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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT REPORT

ON THE

REHABILITATION OF THE STATE RAILWAY

OF

THAILAND

July 28, 1955

Department of Technical Operations

CURRENCY EQUIVALENTS

UNIT		BAHT

OFFICIAL RATE

U.S. $1	=	Baht 12.5
Baht 1	=	U.S. $0.08
Baht 1,000,000	=	U.S. $80,000

FREE MARKET RATE

(end of February 1955)

U.S. $1	=	Baht 20.47
Baht 1	=	U.S. $0.049
Baht 1,000,00	=	U.S. $49,000

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PROJECT REPORT ON THE REHABILITATION OF THE STATE RAILWAY OF THAILAND

I. INTRODUCTION

1. In October 1950 the Bank made a loan of $3 million to the Government of Thailand for the re-equipment of the railway shops and for signaling equipment as a part of a railway rehabilitation program. In 1953 the Bank was asked to consider an additional loan for extension of this program. A Bank mission visited Thailand in early 1953 and investigated various aspects of the program. A mission from Thailand came to Washington in September 1953 to continue negotiations but no agreement was reached at that time. In July 1954, the Bank indicated to the Minister of Finance, the basis on which it would be prepared to resume discussions of the project. In January 1955, the State Railway of Thailand (SRT) submitted a report to the Bank outlining an investment program and indicating its intention to operate the railway system in accordance with sound technical, financial and management standards and practices.

2. This analysis is based on field observations supplemented by material submitted by the SRT. The project considered for Bank financing involves a new rehabilitation and improvement program which supplements the one started after World War II. The program, to be carried out over a period of five years, is estimated to cost ฿1.27 billion, of which the equivalent of $48 million (฿1 billion) calculated at $1 = ฿21 would be spent in foreign currency.

3. The report analyzes the investment program, describes the present condition of the railway and its procedures of operation, accounting, management and financing, makes recommendations for improvements of all aspects of railway administration and indicates the conditions under which a Bank loan in an amount equivalent to about $12 million could be recommended.

II. LEGAL STATUS OF THE SRT

4. The SRT was established as a legal entity by an Act of June 5, 1951. Prior to this date the railways had been run as a department of the Ministry of Communications, from which it was separated in order to provide the basis for a more efficient and business-like operation conducted with a minimum of political interference.

5. Under the Statute which created it, the SRT has full power to manage and develop the railways. The formulation of policies and supervision of the general affairs of the SRT are vested in a Board of Commissioners appointed by the Council of Ministers. The General Manager, who has direct charge of the operations of the SRT, is appointed by the Board subject to approval of the Council of Ministers.

6. The Statute requires the SRT, in the conduct of its business, to give due regard to the interests of the State and the public. The SRT is specifically required to receive the approval of the Government before constructing new lines, abandoning existing lines, increasing or decreasing

capital, selling property, and establishing standard rates for the use of the railway system. The SRT is required to prepare each year both an operating and a capital budget; the latter must be presented to the Council of Ministers for approval. Revenue remaining after deduction of specified charges and funds required to carry out the approved capital program must be turned over to the State. The Statute provides that the Board shall appoint an independent auditor to certify the SRT's accounts.

7. The Statute seems to provide a satisfactory framework for the operation of the SRT as an autonomous entity. In fact, however, the SRT depends on government approval for all decisions of importance, and even for decisions affecting some day-to-day operations. This situation, however, is less the result of the positive requirements of the Statute than of the general political and administrative environment in Thailand. While that environment remains, changes in the Statute to enhance the independence of the SRT are likely to have little effect.

8. It would be desirable to provide for broader representation in the Board of Commissioners of the many economic interests which make use of the railway system. Representation of agriculture, industry, commerce and banking could be provided for without any change in the existing Statute and would result in a strengthening of the Board's ability to make sound policy for the railway system.

III. THE PROPERTY

a. Roadway and Track

9. The roadbed, structures and embankments are in good condition, well maintained and the drainage properly taken care of. The 3333 km of meter-gauge track are laid on hardwood sleepers which have not been treated. Spikes are used rather than screws to attach the rails. With few exceptions, all of the rails are 50-lb rails and are now 35 to 45 years old. The road ballast is adequate in quantity, but is not properly sized.

10. Because the rails are old and are not canted, they are so badly worn that the wheel flange in some places along the line bears on the fish plates. Rails must be replaced on 2132 km of track. Budgetary provisions have been made for the renewal of 754 km of track with 60-lb rails (of which 449 km have been laid), leaving a balance of 1378 km of track to be relaid with heavier 70-lb rails.

b. Locomotives

11. As of January 1955, the SRT owned 328 steam locomotives and 44 diesel-electric locomotives. Eighty steam locomotives and 19 diesels are overage and have to be scrapped as soon as replacements have been made. All steam locomotives use wood for fuel. Compared to the diesels, the operation of the steam locomotives is expensive and commercial speeds are very low since the locomotives have to be refueled every 60 to 70 kms.

12. Locomotives are kept in a perfect state of cleanliness and in good mechanical condition.

c. Freight Cars and Coaches

13. The number of freight cars on the books in January 1955 was 6210, which included 2660 cars delivered since the end of the war. About 600 cars should be scrapped because of overage and poor condition.

14. Passenger coaches in January 1955 totaled 632, of which 569 were bogies. More than half of the coaches were purchased after the war. About 90 of the old coaches should be scrapped. Because of the great increase in passenger traffic in the past 10 years, the existing fleet cannot cope with present requirements.

15. The couplers now in use are of the old "hook and link" type and are not strong enough for the operation of heavy freight trains with the more powerful modern locomotives. Because of weak couplers, freight trains have to be split into sections for steep grades and the result is a drop in operating efficiency. To increase the capacity of the SRT, longer and heavier trains must be operated, requiring the installation of automatic couplers.

d. Communications

16. The present methods of communications are inadequate to operate a modern railway. The principal stations are connected to Bangkok by telegraph wires, and messages to intermediate stations have to be relayed either by telegraph or, over short distances only, by telephone. The train service is controlled by block instruments (token system) with some exceptions where the telegraphic train order is still in use.

17. Because of the lack of long distance telephone communications, the dispatching of trains cannot be centralized in Bangkok as it should be. The station masters at the terminal stations are responsible for forming the trains and allocating freight cars. En route, freight cars can be disconnected and replaced by others at the discretion of another station master. This situation leads to abuse and disorganizes the handling of freight.

18. To provide for better utilization of the equipment and for facilities to centralize traffic information and to control costs, a modern telecommunication network is indispensable. A central dispatching office at Bangkok, connected by telephone to each station of the railway system, would control all movements of trains and allocations of cars. Daily records of freight movement would be available and operating efficiency would improve.

e. Shops

19. The Makasan Railway Shops, which were largely destroyed during the war, have now been rebuilt and equipped with the proceeds of a Bank loan. The shops are among the best equipped in southeast Asia and are designed to take care of requirements for many years to come. In addition to the Makasan Shops, where general and heavy repair work is done, the SRT is building two running repair sheds at Nakorn-Radjima and Thungsong for periodical overhauls. A number of depots exist at various places for the washing of locomotives, inspection and small repairs.

20. The repair facilities of the SRT are adequate for its needs and to a certain extent may be considered at the present time as over-expanded. In view, however, of the backlog of arrears in maintenance of rolling stock and of the planned increase in equipment, it is safe to say that these facilities will be fully utilized in the near future.

IV. ADMINISTRATION OF THE SRT

a. Management and Organization

21. The railway organization consists of 10 departments, all of which report directly to the General Manager. The principal departments are: traffic, mechanical, civil, construction and comptroller. A personnel department does not exist. Apart from an obvious need to organize a personnel department, the departmental breakdown is satisfactory. The responsibilities of the departments, however, are not always clearly defined and coordination between them is poor.

22. Until the end of March 1955 the General Manager -- and he alone -- was responsible for the coordination of the work of the departments. He had two Thai advisors, a technical and an administrative one, but these men had no administrative functions. It is not possible for a single man, however able, to act as top executive if he has no deputies and no proper statistical information to guide him and is required to spend the greater part of his time attending meetings with high government officials, members of parliament and the Railway Board. After the Bank had pointed out the need for delegation of authority, the SRT decided to appoint two deputies to the General Manager, one in charge of operations and one in charge of administration. The two deputies should relieve the General Manager from responsibilities connected with the daily operations of the SRT and allow him to concentrate on matters of general policy and administration. The reinforcement of the executive branch should provide for a much needed coordination among the operating departments which have in fact been functioning in isolation.

23. In early April the two advisors to the General Manager were promoted to the positions of deputies. Their effectiveness will depend largely on their personalities and on the degree to which the General Manager delegates his authority to them. One of their immediate tasks, in addition to coordinating and conducting daily operations, will be to organize a personnel department and a statistical and planning section. In addition to computing all relevant statistical data and preparing a daily summary of facts to be brought to the attention of management, this section should be staffed with people capable of analyzing deficiencies of operation, of making recommendations, of preparing programs of improvements and of advising on methods of financing and execution.

24. Among the top railway staff are to be found competent railway men capable of doing their job well, given effective management and proper administration. The number of such men is not large and their replacement when the time comes will be difficult, as the SRT has not given thought to the preparation of capable men for positions at the second level who could later be promoted.

b. Accounting

25. Autonomy has had the happy result of making the SRT install a good accounting system based on sound commercial principles. The system used is that of the Interstate Commerce Commission in the United States. The central accounting office is well organized and consists of five divisions: cashier and paymaster, receipts, expenditures, general accounting, and asset accounting.

26. The cashier and paymaster division receives all cash receipts from stations, etc., and makes all payments either through its own cash offices or by traveling cashiers. The receipts and expenditures divisions keep separate accounts, subsequently centralized in general accounting. The asset accounting division is responsible for inventory, investment, and inter-line accounts, ancilliary services accounts, i.e., hotels, buffets and restaurant cars, and balance sheet preparation.

27. The accounting procedures have been set up by a foreign consultant employed by the SRT, who is now supervising the work in the department. The department operates in a very efficient manner.

c. Personnel

28. The SRT has a regular staff of some 30,000 men. This number is considered to be unnecessarily high and under better methods of operation and administration could certainly be reduced. There is no personnel department to centralize hiring and separation of employees, to set up appropriate scales of rates, to determine the requirements for the various jobs and to take care of the welfare of the workers. Each department does its own hiring and a man dismissed from a department may be put back on the payroll by another department which has no record of his employment.

29. Prior to the creation of the SRT all railway employees were civil servants and had the benefit of a pension based on years of service. The employees of the SRT have lost this privilege. The pension plan has been replaced by a provident fund to which the employees contribute 5% of their salary matched by an equivalent payment by the State Railways. A pension is given at the age of 60 to employees who have 10 years of uninterrupted service; the pension is only 20% of the last salary and does not depend on the number of years of service. An employee can also withdraw all the accumulated amount at any time he leaves. The result is that many are tempted to abandon their employment when they have accumulated enough money to try their chance in small commerce. If they do not succeed, they can always return to the SRT without loss of benefits. This contributes to an undesirable turnover in personnel.

30. There exists a training school for professional workers. Trainees have to deposit a sum of 500 bahts ($25) but very often, after having learned their trade, they abandon the deposit and take employment in private industry where they are much better paid.

31. No steps have been taken to give incentives to workers to keep them. The basic rates are low compared to those in private industry and good men are hard to keep. A main reason for separating railway personnel from the civil service was to free the SRT to establish its own scale of salary rates in accordance with the labor market. The SRT has not used this freedom. It has appointed a committee to consider the question as well as that of pensions, but the committee is inactive. It is important that the SRT take early action to readjust, where necessary, the salaries to appropriate levels. It is also time for the SRT to organize a proper personnel department which would be effectively in charge of the administration of the personnel.

32. The quality of the railway worker is not bad. The Thai coolie is hardworking. Skilled labor is of good quality, but experienced mechanics are scarce and their recruitment difficult as a result of private competition. The supervisory personnel appear to be weak. This is partly due to failure on the part of the SRT administration to instruct the supervisors in their duties and give them proper guidance.

V. RAILWAY OPERATION

a. Traffic

33. The railway traffic, which had dropped to a low point during the war, has since then rapidly increased. Compared with the last prewar year, the volume of traffic developed as follows:

	1941	1948	1950	1952	1954
Goods (millions tons)	1.8	1.2	2.0	2.4	2.9
Goods (million ton-km, parcels not included)	571	300	480	556	679
Passengers (millions)	7.7	25.1	25.6	33.2	36.7
Passenger-km (millions)	423	1,307	1,436	2,254	2,348

34. The most spectacular increase has been in the number of passengers, which has risen more than 3½ times despite the shortage of carriages. This was partly due to cheap passenger fares, which have not followed the general cost of living. There has also been an increase in the average distance travelled by a passenger which partly reflects the competitive position of bus transportation over shorter distances. By far the larger number of passengers travel in third class. For every first-class passenger there are 8 second-class and 160 third-class passengers.

35. Freight traffic (exclusive of packages) consists of 40% agricultural products, 50% industrial products and manufactured goods and 10% petroleum and miscellaneous products. Only 20% is L.C.L. freight (less than carload loading). On the northern, northeastern and eastern lines, the freight traffic moves principally from the interior of the country to Bangkok and 40% of the cars return empty. On the southern line the movement

is reversed and the outward-bound freight tonnage from Bangkok to the south is four times that of the incoming freight. A car travels an average of 60 km per day with an average load of about 5 tons. This result is quite satisfactory considering that the freight movement is not balanced in both directions. A check made at Bangkok station over a period of 3 days showed that 68% of the cars that had arrived had left again on the next day and 23% on the following day.

36. The trucking of cargo to and from the stations and the loading and unloading of freight cars is done under an exclusive agreement by the Express Transportation Bureau (ETB), a freight-forwarding organization under the jurisdiction of the Ministry of Communications. The SRT has granted the ETB the exclusive franchise for the handling of freight and has provided for its agents rent-free office space at all principal stations. In exchange for these privileges, the ETB was supposed to pay to the SRT a fair share of the profits derived from its handling of this freight but has disregarded all claims for such payments since the SRT became autonomous. Because of powerful political connections, the ETB was able to avoid entering into a firm agreement with the SRT. The Bank suggested and the Government agreed that the ETB should make fair payments to the SRT for its franchise. The Government has now decided the payment should be ₿2 million in 1955 and thereafter 50% of ETB's net earnings derived from railway business.

37. The following maximum speeds are in effect:

- 65 km per hour (40 miles) for passenger trains,
- 50 km per hour (31 miles) for freight trains equipped with pneumatic brakes,
- 40 km per hour (25 miles) for all other trains.

Permanent speed restrictions exist on about 8% of the total length of track; temporary restrictions are frequent due to the condition of the track.

38. According to regulations, speeds have to be reduced at stations where there is no stop, the reason being that switches which are not locked are simply held in position by a laborer. In more than a hundred stations, switches are locked, but the speed restrictions have not been lifted. A simple device for locking the switch by hand would be inexpensive, could be rapidly installed and stop the practice of reducing speeds at all switches. This would result in higher commercial speeds and in savings in fuel.

39. Another handicap in train operation is the frequent and long stops at stations. Some are necessary because of the time-consuming refueling of the wood-burning steam locomotives. However, on the diesel-operated runs, the same running times have been maintained for no justifiable reason. Other reasons which reduce the running time are the absence of freight-handling equipment at stations and the insufficient number of sidings and their short length, which delay shunting operations.

40. The train schedules make excessive allowance for possible delays. It happens frequently that a 20-minute delay is caught up on a stretch of 60 to 80 kilometers. In general, there is a tendency to reduce the running speeds and increase the duration of the stops in order to make operations easier. Thus, for passenger express trains, the average commercial speed (including stops) of the northern, northeastern and southern expresses are respectively only 32, 29 and 42 km per hour. The SRT should modify the train schedules, increase commercial speeds and run the trains on a more efficient basis.

b. Maintenance

41. Maintenance of mechanical equipment is done at the Makasan central shop, at the running sheds and depots. At present, the SRT is in the process of organizing the repair work at the Makasan shops and of setting up proper shop procedures. The shops have a total of 1800 men, of whom less than one-third are qualified maintenance men. New mechanics are difficult to recruit. Workshop procedures are not yet in effect. Because of these shortcomings, the output of the shops is below what it could be and the percentage of equipment out of service is too high. However, the quality of the work performed is definitely good.

42. For the maintenance of the track, the SRT uses, on the average, 1.6 men per km of track. The number of men assigned to this work is excessive and should be reduced after completion of the rehabilitation of the track and after purchase of appropriate track maintenance equipment. The SRT is experimenting with different kinds of pneumatic hand tools. Recommendations have been made by the Bank on methods of relaying the rails and shoveling of the ballast.

c. Tariffs

43. Between 1941 and 1955 freight rates have been revised three times and passenger fares six times. Freight rates now in effect are those of 1952. Carload goods except livestock yield the equivalent of 1.35 U.S. cents per ton-mile; livestock, 3.5¢; package freight, 3.7¢; and all freight together, 1.85¢.* These rates are based on charging what the traffic will bear, with due regard to the cost of competitive transport by waterways. There exists a large number of tariff classes with progressively higher base rates for higher values of freight. Within each class, the ton-mile charge diminishes with increasing length of haul. The rates for loading and unloading the cargo and for trucking are set by ETB.

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* U.S. average for 1953 : 1.43 cent per ton-mile. This average rate reflects a large proportion of cheap bulk goods, such as coal, ore and building materials.

44. The SRT's freight rates are low compared with those of railways in certain other underdeveloped countries carrying similar goods. A general increase of these rates at the present time might, however, be harmful to the Thai economy and is not envisaged by the Government. Some increase in revenue may be obtained by a revision of classifications resulting in moderate increases of rates for higher-priced cargo.

45. At the suggestion of the Bank, passenger fares were increased on February 15, 1955 by 67%. It is too early to judge of the effect of this substantial rate increase on the passenger traffic. It is reasonable to expect an immediate drop in the number of passengers, which might level out again to last year's average over a period of 1 to 3 years. The new tariffs yield a revenue in 3d class travel corresponding to 0.8 U.S.¢ per passenger-mile. In the United States, travel by coach costs about three times more but operating conditions are totally different. The Thai railway is a meter-gauge one for which the investment cost is only about 1/3 to 1/2 of the investment in a standard-gauge railway. Capital charges are, thus, low. Cheap labor and low speeds further reduce operating costs, whereas fuel in Thailand and imported materials, including spare parts, are relatively expensive.

46. The new tariffs were put in effect despite long and continuous opposition in the Government. They were needed to give the SRT additional revenues to help carry through the new investment program and are considered adequate for this purpose. A further increase should not be undertaken without a careful investigation of its effects as it might reduce the volume of traffic without increasing earnings appreciably.

VI. FINANCIAL SITUATION AND RECORD OF EARNINGS

47. The SRT has a good record of earnings. There has been a net profit in every year since its establishment. The following table shows the results of operation for the years 1951 (6 months), 1952, 1953, and 1954:

Year	Operating Revenues (Bahts, million)	Operating Expenses (Bahts, million)	Net income (Bahts, million)
1951 (6 months)	109	99	10
1952	347	283	64
1953	363	330	33
1954	379	333	46

The decrease in net income in 1953 was due principally to a general adjustment in wage rates in Thailand; 74% of the 1953 net income went to reserves. The appropriation of the net income for 1954 has not yet been made and the SRT expects that all of the net income with the approval of the Government will be carried over for the financing of the rehabilitation program.

48. The cash position at the end of each financial year since 1951 was quite good. The following table gives the position:

Year	Cash available (Bahts, million)
1951	21
1952	15
1953	134
1954	91

49. A balance sheet as of December 31, 1954, is attached in Appendix III. It shows that the SRT is in a sound financial position. A substantial reserve fund has been built up to protect the SRT against loss of earnings, accidents, disasters, etc. This fund stands at ฿79 million. However, ฿48 million of this reserve has been advanced for the construction of certain new lines for which budgetary appropriations had been made. This amount therefore has to be repaid into the reserve fund by the Government. The SRT has also established an employees' provident fund to which it contributes a share equal to that of the employees. The provident fund has now reached ฿48 million. The SRT occasionally draws on this fund to make temporary advances to the Government for railway investments. This fund should be set up under independent trustees and should be used only as they see fit, not at the will and order of SRT.

50. The SRT has received approximately ฿415 million in the form of grants from the Government from the time it was established in mid-1951 until the end of 1954. This money was used for a variety of purposes including construction of new railway lines, construction of bridges, replacement of old or war-damaged shops, locomotives and rolling stock, and enlargement of the park of locomotives and cars. Apart from the construction of new lines these investments were needed in the first place to replace property which had suffered war damage and to some extent for renewals of equipment for which a depreciation fund should have been set up at the time when the Government operated the railways as a government department. In future, current renewals of equipment and improvement of other railway facilities should be taken care of by the SRT out of its resources.

51. In summary, the SRT has always balanced its ordinary budget without subsidy from the Government, has built up a substantial reserve fund, and has regularly closed the year with a surplus and a strong cash position. The SRT deserves credit for achieving these results in the comparatively short time since its finances were separated from the Government treasury.

VII. FORECAST OF TRAFFIC AND REVENUES

52. The prospects for the economic growth of Thailand are discussed in the report on "Recent Economic and Financial Developments in Thailand", dated July 28, 1955. It is noted there that Thailand has still substantial undeveloped production potential; and it is suggested that, despite financial difficulties, it is likely that the investment necessary to realize this

potential will be forthcoming in the years to come in an amount sufficient to allow the Thai people, who are increasing at the rate of about two percent a year, to improve their standard of living. This will involve increasing and more diversified agricultural, mining and industrial production. For this purpose an efficient transport system is essential.

53. For some time to come the railways will continue to be the backbone of Thailand's transport system. Inland waterways are already of great importance, but only in the Central Plain, which is the main rice-producing area; even there, they are not all navigable throughout the year. Highways are only just beginning to be built up and it will be many years before they can make an important contribution to inland transport outside the metropolitan areas of a few large towns. The railways now provide the only important link between all regions of the country. The strengthening of that link by providing adequate equipment and better service must therefore be an important factor in the economic development of Thailand. Moreover Bangkok, the hub of the railway system, is also the nation's only important seaport, through which the great bulk of the imports and exports of the country moves. The railways thus play a vital part not only in inland transport but also in foreign trade. The improvement of the railway system is thus justified and indeed is a condition for the further economic development of the country.

54. The needs of the railway system must be based on an estimate of future freight and passenger traffic and revenues. The trends in traffic movements in the past ten years have been studied and extrapolated over the next five. The resulting forecasts of traffic were analyzed by the Bank and the estimates made are considered prudent and realistic.

55. For freight traffic the SRT was able to supply complete data on the movement of all principal items of goods. The items were grouped under main classifications of agricultural, industrial, petroleum and mineral products, government materials, packages and livestock. The forecasts were discussed with economists of the Economic Council. In Appendices V and VI are shown the freight traffic figures for 1945-54 and forecasts of tonnage and revenues for 1955-59. The following table summarizes the forecasts:

	Actual	Estimated				
	1954	1955	1956	1957	1958	1959
- Total tonnage (tons, thousands)	2,865	3,103	3,290	3,467	3,645	3,822
- Freight Revenues (Bahts, thousands)	182,500	198,900	209,500	219,500	229,500	239,500

56. According to this table, the estimated increase in freight tonnage averages 5.8% per year over the next five years. Percentagewise, the estimated increase in revenues over the same period is somewhat smaller and is only 5.3% per year. This shows that the larger increase in freight tonnage is expected to take place in goods of lower tariff categories. An increase in the rates for selected items of higher priced goods would in all probability have no appreciable effect on the transported tonnage. In the circumstances, the SRT should continue its observation of traffic records and adjust

the rates on specific items of cargo in accordance with the conclusions derived from them.

57. With regard to passenger revenues, the basic tariffs, as previously indicated, were raised on February 15, 1955 by 67%. The effect of the tariff increase on the passenger traffic will be twofold: i) a temporary reduction in the number of passengers; ii) a transfer of passengers to lower class travel. It was assumed that, contrary to the steady increase of passenger traffic in the preceding years, the number of passenger-kilometers in 1955 would decrease by 5% compared to 1954. From then on, the average yearly increase of the past three years can be applied. On this basis, the present volume of passenger traffic would be reached again by 1958. The average revenue per kilometer and per passenger was also reduced by 5% after applying the rate increase to make allowances for a larger number of passengers using lower class transportation. The following table summarizes the estimated passenger revenues over the next five years:

	Actual	Estimated				
	1954	1955	1956	1957	1958	1959
- Passenger-Kilometers (millions)	2,348	2,200	2,250	2,300	2,350	2,400
Passenger revenues (Pesos, thousands)	179,900	248,600	261,000	285,200	291,400	297,000

VII. THE REHABILITATION PROGRAM

a. Physical Program

58. The SRT has developed a long range investment plan for the modernization and expansion of the system. Much of this program is not of immediate necessity and could not be economically justified at the present time. The Government and the SRT agreed with the Bank to establish a top priority program of investment, all items of which are essential for improving the efficiency of railway operations and the execution of which would be spread out over a period of five years. The program involves the relaying of rails, the purchase of locomotives, freight cars and coaches, the renovation of the telecommunication system, the installation of automatic couplers and certain items of general improvements. The details of the program with yearly expenditures are shown in Appendix IV. If resources in addition to those required for this program become available during the term of the program, additional projects contained in the long range investment plan could be undertaken by the SRT. Such additional investment, however, should be undertaken only to the extent that it would in no way interfere with the carrying out of the agreed program in the five-year period.

59. Rails. The program provides for the purchase and installation of 115,000 tons of rails and accessories sufficient to relay 1,378 km of track. On the basis of operating requirements, 70-lb. rails are appropriate.

60. Telecommunications. To control train movements and dispatching of cars, carrier telephone equipment, teleprinters and traffic control telephones will be provided for the entire railway system.

61. Locomotives. After retirement of overaged locomotives, SRT will have 250 serviceable steam locomotives and 52 diesel locomotives including the balance to be supplied under an order placed in 1951 in the U.S. The program provides for the supply of an additional 30 diesel-electric locomotives of about 1,000 HP to complete the dieselization of all express trains.

62. Passenger coaches. After retirement of overaged equipment, SRT will have 509 coaches including coaches to be received under orders recently placed. Of the number, 335 will be new. The minimum number of coaches which the Traffic Department requires for adequate service is 580. SRT will order 170 new coaches, thus allowing for about 14.5% of all coaches to be out of service for maintenance. With a good shop and efficient maintenance procedures the number of coaches under repair should be reduced, thus releasing some 40 more for service. It is, however, desirable to have that many coaches as a standby to take care of peak traffic demands and future traffic development.

63. Freight cars. The shortage of freight cars is mainly a seasonal one. Outside of peak periods, the stock would be sufficient for the present traffic if it were in good operating condition. Many of the cars now in service should be scrapped and a large part of the remainder need heavy repairs as a result of deferred maintenance. Allowance must be made for an estimated 25% increase of freight tonnage over the next five years. Total number of cars required of various types is 844 which, together with cars on order and less cars to be scrapped, will increase the present stock to 6,165. A number of 844 additional new cars is adequate for freight traffic requirements.

64. Automatic couplers. The couplers now in use are not adequate. The new locomotives could not be efficiently utilized unless the hauling load was increased. The installation of modern automatic couplers will eliminate delayed traffic, increase the turnaround time of cars and improve substantially the gross ton-kilometers per train hour. Fifty-eight hundred sets of couplers are needed. Their installation will be carried out in gradual steps and completed by the end of 1958.

65. Other improvements include extension of sidings, station yard remodelling, material handling equipment, turn tables, bridge reinforcement, switch locking devices, new staff housing and service buildings, etc.

b. Improvement of Operations

66. It is essential that the physical rehabilitation of the railways under the proposed program should proceed in conjunction with broad improvements in operating practices. The SRT has stated its intention to take all practical measures in its power to improve its organization and operating efficiency.

67. As mentioned before, in early April two deputies to the General Manager were appointed, one in charge of operations and one in charge of

administration. The SRT has decided to employ an Operating Advisor whose responsibility will cover the entire field of operations. Among other organizational matters to which the deputies and the advisor must give urgent attention are:

1. Installation of a central dispatching office to control train movements and car distribution.
2. Installation of a car record system.
3. Installation of a statistical section to provide day-by-day information on operations to management and to analyze the requirements for new equipment and new installations and the need for retirement of unserviceable equipment.
4. Better programming of traffic operations.
5. Improvement in efficiency of yard work.

68. In the field of operations, it is urgent to increase the average speeds of the trains and to reduce the lengthy stops at present in effect at many stations. Even before the replacement of rails, the running times can be improved by lifting speed restrictions at the switches which have a locking device. After completion of the program the maximum allowed speeds should also be increased. Time tables should be revised accordingly.

69. With regard to the maintenance of the track, equipment will be purchased under the program for ballasting and for treatment of sleepers. With more and better equipment for track maintenance, the number of work gangs can be reduced. The staking of curves, which has been neglected, must be attended to in order to increase the speeds tolerated at the curves.

70. The efficiency of the repair work at the shops must be raised by improved organization and better shop procedures. The training program for mechanics must be intensified.

IX. COST AND FINANCING OF THE PROGRAM

a. Estimated Cost of the Program

71. The cost of the five-year program is estimated at ฿1,268 million ($60 million calculated at $1 - ฿21, about the freemarket rate of exchange.) The equivalent of $47.9 million (80%) will be needed in foreign currencies. These estimates include 10% contingencies on foreign and local currency expenditures. Detailed estimates for all items are shown in Appendix IV. The following tables summarize the estimates.

	Foreign Currency ($ equivalent)	Local Currency Bahts	Total (฿ equivalent)
	in thousands		
Rails and accessories	19,950	30,050	449,000
Telecommunications	1,766	29,555	66,641
Diesel locomotives	5,400	7,500	120,900
Cars and coaches	11,825	18,996	266,321
Automatic couplers	2,900	19,750	80,650
Bridges	605	21,677	34,382
Staff and service buildings	-	45,000	45,000
Yard remodeling and extension of sidings	-	51,676	51,676
Impregnation plant	512	1,160	11,912
Miscellaneous	613	12,395	26,268
Total	43,571	237,759	1,152,750
10% contingencies	4,357	23,776	115,273
Grand Total	47,928	261,535	1,268,023

Expenditures by Years

	Foreign Currency ($ equivalent)	Local Currency Bahts	Total (฿ equivalent)
	in thousands		
1955	11,836	68,258	316,808
1956	12,407	56,114	316,661
1957	11,726	37,996	284,242
1958	8,871	46,794	233,085
1959	3,088	52,373	117,227
Total	47,928	261,535	1,268,023

b. Cash Requirements and Sources

72. The new five-year capital investment program is distinct from the railway projects now under way. A statement of investments for these projects and of the funds available and earmarked for the work is given in Appendix VIII. As of November 30, 1954, the total commitments amounted to ฿233 million and the available balance of assets to ฿204.7 million, leaving a cash deficit of obligated funds over availabilities of ฿28.3 million. The SRT intends to cover the shortfall from its reserve fund, which stood at ฿79 million at December 31, 1954.

73. The capital requirements of the five-year investment program will be met from four sources: retained earnings and depreciation charges of the SRT (53.5%), government grant (25.5%), a Bank loan equivalent to $12 million (18.3%) and short-term borrowing from the Provident Fund (2.7%). The estimated income account, investment and fixed charges for the five-year period of the program 1955-1959 and for 1960, the first fiscal year after completion of the program, are shown in Table VII. The figures for the gross freight and passenger revenues used in this table are more conservative than the ones arrived at in the forecasts of traffic and revenues in Chapter VII. The estimates of cash requirements and the sources of financing are summarized in the following table:

	1955	1956	1957	1958	1959	Total
Cash Requirements	- - - - - Bahts in millions - - - - -					
Expenditures	317	317	284	233	117	1,268
Bank loan service	-	6	11	30	30	77
Provident Fund loan service	-	-	-	-	29	29 *
Total	317	323	295	263	176	1,374
Sources of Financing						
SRT net income including depreciation charges	115	132	148	164	176	735
Bank loan withdrawals	120	98	34	-	-	252
Government grants	82	93	87	88	-	350
Provident Fund withdrawals	-	-	26	11	-	37
Total	317	323	295	263	176	1,374

* Balance outstanding to be repaid in full including 5% interest on borrowed funds by the end of 1960.

74. Under the proposed method of financing, the Government would contribute ฿350 million. The Government has agreed to this in view of the large arrears of replacements outstanding from the time the Government operated the Railway. In fact, this amount represents only the present value of new 50 lb rails, the kind now in use. This arrangement does not

of course detract from the general obligation of the Government to contribute funds in excess of ₱350 million should this be necessary to carry out the program and maintain the SRT in sound financial condition.

75. In order to reduce the magnitude of expenditures during the first two years, the order for diesel locomotives and coaches has been divided into two parts, half of which would be placed immediately. At the beginning of the third year, SRT will order the balance of the equipment.

76. The SRT will provide funds for service of the proposed Bank loan. The servicing of the first Bank loan, made to the Government, will not be the responsibility of the SRT. The Government has agreed to continue the service of this debt.

77. At the end of the five-year program the SRT will be in a comfortable financial position. According to the forecasts in Appendix VII the SRT will close the year 1960 with an estimated cash surplus of ₱138 million and a net income of ₱79 million after charges (assuming that revenues and expenses will be the same as in 1959). While it is not possible to project the financial results over the entire term of the proposed Bank loan, it is reasonable to expect that operations will continue to be profitable and that the SRT will continue to show a favorable liquidity position. This position might well be impaired, however, if the SRT were required by the Government to undertake from its own resources the execution of new line construction. Therefore, the establishment and maintenance of sound policies regarding capital expenditures would make it desirable for the Government not to require the SRT to finance new line construction until the normal requirements of the existing railway system have been provided for.

c. Items Proposed for Bank Financing

78. Tentative suggestions have been made by the SRT for items to be financed from the proceeds of the Bank loan. These comprise telecommunication equipment and materials, diesel locomotives, freight cars and couplers. These disbursements would conform with the rate of disbursement shown in Paragraph 73 and would involve about U.S.$4 million and the balance in other currencies. All the equipment and materials from abroad will be purchased on the basis of international competition.

X. Conclusions and Recommendations

79. Aside from arrears of maintenance and renewals the physical properties of the Railway are in fairly good condition.

80. The efficient conduct of railway operations is hampered by obsolete procedures and practices.

81. The senior personnel have good railway experience and technical knowledge. The management of the system suffers from lack of departmental coordination and deferment of decisions.

82. Measures which the SRT has already initiated and proposes to take should improve management and efficiency of operation.

83. The record of earnings of the SRT is good and its financial position is sound. For capital investments the SRT has relied on budgetary appropriations by the Government and has made large use of them since its organization in 1951.

84. The proposed five-year program is estimated to cost the equivalent of $60 million of which the equivalent of $48 million is in foreign currencies. The physical program is considered to be technically sound and of top priority for the modernization of the Railway and the improvement of its operations.

85. The five-year capital investment program would be financed to the extent of about 53% from railway retained earnings and the balance from a Government grant, from a proposed Bank loan, and to a small extent from short-term borrowing from the Provident Fund. The Bank's participation in the program would be about 18%.

86. It is the intention of the Government and the SRT to place the latter on a self-supporting financial basis. This will become possible at the end of the five-year program, at which time the SRT should be in a position to finance from its earnings all current renewals and all improvement projects other than expansion of the system and construction of new lines.

87. It is recommended that:

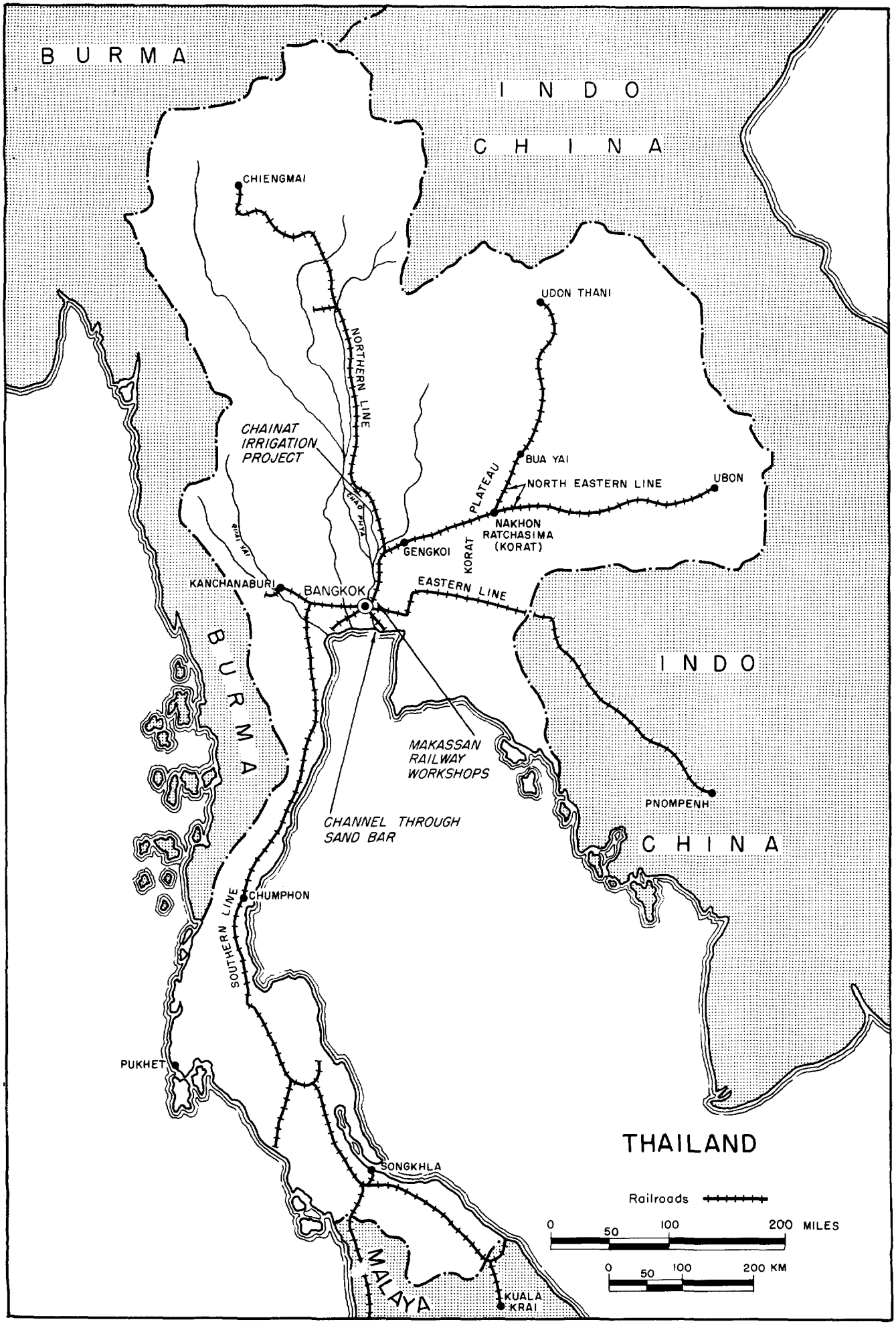
> The Bank make a loan in an amount equivalent to $12 million to cover a part of the foreign exchange requirements of the rehabilitation program. The Borrower should be The State Railway of Thailand. A term of the loan of 15 years with 3 years grace would be appropriate.

88. If a loan is approved for this project the Bank should receive satisfactory assurances that:

a) The SRT will operate the railway system in accordance with sound technical, financial and management procedures and practices and will in particular increase commercial train speeds, revise time tables, establish a personnel department and organize a statistical and planning section.

b) The Government will provide funds in grant form for the execution of the rehabilitation program as indicated in this report and will make available in grant form any additional amounts which may be needed to complete the program.

c) The SRT will continue to maintain a sound rate structure and in general maintain itself in a sound financial condition.


BURMA
INDO
CHINA
CHIENGMAI
UDON THANI
NORTHERN LINE
CHAINAT
IRRIGATION
PROJECT
BUA YAI
NORTH EASTERN LINE
UBON
KORAT PLATEAU
NAKHON
RATCHASIMA
(KORAT)
GENGKOI
KANCHANABURI
BANGKOK
EASTERN LINE
BURMA
INDO
MAKASSAN
RAILWAY
WORKSHOPS
PNOMPENH
CHANNEL THROUGH
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CHINA
CHUMPHON
SOUTHERN LINE
PUKHET
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Railroads
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MALAYA
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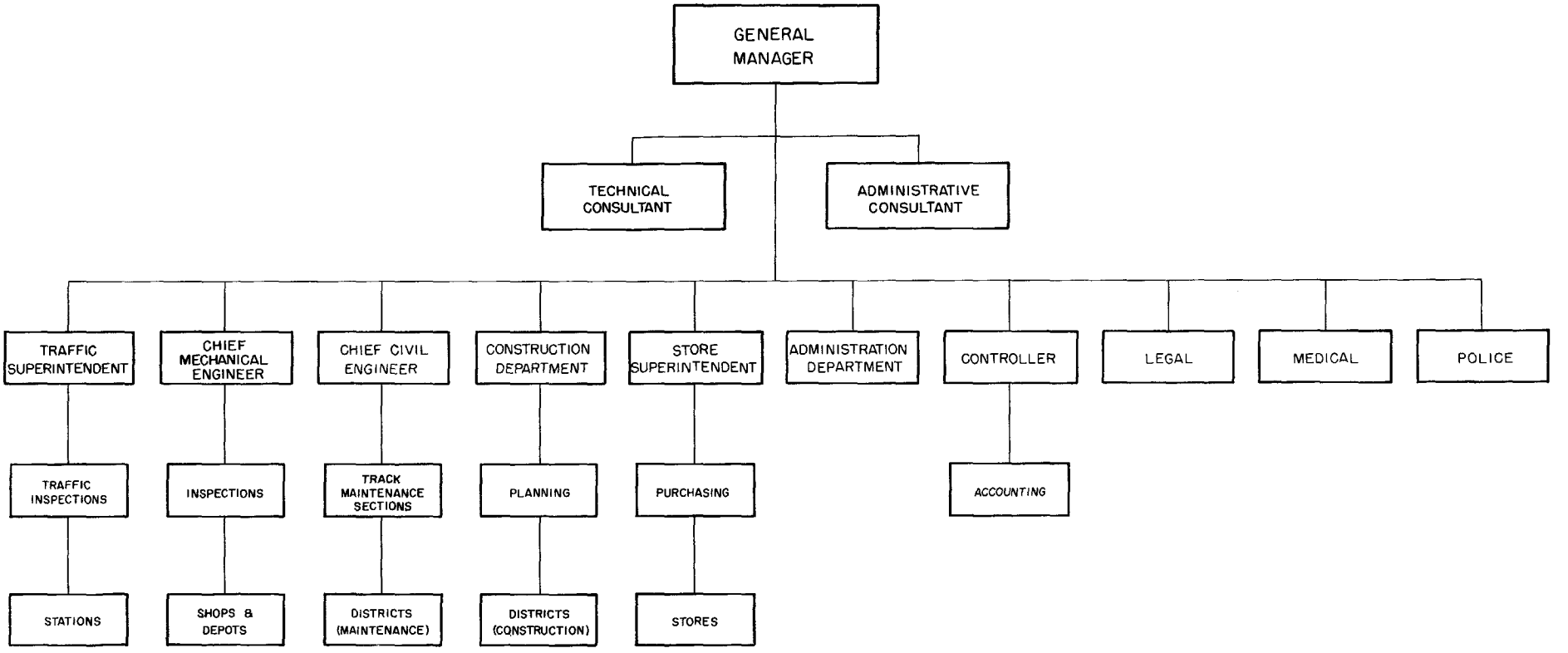
KRAI

APPENDIX I

GENERAL STATISTICS
(1954)

Area of Thailand in square kilometers		513,000	
Population		19,900,000	
The State Railway of Thailand			
Route kilometers		3,333	
Route kilometers under construction		859	
Gauge		1	meter
Stations		491	
Steam locomotives	(on the books	328	
	(in service	291	
Diesel locomotives	(on the books	44	
	(in service	26	
Freight cars	(on the books	6,210	
	(in service	5,052	
Coaches	(on the books	632	
	(in service	508	
Commercial speeds	(express trains	29 to 42	km/h
	(mixed trains	20 to 25	km/h
Average number engine-kilometers per day	(steam	100	
	(diesel	156	
Freight tons carried (revenue freight)		2,865,000	
Freight ton kilometers (parcels excluded)		679,000,000	
Average length of haul per freight ton in km.		236	
Average number freight car kilometers per day		60	
Average load in tons per freight car		5	
Number of passengers carried		36,700,000	
Number of passenger-kilometers		2,348,000,000	
Average length of trip per passenger in km.		70	
Average number of passenger coach kilometers per day		300	
Average number of passengers per coach		56	
Number of employees		30,000	
Revenues, bahts	(passenger traffic	180,000,000	
	(freight traffic	182,500,000	
	(other	17,000,000	
	(total	379,500,000	
Expenses, including fixed charges, bahts		333,000,000	
Net income		46,500,000	
Average revenue per passenger coach on the books, bahts		265,000	
" " " freight car " " " "		30,000	



STATE RAILWAY OF THAILAND

ORGANIZATION CHART

DECEMBER, 1954

STATE RAILWAYS OF THAILAND

APPENDIX III

Unaudited Balance Sheet
as at 31st December, 1954

Liabilities		Assets		
Capital	3,414,149,267.92	**Investment**		
Current Liabilities		Road and Equipment Property		
Audited accounts and wages payable	36,841,803.48	Road	2,593,057,054.07	
Miscellaneous accounts payable	21,078,818.10	Equipment	605,420,436.19	
Accrued accounts payable	16,251,628.24	General expenditure	6,017,208.54	3,204,494,698.80
Taxes accrued	182,636.55	Accrued Depreciation Road	40,875,509.22	
Total Current Liabilities	74,354,886.32	Accrued Depreciation Equipment	70,156,500.45	111,032,009.67
Deferred Liabilities				3,093,462,689.13
Liabilities of provident funds	48,143,590.56	Maintenance Funds		763,646.91
Other deferred liabilities	4,413,583.68	Investment in Transportation Property less recorded Depreciation		3,094,226,336.04
Total Deferred Liabilities	52,557,174.24	**Current Assets**		
Unadjusted Credits		Cash		28,426,165.13
Other unadjusted credits	3,492,958.24	Temporary Cash Investment (Government bonds)		62,500,000.00
Surplus		Balance of 1951-1952 State budget for expenditure and amounts received on behalf of State Railways deposited with State Treasury		168,805,921.32
Earned surplus appropriated	79,429,480.50	Net balance receivable from agent and conductors		920,616.91
Earned surplus unappropriated	48,224,171.15	Miscellaneous accounts receivable		67,034,569.76
		Materials and supplies		93,474,941.25
		Accrued accounts receivable		1,563,228.94
		Total Current Assets		422,725,443.31
		Deferred Assets		
		Working fund advances		22,676,771.55
		Insurance and other funds		48,143,590.56
		Total Deferred Assets		70,820,362.11
		Unadjusted Debits		
		Other unadjusted debits		84,435,796.96
	3,672,207,938.42			3,672,207,938.42

Investment Program

1955 - 1959

No.	Details	1955 U.S.$ 000	1955 $:21.00 000	1955 Baht 000	1955 Total 000	1956 U.S.$ 000	1956 $:21.00 000	1956 Baht 000	1956 Total 000	1957 U.S.$ 000	1957 $:21.00 000	1957 Baht 000	1957 Total 000	1958 U.S.$ 000	1958 $:21.00 000	1958 Baht 000	1958 Total 000	1959 U.S.$ 000	1959 $:21.00 000	1959 Baht 000	1959 Total 000	Total U.S.$ 000	Total $:21.00 000	Total Baht 000	Total Total 000
1	115,000 tons of rail, accessories and switches	4,939	103,719	260	103,979	4,939	103,719	7,448	111,167	4,939	103,719	7,448	111,167	4,938	103,698	7,447	111,145	195	4,095	7,447	11,542	19,950	418,950	30,050	449,000
2	Tele communications	1,766	37,086	17,000	54,086	-	-	7,800	7,800	-	-	4,755	4,755	-	-	-	-	-	-	-	-	1,766	37,086	29,555	66,641
3	30 Diesel-electric locomotives	500	10,500	-	10,500	1,400	29,400	2,500	31,900	1,200	25,200	1,200	28,400	1,400	29,400	2,500	31,900	900	18,900	1,300	20,200	5,400	113,400	7,500	120,900
4	170 Coaches and vans	800	16,800	-	16,800	1,600	33,600	2,700	36,300	2,400	50,400	2,800	53,200	1,531	32,151	2,677	34,828	1,531	32,151	2,677	34,828	7,862	165,102	10,854	175,956
5	844 Freight cars	1,600	33,600	1,950	35,550	1,563	32,823	4,355	37,178	800	16,800	1,837	18,637	-	-	-	-	-	-	-	-	3,963	83,223	8,142	91,365
6	Makasan repair shop improvement	240	5,040	4,461	9,501	-	-	1,000	1,000	-	-	-	-	-	-	-	-	-	-	-	-	240	5,040	5,461	10,501
7	Signal installation	-	-	660	660	-	-	560	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,220	1,220
8	5,800 sets automatic couplers	300	6,300	2,000	8,300	1,400	29,400	6,000	35,400	1,200	25,200	4,000	29,200	-	-	4,000	4,000	-	-	3,750	3,750	2,900	60,900	19,750	80,650
9	Extention of sidings	-	-	8,000	8,000	-	-	5,000	5,000	-	-	2,000	2,000	-	-	-	-	-	-	-	-	-	-	15,000	15,000
10	Station yard remodelling	-	-	7,000	7,000	-	-	7,000	7,000	-	-	7,000	7,000	-	-	7,000	7,000	-	-	8,676	8,676	-	-	36,676	36,676
11	Service Buildings	-	-	5,000	5,000	-	-	-	-	-	-	-	-	-	-	5,000	5,000	-	-	5,000	5,000	-	-	15,000	15,000
12	Weigh bridge and material handling equipment	75	1,575	1,513	3,088	-	-	-	-	-	-	-	-	75	1,575	1,512	3,087	-	-	-	-	150	3,150	3,025	6,175
13	Turn table	20	420	120	540	-	-	-	-	-	-	-	-	-	-	-	-	60	1,260	360	1,620	80	1,680	480	2,160
14	Erection of steel bridges	-	-	2,654	2,654	-	-	2,000	2,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,654	4,654
15	Staff housing	-	-	6,000	6,000	-	-	-	-	-	-	-	-	-	-	9,000	9,000	-	-	15,000	15,000	-	-	30,000	30,000
16	Impregnation plant	43	903	925	1,828	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	903	925	1,828
17	Mechanical equipment for maintenance	256	5,376	580	5,956	256	5,376	580	5,956	-	-	-	-	-	-	-	-	-	-	-	-	512	10,752	1,160	11,912
18	Point locking device for hand operated switches	80	1,680	100	1,780	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	1,680	100	1,780
19	Block installation	-	-	-	-	-	-	666	666	-	-	98	98	-	-	-	-	-	-	-	-	-	-	764	764
20	Level crossing lefting barriers	20	420	420	840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	420	420	840
21	Bridge replacement	121	2,541	3,404	5,945	121	2,541	3,404	5,945	121	2,541	3,404	5,945	121	2,541	3,404	5,945	121	2,541	3,407	5,948	605	12,705	17,023	29,728
	Total	10,760	225,960	52,047	288,007	11,279	236,859	51,013	287,872	10,660	223,860	34,542	253,402	8,065	169,365	42,540	211,905	2,807	57,947	47,617	108,564	43,571	914,991	237,759	1,152,750
	Contigencies 10%	1,076	22,596	6,205	28,801	1,128	23,688	5,101	28,789	1,066	22,386	3,454	25,840	806	16,926	4,254	21,180	281	5,901	4,762	10,663	4,357	91,497	23,776	115,273
	Total	11,836	248,556	68,252	316,808	12,407	260,547	56,114	316,661	11,726	246,246	37,996	284,242	8,871	186,291	46,794	233,085	3,088	64,848	52,379	117,227	47,928	1,006,488	261,535	1,268,023

TONNAGE OF FREIGHT TRAFFIC 1945 - 1954

	CLASSIFICATION	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
	Agricultural Products:										
	Attap	382	810	1,716	2,289	2,002	3,658	5,635	2,304	1,537	1,460
	Bamboo	-	-	161	104	332	532	398	317	443	1,386
	Bark	318	670	484	764	1,345	2,005	1,852	1,503	2,421	3,088
/	Bean	995	1,696	6,757	17,010	12,926	19,552	17,939	10,616	14,580	19,782
	Bone	-	10	198	166	95	97	126	20	171	667
/	Bran	331	1,501	3,344	2,905	3,377	6,926	6,833	6,460	8,214	13,889
	Broken rice	89	1,093	848	3,459	1,362	879	638	715	2,813	2,470
	Caster seeds	-	-	-	-	-	-	643	443	1,883	1,758
/	Coal and Charcoal	5,002	5,270	19,688	20,814	22,064	53,651	57,282	69,413	67,018	73,504
	Cotton	80	390	790	1,847	719	3,367	2,873	758	1,738	2,118
	Cocoa-nuts	-	-	-	-	-	-	-	-	-	12,624
	Firewood	13	567	1,541	1,735	492	464	3,007	1,394	50	4,737
/	Fish & Fish products	3,246	7,137	9,514	10,149	16,180	18,676	18,123	12,707	12,288	15,182
	Flour	401	956	216	435	928	1,741	1,792	1,139	574	1,142
/	Garden produce	3,514	7,961	13,176	10,940	22,920	27,362	30,779	14,976	17,064	20,674
	Grass	-	10	13	4,166	6,026	7,982	7,941	7,149	6,577	6,522
	Hide & Horn	150	1,617	7,249	3,928	4,247	8,489	3,479	1,607	4,033	6,598
	Jungle produce	260	3,580	13,428	9,393	9,750	12,248	11,138	7,995	12,707	11,086
	Lard	66	524	1,021	693	994	1,692	817	135	269	566
	Opium	25	75	52	93	103	202	149	177	207	113
/	Paddy	10,812	118,635	84,368	116,872	149,513	187,123	153,887	125,409	109,731	85,600
/	Plank	5,767	7,661	17,054	19,035	24,143	44,268	65,212	65,611	92,247	135,528
	Poultry	366	48	13	36	98	562	152	141	669	6,063
	Rattan	425	513	1,033	347	513	814	1,549	335	506	480
/	Rice	32,141	62,917	129,138	169,954	248,284	226,062	259,973	329,030	330,283	300,176
/	Rubber	1,014	9,554	15,845	26,499	35,232	35,368	36,519	35,105	26,941	27,573
/	Salt	6,710	20,950	23,917	29,306	28,747	32,285	36,946	38,851	40,381	36,816
	Stick-lac	-	-	-	-	-	-	-	-	-	11,216
	Sugar-cane	100	1,011	2,956	9,440	4,000	360	156	83	-	635
/	Timber	3,372	7,258	25,378	45,557	47,762	56,414	69,282	68,978	58,068	61,314
/	Tobacco	470	796	2,734	4,821	5,754	7,298	7,566	10,941	14,736	16,679
	Wet tapioca refuse	-	-	-	-	23	123	339	25	152	13
	Total all items	76,049	263,210	382,632	512,757	649,931	760,200	803,025	814,337	828,301	881,459
	Total 12 main items marked /	73,374	251,336	350,913	473,862	616,902	714,985	760,341	788,097	791,551	806,717
	Total other items (the rest)	2,675	11,874	31,719	38,895	33,029	45,215	42,684	26,240	36,750	74,742

TONNAGE OF FREIGHT TRAFFIC 1945 - 1954

APPENDIX V
(continued)

CLASSIFICATION	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Industrial Products:										
Building materials	484	1,551	3,315	8,377	11,206	10,922	14,366	25,142	15,467	28,123
/ Canned goods	303	5,908	10,904	25,023	34,857	45,136	44,653	54,901	69,814	58,814
/ Cement	68	622	4,014	12,304	26,110	40,521	53,900	51,283	66,066	90,632
/ Clinker	-	-	-	-	88,546	94,946	94,730	88,681	136,129	204,958
Cloth	125	357	1,153	2,140	1,580	319	225	210	189	180
Explosives	-	10	25	70	47	22	205	322	163	73
Gunny bags	320	835	792	1,124	637	1,444	848	938	1,187	1,256
/ Household & Personal goods	2,270	4,938	4,953	9,334	7,129	8,053	12,374	18,860	60,083	72,858
Ice	55	143	20	557	557	788	620	707	645	662
Liquor	163	543	561	329	416	757	1,695	2,704	2,897	4,699
/ Marl	40	17,091	52,763	54,920	91,877	169,301	180,991	223,599	307,325	340,424
Matches	66	66	464	1,923	1,643	943	549	1,230	572	477
Matting	429	733	225	247	50	59	125	62	96	20
/ Metal goods & Machinery	1,620	3,199	3,075	6,475	12,489	11,992	18,000	33,971	56,599	55,486
Miscellaneous	6,403	10,017	13,767	25,888	29,006	32,125	34,838	40,821	45,858	67,529
/ Railway construction materials	448	787	5,209	21,265	23,534	47,353	57,862	119,697	78,865	115,330
Soap	1,111	4,143	601	1,238	1,351	3,410	3,290	3,018	5,783	5,798
/ Stone	23,309	47,805	46,294	56,884	140,516	197,395	145,729	72,984	224,787	59,759
/ Sugar & Molasses	4,913	8,908	8,563	15,164	21,324	17,884	19,290	23,335	45,529	45,435
/ Vehicles and parts	988	3,291	9,621	14,556	17,950	22,976	28,153	20,816	20,302	20,136
Receipts from tank wagon	-	-	1,875	4,678	4,173	5,917	3,865	9,840	825	2,385
Total all items	43,115	110,947	168,194	262,496	514,998	712,263	716,308	793,121	1,139,181	1,175,034
Total 10 items marked /	37,881	92,549	145,396	215,925	464,332	655,557	655,682	708,027	1,065,499	1,063,832
Total other items (the rest)	5,234	18,398	22,798	46,571	50,666	56,706	60,626	85,094	73,682	111,202
Petroleum Products:										
Benzine	191	1,707	5,432	14,410	25,567	33,823	39,867	47,915	53,634	63,866
Kerosene	119	1,071	6,895	11,539	20,517	27,144	29,667	30,153	33,717	36,468
Other oil	1,325	1,621	1,585	2,441	9,517	26,172	40,083	38,686	44,978	71,561
	1,635	4,399	13,912	28,390	55,601	87,139	109,617	116,754	132,329	171,895
Mineral Products:										
Tin and other ores	917	1,059	1,361	1,759	6,192	6,235	7,895	4,156	7,492	12,389
Government materials:										
Dept.of Ways construction material	585	1,747	7,892	6,830	6,987	11,141	13,578	14,792	23,838	20,012
Packages	107,567	225,287	274,359	371,020	425,602	472,726	611,691	663,526	591,687	580,788
Livestock	2,278	4,056	9,258	17,408	18,679	19,580	21,569	21,705	22,650	23,695
Total Freight Tonnage	232,146	610,813	857,735	1,201,048	1,678,554	2,070,094	2,284,914	2,430,573	2,745,478	2,865,272
Revenue of Freight (Baht)	6,034,236	18,913,812	37,726,178	48,570,683	57,459,848	62,532,440	76,808,138	174,609,878	181,121,878	182,503,310

APPENDIX VI

SUMMARY OF FORECAST ON FREIGHT REVENUES

		Baht
1955		
Car Load	2,460,000 tons	131,905,200
Packages	615,000 "	55,436,100
Livestock	28,400 "	5,602,468
Freight Incidental Charges		6,000,000
	Total	198,943,768
1956		
Car Load	2,640,000 tons	141,556,800
Packages	620,000 "	55,886,800
Livestock	30,600 "	6,036,462
Freight Incidental Charges		6,000,000
	Total	209,480,062
1957		
Car Load	2,810,000 tons	150,672,200
Packages	625,000 "	56,337,500
Livestock	32,700 "	6,450,729
Freight Incidental Charges		6,000,000
	Total	219,460,429
1958		
Car Load	2,980,000 tons	159,787,600
Packages	630,000 "	56,788,200
Livestock	34,860 "	6,876,832
Freight Incidental Charges		6,000,000
	Total	229,452,632
1959		
Car Load	3,150,000 tons	168,903,000
Packages	635,000 "	57,238,900
Livestock	37,000 "	7,298,990
Freight Incidental Charges		6,000,000
	Total	239,440,890
	Total for 5 years	1,096,777,781

STATEMENT OF ESTIMATED INCOME ACCOUNTS AND OF AVAILABLE AND REQUIRED FUNDS FOR INVESTMENT BUDGET 1955 TO 1960
(millions of Bahts)

	1955	1956	1957	1958	1959	1960[b]
I. Income Account						
Revenues: a)						
Passenger traffic	226	244	253	263	270	270
Freight traffic	192	201	213	225	235	235
Other	14	14	16	17	19	19
Total	432	459	482	505	524	524
Expenditures:						
Operating expenditures including fixed charges	358	374	383	391	398	398
Capital charges on new investment	1	4	9	9	9	9
Total	359	378	392	400	407	407
Net income	73	81	90	105	117	117
II. Funds Available for Investment Budget						
SRT resources:						
Net income	73	81	90	105	117	117
Depreciation charges	42	51	58	59	59	59
Bank loan withdrawals	120	98	34	-	-	-
Government grants	82	93	87	88	-	-
Provident fund withdrawal	-	-	26	11	-	-
Total	317	323	295	263	176	176
III. Funds Required for Investment Budget						
Expenditures on investments	317	317	284	233	117	-
Bank loan service	-	6	11	30	30	30
Provident fund loan service	-	-	-	-	29	12
Total	317	323	295	263	176	42
IV. Surplus	0	0	0	0	0	134

a) Estimated revenues supplied by the SRT are somewhat lower than those resulting from the forecasts of traffic contained in the report.
b) Revenues and expenditures in 1960 have been assumed to be the same as in 1959.

APPENDIX VIII
(a)

STATEMENT
OF
SRT COMMITMENTS AS OF NOVEMBER 30, 1954

		Bahts
1.	1954 Investment Program -- from Railways' Earning	55,084,968.00
2.	1953 Investment Program -- from State budget	56,062,177.00
3.	1952 Investment Program -- from Reserve for Extensions	24,352,763.83
4.	1953 Investment Program -- from Reserve for Extensions	12,836,930.77
5.	Makasan Workshop -- Construction	26,772,423.17
	-- Machinery	5,545,580.92
6.	Part of Addition & Betterment to be spent from 1952 budget	250,276.89
7.	Extension of Surat Yard	1,500,000.00
8.	Construction of Thai-Cambodian line	3,017,058.40
9.	Construction of Me Klong line	9,377,050.00
10.	Construction of Udorn-Nong Kai line	6,646,810.26
11.	Payment on 27 Davenport Diesel locomotives	2,800,000.00
12.	18 Baldwin Steam locomotives	4,245,736.27
13.	Materials and supplies	3,144,845.60
14.	Provision for Sulzer Diesel locomotives	152,650.35
15.	Rails & steel bridges ordered from Japan	4,082,476.91
16.	Rama VI Ban Dara and Surat bridges	3,509,855.99
17.	Wheels & axles	13,700,660.00
	Total	233,082,264.36

APPENDIX VIII
(b)

A.	Liquid assets (excluding accounts receivable) as of November 30, 1954	
	1. Cash	4,224,074.39
	2. Deposit at Bank of Thailand	23,885,189.30
	3. Remittances in transit	3,461,828.95
	4. Government bonds	62,500,000.00
	5. Amount deposited with Treasury	168,542,590.66
	6. Balances receivable from agents	1,311,673.24
	Total	263,925,356.54
Less B.	Current Liabilities	
	1. Audited accounts & wages payable	32,356,133.09
	2. Miscellaneous accounts payable	19,327,576.93
	3. Accrued accounts payable	1,898,331.27
	4. Taxes accrued	169,560.40
	Deferred Liabilities	
	5. Guarantee deposit	3,830,707.89
	Unadjusted Credit	
	6. Amount received in advance for construction of lines, roads, sidings, and others from other Government deposits & outsiders	1,619,442.31
	Total	59,201,751.89
C.	Balance of Liquid Assets Available	204,723,604.65
Less D.	Commitments & Obligated Funds	233,082,264.36
E.	Balance being cash deficit of commitments and obligated funds over cash available	28,358,659.71