles and equipment alongwith a copy of the note prepared by the Ministry on the subject.

(iv) Copy of letter No. S-4(1), dated 10th March 1964 from the Chief Engineer, Farakka Barrage Project addressed to Shri S. C. Mukherjee, Iron and Steel Controller, Government of India, Calcutta.

4.9. On the 24th February, 1964, the Chief Engineer, Farakka Barrage Project made an enquiry from the Iron and Steel Controller whether 40,000

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"The total quantity of sheet piles required for putting up cellular coffer dams for enclosing working areas in different years of construction was estimated at 30,000 tons. Against this, a quantity of 7,500 tons, which was approximately the requirement for the first season, was procured from Japan on deferred payment basis. Thus, the quantity actually procurred was just the minimum required to be kept in readiness, in case the river condition necessitated the use of cellular sheet pile coffer dams. Hower, subsequently due to favourable river conditions it was found that the work could be done with earthen bunds with sheet pile protection. The condition were reviewed each year and it was found unnecessary to procure further sheet piles."

tons of straight-web coffer dam sheet piles could be manufactured in any steel plant in India and in case it was not possible to manufacture that in India, then whether the same could be arranged from any of the East European countries. The reply of the Iron and Steel Controller in this regard had not been furnished to the Committee.*

4.10. On the 11th March, 1964, a meeting of the representatives of Ministries of Irrigation and Power, Finance, Steel and Heavy Engineering and Central Water and Power Commission was proposed to be called by the Secretary, Ministry of Irrigation and Power to consider the release of foreign exchange for the import from U.K. of 5,000 tons of cellular type coffer dam sheet piles and the pile driving equipment which were immediately required. The note prepared by the Ministry of Irrigation and Power for the meeting brought out that the total requirement was 30,000 tons of sheet piles. The only countries where the required type of sheet piles might be had were Germany, Japan and U.K. and that delivery schedule of the sheet piles, *i.e.*, by October, 1964 was very important. That the British Sheet Piling Company of U.K. had made a firm offer to supply the requisite sheet piles at the rate of 1,000 tons per month during the period April—September, 1964, provided an order was placed on them by the end of that month. The total foreign exchange involved for 5,000 tons was Rs. 27.4 lakhs with Rs. 5 lakhs as shipping charges. Another Rs. 25.4 lakhs (approx.) was necessary for sheet pile driving equipment with an additional requirement of Rs. 4 lakhs as shipping charges. There was immediate urgency of release of foreign exchange worth Rs. 52.8 lakhs plus Rs. 9 lakhs for foreign shipping for importing at least 5,000 tons of sheet piles together with necessary pile driving equipment, which was the barest minimum and absolute 'must' if the work was to start in the next working season. The Committee have not, however, been informed of the decision taken in thi smeeting.**

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*At the time of factual verification, the Ministry of Irrigation and Power have stated that the General Manager, Farakka Barrage Project has now informed that no reply was received from the Iron & Steel Controller.

**At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

> "x x x x it was decided to invite limited tenders from Indian agents of the firms in U.S.S.R., Luxemberg, Japan, Sweden, U.K., France, Hungary, etc It was also decided that copies of such tender notices should be endorsed to the trade representatives of the relevant emphasises. It was emphasised that it should be made clear while calling tenders that payment would be made on the basis of deferred payment and no down payment would be allowed. Limitted tenders were accordingly called on the 18th March. 1964 to be received by the 2nd April. 1964. ..... The British Sheet Pile Co. Ltd. of U.K., which was one of the firms which had offered to supply sheet piles earlier and who were one of the firms to whom limited tender enquiry was addressed, did not tended for the sheet piles in response to this enquiry. In fact the only firm which had agreed to supply the sheet piles on deferred payment terms was M/s. Mitsubishi of Japan. It was finally decided to place an order for the procurement of sheet piles with M/s. Mitsubishi of Japan."

4.11. On 10th March 1964, the Chief Engineer, Farakka Barrage Project, while reminding the Iron and Steel Controller to let him know the availability of sheet piles from any other country, asked the Iron and Steel Controller to take immediate steps for procuring twenty to twenty-five thousand metric tonnes sheet piles manufactured by Yawata Iron and Steel Co., Tokyo, Japan before September, 1964. The Chief Engineer, Farakka Barrage also requested that the total quantity of sheet piles that could be supplied within that year (*i.e.*, 1964) might be ascertained from the parties concerned.

4.12. In the note furnished by the Ministry of Irrigation and Power to the Minister of Irrigation and Waterways, West Bengal, it is stated that a meeting was held in the Ministry of Irrigation and Power on 16th March, 1964 attended among others by the representatives of the Ministry of Finance, Ministry of Iron and Steel in which it was impressed that a minimum of 8,000 tonnes of coffer dam sheet piles must be obtained by September, 1964. It was decided that limited tenders should be invited from Indian agents of the firms in U.S.S.R., Luxemberg, Japan, Sweden, U.K., France, Hungary etc. for procurement of 8,000 tonnes of sheet piles on deferred payment basis. In view of the urgency, the firms were asked to submit their quotations within 10—15 days. Accordingly, the Chief Engineer, Farakka Barrage Project invited tenders for procurement of 8,000 tonnes of sheet piles to be opened on 2nd April, 1964. Three tenders *i.e.*, from M/s. Mitsubishi Kaisa of Japan; representatives of Krupps, Germany and representative of M/s. Golumeta, Luxemberg were received. The Chief Engineer, Farakka Barrage Project scrutinised the tenders in consultation with the Ministry of Finance and decided to place orders for procurement of 8,000 tonnes of sheet piles with M/s. Mitsubishi of Japan, on the considerations that the Japanese firm had quoted the lowest price and they were the only firm agreeing to supply the sheet piles on deferred payment basis.

4.13. On the recommendations of the Equipment Planning and Programme Schedule Advisory Committee, it was decided that 7,500 tonnes of Cellular Coffer Dam sheet piles and Caps should be obtained from Japan.

4.14. Asked whether it was a fact that four cellular coffer dam cells were sunk as an experiment on the advice of the Russian experts in the river bed with protections but at the end of the following flood season the cells had been washed away, the representative of the Ministry has stated during evidence that "the decision to go in for the construction of cellular coffer dam cell was taken by the Technical Advisory Committee. The loss is Rs. 10.36 lakhs." He added that "we have not consulted any foreign experts with regard to this project except to the extent that two Russians were invited for the design of cellular coffer dam and to see whether our designs and their designs tally."

4.15. When further asked what advice the Russian experts gave as to how to put the experimental cells in a proper way so that they were not

washed away at the time of flood, the General Manager, Farakka Barrage has stated that "They were brought in for a very limited purpose of helping us with the design and also checking our design. The experiment that we carried out was with a view that in the prototype we might not lose very much more if we did not have the experience."* He also informed the Committee that "this is the first construction of this type in the country."

4.16. The Technical Advisory Committee on the Farakka Barrage Project at their 17th meeting held on the 1st and 2nd February, 1968 "felt that, in view of the successful construction of single sheet pile coffer dam in the working season, it should be possible to construct a coffer dam from the right bank with single sheet pile and sand backing in the working season of 1968-69; in that case a submersible coffer dam might not be required at all on the construction of the Barrage. They, therefore, expressed the view that further experiments on submersible coffer dam need not be conducted at present." The Technical Advisory Committee also recommended that "in view of the programme now approved, the Bhilai Steel works might be informed that the Farakka Barrage Project would not require any further flat web piles now and that they might divert their capacity for rolling other sections unless there was demand from other Projects in the country.... The Project should also arrange to procure immediately adequate quantity of 'Z' section sheet piles of the longest length that could be manufactured in India, for single sheet pile coffer dam both for the year 1968-69 and year 1969-70."

4.17. Regarding the behaviour of the test cells driven before 1967 floods, it has been brought to the notice of the Committee that at the meeting of Technical Advisory Committee held on the 1st and 2nd February, 1968 "the Chief Engineer explained that the diving operation could not locate the cells, but drilling operations in the area, both upstream and downstream of the original location of the cells, had indicated the existence of the cell materials at various levels. Unless more boring results were available, the exact orientation of the dislodged cells could not be determined." "After considering all aspects, the Technical Advisory Committee felt that it would not be economical to make any attempt to recover the cell materials. Only a few additional borings in a regular grid should be taken to determine the probable orientation of the cell materials. Their existence in any case would cause no harm to the permanent structure and as such these might be written off."

4.18. The Committee have noted the contents of the letters dated 24-2-1964 and 10-3-1964 from the Chief Engineer, Farakka Barrage Project addressed to the Iron and Steel Controller, Calcutta. The first letter dated 24-2-1964 makes an enquiry about the availability of straight-web

*At the time of factual verification, the Ministry of Irrigation & Power have stated that the driving of the experimental cells did not require any foreign technical expertise.

sheet piles from any steel plant in India and if that was not possible then whether it could be arranged from any of the East European countries. The second letter dated 10-3-1964 states that the Iron and Steel Controller had already been requested to find out and let the Ministry known if sheet piles suitable for the Cellular Coffer Dam would be available from any country. Without awaiting the reply to the first letter the Chief Engineer, Farakka Barrage Project stated in the second letter that the sheet piles of the required specifications manufactured by Yawata Iron and Steel Company, Tokyo, Japan would be suitable for their purpose and requested the Iron and Steel Controller to take immediate steps for procuring the sheet piles (about 20-25 thousand metric tonnes) before September, 1964 and to ascertain the total quantity of sheet piles that could be supplied by the firm within 1964.

4.19. The note circulated by the Ministry of Irrigation and Power for the meeting proposed to be held on 11-3-1964 stated that the British Sheet Piling Company of U.K. had made a firm offer to supply sheet piles of the required specifications at the rate of 1000 tons per month during the period April-September, 1964 provided the order was placed by the end of that month. The British Firm quoted the cost of 5000 tons of sheet piles at Rs. 27.4 lakhs FOB U.K. Port. The Committee are constrained to observe that the said note does not mention about the availability of the sheet piles from Yawata Iron and Steel Co., Tokyo, Japan which was stated to be suitable for the purpose by the Chief Engineer, Farakka Barrage Project in his letter dated 10-3-1964 addressed to the Iron and Steel Controller, Calcutta.

4.20. The Committee further note that the Ministry of Irrigation and Power in their note furnished to the Minister of Irrigation and Waterways, West Bengal regarding purchase of sheet piles that the sheet piles of required type were not manufactured in India by any indigenous manufacture. That it was decided in a meeting held in the Ministry of Irrigation and power on 16-3-1964 that limited tenders should be invited from the Indian Agents of the firms in U.S.S.R., Luxemberg, Japan, Sweden, U.K., France, Hungary, etc. for procurement of 8000 tonnes of sheet piles on deferred payment basis that tenders from M/s. Mitsubishi Kaisa of Japan, representative of M/s. Krupps, Jermany and M/s, Golumeta Luxemberg were received in response to the tender enquiry. The Committee are constrained to observe that in this note, there is no mention about the offer made by the British Sheet Piling Company of U.K.

4.21. Whereas the Committee have been informed that open* tenders were invited but there was no offer from indigenous sources, the Ministry informed the West Bengal Minister that limited tenders were invited.

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*At the time of factual verification, the Ministry of Irrigation & Power have stated as follows :—

"It was intimated by this Ministry in the information forwarded with this Ministry's Office Memorandum No. 6(12)/68-FBP (Vol. V). dated the 7th February, 1970 that "Open tenders were invited but no offer from the indigenous sources was received." The work "open" in this reply was a typing error. Actually limited tenders were invited.'

4.22. The Committee note that while the Sheet Piles were imported in 1964 on urgent basis to enable the construction of the coffer dam in river bed in November, 1964, the experimental cells for the purpose were only sunk after two years in 1966-67 working season.

4.23. The Committee are unhappy to note that out of 7500 tonnes of sheet piles involving foreign exchange of Rs. 93 lakhs, more than 6000 tonnes of sheet piles worth about Rs. 80 lakhs could not be utilised and have been rendered surplus. The Committee are not convinced with the Government's explanation that the Cellular Coffer Dam was found ultimately not necessary due to favourable river conditions in one year which nullified the calculations based on the technical data of the previous many years. The Committee cannot help observing that the idea of cellular coffer dam was conceived without thorough investigation. They feel that with better planning the necessity of importing sheet piles could have been avoided. The Committee consider it regrettable that after the sheet piles had been ordered, the actual site had been investigated and it was decided to have a different type of coffer dam. In view of this revealing statement, the Committee feel that the investigations should have preceded the ordering of the sheet piles.

4.24. The Committee note that there was a loss of Rs. 10.36 lakhs on account of experimental Cellular coffer dam cells being washed away during the floods of 1967. The Committee also note that the advice of the Russian expert was sought on the design of the experimental cellular coffer dam cells. The Committee fail to understand why in the absence of Indian technical know-how the guidance of the Russian experts was not sought regarding the driving of the experimental cells in the river bed. They feel that with better planning this loss could have been avoided.

4.25. The Committee note that the Government have not been able to dispose of imported sheet piles which were rendered surplus. The Committee would urge the Government to take necessary steps for their disposal at an early date, and in the meantime to take adequate steps to ensure that the sheet piles are protected against loss, theft, pilferage or damage due to inclemencies of weather.

B. Procurement and Utilisation of Machinery and Spares

4.26. There is a Central Purchase Committee to finalise the acceptance of tenders with or without negotiations for the purchase of Plant and machinery for the Farakka Barrage Project as are beyond the powers of the Chief Engineer and the Local Committee. The Central Purchase Committee was constituted in August, 1964 and it comprises :

(1) Secretary, Ministry of Irrigation and Power—Chairman.
(2) Chairman, CW&PC or his representative—Member.
(3) Joint Secretary (GB) Ministry of I&P—Member.
(4) Joint Secretary (T&P) Ministry of Finance—Member.
(5) Joint Secretary, Ministry of Finance (Deptt. of Economic Affairs)—Member (where purchases involving foreign exchange are considered).

(6) General Manager Farakka Barrage Project—Member.
(7) F.A. & C.A.O., Farakka Barrage Project—Member.
(8) Representative of DGS&D—Member.
(9) Representative of Technical Development Directorate—Member.
(10) Secretary, FBCB—Secretary.

4.27. The Central Purchase Committee is empowered to take decisions and the recommendations of this Committee are implemented. The Purchase Committee has met five times during the last five years. The meetings of this Committee were held, whenever supply tenders were to be finalised.

4.28. The Committee have been informed that the procurement of spares and materials is done by the Central Purchase Organisation/Direct Demanding Officers on the basis of indents from the provisioning officers. During evidence, the General Manager, Farakka Barrage Project has informed the Committee that for this particular project, an exemption was made that they would have a separate purchasing organisation with an officer loaned from the D.G.S. & D. Regarding the need for separate organisation, he added, that when purchasing through the D.G.S. & D., there might be delay because the D.G.S. & D. had to deal with indents from all over the country and they would not actually appreciate the anxiety of the Farakka Barrage Project. So there was a separate purchase organisation under an officer loaned by the D.G.S. & D. and rules of D.G.S. & D. were followed by them.

4.29. To avoid overstocking of spares and material, the General Manager, Farakka Barrage Project has stated during evidence that a Screening Committee was set up by him on 8-8-1965 with the help of three Superintending Engineers to screen the indents so that Demanding Officers do not unnecessarily stock or purchase more material/spares than was required. The Chairman of the Screening Committee is the Superintending Engineer, Planning and Superintending Engineer, Plant and Machinery and Superintending Engineer, Resources are Members. The Screening Committee met 62 times during the last four years. The Committee have been informed by the Ministry that the Screening Committee has been very useful in screening the indents submitted by the various formations to the Chief Purchase Officer. The Chief Purchase Officer is the purchasing authority exercising the powers of a Director of the office of D.G.S. & D. with a purchase power of 6 lakhs and is also directly responsible to the General Manager, Farakka Barrage Project.

4.30. Asked whether any guidelines were laid down regarding quantities of spares and materials to be kept in stock the Ministry have stated in a written note that the Central Water and Power Commission has laid down certain principles on the lines of the Report of the Construction Plant and Machinery Committee which provides the scale of utilisation of spares for capital equipment.

4.31. For the Farakka Barrage Project, the following scale of spares has been adopted :

For Ist year—10% of cost of capital equipment.
For 2nd year—15% of cost of capital equipment.

For 3rd year—25% of cost of capital equipment.
For 4th year—35% of cost of capital equipment.
For 5th year—15% of cost of capital equipment.
(The life of the machineries is taken as 10,000 working hours and each year would provide 2,000 working hours)

The minimum level is to be maintained at 15%. The construction materials are procured only on a seasonal requirement basis, therefore, no scale for these materials has been laid down.

4.32. The following table furnished by the Ministry of Irrigation & Power indicates the actual position of spares year-wise in respect of capital equipment :

	Cost of Equipment	Cost of Spares	Percentage (Approx.)
End of 1965	Rs. 7,43,27,054	Rs. 26,96.399	3·63%
End of 1966	Rs. 8,73,80,793	Rs. 59,94,953	7%
End of 1967	Rs. 9,99,96,425	Rs. 83,17,763	8·3%
End of 1968	Rs. 10,35,74,385	Rs. 1,13,70,270	10·9%

4.33. As regards the percentage of the spares in stock for capital equipment actually utilised during the years from 1965 to 1968, the Ministry have informed as under :

Year	Percentage of spares in stock actually utilised
1965	8·8%
1966	14·2%
1967	12·1%
1968	13·9%

4.34. When further asked whether the stocking of spares at a minimum level of 15% of the cost capital equipment was excessive and should be reduced to a much lower percentage, the Ministry have stated that since the spare parts are of imported origin, at least 18 months to 24 months requirements are to be obtained at a time, provision upto 15% of the value of equipment in spare parts is, therefore, not excessive.

4.35 Asked about the value of the earthmoving and construction equipment and the spares so far procured by the project authorities, the Ministry of Irrigation and Power have in a written note stated that the cost of earthmoving equipment and construction plants is Rs. 10.35 crores and the total cost of spares purchased upto 25-7-1969 is Rs. 1.95 crores (approx.). The total amount of spares utilised upto 25-7-1969 is Rs 60.36 lakhs i.e. about 31% of the cost of spares.

4.36. As regards the effective utilisation of the spares, the Ministry have stated that almost all the equipment has been effectively used subject to various factors determining their utilisation. Every individual equipment is not expected to be put to use immediately on receipt. In a river bed work of this magnitude considerable 'Stand-by' equipments have to be kept in stock to meet emergent situation which cannot be predicted or foreseen.

4·37 From the information furnished by the Ministry of Irrigation & Power, it is noticed that following items of the construction equipment have not been effectively utilised:—

Sl. No	Name & Description of the equipment	Nos. procured	Nos. put in use	Cost of each (Rs.)	Total cost (Rs.)
1	2	3	4	5	6
1.	Pile Driving unit Type C-268 with Diesel-hammer	4	—	1,08,528·00	4,34,112·00
2.	55 KW Vibrosinker (Elect.)	12	6	51,559·20	6,18,714·00
3.	BSP 2 Diesel Hammer	4	—	24,194·50	96,778·00
4.	Russian hammer C-231 (Pneumatic)	6	3	58,271·30	3,49,627·80
5.	Kirloskar Broomade TSIB Type Elect. air compressor.	10	4	78,630·50	7,86,305·00
6.	Kirloskar Broomade type WR 380 electrical air compressor.	14	10	43,622·00	6,10,708·00
7.	CP32 Pneumatic dry Rock drill 7/8″—¾″ Hex. chuck.	24	—	1,733·16	41,595·84
8.	Millars Concrete Mixture 14/10 (diesel)	25	14	14,244·00	3,55,100·00
9.	'Winget' Concrete Mixture 14/10 (diesel)	8	2	15,400·00	1,23,200·00
10.	'Jyoti' horizontal split casing 10″×8″ Electrical driven pump	10	3	19,646·00	1,96,460·00
11.	—do— 6″×5″	80	18	8,404·00	6,72,320·00
12.	—do— vertical 6″×5″	50	6	7,631·00	3,81,550·00
13.	'Sigma' 5″×5″ Electric pump	45	18	6,764·00	3,04,460·00

4.38. The Ministry of Irrigation and Power in a written note have informed the Committee that Russian C-268 Diesel Pile hammers (Serial No. 1 above) rendered service for two working seasons when the project could not procure other hammers. The hammers suffered from breakdowns during utilisation. They worked for 448 shifts of 8 hours each and are being stored for overhauling. The six vibrosinkers (Serial No. 2 above) could not be utilised due to non-requirement of cellular coffer dam construction and because of early completion of barrage. The Ministry have added that in a work of this magnitude, one has to provide for the worst conditions while planning purchase of important equipments.

4.39. The Committee note that the Report of the Construction Plant and Machinery Committee provides for the maintenance of spares at a minimum level of 15% of the cost of capital equipment and that the value of spares kept in stock was in conformity with the capital cost of the equipment. The Committee, however, note that actual utilisation of spares in stock was only 8.8% in 1965, 14.2% in 1966, 12.1% in 1967 and 13.9% in 1968. The Committee are constrained to observe that the procurement of spares was made in excess of the requirements which led to over-capitalisation of the Project and blocking up of much needed public funds...The The Committee would urge that there is a need for realistic provisioning of machinery and spares keeping in view the experience gained in the Project and other similar projects. The Government should take positive measures to streamline the proceedure of provisioning by examining it in all its aspects including feasibility of reducing the percentage of spares to be kept in stock. The Committee need hardly stress that in the context of the present difficulty in resources position, the Government should keep uppermost the need for effecting economy in such projects.

4.40. From the information furnished by the Ministry regarding utilisation of construction equipment, the Committee are surprised to note that out of 80 'Jyoti' horizontal split casing 6"×5". Electrical driven pumps purchased at the cost of Rs. 6,72,320 only 18 pumps were put into use. Similarly out of 50 'Jyoti' vertical split casing 6"×5" Electrical driven pumps purchased at the cost of Rs. 3,81,550, only 6 pumps were put into use. The other significant items of construction equipment not effectively utilised at the Project are C-268 Type Pile Driven units, Electrical Vibrosinkers, BSP-2 type Diesel Hammers, C-231 Pneumatic hammers, Kirloskar Broomade air compressors, 'Sigma' Electrical pumps, concrete mixtures etc. The Committee note with concern that the said construction equipment which have not been utilised in the project is worth more then Rs. 30 lakhs. The Committee would like the Government to examine how far the non-utilisation was due to over-estimation of the requirements by the Project authorities and how far it was due to defects in the equipment supplied.

Keeping in view the future requirements, the Committee would urge the Government to consider how far the equipment and machinery not utilised could be gainfully used elsewhere in the Project or other Projects.

4.41. The Committee would further like the Government to take adequate steps to ensure that the surplus spares and machinery like Pile Driving Units, Vibrosinkers, hammers, air compressors, Electrical pumps, concrete mixtures etc. which have neither been used so far nor are likely to be used in execution of the project should be properly disposed of expeditiously and till then, they should be adequately protected against loss, theft, that the precious resources of the country are fully utilised.

4.42. The Government should also profit by their experience and evolve realistic criteria for the purchase of machinery and equipment in future so that the precious resources of the country are fully utilised. . . . .

C. Acquisition of Land

4.43. The total acreage of land for acquisition provided in the Project estimate is 11,785.77 acres. The representative of the Ministry of Irrigation and Power informed the Committee during evidence that out of this, they have got possession of 10,258 acres and for the balance they are getting possession in piecemeal.

4.44. The Land Acquisition Department of the Government of West Bengal maintains an office exclusively for the acquisition of land for the project. The land is being acquired through the Special Land Acquisition Officer and Rehabilitation Officer, who are directly under the administrative control of the District Magistrate concerned.

4.45. The Committee have been informed that for acquisition of land the rate adopted in the original estimates after *ad hoc* increase was Rs. 1,950 per acre for homestead and cultivable land and Rs. 55.84 per acre for pond area, but the rates adopted in the revised estimate based on actual payment are Rs. 3,500 per acre for homestead or cultivable land and Rs. 1,600 per acre for pond area.

4.46. When asked about the sharp increase in the rates adopted for land in the original and revised estimates, the representatives of the Ministry of Irrigation and Power has stated that "there is fantastic increase in the price of agricultural and other types of land." The rates "are fixed by the Land Acquisition Officer—a Revenue authority". . . . . "These amounts are in some cases fixed by the Court."

4.47. Asked what was the price of land contiguous to the lands being acquired, the representative of the Ministry stated that it was only on the basis of such figures that they made an original estimate. But by the time they came into picture and acquired the land, appeal was filed against the order of Acquisition Officer and they had to carry out court decisions.

4.48. The Committee have been informed that the amount of compensation that will have to be paid including rehabilitation, demarcation and establishment charges is estimated as Rs. 7.512 crores. Out of which an expenditure of Rs. 3.073 crores for compensation of land and an expenditure of Rs. 8.92 lakhs for rehabilitation has been incurred up to September, 1969.

4.49. During evidence, the General Manager, Farakka Barrage Project, has stated that the total number of people to be displaced on account of acquisition of land will not be more than 500. The responsibility of payment rests with the Revenue Department of the Government of West Bengal and the Project authorities reimburse them. At the beginning of the year they have to intimate the Project authorities that they require so much money for compensation and the Project authorities place the funds at their disposal. There is a special Land Acquisition Collector to expedite payments.

4.50. With regard to the schemes for rehabilitation of the persons displaced, the Ministry of Irrigation and Power have stated that detailed schemes for development of sites on which the displaced people are being settled are drawn up and sanctioned after selection of sites. The schemes are then executed by the Project in so far as they relate to the Civil engineering works, *e.g.*, construction of roads, sinking tube-wells, developing, levelling and the raising of lands, as necessary. The following schemes have been executed :—

	Schemes	Amount sanctioned
		Rs.
1.	Palassey	1,54,660·00
2.	Gharaipara	49,460·00
3.	Bewa	2,46,760·00
4.	Scheme No. 31B in Sankarpur	1,05,480·00
5.	Scheme No. 3/32B in Paranpara	34,502·00
6.	Scheme No. 33/B and 35/B in Malancha	29,414·00
7.	Scheme No. 29B in Panchulgram	76,794·00
8.	—do—	2,474·00
9.	Scheme No. 41 & 42B in Bhasaipakar and Dogachi	5,32,245·00
10.	Scheme No. 6/53/IP in Ahiron (Ramdoba)	1,11,343·00
11.	Ghorsola	48,884·00

4.51. The General Manager, Farakka Barrage Project has also informed the Committee that to provide employment to local people, a special Employment Exchange has been set up. An Officer of the Ministry of Labour and Employment is in charge of this. The local people can register their names with this office and the project authorities draw up men for their requirement from this local Employment Exchange.

4.52. It was noticed that due to delay in acquisition of land, the progress of work on the various components of the Farakka Barrage Project was hampered. While admitting that the delay in acquisition of land has hampered the progress of works, the Ministry have stated the following reasons for delay in the acquisition of land :—

(1) Injunctions from the Courts/Civil suits.

(2) For 'B' schedule lands, the displaced persons are to be rehabilitated. In most cases they are to be persuaded to move to rehabilitation site which causes delay in getting the possession of land.

(3) Transfer of vested land is delayed where the question of vesting has not been finalised. In those cases fresh acquisition proposal has to be initiated.

In a subsequent note, the Ministry have stated that fresh acquisition proposal for transfer of vested lands became necessary because the ownerhip of the lands so far was not finalised on account of court cases/objections filed by the parties.

The Ministry have, however, added that although the progress of works of the project has suffered to some extent, the commissioning date of the project may not be affected on this account.

4.53. In reply to a question as to when the acquisition proceedings were started for various works and when they were finally acquired and whether there was delay in starting the acquisition proceedings, the Ministry have stated that acquisition proceedings were started since 1962 in various instalments and the final acquisition is also being made in instalments. There has not been any delay in starting the acquisition proceedings.

4.54. As regards the measures taken up with the West Bengal Government to get the acquisition of land expedited, the Ministry have stated that the matter is periodically reviewed by the project authorities with the Land and Revenue Department of the State Government. For acquisition of land, the State Government have appointed a Special Land Acquisition Officer exclusively for the Farakka Barrage Project and the Project itself also has been maintaining a Senior Deputy Magistrate as Land Acquisition Liaison Officer who is expediting the proposals by personal contact.

4.55. Asked how it was considered possible that the project would be completed by 1970-71 when the court cases were pending, the Ministry have stated that every effort was being made by the Project authorities for expediting those cases and vacation of injunctions.

4.56. The Committee note with concern that the project authorities have not been able to get possession of one-tenth of the land provided in the project estimate. The Committee are distressed to learn that due to non-availability of land, the progress of various works of the Project is hampered. Evidently the scheduled targets for the completion of the various works of the Project would not be achieved in the absence of the availability of land for the works. Unless the commissioning of the essential components of the project is synchronised with the scheduled targets, the benefits of the project will not be derived in time. The Committee would, therefore, strongly urge the Government to take up the matter at a higher level with the Government of West Bengal and make all out efforts to remove the bottlenecks regarding the acquisition of land early.

D. River Training Works

4.57. The beneficial effects of the Farakka Barrage and other measures like dredging, river training etc. will be that ships drawing 26 feet draft can navigate up the River Hooghly to Calcutta Port on almost all days of the year. It is also expected that a draft of about 29 feet will then be available for about 100 days in a year and a draft of about 28 feet for about 200 days in a year.

4.58. The factors limiting navigation in the River Hooghly are the drafts and length of vessels. With the construction of the Farakka Barrage and perennial head-water supply to River Hooghly, sea-going vessels with an average of 15,000 tonnes and drawing 26 to 29 feet will be able to come up to Calcutta Port over the 120 miles navigable channel.

4.59. It has been stated that the choked state of the Bhagirathi river will have to be rectified before the full benefits of the Farakka Barrage Project could be felt in Calcutta and the Calcutta Port Commissioners may have to assume responsibility for this work. Asked, whether there was any scheme for undertaking training works for the improvement of the Bhagirathi and Hooghly river systems so as to obtain the maximum benefit from the Farakka Barrage, the Ministry of Irrigation and Power, in a written note have stated as under :—

> "The Calcutta Port Commissioners have recently submitted a proposal which is estimated to cost in the aggregate a sum of Rs. 10.83 crores for undertaking river training works for the improvement of the Bhagirathi and the Hooghly. These works are stated by the Port Commissioners to be really ancillary to the Farakka Barrage Project and are essential requirements to yield the benefits of the Farakka Barrage Project.
>
> The details of the scheme together with a break-up of the estimates are given at Appendix V.

It has been stated that the quantum of the annual grant to be given to the Port Commissioners should for the present, be limited to 50% of the expenditure on river dredging and river maintenance within their overall jurisdiction including the debt charges for a period of four years from 1968-69 to 1971-72. The capital cost of the corrective works in the Bhagirathi and the Hooghly would be borne by Government in the same way as for the Farakka Barrage Project."

4.60. Asked when the scheme was submitted and what was the progress made so far, the Ministry of Irrigation and Power in a subsequent note have stated as follows :—

"The Commissioners *vide* their Reso. 331 of 5th meeting held on 28th March, 1968 sanctioned a proposal for corrective works in the Bhagirathi-Hooghly. This was forwarded to the Ministry of Transport by the Chairman, Calcutta Port Commissioners, under his letter No. 7073, dated 6th April, 1968. Phased anticipated expenditure for the projects during the Plan period was forwarded to the Ministry of Transport on 5th June, 1969. A total estimated expenditure in the river training works for the improvement of Bhagirathi and the Hooghly is made up as under :—

(a) The Bhagirathi works	. Rs. 6·20 crores
(b) The Hooghly works	. Rs. 4·63 crores
	Rs. 10·83 crores

Government have accepted in principle the cost for river training works. The project as a whole amounting to Rs. 10.83 crores has not yet been sanctioned by the Government, but the Government have approved the budget expenditure of Rs. 207 lakhs during the current year 1969-70. The work has already been taken up in a phased manner. Some of the essential portions of the scheme need to be completed before the completion of the Farakka Barrage Project and the remaining part thereafter. The estimated cost of the respective portion is as follows :—

(a)	*Essential works before commissioning of the Farakka Barrage Project*	
	(i) The Hooghly works	Rs. 129 lakhs
	(ii) The Bhagirathi works.	Rs. 277 lakhs
(b)	*Works after completion of the Farakka Barrage Project*	
	(i) The Hooghly works	Rs. 334 lakhs
	(ii) The Bhagirathi works	Rs. 343 lakhs

The works both in the Hooghly and in the Bhagirathi are already in hand."

4.61. In reply to a further question whether the progress of work in this regard was according to the schedule and would coincide with the discharge of water flow from Farakka Barrage, the Ministry of Irrigation and Power have stated :—

"Progress of works in Hooghly

The progress of works in the Hooghly has been satisfactory. So far, an expenditure of Rs. 23 lakhs has been incurred against execution of training works in Upper Hooghly, Calcutta and Lower Hooghly.

Progress of works in the Bhagirathi

Corrective works in the Bhagirathi consisting of river training works and dredging, have been taken up including procurement of equipment.

The works, however, have not advanced sufficiently as the scheme is to synchronise with the completion of the Farakka Barrage Project. The Farakka Barrage Project is now expected to be completed within 18 months or so, and the essential works that are necessary in the Bhagirathi and the Hooghly before commissioning of the Farakka Barrage Project are in hand and are expected to be completed in time."

4.62. The Committee regret to note that the progress of the corrective works in the Bhagirathi river have not advanced sufficiently to synchronise with the completion of the Farakka Barrage Project. In order to obtain optimum benefit from the Farakka Barrage, the Committee would urge the Government to expedite the completion of the essential portions of the scheme that are necessary before the commissioning of the Farakka Barrage Project.

E. Miscellaneous

(i) *Power Breakdowns*

4.63. The Committee have been informed during evidence by the representative of the Ministry of Irrigation and Power that no delays on account of power break-downs were experienced in the execution of the Project.

4.64. The attention of the Ministry in this connection was drawn to the Minutes of the meeting of Farakka Barrage Control Board held on 26th April 1968 where the Board viewed with concern the frequent interruptions in power supply which had been continuing for the last couple of years in spite of the fact that it had been impressed upon the State Electricity Board to ensure uninterrupted supply of power to the Project. In order to ensure uninterrupted power supply to the Project, the Board had directed

that a small team consisting of..... may be constituted to consider the causes of power failure and to give a technical plan to ensure uninterrupted supply of power. The Ministry who were asked about the action taken thereon have stated as under :—

"The Control Board at its 20th meeting held on 13th August 1967 had directed Shri A. K. Ghosh, Member, Central Water and Power Commission to visit Farakka and review the entire question of power supply on both the banks of the Barrage *vis-a-vis* load requirements. Shri Ghosh inspected the electrical installations at Farakka on 31st August 1967 and held discussions with the Project authorities and the Chairman, West Bengal State Electricity Board and thereafter submitted his report.

In the 21st meeting of the Control Board held on 18th January, 1968, the Chairman Farakka Barrage Control Board directed that Shri Ghosh should be requested to visit Farakka again to ensure implementation of his recommendations. Shri Ghosh visited Farakka again on 6th February, 1968. In his subsequent report, he had stated that some of the recommendations made by him had been implemented and action to implement the remaining recommendations was on progress.

At the 22nd meeting, the Board had decided to form a small Committee to go into the causes of frequent power failures. But subsequently the Vice-Chairman, Central Water and Power Commission who examined the matter further expressed the view that the number of power failures had already considerably reduced following the implementation of some of the recommendations of the Member (Thermal), Central Water and Power Commission and the position would further improve if his remaining recommendations were also implemented by the West Bengal State Electricity Board. Thereafter the Chairman, West Bengal State Electricity Board in a meeting with Secretary, Irrigation and Power held on 9th July 1968 also agreed to implement the remaining recommendations. In the above circumstances, there was no need for a separate Committee to go into the power supply question of the Project at that stage. The Board at its 23rd meeting held on 29th November, 1968, noted the position as above."

4.65. As regards details of the power break-downs since 1966 when the Chief Engineer, Farakka Barrage Project had brought it to the notice of the State Electricity Board to take remedial measures to ensure that power break-downs do not occur, the Ministry of Irrigation and Power have furnished the following statement giving the list of power break-downs covering

the period 1966—69 :

Date and Period	Grid Supply		Package Plant		Remarks
	Duration	Remarks	Date and Period	Duration	
1	2	3	4	5	6
25-5-66 From 18.30 to 21.25 hrs	2 hrs. 52 minutes	Tripping in the Grid	—	—	—
25-6-66 to 29-6-66	There were the frequent interruptions in supply due to theft in WBSE Board line.		Package Plant	Supply was utilised.	
28-8-66	—	Grid supply failed. Inter-connection utilised for system supply.	From 9 ·48 to 10 ·47 hrs	59 minutes	Package plant failure.
11-2-68 from 08 ·15 to 18 ·00 hrs	9 hrs 45 minutes	—	—	—	Inter-connection utilised for system supply.
19-3-68 From 17 ·32 to 22 ·05 hrs	4 hrs 32 minutes	The inter-connector was given at 17 ·42 hrs	—	—	—
20-3-68 From 17 ·30 to 19 ·45 hrs	2 hrs 15 minutes	—do—			
21-3-68	—	Inter-connector supply utilised for system supply.	From 10 ·49 to 12 ·35 hrs	1 hr 45 min.	Iner-connector utilised for system supply.

1	2	3	4	5	6
31-3-68 from 14·16 to 16·06 hrs	1 hr 50 minutes	—	—	—	—
28-4-68 from 15·31 to 16·31 hrs	1 hr	Inter-connector was given from 15·45 to 16·30 hrs.	—	—	—
2-11-69 from 9·06 to 10·27 hrs	1 hr 21 minutes	Inter-connector supply utilised for system supply.	—	—	—

4.66. It has further been stated by the Ministry of Irrigation and Power that "after the report made in the middle of 1966 referred to in the question under reference the West Bengal State Electricity Board authorities have provided an inter-connection arrangement between the supply from the Package Plant on 6.3 KV system and grid supply on 11 KV system to our Project. As such, any single source failure of supply from the State Electricity Board on the occasions referred to in the report was duly covered by an inter-connection from the other sources of supply as available without any appreciable loss in work on account of power supply interruptions. This has thus nullified any hampering effect for the Project works on account of power breakdowns. It, therefore, transpires that no delays of accountable nature have occurred in the work of Project on account of power breakdowns during the years in question and after commissioning of the interconnector transformer between the Package Plant supply and the grid supply at Farakka by the West Bengal State Electricity Board.

4.67. The Committee regret to note that earlier the work on the Project suffered greatly due to frequent power failures. The Committee are constrained to observe that remedial measures by the Government for improvement in the power supply should have been taken urgently and in a concerted manner.

(ii) *Maintenance Organisation*

4.68. It has been stated by the Ministry that the question of setting up of an organisation for the maintenance of Farakka Barrage Project is under consideration.

4.69. As regards progress made in the matter of setting up of the organisation and the agency which is looking after the maintenance of various works completed so far, the Ministry have stated that the proposals were being examined and would be finalised shortly. The works which are completed during the construction stage of the project are looked after by the construction authorities themselves.

4.70. As the Farakka Barrage is expected to be completed by the next year, the Committee would like the Government to finalise the scheme for setting up of the maintenance organisation at an early date. The Committee also hope that while manning the maintenance organisation for the Project, due consideration will be given to the absorption of the staff which is likely to be rendered surplus on completion of the various works of the Project.

(iii) *Submersion of Bihar Villages*

4.71. Asked whether there was a likelihood of some villages of Bihar being submerged as a result of Farakka Barrage and if so what precautionary measures had been taken to prevent this, the Ministry of Irrigation and Power stated that the position was being examined in the light of surveys

carried out. In a subsequent note (February, 1970) the Ministry have informed the Committee that field surveys have been completed by the Survey of India and the survey maps have just been received from them which are under scrutiny. It has been stated by the Ministry that in view of the position that the Farakka Project is going to be completed by 1970-71, the measures required for the protection of the affected areas would be taken before the operation of the Project.

4.72. The Committee hope that the scrutiny of the survey maps will be completed at an early date and that suitable measures required for the protection of the affected areas would be taken by the Government well in time before the completion of the Project. The Committee would like to be apprised of the measures taken in the matter in due course.

(iv) *Ganga—Kobadak Barrage*

4.73. It has been brought to the notice of the Committee that Pakistan intends to construct Ganga—Kobadak Barrage at a new site near Hardinge Bridge in East Pakistan. A very high pond level as now proposed by Pakistan will create back water effects likely to interfere with the operation of the Farakka Barrage.

4.74. As regards precautionary measures being taken to prevent any damage to the Farakka Barrage, the Ministry of Irrigation and Power have stated that "the details of the proposed project have not been received but we shall not agree for any project if it affected the operation of the Farakka Barrage Project."

4.75. The Committee note that the Government would not agree for any project which might affect the Farakka Barrage Project. The Committee recommend that all possible precautionary measures should be taken well in time to avoid any possibility of damage to the Farakka Barrage Project.

NEW DELHI;
April 13, 1970
Chaitra 23, 1892 (*Saka*)

M. THIRUMALA RAO,
Chairman,
Estimates Committee

APPENDIX I

(*Vide* para 4.8 of the Report)

Copy of note furnished to the Ministry, Irrigation and Waterways West Bengal by the Ministry of Irrigation and Power.

The requirement of Flat Web Sheet Piles for the construction of Cellular Coffer Dams had been assessed as 35,000 tonnes. The Sheet Piles of required type were not manufactured in India by any indigenous manufacturer. In a meeting held in the Ministry of Irrigation & Power on 16.3.1964, which was attended among others by the representatives of the Ministry of Finance, Ministry of Iron & Steel it was impressed that a minimum of 8000 tons of coffer dam sheet piles must be in position by September, 1964. The possibility of getting sheet piles from Italy with whom India had a favourable trade balance was considered as ruled out. It was decided that limited tenderes should be invited from the Indian Agents of the Firm on U.S.S.R., Luxemburg, Japan, Sweden, U.K., France, Hungary etc., for the procurement of 8,000 tonnes of Sheet Piles. It was also decided that while inviting tenders, the Project authorities should make it clear that payment would be made on the basis of deferred payment on down payment being allowed and that full payment would be spread over 10 annual instalments. The sheet piles being required by September, 1964 and allowing for a delivery period of six to eight months, the firms should be requested to submit their quotations within 10 to 15 days.

2. As a result of the above decision, the Chief Engineer, Farakka Barrage Project invited tenders for the procurement of 8,000 tonnes of Sheet piles to be opened on 2nd April, 1964 specifying that the supply of Sheet Piles and the Sheet Pile driving equipment should be so regulated that the last consignment would reach the Calcutta Port by September, 1964. The tenders received by the Chief Engineer, Farakka Barrage Project were closely scrutinised in consultation with the Ministry of Finance, and it was finally decided to place an order for the procurement of 8,000 M/Tonnes with M/s. Mitsubishi of Japan. It was later decided to obtain from them 7,500 tonnes of Sheet Piles, 5 Nos. of corner Piles and 54 Caps.

It may be mentioned in this connection that no offer in response to the tender enquiry had been received from any of the East European Countries or from U.S.S.R.

2-A. M/s. Mitsubishi Kaisa of Japan had quoted Rs. 633/12/645.55 per metric tonne C.I.F. Calcutta ($ 131.90 per metric ton). They are the only firm to agree to deferred payment terms.

3. Representatives of Krupps had made an offer on barter deal basis but the C.I.F. cost quoted per metric ton was Rs. 923/933.31 which was too high.

4. Messrs Shanta Bros. representative of M/s. Golumeta Luxemberg had quoted Rs. 652.56 per metric tonne C.I.F. Calcutta in dollar currency.

5. The price quoted by Mitsubishi Kaisa was lower by just over one per cent compared to that quoted by Shanta Bros. However, the sheet piles quoted by Shanta Bros. was in dollar currency.

6. The main considerations for deciding in placement of order with Messrs Mitsubishi Shoji Kaisa Ltd., Japan are—

(a) The Firm had quoted the lowest price and subsequently agreed to reduce the price from $ 131.90 to $ 130.80 per M/Tonne.

(b) They were the only firm aggreeing to the Supply of the Sheet Piles on the deferred terms of payment *viz.*, 15% payment on finalisation of the contracts and 85% balance in seven equal annual instalments.

APPENDIX II

(*vide* para 4.8 of the Report)

Copy of Chief Engineer, Farakka Barrage Project D.O. letter No. F/NS/DM/367-370, dated 24th February, 1964 addressed to the Iron and Steel Controller, Calcutta.

D.O. No. F/NS/DM/367-370 CAMP : FARAKKA

24th February, 1964.

Dear Shri Mukherjee,

I understand that the Indian Standard Institution had sometimes ago standardized certain section of coffer dam sheet piles which can be manufactured in India. As we would require about 40,000 tons of straight web (about 3/8" thick) coffer dam sheet piles in the construction of the Farakka Barrage Project, I would request you to kindly let me know if such sheet piles can be manufactured in any steel plant in India in which case we would be able to conserve a large amount of foreign exchange. In case, it is not possible to manufacture this in India, I would request you to kindly let me know if this can be arranged from any of the East European countries.

2. You may also consider if it would be desirable to convene a meeting in your office with all the Indian Steel Producers if with suitable modification of their rolls such sheet piles may be manufactured here. As you are aware, the construction of the barrage has been given the highest priority, I shall be grateful for an immediate reply.

Yours sincerely,

Sd./- D. MOOKERJEA

Shri S. C. Mukherjee,
Iron & Steel Controller,
Government of India,
33, Netaji Subhas Road,
Calcutta-1.

Copy forwarded to :—

1. O.S.D. (Designs), for information. Any reference to the Indian Standard Institution Publications may kindly be furnished to me at an early date.
2. Secretary, Ministry of Irrigation & Power, Government of India.
3. Secretary, Farakka Barrage Control Board.

APPENDIX III

(*vide* para 4.8 of the Report)

Copy of Ministry of Irrigation and Power letter No. F. 7/47/61-GB/FBP, dated 5th March, 1964 along with a copy of the note prepared by the Ministry of Irrigation and Power to consider the foreign exchange requirements of the Farakka Barrage Project for the import of sheet piles and pile driving equipment.

Shri P. R. Ahuja,
Chief Engineer &
Joint Secretary.

GOVERNMENT OF INDIA
MINISTRY OF IRRIGATION & POWER
ROOM NO. 224, UDYOG BHAVAN,
New Delhi, the 5th March, 1964.

D.O. No. F. 7/47/61-GB/FBP.

Dear Shri,

It is proposed to hold a meeting on 11th March, 1964, at 11.00 a.m. in the room of Secretary, Ministry of Irrigation and Power (Room No. 10—North Block) to consider the release of foreign exchange for the import from U.K., of 5,000 tons of cellular type coffer dam sheet piles and the pile driving equipment which are required immediately for the construction of the Farakka Barrage Project. I shall be grateful if you will kindly make it convenient to attend.

A note for the meeting is enclosed.

Yours sincerely,

Sd./- P. R. AHUJA.

Encl. : 1 Note

To

1. Shri V. V. Chari, Addl. Secretary,
   Ministry of Finance, New Delhi.
2. Shri M. R. Chopra, Chairman,
   Central Water & Power Commission, New Delhi.
3. Shri C. S. Krishnamoorthi, Joint Secretary,
   Ministry of Finance, New Delhi.

4. Shri M. C. Misra, Deputy Secretary,
Ministry of Steel and Heavy Engineering, New Delhi.

Copy together with a copy of the note forwarded to :—

1. Shri Debes Mookerjea, Chief Engineer, Farakka Barrage Project, Calcutta.
2. Shri K. B. Khushalani, O.S.D.(D), Farakka Barrage Project, Russian Pavilian, Mathura Road, New Delhi.
3. Shri J. S. Jain, General Manager, N.P.C.C. Ltd., New Delhi.
4. Shri Vidya Ratna, Secretary, Farakka Barrage Project Control Board, Udyog Bhavan, New Delhi.

with the request that they may also kindly attend the meeting.

Sd./- K. V. RAJAGOPALAN,
Under Secretary.

MINISTRY OF IRRIGATION AND POWER FARAKKA BARRAGE PROJECT SECTION

Note for the meeting proposed to be held on the 11th March, 1964, at 11.00 A.M. in the room of Secretary, Ministry of Irrigation and Power (Room No. 10, North Block) to consider the foreign exchange requirements of the Farakka Barrage Project for the import of Cellular type Coffer Dam sheet piles and pile driving equipment.

Attention is invited to the Record Note of 1st Meeting of Committee of Secretaries, held on 17th January, 1964, forwarded with Cabinet Secretariat Office Memorandum No. 89/12/CF-64, dated the 23rd January, 1964, with particular reference to the coffer dam sheet piles required for the Farakka Barrage Project (extract enclosed).

2. The total requirement under this head is 30,000 tons to enable the construction of the coffer dam in the bed of the river to start in November, 1964, this amount is required to be in position by September, 1964.

3. At the meeting of the Secretaries, the representative of the Department of Iron and Steel explained that 6,000 tons had been arranged from West Germany under barter agreement. Actually these 6,000 tons did not relate to the Coffer Dam sheet piles but only to the permanent sheet piles, the latter being a separate requirement. The same representative also stated that provision for importing another 5,000 tons from Czechoslovakia had been made under the 'Trade Plan'. Working on this assumption, he concluded that 19,000 tons (valued at Rs. 1.3 crore) still remained to be

covered. The Department of Economic Affairs were understood to be contacting the U.K. authorities for possible extension of the steel credit to cover these requirements as also East European sources especially U.S.S.R.

This was the position on the 17th January, 1964.

Since then, more enquiries have been made. The Russian sheet piles are not considered suitable. Czechoslovakia does not manufacture coffer dam sheet piles. The import of 6,000 tons from West Germany under barter deal has no connection with the coffer dam sheet piles. This virtually leaves us in a position where we have to make arrangements for the entire 30,000 tons.

The only countries where cellular type coffer dam sheet piles of the required specifications might be had are Germany, Japan and U.K. Intensive efforts have been, and will continue to be, made to explore the possibility of obtaining the sheet piles from these countries. It is, however, problematic how far we will succeed in this respect *viz.*, (1) whether those countries will be able to supply the sheet piles and (2) if so, whether the delivery schedule will suit our requirements.

Meanwhile the fact remains that for our work in the river bed, the sheet piles should reach the site latest by October, 1964. It was in view of this extreme urgency that the Committee of Secretaries categorically recommended that the Departments of Economic Affairs and the Iron and Steel should ensure the release of the foreign exchange and import arrangements for 19,000 tons on a most immediate basis.

4. The British Sheet Piling Company of United Kingdom are the only manufacturers who have made a firm offer to supply the sheet piles to our specifications at the rate of 1,000 tons per month during the period April—September, 1964, provided an order is placed on them by the end of this month. They have quoted £ 40.10 per ton in lengths of sheet piles up to 50′ and extra 10 shillings per ton for lengths of 60′ *i.e.*, £ 41.00 per ton for 60′ long piles. The total cost FOB U.K. Port comes to £ 2,05,000 or Rs. 27.4 lakhs for 5,000 *tons sheet piles.* If foreign shipping becomes necessary, a further foreign exchange of £ 37,500 (Rs. 5 lakhs) would be needed.

5. To drive the sheet piles, it is necessary to have a minimum of sheet pile driving equipment. For this, the firm have quoted £ 1,90,500 FOB U.K. Port of Rs. 25.4 lakhs approximately. Another equivalent of Rs. 4 lakhs would be required if recourse is to be made of foreign shipping.

6. In view of the recommendations of the Committee of Secretaries, *vide* 'X' supra, and in view of the immediate urgency of importing at least 5,000 tons of sheet piles together with the necessary pile driving equipment, Ministry of Finance may kindly release forthwith foreign exchange to the tune of Rs. 52.8 lakhs plus Rs. 9 lakhs for foreign shipping so that a firm

order can be placed for the first instalment of 5,000 tons of sheet piles with the pile driving equipment. This is the barest minimum and an absolute 'must' if the work is to start in the next working season. Meanwhile we will continue to explore the possibilities of obtaining the remaining 25,000 tons from countries like Japan, and Germany and approach the Ministry of Finance for release of further foreign exchange only if our efforts to obtain these sheet piles against barter deal or on deferred payment basis do not bear results.

7. British Sheet Piling Company's letter, dated the 27th February giving quotations for 5,000 tons of coffer dam sheet piles and the conditions of sale and a list of pile driving equipment to be imported from them together with their approximate cost are enclosed.

Sd./- P. R. AHUJA.

APPENDIX IV

(*vide* para 4.8 of the Report)

Copy of Chief Engineer, Farakka Barrage Project, letter No. S-4 (1), dated 10th March, 1964 addressed to the Iron and Steel Controller, Calcutta.

Copy of letter No. S-4(1), dated 10th March, 1964 from the Chief Engineer, Farakka Barrage Project addressed to Shri S. C. Mukherji, Iron & Steel Controller, 33, Netaji Subhas Road, Calcutta-1.

SUBJECT :—*Japanese Sheet Piles.*

You have already been requested to find out and let us know if sheet piles suitable for the Cellular Coffer dam would be available from any country.

Japanese Sheet Piles of the specifications as under would be suitable for coffer dam for the Farakka Barrage Project. These sheet piles are manufactured by Yawata Iron & Steel Co. Ltd., Tokyo, Japan. Our requirements will be about 20—25 thousand M/Tonnes. I would request you to kindly take immediate steps for procuring these sheet piles before September, 1964. The total quantity of sheet piles that can be supplied within this year (*i.e.*, 1964) may kindly be ascertained from the parties concerned.

Specifications of Japanese Sheet Piles.

Width	Depth	Webb thickness	Sectional area
YSP F 400 mm	45 mm	9·5 mm	69·1 cm^2
Weight	Modulus of Section		Minimum interlocking strength.
15·5 Kg. per ft.	2·917 $inch^3$.		300 ton per metre.

Immediate action is requested.

Copy to :—

1. Shri P. R. Ahuja, Chief Engineer & Joint Secretary, Government of India, Ministry of Irrigation & Power, Udyog Bhavan, New Delhi with reference to his D.O. No. 7/47/61-FBP, dated the 3/5th March, 1964.
2. Superintending Engineer, Construction Circle No. I, Farakka Barrage Project, Farakka.
3. Ministry of Steel and Heavy Engineering, New Delhi.

Sd./- CHIEF ENGINEER,
Farakka Barrage Project.

APPENDIX V

(*vide* para 4.59 of the Report)

Details of the River Training Works for the improvement of the Bhagirathi and the Hooghly

The basic causes of the progressive deterioration of the Bhagirathi—Hooghly system, which has thrown up a number of problems from the point of view of navigation over the Hooghly, are the diminution of the flow from the Gunga and the excess entry of sand. The history of the Bhagirathi offtake is one of the constant changes. This is known to have shifted 24 miles longitudinally and 10 miles transversely. As a result of curved flow characteristics, sand is built up at the offtake point at Biswanathpur. A natural consequence of the position of the offtake is the excess entry of relatively coarse sand. This process of siltation at the head is accompanied with reduction of water into the Bhagirathi.

2. The Bhagirathi draws water from the Gunga only during freshets. Freshet flow starts only when the Gunga rises by about 12 feet. At the end of the freshets, Bhagirathi carries no discharge. The peak spill in 1938 was of the order of 90,000 cfs. Of the two other spill channels of the Gunga which together with the Bhagirathi form the Hooghly, one is the Jalengi which falls into Bhagirathi at Swarupganj, the tidal limit of the Hooghly, and the other is the Churni which falls into the Hooghly 40 miles from Swarupganj and is now practically dead. The western tributaries important of which are the Pagla, Babla and Ajoy which join Bhagirathi at 6 miles, 92 miles and 98 miles respectively from the head at Biswanathpur, exert no marked influence on the condition of the Bhagirathi—Hooghly system.

3. The progressive deterioration of the Bhagirathi—Hooghly system has brought in its wake a number of problems which affect the functioning of the Port of Calcutta. Depths over the 14 bars in the navigable channel of the Hooghly fluctuate because of the tidal inflow and outflow and particularly over the 10 bars above Hooghly Point as these bars align themselves to the ebb flow in the monsoon and the flood flow in the dry season. This affects the drafts allotted to ships visiting the Port. The shallowness of the Hooghly Channel as a result of heavy sand movement from Bhagirathi and the reduction in the head water supply over the years have resulted in progressive loss of depths besides accentuating the intensity of the bore tides. The occurrence of bore tides is an impediment to navigation. These bore tides also cause dissipation of the berthing capacity by imposing restrictions on the use of the river moorings and riverside jetties besides damaging properties on an extensive scale.

4. The object of constructing a barrage at Farakka is to make Bhagirathi an efficient conveyance channel by moderating and prolonging the

freshet discharges and reducing the entry of coarse sand into the Bhagirathi—Hooghly system. The beneficial effects of these measures will be immense. The Hooghly River will be revitalised and its navigable channel will be deepened. Bore tides will, in course of time, cease to be a factor to be reckoned with for the purpose of safe navigation, and for mooring of ships in the river and riversides jetties. Dredging commitments on which a large sum of money is now being spent will go down appreciably. All this will be possible because of the Gunga barrage delivering into Bhagirathi 40,000 cfs. through a feeder canal provided with silt excluders to prevent entry of sand. In order that this discharge may not flow back into the Gunga when the water level is low, and to regulate the withdrawals from the direct head, a barrage is proposed accross Bhagirathi at Jangipur.

5. The scheme for the preservation of the Port of Calcutta envisaged restoration of adequate head water supply, control of entry of sand and training measures in the Hooghly, so that the benefits of the Farakka Barrage Project may be optimised without transitional difficulties. The construction of the barrage and the feeder canal is already in progress. For the control of the entry of sand provision has been made for sand excluders at the head works at Farakka. Measures are, therefore, now necessary for reduction of sand entry from the Bhagirathi into Hooghly and to make the Bhagirathi an efficient conveyance channel together with training works in the Hooghly. To determine what measures are necessary to make Bhagirathi an efficient conveyance channel to the Hooghly and to prevent sand entry from the Bhagirathi into the Hooghly, a Committee composed of the Chief Engineer and Joint Secretary, Ministry of Irrigation and Power, Chief Engineer, West Bengal Government, Development Adviser, Ministry of Transport, Director, Central Water and Power Research Station, Poona and the Chief Hydraulic Engineer of the Port, was set up in July, 1966. This Committee after studying the problems, has advocated the execution of certain works to improve Bhagirathi. A copy of the report of the Committee containing its observations on the various problems and its recommendations for carrying out certain corrective measures has already been forwarded to the Government of India.

6. The corrective measures recommended by the Committee for making Bhagirathi an efficient conveyance channel are :—

(i) Protective works and construction of spurs and groynes for strengthening about 19 miles of Bhagirathi bank.

(ii) Various zones of aggravation in Bhagirathi to be dredged and spoil dumped in 6 dumping grounds having capacity to hold 12.3 million tonnes.

(iii) Removal of bars and shoals in places like Daffarpur, Birendranagar, Shampur Gadi, Balia Rajarampur, Ganespur, Jaigung and Karbala.

(iv) Cutting channel over humps or bars in the Bhagirathi which have consolidated over the years and may not respond to scouring in the post-Farakka Barrage period.

(v) Purchase of craft, acquisition of land, provision of shore facilities and carrying out engineering studies and hydraulic surveys.

These works, which are likely to cover a period of 7 years for completion are estimated to cost, inclusive of salaries and wages of personnel and running expenditure on craft, about Rs. 6.2 crores. Details of the estimate are printed at Annexure I.

7. To get optimum benefits from the Gunga Barrage, number of training works are also necessary in the River Hooghly, according to a report submitted by the Chief Hydraulic Engineer. The object of these training works is to improve the tidal propagation by reducing the submerged barrier effect and to align the navigable channel by reducing the divergence between the flood and the ebb axis, so that when the Farakka Barrage is commissioned, the present trend of deterioration is effectively arrested and turned into one of progressive improvement. The various works to be executed are listed in Annexure II and are estimated to cost in the aggregate Rs. 4.63 crores. About the programme for their execution essential ones have to be completed by 1972 and the rest by 1974-75.

8. The total estimated cost of the improvement of the Bhagirathi and the Hooghly is about Rs. 10.83 crores at present day prices.

9. The proposed works in the Bhagirathi as well as in the Hooghly are really ancillary to the Farakka Barrage Project and are essential requirements to yield the benefits of the Farakka Barrage Project. It is considered reasonable and fair to request the Government of India to bear the cost in the same way as they are bearing the cost of the Farakka Barrage Project. Besides, in the financial condition of the Port it is not possible for the Port to bear the large expenditure.

ANNEXURE I TO APPENDIX V

Estimate for corrective works in the Bhagirathi.

		Cost in lakhs of Rupees.
I.	Check survey and preservation of Share Marks. .	1·31
II.	River training, Channel Control and Bank Protection—	
	(a) Spurs and groynes.	37·00
	(b) Bank Protection works.	78·00
III.	Dredging and spoil disposal—	
	(a) Dredging and disposal of 9:75×106 tons of spoil @ Rs. 2·75 per ton.	267·00
	(b) Allowing for 15% extra over estimated dredging quantity .	40·05

	Cost of lakhs in rupees
(c) Dredging or excavating and removal of bad materials in selected reaches in the Bhagirathi on bars and crossings—total quantity 0·2 × 106 tons @ Rs. 2·75 per ton including additional load and lift.	5·50
(d) Cost of land acquisition for disposal of dredged spoil—100 acres in Santipur and Anandebas reach @ Rs. 10,500/- per acre (current prices)	10·50
IV. Craft launches and Shore facilities.	
(a) Procurement of crafts including launches, House Boats and out board motors for survey.	36·25
(b) Procurement of vehicles for road transport. . . .	1·75
(c) Running and maintenance of ancillary crafts of IV(a) and IV(b)—repairs, petrol, oil, lubricants etc.	17·55
(d) For above salaries and wages.	11·88
V. Engineering studies and Hydraulic Surveys—	
(a) Salaries and Wages for Engineering studies. . . .	13·00
(b) Salaries and Wages for Hydraulic Survey. . . .	26·00
(c) Plants and equipment required for Engineering studies and Hydraulic Survey.	3·00
VI. Working facilities—	
(a) Construction of additional accommodation for field staff at Beldanga shore station and electrification of Govindpur and Patuli shore station.	2·50
(b) (i) Construction of roads and Jetties including installation of pipe lines for oil/water supply work sites. . . .	5·50
(ii) land for above.	0·10
(c) (i) Construction of shore station at Teghoripara. . .	3·50
(ii) land for above, 1 acre @ Rs. 10,000/- per acre. . .	0·10
(d) (i) Construction of office and accommodation at Krishnagar.	4·75
(ii) land for above.	0·50
(e) Maintenance of Buildings	4·50

Note:—The above provision has been made on the presumption that the existing three shore stations on the Bhagirathi situated at Govindpur, Beldanga and Patuli would be made available for executing works.

VII. Establishment—	
Field Office at Krishnagar including Supervisory staff. . .	25·00
VIII. Miscellaneous.	3·00
	598·24
Contingency at 3%	17·95
TOTAL	616·19 lakhs.
Say Rs.	6·2 crores.

ANNEXURE II TO APPENDIX V

Estimate of the works for the improvement of the Hooghly.

	Particulars of works	Cost in lakhs of Rupees
1.	Improvement of Upper Tidal Compartment between Cossipore and Balagarh:—	
	(a) Construction of spurs.	20·00
	(b) Dredging and dumping.	57·50
	(c) Bank Protection.	52·00
	(d) Working facilities, such as Jetties, roads, land acquisition, etc.	12·50
2.	Hooghly Point area—Nurpur Reach.	25·00
3.	Corrective measures for Outram-Hastings area.	30·00
4.	(a) Sankrail-Jarmaker Reach.	17·60
	(b) Moyapur—Hiraganj Roypur-Brul	41·50
5.	(a) Prevention of bank erosion Geonkhali-Badar Beacon. . .	10·00
	(b) Fisherman's Fulta Reach.	18·00
6.	(a) Corrective works at the back of Hooghly Works. . . .	44·00
	(b) Corrective works, for Panchpara, Koffri and Metiabruz Reaches.	26·40
7.	Corrective works for Uluberia—Pir Serang-Buj Buj-Poojali Reaches.	32·10
8.	Diamond Sand Reach.	45·00
9.	Improvement of Swarupganj—Balagarh Reach for inland navigation.	28·50
10.	Provision for probable works at Caldergran—Natunpanpara Reach	3·00
	TOTAL Rs.	463·10 lakhs.
	Say Rs.	4·63 crores.

APPENDIX VI

Statement showing Summary of Recommendations/Conclusions

Sl. No.	Reference to Para No. of the Report	Summary of Recommendations
1	2	3
1	1·19	The Committee note that the investigations about the details of the Project, which were started by the West Bengal Government in 1948, were later on taken over by the Central Water and Power Commission, the administrative sanction to the Project was given in 1962 and the work was started only by 1963. They further note that even after that for two or three years the work on the Project was not started in right earnest. Although the importance of the Project was realised long ago it was delayed for a long time. The Committee are constrained to observe that this delay, apart from resulting in loss of hundreds of crores and increase in cost, has deprived the country from the anticipated benefits of the Project. The Committee have been informed that the Farakka Barrage Project will enable the diversion of 40,000 cusecs of water from the Ganga into Bhagirathi which will set right the hydraulic balance of the tidal bores in the Hooghly, check the threat posed to the Calcutta Port and restore normal navigation in river Hooghly. The Committee understand that with the reduction in frequency of tides, salinity in the water will be reduced which in turn will solve the problem of water supply to the city of Calcutta and Calcutta Metropolitan District. The Committee note that Farakka Barrage will also bring about the improvement in the communication system and remove the drainage congestion.

1	2	3
2.	2·8	The Committee feel that there is some force in the argument that the decision making authority should be based at site to take on the spot decisions. They are of the view that it would be useful if sufficient powers are delegated to the highest officer on the spot so that it may be possible for him to take quick decisions as and when unforeseen situations arise. The Committee, therefore, recommend that the entire position may be reviewed in consultation with the Ministry of Finance at an early date.
3	2·12	The Committee fail to understand why the liaison work in Delhi could not be done by the office of the Farakka Barrage Control Board earlier also as is being done now. They cannot help drawing the inference that there was no justification for setting up Liaison Office at Delhi.
4	2·15	The Committee note the measures being taken by the Government for absorption of the personnel who may be randered surplus after the completion of the Farakka Barrage Project. The Committee would, however, suggest that the Government should prepare an integrated programme to provide alternative employment to the Project personnel who will be rendered surplus on completion of the Project, thereby saving them from undue hardship and sufferings.
5	2·16	The Committee hope that the possibilities of development of inland water transport in the Farakka Complex have by now been investigated by the Ministry of Transport and the Chairman, Inland Water Transport Committee. The Committee also suggest that in view of the importance of absorption of surplus staff after the completion of the Farakka Barrage Project, the feasibility of developing a base workshop for inland water transport in Farakka Complex may be examined by Government.
6	2·27	The Committee are unhappy to note that the cos of the Project which was originally estimated

1	2	3
		at Rs. 56.40 crores in April, 1960 has now been estimated at Rs. 156.293 crores *i.e.* an increase of about 180 per cent. The Committee are constrained to observe that by the time the original estimate of the Project in 1960 was prepared, the Government had an experience of atleast fifteen years of preparing designs and estimates of river valley projects. It is, therefore, strange that within a short period of six years, the estimate should have increased enormously. The Committee are of the opinion that sharp increase in the Project estimate vitiates the economics of the Project and also disrupts the allocation of precious resources of the country for different projects.
7	2·28	The Committee have been informed that increase in rate, increase in scope of the work, inadequate provision for the works were largely responsible for enormous increase in the estimates. The Committee feel that had the project estimate been initially prepared after full investigations instead of being prepared on limited data and preliminary designs, as has been done in the present case, this enormous increase in the revised estimate of the Project could have been obviated.
8	2·29	The Committee would like to draw the attention to the recommendations made in their Report on the Gandak Project and to stress again that the reasons for the enormous increases in the estimates of most of the river projects in the country should be examined fully by the Government and steps taken to avoid increases of such dimensions in future.
9	3·11 and 3·12	The Committee are unhappy to note that while the work on the right bank of the Farakka Barrage was allotted to M/s. National Projects Construction Corporation in October, 1963, the first pier on it could only be raised after four years *i.e.* in the working season of 1967-68. The Committee feel that the inordinate delay in completion of the work by M/s National Projects

1	2	3
		Construction Corporation has contributed to increase in the cost of the Farakka Barrage. In view of the poor performance of the M/s National Projects Construction Corporation on the right bank of the Farakka Barrage the Committee urge the Government to go into the matter of allotment of work on 1-12 bays of the Farakka Barrage to M/s National Projects Construction Corporation on the cost plus basis.
10	3·18 and 3·19	The Committee are surprised to note that after incurring an expenditure of Rs. 0·88 crores on the construction of Upstream Navigation Lock, taken up in November, 1963 on a priority basis, the work on it was suspended in April, 1966, only three months before the target date of completion in June, 1966, due to paucity of funds. The Committee further note that the estimate of the Navigation Lock has increased from Rs. 0.87 crores to Rs. 2.83 crores. The Committee are of the view that the estimate had not been properly worked out. Had it been properly prepared, the work on the Navigation Lock would have been completed or substantially completed within the original estimate. The Committee are constrained to observe that the porject authorities had not carefully examined the necessity of the Navigation Lock and assessed the immediate requirement *vis-a-vis* available resources before taking up its construction. They feel that with proper planning this could have been avoided.
11	3·24	The Committee note with concern that the work on the Feeder Canal could not be completed *inter alia* due to the failure of the contractor. The Committee hope that the Government would take appropriate action against the contractor for his failure to complete his contract so that the Government is not put to any loss.

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12.	3·25	The Committee are unhappy to note that the targets fixed for excavation of the Feeder Canal could not be achieved except during the years 1963-64 and 1966-67. Unless the work on the Feeder Canal is completed before the Farakka Barrage is completed, the objective of the whole project will remain unfulfilled. The Committee, therefore, stress that every effort should be made by the Government to synchoronise the completion of the Feeder Canal with the commissioning of the Farakka Barrage by June, 1971.
13	3·30	The Committee are unhappy to note that almost a year was taken by the authorities to finalise the contract of the Feeder Canal in the reach between RD 10—68. The Committee note that though the offer of the lowest tenderer was not accepted on the ground that the lowest tenderer was not considered capable of doing the job and the contract was given to the other contractor whose tender was more than one crore higher than the lowest tender, the work on this reach could not be completed in time and an extension of time for two years had to be given to the contractor.
14	3·32	The Committee are unhappy observe that while the work on the Feeder Canal was started in 1963-64, the tenders for the portion of work on the canal in the reach between 68—97 were called in August, 1966 and that it took more than a year to finalise the contract. The Committee hope that the matter regarding delay in calling and finalisation of tenders will be looked into and responsibility fixed. The Committee regret to note that only 17·8% of the work has been completed. The Committee hope that the remaining 82·2% of the work will be completed by June, 1971, the target date fixed for it.
15	3·34	The Committee are unhappy to note that although the tenders for the portion of the work on the Canal in the reach between RD. 103—126 were called in August, 1966, and it took more than one year to finalise the contract. The Committee

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		regret to note that only 5·7% of work has been completed. The Committee hope that the remaining 94.3% of the work will be completed by June, 1971, the target date fixed for it.
16	3·35	The Committee are constrained to observe that after watching the work of the contractor for two years, the Farakka Barrage Control Board had decided to terminate the contract on account of poor performance of the contractor and that the the completion of this portion of the canal is likely to be delayed beyond June, 1971, which is the scheduled date for the commissioning of the Farakka Barrage. The Committee would, therefore, urge that whole matter of delay in calling and finalisation of contracts for work on the Feeder Canal and subsequent delay in completion of the work on various portions of the Feeder Canal should be looked into and responsibility should be fixed for lapse on this account.
17	3·36	The Committee would also urge that the action regarding fresh allotment of work on the portion of the Feeder Canal in the reach between RD 103—126 will be taken by the Government without any further delay and that the work will now be allotted after carefully assessing the capacity of the contractor to complete the work within the time. The Committee hope that a strict watch will be kept on the progress of the work so that the commissioning of the Feeder Canal is done as per programme.
18	3·43	The Committee are surprised to note that although there was no plan of starting work on the Jangipur barrage, the materials for construction were collected on the site earlier and thereby a large sum of money was blocked which could otherwise have been utilised on other works of the Project. The Committee feel that with proper planning this could have been avoided.
19	4·18 to 4·21	The Committee have noted the contents of the letters dated 24-2-1964 and 10-3-1964 from the Chief Engineer, Farakka Barrage Project

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		addressed to the Iron and Steel Controller, Calcutta. The first letter dated 24-2-1964 makes an enquiry about the availability of straight-web sheet piles from any steel plant in India and if that was not possible then whether it could be arranged from any of the East European countries. The second letter dated 10-3-1964 states that the Iron and Steel Controller had already been requested to find out and let the Ministry know if sheet piles suitable for the Cellular Coffer Dam would be available from any country. Without awaiting the reply to the first letter the Chief Engineer, Farakka Barrage Project stated in the second letter that the sheet piles of the required specifications manufactured by Yawata Iron and Steel Company, Tokyo, Japan would be suitable for their purpose and requested the Iron and Steel Controller to take immediate steps for procuring the sheet piles (about 20—25 thousand metric tonnes) before Setpember, 1964 and to ascertain the total quantity of sheet piles that could be supplied by the firm within 1964.
		The note circulated by the Ministry of Irrigation and Power for the meeting proposed to be held on 11-3-1964 stated that the British Sheet Piling Company of U. K. had made a firm offer to supply sheet piles of the required specifications at the rate of 1000 tons per month during the period April-September, 1964 provided the order was placed by the end of that month. The British Firm quoted the cost of 5000 tons of sheet piles at Rs. 27·4 lakhs f.o.b. U. K. Port. The Committee are constrained to observe that the said note does not mention about the availability of the sheet piles from Yawata Iron and Steel Co.,Tokyo, Japan which was stated to be suitable for the purpose by the Chief Engineer, Farakka Barrage Project in his letter dated 10-3-1964 addressed to the Iron and Steel Controller, Calcutta.
		The Committee further note that the Ministry of Irrigation and Power in their note furnished to the Minister of Irrigation and Waterways, West

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		Bengal regarding purchase of sheet piles stated that the sheet piles of required type were not manufactured in India by any indigenous manufacturer. That it was decided in a meeting held in the Ministry of Irrigation and Power on 16-3-1964 that limited tenders should be invited from the Indian Agents of the firms in USSR, Luxemberg, Japan, Sweden, U.K., France, Hungary etc. for procurement of 8000 tonnes of sheet piles on deferred payment basis. That tenders from M/s. Mitsubishi Kaisa of Japan, representative of M/s. Krupps, Germany and M/s. Golumeta, Luxemberg were received in response to the tender enquiry. The committee are constrained to observe that in this note, there is no mention about the offer made by the British Sheet Piling Company of U.K.
		Whereas the Committee have been informed that open tenders were invited but there was no offer from indigenous sources, the Ministry informed the West Bengal Minister that limited tenders were invited.
20	4·22	The Committee note that while the Sheet Piles were imported in 1964 on urgent basis to enable the construction of the coffer dam in river bed in November, 1964, the exeperimental cells for the purpose were only sunk after two years in 1966-67 working season.
21	4·23	The Committee are unhappy to note that out of 7500 tonnes of sheet piles involving foreign exchange of Rs. 93 lakhs, more than 6000 tonnes of sheet piles worth about Rs. 80 lakhs could not be utilised and have been rendered surplus. The Committee are not convinced with the Government's explanation that the Cellular Coffer Dam was found ultimately not necessary due to favourrable river conditions in one year which nullified the calculations based on the technical data of the previous many years. The Committee cannot

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		help observing that the idea of cellular coffer dam was conceived without thorough investigation. They feel that with better planning the necessity of importing sheet piles could have been avoided. The Committee consider it regrettable that after the sheet piles had been ordered, the actual site had been investigated and it was decided to have a different type of coffer dam. In view of this revealing statement, the Committee feel that the investigations should have preceded the ordering of the sheet piles.
22	4·24	The Committee note that there was a loss of Rs. 10·36 lakhs on account of experimental cellular coffer dam cells being washed away during the floods of 1967. The Committee also note that the advice of the Russian expert was sought on the design of the experimental cellular coffer dam cells. The Committee fail to understand why in the absence of Indian technical know-how the guidance of the Russian experts was not sought regarding the driving of the experimental cells in the river bed. They feel that with better planning this loss could have been avoided.
23	4·25	The Committee note that the Government have not been able to dispose of imported sheet piles which were rendered surplus. The Committee would urge the Government to take necessary steps for their disposal at an early date, and in the meantime to take adequate steps to ensure that the sheet piles are protected against loss, theft, pilferage or damage due to inclemencies of weather.
24	4·39	The Committee note that the Report of the Construction Plant and Machinery Committee provides for the maintenance of spares at a minimum level of 15% of the cost of capital equipment and that the value of spares kept in stock was in conformity with the capital cost of the equipment. The Committee, however, note that the actual utilisation of spares in stock was only 8·8% in 1965,

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		14·2% in 1966; 12·1% in 1967 and 13·9% in 1968. The Committee are constrained to observe that the procurement of spares was made in excess of the requirements which led to over capitalisation of the Project and blocking up of much needed public funds. The Committee would urge that there is a need for realistic provisioning of machinery and spares keeping in view the experience gained in the Project and other similar projects. The Government should take positive measures to streamline the procedure of provisioning by examining it in all its aspects including the feasibility of reducing the percentage of spares to be kept in stock. The Committee need hardly stress that in the context of the present difficulty in resources position, the Government should keep uppermost the need for effecting economy in such projects.
25	4·40	From the information furnished by the Ministry regarding utilisation of construction epuipment, the Committee are surprised to note that out of 80 "Jyoti" horizontal split casing 6" × 5" Electrical driven pumps purchased at the cost of Rs. 6,72,320 only 18 pumps were put into use. Similarly out of 50 "Jyoti" vertical split casing 6"×5" Electrical driven pumps purchased at the cost of Rs. 3,81,550 only 6 pumps were put into use. The other significant items of construction equipment not effectively utilised at the Project are C-268 Type Pile Driving units, Electrical Vibrosinkers, BSP 2 type Diesel Hammers, C-231 Pneumatic hammers, Kirloskar Broomade air compressors, "Sigma" Electrical pumps, concrete mixtures etc. The Committee note with concern that the said construction equipment which have not been utilised in the project is worth more than Rs. 30 lakhs. The Committee would like the Government to examine how far the non-utilisation was due to over estimation of the requirements by the Project authorities and how far it was due to defects in the equipment supplied. Keeping in view the future requirements, the

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		Committee would urge the Government to consider how far the equipment and machinery not utilised could be gainfully used elsewhere in the Project or other projects.
26	4.41	The Committee would further like the Government to take adequate steps to ensure that the surplus spares and machinery like Pile Driving Units, Vibrosinkers, hammers, air compressors, Electrical pumps, concrete mixtures etc. which have neither been used so far nor are likely to be used in execution of the project should be properly disposed of expeditiously and till then, they should be adequately protected against loss, theft, pilferage or damage due to inclemencies of weather.
27	4·42	The Government should also profit by their experience and evolve realistic criteria for the purchase of machinery and equipment in future so that the precious resources of the country are fully utilised.
28	4·56	The Committee note with concern that the project authorities have not been able to get possession of one tenth of the land provided in the project estimate. The Committee are distressed to learn that due to non- availability of land, the progress of various works of the Project is hampered. Evidently the scheduled targets for the completion of the various works of the Project would not be achieved in the absence of the availability of land for the works. Unless the commissioning of the essential components of the project is synchronised with the scheduled targets, the benefits of the project will not be derived in time. The Committee would, therefore, strongly urge the Government to take up the matter at a higher level with the Government of West Bengal and make all out efforts to remove the bottlenecks regarding the acquisition of land early.

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29	4·62	The Committee regret to note that the progress of the corrective works in the Bhagirathi river have not advanced sufficiently to synchronise with the completion of the Farakka Barrage Project. In order to obtain optimum benefit from the Farrakka Barrage, the Committee would urge the Government to expedite the completion of the essential portions of the scheme that are necessary before the commissioning of the Farakka Barrage Project.
30	4·67	The Committee regret to note that earlier the work on the Project suffered greatly due to frequent power failures. The Committee are constrained to observe that remedial measures by the Government for improvment in the power supply should have been taken urgently and in a concerted manner.
31	4·70	As the Frakka Barrage is expected to be completed by the next year, the Committee would like the Government to finalise the scheme for setting up of the maintenance organisation at an early date. The Committee also hope that while manning the maintenance organisation for the Project, due consideration will be given to the absorption of the staff which is likely to be rendered surplus on completion of the various works of the Project.
32	4·72	The Committee hope that the scrutiny of the survey maps will be completed at an early date and that suitable measures required for the protection of the affected areas would be taken by the Government well in time before the completion of the Project. The Committee would like to be apprised of the measures taken in the matter in due course.
33	4·75	The Committee note that the Government would not agree for any project which might affect the Farakka Barrage Project. The Committee recommend that all possible precautionary measures should be taken well in time to avoid any possibility of damage to the Farakka Barrage Project.

APPENDIX VII

Analysis of Recommendations/conclusions contained in the Report.

I. CLASSIFICATION OF RECOMMENDATIONS

A. Recommendations for improving organization and working:

Serial Nos. 2, 3, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 28, 29, 30, 31.

B. Recommendations for effecting economy :

Serial Nos. 6, 7, 8, 24, 27.

C. Miscellaneous Recommendations:

Serial Nos. 1. 4, 5, 32, 33.

II. ANALYSIS OF MORE IMPORTANT RECOMMENDATIONS DIRECTED TOWARDS ECONOMY

S. No. as per Summary of Recommendations (Appendix VI)	Particulars
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6	The Committee are unhappy to note that the cost of the Project which was originally estimated at Rs. 56·40 crores in April, 1960 has now been estimated at Rs. 156·293 crores, i.e., an increase of about 180 per cent. The Committee are constrained to observe that by the time the original estimate of the Project in 1960 was prepared, the Government had an experience of at least fifteen years of preparing designs and estimates of river valley projects. It is, therefore, strange that within a short period of six years, the estimate should have increased enormously. The Committee are of the opinion that sharp increase in the Project estimate vitiates the economics of the Project and also disrupts the allocation of precious resources of the country for different projects.
7	The Committee have been informed that increase in rate, increase in scope of the work, inadequate provision for the works were largely responsible for enormous increase in the estimates. The Committee feel that had the project estimate been initially prepared after full investigations instead of being prepared on limited data and preliminary designs, as has been done in the present case, this enormous increase in the revised estimate of the Project could have been obviated.
8	The Committee would like to draw the attention to the recommendations made in their Report on the Gandak Project and to

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	stress again that the reasons for the enormous increases in the estimates of most of the river projects in the country should be examined fully by the Government and steps taken to avoid increases of such dimensions in future.
24	The Committee note that the Report of the Construction Plant and Machinery Committee provides for the Maintenance of spares at a minimum level of 15% of the cost of capital equipment and that the value of spares kept in stock was in conformity with the capital cost of the equipment. The Committee, however, note that the actual utilisation of spares in stock was only 8·8% in 1965, 14·2% in 1966, 12·1% in 1967 and 13·9% in 1968. The Committee are constrained to observe that the procurement of spares was made in excess of the requirements which led to over capitalisation of the project and blocking up of much needed public funds. The Committee would urge that there is a need for realistic provisioning of machinery and spares keeping in view the experience gained in the project and other similar projects. The Government should take positive measures to streamline the procedure of provisioning by examining it in all its aspects including the feasibility of reducing the percentage of spares to be kept in stock. The Committee need hardly stress that in the context of the present difficulty in resources position, the Government should keep uppermost the need for effecting economy in such projects.
27	The Government should also profit by their experience and evolve realistic criteria for the purchase of machinery and equipment in future so that the precious resources of the country are fully utilised.

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