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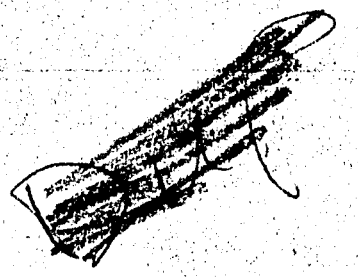

MOZAMBIQUE

Regional Transport Development PP

[690-0231]

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ACTION MEMORANDUM FOR THE ACTING DIRECTOR, USAID/ZIMBABWE

FROM: Eugene Morris, Acting Regional Development Officer

DATE: August 27, 1985

PROBLEM: Your approval is requested for the authorization of a grant for $10,540,000 from the Economic Support Fund for the Southern Africa Regional Transport Development Project (690-0231). Individual grants will be made to the Governments of Mozambique ($5,540,000) and Zambia ($5,000,000) for improvements of important rail systems serving the region. The project components are entitled Mozambique Railways Improvement and Zambia Railways Improvement. The entire $10,540,000 will be obligated in Fiscal Year 1985.

DISCUSSION: The goal of this regional project is to increase the GNP of SADCC member countries by reducing the marketing costs of exports and imports. Specifically, the grants will enable key rail systems to improve their operational capacities and the efficiency of their performance. The two lines identified for assistance under this project are the Beira-Machipanda line in Mozambique and the entire north-south route of the Zambia Railways system. Both of these lines are vital to the transport of commodities which underpin the economies of the countries of Southern Africa.

A brief description of each project, along with a summary financing plan, follows:

1. Mozambique Railways Improvement

The $5,540,000 grant to Mozambique will be for the rehabilitation of the Beira-Machipanda rail system. AID funding will be used for track and locomotive repair and rehabilitation, workshop conversion, workshop equipment, foundry equipment, on-the-job training, and short-term technical assistance. By the end of the three-year project, we expect that system utilization will be dramatically increased through the activities of the project. The Host Country contribution (both financial and in-kind) will be the equivalent of $940,000.

2. Zambia Railways Improvement

AID's contribution to this project component is part of a large, multi-donor effort under the auspices of the IBRD's Fourth Railway Project for Zambia. AID funds in the sum of $5,000,000 will be used exclusively for the purchase of locomotive spare parts for the rehabilitation of the existing fleet of General Electric locomotives. Other IBRD Fourth Railway Project activities include: track repair, improvement of the signaling and communications systems, wagon purchase and rehabilitation, training and technical assistance. It is

anticipated that the GOZ and donors will contribute the following amounts to the total project:

U.S. $ Millions

IDA	20.0
ADB	20.0
AID	
This Project	5.0
ZAMCAM	5.0
SIDA	5.2
Belgium	4.0
KFW	1.6
GOZ	22.3
TOTAL	88.1

The GOZ funding is divided between $16.3 million equivalent in local currency (including in-kind contributions) and $6.0 million in foreign exchange for spare parts.

Through the efforts of the total IBRD project, Zambia Railways will increase the utilization rates for locomotives and wagons, thereby improving the operational efficiency of the system.

Several special conditions and covenants are recommended for the individual Grant Agreements.

Mozambique Component

1. A condition precedent to disbursement of funds for the improvement of the workshop and foundry at Beira will require that the host country provide evidence that emergency power generation to operate the shops is available at all times.

2. The covenants to be included in this component's agreement are the standard clauses concerning the fulfillment of the host country's financial and personnel obligations for the project, the submission of project progress reports, and a requirement that all commodities financed by AID be for the exclusive use of the project.

Zambia Component

1. Conditions precedent to disbursement for this component require the satisfaction of all conditions set forth by the IBRD under the Fourth Railway Project and the submission to AID of a procurement plan for the locomotive spare parts. No special covenants are anticipated.

Project reviews have been conducted in the Southern Africa Regional Office, USAID/Harare and REDSO/ESA. Both reviews found the project to be technically and economically sound and adequately planned and budgeted for in accordance with Congressional and Agency requirements. The review committees

have recommended approval of the proposed project and you have received the required concurrence from the Director, REDSO/ESA via telegram Nairobi 23973, dated July 22, 1985.

The Initial Environmental Examinations for both project components were approved per State 240017, dated August 6, 1985. No human rights issues are involved in regard to this project.

Each component of the project includes an Implementation Plan which has been carefully reviewed by AID and which was developed with the full cooperation of the host country entities involved. Based on the information and analyses contained in the Project Paper, the financial, engineering and other planning requirements of FAA Section 611 (a) are considered satisfied. The project also complies with all other statutory requirements (see statutory checklists).

The field officer responsible for the project is F.D. Light (Southern Africa Regional/USAID/Zimbabwe) and the AFR/PD backstop officer is Wendy Stickel.

A congressional notification was submitted as required on July 25, 1985. The 15-day waiting period expired on August 9, 1985 and there were no issues raised by Congress.

RECOMMENDATION: In accordance with the authority delegated to USAID/Zimbabwe in State 240017, it is recommended that you sign the attached Project Authorization in the amount of $10,540,000.

CLEARANCES:

REDSO/Legal:KHansen (in draft)
REDSO/RCMO:LDunn (in draft)
REDSO/Anal:CBarnes (in draft)
REDSO/PROJ:JGraham (in draft)
RFMC:RHenrich (in draft)

CONCURRENCE

J.W. Koehring
Director,REDSO/ESA
(See Nairobi 23973)

P R O J E C T A U T H O R I Z A T I O N

Name of Country/Entity:	Southern Africa Regional
Name of Project:	Southern Africa Regional Transport Development
Number of Project:	690-0231

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Regional Transport Development Project for the Southern African region involving planned obligations of not to exceed ten million five hundred forty thousand dollars ($10,540,000) in grant funding over a one-year period from the date of authorization, subject to the availability of funds, in accordance with the A.I.D./OYB allotment process, to help finance the foreign exchange and local currency costs of the project. The planned life of the project is through September 30, 1988.

2. The project consists of assistance to the Government of the People's Republic of Mozambique (GPRM) in the amount of five million five hundred forty thousand dollars ($5,540,000) for the rehabilitation of the Beira-Machipanda Railway System and to the Government of Zambia in the amount of five million dollars ($5,000,000) for the purchase of railroad locomotive spare parts under A.I.D. Regulation 1 procedures in support of the IBRD Fourth Railway Project. With respect to the Mozambican component, the project will finance emergency rail line repairs, short-term technical assistance, on-the-job training and commodities for the workshops and foundry.

3. The bilateral Project Agreement which may be negotiated by the A.I.D. Principal Officer to Mozambique shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

(A) Source and Origin of Commodities; Nationality of Services

Commodities financed by A.I.D. under the project shall have their source and origin in the United States or the SADCC member countries, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have as their place of nationality the United States or the SADCC member countries, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

(B) Conditions Precedent to Initial Disbursement

Prior to the first disbursement of funds under the grant, or the issuance of documentation pursuant to which disbursement shall be made, the Cooperating Country shall submit to A.I.D., in form and substance acceptable to A.I.D., a statement containing the names and specimen signatures of the persons who will carry out the cooperating country's responsibility under the agreement, including the name and signature of the individual in the Caminhos de Ferro de Mocambique-Centro (CFM-C), who will be the Project Director, and the name and signature of the individual in the Direccao Nacional dos Portos e Caminhos de Ferro (DNPCF) in the Ministry of Ports, Railways and Merchant Marine (MPRMM) in Maputo who will oversee project activities.

The Cooperating Country will submit in writing, the name of the individual who will chair and convene the Project Implementation Committee meetings. A meeting of the committee must be held prior to the disbursement of project funds.

(C) Additional Disbursement

Prior to disbursement of funds under this Grant, or the issuance of documentation under which disbursement shall be made for workshop and foundry improvements at Beira, the Cooperating Country shall provide evidence satisfactory to A.I.D. that emergency power generation to the workshops is available and can be operated at all times, except as A.I.D. may otherwise agree in writing.

(D) Covenants

The Cooperating Country shall covenant, except as A.I.D. may otherwise agree in writing, to:

(1) Provide the required contribution for the local currency costs of the project in a timely manner in compliance with the decisions of the Project Implementation Committee and as outlined in the Project Agreement and to provide promptly, as needed, all funds in addition to the Grant needed for the effective carrying out of agreed-upon activities.

(2) Provide in a timely manner all personnel required of the Grantee for implementation of the Project, in compliance with the decisions of the Project Implementation Committee.

(3) Endeavour to have all emergency railway repairs completed by March 1987.

(4) Assure that all commodities procured for the project will be used exclusively for Project purposes and that stock records and requisitions for supplies shall be carefully kept and monitored.

(5) Endeavor to have completed the first phase of the conversion of a section of the steam workshop in Beira to diesel prior to September 1986.

(6) Through the MPRMM, submit quarterly reports on Project progress to include an update in other projects of the CFM-C or others which may effect the Project. The reports shall also include information on employee training and transfer of equipment, personnel, locomotives and rolling stock which can effect the operation of the Beira-Machipanda Railroad and the Beira port.

4. The bilateral Project Agreement which may be negotiated by the A.I.D. Principal Officer to Zambia shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

(A) Source and Origin or Commodities; Nationality of Services

Commodities financed by A.I.D. under the Project shall have their source and origin in the United States, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities and incidental services shall have as their place of nationality the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

(B) Conditions Precedent to Disbursement

Prior to the first disbursement of funds under the Grant or the issuance of documentation pursuant to which disbursement shall be made, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance acceptable to A.I.D.:

(1) Evidence that it has satisfied the conditions of effectiveness agreed to with IBRD for the Fourth Railway Project; and,

(2) A written procurement plan for the commodities to be financed by A.I.D. under the Grant. The general elements of the plan shall be set forth in the Project Grant Agreement. Details with respect to the plan shall be set forth in a Project Implementation Letter.

(C) Covenants

The Cooperating Country shall covenant, except as A.I.D. may otherwise agree in writing, that:

(1) All commodities financed by A.I.D. under the Grant shall be used exclusively by Zambia Railways for the rehabilitation of GE Locomotives as planned under the IBRD Fourth Railway Project; and,

(2) It will submit monthly status reports covering the receipt and use of A.I.D.-financed spare parts.

August 27, 1985
Date

John J. Lewis
Acting Mission Director
USAID/Zimbabwe

Cleared by:
DIR/REDSO/ESA: JKoehring: (in draft)
RCMO/REDSO/ESA: (in draft)
RLA/SA:GBisson: (in draft)
RDO:DBPfeiffer: (in draft)
CONT:USAID/Zimbabwe:MALewis

M2 LF24 R43 85

AGENCY FOR INTERNATIONAL DEVELOPMENT **PROJECT DATA SHEET**	1. TRANSACTION CODE A = Add, C = Change, D = Delete A Amendment Number	DOCUMENT CODE 3
2. COUNTRY/ENTITY Southern Africa Regional	3. PROJECT NUMBER 690-0231	
4. BUREAU/OFFICE AFR 06	5. PROJECT TITLE (maximum 40 characters) Regional Transport Development Mozambique	

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 08 YY 88

7. ESTIMATED DATE OF OBLIGATION (Under "B" below, enter 1, 2, 3, or 4)
A. Initial FY 85 B. Quarter 4 C. Final FY 85

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	1770	3770	5540	1770	3770	5540
(Grant)	(1770)	(3770)	(5540)	(1770)	(3770)	(5540)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country		853	853		940	940
Other Donor(s)						
TOTAL $	1770	3770	6393	1770	4770	6480

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. PRIMARY TECH. CODE 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. OBLIGATIONS TO DATE 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. AMOUNT APPROVED THIS ACTION 2. Loan	F. LIFE OF PROJECT 1. Grant	F. LIFE OF PROJECT 2. Loan
(1) ESF 001-S824						5540		5540	
(2)									
(3)									
(4)									
TOTALS						5540		5540	

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BL	TNG					
B. Amount	5493	47					

13. PROJECT PURPOSE (maximum 480 characters)

To improve the capacity and efficiency of key railway systems in the Southern Africa Region.

14. SCHEDULED EVALUATIONS
Interim MM 10 YY 86 Final MM 10 YY 87

15. SOURCE/ORIGIN OF GOODS AND SERVICES
[X] 000 [ ] 941 [X] Local [ ] Other (Specify) SADCC member stat

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment)

Clearance: CONT: Marjorie A. Lewis wl 8/27/85

17. APPROVED BY
Signature: John J. Lewis
Title: John J. Lewis Acting Director, US AID/ZIMBABWE
Date Signed: MM 08 DD 27 YY 85

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY

AID 13304 (8-79)

8

Regional Transport Development (Mozambique)

(690-0231)

Project Paper

0.0. SUMMARY AND RECOMMENDATIONS

0.1 Responsibilities

A. Grantee

The Grantee for the Project will be the Government of the People's Republic of Mozambique.

B. Implementing Agency

The implementing agency will be the Direccao Nacional des Portos e Caminhos de Ferro (DNPCF) within the Ministry of Ports, Railways and Merchant Marine (MPRMM).

0.2 Recommendations and Sources and Uses of Funds

Authorization of a grant is recommended in the amount of $5,540,000 from the Economic Support Fund over a three-year period commencing September 1985 to the Government of the People's Republic of Mozambique for the Regional Railways Improvement Project focused on the Beira-Machipanda railway system. The Government of the People's Republic of Mozambique (GPRM) contribution to the Project is $940,000, representing fifteen percent of the total Project costs.

0.3 Purpose of the Project

The purpose of the Project is to improve the capacity and efficiency of the Beira-Machipanda railroad system.

0.4 Background to the Project

The Southern African Development Coordination Conference (SADCC) places a high priority on improvement in the transportation and communications sector, as a strategy for lessening its member states' dependency on the Republic of South Africa. SADCC's Southern African Transportation and Communications Commission (SATCC) has identified the repair and rehabilitation of the Beira-Machipanda railway link as a top priority project. Independent studies have also placed this as a high priority project. The Beira-Machipanda railroad system is the most direct rail linkage to the northern half of Zimbabwe, and sections of Malawi, Zambia and southern Zaire.

The Beira-Machipanda railroad system, which is part of the central railroad system of Mozambique (CFM-C), is badly in need of emergency repairs to tracks and locomotives. The poor state of the tracks leads to frequent interruptions of the line, often from derailments. Many locomotives are inoperable due to lack of replacement parts. These conditions largely contribute to cargo from the landlocked SADCC member states being shipped through South Africa rather than Beira and, consequently, payment of higher transport charges.

0.5 Description of the Project

By the end of the Project, the average number of trains daily will have increased from 2.4 to 3.4, due to fewer derailments, and faster turnaround times. Cargo carried will increase from 280,000 to 430,000 tons annually by the end of the Project. Two years after the Project is completed, it is expected that there will be an average of 6.4 trains daily and 880,000 tons of cargo carried annually. The Project will also have improved the capacity and capability to maintain tracks and locomotives, manufacture foundry-cast spare parts for locomotives, and repair locomotives, all resulting in better operations.

To achieve the above, the Project consists of mutually supportive components: (a) emergency track repairs, (b) rehabilitation of locomotives, (c) first-phase conversion of steam workshop for diesel repairs, (d) commodities for workshops and foundry, (e) on-the-job training, (f) short-term technical assistance, (g) evaluations and financial reviews, and (h) project administration through a Project Implementation Committee and a project manager. The emergency track repairs on the weak sections of the railway line should reduce derailments and allow trains to go at higher safe speeds. The rehabilitation of eight steam locomotives and the refurbishing of two diesel locomotives will increase the number of operative CFM-C locomotives. Also one steam shunting locomotive will be rehabilitated. Following competitive negotiation, the two diesel locomotives and the nine steam locomotives will be refurbished and rehabilitated respectively. Most likely the major repair of locomotives will be carried out in Zimbabwe where the capacity already exists.

Part of the existing Beira steam locomotive maintenance and repair workshop will be converted under the Project so that facilities will exist to carry out running level maintenance on diesel locomotives.

AID will provide commodities for the diesel workshop as well as commodities needed for the repair of steam locomotives. On-the-job training will be provided by the Project for workshop and foundry personnel and, to a lesser extent, locomotive operators. Some staff will receive on-the-job training at the contractor workshops during the repair and refurbishing of locomotives. Subsequently, short-term, Portuguese-speaking consultants will be based in Beira to provide on-the-job training for the repair of one or more steam locomotives and to advise on management of the foundry and on maintenance/repair routines at the workshop. Also, simple instructional manuals in Portuguese will be provided on steam and diesel locomotive maintenance, repair and foundry practices.

The Project will be guided by a Project Implementation Committee. The committee will be composed of members representing USAID/Zimbabwe, the CFM-C, the MPRMM-Maputo, and the Prime Contractor. A project manager, on a Personal Services Contract, will also attend the committee meetings. The committee will be responsible for implementation scheduling and reviews. Meetings will be held on a quarterly basis.

The expected outputs of the Project are:

- Improved condition of the Beira-Machipanda railway track.
- More CFM-C steam and diesel locomotives operational.
- Establishment of facilities for diesel locomotive running level maintenance in Beira.
- Increased availability of commodities for maintenance and repair of steam and diesel locomotives.
- Enhanced capability of workshop and foundry personnel.

The Project inputs from AID include:

- $775,700 for emergency track repairs;
- $2,672,500 for refurbishing 2 diesel locomotives and repair of 8 steam locomotives and 1 steam shunter;
- $36,000 for workshop conversion;
- $600,200 for commodities for workshop and foundry;
- 18 person-months of short-term technical assistance;
- 34 person-months of on-the-job training outside Mozambique;
- $30,000 for evaluations and financial reviews;
- $125,600 for project administration;
- $1,185,300 to cover contingencies and cost escalatio

0.6 Summary Findings

The Design Team has analyzed the technical, financial, institutional and social implications of the Project's activities and each one has been found to be sound. The Project will benefit Mozambique, Zimbabwe and, to a lesser extent, Malawi, Zambia and

Zaire. The economic analysis shows a high economic rate of return based on conservative scenarios. A combination of the two worst case scenarios would result in an economic rate of return of 35.6 percent. The best case scenarios give an economic rate of return of 72.9 percent.

0.7 Project Issues

Continued Stability of the Government of the People's Republic of Mozambique and Improved Control of the Countryside

In spite of the economic crisis and the guerilla terrorist warfare by the Mozambique National Resistance (MNR), the GPRM appears to be firmly in place. The countryside, however, is not effectively under the control of the GPRM because of the MNR success in carrying out attacks throughout most of the country. The MNR strategy is disruption and economic damage. It does not establish liberated zones and it has not gained any international recognition.

The hope that the agreement signed between the GPRM and the Republic of South Africa at Nkomati in 1984 would result in lessening or even eliminating armed attacks has proved unfounded.

The current status quo of the GPRM vis-a-vis the MNR is unlikely to alter significantly in the next few years unless (a) the external supporters stop supplying and aiding the MNR, or (b) the GPRM receives large amounts of military assistance to enable it to launch an aggressive campaign against the MNR. Concomittantly, there are no indications that the MNR will overthrow the present government.

The Vulnerability of the Beira-Machipanda Railway System to Attacks and Sabotage by the MNR

Military forces along the Beira-Machipanda corridor deter major MNR attacks. The Beira-Machipanda line is the most secure railway system in Mozambique. It is protected jointly by Mozambican and Zimbabwean troops who patrol the corridor, which also contains a major road and the oil pipeline to Zimbabwe. Since it is in the economic and political interests of Zimbabwe, it is expected that Zimbabwe will continue to provide military security.

Trains moving along the route carry soldiers for protection. The soldiers are usually in special wagons near the front and at the back of the train. Also, security protection is given to work crews on track repairs.

In 1984, there were no reports of attacks or sabotage on the Beira-Machipanda railway system. During the first quarter of 1985, two acts of sabotage on the line caused sections to be closed each time for 8-9 hours. Minor acts of sabotage will probably continue, on a sporadic basis, but it is anticipated that no major attacks or acts of sabotage will occur for the reasons given above.

All AID projects involve some risk. The ones in this Project are more apparent because they involve the potential of damage to physical assets, but provided that the security system remains calm, the potential benefits to be derived from the Project warrant proceeding.

The Ability of the Mozambique Railways to Supply Needed Inputs in a Timely Manner

It is reasonable to expect that the GPRM will be able to supply the needed inputs in a timely manner. The monthly allocations of funds from the DNPCF to the CFM-C are expected to include additional monies required by the Project. Most of the extraordinary expenditures will be during the first year of the Project. Because of flexibility in the GPRM for local currency project expenditure, these funds should be forthcoming. Approximately one-third of the ballast required and all of the rails for the emergency track repairs are already on hand. No new staff are required.

Since both the DNPCF and the CFM-C place a high priority on the Project, difficulties in the provision of the requisite inputs should be minimal. Coordination of the GPRM and AID-funded inputs will be the focal point of quarterly meetings of the Project Implementation Committee.

The Likelihood that Zimbabwe and Neighboring States will Increase their Utilization of the Beira-Machipanda Railway System, Commensurate with the Capabilities of the System to Handle Increased Traffic

Almost all clients and major clearing and forwarding agents have indicated that, if the following problems are overcome, they will increase their use of the Beira-Machipanda railroad. The problems cited are: long turnaround times of trains, insufficient locomotive capacity and few sailings from Beira port. Turnaround times of trains will lessen because of a reduction in the hours lost due to obstructions on the line, a higher travelling speed as a result of emergency track repairs, increased reliability and efficiency of locomotives due to total rehabilitation, and improved maintenance and repair services. The number of locomotives operating along the line will be increased through Project activities. A gradual increase is expected in the use of the line as customers gain confidence.

As traffic increases, it is reasonable to expect that shipping lines will respond to the market demands and increase their services to Beira to cope with increased traffic flows. The significantly lower cost of shipping goods on the Beira-Machipanda line as compared with alternative South African routes will make it an extremely attractive option for customers

The Capability of the Port of Beira for Handling Increased Traffic on the Beira-Machipanda Line

The port of Beira has the capability and capacity to handle an increase in traffic on the Beira-Machipanda line, together with normal traffic flows on the Sena line. As a result of the Project, tonnage from the Beira-Machipanda line should gradually increase up to 800,000 tons annually by Year Five. The port's current handling capacity is approximately 3 million tons annually.

0.8 Consideration of Small Disadvantaged and Women-Owned Firms

Serious consideration has been given to the potential involvement of the small business 8A firms. It was determined that the Project is not appropriate for a set-aside for contracting with small and disadvantaged U.S. businesses or those targeted for special consideration under the Gray amendment for the following reasons. First, locomotive repair facilities are required within a reasonable distance from Beira for the rehabilitation and refurbishing of locomotives. Secondly, Portuguese language capability is required for implementation of some Project components. It is likely that the Prime Contractor will be from Zimbabwe, although U.S. small, disadvantaged or women-owned firms will be considered in the open bidding process. In evaluation of potential contractors, the contract selection team will ensure that the sub-contracting plan takes into consideration firms covered by the Gray amendment.

0.9 Waivers and Approvals

No waivers are required at this time. Following competition, it is anticipated that a waiver will be processed under Handbook 1B, Paragraph 5.D.10.a (2) to authorize the NRZ to be approved as a sub-contractor to a private contractor for project services. The NRZ has special facilities to carry out certain repair functions on steam locomotives which are not available in the workshops of the private firms in Zimbabwe.

0.10 Major Conditions Precedent

The conditions precedent to disbursement of AID funds for the Project are detailed in the draft Project Authorization. In brief, these are:

1. The GPRM will submit, in writing, the name of the individual in the CFM-C who will be Project Director and the name of the individual in the DNPCF in Maputo who will oversee Project activities.

2. The GPRM will submit, in writing, the name of the individual who will chair and convene the Project Implementation Committee meetings. A meeting of the committee must be held prior to the disbursement of Project funds.

3. Prior to disbursement of funds in connection with the commodities for the steam workshops and the foundry, the DNPCF shall provide evidence that emergency power generation to the Beira steam workshop is available and can be operated at all times.

0.11 Covenants

The covenants are detailed in the draft Project Authorization. The following provides a summary of these:

1. The Grantee shall provide the required contribution for the local currency costs of the Project in a timely manner, in compliance with the decisions of the Project Implementation Committee.

2. The Grantee shall provide in a timely manner all personnel required of the Grantee for the implementation of this Project, in compliance with the decisions of the Project Implementation Committee.

3. The Grantee shall assure that all commodities procured for the Project will be used exclusively for the Project and that stock records and requisitions for supplies shall be carefully kept and monitored.

4. The Grantee shall endeavor to have all emergency railway line repairs completed prior to completion of the first rehabilitated locomotive, estimated to occur in August 1986.

5. The Grantee shall endeavor to have completed the first phase of the conversion of part of the steam workshop in Beira to diesel prior to September 1986.

6. The Grantee, through the DNPCF, shall submit quarterly reports on Project progress. These shall include an update on other projects related to the CFM-C.

0.12 Main Government of the Peoples Republic of Mozambique Contributors

Ferreira Mendes	- National Director, DNPCF
Rui Fonseca	- Deputy National Director, DNPCF
Luis Ah-Hoy	- Deputy Financial Officer, DNPCF
Julio Hinga	- Chief Engineer of Consultancy and Projects
Gabriel Mabunda	- Director, CFM-C
Oscar Dinis	- Deputy Director, CFM-C
Antonio Pinho	- Financial Manager, CFM-C
Afonso Ramos	- Track Maintenance, CFM-C
Jose Minoria	- Workshop Manager, CFM-C
Pedro Junior	- Inspector of Beira Port
Orlando Jaime	- Human Resources Manager, CFM-C
Pedro Pinto	- Stores Manager, CFM-C

0.13 Project Design Team

Carolyn Barnes	- Team Leader, REDSO/ESA
Dennis Light	- Engineer, REDSO/ESA
Barrie Mitchell	- Locomotive Engineer, Consultant
Charles Richter	- Economist, AID/W
Luis Santos	- Mechanical Engineer, Consultant
Jeanne Stevens	- Transport Economist, Consultant
Gary Bisson	- AID Regional Legal Advisor
Bruce Stader	- Regional Commodity Management Officer, REDSO/ESA

REGIONAL TRANSPORT DEVELOPMENT (MOZAMBIQUE)
PROJECT PAPER

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ACRONYMS

AAO/Maputo	AID Administrative Officer, Maputo
CFM-C	Caminhos de Ferro de Mocambique - Centro (Railways of Mozambique - Central)
CFM-N	Caminhos de Ferro de Mocambique - Norte (Railways of Mozambique - North)
CFM-S	Caminhos de Ferro de Mocambique - Sul (Railways of Mozambique - South)
DNPCF	Direccao Nacional des Portos e Caminhos de Ferro (National Direction of Ports and Railroads)
GE	General Electric
GDP	Gross Domestic Product
GPRM	Government of the People's Republic of Mozambique
MPRMM	Ministry of Ports, Railroads and Merchant Marine
MNR	Mozambique National Resistance
Mt.	Metacal (Mozambique currency)
NRZ	National Railways of Zimbabwe
PIL	Project Implementation Letter
PP	Project Paper
PSC	Personal Services Contract
RCMO	AID Regional Commodity Management Officer
RCO	AID Regional Contracting Officer
REDSO/ESA	AID Regional Economic Development Services Office for East and Southern Africa
SADCC	Southern Africa Development Coordination Conference
SARP	Southern Africa Regional Program, USAID/Z
SATCC	Southern Africa Transportation and Communications Committee
UDI	Rhodesian Unilateral Declaration of Independence
USAID/Z	U.S. Agency for International Development, Zimbab Mission
USD	United States Dollar

1.0 BACKGROUND

1.1 SADCC and Regional Transportation

The Southern African Development Coordination Conference (SADCC) is an organization composed of nine member states - Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. The member states have committed themselves to cooperation and coordination in their development efforts as a means of better ensuring economic growth and reduced dependency on exogenous factors. SADCC, created in 1979, has allocated responsibility for planning regional programs along sectoral lines to its members. Mozambique has been assigned responsibility for transportation and communications.

The highest priority for SADCC in its initial years has been transportation and communications. The Southern African Transportation and Communications Commission (SATCC) was created as one of SADCC's first permanent bodies to oversee development in this sector. SATCC has carried out extensive planning and project identification. The sector represents the heaviest commitment of resources from donors and SADCC members. A total of 114 projects have been proposed and commitments received equal to US$719 million.

Southern Africa has a rather extensive railroad system which provides landlocked states access to ports (see Map 1). All SADCC states and most shippers in the region favor use of rail for long distance, high volume and international traffic. The objective of the SADCC states is to obtain maximum utility of existing railroad infrastructure and to prevent deterioration of roads by heavy loads. South Africa also has this policy. The Southern African Regional Transportation Strategy Paper estimates the current usage of ports for cargo (by tonnage) to and from SADCC states:

59% - South African ports
24% - Mozambican ports, and
17% - Tanzanian ports

1.2 Mozambique Economic and Political Context

The economic and political situations in Mozambique are closely intertwined. The country has large fiscal deficits and low export levels. Imports exceed exports by a ratio of 4.7:1 and foreign exchange is extremely scarce. Few consumer goods are available in local markets, which affects both the urban and rural dwellers.

Many factors contribute to the economic situation. At independence, the Mozambicans inherited an economy with significant foreign exchange deficits and without an adequate number of educated people to take over positions requiring

management and technical expertise. Since independence, economic policies and practices, especially until 1983, have exacerbated and further contributed to the dire economic conditions which currently prevail.

The Government of the People's Republic of Mozambique (GPRM) is also hindered in improving the economy because of the guerilla terrorist warfare waged against it by the externally-supported Mozambique National Resistance (MNR). The MNR strategy includes economic sabotage. On numerous occasions they have attacked major infrastructure, such as railroads, power systems and factories. Millions of dollars in capital investments and in market earnings have been directly or indirectly lost because of the MNR activities. Terrorist tactics result in the GPRM not having effective control of most of the countryside. The MNR, however, has not established "liberated" zones in the rural areas. The GPRM has had to finance a larger military force than would otherwise be the case

In an attempt to alleviate this situation, the GPRM signed an agreement at Nkomati in 1984 with the Republic of South Africa. The hope that the agreement would result in a lessening of armed attacks has proven unfounded.

The MNR activities have slowed the rate of implementation of the GPRM's economic policies, such as private sector initiatives and rehabilitation of existing infrastructure. Nevertheless, projects are underway to rehabilitate the ports and railroads since transit traffic is a major source of foreign exchange earnings, with a much larger potential.

1.3 Mozambican Railroad System

Mozambique plays a role as a regional transit center. The railroad systems are grouped into enterprises referred to as Caminhos de Ferro de Mocambique (CFM). The three main systems are CFM-Southern (CFM-S), CFM-Central (CFM-C) and CFM-Northern (CFM-N) (see Map 2). Maputo is the focal point of the CFM-S, consisting of two ports, the 74 km. Goba line to Swaziland, the 88 km. Ressano Garcia line to South Africa and the 534 km. Limpopo line to Chicualacuala on the Zimbabwe border. The latter line has been closed for some time because of the MNR activities. The Central system is composed of the port of Beira, the 318 km. Beira-Machipanda line connecting with the Zimbabwe rail system, and the Sena line connecting Beira with the Malawi rail system and with Moatize in northwest Mozambique. The Northern system consists of a 615 km. line between Nacala and Entre Lagos on the Malawi border which connects with the Malawi line to Blantyre. Due to the MNR activities, the line has been basically closed for the last two years. The port of Nacala is managed separately from the CFM-N. The CFM systems are directly responsible to the Direccao Nacional dos Portos e Caminhos de Ferro (DNPCF) in the Ministry of Ports, Railroads and Merchant Marine (MPRMM).

Although each enterprise is expected to be self-financing, this objective has not been fulfilled in recent years due to MNR-forced closure of some lines and operational inefficiencies. Because of their financial situation, the GPRM contributes funds for the operation of these vital operations.

The Beira-Machipanda railway line is a single track. Permissible maximum speed limits on the line are generally 60 km./hour, but between Almada and Machipanda, it is 45 km./hour. Grade limitations divide the line into definite sections: (a) Beira-Inhamatanda (approximately 98 km. where gradients are not significant), and (b) Inhamatanda-Gondola-Machipanda (approximately 217 km.). The adverse gradients are not continuous but occur in: (i) the Amatongas Escarpment in a 71 km. stretch between Inhamatanda and Gondola, and (ii) the 89 km. stretch between Almada and Machipanda where there are many severe curves. The line between Machipanda and Mutare is also steeply graded and curved. This line is operated by the National Railways of Zimbabwe (NRZ) using two diesel electric locomotives.

Motive power is primarily by steam. The pattern of locomotive operation is: (1) Beira-Inhamatanda-Beira (a round-trip of about 196 km.) twice daily using diesels or steam; (2) Gondola-Inhamatanda-Gondola (a round-trip of about 162 km.) using steam twice daily; and (3) Gondola-Machipanda-Gondola (a round-trip of about 273 km.) twice daily using steam.

2.0 PROJECT RATIONALE

2.1 Project Background

The Southern Africa Transport and Communications Commission and the USAID Southern Africa Regional Transportation Strategy Paper both identified the repair and rehabilitation of the Beira-Machipanda railway as a key transportation priority for the SADCC member states. This prioritization has also been endorsed by the SADCC Council of Ministers.

The major reasons for classifying this railway link as a top priority are:

(a) The Beira-Machipanda line is a primary alternative to South African routes for many landlocked SADCC member states to link domestic with international markets;

(b) The line is the shortest link to the sea for most of Zimbabwe and parts of Zambia, Zaire and Malawi; and

(c) The infrastructure exists although it needs to be rehabilitated.

The Beira-Machipanda line, covering 318 km., connects with the Zimbabwe railway near Mutare. Although the line is in operation, certain segments need emergency repairs. The scarcity of foreign exchange has prevented the GPRM from carrying out this work. Furthermore, numerous locomotives, both steam and diesel electric, are inoperative because of breakdowns and accidents. They have not been repaired because of a lack of spare parts, repair and testing equipment, foreign exchange and technical capacity. Also, some locomotives are currently not accessible for operation or repair--they are isolated on the Sena (Malawi) line because of the MNR activities. While the CFM-C personnel have some experience in casting parts for steam locomotives and in repairing steam and diesel locomotives, the higher level technical expertise is lacking because Mozambican staff were not adequately trained prior to independence. After independence, most Portuguese technicians departed and Mozambicans have assumed higher posts but with little opportunity to enhance their skill base.

The Beira-Machipanda railway is part of the CFM-C enterprise. The enterprise includes the Sena line which connects with the Malawi rail system and has a branch to the Moatize coalfields in northwestern Mozambique. The Sena system however, has been basically closed since October 1983 because of the MNR activities, although trains operate infrequently on the upper portion of the line. Rehabilitation of the Sena line between Dondo and Muanza was begun in 1982 with help from the German Democratic Republic (GDR), but was halted in 1984 due to the MNR attacks. Repairs were completed on kms. 0-30. Approximately 14 kms. are in need of major repairs and 45 kms. need small repairs.

Major rehabilitation will be required on the Beira-Machipanda line within the next five to ten years. This will include portions of the railway line between Nyamatanda and Gondola, and between Almada and Machipanda. Construction of a new line parallel to the existing single line between Beira and Dondo will be required to serve increased traffic to Zimbabwe and Malawi, after the Sena line reopens.

2.2 Government of the People's Republic of Mozambique Policies and Priorities

The GPRM places a high priority on its ports and railway to earn foreign revenue and to facilitate domestic imports and exports. Historically in Mozambique the transportation sector has been an important contributor of foreign exchange. Transit traffic currently is the main source of foreign exchange revenues. The GPRM policy is directed at rehabilitation and maintenance of existing infrastructure and productive assets, and improvement of technical skills. The

GPRM's stated goals for state enterprises apply to railways and ports: increased accountability and adoption of measures to increase profitability and establishment of effective procedures for control and supervision. It recognizes that the transportation sector must increase its efficiency and reliability in order to be competitive with alternative routes through South Africa.

The importance given to the Project by the Ministry of Ports, Railways and Merchant Marine was reflected in the full cooperation and collaboration of the DNPCF and CFM-C with the Project Paper team.

The priorities of the CFM-C and the DNPCF for the Project activities are:

1. Emergency track repair;
2. Maximum number of Garratt steam locomotives rehabilitated;
3. Beira foundry improvement with raw materials and technical assistance;
4. Steam workshop commodities, on-the-job training and emergency power;
5. Equipment and materials for the Gondola steam repair shop;
6. Diesel locomotives rehabilitated;
7. Equipment, testing equipment, tools, and materials for running level diesel repair; first phase workshop conversion; and improvement of the Beira diesel shed;
8. Shunting locomotive rehabilitated.

2.3 Other Donors

Other donor activities which focus on the CFM-C and on the Mozambique railroad enterprises in general have been taken into account in the design of the Project.

Rail India Technical and Economic Services (RITES) intends to provide management and technical assistance to the CFM-C for a two-year period. The agreement has been signed and funding has been committed by the Kuwait Fund. RITES will provide one financial advisor, three financial officers and one materials controller for CFM-C. The latter person will advise on organization of the inventory system and on store and stock keeping.

The funds will be used for: (a) supply of parts and equipment to repair GE diesel locomotives; and, (b) technical assistance for CFM-S and, to a lesser extent, for CFM-C (as explained above). Approximately $3 million would be allocated for repair of GE diesel locomotives to complement the use of IDA loan funds.

Under an IDA loan of $45 million for Transport Production and Essential Goods, $2.5 million will be for diesel hydraulic locomotives. This loan is supposed to be approved by the end of 1985. Locomotive parts will be allocated across the CFM enterprises.

The GPRM has a loan agreement with the GDR for the CFM-C for the rehabilitation of the Sena line, from Dondo to Derunde. Due to security problems on that line, however, the technical assistants have been pulled back to Beira. There are currently nine technical assistants in the following areas: four people in diesel workshop for maintenance (were in Inhaminga); one traffic expert; one statistician and planning officer in the railways; one technical expert in movement of trains; one railway and bridge maintenance expert; and one telecommunications expert. The contract is to be reviewed in September 1985 and, upon the request of the GPRM, the team will probably be reduced until such time as work can resume on the Sena line. The technical assistance team will not be involved in diesel maintenance.

The Netherlands is financing the first phase of the rehabilitation of the port of Beira. They have completed a masterplan development study and have committed to date US$31.7 million to immediate improvements. An engineering consultancy firm, Nedeco, has been helping with operations in the port since 1982. To date they have installed a flood light system, four new generators and port-side equipment. In addition, they have begun the organization of the container terminal area, and intend to start repairing the area from berths 6 - 10. They have also provided financial, operational, and engineering experts for port and railway operations. The contract with the Dutch government ends in September 1985, but it is expected to be renewed in some form.

The Portuguese and French are providing US$2.4 million and approximately US$5 million, respectively, for training. Their technical and financial assistance centers on development and the provision of three-year courses held at the Railway School in Inhambane. Currently, courses are given on track and civil works, traffic movement, shunting and traction. By 1987, courses will also be given in signaling-telecommunications, electricity-diesel traction, mechanics-diesel traction and maintenance of rolling stock (see Annex E, page E-38).

Additional assistance for improvements needed is included in a list of projects identified by SATCC and the Port of Beira Masterplan Study. SATCC is planning a major conference in March/April of 1986 of all donors interested in funding projects in the Beira corridor system, including the Beira-Machipanda and the Sena lines as well as the port. Preparation for this conference is currently underway. (For a review of projects to be included, consult Annex F, page F-7.)

2.4 Project Relationship to AID Regional Strategy

The Regional Development Strategy Statement (FY 1986) sets forth the AID strategy for transportation. The strategy limits assistance to rehabilitation of infrastructure or construction projects within a selected few corridors. It also calls for incorporating technical assistance and commodity support to improve maintenance capabilities. Assistance to transportation infrastructural development is expected to take place in the context of improvement in the operating efficiency of the transport systems, through emphasis on the institutional development of maintenance capacities, the strengthening of regional transport planning and the coordination of transport policies.

The Project centers on major repairs of existing tracks and locomotives. Furthermore, emphasis is placed on strengthening the institutional capacity to maintain and repair locomotives. Taking into account the importance of rail and port transfer of cargoes, the Project also provides funds for the repair of one shunting locomotive.

Besides directly relating to the transportation strategy laid out in the AID Regional Development Strategy Statement, the Project addresses one of the four priority projects identified in the Southern Africa Regional Transportation Strategy Paper (March 15, 1985), prepared for USAID by Louis Berger International. Based on a relative ranking of strategic considerations, with economic bottleneck relief as first, the paper recommends that the USAID strategy concentrate on four areas. First on the list is short-term support to the Beira-Machipanda railroad system, with medium-term support to the port of Beira.

3. PROJECT DESCRIPTION

3.1 Overview

The Project centers on improvements in the Beira-Machipanda railroad system because: (a) the line is a prime and potentially more cost effective alternative to South African routes for Zimbabwe and, to a lesser extent, three other landlocked SADCC member states for transport of cargo to and from international markets; (b) the infrastructure basically already exists; and, (c) it is the most secure railway route in Mozambique. Significant cost savings can be realized by Zimbabwe and other SADCC member states by rail transport through Beira, in comparison to South African ports. However, improvements are needed to attract a higher volume of traffic.

The line and locomotive fleet are in need of emergency repairs. Maintenance and repair efforts of the CFM-C have been hindered by lack of foreign exchange for commodities and by shortages of adequately skilled personnel. The proposed interventions will address the immediate needs to permit an increase in the tonnage carried on the Beira-Machipanda line. Port operations have been taken into account since they play a role in the amount of cargo that can be handled.

3.2 Project Strategy

The Project strategy is based on use of expertise within the SADCC member states. Zimbabwe has been identified as having private organizations capable of providing most of the services needed. Portuguese speakers are available in the region or could be obtained from Brazil or Portugual to carry out the necessary training. For these reasons, the PP mentions Zimbabwe as the focal point for acquisition of services and many commodities. Thus, within a SADCC regional context, the Project design incorporates technology transfer and private sector development, two themes which are objectives of AID's assistance programs.

Furthermore, the Project strategy is based on improvement in the institutional capacity and capability of the CFM-C to repair and maintain its fleet of locomotives. At the same time, the Project responds to the immediate needs for major repairs on locomotives and repairs to the track. The capacity to carry out track maintenance and locomotive maintenance and repairs will be enhanced through the provision of commodities. The capability for locomotive upkeep will be strengthened through on-the-job training, probably in Zimbabwe, and then in Mozambique.

3.3 Structure

Responsibility for Project implementation will rest with the Prime Contractor and with the CFM-C. The DNPCF in Maputo will be involved in a supervisory and planning capacity. The Project Implementation Committee will meet quarterly. The committee will consist of the CFM-C Project Director, the project manager, a DNPCF/Maputo representative, the Prime Contractor and a USAID/Z representative. A project manager, on a personal services contract financed under the Project, will be responsible for day-to-day oversight of the Project activities.

The total budget level for the Project is well established, but the exact requirements for any component may vary over the life of the Project to accommodate changing circumstances and requirements. A function of the Project Implementation Committee will be to identify and recommend adjustments required in budgetary allocations.

3.4 Project Objectives and Components

3.4.1 Project Goal - The Project goal is to increase real Gross Domestic Product (GDP) in the SADCC member states. Measurement of goal achievement will be that increases in GDP (value added) can be inferred from reduced marketing costs. The sub-goal is to reduce marketing costs for SADCC member states. A reduction of real transport costs for major exports, imports and domestic products will indicate achievement of the sub-goal.

3.4.2 Project Purpose - The purpose of the Project is to improve the capacity and efficiency of the Beira-Machipanda railroad system.

3.4.3 End of Project Status - At the end of the three-year life of this Project the following will have been achieved:

1. An increase in the average number of trains daily from 2.4 to 3.4, due to fewer derailments and faster turnaround times;

2. An increase in cargo from 280,000 to 430,000 tons;

3. An improved capacity and capability to maintain tracks and locomotives, make foundry cast spare parts for steam locomotives and repair locomotives, all resulting in better operations.

3.4.4 Project Outputs - The following outputs will be achieved by the Project:

1. Improved condition of the Beira-Machipanda railway track. Emergency track repairs will be completed on approximately 141 km. of line. Maintenance is carried out on a continuous basis.

2. More CFM-C Garratt locomotives will be operative and running. Eight steam locomotives and one shunting steam locomotive will have been rehabilitated. Major repairs will be completed on at least one steam locomotive in Beira. Two GE diesel locomotives will have been refurbished, that is major new parts will be installed.

3. Establishment of facilities for diesel locomotive running level maintenance in Beira. The first phase of conversion of part of the Beira steam workshop for diesel locomotive running (120,000 km.) maintenance will have been completed. The facilities will be in active use.

4. Increased availability of commodities for maintenance and repairs of locomotives. Beira and Gondola steam workshops, and the Beira foundry and diesel workshop have the necessary commodities and are functioning.

5. Enhanced capability of locomotive workshop and foundry personnel. The skill level of the foundry and the diesel and steam workshop staff and locomotive drivers will have increased. The foundry will be making more use of scrap materials for casting of parts for steam locomotives.

3.4.5 Project Inputs - A summary of inputs for the Project follows.

1. AID Contribution (Total $5,540,000)

(a) Emergency Track Repairs ($775,700)

Some 83,500 steel sleepers will be purchased. For financial reasons, it is anticipated that used, surplus steel sleepers available from the NRZ will be purchased after appropriate inspection has been carried out. Also fasteners, connectors and bolts will be procured. Provision is made for per diem expenses of a CFM-C representative to inspect all sleepers prior to their purchase. Minor tools and replacement parts for a track inspection trolley will be procured with AID funds. The GPRM will be responsible for procurement of all commodities for this component.

(b) Major Repairs to Locomotives ($2,672,500)

A total of 8 Garratt steam locomotives, and one steam shunting locomotive will undergo rehabilitation. Two GE diesel locomotives will be refurbished. Due to a lack of required skills and equipment at CFM-C and, taking into account logistics of the movement of locomotives and the capacity within the SADCC region, the emergency repair and refurbishing of locomotives will most likely be carried out in Zimbabwe.

Emphasis is on rehabilitation of Garratt steam locomotives since they are multipurpose machines able to manage the curves and steep slopes along the line. The shunting locomotive is important since it can be used on the main sidings or in port operations. Two General Electric, U.S.A., diesels will be refurbished. An inspector will be present, on behalf of the CFM-C, to oversee the work. Upon completion of the repairs, each locomotive will be test operated prior to its return to Mozambique under a one-year limited warranty by the contractor.

It is anticipated that some parts that are still useable on the diesel and steam locomotives will be replaced to bring the entire locomotive up to a higher running standard and greater life span. In such cases, the Prime Contractor will be responsible for the turning over of these parts to the CFM-C. The locomotive inspector will keep a record of these parts.

(c) Conversion of the Beira Steam Workshop for Diesel Repairs ($36,000)

Part of the steam workshop at Beira will be established for running level maintenance of diesel locomotives. AID will provide the commodities for the conversion which are not locally available. The Prime Contractor will arrange for consultancy services to draw up a design for the conversion and an implementation schedule.

(d) Commodities for Workshops and Foundry ($600,200)

Commodities for the Beira Steam and Diesel Workshops and Foundry, and the Gondola Steam Repair Shop

The supply and installation of workshop equipment, necessary for major repair and maintenance on steam locomotives, will be provided for the Beira workshop. Some spare parts and tools for repair of steam locomotives will also be made available. Some raw materials and supplies will be procured for the Beira foundry. Because the workshop in Gondola plays a major role in maintenance of steam locomotives that operate on the upper portion of the line, some commodities will be provided to ensure the capacity to carry out the essential work. Also equipment, tools and materials will be supplied for the Beira diesel workshop.

The Prime Contractor will be responsible for procurement of the commodities. Many of the commodities can be procured in Zimbabwe and originate from SADCC member states or the U.S.A. They will be sent to the CFM-C in batches from a control point. Those purchased from overseas will be shipped directly to Beira

(e) On-the-job Training ($46,900)

Approximately 34 person-months of on-the-job training will be carried out by the Prime Contractor during the rehabilitation and refurbishing of the CFM-C locomotives. Provision is made for accommodation, meals and a daily pocket allowance for the trainees. The Prime Contractor will be responsible for provision of transportation to and from the lodging and the workshops. Arrangements for accommodation will be made by the Prime Contractor. AID will also fund the railway ticket expenses between Mutare and the site, anticipated to be in Zimbabwe.

(f) Technical Assistance ($67,800)

Short-term Technical Assistance is Provided for On-the-job Training in Mozambique

Three short-term technical advisors will be provided for a total of 18 person-months through the Prime Contractor. A skilled foundry advisor will provide 6 months of on-the-job training for the Beira foundry staff. He will give guidance on organization, mixing of scrap and raw materials and quality control in the manufacture of spare parts. An expert on steam locomotive work will advise on organization of work and will oversee the major repair of at least one locomotive in Beira. Also, technical assistance will be provided on iron and steel plate work and mechanical work for major repairs.

AID will fund basic household furnishings and appliances, a generator (all of which can be purchased in the SADCC region), and the cost of transporting these to the Mozambique border, where CFM-C will assume responsibility. These provisions are made since neither adequate hotel accommodation nor adequate furnished rental units are available in Beira. The generator is essential because of frequent cut-offs of electricity to the city. When no longer required by the Project, the commodities will be signed over to the CFM-C.

(g) Evaluations and Financial Reviews ($30,000)

Two evaluations and two financial reviews will be carried out during the life of the Project. It is anticipated that one consultant will be required on each evaluation team. The financial reviews will be carried out by a firm on a contract with USAID/Z.

(h) Project Administration ($125,600)

AID will fund a project manager for approximately 34 person-months. Also, a Project vehicle will be purchased in Zimbabwe and funds are allocated for insurance, maintenance and rail transport to Machipanda. The vehicle, a passenger car, will be for use by the project manager, short-term technical advisors and participants at Project Implementation Committee meetings. Provision of a passenger vehicle is considered essential since neither taxi nor car rental services are available in Beira. In addition, funds are provided to cover the per diem and airfare for Mozambican officials to attend Project Implementation Committee meetings outside their country. Funds for the Project Implementation Committee meetings and the Project vehicle will be included in the prime contract.

(i) Contingencies and Cost Escalation ($1,185,300)

Funds for contingencies and cost escalation have been calculated at ten percent for each.

2. GPRM Contribution (Total $940,000)

(a) Emergency Track Repairs ($674,600)

The GPRM will provide approximately 32,000 cubic meters of ballast for 141 km. of repair work. New rails of 40 kg./m. will be laid on curves and in sections to be repaired that currently have 30 kg./m. rail. The rail will be taken from the stock already existing with the CFM-C. A Plasser tamper machine, which CFM-C has, will be made available to asist with the repair of some sections (see Section 6.1 for a list of sites). A minimum of two work gangs, each of 70 men plus two supervisors, will be engaged on emergency track repairs. The GPRM will be responsible for provision of security protection for the workers and tamping machine. The transport of supplies and workers will be provided by the CFM-C. The GPRM will provide an inspector to be on-site to determine the condition of sleepers prior to their purchase and prior to them being loaded on wagons for shipment.

(b) Major Repairs to Locomotives ($68,400)

The locomotives will be towed by the CFM-C to the Zimbabwe border. The GPRM will fund an inspector to monitor the workshop repairs in Zimbabwe. It is anticipated that the DNPCF will make arrangements to have the NRZ carry out some of this function on behalf of Mozambique.

(c) Conversion of Beira Workshop for Diesel ($9,000)

The GPRM will provide the labor and local materials for the first phase conversion of part of the Beira steam workshop for diesel locomotive running repairs. The supervision and direction for the conversion will rest with the CFM-C, based on design drawings and a work schedule developed by a consultant under the Prime Contractor.

(d) Workshops and Foundry ($7,900)

The GPRM will be responsible for securing and installing parts for the existing diesel generator in the steam workshop.

The cost of the transport of commodities in Mozambique for the Project as well as any port fees incurred will be covered by the GPRM. The GPRM will be responsible for the inventory of all commodities received under the Project and the maintenance of stock records.

Also the GPRM will provide the requisite labor and local materials for installation of equipment, relining of the foundry kiln and other such actions. To increase the ability of the Beira foundry to manufacture spare parts, the GPRM will take the required actions for the recycling of obsolete stock and parts. The DNPCF will be assisted by the technical advisor in foundry operations.

(e) Training ($6,000)

An estimated 32 people will be sent for a total of 1,020 person days of on-the-job training in Zimbabwe. The GPRM will continue to pay the salaries of the staff. Also, the GPRM will provide for the transportation of the staff to and from Machipanda.

(f) Technical Assistance ($1,000)

For the three short-term technical advisors, the GPRM will provide accommodation. It is envisaged that this will be a three-bedroom house. Also, the GPRM will cover the transport cost within Mozambique of commodities purchased by AID for the Project house.

(g) Project Administration ($3,200)

For the quarterly Project Implementation Committee meetings to be held alternatively in Beira and probably Harare or Bulawayo in Zimbabwe, the GPRM will cover the air fare cost between Maputo and Beira and the per diem for the MPRMM-Maputo representative. The CFM-C will provide logistical support for meetings held in Beira.

(h) Contingencies and Cost Escalation (169,900)

Contingency has been calculated at 10 percent and the cost escalation at ten percent.

4.0 COST ESTIMATE AND FINANCIAL PLAN

4.1 Project Costs

The Project cost is $6,480,000 over a three-year period. This sum reflects an AID contribution of $5,540,000 and a GPRM contribution of $940,000. The uses of AID and GPRM funds by component are summarized in Table 1.

Table 1
Uses of Financing ('000 USD, 42 Mt. = US $1)

	AID	GPRM	Total
Track Repair	775.7	674.6	1,450.3
Major Repair of Locomotives	2,672.5	68.4	2,740.9
Workshop Conversion	36.0	9.0	45.0
Commodities for Workshops, Foundry	600.2	7.9	608.1
Training	46.9	6.0	52.9
Technical Assistance	67.8	1.0	68.8
Project Administration	125.6	3.2	128.8
Evaluations	30.0	-	30.0
Contingencies	435.5	77.1	512.6
Cost Escalation	749.8	92.8	842.6
Total	5,540.0	940.0	6,480.0

The GPRM total contribution is $940,000, representing 15 percent of the total Project cost. The GPRM contributions include salaries of the track repair staff and trainees to be sent to the contractor workshops. It also includes transport of commodities, port fees, as well as towing within Mozambique of the locomotives to be rehabilitated and refurbished. The supply of local materials for workshop conversion, ballast and rails will be provided by the GPRM. The value of the GPRM equipment and facilities for the Beira-Machipanda railroad system have not been factored into their contribution.

The new GPRM recurrent costs associated with the Project will begin in the final Project year and are estimated to be $100,000. These costs are associated with maintaining the track and the locomotives and with purchasing fuel for the increased number of trains along the Beira-Machipanda route. (See Annex H, Page H-6 for further information.) These expenditures are expected to be met from the increase in foreign revenue receipts which will result from Project activities. The CFM-C ought to have authority over these expenditures which will be primarily in foreign currency (see Annex F, page F

AID funds will be expended in foreign currency and local currency (Zimbabwe dollars), as summarized in Table 2.

Table 2
Sources and Uses of Funds
('000 in US$ equivalents, 42Mt. = US$1, Z$1.58 = US$1)

	AID		GRRM	Total
	FX	LC		
Track Repair	25.0	750.7	675.8	1,451.3
Major Repair Locos.	1,012.5	1,660.0	68.4	2,740.9
Workshop Conversion	6.0	30.0	9.0	45.0
Commodities for Workshops, Foundry	207.6	392.6	7.9	608.1
Training	6.5	40.4	6.0	52.9
Technical Assistance	54.1	13.7	1.0	68.8
Project Administration	81.0	44.6	3.2	128.8
Evaluations	14.0	16.0	-	30.0
Contingency (10%)	140.7	294.8	77.1	512.6
Cost escalation (10%)	222.5	527.3	92.8	842.6
Total	1769.9	3770.1	940.0	6480.0

The percentage uses of AID's contribution of $5,540,000 are projected as follows:

Table 3
Uses of AID Financing

	Percentage
Track Repair	14
Major Repair of Locomotives	48
Workshop Conversion	1
Commodities for Workshop, Foundry	11
Training	1
Technical Assistance	1
Project Administration	2
Evaluations	1
Contingencies, cost escalation	21
	100

4.2 Financial Plan

The proposed expenditure schedule for the Project is as follows:

Table 4
Summary of Financial Plan by Year
('000 in US$ equivalents, 42Mt. = US$1)

	Year 1	Year 2	Year 3	Total
AID	2,647.4	2,797.1	95.5	5,540.0
GPRM	853.3	84.7	2.0	940.0

A summary of AID contributions by year are presented in Table 5. Annex G provides detailed cost plan a budgets, which are the bases of Tables 1-5.

Table 5
Summary of AID Expenditures By Year ('000 US $)

	Year 1	Year 2	Year 3	Total
Track Repair	775.7	-	-	775.7
Major Repair Locos	1,060.0	1,612.5	-	2,672.5
Workshop Conversion	36.0	-	-	36.0
Commodities for Workshops, Foundry	268.9	336.3	-	605.2
Training	6.5	40.4	-	46.9
Technical Assistance	-	57.4	10.4	67.8
Project Administration	45.9	39.9	39.9	125.7
Evaluations	-	15.0	15.0	30.0
Contingency (10%)	218.9	210.1	6.5	435.5
Cost escalation 10%	240.7	485.5	23.6	749.8
Total	2,647.4	2,797.1	95.5	5,540.0

A review of alternative methods of implementation and financing from the standpoint of accountability has been conducted. The preferred methods are: (1) an AID direct contract on a cost plus fixed fee basis; and, (2) a host country contract for AID-financed track repair commodities. The following sets forth methods of implementation and methods of financing.

Method of Implementation	Method of Financing
Commodities, U.S.A., Prime Contractor	Bank Letter of Commitment
Commodities (other), Prime Contractor	Reimbursement
Technical Assts., Training, All Other, Prime Contractor	Reimbursement
Commodities for Track Repair, Host Country	Direct Letter of Commitment
PSCs, Financial Reviews, USAID/Z	Reimbursement

5.0 PROJECT IMPLEMENTATION

5.1 Project Management and Coordination

Management of the AID Direct Contract will be through USAID/Z and the Southern Africa Regional Program (SARP), Zimbabwe, in collaboration with REDSO/ESA and the AAO/Maputo. The Regional Engineer in the SARP will take the main responsibility for overall management of the Project for AID. He will be assisted by a project manager on a personal services contract (see Annex L for a job description). REDSO/ESA will provide the services of a contracting officer. It is expected that the commodities management officer and the controller in USAID/Z will provide services as needed.

Implementation will be guided by a Project Implementation Committee comprised of a representative of USAID/Z, the CFM-C, the DNPCF-Maputo and the Prime Contractor. The project manager will also be a member of the committee. The committee will meet on a quarterly basis at alternating locations of Beira and probably Zimbabwe, the latter depending on the location of the Prime Contractor. The committee will be chaired by either the CFM-C or the MPRMM-Maputo representative. He will be responsible for convening the meetings. Prior to the disbursement of AID Project

funds, the GPRM will name the chairman and convene a committee meeting. The committee will be responsible for reviewing the CFM-C and the Prime Contractor quarterly progress reports and for approving their work schedules. The members will inspect work and training in progress. The Project Implementation Committee will also be responsible for the overall direction of the Project.

5.2 Contracting

An AID Direct Contract will be let for:

a) Major rehabilitation and refurbishing of locomotives;
b) Commodities for conversion of part of the Beira steam workshops for diesel repair and associated consultancy services;
c) Commodities for steam and diesel workshops and foundry;
d) On-the-job training;
e) Technical services;
f) Administration of funds related to Project vehicle and Project Implementation Committee meetings.

The Prime Project contract will be competitively let to a firm of the U.S.A. or a SADCC member country. The contractor selection committee will be composed of a DNPCF representative, the SARP Regional Engineer and the SARP Project Development Officer. The prime contract will be prepared by the REDSO/ESA Contracting Officer on behalf of, and at the request of, the GPRM. The contract will be based on costs plus a fixed fee. The parts made by the Prime Contractor for rehabilitation of steam locomotives and to supply the Beira workshop will be reimbursed at costs, after approval to proceed from the SARP Regional Engineer. Payment of the AID direct contract will involve AID payment upon technical approval by the SARP Regional Engineer and subsequent DNPCF approval.

Besides the prime contract, the Project will include contracts for: a) a personal services contract for a project manager; b) a contract for financial reviews; and, c) PSC contracts for Project evaluations.

The DNPCF will submit a list of commodities for track repair and their estimated costs to USAID/Z for approval to purchase. All AID-financed commodities for track repairs wil be procured by the MPRMM or directly by AID. If it is determined to be more effective to use Host country Contracting, the DNPCF contracting procedures and capabilities will be evaluated by AID before proceeding.

5.3 Project Training

Project training will be a mixture of CFM-C employee on-the-job training at contractor sites, on-the-job training in Mozambique, and simple instructional manuals in Portuguese. Scheduling of the training will be done by the prime Contractor in conjunction with the CFM-C and approved by the Project Implementation Committee. On-the-job training will be carried out over a period of six months as the locomotives are rehabilitated and refurbished. The Prime Contractor will be responsible for ensuring that appropriate Portuguese-speaking trainers are provided. Also, the Prime Contractor will provide transportation between the lodging and the work site, and arrange for accommodation.

Three short-term technical advisors will devote a total of 18 person-months to on-the-job training in Beira. The Prime Contractor will submit the resumes of candidates to the CFM-C Project Director and USAID/Z for approval. The Prime Contractor will be expected to solicit candidates from outside its organization, if suitable ones are not available internally. (Consult Annex E, Report 4 for job descriptions.)

Provision is made for simple instructional manuals in Portuguese for steam and diesel locomotive repair and foundry work. The Prime Contractor will be responsible for securing existing manuals in Portuguese. If the Project Manager and Project Director deem these inadequate, funds will be released for the development and printing of new manuals, which will probably be simple modifications of existing manuals printed in English and Portuguese.

5.4 Commodity Procurement

Commodities will include equipment, materials, parts, tools and raw materials. Equipment will be that manufactured in the U.S.A. and SADCC member countries plus isolated instances of off the shelf items of Code 941 and Code 935. Materials and replacement parts will include those manufactured in the workshops of the Prime Contractor or sub-contractor. Raw materials will be the base metals for the foundry which are manufactured in Zimbabwe and other SADCC member states. Details are found in Annex K.

Under the prime contract, items will be ordered by the Prime Contractor or his sub-contractor. Commodities purchased regionally will be brought to a central point for checking and bulk shipping. It is envisaged that the commodities will be sent to Beira and/or Gondola on a quarterly basis for ease of checking. Items ordered for the CFM-C from the U.S.A. will be shipped directly to Beira.

5.5 Disbursements

The MPRMM will be responsible for procurement of the AID-financed commodities for track repairs. AID will issue a Letter of Commitment for the purchase of the requisite items. Payment will be upon receipt of invoices approved by the SARP Regional Engineer.

To finance the commodities to be procured in the U.S.A. under the prime contract, AID/FM/PAFD will be requested to open a Bank Letter of Commitment with a U.S.A. commercial bank, naming the Prime Contractor as the approved applicant authorized to request the opening of letters of credit to individual commodity suppliers.

Disbursements for services under the prime contract will be monthly with a 45-day payment cycle. Disbursements on the non-U.S.A. commodities procured by the Prime Contractor will be monthly with a 30-day payment cycle.

On receipt of the contractor's monthly invoice, the SARP Regional Engineer will go to the prime contractor's office for verification prior to certifying it. He would then send copies to the CFM-C for their approval.

Standard procedures will be used for disbursements for the personal services contracts and the contract for financial reviews.

Implementation	Schedule	
		1985
Project Agreement signed	AAO/Maputo, GPRM	August
PIL issued for track repairs, tools and equipment	USAID/Z, GPRM	Sept.
CFM-C begins emergency track repairs manually and with one tamper machine	CFM-C	Nov.
Prime Project contract advertized	USAID/Z, REDSO/RCO	Dec.
		1986
Main Project contract signed	REDSO/RCO, Contractor	Feb.
9 steam locos brought to Zimbabwe at rate of 2 per month	CFM-C, NRZ Contractor	Mar/July

Loco inspected in Zimbabwe	GPRM	Apr./Aug. 87
2 GE locos brought to Zimbabwe	CFM-NRZ Contractor	April
GE locos inspected and parts ordered from the U.S.	Contractor	May
CFM-C completes emergency railway track repairs	CFM-C	July
On the job training of CFM-C staff in Zimbabwe	CFM-C, Contractor NRZ	July/Feb. 87
GE parts arrive from US	Contractor	Aug.
Steam locos return to Gondola/ Beira at rate of 1 every 5 weeks	Contractor, CFM-C	Aug./Aug. 87
Technical assistance to Beira foundry	Contractor	Oct./Mar. 87
First evaluation	USAID/Z, CFM-C	Oct.
		1987
GE locos return to Beira	Contractor, CFM-C	Jan.
Technical assistance to steam workshop in Beira	Contractor	Jan./Aug. 88
CFM-C rehab. steam locos in Beira	Contractor, CFM-C	Jan. 87 ongoing
Second evaluation	USAID/Z, CFM-C	Oct.
		1988
PACD		Sept. 88

6.0 PROJECT ANALYSES

6.1. Summary of Technical Analysis

6.1.1 Emergency Line Repairs

Emergency repairs are required in certain places alon the line. The current state of the track causes frequent derailments. From January to June 1985, parts of the Beira-Machipanda line were inoperative for a total of 537 hours. Particularly since trains only operate between 0600 an 1800 hours for security reasons, the hours lost are significant

The CFM-C has designated emergency repairs approximating 30 percent of needs within a 141 km. section of the line. For this, 83,500 C40 steel sleepers with fasteners, 5,000 pairs of connector plates and 20,000 nuts and bolts are needed. The NRZ has the requisite sleepers in its surplus stoc plus the other items. Ballast, amounting to 32,000 cubic meters, will be furnished by the GPRM. Some 8,000 cubic meters are already available along the line at km. 30 outside Dondo. The remainder of the supply will come from quarries near the line at kms. 90 and 220. The 40 km./m. rail will be furnished from existing stock. Table 6 provides information on the sections to be repaired and commodities required.

Due to the urgency of the work, a minimum of two work crews will be used, each of 70 men. Output of each crew using mechanical tools should be approximately 300 meters per day. I addition, a Plasser mechanical tamping rail laying machine will be used on the more difficult sections. The tamper will be use on Sections d, e, and f, leaving the easier Sections a, b, and to be done manually, but with the assistance of some mechanical tools (see Table 6). The Plasser would operate some 35 working days. Inspection of the emergency repairs will be done by the CFM-C.

The ballast and materials will be transported in side loading or bottom loading wagons to the site. Work crews and soldiers will also be transported to the site. Motive power will be by a sidings shunter and the men will sleep in secure areas at the end of the day. With the rainy season being January and February, work should be started before January and recommence after the rainy period.

Table 6
Requirements for Railway Line Emergency Repairs
Beira-Machipanda

Normally, 1500 sleepers or cross pieces are needed per kilometer of track. The dimensions of wooden ones are 2 m x 13 cm. x 24 cm. The line totals 318 kms. The sleepers needed below refer to C40 steel sleepers.

Section	Need
a) km. 90 - 105	± 8,000 sleepers, 3,000 cubic meters of gravel
b) km. 115-160	±25,000 sleepers, 4,500 cubic meters of gravel
c) km. 170-210	±22,000 sleepers, 4,500 cubic meters of gravel
d) km. 260-288	±18,000 sleepers, 4,000 cubic meters of gravel, unknown number of 40 kg. rails plus connector plates, nuts and bolts. Existing rail section is 30 kg.
e) km. 301-308	± 3,500 sleepers, 8,000 cubic meters of gravel unknown number of 40 kg. rails plus connector plates, nuts and bolts (39.7 mm. nut, 20.6 mm. x 113 mm. bolt)
f) km. 309-315	± 7,000 sleepers, 8,000 cubic meters of gravel

Total: 141 kms. ± 83,500 C40 steel sleepers, 32,000 cubic meters of gravel, unknown number of 40 kg./meter rails, connector plates, nuts and bolts.

Note: Only 30 percent of repairs are needed on each section.

6.1.2 Locomotive Rehabilitation

1. Steam Locomotives Garratt Type: The Garratt type steam locomotives are multipurpose due to their large motive power an their flexible wheel arrangement which enables them to negotiat curves easily. Their importance is shown by the fact that the CFM-C presently has five of them on loan from Zimbabwe. These plus three belonging to the CFM-C are operational. As seen fro Table 5 in Annex E, five locomotives of Belgian FVF manufacture (No.'s 952, 953, 960, 961, 962) plus three locomotives of Germa Henschel manufacture (971, 972, 975) will be rehabilitated unde the Project, probably in Zimbabwe. The locomotives would be towed as dead loads from Gondola to Machipanda by the CFM-C, an then from Machipanda to the contractor site in Zimbabwe by the NRZ. The contractor would assess the extent of the repairs needed for each locomotive and the quantities listed in the contract would be adjusted accordingly. It is anticipated that the work will be carried out by a private contractor and his sub-contractors in their workshops. Inspection and testing would be done by a DNPCF inspector (or the CFM-C could make arrangements with the NRZ inspectors). Work would continue up to completion and final testing, when the locomotives would return to Gondola under their own steam and with a one-year limited warranty from the contractor. The locomotives would be sent to Zimbabwe at the rate of two per month and return at the rate of one per month and a half.

2. Steam Shunting Locomotive Class 80: Some four shunting locomotives are needed to operate at the railway sidings and at the port of Beira. Presently three to four usually operate, including two 45-year old Baldwin U.S.A. types and two 35-year old Henschels. One additional operative shunter is needed since these shunting locomotives are frequently in the repair shop. Locomotive 84 will be taken from the four class 80, 30-year old Henschels presently inoperative and will be rehabilitated under the Project.

Locomotive 84 will be sent from Beira and be rehabilitated in the same manner as the Garratt locomotives. After testing and certification, it will be returned to Beira under a limited warranty from the contractor.

3. GE Diesel Locomotives Type U20C: Some 24 GE locomotives are with the CFM-C--two older ones are operational, four are new, some are stranded along the Sena line, seven are being scrapped, and the remainder are isolated at Inhaminga on the Sena line and presently cannot be brought to the Beira-Machipanda line. Only two of the diesels needing rehabilitation are at Beira and available for refurbishing under the Project. These are locomotives D26 and D33 which were part of the U.S.A. shipments in 1966 and 1968.

The locomotives would be towed as dead loads from Beira to Machipanda by the CFM-C and then from Machipanda to the contractor site by the NRZ. The contractor would assess the extent of the repairs needed for each locomotive and the contract would be adjusted accordingly. The Prime Contractor would order specialized parts from General Electric U.S.A. and await their arrival prior to commencement of major repairs. Work, inspection and testing would be carried out in the same manner as for the steam locomotives. Upon final testing, the diesel locomotive would be under a limited warranty for at least one year with the contractor.

6.1.3 Workshop Improvement and Commodities

Steam Workshop Beira: The workshop for steam locomotive repairs has most of the personnel and equipment required for major repair work, with the possible exception of boilers and fire boxes.

The inventory for major equipment shows most to be operative (Table 7, Annex E). One of the major exceptions is the Deutz diesel generator which is 8 cylinder and has one piston and cylinder lining broken. These parts are already on order. An existing 500 kw diesel generator operates at the port and 4 MAN diesel generators, each of 320 kw, have been installed but are not yet operating. This system is sufficient for both railway and port. In Beira, the city power supply varies in operation, but is currently more off than on. As a result, the workshops are rendered ineffective and inefficient without an alternative power supply. A stipulation should be made in the Project Agreement that no AID funds will be disbursed for the workshops until an emergency power system to the workshop is operative at all times. Another exception is the air compressors: one is operating and the other is inoperative because of a burnt out rotor. As a result, the compressed air system is alternated between the wagon shop and the steam locomotive repair shop. Due to the age of the inoperative air compressor, the Project should supply an air compressor for use solely in the steam locomotive workshop. Other equipment supplied would be minor. To be able to more effectively carry out major repairs, the steam workshop needs some tools and supplies. The Project will provide these.

Foundry Beira: A major foundry exists at the CFM-C in Beira. This foundry has been only partly functional because it is awaiting one casting crucible, which has been ordered. Parts have been made mainly in cast iron but there are also some in bronze.

More attention, however, ought to be given to quality control. Also, expansion into more phosphorous bronze, copper, brass, and aluminum are needed. One of the major deficiences of the foundry has been the limited use of scrap metals along with

the base raw material. This has to be corrected as scrap metal abounds. Lining of the kilns is necessary as well as the provision of some replacement parts. There is a highly competent mold maker. Finished molds are available in the workshop next to the foundry.

Steam Repair Shop Gondola: This is the running repair shop for steam locomotives used only on the Gondola-Machipanda section. It is important that Gondola satisfactorily performs maintenance and light repairs sufficient to keep the steam locomotives running. A list of requirements has been made and money budgeted for equipment, parts and materials for the Gondola shop.

Diesel Running Repair Shop Beira: Presently a diesel service depot exists at Beira and a running level repair shop at Inhaminga on the Sena line. The Inhaminga repair shop (for 120,000 km. repairs) is about 100 kilometers up the Sena line, which is presently closed. No major diesel repair workshop exists in the CFM-C. A proposal has been made by SOMAFEL, a Portuguese firm, for part of the steam repair workshop in Beira to be made into a diesel repair workshop. This would be done in two phases to suit the initial plan of having both diesel and steam repairs at Beira and the ultimate desire of having just diesel locomotives in operation. A preliminary outline drawing and work schedule were made by the PP team in conjunction with the CFM-C and the DNPCF for the first phase which will initially give a running level diesel repair status in the Beira workshop. A more detailed plan will be developed by a consultant under the Project. The Project will supply equipment, testing equipment, tools and materials for the workshop.

The MPRMM has negotiated with the Kuwait Fund for funding of diesel equipment, testing equipment, tools, materials, etc., which could be allocated to the CFM-C to bring the Beira diesel workshop up to running level standard. However, this may not materialize or may happen very late. The Project assumes that this may not happen or if it occurs, the Project commodity list would be adjusted to procure other major equipment to enable the diesel workshop to do major repairs. A World Bank loan of $2.5 million for two years will provide spare parts for diesels to facilitate running maintenance. The DNPCF is coordinating the commodities to be procured from both the Kuwait Fund and the World Bank so they complement each other.

6.1.4 Training and Technical Assistance

A list of artisans in the various sections of the workshops is provided in Table 8 of Annex E. Most artisans are generally one stage higher than their skills would normally permit. In addition, supervisors and managers have been promoted from the ranks of higher skills without managerial training. The Project intends to give on- the-job training to the CFM-C artisans at the contractor workshops while steam locomotive rehabilitation and diesel locomotive refurbishing take place. On-the-job training for steam locomotive personnel would consist of approximately eight persons for two months each. Training of diesel locomotive personnel would be provided for 12 persons for one month each. In addition, three artisans from the foundry would be given on-the-job training for two weeks.

Because of the important role of locomotive operators vis-a-vis maintenance and repair of locomotives, nine operators will be sent for a special two-week course in Zimbabwe.

Short-term technical advisors with Portuguese language capability will be provided by the Prime Contractor. Two specialists, for a total of 12 person-months, will be advisors to the steam workshop staff. One would focus on general steam work and the other would concentrate on ironwork plus mechanical locksmith skills. While their work will center on the Beira workshop, a minimum of two weeks should be spent at Gondola providing assistance. A skilled foundry supervisor will be made available for six person-months. He would advise the foundry workers in the skills and organization of mixing scrap metal with basic raw materials to produce quality products of cast iron, bronze, phosphorous bronze, copper, and aluminum. The emphasis would be on increasing CFM-C self-sufficiency in producing high-quality spare parts urgently needed for locomotive repairs.

The on-the-job training by short-term technical advisors has been concentrated to give training to a maximum number of employees within a reasonable time frame. The timing of the training at the contractor workshops will be coordinated with the staggered rehabilitation and refurbishing of locomotives so as to give training on all tasks. It is presumed that the CFM-C employees who have received on-the-job training will transmit this knowledge to others so that the benefit of the transmitted knowledge will show itself during the technical assistance period. It is anticipated that on-the-job training, technical assistance and commodities provided by the Project will result in the rehabilitation of three Garratts and two shunters in Beira. These locomotives will be added to the newly-operating fleet. The improvement in the capacity and capability to repair locomotives should be reflected in the number of rehabilitated locomotives completed in the Beira workshops in a reasonable length of time and in the rehabilitated locomotives not continually returning to the shop for repairs.

6.2 Summary of Institutional Analysis

The CFM-C is directly responsible to the DNPCF, within the MPRMM. Quarterly General Council meetings of the ministry serve as a coordination and management mechanism. Although, in principle, each CFM system is to be self-financing and semi-autonomous, in practice the main direction and financial decisions rest with the DNPCF and other high-level administrative units within the MPRMM. Also, the GPRM contributes funds for operation of the DNPCF enterprises, including the CFM-C. (Annex F provides more details on the institutional context of the Project.)

The need for staff with greater management and technical skills prevails throughout the DNPCF, including the CFM-C. The policy is to strengthen the provision of technical education within the country. A project, financed by the French and Portuguese governments, provides financial and technical assistance in the organization and implementation of a system of training for railroad personnel. The training focuses on three-year courses at Inhambane Railway Training School. After completion of a course, the trainee returns to his respective enterprise.

Personnel are basically considered as employees of a particular enterprise, with the exception of high-level managers and technicians. Within an enterprise, however, staff may be transferred or seconded. The GPRM has a policy of not employing new people in the public sector.

In regard to the Project, no new staff are required for implementation. However, upon completion of the conversion of part of the steam workshop for diesel repairs, temporary transfer of staff from the Inhaminga diesel workshop may be envisaged. The Project complements the formal railway training program by providing on-the-job practical training for approximately 32 CFM-C staff. It can be anticipated that those trained under the Project will remain in their jobs servicing the Beira-Machipanda railroad line.

The CFM-C will receive a large quantity of commodities under the Project. Equipment will be registered on the inventory lists and tools, supplies and materials will be entered on stock cards following the normal CFM-C practice. The stores will release an item upon receipt of a requisition signed by the chief of the department. The RITES technical assistant anticipated under the Kuwait agreement is expected to provide guidance for carrying out improvements in record keeping and organization of commodities in the CFM-C stores.

6.3 Financial Analysis

6.3.1 Feasibility of the Financial Plan

The GPRM contribution to the Project will be in local currency equalling $940,000. Of this amount, 39 percent represents existing commodities and salaries of existing staff. An additional 16 percent is attributable to transport costs using the Beira-Machipanda line and, to a lesser extent, port fees, both calculated at market rates. Approximately 27 percent of the GPRM contribution represents new expenditures for commodities, primarily ballast.

Most of the GPRM funds will be required during the first year of the Project. This results from the urgent need for emergency track repairs. The main expenditures for this activity will be ballast, labor and transport. Some 8,000 cubic meters of ballast are already available to begin the work. The PP team concluded that this plan is feasible and that the funds will be forthcoming in a timely manner.

6.3.2 Current and Projected Financial Position of CFM-C

The CFM-C and the Mozambique railways and ports in general have been operating at a deficit. This situation is largely attributable to the MNR-forced closure of some of the lines. In 1983 and 1984, the CFM-C deficit constituted 41-42 percent of all CFM system deficits. The closure of the Sena line of the CFM-C since late 1983 mainly accounts for the CFM-C deficit but, also, the slow train turnaround times and slow speeds in transit on the Beira-Machipanda line contribute to the net loss.

The income position of the CFM-C is affected not only by the revenue losses associated with the resulting decline in tonnage miles, but also by the fact that many of the operating costs are actually fixed. Of particular importance are labor costs. While the CFM-C gross receipts from rail activities were declining by 81% from 1981 to 1984, labor costs dropped by only 15%. Other expenses have gone down more or less proportionately with the drop in rail traffic and revenue.

Losses are incurred in both the foreign exchange and local currency accounts. International traffic on the Malawi line has declined precipitously since 1982, falling from over a half million tons carried in that year to just over 11,000 tons in 1984. (The line was closed in October 1983, but some special cargoes have been transported since then.) The accompanying loss in gross receipts combined with constant salary costs have created a dismal financial picture of the CFM-C in general. Finally, the foreign exchange income situation is made worse by two rental expenses: (1) charges paid by the CFM-C for the NRZ

wagons which spend too much time in Mozambique due to slow turnaround times; and, (2) leasing of four NRZ steam locomotives. In fact, roughly 60% of all the CFM-C foreign exchange receipts are returned to the NRZ in the form of rental fees plus traffic.

This Project will significantly improve the financial performance of the CFM-C. Efficiency improvements that increase locomotive effectiveness, increase transit speeds and reduce turnaround times will yield more tonnage miles of commodity deliveries, thereby raising gross receipts. On the cost side, there will be savings on locomotive and wagon rentals. It is projected that the increase in receipts and reduction in costs will have the following net revenue impacts:

Net Revenue Increases (in US $)

Currency	Foreign Exchange	Local
Year 2	$310,000	$37,500
Year 3	$620,000	$75,000
Year 4	$1,240,000	$150,000
Year 5+	$2,480,000	$300,000

The net effect will be to put the Beira-Machipanda line on a sound financial footing by increasing net revenues and, by virtue of lowering the unit labor cost of operating the line, improving net profitability. Fixed costs, including a large labor bill, on the closed Sena line will continue to place the CFM-C in an overall deficit situation until the line reopens. The losses on the Malawi line can be only partially offset by the improved financial performance of the Beira-Machipanda line and the system as a whole will continue to operate at an overall loss. Therefore, the GPRM financial support will be necessary for the foreseeable future. The PP team has concluded that such support will be continued. The CFM-C operated railways are economically, as well as politically, important to Mozambique and the other SADCC member states.

The Project will definitely place the Beira-Machipanda line in a positive net revenue position, lessening the financial burden on the GPRM resulting from the closure of the Sena line. When the Sena line is again secure, rehabilitation efforts on rail and locomotives will be necessary to get efficiency levels back to normal standards. (The GDR assistance is likely to be forthcoming for the track repairs.) When that is done, given potential traffic growth rates and with some minor tariff and cost account adjustments, there is no apparent reason why the CFM-C cannot operate at the break-even point.

6.4 Summary of Economic Analysis

Since a relatively small expenditure of US$6 million is being proposed to almost triple the carrying capacity of a rail line without an investment in new assets, it would be expected that the Project yields a favorable economic rate of return. In addition to the favorable economic conclusions, the Project can be supported for its strategic importance to the regional transport system as the rehabilitation of the Beira-Machipanda rail link will strengthen an important route to the sea for several landlocked SADCC nations. It would help to limit the affect on transport should political unrest heighten in South Africa, the other major access route to the sea for Zimbabwe.

The port of Beira was completed in the 1920's and was connected to railways from Zimbabwe (then Rhodesia), Zambia and Malawi. In the 1960's, 90% of Zimbabwe's overseas trade passed via either Beira or Maputo. Zimbabwean traffic over the Machipanda- Beira line was approximately 900,000 tons in 1963 but the traffic pattern began to change in 1965 and declined drastically from 1973 onwards. From 1975-1980, the Zimbabwe-Mozambique border was closed. During this period, the port of Beira as well as the rail line deteriorated significantly. With Mozambican independence, there was an exodus of skilled workers and few Mozambicans were able to fill the void left by the Portuguese. This was, and remains, particularly true for middle-level management and skilled artisan positions.

All these problems have been exacerbated, particularly within the past five years, by security problems related to the emergence of the MNR. MNR activity was concentrated on the Machipanda-Beira corridor (the road, railways and pipeline) in 1982 and early 1983. Since then, however, both Zimbabwean and Mozambican troops have been employed to keep the road, rail and pipeline corridor open to Zimbabwe. In 1984, there were no reported security problems on this line and the corridor remains well protected and relatively secure.

While Mozambique has been grappling internally to address these problems, many external factors have come to influence transport and affect the routine of traffic. The rail link to South Africa through Beitbridge was completed in 1974 and the Tazara line connecting Zambia to Dar es Salaam opened in 1975. With the reopening of the Zimbabwe-Mozambique border in 1980, some international traffic began to move on the Machipanda-Beira line. However, the bulk of the traffic still passes via South Africa.

The Machipanda-Beira railway rehabilitation project will increase the carrying capacity of the line from a present level of about 300,000 tons per year to 880,000 tons per year in three years, although it is anticipated that not until Year Five will the traffic reach this limit. This assumes that the current average of 2.4 trains per day will increase to 6.5 trains daily. These trains are assumed to operate 300 days per year with each carrying 15 wagons loaded to 30 tons. Although this capacity will be attained by the end of the Project, it is assumed that an additional two years will be required before traffic increases are sufficient to approach the new capacity limits. This is due to the need of the rehabilitated line to effectively compete with the South African transport system, which is relatively efficient in getting shipments delivered with a minimum of delays and uncertainty. However, by the end of the Project, the average number of trains daily should increase to 3.4 and the total tonnage carried that year should reach 430,000 tons.

The Project assumes that the Beira-Machipanda system will be able to compete with South Africa sufficiently to divert 400,000 additional tons of traffic from landlocked SADCC member states to Beira within five years of the Project's initiation. These increases are assumed to be gradual over the five-year period. It is anticipated that the security situation along the line remains relatively stable.

Due to the uncertainty of the political and economic events in Mozambique, the economic analysis of the Project tends to be very conservative in the selection of benefits, with a tendency to err more on the side of underestimating than overestimating them.

The economic costs of the Project are based on the financial costs to Mozambique expressed at a shadow price for Mozambican currencies which, being about 4% of the official exchange rate, assigns a low relative weight to these expenditures. Benefits of US$6.20 per additional ton shipped to and from Zimbabwe are estimated to accrue to Mozambique, while the benefits to Zimbabwe are estimated at US$12.80 per ton. This scenario results in an economic rate of return of 72.9% which is very high, but not completely unexpected given the large projected benefits resulting from a relatively small expenditure. Upon designing alternative scenarios with far lower benefits (half the tonnage and a reduction of benefits to Zimbabwe of 25%), the economic rate of return drops as low as 35.6%. This is still quite high and probably a strong indication of the Project's economic viability.

Since the Project will improve the utilization of existing assets rather than finance new capital equipment, its completion does not imply the generation of a new recurrent cost burden. However, the Project assumes that, as a result of the

railway improvement, Mozambique will perform the necessary maintenance to keep the Machipanda-Beira line at the standards reached by the rehabilitation. These expenditures are estimated at approximately $100,000 per year.

6.5 Summary of Social Analysis

Zimbabwe, Mozambique and, to a lesser extent, Malawi, Zambia and Zaire will benefit from Project improvements in the Beira-Machipanda railroad system. Zimbabwe will benefit since it is a major user of the line. The benefit will be lower transport costs. The cost savings will be manifested in a savings in foreign exchange as well as a direct savings to importers and exporters. In Zimbabwe, the primary users of the line are, and will continue to be, the private sector. The savings gained is likely to be invested in further private sector activities and reflected in higher prices to agricultural producers.

Mozambique will benefit from an increase in foreign revenue generated as a result of the Project. Approximately 20 percent of the increased revenue is expected to be reinvested in the CFM-C, including maintenance of the Beira-Machipanda railroad system. The remainder will be controlled by the Bank of Mozambique. Based on the economic policies of 1983, the foreign exchange will most likely be spent on imported goods to rehabilitate the manufacturing and light industrial sectors, as well as critical agricultural inputs.

6.6 Summary of Environmental Analysis

The Project entails repairs to an existing rail line and locomotives plus the supply of commodities for existing workshops and foundry. Any change to the existing steam workshop buildings to permit diesel maintenance work will be minor. On-the-job training and technical assistance will be provided. Repairs to the railway line will take place within the right of way and in sparsely populated areas. Railway usage will increase causing greater frequency of noise and smoke pollution from the locomotives, but for small periods of time and within a circumscribed distance of the railway line. The net impact will be positive due to the greater flow of goods to and from the port of Beira, from both domestic and international markets.

A Negative Determination is recommended.

6.7 Energy Analysis

A focal point of the Project is rehabilitation of coal burning steam locomotives and refurbishing of diesel electric locomotives. Also the Project centers on increasing the capability and capacity of the CFM-C to maintain and repair their existing fleet. The question of first cost of new

locomotives combined with running costs does not appear as an alternative. In addition, both diesel and coal are non-renewable sources and at present both are imported, the coal coming from Wankie in Zimbabwe. The Project will render existing locomotives more cost effective and more energy efficient.

However, when plans are made for the purchase of new locomotives, a comparison of energy costs ought to be factored into the decision. The forthcoming SATCC meeting on the Beira corridor should consider funds for a comparative economic analysis of diesel and steam locomotives, since preliminary plans are for gradual replacement of steam with diesel locomotives.

7.0 MONITORING, REVIEWS AND EVALUATIONS

7.1 Monitoring and Reviews

Monitoring of the Project will be done through quarterly Project Implementation Committee meetings attended by all concerned parties, USAID/Z, the CFM-C, the DNPCF-Maputo and the Prime Contractor. Meetings will be held alternately in Beira and the Prime Contractor site. The meetings will focus on past actions and work done combined with future actions and work to be done. The discussions will be based on the CFM-C and the Prime Contractor quarterly reports on Project progress and their draft implementation schedules for the forthcoming quarter. The parties will also inspect work and training in progress.

Monitoring will also be done on a monthly basis when the Prime Contractor submits monthly invoices of work done, commodities procured and/or services rendered. Monitoring of work at the contractor sites will be done by the SARP Regional Engineer in Harare or the project manager. In Mozambique, the monitoring will be done by the CFM-C Project Director.

Day-to-day monitoring at the contractor sites will be done by a locomotive inspector for CFM-C, and trainees. In Mozambique the monitoring will be carried out by the Project Director.

Financial monitoring will be done through USAID/Z and, as necessary, RFMC. Also the Project will undergo two special financial reviews, carried out through a contract with USAID/Z. The financial reviews should be done in the last half of 1986 and at the end of the Project.

7.2 Evaluation

Active implementation of most of the Project components will be delayed initially by the need to open bids for the main Project contract. For this reason the first evaluation should not be scheduled before October 1986. The evaluation team should consist of a Project Officer, an AID engineer, a locomotive workshop trainer-engineer, and an AID contracting officer or commodity procurement officer (part-time).

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The second evaluation should take place not earlier than September 1987, when all locomotive rehabilitation work is done and the CFM-C employees are repairing locomotives in Beira. The actual date for the second evaluation should be set at the time of the first evaluation. The second evaluation should be carried out by a Project Officer, an AID engineer, and a transport economist.

8.0 WAIVERS, CONDITIONS PRECEDENT, AND CONVENANTS

8.1 Waivers

No waivers are required at this time. Following competition, it is anticipated that a waiver will be processed under Handbook 1B, Paragraph 5.D.10.a (2) to authorize the NRZ to be approved as a sub-contractor to a private contractor for project services. The NRZ has special facilities to carry out certain repair functions on steam locomotives which are not available in the workshops of the private firms in Zimbabwe.

8.2 Conditions Precedent

The conditions precedent to disbursement of funds in the Project are detailed in the draft Project Authorization. In brief these are:

1. The GPRM will submit, in writing, the name of the individual in the CFM-C who will be Project Director and the name of the responsible individual in the DNPCF in Maputo who will oversee Project activities.

2. The GPRM will submit, in writing, the name of the individual who will chair and convene the Project Implementation Committee meetings. A meeting of the committee must be held prior to the disbursement of any Project funds.

3. Prior to disbursement of funds in connection with the commodities for the steam workshops and the foundry, the DNPCF shall provide evidence that emergency power generation to the Beira steam workshop is available and can be operated at all times.

8.3 Covenants

The covenants are detailed in the draft Project Authorization. The following provides a summary of these:

1. The Grantee shall provide the required contribution for the local currency costs of the Project in a timely manner, in compliance with the decisions of the Project Implementation Committee.

2. The Grantee shall provide in a timely manner all personnel required of the Grantee for the implementation of this Project, in compliance with the decisions of the Project Implementation Committee.

3. The Grantee shall assure that all commodities procured for the Project will be used exclusively for the Project and that stock records and requisitions for supplies shall be carefully kept and monitored.

4. The Grantee shall endeavor to have all emergency railway line repairs completed by March 1987.

5. The Grantee shall endeavor to have completed the first phase of the conversion of part of the steam workshop in Beira to diesel prior to September 1986.

6. The Grantee through the DNFPC shall submit quarterly reports on Project progress. These shall include an update on other projects of the CFM-C and actions.

UNCLASSIFIED STATE 240017

(5) ACTION AID-3 INFO AMB/DCM R/F

ZVT
VZCZCSB0892
OO RUEHSB
DE RUEHC #0017 2180201
ZNR UUUUU ZZH
O 0602022 AUG 85
FM SECSTATE WASHDC
TO RUEHNR/AMEMBASSY NAIROBI IMMEDIATE 7835
INFO RUEHSB/AMEMBASSY HARARE IMMEDIATE 7634
BT
UNCLAS STATE 240017

ANNEX A

LOC: DISK 195 338
06 AUG 85 0203
CN: 22924
CHRG: AID
DIST: AID

DATE AUG 6 1985

	ACTION	INFO
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AIDAC FOR REDSO/ESA

E.O. 12356: N/A
TAGS:
SUBJECT: SOUTHERN AFRICA REGIONAL TRANSPORT PROJECT (632-0231)

1. DRAFT PID FOR SUBJECT PROJECT HAS BEEN REVIEWED INFORMALLY. WE HEREBY CONFIRM THE DELEGATION OF AUTHORITY TO USAID/ZIMBABWE FOR PID AND PP APPROVAL AND PROJECT AUTHORIZATION (SUBJECT TO REDSO/ESA CONCURRENCE) FOLLOWING THE BUDGET AND BASIC PROJECT OUTLINE AS DESIGNED IN THE PID.

2. IEE HAS BEEN APPROVED BY BUREAU'S ENVIRONMENTAL OFFICER. WILL POUCH SIGNED COPY ASAP.

DATE 8-12-85
ACTION TAKEN

3. CN FORWARDED TO CONGRESS ON JULY 25. DELAY DUE TO LATE-HOUR RECEIPT OF PROJECT FUNDING INFO; AND OTHER HOLDS ON MOZAMBIQUE AND ZAMBIA AND AGENCY REVIEW OF POSSIBLE REPROGRAMMING ACTIONS WHICH MIGHT HAVE REDUCED FUNDS FOR THIS PROJECT. APPORTIONMENT REQUEST FORWARDED TO OMB AUG. 1. CN WAITING PERIOD EXPIRES ON AUGUST 9, AFTER WHICH TIME AUTHORIZATION AND GRANT AGREEMENTS MAY BE SIGNED.

4. FYI G. MORRIS HAS REDRAFTED THE INTRODUCTION TO THE PID IN ORDER TO CLARIFY AND STRENGTHEN THE RATIONALE FOR A REGIONAL APPROACH TO RELIEVING THE KEY TRANSPORTATION BOTTLENECKS IN SOUTHERN AFRICA. WILL POUCH REVISED TEXT OF PID ON DISKETTE TO USAID IMMEDIATELY. END FYI.
SHULTZ
BT
#0017

NNNN

UNCLASSIFIED STATE 240017

690-0209.1

JUN 14 1985

DATE

	ACT	
	✓	
CPD	✓	
HRD		
AGR		
CONT		
ADM		
RDO	✓	
EHRDM		✓
PM		

DUE DATE 6/19/85

ACTION TAKEN

NAN

B-1

REPÚBLICA POPULAR DE MOÇAMBIQUE

COMISSÃO NACIONAL DO PLANO
SECRETARIA DE ESTADO DA COOPERAÇÃO INTERNACIONAL
Av. Ahmed Sekou Touré n.º 21
Caixa Postal 1101 — Maputo

Mr. DALE PFEIFFER
Regional Development Officer
United States Agency for International Development
1 Pascoe Avenue
Harare
Zimbabwe

Sua referência	De	Nossa referência	Data
		1465/GSE/SECI/85	12/6/85

ASSUNTO: REQUEST FOR FINANCIAL ASSISTANCE

Dear Sir,

The Government of Mozambique wishes to request financial assistance for improvement of the Beira-Machipanda railway system. There is an immediate need for approximately five million dollars (U.S.) of donor assistance for repair of tracks and locomotives, commodities and training.

I should be grateful for your favorable consideration of this request and shall request you to send as soon as possible the draft project documentation and the draft project agreement.

Yours Sincerely

Secretary of State for International Cooperation

António Sumbana

c.c. - Alan Silva USAID

BEST AVAILABLE COPY

B - 2 690-0209.1 13 JUL 1985

SOUTHERN AFRICA TRANSPORT AND COMMUNICATIONS COMMISSION

P. O. BOX 2677
TELEPHONE 29214
TELEX 6-597
MAPUTO

JUL 8 1985
DATE

	ACTION	INFO
D		✓
CDO		
HRD		
AGR		
COMT		
ADM		
Rep	✓	
COMMON		✓
RP		✓

DUE DATE: 7/12/85
ACTION TAKEN: EXCEL
FILE:

Mr. Dale Pfeiffer
Regional Development Officer
United States Agency for International Development
1 Pascoe Avenue
Harare
ZIMBABWE

OUR REFERENCE: TU 325/85
DATE: 10.6.1985

Dear Sir,

SATCC Regional Transportation Programme
Request For Financial Assistance

The Southern Africa Transport and Communications Commission, on behalf of the Government of Mozambique wishes to request financial assistance for the improvement of the Beira-Machipanda Railway System.

There is an immediate need for emergency repairs, equipment components and training, amounting to approximately five million United States dollars of donor assistance.

Your early decision concerning the above proposal would be highly appreciated.

Yours faithfully,

SOUTHERN AFRICA TRANSPORT AND COMMUNICATIONS COMMISSION MAPUTO

P. Figueiredo
for: Dr. S. M. Bhatt
Chairman of the Co-ordinating Committee of SATCC

cc. Mr. Alan Silva
USAID
Maputo

COST PLAN AND FINANCIAL BUDGET FOR LIFE OF PROJECT IN CONSTANT US$ EQUIVALENTS

	Year 1 Oct 85/Sept 86			Year 2 Oct 86/Sept 87			Year 3 Oct 87/Sept 88		
	AID		GPRM	AID		GPRM	AID		GPRM
Description	FX	LC		FX	LC		FX	LC	
A. Track Repair									
1. Supply of C40 sleepers connectors & bolts		620,350							
2. Supply of tools & equip.	15,000	16,000							
3. NRZ transport of 1 & 2 (2 containers, wagons)		113,890							
4. CFM transport of 1 & 2 (2 containers, wagons)			36,242						
5. Supply ballast, rails, labor, supervisors			602,138						
6. CFM transport of 5			32,808						
7. Operation and transport of tamper			3,000						
8. Spares for tamper	10,000								
9. Sleeper inspector CFM		460	335						
Sub-total A	25,000	750,700	74,583						
B. Rehab. of Steam Locos									
1. 8 Garratts rehabed in Zim	75,000	150,240		172,000	1,065,440				
2. 1 shunter rehabed in Zim	20,000			40,500	120,500				
3. NRZ transport of locos		19,000			82,300				
4. CFM transport of locos			8,730			39,650			
5. Loco Inspector			4,000		6,000	7,200			
Sub-total B	95,000	169,240	12,730	212,500	1,274,240	46,850			
C. Refurb GE Diesel Locos									
1. 2 GE locos refurb in Zim		80,000			115,000				
2. GE parts proc. in US (CIF)	705,000								
3. NRZ transport of locos		10,760			10,760				
4. CFM transport of locos			4,000			4,850			
Sub-total C	705,000	90,760	4,000		125,760	4,850			

Description	Year 1 Oct 5/Sept 86 AID FX	LC	GPRM	Year 2 Oct 86/Sept 87 AID FX	LC	GPRM	Year 3 Oct 87/Sept 88 AID FX	LC	GPRM
D. Workshop Steam & Foundry Beira									
1. Equip. & spare parts	3,000	175,350		83,400	104,610				
2. Foundry rehab. & spare parts	1,000	9,620		7,000	17,720				
3. Materials for steam workshop & foundry	3,000	10,000		12,000	10,000				
4. NRZ transport (4 containers, 3 wagons)		2,870			2,870				
5. CFM transport (4 containers, 3 wagons)			2,868			2,868			
Sub-total D	7,000	198,020	2,868	102,400	135,200	2,868			
E. Repairshop Steam Gondola									
1. Equipment	1,500	10,000		10,000					
2. Parts, tools, materials		18,000							
3. NRZ transport (1 container)		380							
4. CFM transport (1 container)			201						
Sub-total E	1,500	28,380	201	10,000					
F. Workshop Diesel Beira									
1. Equipment, parts				60,000	27,000				
2. Tools GE US (CIF)	25,000								
3. Materials		3,620							
4. NRZ transport (2 containers, 1 wagon)		380		1,700					
5. CFM transport as per 4			482			1,445			
Sub-total F	25,000	4,000	482	61,700	27,000	1,445			
G. Workshop Beira Conversion to Diesel									
1. Design first phase - short-term consultant	6,000								
2. Materials		30,000							
3. Construction			9,000						
Sub-total G	6,000	30,000	9,000						

Description	Year 1 Oct 5/Sept 86 AID FX	LC	GPRM	Year 2 Oct 86/Sept 87 AID FX	LC	GPRM	Year 3 Oct 87/Sept 88 AID FX	LC	GPRM
H. Training									
1. Instruct. manuals - diesel	3,000								
2. Instruct. manuals - steam foundry	3,500								
3. CFM staff on job Zim steam 20.5 pm					18,860	3,622			
4. CFM staff on job Zim diesel 12 pm					11,040	2,120			
5. CFM staff on job Zim foundry 1.5 pm					1,380	265			
6. Overhead (3-5)					7,550				
7. NRZ transport					1,583				
8. CFM transport						55			
Sub-total H	6,500				40,413	6,062			
I. Technical Assistance									
1. 3 TA for total 18 pm				31,050			10,350		
2. Overhead on 1					8,280				
3. Transport & misc.				6,600					
4. Accommodation				6,000	5,064	428			428
5. NRZ transport (1 container)					379				
6. CFM transport (1 container)						200			
Sub-total I				43,650	13,723	628	10,350		428
J. Project Administration									
1. Project quarterly review		2,700	1,000		2,700	1,000		2,700	1,000
2. Project Manager 34 pm	23,000	10,000		26,000	9,200		26,000	9,200	
3. Project vehicle, misc.	2,000	8,000		2,000			2,000		
4. Transport		100	201						
Sub-total J	25,000	20,800	1,201	28,000	11,900	1,000	28,000	11,900	1,000

Description	Year 1 Oct 5/Sept 86 AID FX	LC	GPRM	Year 2 Oct 86/Sept 87 AID FX	LC	GPRM	Year 3 Oct 87/Sept 88 AID FX	LC	GPRM
K. Evaluations									
1. Evaluations				7,000			7,000		
2. Financial Reviews					8,000			8,000	
Sub-total K				7,000	8,000		7,000	8,000	
TOTAL	896,000	1,291,900	705,065	465,300	1,636,200	63,703	45,400	19,900	1,428
Contingency 10%	89,600	129,200	70,506	46,500	163,600	6,370	4,500	2,000	142
Cost Escalation 10%	98,600	142,100	77,557	107,500	378,000	14,715	16,400	7,200	514
Totals	1,084,200	1,563,200	853,128	619,300	2,177,800	84,788	66,400	29,100	2,084
Total AID	5,540,000								
Total Mozambique	940,000								
	6,480,000								

Annex C

LOGICAL FRAMEWORK MATRIX

PROJECT GOAL	MEASURES OF GOAL ACHIEVEMENT	MEANS OF VERIFICATION	ASSUMPTIONS
Increase in real GDP in SADCC member states.	Increases in GDP (value-added) can be inferred from reduced marketing costs.	National level statistics.	SADCC member states cooperate for their mutual benefit.
Sub-goal: Reduced marketing costs for SADCC member states.	Real transport costs are lower for major exports, imports and domestic products.	Transport cost statistics.	
PROJECT PURPOSE	**END OF PROJECT STATUS**	**MEANS OF VERIFICATION**	**ASSUMPTIONS**
Improve the capacity and efficiency of the Beira-Machipanda railroad system.	Increase in average number of trains daily to 3.4 due to fewer derailments and faster turn around times. Increased tonnage cargo by 150 tons, totalling 430,000 tons. Strengthened capacity and capability to maintain and repair locomotives and make spare parts, resulting in increased operations in Beira and Gondola workshops and Beira foundry.	CFM-C and NRZ statistics. Records of tonnage from CFM and NRZ. Project records and AID evaluations.	Railway line operates without MNR disruption. Zimbabwe traffic increases. Workshops have access to requisite commodities.
PROJECT OUTPUTS	**MAGNITUDE**	**VERIFICATION**	**ASSUMPTIONS**
1. Improved condition of tracks.	1. 141 km of emergency repairs	1. Reports of CFM-C and DNPCF track repair completed	Adequate protection of line repair brigades and trains by Mozambique and Zimbabwe troops against MNR attacks.
2. More CFM-C locomotives operative.	2. 8 steam and 1 shunting steam locomotives rehabilitated and 2 GE diesel locomotives refurbished. Major repairs completed on one steam locomotive in Beira.	2. Contractor reports, CFM-C maintenance records.	

Annex C

LOGICAL FRAMEWORK MATRIX

PROJECT OUTPUTS	MAGNITUDE	VERIFICATION	ASSUMPTIONS
3. Establishment of facilities for diesel locomotive running maitenance in Beira.	3. First phase coversion of Beira workshop for diesel locomotive runners maintenance completed.	3. CFM-C records, contractor reports.	CFM also to do the requisite work for conversion and repairs to generator in steam workshop. Trained staff are sufficiently motivated to learn and apply knowledge acquired. Technical assistants have good communication skills.
4. Increased availability of commodities for maintenace and repairs of locomotives.	4. Beira and Gondola steam and Beira foundry and diesel workshop equipped and functioning.	4. Project records and AID evaluations.	
5. Enhanced capability of workshop and foundry personnel.	5. Increased skill level of foundry, steam and diesel workshop staff, and locomotive drivers. More use of scrap materials.	5. Contractor reports and AID evaluations.	

PROJECT INPUTS	FUNDING TARGETS		VERIFICATION	ASSUMPTIONS
1. Commodities and services for emergency railway line repair - supply of sleepers, fasteners, connectors, bolts - supply on-site ballast, rails, labor, and tamper equipment	USAID GPRM	$775,700 $674,600	CFM-C track maintenance monthly reports, payment vouchers, site inspection	
2. Parts and services for - refurbishing 2 GE diesel locomotives, rehabilitation of 1 class 80 steam shunter and 8 Garratt steam locomotives - towing of locomotives in Mozambique, services loco inspector	USAID GPRM	$2,672,500 $68,400	Contractor records, payment vouchers/ certificates	
3. Conversion of Beira steam workshop for diesel repairs	USAID GPRM	$36,000 $ 9,000		
4. Commodities for workshops and foundry - supply of equipment, materials and tools to Beira steam workshop and foundry - supply of equipment, materials and tools to Gondola steam workshop - supply of materials for Beira foundry - supply of equipment, tools and materials for diesel running level maintenance Beira	USAID GPRM	$600,200 $7,900	CFM-C records, payment vouchers/ certificates, site inspection	
5. On-the-job training in Zimbabwe - 34 person-months steam and diesel maintenance/repair, foundry operators and locomotive drivers	USAID GPRM	$46,900 $6,000	Contractor records, CFM-C records	Trained personnel teach others
6. Technical Assistance - 12 person-months for Beira/Gondola steam locomotive workshop - 6 person-months for Beira foundry operations	USAID GPRM	$67,800 $1,000	Contractor records, CFM-C records	
7. Project Administration - Project Manager, Quarterly Project Implementation Committee meetings, Project vehicle	USAID GPRM	$125,600 $3,200	AID records, CFM-C records	
8. Evaluations - evaluations and financial reviews	USAID	$30,000	AID records	

Annex D: Southern Africa Regional Transport Development Project 690-231

PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only: B.1. applies to all projects funded with Development Assistance loans, and B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? N/A for Regional Project

HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT? N/A

A. GENERAL CRITERIA FOR PROJECT

1. FY 1985 Continuing Resolution Sec. 525; FAA Sec. 634A; Sec. 653(b).

(a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or nor more than $1 million over that amount)?

(a) A CN was prepared for this Project and the Congressional waiting period expired on 9 August 1985.

(b) Yes.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimte of the cost to the U.S. of the assistance?

(a) Yes.

(b) Yes.

3.	FAA Sec. 611(a)(2). If further legislative action i required within recipient country, what is basis for reasonable expectation that such action will be complete in time to permit orderly accomplishment of purpose of the assistance?	N/A
4.	FAA Sec. 611(b); FY 1985 Continuing Resolution Sec. 501. If for water or water-related land resource construction, has project me the standards and criteria a set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973, or the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See AID Handbook 3 for new guidelines.)	Not a water-related Project.
5.	FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	This is not a capital assistance(e.g. construction) activity.
6.	FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	Yes.It will be so executed as such.

7. FAA Sec. 601(a). Information and conclusions whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

(a) Project will increase the flow of international trade, particularly among SADCC members, (b) it should promote private initiative and competition, particularl within the SADCC region, (c) is not a applicable, (d) it will lessen the monopolistic practices of the SAR by making ZRR, CFM-C, and NRZ more competitive, (e) it will improve the technical efficiency of ZRR and CFM-C, (f) is not applicable to Project

8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

U.S. suppliers will provide deisel locomotive parts and other commodities in support of the Mozambique subproject and all of the project commodities in support of the Zambian subproject.

9. FAA Sec. 612(b), 636(h); FY 1985 Continuing Resolution Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

The Mozambique subproject involves both FX and LC, and the GPRM is providing the equivalent of $940,000 in LC costs. The Zambian subproject involves FX costs only, but it is in support of the IBRD fourth RR Project for which Zambia will make a large LC contribution.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

Zambia and Mozambique are not excess currency countries.

11.	FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes.
12.	FY 1985 Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	Not applicable.
13.	FAA 118(c) and (d). Does the project comply with the environomental procedures set forth in AID Regulation 16. Does the project or prograam taken into consideration the problem of the destruction of tropical forests?	Yes. Not applicable.
14.	FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate sysem for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)?	Not applicable.

15. FY 1985 Continuing Resolution Sec. 536. Is disbursement of the assistance conditioned solely on the basis of the policies of any multilateral institution? — No. The GPRM and GOZ's policies in addition to SADCC's apply.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria — Not a DA-funded Project.

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote — Not applicable.

the participation of women in the national economies of developing countries and the improvement of women's status, (e) utilize and encourage regional cooperation by developing countries?	Not applicable. Not applicable.
b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?	Not applicable.
c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?	Not applicable.
d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to whch the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed country)?	Not applicable.
e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project for more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country	

"relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than $100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character."	Not applicable.
f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	Not applicable.
g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.	Not applicable.

2. Development Assistance Project Criteria (Loans Only)	Not a DA loan.
a. FAA Sec. 122(b). Information an conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.	Not applicable.
b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	Not applicable.
3. Economic Support Fund Project Criteria	
a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?	It will promote economic and political stability with-in the SADCC Region by lessening economic dependence on the RSA.
b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?	No.
c. FAA Sec. 534. Will ESF funds be used to finance the construction of, or the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives?	No.
	Not applicable.

d.	FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	Special account arrangements will be made for the Zambian subproject.

5C(3) - STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?

   Yes: The Zambian subproject will be under Reg. 1 procedures and will be restricted to U.S. businesses only.

2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him??

   Yes.

3. FAA Sec. 604(d). If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?

   Yes.

4.	FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.)	Not applicable.
5.	FAA Sec. 604(g). Will construction or engineering services be procured from firms of countries which are direct aid recipients and which are otherwise eligible under Code 941, but which have attained a competitive capability in international markets in one of these areas? Do these countries permit United States firms to compete for construction or engineering services financed from assistance programs of these countries?	No.
6.	FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent such vessels are available at fair and reasonable rates?	No.

ANNEX E - TECHNICAL ANALYSIS

The Technical Annex is a series of figures, tables and reports dealing with the components of the Project. Locomotives selected for Zimbabwe are based on need for major repair or maintenance. For example, steam locomotives requiring general repair (240,000 Km level).

1. Emergency Line Repairs

Fig. 1 Rail line Beira-Machipanda. Map and Diagram.
Fig. 2 Rail line Beira-Machipanda. Line Diagram.
Table 1 Emergency Repairs. Sections by Km and required commodities.

Note 1 Timing of repairs has been based on two work crews of 70 persons using some mechanical tools working on km 90 to 105, 115 to 160, 170 to 210 at the rate of 300 meters/day/crew. This gives 125 working days. A Plasser working on km 260 to 288, 301 to 308, 309 to 315 would take 35 working days.

Note 2 Some tools and equipment for the work crews will be funded by AID. Also AID will pay for C40 sleepers, fasteners, fishplate connectors and bolts as well as transport of commodities to Mozambique. AID will also pay the per diem of the DNPCF inspector of the rails. All other costs will be borne by CFM-C.

Note 3 An allowance is made for spare parts for the Plasser tamping machine. This machine was purchased for use on repairs to the Sena line, financed by GDR.

2. Steam Locomotive Rehabilitation: 8 Garratt, 1 Shunting

Table 2 Fleet Availability
Table 3 Motive Power Units - Characteristics
Table 4 Steam Locomotives of CFM Central
Table 5 Garratt Steam Locomotives
Fig. 3 Shunting Locomotives Class 50
Shunting Locomotives Class 80
Shunting Locomotives Class 90
Mainline Locomotives Class 200
Garratt Locomotives Class 950
Garratt Locomotives Class 970

Note 1 8 Garratts rehabilitated at Contractor workshops. The remainder will be rehabilitated in Beira workshops or scrapped.

Note 2 — 1 Shunter Class 80 rehabilitated at Contractor workshops. The remainder will be rehabilitated in Beira workshops or scrapped.

3. GE Diesel Locomotives Refurbishing

Table 6 — CFM Central Diesel Locomotives
Fig. 4 — GE Diesel Class D12 to D26
GE Diesel Class D27 to D42
Report 1 — Inspection of GE Diesels

Note 1 — Only 2 inoperative diesels are presently available for repair by the Project as remainder are scrapped, stranded along the Dondo-Sena line or isolated in Inhaminga.

4. Workshop Steam Beira

Table 7 — Inventory of Major Equipment
Fig. 5 — Layout of Workshops
Fig. 6 — Workshop for Axles and Wheels
Fig. 7 — Steam Workshop Layout

Note 1 — Steam workshop has capacity to do all major repairs with most major equipment presently operational. Repair schedules are:
GR - 240,000 Km in workshop, require repairs
RC3 - 200,000 Km in steam shed
PR2 - 160,000 Km in workshop, require repairs
RC2 - 120,000 Km in steam shed
PR1 - 80,000 Km in workshop
RC1 - 40,000 Km in steam shed.

Note 2 — Diesel generator for emergency power at the workshop is inoperative. Four newly-installed diesel generators at the port are presently not operating but have the power capacity to service both port and railway.

Note 3 — 2 air compressors serve all rail workshops but 1 is inoperative, requiring heavy repair.

Note 4 — Boiler work and fire box work is not fully functional.

Note 5 — Main foundry is operating inefficiently. It could use scrap metal with the basic raw materials, especially on the copper, bronzes,

aluminum. Training is necessary plus kiln relining and some commodities. Molds for castings can be made in an adjacent shop. Finished molds are stored on shelves. Molding work is excellent.

5. Repair Shop Steam Gondola

Note 1 Inventory of tools and equipment has been based on incomplete data and needs derived from it.

6. Diesel Workshop Beira

Fig. 8 Preliminary Diesel Workshop Conversion Phase 1 Layout

Report 2 Required Work Outline Diesel Workshop

Note 1 The section of the steam workshop to be used for diesel repair is presently occupied by the steam boilers, tenders and frames of locomotives. It has few existing machines. The advantages of the area are the 2 lines running into the workshop, the existing 100-ton and 10-ton cranes and the adjacent available stores and offices. In addition, there is an adjacent line that could be used to transport bogies to the moving transporter at the rear of the workshop which will give access to the wheel repair shop. Initial conversion costs for Phase 1 (Running Level) will be minor, involving construction of a pit, equipment foundations, partitions and shelving for the different sections. An outline drawing for Phase 1 conversion is already prepared.

Note 2 Phase 1 workshop conversion should be done so as to provide running level maintenance (120,000 Km) in its final location.

Note 3 Equipment, including testing equipment, should be provided under the Project. MPRMM is starting to negotiate with Kuwait Fund for spare parts for operational locomotives and spare parts for all CFM enterprises.

Note 4 World Bank is providing $1.25 million loan for all CFM diesel shops for spare parts sufficient to last two years normal use at running level maintenance (120,000 Km) plus $0.4 million for tools and equipment.

Note 5 Equipment required for general repair (240,000 Km) including test equipment beyond the running level (120,000 Km) could cost in the region of $750,000 excluding tooling, parts and spare parts.

7. Training and Technical Assistance

Table 8 Workshop Section Staffing List
Report 3 Training
Report 4 Job Descriptions for Technical Assistants

Note 1 On-the-job training at Contractor workshops might include workshop inspectors. CFM-C priorities are foundry followed by steam locomotive workers, then diesel. The stress would be on training as many workers as possible within the cost frame. Suggested are two iron workers and six mechanical locksmiths each for two months, one foundry and two mold carpenters for two weeks each, nine diesel mechanics and three diesel electricians each for one month and 9 locomotive drivers for two weeks each.

Note 2 No formal training will be done under this project.

8. Overview of Locomotive Maximum Capacity

Report 5 Overview of Locomotive Maximum Capacity

REPORT NO. 3 TRAINING

A) EXISTING PATTERN

The DNPCF has at present the following types of courses:
- on-the-job training
- medium-term specialized training (3 years)
- managerial training

DNPCF entered into an agreement with the French and Portuguese governments, for assistance in the organization and implementation of a railway training program. The first phase of the project is for three years and two additional years are foreseen. The training plan is given in Table 3.1 for the Inhambane Railway Training School.

The methodology followed for the medium-term training is to impart general education, followed by specialized professional courses, as follows:

(a) General (physical education, history, geography, Portuguese and English);
(b) Basic (mathematics, physics, chemistry and drawing);
(c) Basic Professional (technical drawing, general engineering technology, safety at work);
(d) Specific professional (maintenance of rolling stock, track and civil works, signaling and communications, traction, traffic and shunting. Classroom teaching is to be complemented the third year with practical training at CFM-S.

The staff selected for the medium-term courses must have the following basic qualifications:

1. School level not less than 6th class.
2. Minimum professional experience of one year.

After the completion of the medium-term course, the pupil returns to his respective enterprise. On an average, there is one instructor for a group of 20 pupils.

B. SPECIFIC TRAINING ENVISAGED IN THE PROJECT

The Project training will consist of on-the-job training by technical assistants and training at the Contractor workshops plus special training for locomotive drivers. On-the-job training will be realized in Beira and probably Zimbabwe and, to a lesser extent, Gondola.

A team of four (1 iron worker and 3 mechanical locksmiths) will be sent to the Contractor workshops during the rehabilitation

repairs on all phases of the steam locomotives. This would require each team to remain in Zimbabwe for about 60 working days, from the commencement of repairs to approval of the line tests. The training should be for levels III and IV staff, who are expected to transfer knowledge gained to fellow workers. (Table 3.1 shows the job levels.)

In respect to diesel locomotives, it is necessary to train electricians and mechanics of levels II to VII. Three teams of 4 members (1 electrician and 3 mechanics) will remain in Zimbabwe for 30 working days each.

Each team will be assigned specific objectives, falling broadly under the following headings:

- diagnosis of faults and repairs;
- diesel engine and auxiliary systems;
- compressor and air brake systems;
- control and transmission system;
- power testing and fault finding.

Each individual should preferably be assigned specialized areas for comprehensive study. Three teams of three drivers each of IV to VII levels will be trained in Zimbabwe for a period of 15 working days, with empahsis on fault findings, diagnosis and repairs.

Needs of specific training envisaged in the project are shown in Table 3.3.

TABLE 3.1: PLANS OF THE RAILWAYS SCHOOLS FOR NEXT 3 YEARS

DESIGNATION	Years	Number of Pupils 1985	1986	1987	TOTAL
TRAFFIC	1 year	20			20
	2 "	-			-
	3 "	-			-
TRACTION	1 year	20			20
	2 "	-		20	20
	3 "	-			-
TRACK	1 year	20			20
	2 "		20	20	40
	3 "				-
SHUNTING	1 year	20			20
	2 "				-
	3 "				-
SIGNALING AND COMMUNICATIONS	1 year		20		20
	2 "				-
	3 "				-
MONITORS	-	-	-	-	-
TOTAL	-	80	40	40	160

TABLE 3.2: PROFESSIONAL LEVELS
FOR THE SECTOR PORTS AND RAILWAYS

LEVEL	DESIGNATION	
	TRACTION	MAINTENANCE
I	Auxiliar of traction	Auxiliar of workshop
II	Stoker	Deputy Fitter
III	Deputy Driver	2nd Class Fitter
IV	2nd Class Driver	1st Class Fitter
V	1st Class Driver	Specialized Fitter
VI	Principal Driver	Chief of Brigade
VII	Inspector of Traction	Supervisor

TABLE 3.3: SPECIFIC TRAINING ENVISAGED IN THE PROJECT

LEVELS	IRON WORKER	MECHANICAL LOCKSMITH	FOUNDRY	CARPENTER MOLDS	DIESEL MECHANICAL	DIESEL ELECTRICIAN	DRIVERS	PERSON DAYS IN ZIMBABWE
I	-	-	-	-	-	-	-	-
II			-	-	3	-	-	90
III		2	-	2	4	2	2	360
IV	2	4	1	-	2	1	5	540
V	-	-	-	-	-	-	2	30
VI	-	-	-	-	-	-	-	-
VII	-	-	-	-	-	-	-	-
SUM	2	6	1	2	9	3	9	
TIME IN ZIMBABWE (DAYS)	60	60	15	15	30	30	15	1020

REPORT 4 JOB DESCRIPTION FOR TECHNICAL ASSISTANCE

All short-term technical assistants for the steam locomotive workshop and foundry in Beira are required to have working experience as supervisors or brigade chiefs, a minimum of 7 years working experience in their field of speciality and requisite technical knowledge. They must have successfully demonstrated their ability to train others. They must be conversant technically in Portuguese. The ability to physically demonstrate and explain an action fluently in Portuguese is mandatory.

The skills required are as follows. One of the two technical assistants for the steam locomotive workshop is expected to have a combination of skills (points 1-3):

1. Advisor for overall or general steam locomotive work.
2. Advisor for iron and steel plate work including welding, blacksmith, lathes, rivets, bolts and sheet plates, wheels together with all appropriate machines.
3. Advisor for mechanical work including pipes, fittings, for boilers, fireboxes and appropriate electrical items.
4. Advisor for foundry work with emphasis on management, organization, foundry skills to produce quality spare parts for locomotives, together with the ability to combine, to a major extent, scrap material with base raw material ingots, to produce required composition cast iron, copper, bronze, phosphur bronze, white metal, aluminum products.

The technical assistants will be expected to live in Beira. The steam workshop specialists will be required to spend a minimum of 10 days in Gondola, advising on operations there.

REPORT 5 OVERVIEW OF LOCOMOTIVE MAXIMUM CAPACITY

Locomotives and trains travel from Beira to Machipanda in three definite sections: Beira-Inhamatanda (98 Km), Inhamatanda-Gondola (82 Km) and Gondola-Machipanda (135 Km). Permissible speeds are 60 Km/Hr, except between Almada and Machipanda (71 Km) where the permissible speed is 45 Km/hr. Therefore, minimum travel times are: Beira-Inhamatanda 1.65 hours, Inhamatanda-Gondola 1.37 hours, and Gondola-Machipanda 2.65 hours.

Allowing for single line track, sidings, and communication problems, a diesel should be able to make one round-trip between Beira to Gondola in one day (6 hours plus). Because of the adverse gradients from Gondola to Machipanda, two steam locomotives are used to pull the wagons. One trip up and down from Gondola to Machipanda can be made in a day (5.3+ hours).

A maximum trainload would be 29 wagons plus one brake van or loading should equal 29 x 50 tons = 1450 tons on level (4 axles x 16.2 axleload - dead load of wagon = approx. 50 tons). 1450 tons less locomotive dead load less brake van dead load = 1320 tons on the level or some 850 tons on the adverse gradients. If four trips up and down per day are assumed, then diesel locomotives required will be four plus one for double loading between Inhamatanda and Gondola plus one in reserve for maintenance and repair.

Based on the above, the number of steam locomotives required is 4 x 2 = 8 (doubling of locomotives for steep gradients) plus 3 shunting locomotives in sidings plus two in reserve, giving a total of 13. For the Beira rail sidings and port, there should be 2 shunting locomotives in rail sidings plus two in port and one spare, totalling five. One mainline steam locomotive can operate the passenger train between Beira and Dondo.

Presently, three Garratt steam locomotives plus five on loan from Zimbabwe operate along the Beira-Machipanda line. To have the needed CFM-C fleet (excluding rented locomotives), eight will be rehabilitated in Zimbabwe and two in Beira to provide a total of 13 operative steam locomotives.

Presently, six diesel locomotives operate on the line. Two will be added to the fleet by refurbishing under the Project to give a total of eight.

Four shunter locomotives currently operate in Beira. An additional one will be rehabilitated to give a total of five.

Maximum tonnage on line, assuming 4 trips up and down, is 2 x 4 x 850 tons daily = 6800 tons daily or at 7 days a week and 52 weeks a year = 2.47 million tons. At an 80% loading factor, this would be approximately 2 million tons.

Traffic in 1982 was internal 843,000 + international 785,0000 = 1,628,000.

Traffic in 1983 was internal 770,300 + international 835,700 = 1,606,000.

Traffic in 1984 was internal 552,500 + international 856,400 = 1,408,900.

Table 4

STEAM LOCOMOTIVES CFM-C

Loco No.	Type	Location	Condition	Needs Engine	Needs Boiler	Observation
54	Shunting Engine	Beira	Inoperational	GR	GR	Awaiting Repair
55	"	"	"	GR	GR	"
56	"	"	Operational	-	-	
58	"	"	"	-	-	
84	"	"	Inoperational	GR	GR	Awaiting Repair
92	"	"	In P.R.	-	-	
94	"	"	Operational	-	-	
95	"	"	"	-	-	
96	"	"	Inoperational	RPA	Visual	"
210	Santa Fe	"	"	GR	GR	"
251	"	"	Operational	-	-	
267	"	"	Inoperational	RPA	Visual	"
268	"	"	In R.A	RA	"	
269		"	"	"	P.R.	
271		"	"	"	G.R.	
253		Moatize	Operational	-	-	
270		"	"	-	-	
952		Gondola	Inoperative	GR	GR	Awaiting Repair
953		"	"	"	"	"
955		"	"	"	"	"
957		Machipanda	Operational	-	-	
958		Beira	In G.R.	GR	In G.R.	
959		Gondola	Overturned	RA	-	Good Boiler
960		"	Operational	-	-	

Loco No.	Location	Condition	Needs Engine	Needs Boiler	Observation
961	Gondola	In R.C.	GR	GR	
962	Gondola	"	GR	GR	
971	"	Inoperative	GR	GR	Awaiting Repair
972	"	"	GR	GR	"
973	Beira	In GR	GR	GR	
975	Gondola	Inoperative	GR	GR	"
991	Nhamatanda	Operational			
415	Beira	Inoperative	RA	Visual	

Summary

Serial	Type and Use	Inoperative	Operational	Observation
50	Shunting Engine	4	2	
80	"	1	-	
90	"	4	2	
200	Santa Fe Line Beira Nhaminga	8	3	
400	Line Beira Nhaminga	1	-	
900	Garrats Line Nhaminga Machipanda	14	3	
TOTAL		32	10	

Shunting	4
Line Beira	1
" Nhamat.	1
" Machip.	2
" Moatize	2
TOTAL	10

SYMBOLS

GR - Major Repair
PR - Minor Repair
RPA - Repair because of accident
RA - Incidental Repair
RC - Maintenance Repair

Beira, 25 April 1985

ANNEX F

INSTITUTIONAL ANALYSIS

1. Ministry of Ports, Railways and Merchant Marine (MPCFMM)

The MPCFMM contains the National Direction of Ports and Railways (DNPCF), which is directly responsible to the Minister (Figure 1). The Minister gives policy guidance directly to the MPCFMM national directors, the chiefs of track rehabilitation on the Northern and the Limpopo lines, the directors of the ministry's schools and the chief of the Cabinet of Consultancy and Projects. The current Minister is a civil engineer with over 20 years service in rails and ports.

The MPCFMM Consultative Council meets on a monthly basis. Its purpose is to clarify implementation of GOM policies, direct the strategies of its enterprises, and serve as a general management tool. The Consultative Council consists of:

1. Minister;
2. Vice-Minister;
3. National Director of Regional Cooperation and Investments; Chief of Track Rehabilitation Brigade for Northern Line; Chairman of SATCC (same person);
4. National Director of Ports and Railways;
5. Deputy National Director of Ports and Railways;
6. Finance and Stores Director of MPCFMM;
7. Planning Director of MPCFMM;
8. Human Resources Director of MPCFMM;
9. Chief of Track Rehabilitation Brigade of Limpopo Line;
10. Chief of Cabinet of Consultancy and Projects.

A General Council of the DNPCF meets on a quarterly basis. The Council discusses management of the enterprises and directions are given for improvements. The General Council consists of the Consultative Council members plus the following:

11. CFM-South Director;
12. CFM-Central Director;
13. CFM-North Director;
14. Port of Nacala Director;
15. CFM-Zambezia Director;
16. CFM-Inhambane Director;
17. CFM-Cabo Delgado Director;
18. Railway School Director;
19. Mozambique Railways Representative in Johannesburg;
20. Mozambique Railways Representative in Bulawayo;
21. Mozambique Railways Representative in Blantyre.

2. The National Direction of Ports and Railways

Overview: The DNPCF consists of a National Director, Deputy National Director, three inspectors, and secretarial services. The present National Director is an electrical engineer, with several years of management experience. The prime and sole responsibility of DNPCF is the coordination and management of its six enterprises (Figure 2). Of these, three are of particular importance since they have international railway traffic--CFM-S, CFM-C and CFM-N--and the most important ports, Maputo, Beira and Nacala, respectively. Each enterprise is expected to be self-financing. However, the GRPM has been required to contribute funds for the operation of these enterprises, largely because of closure of some lines due to MNR activities.

Financial Aspects: Each enterprise submits to DNPCF an annual budget, indicating planned revenues and expenditures. (In the past some of these have reflected too great of an optimism of projected revenues.) The budgets are reviewed, summarized and submitted to the Ministry of Finance. In the national budgeting process, funds are allocated for the enterprises.

Although each CFM-enterprise has funds allocated for local purchase, the General Director of the enterprise can only authorize purchases of up to 50,000 Mt (US$1163). Local purchases above the mentioned value must be approved by the National Director of DNPCF. Currently, the control of all purchases involving foreign exchange are centralized within the Ministry. The current system precludes any enterprise from incurring foreign currency expenditures without channelling their request through DNPCF who, in turn, submits an application to the Minister of Finance and the Bank of Mozambique.

This process is, however, being revised. The newly proposed system would allow each of the three major enterprises (CFM-S, CFM-C and CFM-N) to have discretionary decision-making ability for a certain percent of their foreign exchange earnings. An estimated, though yet undecided, figure is 20% of each enterprise's earnings. It is expected that within 12 months, this new provision will be in place. As an interim measure, DNPCF has the authority to spend up to 20% of the total system's foreign exchange earnings, on behalf of each of the regional systems. Any expenditures exceeding the allocated percentage must be channelled through the Ministry of Finance and the Bank of Mozambique.

Global financial management of railways and ports has improved substantially during the past four years. A group of Indian experts from RITES (see related project activities) have assisted the financial management of the Directorate, and as a result, financial control is much more rigid. Nevertheless, a clear financial picture of the DNPCF enterprises is not easily available as can be discerned by the fact that only cash flow budgets are provided.

CFM-Central has a well managed financial department that has been steadily improving in the last two years. The improvements have been made possible by assistance from both the Dutch team as well as through RITES.

Personnel Practices: Two particular policies directly relate to the Project: training and transfer of personnel. The policy is to strengthen the provision of technical education within Mozambique. In late 1983, GPRM signed an agreement with the French and Portuguese governments for assistance in the organization and implementation of a system of training for railway personnel. The training focuses on three-year courses at Inhambane Railway Training School. Selection of students is on a national basis, not a quota system for each enterprise. After completion of a course, the trainee returns to his respective enterprise.

Personnel are basically considered as employees of a particular enterprise, with the the exception of high-level managers and technicians. Transference of managers or technicians with high-level qualifications or experience requires the approval of the Minister upon a proposal from the National Director of DNPCF. Within each enterprise, transfers may occur, especially nowadays since some lines are closed. It can be anticipated that the personnel trained under the Project will remain in their jobs servicing the Beira-Machipanda railroad system. Also, when the first phase diesel workshop is established, if more experienced diesel mechanics are required, temporary transfer of staff from the Inhaminga diesel workshop can be expected.

GPRM has a policy of not employing new people in the public sector. If an enterprise wants to hire a new staff member, it must receive authorization from either the Ministry of Works or the Ministry of Education and Culture. The latter is charged with the selection and allocation of new employees with nine years of education or more.

3. CFM-Central Organization

CFM-Central enterprise consists of the port of Beira, the Beira-Machipanda railway and the Sena railway which has two branches, one to Malawi and the other to Moatize. Figure 3 shows the organizational structure. As of June 1985, CFM-C had 13,447 employees, including 38 foreign technicians (Figure 4).

CFM-Railways: The Project focuses on three departments in Railway Maintenance Service. These are: Steam and Diesel Equipment, General Production and Track and Civil Works.

The steam and diesel equipment department includes repair shops located along the lines. The major steam repair workshop is situated in Beira. There is also a foundry for casting replacement parts which is within the General Production Department. Currently, they work almost exclusively in iron due to lack of other raw materials and technical expertise for overseeing quality control. A steam maintenance workshop at Gondola carries out running repairs on locomotives used on the Gondola-Machipanda section of the Beira-Machipanda line. Running maintenance is performed at the Machipanda steam stop. Along the Beira-Machipanda line, there are 13 different watering points, including Beira, Gondola and Machipanda. Train movement and crossings are controlled by staff at these points.

Existing staff will be able to handle an increase in the number of trains daily expected by the Project. There are a sufficient number of drivers, firemen and coal stokers.

One shop services diesel locomotives run on the Beira-Machipanda line. It is located at Beira. Three shops are located on the Sena line, the most important at Inhaminga. The Project proposed diesel workshop in Beira may require that experienced diesel mechanics be temporarily posted from Inhaminga to Beira. They would provide on-the-job guidance to existing Beira staff.

For track maintenance along the Beira-Machipanda line, the line is divided into four sections. Each has a chief and work crews headed by gang leaders. Each crew contains approximately 10 laborers. On Sections 2-4, which are the focal point of Project-funded track repairs, the following is the current staffing pattern:

Section	2	3	4
Chief of Section	1	1	1
Gang Leaders	17	7	9
Workers/operators	62	94	141

The staff live in groups, located about 12 km away from their place of work. Trolleys are used to move to and fro.

The CFM-C Chief of Track maintenance meets monthly with the Chiefs of Sections. Also, the latter submit a monthly report.

Workshop and Foundry*

Levels	Designations	Foundry Foundry (Founder)	Pattern Shop (Pattern Maker)	Machine Shop (Lock-smith)	Steam Boiler (Shop (Boiler Maker)	Copper Shop (Copper-smith)	Steam Shed Beira	Steam Shed Gondola	Steam Shed Machi-panda	Beira Diesel Diesel	Shed Diesel Elect.	Inhaminga Diesel	Workshop Diesel Elect.
	Engineers	-	-	-	-	-	-	1	-	-	-	2	-
VII	Supervisor	-	-	-	-	-	-	1	-	-	-	-	-
VI	Chief of Brigade	1	-	-	-	-	-	-	-	-	-	-	-
V	Specialized Fitter	-	-	-	-	-	-	-	-	-	-	-	-
IV	1st Class Fitter	-	-	-	-	-	-	-	-	-	-	-	-
III	2nd Class Fitter	3	2	16	4	7	4	15	-	5	3	7	4
II	Deputy Fitter	19	3	34	16	11	24	16	1	4	2	14	4
I	Auxiliar of Workshop	13	26	2	43	40	16	25	84	12	-	-	13
		49	7	93	60	34	53	117	13	9	5	34	21

* Staff existing as of June 1985.

4. Port of Beira

The Port of Beira, sighted at the mouth of the Pungwe River is Mozambique's second largest port. It consists of 10 major berths with a surrounding dumping and storage space of 310,330 m^2 as well as 25 transit sheds with 61,325 m^2 storage capacity. While it does not have a great capacity to handle specialised cargo, it does have facilities for the loading and unloading of POL products. In addition, it has storage tanks for molasses and tallow as well as cold storage facilities for the export of Mozambican fish and fruit. More recently a stacking, shipping and stuffing area has been designated for containers and designed to deal with expected traffic increases.

The port has fifty-one cranes of which 75% are operational, and 78 forklifts of which 90% are operational. The theoretical capacity of the port is 5,000,000 tons, although it has not handled this volume of traffic since 1965 when a record 4,346,596 tons were moved. Realistic, as opposed to theoretical, capacity is closer to 3 million tons. In 1984, the port handled 1,410,000 tons.

The greatest disadvantage to Beira port is that, because of heavy silt from the Pungwe River, it requires major dredging to accommodate larger vessels. Presently, the port has a draft restriction of 34 feet (an average of 32 feet). The largest ship it can, therefore, handle would be of 25,000 tons. The average sized shipped calling at Beira in 1984 was 10-12 thousand tons.

Despite these restrictions, the port is operating below its capacity and could, with little difficulty, handle increased traffic from either Zimbabwe or Malawi.

5. Related Project Activities

Under the auspices of SATCC, numerous projects are envisioned to be undertaken to improve the port of Beira and the adjacent rail links. SATCC foresees that the majority of these projects will be completed by the year 2000, giving the port a capacity of 2.6 million tons excluding coal and POL products. Below is a summary of projects included in the port transport system as of May 1985.

Roads					
Study on the Upgrading of the road Blantyre-Mulanje /Milange - Mocube Malawi/Mozambique	1.1	1.1	-	1.1	?
Rehabilitation of Tete-Cassacatiza Road, Section Mutundo-Chiuta. Moz.	6.5	5.0	-	-	?
Rehabilitation of Road Beira-Chimoio-Zimbabwe Border. Mozambique	21.0	13.7	-	13.7	?
Study on the Upgrading of the Eastern End of Road Harare-Mutare-Mozambique Border. Zimbabwe	0.1	0.1	-	0.1	?
Total	655.7	561.8	71.1	93.7	

Source: SATCC Updated Project Status Paper May, 1985.

Beira Port Transport System Projects

Project Title	Estimated Cost USD million Total	Foreign	Secured Financ. USD Million	Funding Under Negot.+ USD million	Source/ Comments
Ports and Water Transport					
Increase in Capacity of the Port of Beira	444.3	399.2	31.7	37.5	Netherlands
Rehabilitation and Short-Term Improvements	(21.1)	(21.1)	(21.1)	-	?
Entrance Channel Study	(3.4)	(3.4)	(3.4)	-	Completed - Netherlands
Masterplan Study	(1.2)	(1.2)	(1.2)	-	Completed - Netherlands
Masterplan Study					
Service Port Facility	(3.6)	(3.1)	-	-	?
Oil Terminal	(9.2)	(7.7)	-	-	?
Sugar Cereals Terminal	(31.3)	(29.8)	-	-	?
Multipurpose Berths 4-5	(33.5)	(31.1)	-	-	?
Dredging to CD-8	(9.5)	(8.6)	-	-	?
Reclamation, Coal Term.	(40.3)	(36.3)	-	-	?
Railways, Non-Coal Traffic	(17.8)	(14.3)	-	-	?
Roads	(3.7)	(2.5)	-	-	?
Cont./m.p., Berth 2-3	(54.6)	(49.1)	-	-	
Channel Dredging CD-10	(21.6)	(19.5)	-	-	?
CD-14	(63.4)	(57.1)	-	-	?
Coal Terminal Phase 1-2	(81.8)	(73.6)	-	-	?
Dev. of Berths 6-10	(8.5)	(4.9)	-	-	?
Coal Terminal Phase 3	(39.8)	(35.9)	-	-	?
Railways					
Track Rehabilitation Malawi Railways. Malawi	20.0	13.0	3.0	10.0	UK
Supply of Railway Rolling Stock. Malawi	9.0	9.0	3.0	6.0	FRG
Rehabilitation of the Beira Zimbabwe Railway. Dondo-Zimbabwe Border. Moz.	20.0	15.0	-	15.0	Partially covered by this project additional funds sought.
Rehabilitation of the Beira Malawi Railway. Moz. Section Beira-Dondo	21.0	14.7	0.3	0.3	Belgium
Section Dondo-Malawi Border	112.0	90.0	33.0	10.0	Dondo-Derundo Moz + GDR. Dondo Moatize - Partially Italy. ADB & Canada approached.

Year 1 Oct 5/Sept 86	Year 2 Oct 86/Sept 87			Year 3 Oct 87/Sept 88					
	AID			AID			AID		
Description	FX	LC	GPRM	FX	LC	GPRM	FX	LC	GPRM
D. Workshop Steam & Foundry Beira									
1. Equip. & spare parts	3,000	175,350		83,400	104,610				
2. Foundry rehab. & spare parts	1,000	9,620		7,000	17,720				
3. Materials for steam workshop & foundry	3,000	10,000		12,000	10,000				
4. NRZ transport (4 containers, 3 wagons)		2,870			2,870				
5. CFM transport (4 containers, 3 wagons)			2,868			2,868			
Sub-total D	7,000	198,020	2,868	102,400	135,200	2,868			
E. Repairshop Steam Gondola									
1. Equipment	1,500	10,000		10,000					
2. Parts, tools, materials		18,000							
3. NRZ transport (1 container)		380							
4. CFM transport (1 container)			201						
Sub-total E	1,500	28,380	201	10,000					
F. Workshop Diesel Beira									
1. Equipment, parts				60,000	27,000				
2. Tools GE US (CIF)	25,000								
3. Materials		3,620							
4. NRZ transport (2 containers, 1 wagon)		380		1,700					
5. CFM transport as per 4			482			1,445			
Sub-total F	25,000	4,000	482	61,700	27,000	1,445			
G. Workshop Beira Conversion to Diesel									
1. Design first phase - short-term consultant	6,000								
2. Materials		30,000							
3. Construction			9,000						
Sub-total G	6,000	30,000	9.000						

Year 1 Oct 5/Sept 86	Year 2 Oct 86/Sept 87			Year 3 Oct 87/Sept 88					
	AID			AID			AID		
Description	FX	LC	GPRM	FX	LC	GPRM	FX	LC	GPRM
H. Training									
1. Instruct. manuals - diesel	3,000								
2. Instruct. manuals - steam foundry	3,500								
3. CFM staff on job Zim steam 20.5 pm					18,860	3,622			
4. CFM staff on job Zim diesel 12 pm					11,040	2,120			
5. CFM staff on job Zim foundry 1.5 pm					1,380	265			
6. Overhead (3-5)					7,550				
7. NRZ transport					1,583				
8. CFM transport						55			
Sub-total H	6,500				40,413	6,062			
I. Technical Assistance									
1. 3 TA for total 18 pm				31,050					
2. Overhead on 1					8,280		10,350		
3. Transport & misc.				6,600					
4. Accommodation				6,000	5,064	428			428
5. NRZ transport (1 container)					379				
6. CFM transport (1 container)						200			
Sub-total I				43,650	13,723	628	10,350		428
J. Project Administration									
1. Project quarterly review		2,700	1,000		2,700	1,000		2,700	1,000
2. Project Manager 34 pm	23,000	10,000		26,000	9,200		26,000	9,200	
3. Project vehicle, misc.	2,000	8,000		2,000			2,000		
4. Transport		100	201						
Sub-total J	25,000	20,800	1,201	28,000	11,900	1,000	28,000	11,900	1,000

10/

Description	Year 1 Oct 5/Sept 86 AID FX	LC	GPRM	Year 2 Oct 86/Sept 87 AID FX	LC	GPRM	Year 3 AID FX	Oct 87/Sept 88 LC	GPRM
K. Evaluations									
1. Evaluations				7,000			7,000		
2. Financial Reviews					8,000			8,000	
Sub-total K				7,000	8,000		7,000	8,000	
TOTAL	896,000	1,291,900	705,065	465,300	1,636,200	63,703	45,400	19,900	1,428
Contingency 10%	89,600	129,200	70,506	46,500	163,600	6,370	4,500	2,000	142
Cost Escalation 10%	98,600	142,100	77,557	107,500	378,000	14,715	16,400	7,200	514
Totals	1,084,200	1,563,200	853,128	619,300	2,177,800	84,788	66,400	29,100	2,084
Total AID	5,540,000								
Total Mozambique	940,000								
	6,480,000								

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ANNEX H

ECONOMIC ANALYSIS

1. Introduction

The project involves an expenditure by AID of approximately US$5 million and a Mozambican contribution of approximately US$1 million to rehabilitate a railway which has fallen into a condition of disrepair. Since a relatively small cost is expected to almost triple the carrying capacity of the rail line without an investment in new assets, it is not surprising the Project yields a high rate of return. In addition to the favorable economic conclusions, this Project can be supported for its strategic importance to the regional transport system. Rehabilitation of this rail link will strengthen an important route to the sea for several Southern African countries. It will also help limit the affect on transport should political unrest heighten in South Africa, the other major access route to the sea for Zimbabwe. To appreciate the importance of transport in the area and recent problems in this sector, a brief economic historical review is provided below.

2. Macroeconomic Overview

The Port of Beira and adjacent railways have in the past played a crucial role for the landlocked countries in the Southern African region. The railway link to what is now Zimbabwe was built at the turn of the century and the port itself completed in the 1920s. Since the port was considered the natural outlet by the English for its colonies in the interior, they invested heavily in its initial construction and subsequent maintenance.

Beira became particularly important for what are now Zimbabwe and Zambia, as well as Malawi. For all of these countries, this port was and continues to be the closest outlet to the sea, closer than either Maputo or ports in South Africa. In the 1960's, all Zambian copper was exported through Zimbabwe via Beira, while 90% of Zimbabwe's overseas trade passed via either Beira or Maputo. This traffic pattern began to alter by 1965 and drastically changed from 1973 onwards.

The Unilateral Declaration of Independence by Rhodesia in 1965 affected the entire transportation system in the region. Mozambican ports, still controlled by the Portuguese, and South African ports played important roles in moving Rhodesia imports and exports despite the imposition of U.N. sanctions against the regime. Zambian goods continued to use Beira until 1973 when Zambia closed its border with Rhodesia. The border closure meant that alternate routes for both imports and exports had to be found. The Benguela railway to the Angola port of Lobito and the construction of the Tazara railway (linking Tanzania and Zambia) served to meet most of Zambia's needs.

Rhodesia continued, however, to use the port of Beira until 1975 when a newly independent Mozambique, in solidarity with Zimbabwe's fight for independence and in accordance with U.N. sanctions, closed the border between the two countries. This border remained closed for five years until 1980. During this time, the situation in the port and railway sector within Mozambique began to deteriorate.

Mozambican independence witnessed an exodus of skilled Portuguese artisans from all sectors of the economy. The ports and railway sector were severely affected from both an operational and technical viewpoint. Lack of training opportunities prior to 1975 meant that few Mozambicans had the ability to fill the huge void created by the Portuguese. This was, and remains, particularly true for middle-level management positions as well as skilled artisan positions.

In addition to these problems experienced by DNPCF, the overall economic conditions within the country also deteriorated. As in the transport sector, the economy as a whole suffered from the lack of skilled personnel. Moreover, the inherited economy remained highly dependent upon plantation agriculture and invisible services such as migrant labor and transport. Attempts to diversify the economy, however, have been limited and during the past ten years government policies may indeed have exacerbated existing problems.

The problems in the transport sector were compounded by the closure of the Zimbabwean/Rhodesia border. Both the Beira-Machipanda route as well as the Maputo-Chicualacuala route were hardly used and, therefore, badly maintained during this five-year period.

All these problems have been exacerbated, particularly within the past five years, by security problems and the emergence of the resistance movement, referred to as the Mozambique National Resistance (MNR). MNR activity seemed to be particularly concentrated on the Beira-Machipanda line in 1982 and early 1983. Since then, however, both Zimbabwean and Mozambican troops have been employed to keep the road, rail and pipeline corridor open to Zimbabwe. In 1984, there were no security problems on this line and the corridor remains well protected and relatively secure.

While Mozambique has been grappling internally to address these problems, many external factors have come to influence transport and affect the routing of traffic. By November 1974, Rhodesia had completed a new rail route linking the southern part of the country with South Africa. The Tazara railway was also completed in 1975. Thus by 1980, when the border was reopened,

traffic patterns had altered considerably. Although some Zimbabwe cargo did begin to flow via Mozambican ports, the bulk of traffic still passed via South Africa. Neither has Mozambique been able to recoup lost Zambian traffic.

Efforts to coordinate transport within the region has been a major priority for the Southern African Transport and Communications Commission (SATCC), a body of SADCC. The SATCC has stressed rehabilitation of existing infrastructure in order to improve regional transport links while lessening dependence on South Africa. It is anticipated that projects aimed at transport improvements will help normalize traffic patterns within the region.

3. Alternate Routes

For the moment the majority of Zimbabwean imports and exports pass via South African ports, either through Durban or Port Elizabeth. The reasons for the continued use of these facilities are numerous. The overall security situation is a concern, even though the Beira line itself has suffered few attacks. In interviews held in Zimbabwe, Mozambique and Malawi with persons responsible for the shipping of cotton, tobacco, grains, coffee and tea as well as with major freight forwarders and clients, comments have been made about the relative lack of efficiency on the Beira route. Long turnaround times of trains, insufficient locomotive capacity and fewer sailings from the port are all commonly cited problems. Nevertheless, almost all clients and major clearing and forwarding agents have indicated that, should these problems be overcome, they would increase their use of Beira port. Emergency repairs to the line and rehabilitation of locomotives will substantially improve the operating capacity. Further, it can be assumed that as traffic increases, shipping lines will respond to the demand for increased services to Beira to cope with increased traffic flows.

The case for increasing the use of Beira port for Zimbabwean and Zambian traffic (as well as, in the short term, Malawian traffic) can be made at several levels. First, the overall costs of transporting goods door-to-door (i.e., Zimbabwe-N.W. Europe) is cheaper via Beira than through Durban, the major alternative route currently being used. While it is true that shipping (freight) costs from Beira are higher than from Durban, these costs are offset by lower inland transport costs. Also, it is expected that sea freight costs will decrease as traffic through the port increases. Another consideration is that the railway costs for the South Africa routes are higher than for the Beira route.

Second, it is important for Zimbabwe to maintain as many access points to the sea as possible. Currently, Zimbabwe is moving 60% of its overseas trade through South Africa. The remainder is being routed through Maputo via South Africa

(Beitbridge-Komatipoort) or Beira. The security situation on the Komatipoort-Maputo route has made movement of goods on that line irregular. Given that the political situation within South Africa is itself volatile, it will be important for Zimbabwe to maintain and augment the use of other rail-port facilities, particularly Beira. Should a situation arise that would preclude the use of the South African transport system, Zimbabwe would have to use Beira as its major port outlet. Thus, a planned, phased increase of the Machipanda-Beira line should be encouraged. Increasing the capacity of the line through rehabilitation and locomotive repair will greatly enhance such possibilities.

4. Basic Assumptions

Currently an average of 1.2 trains per day pass along the Machipanda-Beira line in each direction. In 1984, Zimbabwe moved a total of 175 thousand tons of imports and exports of which 35 thousand tons were Malawian traffic. Internally, Mozambique moved 110 thousand tons.

The Project will increase the carrying capacity of the line by repairing portions of the track, performing deferred maintenance on locomotives and wagons, and in turn improving the utilization of rolling stock. As a result of this project, the line should be able to increase its carrying capacity from approximately 300,000 tons per year to 880,000 tons by the end of Year Three. This assumes 6.5 trains per day operating 300 days per year with each carrying 15 wagons loaded to 30 tons. Although this capacity will be attained by the end of the Project, it is assumed for reasons mentioned below that an additional two years will be required before the traffic reaches programmed levels, which for this analysis are considered to be somewhat less than maximum capacity.

The Project is based on two important assumptions. One is that there will be sufficient demand to justify the line's increased capacity. Since the inland cost of shipping through Beira is much less than through South Africa and is not completely offset by more favorable ocean rates through South Africa, there is a cost advantage of using the Port of Beira. However, it will be necessary to compete with the South African transport system which is relatively efficient in getting shipments to ports with a minimum of delays and uncertainty.

A second assumption is that security does not become a major problem on the Machipanda-Beira line. Although the Mozambican rail lines have been closed or severely disrupted by the MNR, the

Machipanda-Beira line has suffered no major attacks since 1983. This is due to the protection Zimbabwean and Mozambican troops are providing to the railway. Protection along the corridor is expected to continue without a need for additional troops.

Due to the uncertainty of the political and economic events in Mozambique, the economic analysis is very conservative in the selection of benefits, with a tendency to err more on the side of understating than overstating them. Keeping this in mind, the increases in traffic along the Machipanda-Beira line due to the Project are assumed to be as follows (in thousands of tons, total for both directions):

Year	1	2	3	4	5	6	7	8	9	10
Zim	0	50	100	200	400	400	400	400	400	400
Moz	0	25	50	100	200	200	200	200	200	200
Total	0	75	150	300	600	600	600	600	600	600

As the reader will notice, there is no traffic increase assumed for the first year when the rail bed will be improved and the locomotives will begin to be rehabilitated. By the second year it is assumed that increased traffic flows from Zimbabwe to Beira will be 25,000 tons in each direction, or a total of 50,000 tons. By the end of Year Three when the Project will be completed, it is assumed that there will be an average of 3.4 trains per day carrying an annual total of 430,000 tons. This includes pre-project traffic flows of approximately 280,000 tons, increased Zimbabwe-Beira traffic of 100,000 tons and about 50,000 tons of purely domestic traffic. The maximum flow of a total 880,000 tons per annum will not be reached until Year Five, two years after the termination of the Project. The delay in reaching the maximum projected flows is due to the need for service to improve on the line before shippers will be convinced to divert more of their traffic from other ports, particularly those in South Africa. With gradual shifts in traffic towards Beira, it will be possible to negotiate more favorable maritime rates than those which presently favor South African ports.

It should be noted that the Zimbabwe to Beira traffic, which is projected to increase from 175,000 to 575,000 tons per annum, represents approximately 15% of Zimbabwe's shipments outside the Southern Africa region. This is considered a realistic and somewhat conservative possibility of traffic diversion. If, by chance, the South African railways were cut off for use by Zimbabwe, the demand for shipping on the Machipanda-Beira line would far exceed the projected figures. Abiding by the criteria of avoiding an overstatement of benefits, no attempt was made to quantify the benefits accruing to Mozambique as a result of an improvement in its

internal transport network. Nevertheless, the improvement in internal transportation will have an important developmental impact and, therefore, will generate corresponding benefits.

5. Costs of the Project

The estimated costs of the Project are presented in Table 1. These are derived from the financial costs in the Project's budget. Since economic costs utilize conversion factors designed t capture the opportunity costs of alternative uses of currencies, th Mozambique currency (metacais) has an estimated shadow price of 1,000 to the U.S. dollar[1/], reflecting a rough approximation of its economic value. This means the shadow price of the dollar in relation to metacais is about 25 times its official price of 42 metacais = US$1. Thus, internal expenditures in local currency which might appear expensive using the official exchange rate lose importance when expressed in terms of the shadow prices.

The recurrent costs associated with the Project are the additional expenditures associated with maintaining the rehabilitated track and rolling stock. Almost the entire recurrent cost figures represent foreign currency expenditures. These are lo as most of the additional steam locomotive maintenance can be performed with parts produced by the foundry in Beira, utilizing relatively inexpensive raw materials. The annual recurrent expenditures are estimated at the U.S. dollar equivalent of $35,000 for track, $35,000 for fuel, $9,200 for raw materials to make spare parts for steam locomotives and $20,800 for spare parts of the steam locomotives which cannot be produced in the foundry. All costs and benefits are expressed in constant 1985 dollars. They include allowances for contingencies.

Since this Project will improve the utilization of existing assets instead of financing new capital equipment, its completion does not imply the generation of new recurrent costs. However, the project assumes that, as a result of the railway improvement, Mozambique will perform the necessary maintenance to keep the Machipanda-Beira line at the standards reached by the rehabilitation. As explained above, these expenditures are estimated at US$100,000 per year.

1. There is no sound basis for estimating the shadow price of metacais. The figure of 1,000 metacais = US$1 is a rough estimate in round numbers. It is understood that the black market rate for metacais is US$1 = 1,200 metacais.

Benefits of the Project

Project benefits fall into two principal categories: those which accrue to Mozambique, principally in the form of increased foreign exchange earnings associated with the revenue from the additional traffic and those accruing to Zimbabwe through reductions in transport costs. As detailed below, it is seen that the benefits to Mozambique are estimated at US$6.20 for each additional ton transported between Zimbabwe and Beira while the benefits to Zimbabwe are estimated at US$12.80 per ton.

The benefits accruing to Mozambique are derived from the foreign exchange received as payment for the additional transportation services provided. On the basis of current net earnings, net receipts per ton are estimated as US$4.45 over the Machipanda-Beira line. In addition Mozambique receives, on the average, net revenue of US$1.82 per ton for port charges. These revenues, which are net of all costs, sum to US$6.27 per ton. Assuming that the total cost function is linear and homogeneous of grade zero and that the same average charges will prevail in the future, the benefits to Mozambique are rounded down to US$6.20 per ton.

In order to avoid a possible overstatement of benefits, others of potential importance were excluded. These include the reduction in costs due to breakdowns and derailments caused by the current level of maintenance as well as the previously mentioned benefits to Mozambique of having an improved internal transport link.

The benefits to Zimbabwe were derived from the financial savings associated with origin to destination shipping costs through Beira instead of Durban or Port Elizabeth. Upon consulting Table 2, it can be seen that there are considerable savings on the inland transport component for seven of the principal types of traffic entering and leaving Zimbabwe. On the average (without attempting to weight by tonnage) the savings amount to US$42.00 per ton. This saving is partially offset by higher shipping costs through Beira, a differential which is estimated at an average of US$29.20 per ton for six principal commodities. The difference, or net transport saving, is estimated at an average of US$12.80 per ton. Of course to achieve this saving, the efficiency of the Beira-Machipanda line will have to improve. This project assumes that the repairs of the tracks and rolling stock will permit it to compete with the South African system. Shorter distances for the inland component of shipments through Beira are an important advantage. As traffic flows increase through the Port of Beira, it is expected that more favorable freight rates can be negotiated, thus further increasing the benefits of the Project. No attempt was made to quantify these benefits.

The total benefits to Mozambique and Zimbabwe are presented in Table 1. It can be seen that the stream of benefits starts in Year Two. Although it is expected that there will be benefits associated with track improvement in Year 1, these were excluded in order to maintain a conservative estimation of the Project's economic rate of return. As the reader can see, Table 1 shows an estimated flow of benefits amounting to US$7.60 million per year beginning in Year 5. The time horizon for the economic analysis is restricted to ten years due to the uncertainty facing the Southern Africa region and the need to make structural changes in the Beira railway line to maintain a competitive advantage over a longer time span.

7. Economic Rate of Return

On the basis of the foregoing estimations of costs and benefits, the economic rate of return is estimated at 72.9%. This is extremely high, but plausible since a relatively small expenditure of approximately US$6 is utilized to almost triple the carrying capacity of an important rail line. Approximately one-third of the benefits accrue to Mozambique with the other two-thirds accruing to Zimbabwe.

Due to the rather large variations in the benefits which could occur as a result of political and economic developments in the region, it was decided to test the sensitivity of the economic rate of return (ERR) to substantial reductions in the benefits. Two basic scenarios were utilized for traffic flows: the best is as presented above while the worst assumes that future tonnage over the repaired line will be one-half of the original projections. This is considered a reasonable "worst" case and would be quite unlikely unless the line's security situation deteriorates or if shippers prove to be far more reluctant to use the Port of Beira than the research behind this PP indicates. In the worst case, the benefits to both countries are reduced in proportion to the reduction in tonnage.

Another two basic scenarios were chosen for the benefits accruing to Zimbabwe. Using as a basis the savings of US$12.80 per ton originally estimated, the second case assumes that delays continue to reduce the viability of shipping through Beira such that the benefits are reduced by 25% to US$9.60 per ton.

The four EERs corresponding to the two pairs of two scenarios are presented in Table 3. It can be seen that a reduction of tonnage by 50% would lower the EER from 72.9% to 42.1% while a decline of the benefits to Zimbabwe at the original tonnage would reduce the EER to 63.4%. A combination of the two "worst" cases would result in an EER of 35.6%. This is still quite high, but as mentioned previously, it is not surprising for a rehabilitation Project as compared with one which increases the stock of assets.

TABLE 1

ESTIMATED ECONOMIC COSTS AND BENEFITS OF PROJECT (IN MILLIONS OF $US)

	Years									
	1	2	3	4	5	6	7	8	9	10
Costs										
- Cost of Project										
US Dollars+	2.44	2.22	.07							
Metacais Equivalent[1/]	04									
- Recurrent Costs			.10	.10	.10	.10	.10	.10	.10	.10
Total	2.48	2.22	.17	.10	.10	.10	.10	.10	.10	.10
Benefits[2/]										
- to Mozambique	0	.31	.62	1.24	2.48	2.48	2.48	2.48	2.48	2.48
- to Zimbabwe	0	.64	1.28	2.56	5.12	5.12	5.12	5.12	5.12	5.12
Total	0	.95	1.90	3.80	7.60	7.60	7.60	7.60	7.60	7.60

1/ Valued at shadow price of US$1 = 1000 metacais

2/ Assumes additional Zimbabwe-Beira total tonnage of:

Year	Tons (Thousands)
1	0
2	50
3	100
4	200
5	400
6	400
7	400
8	400
9	400
10	400

Benefits are assumed to be US$6.20 per ton for Mozambique and US$12.80 for Zimbabwe

TABLE 2

INLAND RAIL TRANSPORT COSTS THROUGH SOUTH AFRICA AND BEIRA
(COSTS PER TON IN $US)

Commodity	Route	NRZ	CFM/SAR[3/]	Total	Savings via Beira
Maize	Lions Den-Durban	7.28	37.20	44.48	
	Lions Den-Beira	4.73	10.98	15.71	28.77
Chrome Ore	Kildonan-P. Eliz	11.66	32.65	44.31	
	Kildonan-Beira	5.20	11.85	17.05	27.26
Cotton	Harare-Durban	18.12	61.30	79.42	
	Harare-Beira	11.76	18.66	30.42	49.00
Wheat	P. Eliz-Harare	9.42	23.58	33.0	
	Beira-Harare	3.49	10.27	13.76	19.24
Rice	P. Eliz-Harare	9.91	83.45	93.36	
	Beira-Harare	3.67	10.77	14.44	78.92
Motor Veh. CKD	Durban-Mutare	36.36	45.45	81.81	
	Beira-Mutare	5.76	9.60	15.36	66.45
Containers[2/]	Harare-Durban	16.08	41.50[1/]	57.58	
	Harare-Beira	10.88	22.53	33.41	24.17

Source: Official railway tariffs of South Africa, Zimbabwe and Mozambique unless otherwise indicated.

1/ Contract rate
2/ Assumes 10 tons per container
3/ Foreign exchange rates expressed in US$ via the following conversion factors: US$1.00 = Z$2.50 (estimated shadow pricing)
US$1.00 = SAR2.00

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TABLE 3

ECONOMIC RATE OF RETURN

	Scenario	
	A	B
1.	72.9%	42.1%
2.	63.4%	35.6%

Scenario A. Includes tonnage as in Table 1

Scenario B. Assumes 50% reduction in tonnage

Scenario 1. Benefits to Zimbabwe of US$12.80 per ton

Scenario 2. Benefits to Zimbabwe are reduced by 25% per ton carried

ANNEX I

SOCIAL ANALYSIS

A basic premise of the Project is that CFM-C employees will be motivated to improve the efficiency of the Beira-Machipanda railroad system. This is based on an assessment of the job conditions. No pay incentives will result from good job performance, although a few artisans may be promoted to a higher level. Further, the salaries received by workers buy little due to a scarcity of consumer goods, including food. Most of the families of the workers, however, have gardens to supply food for domestic consumption.

In spite of no monetary rewards, it is foreseen that employee performance will improve. This will occur from having the requisite commodites to do the work. Also on-the-job training is expected to increase the artisans' and drivers' pride in their work as well as enhance their skills. Interaction with colleagues in Zimbabwe and technical assistants will help stimulate this pride.

On-the-job training at contractor workshops is considered socially and culturally sound, since Mozambicans exhibit no inhibitions about former Portuguese settlers in Mozambique serving as advisors, as long as they have good communication and training skills.

Beneficiaries

The direct beneficiaries will include 23 artisans and 9 locomotive drivers who receive on-the-job training in zimbabwe. An additional 404 artisans will benefit from training provided by the Project technical assistants.

Zimbabwe, Mozambique and, to a lesser extent, Malawi and Southern Zambia, will benefit from improvements in the Beira-Machipanda railroad system. Zimbabwe, a major user of the line, is expected to increase its usage because of the lower transport charges in comparison to alternative routes. Approximately US$13 can be saved by using the Beira port. Increases in usage are expected through a greater volume of the same types of cargo currently moving through Beira. Statistics for 1982-84 show that maize, cotton and a smaller volume of tea and coffee were exported through Beira. Also, coal from Wankie and sizeable container traffic move through Beira.

The cost savings may be reflected in increased producer prices through the Zimbabwe marketing boards. The agricultural exports largely derive from the large scale farm sector. However, in the past few years, more small holders are marketing maize and cotton and this trend is likely to continue. The main import traffic to Zimbabwe has been rice, vehicle parts for assembly and containerized cargo. The consumer price of the commodities ought to reflect the lower transport costs through Beira.

While the intention is for approximately two-thirds of the Malawi traffic to pass through Ncala port and the remainder through Beira, closure of the CFM-N due to MNR attacks means that the Beira-Machipanda railway line is Malawi's closest access to a seaport. Malawi exports some of its sugar through Beira and the amount is expected to increase in 1985 to 70,000 tons. The sugar is grown on large, private estates. Also, some fertilizer imports for Malawi are transported on the Beira-Machipanda line. The fertilizer is used by both estates and the top quarter of the small holder sector. The latter use it primarily for production of hybrid maize for sale.

A general public benefit will be derived through increased traffic on the line through a savings in foreign exchange from using this less costly route.

In general, Mozambique will benefit from increased foreign revenues. Approximately 20 percent of the foreign revenue is expected to be spent by the CFM-C for maintenance of the Beira-Machipanda line and for the port. The remainder of the foreign revenue will be controlled by the Bank of Mozambique and will most likely be spent on essential commodities to rehabilitate the economy.

The Project improvements should also benefit services and industries along the line. For example, a new pulp and wood industry is currently being established in Manica. Also, the textile mill in Chimoio and the citrus fruit plantation near Chimoio should have more efficient service to coastal areas and sea shipment to other ports of Mozambique.

ANNEX J

ENVIRONMENTAL ANALYSIS

The Project consists of making emergency rail repairs, rehabilitation of locomotives, providing equipment and materials to railroad workshops and foundry and training of personnel. Railroad repairs are to the existing 318 kilometer line between the Port of Beira and Machipanda (on the Zimbabwe border) in Mozambique.

The existing railroad is the shortest route between Beira and most of Zimbabwe. The railroad has weakened railroad sleepers that cause derailment and slowing of railway trains. There are also steep grades (up to 2) and very sharp curves. The right of way is narrow and has extremely short sight distances in some sections. These conditions create high transportation costs, delays, excessive wear and tear on the rail equipment and cause a high accident rate along the railroad.

The physical work to be performed outside of Beira under this project will consist of removing the wooden sleepers and replacing them with steel sleepers together with necessary ballast. Minor alterations will be made to the existing steam workshop for diesel locomotive repair and maintenance. All other workshop support will be in the form of training and the provision of equipment and materials for the Beira workshop. Rehabilitation of locomotives will be done in existing workshops in Zimbabwe.

The end result of the emergency line repairs will be a railroad that will allow for faster and more economical movement of goods between Mozambique and Zimbabwe.

Discussion of Environmental Impacts:

The work proposed will not require additional land use since the existing right-of-way will be used. Any erosion will be extremely limited and in the open country. The proposed work should improve the drainage channels and result in reduced erosion. Fill material will be from gravel and borrow pits along the railroad and it is unlikely that additional land will be used for such purposes. Minimal impact on water quality is expected because no change in natural waterways is anticipated.

Air pollution due to dust can be expected in the repair period, but will not be excessive. Noise and fumes from the repair effort will be in open, sparsely populated areas.

The project will not cause any inefficient utilization or waste of natural resources in the area. The railroad passes through a sparsely populated area of Mozambique. Wildlife in the area have adjusted to the existing railroad and no additional obstructions to their movement will occur. With the exception of temporary changes, no negative impact on vegetation is anticipated. Positive changes will result from improved access of the population of Mozambique, Zimbabwe and other Southern African countries to import and export markets. In addition, the people of Zimbabwe will have a direct benefit of more reliable access to the sea. Training and supply of materials and equipment to railroad workshops will assist in upgrading artisan skills.

Recommendations for Environmental Action:

The proposed improvements in the railroad will have positive socio-economic effects, not only for the population within the railroad's zone of influence, but also in terms of flow of goods and other product availability in Mozambique, Zimbabwe and other Southern Africa countries. Other environmental impacts will be minimally negative and temporary. Therefore, a negative determination is recommended.

PROCUREMENT PLAN

A. Responsible Agency: As a condition precedent to disbursement, the Government of Mozambique will designate a Project Director for the Regional Railway Improvement Project. This individual will be a senior professional of the Direccao Nacional dos Portos e Caminhos de Ferro (DNPCF) but will be resident at the Caminhos de Ferro Centro (CFM-C) at Beira. All commodity procurement operations including purchases, record keeping, receipt, utilization, supervision and coordination with the Prime Contractor for procurement actions will be the ultimate responsibility of the Project Director and his staff.

B. Authorized Source/Origin: The authorized source/origin for commodities and commodity-related services for this Project will be the United States (AID Geographic Code 000) and the SADCC countries. A Project vehicle from AID Geographic Code 935 will be purchased for the use of the project Manager and the Prime Contractor (title resting in the Government of Mozambique) under the Mozambique Mission Blanket Vehicle Waiver. Individual transaction source/origin waivers may be required for items found not available in the authorized source/origin. However, no such waivers can be identified at this time.

C. Methods of Procurement (Applicable AID regulations): The Project has three distinct components. Procurement methods will vary by component:

1. Rail Line Repairs: The Project will finance approximately 83,500 used steel sleepers (railroad ties), bolts, connectors, and related hardware to be used to repair the rail line from Biera to Machipanda. The sleepers will be purchased from the Zimbabwe National Railroad (NRZ) from which they are available because NRZ has been switching from steel to cement sleepers.

REDSO/ESA RCMO has determined that NRZ's prices for these used sleepers is approximately 10-15% of the cost of similar new sleepers. In order to ensure that the sleepers are structurally sound and in good condition, the following procedures will be followed before AID financing is made available for their purchase:

a) An inspection to determine general condition will be done by a U.S. Direct Hire AID Engineer. He will prepare a written report which will be reviewed and retained by the AID Project Manager.

b) An inspection will be made by a recognized Local inspection firm which will include an analysis of the metallurgical composition of 5 of the ties chosen at random. (A Certificate of Metallurgical Composition by the foundry which originally manufactured the sleepers or similar proof can be substituted for this requirement.) The results of this inspection will be reviewed by the Regional Engineering Officer, Harare, to ensure that the substance of the requirements of Special Provision 54 (HB 15, Appendix B, Part III) are met.

If, after the above procedures are followed, the sleepers are determined to be appropriate for AID financing, a PIL cleared by the Regional Engineer, Harare, and the USAID/Z Commodity Management Officer will be issued to the Project Director to authorize AID financing for the procurement of the sleepers. Additionally, an inspector representing CFM-C will be present to inspect all sleepers as they are loaded for transport to Mozambique. He will be reponsible for ensuring the useable condition of each individual sleeper purchased. If the used sleepers are found to be inappropriate for AID financing, new sleepers will be purchased by DNPCF with AID financing to the extent such financing is available under the Project. If procurement of new sleepers is the determined course of action, DNPCF will contract for their purchase under established Government of the People's Republic of Mozambique procurement procedures, as supplemented by required provisions of Handbook 11, Chapter 3, following good commercial practices. Other small value items for this component will be purchased in the same manner.

2. Beira and Gondola Steam Locomotive Workshop and the Beira Foundry and Diesel Locomotive Workshop: For these components, the Prime Contractor who will be operating under an AID direct contract will purchase the equipment listed in Section E 2, 3 and 4 as well as additional items as may be required, after AID approval. Procurement of these items will be accomplished under AID HB 11, Chapter 3 procedures/ guidelines. The provisions of the Prime Contractor's AID direct contract dealing with commodity procurement will be cleared with the USAID/Z Commodity Management officer.

3. Repair/Replacement parts and special locomotive repair tools: REDSO/ESA/RCMO, through SER/COM, has identified two sources of supply for the GE spare parts/replacement components for the two diesel locomotives to the rehabilitated. These sources are Towmar Inc. and General Electric. Purchase of the GE parts will, therefore, be by competitive negotiation (public solicitation of offers from the United States) by the Prime Contractor under HB 11, Chapter III procedures.

D. Financing Methods for Commodities:

A. Rail-line Rehabilitation. Assuming the railroad sleepers are purchased from NRZ, a Direct Letter of Commitment will be used to finance their purchase.

B. Commodities for the Beira steam locomotive workshop and diesel locomotive workshop will be financed under the AID direct prime contract. For those to be purchased in the U.S., AID/FM/PAFD will be requested to open a Bank Letter of Commitment with a U.S. commercial bank, naming the Contractor as the approved applicant authorized to request opening of Letters of Credit to individual commodity suppliers. Reimbursement procedures will be followed for non-U.S. procured commodities.

E. Commodities to be Purchased:

The list below indicates sources in Zimbabwe where it has been determined that the item is available in the local market. Actual place of purchase may vary but would be restricted to SADCC or the United States unless covered by individual transaction source/origin waivers.

TABLE II
COMMODITY PROCUREMENT AND COSTING

1 - TRACK REHABILITATION COMPONENT

Quantity	Description	Source	Origin	Total Cost US$
20	Compactor (Manual)	Zimb.	SADCC	400
15	Tape	Zimb.	USA	500
600	Fork	Zimb.	SADCC	9,700
5	Level	Zimb.	USA	135
10	Drilling Machine (Manual)	Zimb.	USA	100
3	Slipper	Zimb.	SADCC	70
500	Hacksaw for Rails	Zimb. or U.S.	USA	2,500
1 Set	Spares for Motor trolleys	Zimb. or U.S.	USA	1,700
200	Shovel	Zimb.	SADCC	1,000
600	Spanner	Zimb.	SADCC	4,000
83500	Sleeper (Steel 40) 40 Kg	Zimb.	SADCC	276,000
20000	Bolt Type 1	Zimb.	SADCC	8,600
38000	Bolt Type 2	Zimb.	SADCC	16,250
10000	Fishplate per pair $32	Zimb.	SADCC	320,000
90	Pick Handle	Zimb.	SADCC	360
3	Mechanical Hacksaw	Zimb. or U.S.	USA	6,600
	Plasser	USA	USA	15,800

C. Major Repair of Locomotives. The same procedures expalined in B above will be followed for financing of commodities for the rehabilitation and refurbishing of locomotives.

2 - BEIRA AND GONDOLA STEAM LOCOMOTIVE WORKSHOPS AND BEIRA FOUNDRY

Quantity	Description	Source	Origin	Total Cost US$
1	Gouging Machine	Zimb. or U.S	USA	2,100
4	Welding Machine	Zimb. or U.S.	USA	5,350
300 Mt	Cable & Fittings (Welding)	Zimb. or U.S.	USA	560
1 Set	Cables & Fittings (Gouging)	Zimb. or U.S.	USA	165
1 Yr	Oxygen (35 btls x 12 mths)	Zimb.	SADCC	4,200
1 Yr	Acetelene (20 btls x 12 mths	Zimb.	SADCC	5,600
3 Sets	Gauges & Tubes	Zimb. or U.S.	USA	300
3	Torch	Zimb. or U.S.	USA	350
150 Mt	Air Hose	Zimb. or U.S		300
10	Brass Fitting	Zimb.	SADCC	35
1	Compressor x 700 cfm	Zimb. or U.S.	USA	33,000
1 Set	Air Feed Piping & Fittings	Zimb.	USA	2,600
2	Angle Grinder	Zimb. or U.S.	USA	1,000
3	Pom Pom Rivetters & Dollies	Zimb. or U.S.	USA	3,000
3	Straight Grinder	Zimb. or U.S.	USA	1,700
1 Yr	Electrodes (60 Kg x 49.00) (60 Kg x 29.00)	Zimb. or U.S.	USA	3,350
1 Yr	Gouging Rods	Zimb. or U.S.	USA	5,350
1	Dumpy Level	Zimb. or U.S.	USA	800
3	Spirit Level	Zimb. or U.S.	USA	70
6	Ram Pack	Zimb. or U.S.	USA	5,350
2	Jack	Zimb. or U.S.	USA	1,350
1 Set	Valve Seat Cutters & Grinders	Zimb. or U.S.	USA	2,000
2 Sets	Springs	Zimb.	SADCC	12,000
100	Spare Grindestone Wheel	Zimb. or U.S.	USA	1,300
16	Carbon Conductor (Transporter)	Zimb. or U.S.	USA	500
-	Tools (Hand/Pneumatic)	Zimb. or U.S.	USA	5,000
2	Rivet Buster	U.S.	USA	1,750
36	Chisel	Zimb. or U.S.	USA	700
4	Angle Drilling Machine	U.S.	USA	3,500
1 Set	Tubes as per list 242820	U.S.	USA	16,000
6	Zimb. Refurb. of Boilers	Zimb.	SADCC	160,000
-	10 Tonne Steel Plate	U.S.	USA	4,000
3 Sets	Copper Tubing App 3 Loco Sets	Zimb.	SADCC	1,700
10	Fireclay (Cement)	Zimb.	SADCC	70
2	Crucible 100 kilos	Zimb. or U.S.	USA	450
1	Crucible 300 kilos	Zimb. or U.S.	USA	1,000
10 cu.m	Sand for Valve and Fine	Zimb.	SADCC	700
1 Yr	Casting Materials	Zimb.	SADCC	13,350
4	Wheelbarrow	Zimb.	SADCC	200
30	Tonne Sand (Silicon)	Zimb.	SADCC	700
1 Yr	Oxygen	Zimb.	SADCC	700
1 Yr	Acetelene	Zimb.	SADCC	1,350
10 cu.m	Timber for Molds	Zimb.	SADCC	7,000
10	Crucibles 300 Kg	Zimb. or U.S.	USA	7,000
2 Sets	Heating and Cutting Torches	Zimb. or U.S.	USA	400

3 - DIESEL LOCOMOTIVE WORKSHOP COMPONENT

Quantity	Description	Source	Origin	Total Cost US$
1	Pop Tester	U.S.	USA	800
1	Compressor 500 cfm	U.S.	USA	17,000
1	High Pressure Pump	U.S.	USA	1,350
1	Air Screen Cleaner	U.S.	USA	4,000
3	Oil Storage Tanks	Zimb. or U.S.	USA	700
1	Viscosity Gauge	U.S.	USA	70
1	Flash Tester	U.S.	USA	350
1	Pedestal Grinder	U.S.	USA	1,350
1	Pedestal Drill	U.S.	USA	2,000
100 mt	Hose	Zimb. or U.S	USA	700
1	Schedule Support	Zimb.	SADCC	250
1	Welding Machine	U.S.	USA	700
1	Battery Charger	U.S.	USA	1,000
2	20t. Jack	U.S.	USA	4,000
1	Water Treatment Plant	Zimb.	SADCC	13,350
1	Deionising Plant	Zimb.	SADCC	10,000
16 Sets	Contractors for Transporter	Zimb. or U.S.	USA	1,100
2	Washing Machine Spares	Zimb. or U.S.	USA	700

4 - PROJECT HOUSE AND VEHICLE (CONTRACTOR SUPPORT COMPONENT)

Quantity	Description	Source	Origin	Total Cost US$
1 Set	Furniture for 3b/rm house	Zimb.	SADCC	3,000
1	Refrigerator	Zimb.	SADCC or U.S.	750
1	Stove	Zimb.	SADCC or U.S.	600
1 Set	Curtains	Zimb.	Zimb.	750
1	Generator	Zimb.	SADCC	1,000
1	Passenger Vehicle	Zimb.	935	6,000

Annex L

Job Description for the PSC Project Manager

The project manager will be responsible to the AID Deputy Director of the Regional Office in Harare. The project manager will be able to speak both English and Portuguese and be capable of writing in both languages. The person must have knowledge of rehabilitation of steam locomotives and locomotive workshop layout and operations.

Some knowledge of USAID as well as railroads in East and Southern Africa would be an advantage.

The project manager is expected to be based in Zimbabwe where major locomotive rehabilitation is anticipated to take place. Travelling to the contractor's workshops, CFM-C in Beira, and DNPCF in Maputo will be expected.

AID will select the project manager and obtain DNPCF approval.

	Year 1		Year 2		Year 3		Total		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
Emergency track repair	25.0	750.7	0.0	0.0	0.0	0.0	25.0	758.3	783.3
Major repairs locomotives	802.0	273.0	217.5	1,457.1	0.0	0.0	1,019.5	1,730.1	2,749.6
Workshop conversion	6.0	40.0	0.0	0.0	0.0	0.0	6.0	40.0	46.0
Commodities for workshops, foundry	35.1	247.4	174.1	162.2	0.0	0.0	209.2	409.6	618.8
Training	6.5	0.0	0.0	40.4	0.0	0.0	6.5	40.4	46.9
Technical assistance	0.0	0.0	43.7	13.7	10.4	0.0	54.1	13.7	67.8
Other	25.0	20.8	35.0	19.9	35.0	19.9	95.0	60.6	155.5
Contingency 6%	54.0	80.4	28.2	101.6	2.7	1.2	84.9	183.2	268.1
Inflation 10%			49.8	179.5	5.3	2.3	55.1	181.8	236.9
	953.6	1,419.9	548.3	1.974.4	53.4	23.4	1,555.3	3,417.7	4,973.0

FX=Foreign Exchange
LC-Local Currency
Year=Fiscal Year October through September
Inflation compounded Year 3

GPRM PROJECT CONTRIBUTIONS ('000 IN U.S. DOLLAR EQUIVALENTS, 42MT = US$

Description	Year 1	Year 2	Year 3	Total
Emergency track repairs	674.6	0.0	0.0	674.6
Major repairs locomotives	16.7	51.7	0.0	68.4
Workshop conversion	9.0	0.0	0.0	9.0
Commodities for workshops and foundry	3.6	4.3	0.0	7.9
Training	0.0	6.0	0.0	6.0
Technical Assistants	0.0	0.6	0.4	1.0
Project Administration	1.2	1.0	1.0	3.2
Contingency 10%	70.6	6.4	0.1	77.1
Cost escalation 10%	77.61	14.7	0.5	92.8
Total	853.3	84.7	2.0	940.0

Fiscal Year, October through September