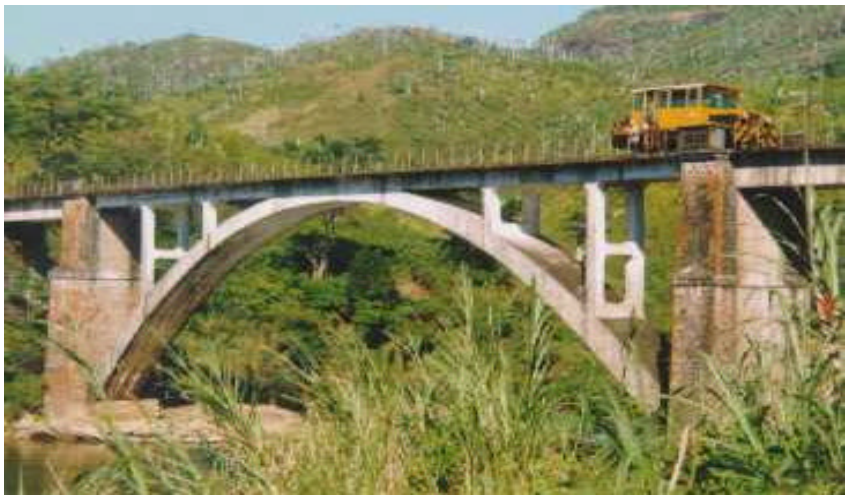
FCE Rehabilitation



Annual Report

February 5, 2001 to January 31, 2002

Quarterly Report

January 1, 2002 to March 31, 2002

CONTRACT : **PCE-I-809-00-000030, TO #809**

SUBMITTED TO : **USAID / Madagascar**

SUBMITTED BY : **CHEMONICS INTERNATIONAL**
HARZA INTERNATIONAL

March 8, 2002

Work described herein is essential to the achievement of SO3 and SpIR 3.5.

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Liste des Acronymes

FCE	Fianarantsoa Côte-Est
FCER	FCE Rehabilitation Project
USAID	United States Agency International Development
AfDB	African Development Bank
LDI	Landscape Development Interventions
ADB	African Development Bank
UNDP	United Nations Development Program
CIM	Compagnie International de Maintenance
SNCFI	Societé des Chemins de Fer (Francaise) Internationale

Contract Number PCE-I-809-00-000030, TO #809
Submitted March 8, 2002

During this quarter, the FCER completed Phase I project activities. This report documents the completion of these activities during the quarter, as well as the cumulative results of Fast Track and Phase I activities over the first year of the project. The project has just finished detailed planning of its Phase II activities, which will begin after the rains in April and continue until the end of the project.

I. Overall evolution of the project

The project has closely followed the initial program and anticipated timing of various activities except for the delay of the Donor Round Table conference, which was initially scheduled for June and actually took place in September. This was a deliberate delay in order to assure the presence of key actors and to make sure that we had sufficient information in hand to make a persuasive case.

While we have been able to keep very close to the initial anticipated schedule up to this point, we are now facing certain difficulties due to the unsettled political situation. This is, in particular, having an effect on our ability to get parts on time, as needed for the locomotive rehabilitation. We are trying to find creative solutions to these problems as they arise, but if they continue will risk implementation delays that are beyond our control.

I. 1. The Master Plan Study

The first period of the project (April to June 2001) was devoted primarily to carrying out the Master Plan study to determine

(i) the overall investment needed to render the FCE sustainable and
(ii) the most effective use of FCER resources in financing discrete activities within the plan.

Dinika Consultants was awarded the bid for the study, after a competitive process in which five consulting firms submitted bids. Dinika put together a team of specialist railway engineers who worked with the international consultants (Harza's Philippe Martin on civil engineering issues and Louis Venault on railway engineering questions) and submitted their conclusions to the project and to USAID in June 2001.

The plan concluded that the railroad represents an enormous capital asset for Madagascar (its construction today would cost well over $200 million). For an investment of $11-14 million it can be rehabilitated to the level where it provides reliable service and can be sustainable under private management. The Master Plan proposed four separate but interrelated projects to be funded through the international rehabilitation effort:

(i) Tunnels and bridges;
(ii) Earthworks, slope stabilization, and drainage;
(iii) Rolling stock; and
(iv) Right of way/track work.

I. 2. The Revised Implementation Plan

With the results of the Master Plan Study in hand, the project then turned to defining which aspects of the plan would be financed under the auspices of FCER and which would require the intervention of other donors. The criteria used to determine which interventions would be funded under FCER were:

- those that were most critical to assuring reliable service in the short-term;
- those that were most critical to increasing the safety of transport;
- those that would contribute most to making the line resistant to future cyclone damage.
- those that were least likely to find funding from other donors who had already expressed an interest in partially funding the project;
- those that were most urgent since our funding was available more quickly than that of the other donors;

Drainage works have been a priority during the rehabilitation effort because they are critical to protecting the line from future cyclone damage

The Revised Implementation Plan was submitted to USAID on July 31, 2001 and approved subsequently. In order to strategically meet the objectives outlined above, the project ended up taking on a portion of each of the "project areas" outlined above:

- we decided to stabilize the most critical tunnels to ensure that they did not deteriorate further while awaiting AfDB funds to become available later this year;

- we decided to stabilize the most vulnerable hillslopes and put a significant emphasis on drainage in order to reduce further flood damage;

- we put significant funds into locomotive rehabilitation because reliable traction is essential to carrying out all the other interventions funded both by FCER and the other donors;

- and we have taken on the most critical aspects of track work as needed to ensure the secure operation of the line until more significant funding becomes available to do a more systematic program of track rehabilitation.

An Environmental Impact Assessment for all these works was submitted to the "Office National de l'Environnement" and official approval was received from the Ministry of Environment on December 17, 2001. The project had already received conditional approval to start work in the meantime.
As anticipated from the beginning, the Master Plan Study and the pursuant Revised Implementation Plan allowed the project to more appropriately define the relevant performance indicators for FCER's intervention. In light of the studies, we were able to identify the most critical intervention needs and, after discussions with other donors, determined which aspects of the rehabilitation program would be financed by FCER, as opposed to those reserved for financing by other donors. These revised indicators are awaiting approval by USAID in February 2002.

I. 3. The Donor Round Table Conference

In collaboration with the Ministry of Transport and the LDI Program, the FCER hosted a donor conference in Antananarivo on October 15, 2001. The purpose of this conference was to confirm the likely contributions of other key donors and attract new donors to the funding consortium. As a result of this conference and follow up meetings to this conference, we now know that the African Development Bank has committed to investing some $2.3 million, with spending primarily on earth works, tunnels and bridges, and drainage beginning in about April 2002. The ADB has launched the bidding process for the consulting group that will supervise their rehabilitation work. The World Bank is prepared to finance $8.2 million of track work and community slope stabilization starting in early 2003, or as soon as the concession agreement is signed. A detailed schedule and timeline has been developed for the work to be carried out with World Bank funding. The UNDP is funding $120,000 of track maintenance and drainage. Due to considerations outside our control, the Japanese appear to have backed off their initial commitment to contribute $1.4 million of counterpart funds for drainage works. FCER and the AfDB will fund the most urgent and critical of these works. There is still about $400,000 worth of work (primarily improved drainage canals) for which we are working to identify a funding source.

The FCER project has used $4.7 million of USAID cyclone recovery funds to leverage an additional $10.6 million. Of this, $8.2m has been committed by the World Bank (contingent on the signing of a concession agreement), approximately $2.3 m is expected from the AfDB in 2002-3, and $100,000 has already been spent by UNDP.

I. 4. Rehabilitation Works by Project

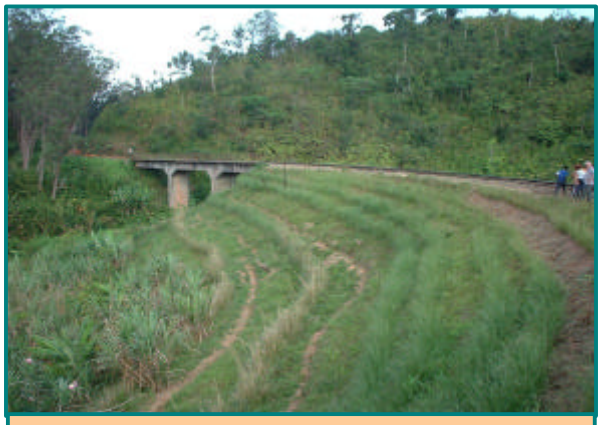
Rehabilitation work on the line began in May 2001 when the FCER project signed its first contract to begin track clearing. As proposed in the Provisional Implementation Plan submitted to USAID, the project spent $300,725 on "fast track" activities so as not to delay implementation until the Master Plan Study was completed. These funds were earmarked for activities that were particularly urgent because the situation risked deteriorating over time if the project did not intervene in a timely manner, or because they were prerequisite investments to carrying out more substantial interventions defined by the Master Plan. The paragraphs below summarize interventions undertaken during the first year of the project, including fast track and main track (phase I) interventions.

This picture shows vetiver planted on the top of the tunnel at PK 121. The vetiver pattern is designed to reduce erosion on the tunnel, and guide run-off into drainage channels so that it will not erode the tunnel roof.

I. 4.a. Tunnels and bridges. The Master Plan found that the FCE tunnels and bridges are generally in better shape than had been anticipated. The only urgent tunnel intervention identified (and which was therefore earmarked for FCER funding) was the tunnel at PK 121. This tunnel, which was already in poor shape suffered significant damage from erosion during the 2000 cyclones. While not dealing with the interior problems of the tunnel (which will be addressed by the larger AfDB tunnel program), the project did intervene to prevent the situation from deteriorating further in the period until the AfDB work

begins. This involved draining and regrading the land above the tunnel, which had essentially become a lake, and planting it with vetiver to control erosion and channel run-off. This tunnel, which used to leak torrents of water even during the dry season, is now virtually dry all year round.

I. 4.b. Earthworks, slope stabilization, and drainage. As with the tunnels, most of the heavy-duty earthworks will be carried out by the AfDB. FCER, however, intervened to stabilize some nine *points noirs* that would not withstand the rainy season and, especially, put a major emphasis on improving drainage, since inadequate drainage is a principal cause of landslides. 53.9 kilometers of drainage ditches along the tracks were cleared (in addition to another 79 km cleared with UNDP funding), 21 lateral drainage ditches and culverts have been rehabilitated, and 10 new drainage systems were created in areas where the existing structures were insufficient for current run-off flows.



Vetiver and fruit trees planted along the contours in this field replace manioc. This will help prevent washouts and protect the bridge infrastructure from erosion.

Over the past ten years, the FCE has been closed an average of 15 days a year due to landslides and washouts. Thanks to improved drainage and slope stabilization, in 2001 the line was closed only 4 days. This rainy season not a single train has been cancelled due to flooding, landslips, or washouts. The rains that caused 3 major washouts this year on the northern line, posed no serious problems to the FCE.

In addition to improved drainage, the second major effort to prevent or reduce future cyclone damage was the stabilization of steep cultivated hillsides the length of the line. The project is now working with 345 farmers who have already completed the stabilization process, which includes planting vetiver on the contours and replacing erosion provoking annual crops with more stable perennial tree crops. An additional 150 have joined the effort for the third campaign season.

I. 4.c. Rolling stock. As predicted from the outset, the rolling stock has proven to be the Achilles' heel of this project since so much else depends on effective transport. We are finally at the point where we are beginning to see major progress in assuring reliable locomotive service, but it has taken a long time and we have suffered many headaches in the process. One of the biggest problems is that parts are not easily available for the old, narrow gauge equipment that is used on the line. In some cases it can take up to a year to obtain critical parts; in some cases the parts are no longer available and one has to go to the used part market to find what is needed. Needless to say, the scarcity of parts also has an impact on price and we have found a regular pattern of price gouging by monopoly sellers in Madagascar on many of the parts needed by the FCE. We've addressed this problem by purchasing parts at the source in Europe as much as possible. In some cases we have been able to purchase parts at below the standard European price through Frank West's direct contact with manufacturers.

Having said that, we have made significant progress over the past year and are looking forward to reaping the benefits of these investments in the year ahead. We have systematically repaired the equipment (ballast cars, cranes, tunnel inspection car) that must be functional to carry out project interventions along the line. We have signed a major contract with a French railroad maintenance company (CIM/Logerail) to rehabilitate three locomotives (including maintaining the locomotives in operation until December 2002).

The rehabilitation of the first locomotive is now nearly finished (it is due to be completed at the end of March). With the help of Frank West in Europe (who identified 8 traction motors available in a mine in France) we think that we have finally solved the traction motor problem that has been plaguing the FCE for years.

This locomotive bogie is fully rehabilitated and ready to be installed on BB 242. Rehabilitation of the locomotives will ensure more reliable service for the people who depend on the train line, and allow the transport of materials to work sites funded by FCER, the AfDB, and the World Bank.

A contract (similar to the CIM contract but with a local firm) to rehabilitate and maintain the two draisines is also in effect. We decided to rehabilitate, rather than purchase, new draisines (as initially intended) when we found that the delivery delay for new narrow gauge draisines exceeds 8 months.

Cleaner fuel has meant that whereas the FCE used to purchase 6-8 fuel filters per locomotive every 3 months, they now purchase only two. Similarly, their consumption of oil filters has dropped by ½ and the number of injectors purchased went from 72 per locomotive every 6 months to 12. The cost (for these three parts and oil alone) of maintaining the FCE locomotive park for six months went from $5,000 to $1,000, solely as a result of our investment in the fuel pump. When one considers that the FCE only recently went from having a negative monthly cash flow to a positive balance of $469 in May 2001, the importance of this savings becomes evident.

We are also very pleased to see that our efforts to deal with not only the problems, but also the *cause* of the traction problems are now beginning to bear fruit. As one of our Fast Track activities, we assisted the FCE in putting in a gas pump/meter that would allow them to use the fuel storage tanks at the station. This in turn decants the fuel, reducing the impurities quite significantly (Previously, the FCE had been filling their reservoirs with 50-liter drums purchased *en vrac*). Dirty fuel contributed to many locomotive maintenance problems and costs, as illustrated in the box at left.

I. 4.d. Right of way/track work. The project has carried out three main interventions on the track and will continue to focus on track safety in the second phase of interventions that will begin after the rainy season. During the Fast Track, FCER rehabilitated (and in one case built anew) siding tracks at five stations. These tracks allow trains to cross on the line, which is otherwise a single track. Many stations already had the sidings, but in some cases they were so badly deteriorated as to be dangerous. These sidings will be particularly important in Phase II (and especially during the African Development Bank and World Bank rehabilitation efforts) when there will be massive quantities of materials (e.g. ballast, blocks, ties, and rails) to be transported. If the trains cannot cross there would be significant delays in passenger and normal freight service, an outcome that we have tried to avoid throughout the rehabilitation program.

Here the ballast, previously covered with mud from a landslide, is being cleaned. More ballast will be added as necessary once the cleaning is complete. Adequate and well-cleaned ballast is central to assuring the security of traffic on the line.

The second track intervention was the rehabilitation of the track spur between the Manakara rail station and the port of Manakara. This spur was in such bad shape and so little used that squatters had built homes and shops on the rail line. The line is now once again fully functional and will be an important element in the future development of the Fianarantsoa-Manakara economic development corridor. At the moment the line is of limited use because sand invasion of the port prevents boats from entering during much of the year. This problem will be solved once the port is dredged. It is expected that the 118 km of rail that will be imported for the World Bank track rehabilitation efforts will be brought through the port of Manakara and along the newly refurbished spur.

The last and most important track intervention has focused on increasing the security of the line. The project has not attempted to undertake a systematic rehabilitation, which will be carried out with World Bank funding (2003-2005), but has rather focused on those areas of the line identified as hazardous in the Dinika study. Many of the problems are due to erosion and mud slides during the cyclone period. This meant that in many cases the track was little more than two rails running through a sea of packed earth. It was impossible to verify the ties and assure that the rails were properly attached to the ties (which they often were not) since mud covered the key elements of the track superstructure. The project has focused on cleaning and (where necessary) adding ballast, making sure that all the attachments are complete and secure, welding tracks where attachments are missing, and replacing ties and rails where they are

The impact of FCER track work has already been noted in derailment statistics. Between 1998 and 2000, the FCE suffered an average of 5.3 derailments per year. In 2001, there were only 3 derailments on the line and there have been none since May. We expect the number of derailments to decrease even further after second phase track security interventions are carried out in Project Year 2.

the most badly worn. During Fast Track and Phase I activities, we soldered 961 joints, replaced 1,240 meters of rail, replaced 2,865 rotten wooden ties with metal ties, and replaced 309 worn metal ties. In all cases, these interventions took place where the risk of derailment was the greatest so as to increase the overall security of the line.

We have continued to benefit from the generous contributions of the private Swiss railways in carrying out these interventions. Over the first year of the project, we have imported 1050 meters of rails, more than 2000 ties, and used rail and track maintenance equipment. The project paid transport costs for these materials, all of which were donated by members of the Swiss solidarity network.

I. 4.e. Contributions to Improved FCE Management. In addition to these nuts, bolts, and vetiver interventions, the project (following a previous LDI intervention) signed a contract with Fivoarana Consulting to reinforce the management aspects of the FCE system. This has primarily involved computerizing the FCE payroll, stock, ticketing, and financial accounting systems. The computerization of these functions has both permitted the more effective use of project funded and other FCE resources and has encouraged more transparent accounting practices as required to attract potential concessionaires. We continue to have excellent relations with our counterparts at the FCE, as well as with beneficiaries along the line and provincial authorities. The project has met with and encouraged two potential concessionaires who are interested in managing the line: Sheltam Rail Services (from South Africa) and SNCFI (the international affiliate of the French rail company).

I.5. Results Indicators

Based on findings in the Master Plan Study and the additional funds we have been able to leverage, we submitted a revised implementation plan in July 2001 which has been approved. Revised targeted results have been proposed in a task order modification now pending with USAID. The targeted results below are those in the initial task order.

Targeted Results	Progress in Achieving Results
1000 meters of tunnel repaired	Will be undertaken by the African Development Bank
126 meters of bridges repaired	Will be undertaken by the African Development Bank
25,000 meters of structures repaired	53.9 km of drainage ditches cleaned 21 drains or culverts rehabilitated 10 new drains or culverts completed
6000 meters of breast wall constructed	750,000 vetiver slips planted (some in conjunction with LDI's cyclone recovery activities)
800 hectares of abutting embankments stabilized	245 farmers trained in hillslope stabilization techniques (in conjunction with LDI's cyclone recovery activities)
3000 meters of alignment stabilized	13.31 km of track stabilized (joints soldered, rails replaced, and/or ties replaced). 1.25 km of track spur reopened

II. Quarterly Funds Expenditures

Total Estimated for quarter ending March 31, 2002	$ 663,203
Total since beginning of contract through March 31, 2002	$ 2,168,442

	January Actual	February Projected	March Projected	**Total Projected**
Workdays Ordered	57,883	60,200	59,500	**$177,583**
ODCs	41,736	125,743	297,200	**$464,679**
G&A	1,949	4,197	13,701	**$19,847**
TOTAL	**101,568**	**190,139**	**370,401**	**$662,108**

III. Task Order Year 1 Expenditures

	Feb, Mar 2001	Apr-Jun 2001	Jul-Sept 2001	Oct-Dec 2001	Jan-02	**TOTALS**
Workdays Ordered	64,129	212,094	121,035	168,445	57,341	**$623,044**
ODCs	22,579	160,089	249,846	465,679	42,277	**$940,470**
Rehab Fund		*53,385*	*154,548*	*391,314*	*18,793*	***$618,040***
G&A	1,079	7,652	11,943	22,361	1,949	**$44,984**
TOTAL	**$87,787**	**$379,836**	**$382,824**	**$656,485**	**$101,567**	**$1,608,498**

IV. Projected Expenditures -- Quarterly

	actual thru Dec 31, 2001	thru Mar. 31, 2002	thru June 30, 2002	thru Sept 30, 2002	**Total by Dec. 5, 2002**
Workdays Ordered	565,704	743,287	921,247	1,099,206	**1,217,846**
ODCs	897,594	1,362,273	2,441,293	2,964,292	**3,323,299**
Rehab Fund	*611,608*	*984,568*	*1,977,115*	*2,413,642*	*2,715,000*
G&A	43,036	62,883	98,872	134,861	**158,854**
TOTAL	**1,506,334**	**2,168,443**	**3,461,412**	**4,198,360**	**4,699,999**

Rehab Fund is included in ODC's

V. Fast Track and Phase I Procurement by Category

Fast Track and Phase I Procurement by Category

Category	Amount
Locomotive parts	$105,101
Draisine and motorlorry parts	$871
Track laying equipment	$8,600
Fuel pump and fencing materials for fuel depot	$4,158
Bulldozer and compressor parts	$9,031
Ballast	$4,461
Vetiver	$9,395
TOTAL	**$141,617**

Items ordered, in transit	Amount
Track fixtures	$154,123
Track laying materials	$100,500
Locomotive parts	$754,391
Draisine parts	$47,448
TOTAL	**$1,056,462**