

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No. 13764

PROJECT COMPLETION REPORT

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT

(LOAN 2872-TH)

DECEMBER 9, 1994

Infrastructure Operations Division
Country Department I
East Asia and Pacific Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

Currency Unit	=	Thai Baht (B)
Loan 2894-TH		
US\$1.00	=	B 26 (at appraisal, January 1987)
US\$1.0	=	B 26 (at closing date, December 1992)
Loan 3008-TH		
US\$1.0	=	B 26 (at appraisal, June 1988)
US\$1.0	=	B 25 (at closing, December 1993)

FISCAL YEAR

October 1 - September 30

MEASURES AND EQUIVALENTS

Metric System

ABBREVIATIONS

ADB	-	Asian Development Bank
DOH	-	Department of Highways
LTD	-	Department of Land Transport
MOTC	-	Ministry of Transportation and Communications
MOF	-	Ministry of Finance
NSC	-	National Safety Council
OECE	-	Overseas Economic Cooperation Fund (Japan)

December 9, 1994

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Completion Report on Thailand
Railway Efficiency Improvement Project (Loan 2872-TH)

Attached is the Project Completion Report on Thailand - Railway Efficiency Improvement Project (Loan 2872-TH), prepared by the East Asia and Pacific Regional Office. The Borrower did not contribute Part II.

The main project objective was to achieve immediate improvements in the railway's operations and finance. Together with follow-up initiatives, the project was expected to make the railway operationally efficient and financially viable. Project benefits were to become apparent within two years. Further, the project was to demonstrate the impact of operational improvements on railway finances and to become the foundation for a major railway reorientation. Project components were technical assistance, training and procurement of diverse goods.

Implementation lasted more than six years. There was a time over-run of 100%. While most project items were implemented, actual project costs are not available.

Regarding the railway's financial position, the PCR has nothing positive to report. The PCR notes increases in traffic and productivity. There is little evidence that such improvements were attributable to the project. But these are signs that project components such as Technical Assistance in marketing and Operations Control Systems were timely and also that management's will and capability exist to reorient the railway towards solvency.

Project outcome is rated as marginally satisfactory on balance. The institutional development impact is modest. Sustainability is uncertain due to the railway's policy environment and road competition.

No performance audit is planned.



Attachment

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

THAILANDRAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)PROJECT COMPLETION REPORTTable of Contents

Preface	i
Evaluation Summary	ii
PART I. BANK'S REVIEW	
Summary Project Data	1
Background	1
Previous Bank Involvement	2
Project Objectives	2
Project Design	3
GTZ Project	4
Project Implementation	4
Project Results	8
Project Sustainability	8
Bank Performance	8
Borrower Performance	9
Project Relationship	9
Consulting Services	9
PART II. BORROWER'S EVALUATION	
	10
PART III. STATISTICAL INFORMATION: TABLES	
Table 1: Project Timetable	11
Table 2: Related Bank Loan and/or Credits	12
Table 3: Bank Resources	13
Table 4: Cumulative Disbursement Schedule	14
Table 5: Status of Covenants	15
Table 6: Procurement of Goods	16
Table 7: Summary of Technical Assistance & Training Components	17

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Preface

This is the Project Completion Report (PCR) for the Thailand Railway Efficiency Improvement Project for which Loan 2872-TH in the amount of US\$13.0 million was approved on September 15, 1987. The loan was closed on December 31, 1993, three years behind schedule. The undisbursed balance of US\$1,568,070.25 was canceled on May 6, 1994, which was the date for the last disbursement.

The PCR was prepared by the Infrastructure Operations Division of the East Asia 1 Department (EA1IN) with the assistance of a consultant.

Preparation of this PCR was started during the Bank's final supervision mission of the project in May 1993, and is based, inter alia, on the Loan and Project Agreements; the Memorandum of the President; supervision reports; correspondence between the Bank and the Borrower; and internal Bank memoranda. There was no Staff Appraisal Report prepared since this was a Technical Assistance Project.

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Evaluation Summary

Objectives

The immediate objective of the Project was to assist the State Railway of Thailand (SRT) in achieving certain improvements in its operations and financial position. It was reasoned that if it could be shown through such a relatively small project (in terms of cost) that tangible operational and financial benefits were possible, then the Government and SRT would be more receptive to a larger project with a longer term objective. This objective would be to turn SRT into an operationally efficient and financially viable railway.

Implementation Experience

Implementation was, with one exception, routine. The Project initially included a component to develop and implement a passenger "Seat Ticketing and Reservation System" (STARS), and for the necessary hardware procurement. The SRT decided during implementation, however, to contract the system on a "turn-key" basis. This decision, and the subsequent pre-qualified bidders received no objection from the Bank. However, as a result of representations made to the Bank on behalf of a firm, the Bank requested that SRT pre-qualify that firm. SRT did not agree to this request, and the component was removed from Bank financing. These events considerably delayed the implementation of STARS.

A further decision was made by SRT to use the STARS mainframe computer as the mainframe for the Bank sponsored Operations Control System (OCS) development. This meant that contracting specifications for OCS could not be finalized until the STARS system had been contracted. As a result, OCS development was delayed significantly, however, the introduction of both the STARS and OCS systems is expected to have significant long term benefits to the operational efficiency of the railway.

Since the Bank's long term objective was to improve the operational and financial performance of SRT and to set the stage for a larger project which would assist in making SRT more commercially oriented and financially viable, the Bank agreed to extend the Project's loan closing date for a third time in order to have the opportunity

to work with the Government and SRT in the development of a Long Term Master Development Plan Study for the railway. This Study attempted to forecast the role of the railway in the Thai transport system in the next century. While the Bank did not agree with some aspects of the Study, there was agreement with the conclusion concerning the need for changes in the SRT organization and the way in which the railway is regulated. Further analysis is needed to determine the specific changes that should be made, but the implementation of the agreed upon changes would form the foundation for any future Bank lending program to SRT.

Sustainability

All of the goods procured should maintain an acceptable level of net benefit during their economic lives. Sustainability of the technical assistance and training components will vary. Long term benefits should be realized from the MIS assistance. Freight marketing techniques learned by SRT should have long-ranging effect. Within the Civil Engineering Department, certain maintenance techniques learned should have similar effect, but the planning systems introduced have questionable long-term impact.

Findings and Lessons Learned

There were a number of findings and lessons which resulted from this Project. These included:

- (a) Although relatively small in cost, this Project was very diverse in nature. It included technical assistance, training and goods procurement which involved a great number of SRT offices. To ensure that these components were implemented in full concert with one another, and with the Project objectives in mind, was too great a task for periodic visits by Bank personnel. Furthermore, it may be too much to expect that the Borrower could effectively manage the project along these lines without a prior firm commitment. As a result, components were implemented to a large degree as separate sub- projects, with relatively little coordination. This led to a lack of high level direction within the components, resulting, in certain instances, in less than fully effective implementation (vis a vis the objectives). Such projects require an active management organization to oversee implementation. This function should be assigned to a senior level manager within the Borrower's organization, who has the time in his work schedule to do justice to the assignment. Consideration might also be given to providing technical assistance to this manager.
- (b) The Project was designed in concert with a Gesellschaft für Technische Zusammenarbeit (GTZ) project, with the two being complementary and carried out at the same time. While relations between the Bank and GTZ

personnel were good, there may have been better cooperation between the implementing parties. Consultants working under GTZ financing had no reason to be cooperative with Bank staff. Although such cooperation oftentimes did exist, the Bank's and GTZ's projects were, in large measure, run as separate projects rather than as parts of a whole. There may have been improved success overall if one of the lending agencies had some degree of responsibility for the whole project, but at the time, SRT did not want either the Bank or GTZ to have that function and insisted that it be done by SRT.

- (c) In certain cases, some of the technical assistance consultants on this project attempted to introduce technologies without adapting such technologies fully to meet SRT's conditions and environment. In the worst case, this can have a negative effect on project objectives, although in this case the results were not quite as dramatic. Improved project management as outlined in a) above would have helped this situation. In addition, technical assistance and training terms of reference must be prepared in such a way so as to minimize the potential of this problem.

THAILAND
RAILWAY EFFICIENCY IMPROVEMENT PROJECT
(LOAN 2872-TH)

PART I - BANK'S REVIEW

Summary Project Data

Project Name	:	Railway Efficiency Project
Loan Number	:	2872-TH
RVP Unit	:	East Asia and Pacific
Country	:	Thailand
Sector	:	Transport
Subsector	:	Railways
Board Date	:	September 15, 1987
Signing date	:	December 11, 1987
Effective Date	:	May 10, 1988
Closing Date	:	December 31, 1993
Loan Amount	:	US\$ 13.0 million
Disbursed Amount	:	US\$ 11.4 million

Background

1. SRT has recently celebrated its centennial anniversary. During most of its history, it has served the people of Thailand well while generating sufficient profit to sustain its operations. As with the world experience, SRT experienced virtually a monopolistic position in the transportation sector in Thailand during the earlier years. As a result, the Royal Thai Government highly regulated the operations of SRT. The railway became an instrument of Government policy.

2. Again following the world experience, SRT began receiving formidable competition from the highway sector. Small and efficient trucking and bus operations began offering service-oriented transportation alternatives, which were financially viable. It became evermore difficult for SRT to compete with these companies, largely due to two problems. Firstly, the Railway was handicapped by the Government regulations in place, especially related to tariff and wage rate setting. Secondly, SRT remained an instrument of Government policy, with considerable interference from the Government

in its operations, and without the incentive or experience to operate efficiently from a financial point of view.

3. In 1974, SRT experienced an operating loss. Its operating ratio (expenses/revenues) rose from 88.6 % in 1973 to 106.1 % in 1974. For the twenty years hence until today, SRT has been operating in a loss position. Under legislation, the Government must make payment each year to SRT in an amount equal to its operating loss from the previous year.

4. Third class passenger service represents more than 70% of SRT's business in terms of train kilometers. During the period 1970 to 1990, third class passenger fares decreased (on a constant Baht basis) by almost 50% (based on a trip distance of 500 km.). Similarly, freight tariffs fell almost 50% (Class 4 freight over a distance of 500 km.). These tariff rates are largely due to Government regulation.

5. During this period (1970-1990), SRT received, and continues to receive, conflicting directives from the Government. On the one hand, land transport bureaucrats require services for the public good, at rates perceived as politically acceptable (but at lower than cost). On the other hand, the financial bureaucrats insist that SRT lower its operating losses. In the world context, SRT has met the service demands quite well. By most measures, its productivity levels are acceptable. Efforts at decreasing operating losses have concentrated mostly on staff reductions. During this twenty year period numbers of employees fell by about 22%, while over the same period numbers of passengers transported rose 64% and freight tonnage transported grew by 80%.

6. SRT continues its attempts at balancing these conflicting signals from Government today. It was within this context that the Railway Efficiency Improvement Project was developed.

Previous Bank Involvement

7. The Bank has been involved with railway development in Thailand through five previous loans. The last project, Railway Project V, closed during 1984 (PCR #6163, April 1986). A planned sixth railway project was shelved at the green cover stage in 1983, primarily because the Government would not agree to substantial tariff increases proposed by the Bank. The Bank considered these increases necessary to improve SRT 's financial position.

Project Objectives

8. The immediate objective of the Project was to assist SRT in achieving certain improvements in its operations and financial position. It was reasoned that if it could be shown through such a relatively small project (in terms of cost) that tangible operational and financial benefits were possible, then the Government and SRT would

be more receptive to a larger project with a longer term objective. This objective would be to turn SRT into an operationally efficient and financially viable railway.

9. Within the immediate objective of this Project was included the need to identify those market segments which SRT could effectively and profitably serve, and to strengthen SRT's ability to compete with other modes. The Project was aimed at: (a) realigning railway services to match changing demand; (b) increasing marketing and sales efforts; and (c) reducing costs per traffic unit through cost reduction and efficiency improvements.

Project Design

10. Following is a summary list of the major project components which were planned:

- (a) Technical Assistance and Training:
 - i. Freight traffic marketing skills;
 - ii. General Management Information Systems planning;
 - iii. Operations Control System development;
 - iv. Inventory & Materials Management System development;
 - v. Seat Ticketing and Reservations System development; and
 - vi. Civil Engineering methodology and planning.
- (b) Procurement of Goods:
 - i. Yards and line radio systems;
 - ii. Computer Equipment (associated with Technical Assistance packages);
 - iii. Passenger coach bogies;
 - iv. Track maintenance equipment;
 - v. Mobile Wagon Repair Truck; and
 - vi. Diesel engines and turbo chargers.

11. By design, the Project was fragmented according to SRT's immediate needs. Each component was relatively well defined, with specific goals in mind. The goods procurement components were aimed at meeting immediate operational needs. The largest of the technical assistance/training packages was in the area of management information systems, aimed primarily at the development of systems to improve operational efficiency. The remainder of the technical assistance/training components were designed to improve specific management skills.

12. In general the packages were well designed and defined. For the technical assistance program, there was a slight deficiency in defining the level of technology adaption required to suit the organizational environment. Also, in the management systems area, there was not enough effort to define implementation organization.

GTZ Project

13. The Bank's Project was designed in concert with a technical assistance project carried out under German funding. This project provided assistance to SRT in the following areas:

- (a) Passenger marketing;
 - i. Marketing planning & policy;
 - ii. Mechanical shop management;
 - iii. Air brake conversion program; and
 - iv. Stores management.

14. The Bank and GTZ projects were not designed with major organizational interfaces between the two. In retrospect, it would have been beneficial if a new organizational unit such as a project office had been defined to ensure close cooperation between the two projects. Instead, both projects were managed and coordination was to be provided by the Policy and Planning Bureau. This coordination was at times not as effective as it could have been.

Project Implementation

Technical Assistance and Training

15. Freight Traffic Marketing Skills. The consultant worked well with the Freight Marketing personnel, and there was a high degree of technology transfer. Significant gains were realized in the effectiveness of the freight marketing organization, including its ability to assess customer needs and to plan for future requirements. A unit

(block) train container operation was created and continues to operate satisfactorily. Training programs for 100 Traffic and Marketing personnel were carried out with a perceived high degree of success.

16. General Management Information Systems Planning. This component was largely aimed at defining management reporting from the STARS and OCS systems (below). Implementation will be done by SRT subsequent to full implementation of these two systems.

17. Seat Ticketing and Reservations System Development. This system development was originally designed to provide for computer hardware purchase and technical assistance in developing the software. SRT subsequently decided, however, to contract "STARS" on a "turn-key" basis. This was accepted by the Bank, but later there was disagreement on the firms to be pre-qualified. This conflict resulted in the STARS package being removed from Bank financing which caused considerable delay in contracting for STARS.

18. Subsequently, SRT decided to use the mainframe computer to be supplied under STARS as the mainframe for the Operations Control System (OCS) and the Inventory and Materials Management System (IMMS), both of which were under Bank financing. This led to considerable additional delay to the contracting of these latter two systems, as an agreement with the STARS contractor had to be signed before specifications for the other two systems could be finalized. The net result was a delay of over three years to the OCS system development.

19. At the time of writing this report, the STARS system has been implemented at all of SRT's stations. There remain some data communications problems, and not all of the batch reports have been implemented.

20. Operations Control System Development. After the considerable delay in contracting for this system, the software is now complete and tested, and field implementation is underway. Several hardware problems are being experienced, but should be resolvable by SRT. This system should lead to considerable operational efficiency gains, but it is too early to evaluate the results.

21. Inventory & Materials Management System Development. Because of the lengthy delays within the MIS development area, caused by the STARS delays noted above, and because of the lack of sufficient SRT resources to support simultaneous development of STARS, OCS and IMMS, it was decided by SRT to defer IMMS development, and therefore to delete IMMS development from the Bank's project. The Bank supported this decision.

22. Civil Engineering Methodology and Planning. This program concentrated on four major areas: a) track and track maintenance standards; b) track

maintenance planning; c) machinery requirements and usage planning; and d) bridge maintenance planning and procedures. Although some useful technology transfer took place, the overall benefits of this package are limited. It appears that in many cases technologies introduced were not adapted well enough to suit the local organizational environment.

Procurement of Goods

23. Railway Line Radio System. It had been originally planned to introduce a full train radio system on one or two selected test track sections. The intention was to provide SRT with experience on such a system, in order for them to evaluate the potential of a full (system-wide) train radio system. During the project period, however, SRT decided it wanted full implementation immediately. The Bank fully endorsed this position.

24. At the time of writing, 400 base radios have been installed (mainly at stations), and 337 mobile radios are being installed on locomotives and diesel rail cars. Although too early to measure, it is anticipated there will be significant improvements realized in train operating efficiency and safety.

25. Yard Radio Systems. Base radio stations and hand-portables have been installed at Bangkok, Bang Sue and Mae Nam yards, to improve yard operating capability. Implementation went well, and no problems were reported. SRT reports that a decrease in accidents at these yards has been noted, and that there is an increase in the capacity and throughput times at these yards (quantifiable data not available). There are no plans, however, to introduce the system at other (smaller) yards.

26. Computer Equipment. This component included procurement of terminals and data communications equipment required by the OCS system. There were significant changes from the original specifications caused by the decision to contract STARS on a turn-key basis, and by the earlier than anticipated implementation of the fiber optics line on SRT's right-of-way. The success of this component cannot be evaluated until the OCS system has been fully operational for a period of time.

27. Passenger Coach Bogies. 178 passenger coach bogies have been purchased and installed on older 3rd Class coaches. This has resulted in extended coach life, and has elevated the maximum speed capability of these coaches from 70 kph to 100 kph (max. 120 kph).

28. Track Maintenance Equipment. Three ballast regulators and one ballast tamper have been procured and are in service. These have led to improvements in track maintenance productivity and quality. Corresponding procurement of track maintenance workshop equipment, planned under the project, was carried out locally by SRT using their own funds.

29. Mobile Wagon Repair Truck. This vehicle, and its equipment, is intended to effect more timely repairs of locomotive break-downs in service, or of accidents. The result is improved operating efficiency and gains in locomotive in-service times. The truck is operational, but has not yet been licensed for road transport.

30. Diesel Engines & Turbo Chargers. SRT has purchased and installed 106 new diesel engines for locomotives, of which 18 were financed by the Project. The life of the corresponding locomotives has been increased accordingly by at least 10 years.

31. The Bank also financed the purchase of 50 turbo-charger units, which have now been installed. This has put back into service several locomotives which had been awaiting these parts.

Other Project Work

32. In addition to the planned work, the Bank assisted SRT in other ways during the project period. Firstly, the services of a railway consultant was provided for 4 months to assist in project implementation and to act as an adviser to the General Manager. Secondly, the project review missions assisted SRT in future strategic planning. Thirdly, the Bank lent good support to the Long Range Master Development Plan Study carried out by the Thailand Development Research Institute for SRT. This latter study was aimed at a partial restructuring of SRT, and at this time is still under active review by SRT Executive Management. All of this additional work has proved valuable in progressing the project's objectives.

33. Since the objective of this Project was to begin to improve the operational and financial performance of SRT and to set the stage for a larger project which would assist in making SRT more commercially oriented and financially viable, the Bank agreed to extend the Project's loan closing date for a third time in order to have the opportunity to work with the Government and SRT in the development of a long term master plan for the railway. Both the Government and the Bank believed that SRT was important to the Thai economy, but each wanted to study the issue to determine the specific role that the railway should play in the Thai transport system in the next century so that future railway investments would be properly focused.

34. The Long Term Master Development Plan Study concluded that there would be a very sharp increase in SRT passenger demand over the next 20 years, and a lesser but still significant increase in freight demand over the same period. The Study also concluded that there must be some fundamental changes in the SRT organization and environment if SRT is to benefit from this increased demand. While the Bank does not completely agree with the conclusions reached concerning the increased demand for rail traffic, we are in complete agreement on the need for changes in the SRT organization and the way in which the railway is regulated. Further analysis is needed to determine

the specific changes that should be made, but the implementation of the agreed upon changes would form the foundation for any future Bank lending program to SRT.

Project Results

35. Both passenger and freight traffic continues to grow on SRT in terms of passenger-km and ton-km in the range of 2% and 5% respectively. Staff productivity in terms of traffic units per employee has also grown at an annual rate of about 5%. These improvements are due in part to the Project. The first component of the immediate objective (improvement in operations) has been met. There as yet is no significant improvement in SRT's financial position, although in time such items as operational efficiency improvements due to the OCS system should assist this position. It is not possible at this time, however, to confirm that the second component of the immediate objective (improvement in financial position) has been met, but this is largely the result of the Government not being willing to provide the management of SRT with significant control over either the operating revenue (tariff setting) or operating costs..

36. It is likewise too early to determine if the long-range objective of turning SRT into an operationally efficient and financially viable railway can be met. It is discouraging to note, however, that the momentum towards financial reform has all but ended. Whereas the Thai Cabinet previously agreed on a policy of having the Government compensate SRT for the cost to provide the non-commercial services that the Government requests (through a mechanism called Public Service Obligations (PSOs)) for this policy has not been implemented. There does not appear to be any significant effort at this time to implement a PSO for SRT.

Project Sustainability

37. All of the goods procured should maintain an acceptable level of net benefit during their economic lives. Sustainability of the technical assistance and training components will vary. Long term benefits should be realized from the MIS assistance. Freight marketing techniques learned by SRT should have long-ranging effect. Within the Civil Engineering Department, certain maintenance techniques learned should have similar effect, but the planning systems introduced have questionable long-term impact.

Bank Performance

38. The Project was well-conceived, and the Bank's personnel performed well during implementation. This was a difficult Project to supervise, however, due to the number of technically unrelated components. There was perhaps not enough time spent on supervising the individual components, and as such some components were designed and implemented without due regard to the Project's objectives. An example is the Freight Marketing technical assistance, where the consultant worked closely with SRT in setting up a unit (block) train operation for containers. Operationally this has

proven very successful, with the customer's needs being met to a high degree of reliability. There is good cause to question, however, if SRT is recovering costs from this operation.

Borrower Performance

39. The Borrower performed well throughout the life of the Project. SRT personnel were very cooperative with Bank personnel, and SRT staff assignment for implementation was adequate. Because of the fragmented project, however, and the large number of SRT departments involved, the Borrower might have been more diligent in overall management of the Project.

Project Relationship

40. As noted above, relations between the Borrower and the Bank were good throughout the Project. The Bank personnel reacted well to SRT's needs, and SRT personnel were always cooperative with supervision missions.

41. The Project was designed in concert with a GTZ project, with the two being complementary and carried out at the same time. While relations between the Bank and GTZ personnel were good, there may have been better cooperation between the implementing parties. Consultants working under GTZ financing had no reason to be cooperative with Bank staff. Although such cooperation oftentimes did exist, the Bank's and GTZ's projects were in large measure run as separate activities, rather than as parts of a whole. There may have been improved success overall if one of the lending agencies had some degree of responsibility for the whole project, but at the time, SRT did not want either the Bank or GTZ to have that function and insisted that it be done by SRT.

Consulting Services

42. Generally, the consultants involved in the Project performed well. In some cases, however, there was not enough effort made by the consultant to adapt his technology to suit SRT conditions. This was especially true in the MIS and Civil Engineering components. In the Freight Marketing component, there was some deviation from the defined terms of reference, which required contract extensions to rectify.

THAILAND
RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)
PROJECT COMPLETION REPORT

PART II. BORROWER'S EVALUATION

The Borrower did not provide Part II of the Report.

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Table 1. Project Timetable

Item	Date
Identification	December 1984
Preparation	October 1986
Appraisal Mission	No appraisal mission.
Negotiations	April 1987
Board Approval	September 15, 1987
Loan Signature	December 11, 1987
Loan Effectiveness	May 10, 1988
Loan Closing: Original	December 31, 1990
Revised	December 31, 1993

Comments: There was no appraisal mission. Preparatory work done for the Railway VI project, which did not materialize, was used to formulate the Memorandum of the President.

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Table 2. Related Bank Loans and/or Credits

<u>Loan/Credit</u>	<u>Purpose</u>	<u>Year of Approval</u>	<u>Status</u>	<u>Comments</u>
Loan 898 Fourth Railway	To assist State Railways of Thailand (SRT) to increase their transport capacity, modernize operations and reduce transport costs by investing in diesel locomotives, rolling stocks, tracks, yards and station improvements.	1973	Completed	PPAR #2611 July 1979
Loan 1662 Railway V	To assist the SRT in the financing of their investment plan for 1977-1981 and to improve efficiency by replacing obsolete and worn-out assets and expanding capacity to serve projected traffic needs.	1979	Completed	PCR #6163 April 1986

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Table 3. Bank Resources

A. Staff Input

<u>Stage of Project Cycle</u>	<u>Number of Staffweeks</u>
Through Appraisal	10.6 sw
Appraisal through Board Approval	7.4 sw
Board Approval through Effectiveness	19.7 sw
Supervision	75.1 sw
Total:	<u>112.8 sw</u>

B. Missions

Month/ year	No. of persons	Days in field	Special- ization	Performance rating	Type of problem
Feb. 1985	3	14	EC/RE/CONS	n/a	n/a
Oct. 1985	2	6	EC/FA	n/a	n/a
Oct. 1986	2	14	EC/FA	n/a	n/a
March 1987	2	12	EC/FA	n/a	n/a
May 1987	1	2	EC	n/a	n/a
July 1987	1	14	LO	n/a	n/a
Sept. 1987	3	7	EC/FA/CONS	n/a	n/a
Feb. 1988	3	10	EC/FA/CONS	1	n/a
Sept. 1988	3	10	EC/FA/RE	1	n/a
Feb. 1989	3	14	EC/FA/RE	1	n/a
Sept. 1989	3	10	EC/FA/RE	2	P/F
Jan. 1990	3	18	EC/RE/CONS	2	P/F
Sept. 1990	2	15	EC/CONS	2	P/F
Sept. 1991	3	7	EC/FA/CONS	2	P/F
Jan. 1992	3	7	EC/FA/CONS	2	P/F
June 1992	2	7	FA/CONS	2	P/F
Nov. 1992	2	2	FA/CONS	2	P/F
May 1993	2	4	FA/CONS	2	P/F

Note: EC - Economist
RE - Railway Engineer

FA - Financial Analyst
LO - Loan Officer

P - Procurement

F - Financial Performance

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Table 4. Cumulative Disbursement Schedule

Fiscal Year	Quarter Ending	Actual Disbursement (in US\$ million)	
		Quarter	Cumulative
1988	Sep. '87	0.00	0.00
	Dec. '87	0.00	0.00
	Mar. '88	0.00	0.00
	Jun. '88	0.04	0.04
1989	Sep. '88	0.08	0.12
	Dec. '88	0.08	0.20
	Mar. '89	0.13	0.33
	Jun. '89	0.85	1.18
1990	Sep. '89	0.13	1.31
	Dec. '89	0.71	2.02
	Mar. '90	0.14	2.16
	Jun. '90	0.07	2.23
1991	Sep. '90	0.75	2.98
	Dec. '90	1.37	4.35
	Mar. '91	1.17	5.52
	Jun. '91	0.03	5.55
1992	Sep. '91	0.06	5.61
	Dec. '91	0.29	5.90
	Mar. '92	3.43	9.33
	Jun. '92	0.30	9.63
1993	Sep. '92	1.08	10.71
	Dec. '92	0.22	10.93
	Mar. '93	0.08	11.01
	Jun. '93	0.30	11.31
1994	Sep. '93	0.00	11.31
	Dec. '93	0.05	11.35
	Mar. '94	0.00	11.35
	Jun. '94	0.08	11.43

THAILAND

RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)

PROJECT COMPLETION REPORT

Table 5. Status of Covenant

Section of Loan Agreement	Agreed Actions	Status
3.02 (a)	The Government will provide annual budget provisions and timely payments to SRT to compensate for losses incurred in operating uneconomic lines and services.	The Government is providing a portion of the year's estimated loss in the annual budget. Final compensation is paid after completion of the audit.
3.02 (b)	Payments will be made by the Government to cover SRT's losses incurred in FY1985 and 1986 by September 30, 1989.	Complied with.
5.01 (b)	SRT will forward its audited financial statements to the Bank within nine months of the end of each fiscal year.	1991 received 11/92; 1992 report due 6/93 not yet received.
5.02	SRT will consult with the Bank before finalizing the annual investment program.	Complied with.
5.03	SRT will complete a detailed review of its capital structure and prepare a plan by June 30, 1988 which will enable SRT to finance future investments and to service residual debt.	Complied with 9/1/88.
5.04	SRT will adjust its tariffs on an annual basis to at least compensate for inflation.	Partially complied with. Government has not been willing to increase passenger tariffs.
5.05	SRT will develop an action plan to review its entire tariff structure by December 31, 1988.	Action plan prepared implemented for freight.

THAILAND
RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)
PROJECT COMPLETION REPORT

Table 6: Procurement of Goods

ITEM	FINANCE SOURCE	CURRENT STATUS	NEXT CRITICAL STEP		COMPL. DATE
			ACTIVITY	TARGET	
1. Radio -Line -Yard	IBRD IBRD	Installation (Stations & Locos.) Complete	Completion	12/93	12/93 Compl.
2. "STARS" hardware	(SRT)	Complete			11/92
3. Computer Peripherals -Inventory control -Operations control	IBRD IBRD	Cancelled Supplier negotiations	Purchase/Install	03/94	03/94
4. Psgr. Coach Bogies	IBRD	Complete			09/91
5. Trk. Mtce. Equip -Tamper(1) -Blst. Regulators(3) -Workshop equip.	IBRD IBRD (SRT)	Complete Complete Complete			12/90 12/90 09/90
6. Mobile Wagon Repair Truck	IBRD	Complete			12/92
7. Turbo chargers	IBRD	Complete			Compl.
8. Diesel engines	IBRD	Complete			Compl.

THAILAND
RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)
PROJECT COMPLETION REPORT

Table 7: Summary of Technical Assistance and Training Components

AREA	FINANCE SOURCE	CONSULTANT	M/M	START	CURRENT STATUS	NEXT CRITICAL STEP		PROJECT COMPL.
						ACTIVITY	TARGET	
1. TECHNICAL ASSISTANCE								
1.1 Marketing								
- psgr. traffic	GTZ	DE-Consult	14	08/87	Completed			04/90
- Int. traffic	IBRD	Transmark	36	04/88	Completed			10/90
- product policy & plan.	GTZ	DE-Consult	16	-	Completed			08/92
1.2 Operations								
- time-tabling	GTZ	DE-Consult	20	03/87	Completed			07/90
1.3 Information Systems								
(Systems Design)								
- General MIS	IBRD	Transurb	12	12/87	Completed			03/90
- OCS	IBRD	Transurb	17	07/88	Completed			03/90
- IMMS	TDP	SRI	10	09/88	Completed			04/90
- STARS	GTZ	DE-Consult	5	11/87	Completed			07/90
- Network	IBRD	Transurb	4	03/89	Completed			03/90
(Systems Implementation)								
- OCS	IBRD	Sinobrit/PST		01/91	Program coding complete	Train/Document	03/94	03/94
- OCS Tech.Assist.(part time)	IBRD	Transurb	8	01/91	On-going			03/94
- IMMS	IBRD				Project cancelled			
- STARS	(SRT)	Prime/Korean		08/90	Hardware/Software installed	Implement	09/93	09/93
1.4 Mechanical Shops								
- General	GTZ	DE-Consult	67	02/87	Completed			06/92
- Air-brake Conversion	GTZ	DE-Consult	20		Completed			03/92
1.5 Stores	GTZ	DE-Consult	6	09/87	Completed			12/88
1.6 Civil Engineering	IBRD	Sofrerail	16	10/88	Completed			03/91
1.7 Traffic Costing	IBRD	Transmark	15	07/90	Completed			12/91
1.8 Project Coordinator	IBRD	W.Thompson	4	04/88	Completed			12/89

THAILAND
RAILWAY EFFICIENCY IMPROVEMENT PROJECT (LOAN 2872-TH)
PROJECT COMPLETION REPORT

Table 7: Summary of Technical Assistance and Training Components

AREA	FINANCE SOURCE	CONSULTANT	M/M	CURRENT STATUS	NEXT CRITICAL STEP		PROJECT COMPL.
					ACTIVITY	TARGET	
II TRAINING							
1. Management Level							
-general seminars (Step 1)	GTZ	DE-Consult	1	Completed			07/90
-general seminars (Step 2)	GTZ	DE-Consult	16	Completed			08/92
-management improvement, (corp. planning, PSO)	GTZ	DE-Consult	14	Completed			08/92
2. Mechanical Engineering							
-IMMS	IBRD	W Thompson	1	Completed			06/89
-Coach mtce.	GTZ	DE-Consult	8	Completed			07/89
-Loco. mtce.	GTZ	DE-Consult	8	Completed			07/89
-Mtce. management	GTZ	DE-Consult	3	Completed			08/92
3. Civil Engineering							
-Track Std's & Mtce.	IBRD	Sotrerail	11	Completed			06/89
-Trk. Mtce. Planning	IBRD	Sotrerail	6	Completed			06/89
-Machinery	IBRD	Sotrerail	6	Completed			06/89
-Brlidge Mtce.	IBRD	Sotrerail	4	Completed			06/89
4. Traffic (OCS)							
	IBRD	Transurb	2	Completed			01/89
5. Marketing							
-Specific skills	IBRD	Transurb	22	Completed			12/89
-Seminar/Cntrpart train'g	GTZ	DE-Consult	6	Completed			12/89
6. Information Systems							
-OCS	IBRD	Transurb	2	Completed			01/89
-IMMS	IBRD	W. Thompson	2	Completed			06/89
7. Stores Bureau (IMMS)							
	IBRD	W. Thompson	1	Completed			06/89
8. Operational Safety							
	GTZ	DE-Consult	15	Completed			08/92