

PD-BEK-664

93676

Final Report

Final Evaluation Study

# **Strengthening Road Maintenance Project**

(Project No. 677-0050)

United States Agency for International Development  
N'Djamena, Chad

USAID Contract: IQC No. PCE-0001-I-003013

 **Morrison Knudsen Corporation**

with the assistance of  
Wilbur Smith Associates and Sheladia Associates, Inc.

September 8, 1994

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## Acronym List

ARN	Agence Regionale de N'Djamena
BAD	Banque Africaine de Developpement
BDEAC	Banque des Etats de l'Afrique Centrale
BNF	Bureau National de Fret
CAER	Compte Autonome d'Entretien Routier
Cat	Caterpillar
CoP	Chief of Party
CST	Conseil Superieur de Transition
CTT	Cooperative des Transporteurs Tchadiens
DAI	Development Alternatives, Inc.
DCI	DeLeuw Cather International Ltd
ETTP	Entreprise Tchadienne de Travaux Publics
FCFA	Franc Communaute Financiere Africaine
FED	European Development Fund
GDP	Gross Domestic Product
GER	Groupe Entretien Routier
GOC	Government of Chad
IDA	International Development Association
IDB	Islamic Development Bank
IQC	Indefinite Quantity Contract
IRI	International Roughness Index
km	Kilometer
kw	Kilowatt
LBII	Louis Berger International, Inc.
lm	Linear meter
LNBTP	Laboratoire National du Batiment et des Travaux Publics
m <sup>3</sup>	cubic meter
mm	millimeter
MTPT	Ministere des Travaux Publics et des Transports
OFNAR	Office National des Routes
OTJ	On the Job Training
PACD	Project Assistance Completion Date
PASET	Projet d'Adjustement Sectoriel des Transports
PST2	Second Projet Sectoriel des Transports
PIL	Project Implementation Letter
SNER	Societe Nationale d'Entretien Routier
SRMP	Strengthening Road Maintenance Project
STEE	Societe Tchadienne d'Eau et d'Electricite
STECHE	Societe Tchadienne d'Etudes et de Construction Hydraulique
TA	Technical Assistance
UNDP	United Nations Development Program
US	United States
USAID	United States Agency for International Development
USAID/W	USAID Washington
VOC	Vehicle Operating Costs

## Project Identification Data

1. Country: Chad
2. Project Title: Strengthening Road Maintenance Project
3. Project Number: 677-0050
4. Project Dates:
  - a. First Project Agreement: June 29, 1985
  - b. Final Obligation Date: Fiscal Year 1993
  - c. Project Assistance Completion Date: September 1994
5. Project Funding: USAID Grant US\$33,105,000
6. Mode of Implementation: USAID Direct Contractors:
  - a. Gannett Fleming Transportation Engineers (1985-90)
  - b. Louis Berger International, Inc. (1990-93)
7. Project Designers:
  - a. USAID/Chad
  - b. USAID/REDSO/WCA
  - c. US Department of Transportation
8. Responsible Mission Officials:
  - a. Mission Directors: John B. Woods, Bernard B. Wilder, Richard Fraenkel
  - b. Project Officers: Iqbal M. Chaudry, H. Van de Pol, Samir Zoghby
9. Previous Project Evaluations:
  - a. May 1988
  - b. March 1992

## Executive Summary

The Strengthening Road Maintenance Project (SRMP) was initiated in 1985. The revised completion date for the project was September 1993. The goal of this project was to maintain the road network in Chad. The purpose of the project was to assist the Government of Chad (GOC) in developing a technically competent and financially responsible organization (Office National des Routes: OFNAR) for the maintenance of Chad's road network.

The original period scheduled to accomplish this purpose was ten years and the project was intended to have two phases of five years each. The second phase was cut short following two major events. The first was the World Bank's and other donors involvement in 1988 with the *Projet d'Ajustement Sectoriel des Transports (PASET)* and the second was USAID's decision in 1993 to withdraw its personnel from Chad. The last action which caused disarray of all parties involved in SRMP (USAID/Chad, OFNAR and TA staff) was the decision taken by the World Bank and the GOC to transition OFNAR into a private firm. OFNAR had been the principal focus of USAID assistance since 1985 and of the international donors since 1988. By transitioning OFNAR the GOC, the World Bank and the other donors recognized OFNAR's inefficiency and in effect nullified 8 years of TA and \$33.105 million of USAID funding.

The principal objectives of this SRMP final evaluation study performed by Morrison Knudsen Corporation with the assistance of Wilbur Smith Associates and Sheladia Associates, Inc. were to derive lessons from the implementation of the project, and to evaluate the transformation of OFNAR into the private firm *Societe Nationale d'Entretien Routier (SNER)*.

Opinions and facts were sought by reviewing project quarterly and final reports, contract documents, project implementation letters, Project Agreements, other evaluation reports, and other pertinent documents; from interviews with the staff of USAID, Ministry of Public Works, OFNAR, SNER, and other international donors; and by field trips to five roads maintained during the project. However this evaluation was carried out after OFNAR was abolished, the project completed, the TA team gone, and much of the relevant documentation unavailable.

The main conclusion of the final evaluation is that SRMP fell short of the stated outputs. SRMP developed technically competent individuals but failed to do so at the institutional level. The project failed also to develop a financially responsible organization. This has been, however, outside its scope almost since the conception of the project. The project did succeed partially in reaching the goal of maintaining some roads in Chad.

The successes can be grouped under two categories:

1. Sustainable after the end of the project:
  - Central and ARN workshops' equipment and furnishing;
  - Workshop procedures;
  - Some equipment with a 2-3 year remaining life;

- Construction of wells; and
  - Participation in the Dan'di road construction.
2. During the project:
- Road training brigade;
  - Bitumen brigade;
  - Maintenance of part of the road network.

The reasons for the shortcomings are difficult to assess. It is a combination of accumulated errors in conception, in management, and in technical inputs during the entire the project that, if taken individually and/or corrected in the course of the project, would have contributed to better the outputs. In addition most of the assumptions stated in the Project Paper and presented in the Summary Table 2 could not be maintained over the entire course of the project.

**Conceptual Errors:** Characterized by the failure to define exactly what road maintenance means, failure to foresee either the need for equipment amortization in view of the length of the project or unrealistic expectation of OFNAR financial capacity, failure to define what training consists of, and failure to discuss the funding problem known to be the main recurrent problem for road maintenance in Africa.

**Engineering Errors:** Characterized by the failure to clearly envisage the road maintenance equipment needs for maintenance brigades in Chad, to set standards for road maintenance, and to establish quality control.

**Implementation Errors:** Characterized by the lack of close coordination between the parties and close monitoring of the implementation of the project components.

**Management Errors:** USAID failed to recognize the impact of PASET on SRMP (the problem was discussed at length in a March 3, 1989 Memorandum but failed to take a global view of the problems and concluded that there was no need for the Project Paper revision).

Three main lessons could be derived:

- Project monitoring needs to be both detail-oriented (on a daily basis), and global, allowing a clear vision of the goal.
- Project needs to be revised when the assumptions are no longer valid.
- Project redesign needs to be mandatory when the system takes major shocks.

Specific recommendations follow:

- Future USAID project officer of road maintenance projects must be a civil engineer with relevant field experience.

- A Training Specialist must be appointed when projects have a training component, in addition to the training conducted by the TA;
- Baseline and end-of-project socio-economic study must be done for every project if USAID is concerned about assessing the socio-economic impact of the project.
- Final evaluation of a project must be carried out before the departure of the TA team and before the end of the project.

The Summary Tables 1 and 2 present the findings of this evaluation.

**Summary Table 1  
Evaluation Summary**

**Project Specific Achievements**

Beyond the project

1. Central and ARN workshops' equipment and furnishing
2. Set-up the basis for workshop procedures
3. Some equipment is left with a 2-3 year life
4. Construction of wells
5. Participation in the Dandi road construction

During the project

1. Road training brigade
2. Bituminous brigade
3. Maintenance of part of the road network

**Project Specific Shortcomings**

1. Training: poor training for mechanics, electricians, operators
2. Road maintenance program: never reached 750 km per year
3. OFNAR obligations toward recurrent costs: never fulfilled its quota
4. Private sector involvement: failure to involve PMEs
5. Equipment procurement: failure to evaluate the real needs
6. Wells: failure to share them with the population
7. Average maintenance cost per km: too expensive

**Overall Shortcomings**

Conceptual

1. Failure to define what road maintenance is
2. Failure to foresee the need of equipment amortization to sustain the initial investment
3. Unrealistic expectation of OFNAR financial capacity
4. Failure to define what training consists in
5. Failure to discuss the funding problem for road maintenance

Engineering

1. Failure to specify road maintenance equipment needs correctly
2. Failure to set up standard for road maintenance
3. Failure to establish quality control

Implementation

1. Lack of close coordination between parties
2. Lack of close monitoring of the implementation of the project components among parties

Management

1. Failure to recognize the need for revising the project paper

**Transcending Lessons**

1. Project monitoring must be detail oriented (day to day management), and project management must be global
2. Project must be revised when the assumptions are no longer valid
3. Project redesign must be mandatory when the environment of the project changes

**Specific Recommendations**

1. USAID project officer of road maintenance projects must be a civil engineer with prior field experience
2. Need for a Training Specialist in addition to the TA doing the training
3. Mandatory baseline and end of project socio-economic study to assess project impact
4. Need to carry out the final evaluation of a project before the departure of the TA team and before the end of the project

**Summary Table 2  
Project Goal, Purpose, and Outputs Evaluation**

<b>Project Assumptions</b>		<b>Outcome</b>
Goal	<ul style="list-style-type: none"> <li>1. Absence of sustained armed conflict</li> <li>2. Continuation of efforts toward national unity; and</li> <li>3. Increased economic activity generated over the next five years</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>erratic</li> </ul>
Project Purpose	1. Resources allocated by the GOC, supplemented by donor contributions, would be adequate to support the growing costs of road maintenance	no
Project Outputs	<ul style="list-style-type: none"> <li>1. TA has operational responsibility for road maintenance training and for Central Workshop operations, under OFNAR direction</li> <li>2. Chad transport economy remains open to private sector initiatives; and</li> <li>3. Adequate staff in terms of quality and numbers is furnished to OFNAR</li> </ul>	<ul style="list-style-type: none"> <li>partially</li> <li>yes</li> <li>no</li> </ul>
<b>Project Goal, Purpose, and Outputs</b>		<b>Outcome</b>
Goal	Maintain Chad's road network	
Indicators	<ul style="list-style-type: none"> <li>1. Increased volume of traffic</li> <li>2. Increased volume of ag product carried on the road</li> <li>3. Increased longevity of the road network</li> <li>4. Reduced vehicle operating costs</li> </ul>	<ul style="list-style-type: none"> <li>yes</li> <li>na</li> <li>na</li> <li>na</li> </ul>
Purpose	Assist the GOC in developing a technically competent and financially responsible organization for the maintenance of the road network	no
Indicators	<ul style="list-style-type: none"> <li>1. Maintain with its own equipment 750 km</li> <li>2. Decrease in OFNAR support</li> <li>3. OFNAR geographical scope expanded</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>no</li> </ul>
Outputs	1. Fully trained and equipped OFNAR	yes
Indicators	<ul style="list-style-type: none"> <li>1. 18 supervisors and managers</li> <li>2. 40 equipment operators</li> <li>3. 50 mechanics and shop technicians</li> </ul>	<ul style="list-style-type: none"> <li>yes</li> <li>yes</li> <li>yes</li> </ul>
	2. Roads maintenance crews functioning	
	<ul style="list-style-type: none"> <li>1. Maintenance of 750 km</li> </ul>	no
	3. Central and ARN workshops equipped	
	<ul style="list-style-type: none"> <li>1. Regular maintenance of OFNAR and ARN equipment</li> </ul>	yes
	4. Rehabilitation of the Dandi road	yes

1  
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**Section 1.0**  
**Introduction**

## Section 1 Introduction

This report presents the final evaluation of the Strengthening Road Maintenance Project (SRMP) in Chad. SRMP was initiated in 1985 and lasted until September 30, 1993. Total funding for the project was US \$33.105 million.

SRMP experienced many disturbances including: two implementing contractors, Gannett Fleming Transport Engineers (1985-1990) and Louis Berger International (1990-1993); three Chiefs of Party; a large Technical Assistance turnover; three Mission Directors; three USAID Project Officers; civil unrest; and considerable political strife throughout its lifespan. Furthermore, the World Bank's and other donors increased activities in the transport sector with the *Projet d'Ajustement Sectoriel des Transports (PASET)* in 1988, followed by the *Second Projet Sectoriel des Transports (PST2)*, contributed to limit USAID's sphere of influence in this sector.

The remaining part of this section briefly discusses the economic, political and social context of Chad; gives a summary description of the Project; presents the purpose and the study questions of this evaluation; and provides the team composition and the evaluation method.

### 1.1 Economic, Political, and Social Context of the Project

Chad is a landlocked country located in Central Africa. Its capital, N'Djamena is more than 1400 km from the nearest port. Chad depends on its good relationship with, and political stability in, Nigeria and Cameroon for its foreign commerce. As a landlocked country with no railroad, roads are of primordial importance for Chad's future economic development within and outside its frontiers.

Chad can be divided into three climatic zones, according to the amount of rainfall per year; they are from North to South:

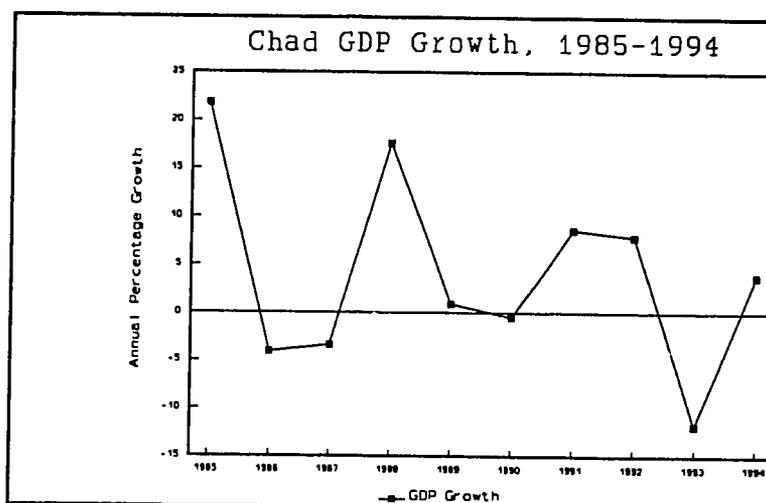
- Northern half of the country: Saharan and Saharo-Sahelian zones with 50 to 400 mm of rainfall per year;
- The Sahelian zone receives up to 600 mm of rainfall per year; rainy season lasts four months.
- The Sudanian zone receives from 600 to 1200 mm of rainfall per year; the rainy season lasts six to eight months. This zone is the most populated and has important rainfed crops (both food and cash) with cotton as major cash crop.

Chad's population is estimated to be 6.3 million, based on the 1993 census. This latest figure is significantly higher than the estimates available prior to the census. Urban population represents 21 percent and is growing. Eighty percent of the population depends on agriculture for income generation.

The recent CFA devaluation (January 1994) and the increased population as reported in the 1993 census contribute to a significant decrease in the GDP per capita which is estimated by the Ministère du Plan et de la Coopération to be US\$ 119 in 1994 as opposed to US\$ 169 in 1993.

Throughout the lifespan of the project real GDP growth has been erratic:

1985	+21.8
1986	- 4.1
1987	- 3.4
1988	+17.6
1989	+ 0.9
1990	- 0.5
1991	+ 8.6
1992	+ 7.9
1993	-11.8
1994	+ 3.8



These data should be reviewed with caution since considerable uncertainty exists as to the real size of the private sector. Agriculture and industry respectively represent 47.5 percent and 14.5 percent of 1994 GDP projection. Exports are dominated by livestock (41.3 percent of total export) and cotton (29.4 percent). Significant oil reserves have been discovered in the South and somewhat less significant reserves near the Lake Chad with possible production projected in the year 2000.

Political stability in Chad after the civil war of 1979-1982 has been a problem. In late 1990, Hissene Habre, then the President, was run out of office by Idriss Deby. Since then, the political situation has never been stable; and it has degraded further with increased armed conflicts and civil strife during 1992. The National Conference of 1993 created hope for a new representative government system. General elections should be held in 1995. However, very little has changed and the public sector seems to be on hold. As a result, the country is going through a difficult transition.

Table 1.1 gives Chad's main indicators in economy, population and environment.

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## 1.2 Description of the Project

The Office National des Routes (OFNAR), created in 1984, was responsible for maintaining the road network under the Directorate of Roads in the Ministry of Public Works until 1993 (Annex 1 presents OFNAR organization chart). The Directorate of Roads' function was to plan the maintenance campaign every year. The National Public Works Laboratory (LNBTP), an autonomous entity, was responsible for, among other functions, field and laboratory tests for quality control

**Table 1.1**  
**Chad's Main Indicators**  
**Economy, Population, Environment**  
**1994 (projection)**

**Economy**

GDP Growth	Forecast 1994 4.2%; 1993: -11.9%, 1992: 8.0%
Industry	14.5% of GDP (cotton: 29.4% of exports)
Agriculture	47.5 % of GDP (livestock: 41.3% of exports)
GDP Per capita	\$119, 1994
Budget Deficit	7.1% of GDP; 81.5% of state's receipts
Total Exterior Debt	88.8% of GDP in 1994
Total Service Debt	0.4% of GDP in 1994

**Population**

Total	6.3 million, 1993 census
Rural	78.8%
Urban	21.1%
Growth	Total 2.6% 1992-2000
Urban	6.8% 1980-1992

80% of population depends on agriculture for its income

Literacy Total: 30% of population; 18% of women, 1990

Access to piped water: 30% of the population of N'Djamena

No household waste water, sewage, and solid waste systems exist

**Environment**

**Problems**

Deforestation	Wood and charcoal account for 80 to 90% of energy consumption in the country and 95% of household energy consumption Annual rate: 0.7%
Desertification	No data available
Biodiversity loss	No data available
Decrease in fishing reserves	No data available

**Particular Problems**

Water	Significant decrease in rainfall in the last 30 years. For example: median average rainfall in N'Djamena was over 600 mm between 1950 and 1967, but under 450 mm between 1968 and 1985; the 100mm isohyet averaged about 200 km north of Lake Chad between 1950 and 1967, but only 50 km after 1968
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Sources: Principaux Indicateurs Macro-Economiques, 24 Mai, 1994, Direction de la Statistique, des Etudes Economiques et Demographiques, Ministere de la Cooperation et du Plan  
 Chad: Country Environment Strategy Paper, Draft, Prepared for the World Bank by Joy E. Hecht, January 1994  
 World Development Report 1994, Infrastructure for Development, Published for the World Bank, Oxford University Press, New York, NY, 1994

of road building. However, OFNAR was doing the planning and control as well as the maintenance of the network.

Chad priority road network consists of about 4724 km of classified (primary and secondary) roads. In 1994 the priority network (see Annex 2) is composed of:

- Primary roads: 3,769 km (including 260 km paved); and
- Secondary roads: 955 km.

The Agence Regionale de N'Djamena (a sub-division of OFNAR) had around 1456 km of roads to maintain (30 percent of the national network) of which 255 km are bituminous and 1201 km earth surfaced roads. Only 40 percent have been rehabilitated in the last five years (Annex 3).

USAID was the first international donor after the civil war to start a technical assistance program in the road maintenance sector. The Strengthening Road Maintenance Project (SRMP) was started in 1985 as a five year, \$27.5 million activity with a Project Assistance Completion Date (PACD) of September 30, 1990. During the life of the project there were 10 project amendments and 38 Project Implementation Letters (PIL). The main amendments are:

- The amendment of July 26, 1988 deleted the Djermaya-Dandi road rehabilitation work from the project and gave a sub-grant to the World Bank to build the road.
- The amendment on August 31, 1989 increased the total funding to \$29.76 million and extended the completion date to March 31, 1992.
- The amendment on July 15, 1991 increased project funding to \$33.105 million and extended the PACD to September 30, 1993.
- The last amendment extended the PACD to September 30, 1994.

The project included technical assistance to OFNAR, rehabilitation and furnishing of office and workshop buildings, equipment rehabilitation and procurement of new road maintenance equipment, financing road maintenance operations, and workshop and field staff training.

### 1.3 Purpose and Study Questions of the Evaluation

The purpose of this study was to perform a final evaluation of the Strengthening Road Maintenance Project and evaluate the transition of the Office National des Routes (OFNAR) to the Societe Nationale d'Entretien Routier (SNER). The full length statement of work is detailed in Annex 4.

The final evaluation responds to the following questions with an emphasis on the achievements and shortcomings of the project upon completion, the lessons learned from the implementation of the project, and the transition from a public service office to a private sector entity:

1. What has been the progress in achieving the original objectives of the project as far as specific inputs and outputs?
2. How successful and effective were the technical assistance teams, OFNAR, and USAID in insuring the timely provision of satisfactory inputs to accomplish the project's planned outputs? The contractor shall discuss the success of these organizations in collaborating and coordinating with one another to achieve project outputs.
3. What impact has the project on socio-economic structures and elements such as farmers, consumers, markets, transporters, the environment, and women? Specify the positive and negative impacts for each of the above.
4. Were the effects of the project produced at an acceptable cost compared with alternative approaches and what are alternatives for the future?
5. Were the project objectives and strategy for their achievement valid with the arrival and participation of other donors in the transport sector, such as the World Bank, and how does this fit into PST2 and long term sustainable projects and results in the future?
6. What are the future possibilities for USAID to contribute to the Transport sector in Chad?
7. What have been the achievements of the project in integrating the private sector into road maintenance and what can be done to encourage private sector input in the future?

Question 6 above pertaining to future USAID activities in Chad addressing road maintenance is moot since USAID has decided to withdraw from Chad. It is also USAID/W's policy to avoid any future involvement in road projects except indirectly as associated with agricultural projects.

The evaluation team's mission, as understood by its members, consisted not only in analyzing the results of the project between January 1992 and September 1993, but also and more importantly to encompass the life of the project, draw lessons, and recommendations for USAID which transcend the project itself.

#### **1.4 Team Composition and Study Methods**

The evaluation study contractor, Morrison Knudsen Corporation, fielded a three member team, consisting of a Team Leader/Economist (Christine Bernardeau), a Senior Transport Economist (Graham Gleave), and a Senior Civil Engineer (Michael Scott). The evaluation team's field work was carried out during the period of July 12 to August 17, 1994.

The evaluation study focused on project activities undertaken since the previous evaluation carried out in early 1992, specifically from January 1, 1992 to September 30, 1993.

Opinions and gathering of facts were sought in:

- A review of project quarterly reports (1992-1993), contract documents, Project Implementation Letters (PIL), Project Agreements, previous evaluation reports, and other pertinent documents (Annex 5).
- Interviews with staff of the following organizations: USAID, Ministry of Public Works, OFNAR, Bureau National de Fret (BNF), SNER, Ministry of Finance, Ministry of Plan and Cooperation, other international organizations, and private public work companies (Annex 6).
- Field trips to Linia, Dandi, N'Goura, Mbere, and Bongor.

A considerable amount of time had elapsed since the official end of the project (September 30, 1993) and the start of this final evaluation. Key people had left or moved away, organizations had changed or disappeared, documents had been packed and stored, and in some cases shipped away, and memories were vague. As a result, the evaluation team had tremendous difficulty getting a good grip on facts to form a complete picture of the project from January 1992 to September 1993.

One of the major difficulties was the lack of interlocutors from the Technical Assistance team. Assessment of the TA team performance was based largely on reading the quarterly reports. Unfortunately the quarterly reports are incomplete and lack standardization (lack of consistent format, use of tabulated records and logical approach to assessing progress and achievements) and information is difficult to extract from the reports. It is the opinion of the evaluation team that the quarterly reports needed a precise outline to report project progress in an identical format from quarter to quarter.

USAID would have been better served and funds better spent had the final evaluation of the project been carried out as planned in June 1993, with a second separate evaluation for analyzing the transition of OFNAR into SNER two or three years later (this part will be developed later in the report: Section 2.5).

## **Section 2.0**

### **Findings of the Evaluation Team**

## Section 2 Findings of the Evaluation Team

This section presents the project progress towards meeting its objectives for the period from January 1992 through September 1993. It then analyzes the overall cost of the project. The third and fourth sections discuss the private sector achievement of the project and the socio-economic impacts. The fifth section examines the overall project success, and the last section analyzes the project objectives and strategy in view of the World Bank's and other donors actions during the life of the project.

### 2.1 Achieving the Project Objectives

During the project life the original objectives evolved. They were shaped and further defined in thirty-eight Project Implementation Letters. These objectives are grouped and analyzed under the topics in the following text. They are:

- OFNAR Central and ARN Workshop, and Training;
- ARN Workshop Procedures;
- Maintenance Program;
- Road Maintenance Crews;
- Host Country Contracts; and
- OFNAR Obligations Toward Recurrent Costs.

#### 2.1.1 OFNAR Central Workshop, ARN Workshop, Training

##### 2.1.1.1 OFNAR Central Workshop and ARN Workshop

###### Central Workshop

###### Repair Facilities

The rehabilitated Central Workshop contained seven activity sections:

- Heavy Plant & Equipment;
- Heavy Trucks,
- Light Vehicles and Body shop;
- Machine Shop;
- Engine Shop;
- Automotive Electrical Shop; and
- Fuel Pump and Injector Shop.<sup>1</sup>

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<sup>1</sup> The Central Workshop was inspected in July 1994 in its present SNER format and the workshop retains the ability to perform as a competent well organized unit. The stores remain well organized by equipment and manufacturer type for specific items and by commodity type for general items such as tires, batteries, etc.

Additional needs were identified by LBII and separate specialist repair shops were added to cater for transmission work and hydraulic repairs and to provide OFNAR a center for formal training classes.

### Storekeeping

A dual system of inventory is still maintained, consisting of the Card Index system set up by Gannett Fleming to back up a computerized system for continuous cost control of inventory and repairs data. The LBII TA team was in the process of installing a computerized system when Advisors funded by IDA decided to set up their own system. The LBII system was abandoned to avoid duplication and confusion.

The LBII advisors obtained microfiche readers as well as parts catalogues for all main equipment items in use to provide a rapid and compact means of identifying and ordering spares. This was a worthwhile step in insuring that such valuable data would remain in a compact, protected and long lasting form.

In 1988 a Central Workshop inventory system had been established by Gannett Fleming which was expanded into a centralized control with only fast moving parts held in the agencies, as a result the overall situation became greatly improved and more manageable.<sup>2</sup> However in 1991 the Central Workshop stock of spare parts had been used up. Each of the five OFNAR agencies had autonomy over the spare parts it held in stock, but there was no central inventory and massive duplication of parts and stores was occurring.

OFNAR financial shortages caused ceaseless problems and delays in the procurement of stores and spare parts. A preventive maintenance plan was developed by LBII but they were unable to convince OFNAR of its benefits and it was not implemented. This situation was further aggravated by OFNAR's unwillingness to dispose of equipments that were past economic life.

### Additional Improvements

In the period 1992-1993 a new concreted equipment washing area was constructed, 100 kw backup power generator unit installed and connected and centralized compressed air and electric power tool distribution lines installed under host country contracts. These items are all essential to the function and cleanliness of a modern mechanical workshop.

### Repair Procedures

Workshop repair procedures remain similar to those initiated jointly by LBII and the Direction du Materiel. They consist of a work order costing system for each repair

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<sup>2</sup> Since the transformation of OFNAR into SNER obsolete spare parts have been made over to a liquidator for disposal and credit to the OFNAR account and all parts previously held in the regional agencies have been returned to the Central Workshop.

combining costs of parts, materials, and labor. A computer data-base recording all repair-work and operating costs for each equipment item was created. Samples of the current Rapport Mecanique and Ordre de Travail are included in Annex 7. The workshop methods are good, but with the present low literacy level require continuous close supervision.

Efforts were made to support the private sector by having repairs done by private workshops rather than purchasing expensive equipment for OFNAR which would remain under-utilized. This policy was not always successful or satisfactory and as the skill of the OFNAR mechanics improved for complex work, repairs were carried out in-house.

### **ARN Workshop**

The ARN Workshop was advantageously located next to the Central Workshop and had been established to handle straightforward running repairs to the brigades' equipment. Major work was handled by the Central Workshop. During the period of its use the ARN Workshop functioned as a competent "On-the-Job" (OTJ) training ground for field mechanics and servicing staff.

#### **2.1.1.2 Training**

##### **Achievements**

A comparison has been made between the total number of staff identified for training in the Project Paper and the total numbers trained in each category. While the total number trained was achieved, the numbers in each category are markedly different from those originally identified (Table 2.1.1).<sup>3</sup>

A low success rate was recorded in training adequate numbers of supervisory and skilled staff. Regular appraisals of the training targets cannot be found in the project documents and it seems doubtful if any were carried out.<sup>4</sup>

After 1992 when layoffs occurred an overall improvement followed with the better staff being retained and a generally more responsible attitude to work resulted.

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<sup>3</sup> No clear summary table listing the numbers and categories of staff trained by LBII could be found and it is possible that the figures tabled present an underestimate. At the end of 1993 OFNAR had 76 staff in the Central Workshop, 10 in the Store and 43 in the ARN, a total of 129. Since training was a continuous process and there was a turnover of staff it is probable that more than 129 received OTJ training. Certain categories that show no trainees existed and must also have been trained e.g. foremen and machinists but the reports simply list mechanics, engine mechanics, electro-mechanics and assistant mechanics and these are the staff tabled.

<sup>4</sup> If the targets listed in the Project Paper were unrealistic in respect of training senior staff comment was due. Possibly this was an inherent point of weakness in relying on OTJ training or is an exaggerated impression perceived at this late stage due to the very sparse records on the subject.

**Table No. 2.1.1.  
Training Targets & Achievements.**

Category	Number	Phase I	Phase II	Phase II	Total	Training
	Proposed in Project Paper	Actual Number Trained	Actual Number Trained	Bitumen Brigade		
	1	2	3	4	5	6
Field Engineer / Supervisor	2	3	0	1	4	2
Road Maintenance Foreman	2	0	0	0	0	(2)
Equipment Foreman / Instructor	2	1	0	0	1	(1)
Labor Foreman	2	0	0	2	2	0
Equipment Operator	42	36	10	0	46	4
Field Mechanic	10	3	0	1	4	(6)
Field Maintenance Clerical Personnel	5	4	0	0	4	(1)
Central Workshop Superintendent	1	0	0	0	0	(1)
Engine Mechanics Foreman	1	0	0	0	0	(1)
Engine Mechanics	10	0	10	0	10	0
Spare Parts Foreman	1	0	0	0	0	(1)
Spare Parts Specialist / Warehouseman	10	2	0	0	2	(8)
Machinist Foreman	1	0	0	0	0	(1)
Machinists	5	0	0	0	0	(5)
Service Foreman	1	0	0	0	0	(1)
Equipment Servicing Technicians/Asst Mechs	10	4	3	0	7	(3)
Truck Drivers	0	16	0	1	17	17
Light Vehicle Drivers	0	5	0	1	6	6
Welder	0	1	0	0	1	1
POL Technician	0	1	0	0	1	1
Field Office/Radio	0	1	0	0	1	1
Electrician	0	0	3	0	3	3
Laborers	0	0	0	8	0	0
						0
<b>Total</b>	105	77	26	14	117	12

**Sources**

1. Project Paper Chad Strengthening Road Maintenance Project 677-0050 24 June 1985
2. Gannet Fleming Phase I Final Report September 1990
3. Gannet Fleming Phase I Final Report September 1990
4. Louis Berger Int. Inc. Quarterly Reports Phase II

### OFNAR Training Center

An OFNAR center for formal training was created in 1992 with USAID funding.<sup>5</sup> A short term visit by an Electrical Mechanic provided formal training for six OFNAR personnel. With OFNAR help the Electrical Mechanic also renovated the back-up generator for the electrical distribution system and completed the installation of a compressed air distribution line system in both the Central and ARN Workshops. It was recorded that more electricians would have been trained but that suitable staff could not be obtained by OFNAR due to their inability to offer competitive salaries. Sixteen mechanics received training at the OFNAR center during the first six months of 1992. Lectures were given by the Caterpillar agent. While this type of training reinforced the capability of the OFNAR workshops' personnel to undertake complicated repairs confidently, it did result in less work being given out to private sector companies.

### Bitumen Brigade

The major training exercise of the period and one that was unpredicted in the project paper was the training of a fourteen man "Bitumen Brigade" to undertake crack sealing, patching and other bituminous pavement repairs. They also cleared the waterways and bottoms (inverts) of drainage structures and carried out other non-mechanized maintenance work.

The bitumen brigade training commenced in September 1992 with pavement condition survey and inventory instruction for the supervisors. It concluded at the end of March 1993 having carried out crack sealing repairs on 244 kilometers of the Guelengdeng-N'Djamena, N'Djamena-Djermaya and Djermaya-Dandi roads.<sup>6</sup>

### **Failings**

The staff trained were generally stated as being too old. Eighty percent of those accepted for training were illiterate and unable to read a service manual, order parts, fill a report or timesheet or be taught in any formalized study course. Why was the training unable to concentrate entirely on the retraining of existing personnel under 30 years of age for whom work would continue to exist?

Half the personnel trained left for jobs in the private sector, not simply for higher pay, but because there was no position for them within the OFNAR organization (e.g. the number of operators needed is governed by the number of equipment items in use and unless more equipment is purchased or an operator leaves OFNAR there

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<sup>5</sup> During 1991-93 the BAD funded a "Programme de Formation" by establishing "Le Centre de Perfectionnement et Recyclage" directed at the training of mechanics, welders, electricians, and like tradesmen. There were short courses of two weeks every three months and longer two month courses.

<sup>6</sup> The crack sealing method initially taught was inappropriate and expensive for Chad. It would have been better to concentrate entirely on simple patching and crack sealing methods using hot bitumen and/or bituminous emulsion products with sand, fine and coarse aggregates.

is no machine for the new operator, the same principle applies to the need for mechanics). The project intention had been that the trained staff would be sent out to other brigades and replaced by new trainees.

The project failed to remedy the complaints put forward about the poor standard and the unsuitability of the trainees designated for training. The TA team should have had authority in the selection process. The TA team should have been responsible for arranging basic literacy classes for candidates who, although illiterate, had an affinity for the work.

At least 10 percent of all equipment failures and breakdowns were a direct result of abuse or overstressing of the machine, possibly stemming from a lack of understanding of simple laws of mechanics, factors that are hard to remedy without literacy.<sup>7</sup>

The creation of the "Centre de Perfectionnement et Recyclage" during the period 1991-93 would appear to substantiate the view that there was a desire for tradesmen to be trained but that the USAID program was failing to hit the target and train the people who were best suited to learn; they were obliged to follow unsatisfactory OFNAR selections.

The emphasis was for OTJ type training to comply with the Project Paper. However for skilled mechanics, electricians and machinists some degree of formal training is essential as are regular reports, skill tests and assessments. The evaluation team was unable to find evidence of any formalized method of recording the training achievements.

### **2.1.2 ARN Workshop Procedures**

Workshop and equipment repair procedures followed those established for and described in the section on the Central Workshop Repair Facilities (2.1.1.1.). The "work order and equipment operating cost system" appears to have functioned well within limitations and to have improved as staff became experienced with it. The limiting factor was the weakness inherent in the system. The system accuracy was wholly dependent on the quality and integrity of the reports, literacy levels of the shop, field mechanics, and the operators, whose literacy level was generally stated by both Gannett Fleming and LBII as being low and inadequate. Although the ARN workshop has been disbanded, the fundamental methodology remains in use at the Central Workshop.

### **2.1.3 Road Maintenance Program**

During February 1992 the political situation in the country was such that field trips by the Field Mechanic and other Advisors were curtailed. Field trips were again curtailed in June 1992 when the security situation further deteriorated. LBII reported

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<sup>7</sup> These comments are a combination of opinions previously stated in the reports of Gannett Fleming and LBII and obtained at interviews with former senior workshop staff of OFNAR.

that as a result of these conditions both the road maintenance work and equipment repairs were also delayed or reduced during the periods of insecurity.

### Work Definition

The road maintenance program for each campaign was issued by the MTPT in the form of a bill of quantities for each road and a unit rate for the work, with an outline schedule for carrying out the work items during the period. OFNAR was then expected to make up its own detailed workplan to suit but evidently considered this could not be done until after the wet season had ended. Such a policy failed to take into account the weak lengths of road remaining from year to year. The LBII advisers identified this as a problem but were unable to modify it.

A major problem was that the Project Paper nor any subsequent consultants' reports defines the maintenance objective and what was meant by "kilometers of road maintained".

The LBII method of reporting and recording maintenance work in the quarterly reports failed to provide a clear picture as to exactly what was maintained and to which standard. A standardized report format for routine periodic data should have been developed in the first months of the project. However, there was not a simple method by which the maintenance of a road requiring a combination of treatments could be reduced to a single kilometer length quantity per year and still be fully informative and descriptive. Therefore the revised project output when stated in terms of OFNAR maintaining 750 km of earth road within the ARN was vague and open to misinterpretation.<sup>8</sup>

Only in 1991 did the quarterly reports refer to four standard categories of routine maintenance. These categories are:

- **Category-1: Passe Rapide - Reprofilage a Sec** (Unit: linear meters) consists of a fast dry grading of the road surface;
- **Category-2: Reprofilage avec Compactage** (Unit: linear meters) consists of a light scarifying of the running surface, reshaping by grading, and immediate recompaction with added water (only if necessary). Other sections badly damaged in the preceding wet season might require "Reprofilage Lourd";
- **Category-3: Reprofilage Lourd** (Unit: linear meters) is a process that requires a heavy cut with the grader, scarifying of the carriageway and subsequent watering and rolling; and

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<sup>8</sup> By carrying out "Passe Rapide-Reprofilage a Sec" twice a year, or more probably a "Passe Rapide" immediately after the rains to re-establish fast travel, followed later in the dry season by a "Reprofilage avec Compactage" to redefine the road shape over the 750 km system, one could claim to have maintained 1,500 km of road.

- **Category-4: Rechargement** (Unit: cubic meters) is the building up of an engineered road embankment from imported earth with the inclusion of culverts and causeways.

Category 1 consists of work that would normally be performed over the full road length each year.<sup>9</sup>

The method by which maintenance achievements are stated in terms of road length is only valid in the case of Category-1, routine mechanized maintenance. This should be carried out over the full length of a road at least once a year, its second application would probably be selective and only be carried out where any of the other three treatments had not been used. Maintenance treatments Categories 2, 3 and 4 may not necessarily be applied over the full length of a road and therefore are selective by nature. The basic intention is that the full length of each road will be graded twice during the maintenance season using one or more combinations of the four treatments.

### Campaign Programs and Reports

The ARN work programs have been tabulated for both the 1991-92 and 1992-93 routine maintenance campaigns and presented in Table 2.1.3. One can conclude that the maintenance program was virtually fulfilled in both years, though the project objective of 750 km per year was never attained. Table 2.1.3 compares the available data on the campaign program and actual recorded achievements for the maintenance campaigns of 1991-1992 and 1992-1993. The actual work quantities for Table 2.1.3. are sourced from the LBII quarterly reports and indicate 502 km of road were maintained out of a program of 538 km in 1991-92 and 430 km out of 460 km in 1992-93. The program did not exceed 540 km per year using the straightforward two gradings per year interpretation for the length maintained.<sup>10</sup>

From an analysis of the maintenance reports and programs it was impossible to identify where and when each work type was carried out. The work listings give a quantity in cubic meters (m<sup>3</sup>) for Rechargement and in linear meters (lm) or kilometers (km) of full width grading for the other three processes.

The OFNAR reports differ from those of the consultant and sometimes add in extra lengths for each subsequent pass of grading in each of the three treatment categories. Therefore quantities for the same work as listed in the OFNAR report to the MPTT

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<sup>9</sup> Treatment procedures for graveled roads differ and generally consist of only two categories: Passe Rapide as for earth roads and Resheeting (the placing of a fresh replacement layer of gravel in combination with watering and compaction).

<sup>10</sup> The Maintenance Programs were issued by the MPTT to OFNAR and the effectiveness of the TA input was therefore largely dependent upon the degree of detail and accuracy with which the program was drawn up. In reality the program was wholly without any details except the road name, work type, quantity and time and in the period 1991-1993 contained very little rehabilitation work.

**Table No. 2.1.3.**  
**Programmed and Reported Routine Maintenance Work in the ARN in**  
**The Years 1991-1992 and 1992-1993.**

1991 / 92 Item / Location	Unit	Djermaya- -N'Goura Est/Actual	N'Goura- -Bokoro Est/Actual	Guelengdeng- -Ere Est/Actual	Ere- -Lai Est/Actual	N'Djamena- -Linia Est/Actual	Guelengdeng- -Busso Est/Actual	Totals Est/Actual
Bouchage Nids Pde oules	m3	4342	658	0	0	0	0	5,000
Construction Buses	ml	21	163	16	0	0	0	200
Construction Radiers	ml	0	0	0	0	0	0	0
Beton, Maconnerie	m3	11	82	8	0	0	0	101
Reprofilage a Sec	km	0	0	0	0	0	0	0
Reprofilage Compactage	km	171 / 171	0	169 / 169	Tf to ND-Linia	30 / 30	0	370 / 370
Reprofilage Lourd	km	171 / 171	103 / 103	169 / 133	65 / 65	30 / 30	0	538 / 502
Rechargement	m3x1000	80 / 22.6	36.5 / 38.6	40 / 27.2	6.5 / 0	1 / 0	0	143 / 88.4
TOTAL Reprofilage	km							538/502
TOTAL Rechargement	m3							143 / 88.4

1992 / 93 Item / Location	Unit	Djermaya- -N'Goura Est/Actual	N'Goura- -Bokoro Est/Actual	Guelengdeng- -Ere & Ferry Accesses Est/Actual	Ere- -Lai Est/Actual	N'Djamena- -Linia Est/Actual	Guelengdeng- -Busso Est/Actual	Totals Est/Actual
Bouchage Nids de Poules	m3	NA	NA	NA	NA	NA	NA	NA
Construction Buses	ml	NA	NA	NA	NA	NA	NA	NA
Construction Radiers	ml	NA	NA	NA	NA	NA	NA	NA
Beton, Maconnerie	m3	NA	NA	NA	NA	NA	NA	NA
Reprofilage a Sec	km	171 / 171	0 / 0	194 / 194	65 / 65	0 / 0	***150 / 150	430 / 430
Reprofilage Compactage	km	*171 / 171	0 / 0	194 / 194	65 / 65	**30 / 0	0 / 0	460 / 430
Reprofilage Lourd	km						***150 / 150	***150 / 150
Rechargement	m3x1000	0 / 0	0 / 0	2.6 / 2.6	0 / 6.5	0 / 0	NK / 0	2.6 / 9.1
TOTAL Reprofilage	km							460 / 430
TOTAL Rechargement	m3							2.6 / 9.1

Source: LBII Quarterly SRMP Reports and OFNAR Work Programmes.

\* 103km of Reprofilage Compactage cancelled and the Work switched to 65km Massaguet-Massakory Road. 04/93.

\*\* Reprofilage Compactage work cancelled.

\*\*\* Not Project work. FED.

NA = Not Available

differ greatly because the lengths of road graded were multiplied by the number of grader passes on each layer placed.<sup>11</sup>

### **Culvert Pipes**

A review of the work programs shows very little culvert installation work programmed or carried out. Drainage work is fundamental to road construction and is one very important aspect on which Chad would benefit from an increased emphasis.<sup>12</sup>

### **Recommendations**

#### Campaign Reports

The following is needed:

- The dates and categories of grading carried out;
- Between what kilometer points the work took place; and
- Whether the work consisted of the first, second, or third or more course of grading carried out at that location during that maintenance campaign.

The samples of brigade field sheets examined seem both complex and cumbersome. It is suggested that a system based on daily slips would be easier to maintain control over on a regular basis than the OFNAR/SNER system that relies largely on monthly records.

#### Maintenance Work

Most of the Chadian road system needs to be raised. There is a need for substantial lengths of road to be improved under a rolling program of periodic maintenance by "Rechargement". Until this is achieved permanent improvement will not result from the maintenance expenditure. It is recognized that to do this would require a substantial investment in the region of about US\$ 50,000 per kilometer rather than US\$ 2,000. The emphasis however is to obtain an annual increase in the kilometer

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<sup>11</sup> These latter figures are presented in Table 2.1.3.a.

<sup>12</sup> The inspections carried out by the evaluation team over roads in the ARN showed a considerable number of locations where pipe culverts urgently need to be installed to prevent the road from being cut each wet season. In the December 1992 quarterly report reference is made to a stock of Armcu culvert pipes being surplus to the project needs. The project had then been running for eight years, and it would have been sensible for greater efforts to have been made to install the pipes wherever needed, since the provision of waterway crossings and other drainage improvements are the most important factor in creating a trafficable all weather route.

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**Table 2.1.3.a.**  
**Programmed and Reported Routine Maintenance Work in the ARN in**  
**The Years 1991-1992 and 1992-1993.**

1991 / 92 Item / Location	Unit	Djermaya- N'Goura Est/Actual	N'Goura- Bokoro Est/Actual	Guelengdeng- Ere Est/Actual	Ere- Lai Est/Actual	NDjamena- Linia Est/Actual	Access to Bacs Est/Actual	Totals Est/Actual
Bouchage Nids de Poules	m3	19	0	0	0	0	0	19
Construction Buses	ml	121	10	16	0	0	0	147
Construction Radiers	ml	0	0	0	0	0	0	0
Beton, Maconnerie	m3	0	2	20	0	0	0	22
Reprofilage a Sec	km	0 / 29.3	0 / 77	0 / 34.3	0 / 22.8	0 / 20	30 / 2.25	0 / 186
Reprofilage Compactage	km	171 / 0	0	169 / 0	Tf to ND-Linia	30 / 0	0	370 / 0
Reprofilage Lourd	km	171 / 285	103 / 132	169 / 215.5	65 / 128.8	30 / 32	14	552 / 807
Rechargement	m3x1000	60 / 73.7	38.5 / 16.6	40 / 22.7	8.5 / 4	1 / 52	11.4	144 / 180
TOTAL Reprofilage	km							552 / 807
TOTAL Rechargement	m3							144 / 180

1992 / 93 Item / Location	Unit	Djermaya- N'Goura Est/Actual	N'Goura- Bokoro Est/Actual	Guelengdeng- Ere Est/Actual	Ere- Lai Est/Actual	NDjamena- Linia Est/Actual	Guelengdeng- Busso Est/Actual	Totals Est/Actual
Bouchage Nids de Poules	m3	C	0	0	0	0	0	0
Construction Buses	ml	na	na	na	na	na	na	200
Construction Radiers	ml	0	0	0	0	0	0	0
Beton, Maconnerie	m3	na	na	na	na	na	na	50
Reprofilage a Sec	km	0 / 0	**0 / 88	0 / 73.5	0 / 124	0 / 6	*150 / 0	150 / 272
Reprofilage Compactage	km	171 / 138.4	0 / 0	169 / 83	0 / 115.5	0 / 7	0 / 0	340 / 344
Reprofilage Lourd	km	171 / 235	**103 / 41.5	169 / 85.9	65 / 84.1	0 / 0	*150 / 150	508 / 830
Rechargement	m3x1000	33 / 47	36 / 25.4	40 / 7.7	0 / 18	0 / 0.23	45 / 10.5	154 / 109
TOTAL Reprofilage	km							508 / 830
TOTAL Rechargement	m3							154 / 109

Source: OFNAR Annual Reports to MTPT on the Campaign Performance

\* Not Project work

\*\* Work switched to 65km Massaguet-Massakory Road. 04/93.

na = not available.

length of raised roadway in addition to routine grading. Economics would dictate that selected weak spots on the busier roads would have priority. After the whole system has been rehabilitated, so that the running surface is at least 600 mm above the wet season water table, the road surface should be provided with a gravel pavement as a minimum protection for the investment. The 1994-1995 campaign program has contracted out periodic maintenance work funded by the FED and IDA and this may be more successful.

#### **2.1.4 Road Maintenance Crews**

This section discusses the training level of the Road Maintenance Crews, their equipment, and management.

##### **2.1.4.1 Training**

The LBII final report indicated that although brigade training could be considered a success at the individual level, it failed to improve the overall level of institutional competence. The trainees on their return to their work groups were insufficient in number to raise the overall standards and lapsed into their former practices and systems.<sup>13</sup>

OFNAR supervision of the brigades was partial and ineffectual. Since the TA team members were only advisors and had no power to control or order staff changes or enforce discipline, the effectiveness of the TA team was limited.

Five of the relevant ARN roads were inspected in the course of the evaluation in order to determine the effectiveness of the maintenance work and training of the crews by the project. A summary of this data is contained in Annex 8.

##### **2.1.4.2 Equipment**

The list of suggested equipment for the Training Brigade as set out in the Project Paper was satisfactory in its selection of the major items and should not have been abandoned. However, Gannett Fleming doubled the provision of the major items of heavy equipment at an extra cost of US\$ 500,000 but failed to provide any means for their transportation between work sites. The additional money was spent on a second Caterpillar D7H bulldozer, a second heavy motor grader and four heavy vibrating rollers instead of a single 18-ton towed roller.<sup>14</sup>

Such an important matter as the selection of the heavy equipment should have been considered most carefully because the entire performance of the brigades depended

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<sup>13</sup> As stated in the Quarterly Reports.

<sup>14</sup> A Caterpillar D7H bulldozer is not a small machine and one with its own low-boy should have been capable of keeping the training brigade or two maintenance brigades supplied with material. Likewise one large Front-End (F.E.) loader would have been adequate for the project, backed up, as provided for in the Project Paper, by a F.E. loader/backhoe of medium capacity.



upon it. The choice of equipment made in 1987 has caused the project as a whole to suffer in its performance and capabilities throughout the following six years.

Throughout the project, both Consultants verified the need for the purchase of a tow truck, low-boy and other vehicles for transporting, rollers, bulldozers, graders and the like over long distances.<sup>15</sup> Gannett Fleming in their Final Report stated that funding was no longer available to purchase these essential items and this unsatisfactory state of affairs continued for the duration of the project. The possibility exists that the use of rehabilitated equipment recovered early in the project might have influenced the change in equipment selection. This possibility was checked against the records which show that with the exception of 12 Peugeot pick-ups, the rehabilitated items comprised 15 graders, 9 bulldozers, 12 F.E. loaders and 10 compactors, all categories of equipment that were increased in the USAID purchase.<sup>16</sup>

Table 2.1.4. compares the Project Paper recommendations for equipment purchase with what was actually bought. Also listed are the Project Paper suggestions for equipping a training brigade and a maintenance brigade. No records could be found relating to the equipment purchase approvals other than a mention in the Gannett Fleming final report that sufficient heavy equipment had been bought to equip two brigades. This decision purchased extra items of the only types of equipment identified in Figure XIV of the project paper as being estimated as available in excess of the project needs. This indicated an intention for the training brigade to carry out a greater amount of rehabilitation work on the roads than first conceived. This could have been successful but did not occur.

As the project progressed, the condition of the non-USAID OFNAR equipment used by the brigades deteriorated. Compactors and water trucks became so reduced in number that only about half the work potential was possible due to breakdowns and the lack of a low-boy. During the latter months of the project countless arguments occurred because there was a difference of opinion between the IDA funded executive staff and the USAID advisors over the allocation of an OFNAR low-boy. Yet OFNAR possessed no less than six low-boys purchased between 1984 and 1991.

Had the selection of the USAID equipment by Gannett Fleming been better suited to the realities of working in Chad on earth road maintenance and rehabilitation, a greater effectiveness would have been possible and many of the complaints recorded by the LBII quarterly reports and final reports avoided.<sup>17</sup>

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<sup>15</sup> A low-boy, low-loader or semi-remorque-porte-engin is a heavy and high load transporting semi-trailer for construction equipment having a dropped deck between the wheel sets.

<sup>16</sup> Gannett Fleming Phase I Final Report, September 1990, Table 2.III-6.

<sup>17</sup> Additional comments relating to the equipment purchase are contained in Annex 9.

**Table No. 2.1.4.  
Equipment: Planned v/s Purchased**

EQUIPMENT	Numbers Listed in Project Paper	Numbers Actually Purchased	Numbers Recommended Per Training Brigade in Project Paper	Numbers Recommended Per Brigade After Phase I
	1	2	3	4
Heavy Duty Dump-Trucks, Merc.2628. 7m3	8	8	8	4 (12m3)
Motor-Grader. Cat.120G	2	2	1	2
Bulldozer. Cat.D7H	1	2	1	1
F-E loader. Cat.950B. 3m3.	1	2	1	1
Compactor. Cat. 815B.Smooth Vib. Self Prop	1	2	1	0
Compactor Towed 18T. ( Vib. Wedgefoot Bomag BW6S.)	0	2	1	0
Compactor. Multi-Hired Pneumatic	0	0	0	1
Fork-Lift Truck. Cat.R80 (Workshop need)	1	1	0	0
Peugeot Pick-up	8	0	2	0
Peugeot Sedan	4	2	0	0
Station Wagon	0	3	0	0
Mobile Workshop Truck. Merc.911. c/w Tools. Fid Svce.	1	1	1	1
Supply and Maintenance Truck.Merc911.	1	1	1	0
Truck Tractor. Merc/Berliet	1	0	0	0
Tilt Trailer. 20T	0	0	1	0
Fuel Trailer 3,000gal = 12,000l	0	0	1	0
Water Trailer 500gal = 2,000L	0	0	1	0
Flatbed. 8x12.5'	0	0	1	0
<b>Other Mobile Equipment</b>				
Tow Truck c/w Hoist	1	0	0	0
Low Boy, 50T Drop Deck + Winch	1	0	1	1
Truck Tractor	1	0	1	1
Fork Lift	1	0	0	0
Backhoes / Loader	1	0	1	1
Water Truck Merc. 2628	3	2	3	4 (Capy 19,000L)
Fuel Truck. Merc. 2628	1	1	1	1 (Capy 19,000L)
Agric Tractor. John Deere	0	0	1	0
Travel Mxer. Seaman	0	0	1	0
Office Trailer	0	1	1	0
House Trailer	0	2	0	0
Service Trailer	0	0	*	0
<b>Small Equipment &amp; Tools</b>				
Water Pump	Not Listed	7	1	Not Listed
Immersion Pumps (well)	Not Listed	5	Not listed	Not Listed
Concrete Mxer. Seaman	Not Listed	1	Not listed	Not Listed
Air Compressor (Workshop)	Not Listed	3	Not listed	Not Listed
Electric Generating Set	Not Listed	5	Not listed	Not Listed
Electric Welding Set (Workshop)	Not Listed	1	Not listed	Not Listed
Steam Cleaner (Workshop)	Not Listed	3	Not listed	Not Listed
Compactor. Bomag BW2130.Smooth Vib. 0.7T.Hand Op.	Not Listed	1	1	Not Listed

**Sources**

Column 1 - Project Paper. Chad Strengthening Road Maintenance Project. 677-0050. 24 June 1985.

Column 2 - Gannett Fleming. Phase I. Final Report. September 1990. Table 3.,IV-2. Checked against OFNAR & SNER Listings of July 1994.

Column 3 - Project Paper. Chad Strengthening Road Maintenance Project. 677-0050. 24 June 1985. Table VI.

Column 4 - Gannett Fleming. Phase I. Final Report. September 1990. Table 10.,V-13.

\* - Made locally but rejected & not replaced.

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### 2.1.5 Host Country Contracts

During the second phase of the project there were some important work activities planned to be implemented through host country contracts supervised by OFNAR:

- Water wells;
- ARN refuelling station; and
- Rehabilitation items in the Central and ARN Workshops.

These activities are briefly reviewed in this section. Due to the failure of the host country management these contracts were ultimately put under the responsibility of LBII. A short term advisor was appointed for six months specifically to manage them, but the advisor remained in the country for the two years it took to complete them, September 1991 to August 1993.

#### 2.1.5.1 Water Wells

There were two reasons for seeking additional water sources for roadmaking:

- The supplier refused to continue providing water since OFNAR was not paying its water bills;
- To reduce and even out the haul distances between water sources (to a maximum of about 20 km) so as to permit the maintenance work to progress at a steady speed using the number of water tankers available.

A contract was let on April 3, 1991 to STECHE for the installation of 12 water wells, to be completed June 30, 1991. The work cost US\$ 582,184. Work on site began in May 1991 but the twelve wells were not completed until March 31, 1992. Pumps were requested on December 18, 1991 but were not received until mid-December 1992, at which time five wells in the northern sector could be used. The other wells were operable by late February 1993 when delivery pipes were received. Ground reservoirs, with a capacity of at least 1,000 m<sup>3</sup>, were dug at each well site and lined with either heavy plastic sheeting or clay-filled-woven plastic bags as a measure to reduce water loss through the pervious soil.

Installation of the wells was scheduled to be completed in six months, however it took 21 months and was completed by the end of March 1993. The well boring contract ran six months late, and the procurement of material delayed the work a further 15 months. Because of the late completion, the wells were only used for part of the last campaign of the project.

Though the wells remain operable, they can only be used with a portable electric power generator. A down-the-well pump requires regular maintenance and can become clogged with silt if left unused. GOC should consider substituting the pumps for a pumping system driven by wind or other renewable energy source feeding the reservoirs on a full time basis. Windmill type pumps for example are simple to maintain and continue to work without attention. Water, therefore, would always be available for the local population, cattle, and roadworks.

### 2.1.5.2 Refuelling Station at ARN

In November 1991 it was decided to increase the fuel storage capacity at the Agency, with pumps and tanks purchased through USAID in 1990. Unfortunately the tanks were damaged when they were sunk into the ground and had to be removed and the installation redesigned. The redesign was completed 10 months later in late September 1992. The new installation was completed by late June 1993. The job took 32 months from start to finish. The refuelling station was never put into service because of the transition of OFNAR to SNER.

### 2.1.5.3 Workshops' Rehabilitation

Host country contracts were planned for a series of small activities, but as a result of unacceptable delays, the work was instead carried out by force-account. The works consisted of:

- A plinth for the new 100 kw back-up generator together with a protective shed for it (Central Workshop);
- A new concrete floored equipment washing area and guard house (ARN);
- Rehabilitation of the electrical, compressed air and water distribution systems for the ARN and Central Workshops; and
- New rooms for battery charging and tools' storage (Central Workshop).

All works were completed by the end of May 1993.

### 2.1.6 OFNAR Obligations to Recurrent Costs

Since the beginning of SRMP, OFNAR has been required to make a contribution to the recurrent costs resulting from the project. During the course of the project there have been significant changes to the definition of recurrent costs, the manner in which they have been administered and the required contribution. The requirements have been set out in the Project Implementation Letters (PILs).

PIL 1, in September 1985, set the first year contribution at 10 percent. It also required the Government of Chad (GOC) to set up a fuel tax which would cover 50 percent of OFNAR's operating costs by the end of the project in 1990. This PIL did not define either recurrent or operating costs.

One year later, PIL 8, issued in September 1986, set out the definition of recurrent costs as:

- Operations, maintenance, spares and depreciation of light and heavy equipment supplied or rehabilitated by the project;
- Shop supplies;

- Road maintenance materials required in the N'Djamena district, in excess of 1985 usage;
- Brigades' per diem; and
- Administration and utilities.

The OFNAR contributions were set at 10 percent in 1986, rising by 10 percentage points per year to reach 50 percent in 1990.

It was initially envisaged that two accounts would be established, one for recurrent costs which would be under the joint control of OFNAR and USAID and one for depreciation (provision for replacement) which would be controlled by OFNAR alone. The depreciation account appears never to have been set up. It would have provided a mechanism by which USAID could have contributed to the eventual replacement of the equipment it had provided.

The Gannett Fleming Chief of Party (CoP) was given the responsibility for calculating the recurrent costs on a quarterly basis.

PIL 10, issued in October 1986, set out the administrative procedures for controlling the accounts and made provision for USAID to make advances to the joint account. In September 1988, PIL 18 revised the definition of recurrent costs to correspond to the new OFNAR accounting system.

The OFNAR contribution for 1987 was set at FCFA 76.3 million (US\$ 0.3 million) in PIL 14. The contribution for 1988 was FCFA 100.3 million (US\$ 0.4 million) (PIL 17). Over the period 1988 to 1990, the OFNAR budgeted contribution rose rapidly to FCFA 311.0 million, over US\$ 1.0 million.

In PIL 27 of May 1991, recurrent costs for 1991 were estimated to be to US\$ 2.0 million and the OFNAR contribution was set at 60 % or US\$ 1.2 million. (Until then, the OFNAR contribution had always been specified in FCFA). By September 1991, it was clear that this target would not be met and the total value of recurrent costs was reduced to US\$ 1.7 million and the OFNAR share to 50 percent. (US\$ 870,000)

In 1989, the project paper was amended to take account of the involvement of the World Bank in Technical Assistance to OFNAR and project activities were redirected towards the Central Workshop and the N'Djamena Regional Agency (ARN). However, it was not until April 1992 (PIL 30) that this was reflected in the targets for recurrent costs.

PIL 30 also made some significant changes to the definition of the recurrent costs and to the way in which they were administered. For the first time, OFNAR was allowed to include salaries for ARN as part of their contribution. These amounted to US\$ 0.3 million. The OFNAR contribution was set at 60 percent and totalled US\$ 1.0 million.

It was also at this time that the USAID contribution in practice became separated from that of OFNAR. From this time on, instead of contributing a percentage of all the recurrent costs, USAID accepted responsibility for the payment of certain specific line items in the budget, principally fuel, spares, and tires for ARN while OFNAR was directly responsible for all the other items. The Evaluation Team was not able to discover the reason for this change in procedure.

The weakness of the new procedure was that while it established shares at budget level, it made no provision for ensuring that OFNAR did in fact spend the amounts expected.

The LBII CoP attempted to keep track of OFNAR's expenditure to establish their compliance with the agreed division of costs, but encountered great difficulties as the OFNAR accounts were normally several months late. There appears to have been no formal end of year or end of project reconciliation to establish what the shares really were.

By October 1992, it was clear that OFNAR could not meet its obligations for 1992 and there was a further widening of the definition of recurrent costs to include rental of OFNAR equipment (non USAID funded) for project activities. PIL 33 (October 1992) set the OFNAR contributions for calendar 1992 and the first 9 months of 1993 at 60 percent and 70 percent respectively, corresponding to US\$ 1.3 million and US\$ 1.1 million. The portion attributed to equipment rental was relatively small in 1992 at US\$ 101,360, but rose to US\$ 444,910 in 1993, over 40 percent of the OFNAR contribution.

In the event, OFNAR have not produced any estimate of the rental costs. No records of equipment utilization were available to the Evaluation Team and it is not possible to say whether or not this contribution in kind to project costs has been made.

### **Compliance**

An audit of the project for the period 1986 to June 1991 was carried out by Cabinet Aziz Dieye (Coopers & Lybrand). They found that OFNAR's accounting procedures were inadequate and that the recurrent costs had been significantly overestimated.

The auditors produced their own estimate of recurrent costs which showed a total of US\$ 4.0 million over the 5 year period. Of this, OFNAR's share was US\$ 1.6 million. OFNAR had, in fact, made payments in excess of this amount and there was a small balance to be paid by USAID. Thus, until mid 1991, OFNAR was able to meet its recurrent cost obligations to the project.

It should be noted that these calculations specifically excluded any estimate of the depreciation costs allowed for in PILs 1 and 8 on the instructions of the USAID Controller on the grounds that OFNAR had not set up a depreciation account. There is, however, no formal record in the PILs referring to this change to the agreed procedures.

OFNAR produced estimates of the recurrent costs of the project since June 1991. These are shown below in Table 2.1.6.1. They do not include estimates of central administration costs which were provided for in the budget nor the equipment rentals. For the purposes of obtaining a rough estimate of OFNAR's degree of compliance, the administration and equipment rentals have been included at their budgeted amounts.

The Table shows clearly that over the last two years of the project, even including the equipment rental, OFNAR's contribution was significantly below the amounts agreed. If the allowance for rental is excluded, the contribution was steady at around 40 percent. If the calculation had been made on the original, more restrictive basis, excluding salaries, the contribution would be seen to be significantly lower.

Broadly, it can be concluded that OFNAR was only able to comply with the contribution requirement in the very early stages of the project. By 1991, OFNAR's budgeted share had risen to US\$ 1.2 million, almost as much as it had been required to contribute in total over the preceding 5 years, and it was simply unable to pay.

#### **OFNAR's Overall Financial Position**

The problems which OFNAR has faced in meeting its obligations to the SRMP are a reflection of the overall weakness of its finances. OFNAR's principal source of income has always been the Fiscalite Petroliere, by which it was allocated 16 percent of the Taxe Unique on fuel. Unfortunately, there is widespread evasion of this tax and collections have always been poor.

The Tables 2.1.6.2 and 2.1.6.3 show OFNAR's income and expenditure from 1989 to 1993 when it was closed. As can be seen, current expenditures peaked in 1990 at FCFA 2.3 billion, or around US\$ 9.0 million. Of this, domestic sources accounted for around 60 percent, with the balance coming from donors, principally USAID and the FED. Despite the donor assistance, OFNAR had an operating deficit of over US\$ 1.6 million.

Expenditures were cut slightly in 1991 and then again more severely in 1992 and 1993 when they fell to around US\$ 6.2 million. The reduction in expenditure combined with the increase in the Fiscalite Petroliere, together with continuing though reduced donor support, meant that OFNAR had an operating surplus and was able to make a contribution to depreciation and provision costs. Unfortunately, this improvement never fully materialized. The Government failed to pay all the money due from the Fiscalite Petroliere. At the end of 1993, the OFNAR accounts showed an accumulated debt of FCFA 863 billion (over US\$ 3 million) from the Fiscalite Petroliere.

It is clear that OFNAR's finances, like those of the rest of the public sector in Chad, have been chronically weak and that even modest expenditures on road maintenance cannot be sustained without ongoing donor support. As a result of OFNAR's budgetary problems, the road maintenance work program had to be severely cut, thus frustrating the Technical Assistance from USAID and other donors.

Table 2.1.6.1  
OFNAR ARN Recurrent Costs  
million of FCFA

	1991	1992	1993
Exchange Rate: FCFA to US \$1.00	268	264	274
Total (OFNAR Statement)	298.2	344.8	296.8
USAID line items	176.9	211.4	179.7
OFNAR	121.3	133.4	117.1
Equipment Rental (PIL 34)			
US \$ 000		101.4	444.9
FCFA mn		26.8	121.7
Total (including Rental)	298.2	371.6	418.5
OFNAR	121.3	160.2	238.8
OFNAR Share (%)			
Including Rental	41	43	57
Excluding Rental	41	39	39
Total Expenditure: Jul 91 - Dec 93		US\$	FCFA
		thousand	million
Including Rental		4048.2	1088.3
Excluding Rental		3501.9	939.8
km maintained		950	950
Cost per km			
Including Rental		4.3	1.1
Excluding Rental		3.7	1.0
Sources: OFNAR, PIL 34			

**Table 2.1.6.2**  
**OFNAR Income and Expenditure**  
**Local Currency (million FCFA)**

	1990	1991	1992	1993
<b>Income</b>				
Fiscalite Petroliere	1100.0	1300.0	1500.0	1700.0
Other Income (Ferries, Misc etc)	88.8	86.7	119.4	466.8
<b>Total OFNAR Own Sources</b>	<b>1188.755</b>	<b>1386.667</b>	<b>1619.4</b>	<b>2166.8</b>
<b>Donors</b>				
USAID	255.5	356.7	230.5	173.2
IDA	0.0	86.4	0.0	0.0
FED	458.2	379.0	459.7	0.0
FAD	0.0	15.3	0.0	0.0
GTZ	0.0	0.0	34.4	62.8
Reprise sur Subv. d'equip.	0.0	0.0	0.0	307.8
<b>Subtotal Donors</b>	<b>713.8</b>	<b>837.4</b>	<b>724.6</b>	<b>543.8</b>
<b>Total Income</b>	<b>1902.5</b>	<b>2224.1</b>	<b>2344.0</b>	<b>2710.6</b>
<b>Expenditure</b>				
Current Outlays	2339.9	2260.4	1641.7	1683.3
Depreciation and Provision	753.4	658.5	665.2	817.2
<b>Total Expenditure</b>	<b>3093.3</b>	<b>2918.9</b>	<b>2306.9</b>	<b>2500.5</b>
<b>Surplus</b>				
Current	-437.4	-36.3	702.3	1027.3
Inc Depn & Prov	-1190.8	-694.8	37.1	210.1
<b>OFNAR Contribution (%)</b>				
Current Costs	50.8	61.3	98.6	128.7
Total Costs (inc Depn & Prov)	38.4	47.5	70.2	86.7
Source: OFNAR Accounts 1991, 1992, 1993				

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**Table 2.1.6.3**  
**OFNAR Income and Expenditure**  
**(in US\$ million)**

	1990	1991	1992	1993
Exchange Rate: FCFA to US \$1.00	266	268	264	274
<b>Income</b>				
Fiscalite Petroliere	4.1	4.8	5.7	6.2
Other Income (Ferries, Misc etc)	0.3	0.3	0.5	1.7
<b>Total OFNAR Own Sources</b>	<b>4.5</b>	<b>5.2</b>	<b>6.1</b>	<b>7.9</b>
<b>Donors</b>				
USAID	1.0	1.3	0.9	0.6
IDA	0.0	0.3	0.0	0.0
FED	1.7	1.4	1.7	0.0
FAO	0.0	0.1	0.0	0.0
GTZ	0.0	0.0	0.1	1.1
Reprise sur Subv. d'equip.	0.0	0.0	0.0	1.1
<b>Subtotal Donors</b>	<b>2.7</b>	<b>3.1</b>	<b>2.7</b>	<b>2.0</b>
<b>Total Income</b>	<b>7.1</b>	<b>8.3</b>	<b>8.9</b>	<b>9.9</b>
<b>Expenditure</b>				
Current Outlays	8.8	8.4	6.2	6.2
Depreciation and Provision	2.8	2.5	2.5	3.0
<b>Total Expenditure</b>	<b>11.6</b>	<b>10.9</b>	<b>8.7</b>	<b>9.1</b>
<b>Surplus</b>				
Current	-1.6	-0.1	2.7	3.8
Inc Depn & Prov	-4.5	-2.6	0.1	0.8
<b>OFNAR Contribution (%)</b>				
Current Costs	50.8	61.3	98.6	128.7
Total Costs (inc Depn & Prov)	38.4	47.5	70.2	86.7
Source: OFNAR Accounts 1991, 1992, 1993				

It should also have been clear by 1991 that OFNAR had little or no chance of being able to make the required rising contributions to recurrent costs. It is regrettable that USAID did not make a radical review of funding requirements at that time. Rather, USAID engaged in cosmetic adjustments to the definition of recurrent costs to make it appear that OFNAR was complying with the contribution requirements.

## 2.2 Project Costs

### 2.2.1 Budget

Over the course of the SRMP there have been a number of changes to the budget. Over the period under review, the budget was set at US\$ 33.1 million (PIL 33/34) in October 1992 with expenditure for the 1992 - 93 period set at US\$ 4.6 million. As late as September 1993, when SRMP activity ceased, the budget was essentially unchanged (PIL 37). Subsequently, US\$ 1.2 have been de-obligated.

### 2.2.2 Expenditure

Total expenditure by the end of 1993 was estimated to have been US\$ 30.6 million, some US\$ 2.5 million below budget. Most of the difference is attributable to the lower than expected contribution to the recurrent costs of ARN.

Actual expenditure over the period 1992-1993 was in excess of US\$ 6.4 million, but this includes payments carried over from earlier periods.

At the time of the final evaluation, the OFNAR expenditure was being audited and the results of the audit were not available to the Evaluation Team. However, it is anticipated that there may be some small upwards revision of the contribution to OFNAR.

The major items of expenditure are shown in Table 2.2.1. The largest single item was Technical Assistance at US\$ 10.4 million, followed by equipment (US\$ 7.3 million), the contribution to the rehabilitation of the Djermaya-Dandi road (US\$ 5.6 million) and support to OFNAR's recurrent costs (US\$ 4.0 million). More details are given in Annex 10.

### 2.2.3 Value for Money

In assessing value for money, account has to be taken of both the measurable outputs of the project, principally the amount of road maintenance work carried out, and the less tangible effects such as the long term impact of improvements in work practice brought about by training and technical assistance. It is also the case that some of the project outlays were in the form of investments which have to be considered in the long term.

Over the life of SRMP a total of approximately 3200 km have received annual maintenance, an average of 536 km pa between 1987 and 1993. A useful, if incomplete, measure of value for money is the cost per kilometer of that maintenance work.

**Table 2.2.1**  
**Project Expenditure to End 1993**  
**(US\$ in thousand)**

	Cumulative Total End 91	Annual Expenditure		Cumulative Total End 93	Budget PIL 37	Under Spend vs PIL 37
		1992	1993			
TA Contract (1,2,3)	7741	1591	1092	10424	10467	44
Equipment (4,5,6,7)	6065	776	466	7306	7497	191
Road Rehab	5130	404	66	5600	5600	0
Water Wells	165	214	60	439	582	143
OFNAR Support (13,19)	2620	920	457	3996	5708	1712
Other	2412	164	210	2786	3257	472
<b>Total</b>	<b>24133</b>	<b>4069</b>	<b>2350</b>	<b>30551</b>	<b>33112</b>	<b>2561</b>

Source: USAID Controller's Office

In making this calculation, certain costs have to be excluded. The Djermaya to Dandi road rehabilitation is not a relevant cost and a large portion of the Technical Assistance costs should also be excluded. The water wells are in the nature of a long term investment and can also be left out.

It is, however, reasonable to include all the OFNAR recurrent costs and most of the other items. Much of the equipment provided under the contract, for example, is approaching the end of its useful life and has been "consumed" in carrying out the maintenance work.

Rather than make a series of complex and necessarily arbitrary attributions of cost, a very simple division of costs has been made in order to obtain an order of magnitude estimate of the unit maintenance costs. The following costs have been excluded:

	<u>US\$ million</u>
Technical Assistance	10.4
Road Rehabilitation	5.6
Water Wells	0.4
Total Exclusions	16.4

In assessing the total attributable costs, it is also necessary to include the costs born by OFNAR. For simplicity, only the recurrent costs, excluding the cost of other non-USAID equipment, has been taken. The OFNAR costs are thus understated.

	<u>US\$ million</u>
Project Cost (USAID)	30.6
Exclusions	16.4
USAID Costs Attributed to Maintenance	14.4
OFNAR share of Recurrent Costs	3.0
Total Maintenance Costs	17.4
Kilometers Maintained	3220
Cost per km per year (US \$)	5400

As can be seen, the maintenance cost per kilometer is over US \$5,000 per year. If account were taken of some portion of the Technical Assistance and of the cost of interest on capital tied up in equipment, the average costs would be even higher.

World Bank sources suggest that maintenance costs for earth and gravel roads are normally in the range US\$ 2,000 to US\$ 3,000 per km. Even allowing for the fact that some of the early work was in the nature of rehabilitation, the output costs for SRMP seem high, particularly in view of the low traffic levels. It seems reasonable to conclude that the project has proved a very costly way of maintaining a small portion of Chad's network.

## 2.3 Private Sector

### 2.3.1 OFNAR's Experience with Private Sector Contracts

It has long been the intention of USAID, the World Bank and other donors to encourage the development of private sector participation in road maintenance in Chad. OFNAR had a PME division with an expatriate advisor funded by the World Bank which was responsible for drawing up contracts with local contractors and for supervising their work.

Throughout the second phase of the project, OFNAR was heavily in debt to the private sector. OFNAR accounts show large outstanding credits with suppliers, up to US\$ 1 million in 1992, and the LBII Quarterly Reports indicate that many of these debts were of long standing. As might be expected under these circumstances, the World Bank PME advisory arrangements did not work very satisfactorily. Over an 18 month period, the OFNAR PME division only succeeded in letting three small contracts. The division was eventually closed.

It was also intended that there would be a PME advisor assigned to ARN under SRMP. However, in view of the problems encountered by the PME division, particularly funding, it was decided not to fill the position.

Nevertheless, contracts were let for minor construction of head walls for culverts and for routine maintenance activity in the ARN area. Problems were encountered with contractor performance, as the contractors were apparently more effective carrying out the construction work than the maintenance.

Work was contracted out by both the ARN and Central Workshops to local garages, particularly for specialized testing. The LBII Quarterly Reports indicate that the quality of work was generally not very good.

The major items of work contracted out under the USAID program were the Host Country contracts for the wells and for the fuel tank at ARN. Both suffered from delays and there were serious problems with the quality of the work. Eventually, supervision of the work was taken over by LBII.<sup>18</sup>

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<sup>18</sup> The fuel tanks were completed just before OFNAR was closed and have never been used. They have now been sold off to a private company.

An attempt was made to let out a USAID-funded private sector contract for building rehabilitation in ARN as part of SRMP activity. However, the OFNAR procurement procedures proved so cumbersome that LBII opted to have the work done by force account.

It is clear that, despite pressure and assistance from the donors that OFNAR had great difficulty in setting up a satisfactory system of contracting out work. In part, the lack of success may have been due to a natural reluctance of a parastatal to give up activities which provided employment for its own staff. The procedures for sanctioning expenditure also seem to have been unduly difficult to implement. However, there seems to be little doubt that the major impediment to a success program of private sector involvement was the chronic shortage of money.

### 2.3.2 Future Possibilities

Under the reorganization of road maintenance, the MTPT no longer has any internal road maintenance capacity. All road maintenance work is now to be carried out by contractors.

There are now three Chadian companies involved in road maintenance:

- SNER which is government owned;
- ETPP which is privately owned, with a minority government shareholding; and
- GER which is wholly private.

SNER has been formed from OFNAR and ETPP has been formed out of the former government-owned Brigade Autonome Routiere. Both have taken over government road maintenance equipment and both are heavily indebted to the government.

SNER's debt to the government is approximately FCFA 3.0 billion, around US\$ 6.0 million. It is due to be repaid over a three year period. The interest rate on the loan has not yet been decided.

SNER took over most of OFNAR's equipment which was estimated to have a replacement value of around FCFA 5.7 billion. Since the estimate was made before devaluation and most of the equipment is imported, it is reasonable to assume that the replacement costs of SNER's assets is of the order of US\$ 20.0 million. In order to sustain an asset base of this size SNER will be required to run a surplus, before depreciation and interest charges, of around US\$ 5.0 million per year.

Nevertheless, SNER's management is currently confident that they will be able to secure sufficient work to repay their debts within 3 years and they then hope to be able to become privatized.

SNER has been guaranteed 50 percent of the routine maintenance over the next three years. These contracts were made by agreement. The remaining 50 percent was put out to tender and both ETTP and GER have been awarded contracts.

All three Chadian companies are of the view that the rates offered for the routine maintenance work are inadequate. SNER has suggested that it will drop out of the business once the initial three years are over and concentrate on rehabilitation and periodic maintenance. Presumably, however, if the rates offered were improved, SNER's attitude would change. Moreover, it is unlikely that the Government as the major shareholder would be prepared to allow SNER to drop out of routine maintenance work altogether.

Both SNER and ETTP have been awarded donor-funded contracts for periodic maintenance work on the same sections of road as their routine maintenance work. These contracts are donor funded and appear to be more lucrative than those for the routine work.

Rehabilitation work is being planned for some sections of road, again with donor funding. However, neither SNER nor ETTP are able to qualify for this work as the companies have not been in existence long enough. However, they are likely to participate on a subcontracting basis.

### **2.3.3 Funding Future Road Maintenance Work**

As part of PST2, it is intended that Chad should pay all the costs of routine maintenance from its own resources, while periodic maintenance and rehabilitation work will be donor funded. Under pressure from the World Bank, the Government has established a *Compte Autonome d'Entretien Routier (CAER)* which is intended to have assured sources of funds isolated from political and other budgetary pressures.

The CAER is under the control of the *Directeur des Routes* in MTPT. The account is to be used to pay for routine maintenance of both earth and bituminous roads and the Chadian share of donor funded projects.

It was originally hoped to fund CAER entirely from Chadian sources, principally a share of the fuel tax and the receipts from tax on transport contracts collected by the *Bureau National de Fret (BNF)*. Other, minor sources of funds are ferry and toll fees and the repayment of debt by SNER and ETTP.

The planned contributions, together with the results to date are shown in the Tables 2.3.3.1 and 2.3.3.2. As can be seen, BNF is easily meeting its target, but the receipts from the *Fiscalite Petroliere* are well below expectations. The *Fiscalite* has a long standing problem with collections due to both widespread evasion and official exemptions for enterprises like the electricity generating company, STEE.

CAER's funding problems have been compounded by the recent devaluation which has increased the FCFA cost of imported inputs, such as spares and fuel. As a temporary measure, a subsidy of FCFA 1.0 billion is to be provided by the FED and

<b>Table 2.3.3.1</b>	
<b>CAER Draft Budget 1994</b>	
<b>million FCFA</b>	
<b>Receipts</b>	
Ferries	45.0
N'Gueli Bridge Tolls	160.0
Bureau National de Fret	600.0
Debt Repayment (SNER, ETPP)	160.0
Fuel Taxes	500.0
Subsidy (CFD)	300.0
Subsidy (EEC)	1,000.0
<b>Total Receipts</b>	<b>2,765.0</b>
<b>Expenses</b>	
Road Maintenance	2,126.6
Network Management	418.8
Road Rehabilitation	132.9
Administrative Costs	86.7
<b>Total Expenses</b>	<b>2,765.0</b>
Source: World Bank Aide Memoire, July 1994	

<b>Table 2.3.3.2</b>		
<b>CAER Receipts to June 30 1994</b>		
<b>million of FCFA</b>		
	<b>Projected</b>	<b>Actual</b>
Bureau National de Fret	300	378
Fiscalite Petroliere	370	187
N'Gueli Bridge Toll	125	81
Ferries	25	16
Debt Repayments (SNER, ETPP)	80	1
<b>Total</b>	<b>900</b>	<b>663</b>
Source: World Bank Aide Memoire, July 1994		

the French government is giving FCFA 300 million. The FED funds, however, will be administered separately from those of CAER.

### 2.3.4 Conclusions

The future of private sector road maintenance activity in Chad will depend almost entirely on the Government's ability to pay for the work carried out. The funding available for CAER is already inadequate and, in view of the fiscal crisis facing the Government, it seems unlikely that additional funds will become available. If the road system is to be maintained, continuing foreign assistance is likely to be required for many years.

## 2.4 Socio-Economic Impact of the Project

The primary economic impact of road rehabilitation or maintenance activity is the reduction of vehicle operating costs (VOC). Improving the quality of the road surface reduces expenditures on tires and vehicle maintenance. Higher operating speeds are possible thus permitting greater vehicle utilization. Also, normally, fuel consumption is reduced.

The reduction in VOC is the principal mechanism by which the socio-economic impacts of road maintenance activities are brought about. If the market for transport services is competitive, as now appears to be the case in Chad, the reductions in operating costs will be passed on to consumers of transport services. Consequently:

- The costs of personal mobility will be reduced;
- The costs of transporting farm produce to market will be reduced, thus increasing the net income of farmers;
- The costs of agricultural inputs such as fertilizers will be reduced, thus permitting more intensive use and higher outputs, again increasing farmers' incomes; and
- The costs of consumer goods will be reduced, thus increasing welfare.

Improved accessibility may also facilitate the provision of government services such as schooling, health care and security.

The reduction in transport costs may generate additional traffic, from increased personal mobility and increased production and consumption although it should be remembered that other factors such as the general level of economic activity are probably more important determinants of traffic growth than road improvements.

In addition to the benefits arising from transport cost reductions, road maintenance may provide limited opportunities for local employment of unskilled labor for vegetation control and the cleaning of drains and culverts. The availability and

willingness of local labor, particularly women, to undertake such tasks was examined in a USAID commissioned report by Louise Brown in 1988.

In principle, all the possible impacts can be specified and their progress monitored. It is unfortunate, however, that apart from traffic counts, no baseline studies were carried out when the project started nor were any socio-economic studies carried out during the course of the project, despite a recommendation to do so in the 1992 evaluation by DCI.

### **Road Condition**

One particular shortcoming is the absence of any systematic monitoring of the condition of project roads, although some information on road quality is available from the MTPT Banque des Donnees. This is shown in Table 2.4.1. The roads are rated on a scale of 0 to 20, with higher scores indicating better roads.

Over the recorded period, the Djermaya to Massaguet road showed significant improvement, Massaguet to Ngoura showed a modest improvement and Ngoura to Bokoro became worse. None of the roads have ever been recorded as being in good condition.

In general, however, it can reasonably be assumed that road quality improved after maintenance, although the LBII Quarterly Reports suggest that towards the end of the project period work quality was poor and improvement may only have been temporary. However, in the absence of any systematic condition data, it is not possible to make any estimate of the VOC savings which might be attributed to the project.

### **Traffic Data**

Traffic counts are available for most of the project roads and are shown in Table 2.4.2. There was a definite surge in traffic between 1988 and 1989. It is not clear whether this was due to improved road conditions as maintenance activities resumed or whether it reflects more complete counting.

The pattern for earth and bitumen roads has been rather different. Traffic on the bitumen roads dropped significantly in 1990 but has risen steadily since.

The earth road traffic recorded only a small drop in 1990. Traffic growth resumed in 1991, but traffic fell again in 1993.

Over the period 1989 to 1993, growth has averaged a relatively modest 3 - 4 percent per year, in line with reported GDP growth. It is thus difficult to conclude from these data that road improvements have, in themselves, led to any sustained increase in traffic.

**Table 2.4.1**  
**Road Condition Data**

Section	90:2	91:1	91:2	92:1	92:2
Djermaya–Massaguet	na	1.0	na	na	8.6
Massaguet–Massakory	na	9.6	na	na	na
Massaguet–N'Goura	na	7.0	na	7.9	10.1
N'Goura–Bokoro	na	13.2	na	9.7	10.2

Source: MTCT Direction des Routes: Banque de Donnees

**Table 2.4.2**  
**Traffic Counts**

Section	1988	1989	1990	1991	1992	1993
<b>Bituminous Roads</b>						
N'Djamena–Djermaya	258	314	256	382	397	441
N'Djamena–Guelendeng	198	270	180	151	255	241
Subtotal	456	584	436	533	652	682
Djermaya–Dandi	na	na	149	183	169	na
Total Bituminous	na	na	436	533	652	na
<b>Earth Roads</b>						
Guelendeng–Bongor	51	60	62	82	81	82
Bongor–Koyom	38	41	36	49	67	69
Djermaya–Massaguet	120	147	207	199	214	187
Massaguet–Massakory	51	107	98	83	94	77
Massaguet–N'goura	64	113	53	70	77	74
N'Goura–Bokoro	18	19	24	51	61	64
Total Earth	342	487	480	534	594	553

Source: MTPT Direction des Routes: Banque de Donnees

### **Transport Costs**

A recent report by DAI on the Road Transport Industry in Chad indicated that transport prices have fallen in Chad as a whole, but this was attributed to the abolition of the Cooperative des Transporteurs Tchadiens (CTT) transport monopoly rather than to road improvements. There is no information available on any change in transport prices on the project roads.

### **Employment Opportunities**

Apart from a limited number of unsuccessful attempts to contract out some minor works, there was no involvement of local labor in OFNAR's activities. No women were employed by OFNAR or, as far as is known, by the contractors for road maintenance activities.

### **Women's Issues**

There is nothing in the project paper to suggest that women were involved in the design of the project. There were no women on the design team and no women professionals in either OFNAR or MTPT.

It is known that women are active in marketing in Chad and road improvements could reasonably be expected to facilitate that marketing.

In other respects it can reasonably be assumed that women have benefitted from the project in the same degree as other members of the community.

## **2.5 Success of TA Team, OFNAR, and USAID towards Project Outputs**

This section summarizes the above discussion. It is based also on the evaluation team's interviews and conclusions reached after reading the available documents.

This section presents a description of the Project Outputs, and an evaluation of the success of OFNAR, USAID and the TA team towards achieving these outputs.

### **2.5.1 Project Outputs**

During the life of the project, in spite of increased funding, increased duration of the project, and a reduced area of operation, the project paper was not significantly revised (area of activity was reduced to ARN and Central Workshop), and the project's goal and outputs stayed practically the same.

The original project goal was to maintain Chad's road network. The stated purposes were to assist the Government of Chad (GOC) in developing a technically competent and financially responsible organization for the maintenance of the road network

(Office National des Routes, OFNAR). At the end of the five-year-term of the project (Phase I) OFNAR would be able to regularly maintain with its own equipment and personnel 1600 km of road per year. Phase II of the project would continue support for OFNAR operating expenses but at a reduced pace while the geographic scope of OFNAR would substantially be expanded.<sup>19</sup>

Expected indicators of progress toward the goal were:

- Increased total volume of vehicular traffic on upgraded and maintained roads;
- Increased volume of agricultural production and agricultural inputs carried on the road network;
- Increased longevity of the road network as a result of regular maintenance efforts; and
- Reduced vehicle operating costs.

Expected outputs of the Project were:

1. A fully trained and equipped OFNAR staff providing administrative directive to maintain an expanding national road network;

Indicators: 18 supervisors and managers,  
40 equipment operators,  
50 mechanics and shop technicians;

2. Road maintenance crews functioning and supported by OFNAR capable of accomplishing road maintenance;

Indicator: maintaining 1600 km of road, reduced to 750 km in 1989.

3. Central and ARN workshops equipped and operating to repair and maintain equipment and vehicles;

Indicator: regular maintenance of OFNAR and ARN equipment.

In 1989 (August 31, 1989 amendment) SRMP concentrated its effort to the Agence Regionale de N'Djamena (ARN) abandoning OFNAR central administration to the World Bank's Technical Assistance whose Transport Sector Adjustment Project (PASET) had started in 1988. At the same time the road maintenance target was reduced from 1600 km to 750 km.<sup>20</sup>

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<sup>19</sup> Project Paper, Chad Strengthening Road Maintenance Project, USAID.

<sup>20</sup> Assessment of Program Impact, USAID/N'Djamena, Fiscal Year 1991.

## 2.5.2 Evaluation

In the following paragraphs the project goal, purpose, and outputs along with an evaluation of their respective assumptions are presented. Table 2.5.2 summarizes the findings.

### 2.5.2.1 Goal

Three major assumptions were deemed necessary to reach the project goal. They were:

- Absence of sustained armed conflict;
- Continuation of efforts toward national unity; and
- Increased economic activity generated over the next five years.

All three assumptions were maintained in the first five years of the project. Good progress was then made during the first five years. Unfortunately the economic, political, and social climate started to change in 1990, as mentioned elsewhere in this report, and the above assumptions were not fulfilled during the second phase of the project.

### 2.5.2.2 Project Purpose

The main assumption behind the project purpose was that "resources allocated by the GOC, supplemented by donor contributions, would be adequate to support the growing costs of road maintenance".

The above discussion in Section 2.1.6 on OFNAR Obligation to recurrent costs demonstrates that GOC had difficulty in fulfilling its financial obligation toward maintaining the road network. Therefore it is not surprising that the project purpose was not attained.

### 2.5.2.3 Project Outputs

Three assumptions were behind the project outputs:

- TA has operational responsibility for road maintenance training and for Central Workshop operations, under OFNAR direction;
- Chad transport economy remains open to private sector initiatives; and
- Adequate staff in terms of quality and numbers are furnished to OFNAR.

Of the three assumptions described above, only the quality of staff was not fulfilled. The first assumption was partially fulfilled. The TA has a lot of influence on how work was carried out, but no direct authority. Responsibility of training lay with the Training Director, an expatriate funded by the World Bank. (See the discussion of training under Sections 2.1.1.2 and 2.1.4.1).

**Table 2.5.2  
Project Goal, Purpose, and Outputs Evaluation**

<b>Project Assumptions</b>		<b>Outcome</b>
Goal	<ul style="list-style-type: none"> <li>1. Absence of sustained armed conflict</li> <li>2. Continuation of efforts toward national unity; and</li> <li>3. Increased economic activity generated over the next five years</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>erratic</li> </ul>
Project Purpose	1. Resources allocated by the GOC, supplemented by donor contributions, would be adequate to support the growing costs of road maintenance	no
Project Outputs	<ul style="list-style-type: none"> <li>1. TA has operational responsibility for road maintenance training and for Central Workshop operations, under OFNAR direction</li> <li>2. Chad transport economy remains open to private sector initiatives; and</li> <li>3. Adequate staff in terms of quality and numbers is furnished to OFNAR</li> </ul>	<ul style="list-style-type: none"> <li>partially</li> <li>yes</li> <li>no</li> </ul>
<b>Project Goal, Purpose, and Outputs</b>		<b>Outcome</b>
Goal	Maintain Chad's road network	
Indicators	<ul style="list-style-type: none"> <li>1. Increased volume of traffic</li> <li>2. Increased volume of ag product carried on the road</li> <li>3. Increased longevity of the road network</li> <li>4. Reduced vehicle operating costs</li> </ul>	<ul style="list-style-type: none"> <li>yes</li> <li>na</li> <li>na</li> <li>na</li> </ul>
Purpose	Assist the GOC in developing a technically competent and financially responsible organization for the maintenance of the road network	no
Indicators	<ul style="list-style-type: none"> <li>1. Maintain with its own equipment 750 km</li> <li>2. Decrease in OFNAR support</li> <li>3. OFNAR geographical scope expanded</li> </ul>	<ul style="list-style-type: none"> <li>no</li> <li>no</li> <li>no</li> </ul>
Outputs	1. Fully trained and equipped OFNAR	yes
Indicators	<ul style="list-style-type: none"> <li>1. 18 supervisors and managers</li> <li>2. 40 equipment operators</li> <li>3. 50 mechanics and shop technicians</li> </ul>	<ul style="list-style-type: none"> <li>yes</li> <li>yes</li> <li>yes</li> </ul>
	2. Roads maintenance crews functioning	
	<ul style="list-style-type: none"> <li>1. Maintenance of 750 km</li> </ul>	no
	3. Central and ARN workshops equipped	
	<ul style="list-style-type: none"> <li>1. Regular maintenance of OFNAR and ARN equipment</li> </ul>	yes
	4. Rehabilitation of the Dandi road	yes

However if one looks at the indicators for the first output mentioned above, then the first output was achieved. It was even achieved during the first phase of the project.<sup>21</sup>

Does this mean that OFNAR was capable of providing administrative directive and able to maintain an expanding national road network? What about the quality of the training? What about the durability of the training? The discussion in Sections 2.1.1.2 and 2.1.4.1 supported by the Quarterly Reports (First Quarter 1992 to Third Quarter 1993) clearly means that the first output was not reached.

As for the second output, OFNAR had difficulty maintaining an average of 400-500 km per campaign between 1992 and 1993 which was the end of the project. OFNAR never succeeded in maintaining 750 km per campaign. Two maintenance crews were formed at the end of the first phase from the disbandment of the Training Brigade (which apparently was a success). The equipment in each brigade was not entirely adequate and toward the end of the project the "non-USAID equipment" was breaking down due mainly to age. Toward the end of the project as well and as soon as the transformation of OFNAR into SNER was rumored morale and discipline were lacking among both North and South Brigades, which in turn had negative effect on the work.

The third output concerns the Central and ARN workshops. Maintenance and repair of equipment were a constant problem during the entire project. The diversity of the equipment in terms of brand name was the major problem. Lengthy procurement and stocking of spare parts for non-USAID equipment was a constant hassle. Central and ARN workshops maintained OFNAR's and ARN's equipment with various success. OFNAR and ARN workshops were over staffed. According to OFNAR management, now in SNER, efficiency was lacking and productivity low. Even though the indicator was attained, the output was not totally reached.

#### 2.5.2.4 Conclusion

In conclusion although some of the indicators were more or less reached, the TA team, USAID, and OFNAR had limited success in reaching the outputs as stated in the Project Paper.<sup>22</sup> If there were partial successes, these were limited and nothing came close to a well oiled organization. One has a feeling of a disjointed organization which sometimes and only partially could come close to its goal but never quite realizing it.

The successes can be grouped under two categories:

1. Sustainable after the end of the project:
  - Central and ARN workshop's equipment and furnishing;
  - Workshop procedures;

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<sup>21</sup> What were then the indicators of the phase starting in 1990?

<sup>22</sup> The problems come perhaps from ill defined outputs, inadequate and too simplistic indicators.

- Some equipment left with 2-3 year life;
  - Construction of wells; and
  - The participation in the Dandi road construction.
2. During the project:
- Road training brigade;
  - Bituminous brigade;
  - Maintenance of part of the road network.

In retrospective some of the problems encountered during the project implementation could be traced back to:

- The original Project Paper design,<sup>23</sup>
- USAID lack of tight control,
- The TA team management situation in OFNAR, lacking decision making power, and understandably,
- The overall political climate.

## 2.6 Project Objectives and Strategy in View of the World Bank's and other Donors' Program

This section presents the evaluation of the transformation of OFNAR into SNER. It presents first a short summary of the World Bank involvement into the Chadian Transport Sector, and then analyzes the impact of its action on OFNAR and subsequently on SNER.

### 2.6.1 Summary

SRMP's objectives and strategy were jeopardized twice by the World Bank's action acting as donors' leader. The first problem was when PASET was launched in 1988 at a cost of \$180 million of total funding (1988-1993). The second problem occurred when the World Bank and the GOC decided to eliminate OFNAR altogether and start anew with the Societe Nationale de l'Entretien Routier (SNER) in the Second Transport Sector Project (PST2) framework.

PASET was certainly welcome news in the Chadian transport sector in 1988. It was needed and apparently reinforced USAID original efforts. PASET had the same

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<sup>23</sup> Such as lack of engineering definitions of what "maintaining a road" was; or well-thought equipment needs for road maintenance brigades; lack of foresight in the need of equipment amortization especially if the project was to last 10 years; total lack of discussion of sources of overall financing..

objectives as the USAID SRMP project although larger since PASET technical assistance encompassed the Ministry of Public Works as well as OFNAR.

As a consequence of the World Bank's action, USAID regrouped its forces, withdrew from OFNAR central administration and concentrated its technical assistance on the N'Djamena Regional Agency (ARN), the ARN workshop, but nevertheless kept its activity in the Central Workshop. Numerous management problems, as described in the Quarterly Reports, arose since USAID Technical Assistance was in a way hierarchically dependent of the World Bank's TA.

In 1992, the World Bank and the GOC decided that OFNAR was not working properly and could never have worked properly the way it was set up.<sup>24</sup> This reflects badly not only on the Bank but also on USAID involvement into OFNAR. Several studies were done on the possible future of OFNAR. The Bank and the GOC decided to create an organization based on private management principles using part of OFNAR financial and human resources.

### 2.6.2 Evaluation

In July 1993, OFNAR was disbanded and the Societe Nationale d'Entretien Routier (SNER) was created. SNER is a parastatal whose capital is 99 percent from the State.<sup>25</sup> However, legally SNER stayed in limbo until the beginning of February 1994 when the Conseil Superieur de Transition (CST) decided to approve the nomination of its General Director. At the same time OFNAR's Liquidator was named.

Therefore there exists a lapse of administration in the maintenance of the national network for 8 months. The first half of the 93-94 campaign did not take place as planned for lack of an entity that could direct it. As early as the third quarter of 1993, funds were lacking to finance the necessary equipment maintenance for the start of the 1993-1994 campaign in September 1993 and the 1993-94 campaign did not take place.

In spite of these delays SNER managed to execute a mini-campaign between February and June 1994 and seems to be poised to start the new campaign 1994-95 on time.<sup>26</sup> Half OFNAR staff was retained as SNER's staff and around FCFA 2.0 billion worth of OFNAR's equipment was transferred to SNER as loan payable to the

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<sup>24</sup> In September 1992, with one year to run, it was judged that PASET had reached only half its objectives (see "Etude pour la Reforme de l'Entretien Routier, Rapport sur le Diagnostic et les Scenarios Possibles", Sept 92).

<sup>25</sup> SNER is projected to be privatized in three years.

<sup>26</sup> However the activity level in the Workshop during July and August 1994 does not seem adequate for the rainy season. This is road equipment maintenance period par excellence.

GOC by 1997.<sup>27</sup> Equipment and furnishing belonging to OFNAR and financed by the project were transferred before the end of June 1993 to SNER on time for SNER's projected start.

Seven months or even a year does not seem to be sufficient to cure the problems that plagued the existence of OFNAR and still existed as recently as last year. Management is essentially the same, equipment is the same, the staff has been reduced, and the work load --which has not started yet-- has been cut in half.<sup>28</sup> The difference between OFNAR's perceived attitude and SNER's confidence is startling. So why this optimism? Was the transformation of OFNAR into SNER sufficient to cure all the ills of a public run company?

It is too early to judge the GOC's and the World Bank's and other donors' success in creating SNER since it has been in existence only 7 months, and has performed only a mini-maintenance campaign. The move certainly succeeded in cutting the staff in half, and boosted the morale of the senior staff, but for how long?

The next three campaigns will be able to provide better data on SNER's performance.<sup>29</sup> However success does not depend solely on SNER's increased overall productivity. GOC funding was the major problem during OFNAR and funding is still the major problem now.<sup>30</sup>

In conclusion, if SNER increases its productivity, if the funding is durable and if the management succeeds in making SNER profitable there are good reasons to believe that SNER will survive and prosper in spite of its chaotic birth. The advantage for Chad is the start of a private sector in the road maintenance sector. There is no disadvantage in that case. USAID's SRMP could share the credit with the other donors. Then eight years of TA and \$31.0 million would not have been spent entirely in vain.

However if SNER fails to succeed in being profitable in the road maintenance business, the Government of Chad will face the same situation which existed in 1984 before the creation of OFNAR. The need for public road maintenance capacity in Chad will then be demonstrated and SRMP's effort and funds would have been lost.

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<sup>27</sup> This is the estimated economic value of the equipment. USAID's part represents 8 percent of this number (FCFA 168 million).

<sup>28</sup> It seems that SNER faced with half OFNAR workload will be burdened with 80 percent of OFNAR equipment unless SNER's strategy is to cannibalized 30 percent of it to maintain the other 50 percent.

<sup>29</sup> SNER has 50 percent of the current road maintenance market for three years (SNER complains already that the price are low and they will not be interested in this market after three years), ferry management, Ngueli bridge management, and road traffic surveys.

<sup>30</sup> CAER received FCFA 300.0 million from France and FCFA 1.0 billion from the FED in 1994 in direct support, proof that CAER cannot be sustained with its funding. What will happen next year?

**Section 3.0**  
**Conclusions and Recommendations**

## Section 3 Conclusions and Recommendations

The main conclusion of the final evaluation is that SRMP fell short of its stated outputs. SRMP developed technically competent individuals but failed to do so at the institutional level. It failed also to develop a financially responsible organization. This has been, however, outside its scope almost since the conception of the project. It did succeed partially in reaching its goal of maintaining some roads in Chad.

The successes can be grouped under two categories:

1. Sustainable after the end of the project:
  - Central and ARN workshops' equipment and furnishing;
  - Workshop procedures;
  - Some equipment with a 2-3 year remaining life;
  - Construction of wells; and
  - Participation in the Dandi road construction.
2. During the project:
  - Road training brigade;
  - Bitumen brigade;
  - Maintenance of part of the road network.

The reasons for the shortcomings are difficult to assess. It is a combination of accumulated errors in conception, in management, and in technical inputs during the length of the project that, if taken individually and/or corrected in the course of the project, would have contributed to better the outputs. In addition most of the assumptions stated in the Project Paper could not be maintained over the entire course of the project.

**Conceptual errors:** Characterized by the failure to define exactly what road maintenance means, failure to foresee either the need for equipment amortization in view of the length of the project or unrealistic expectation of OFNAR financial capacity, failure to define what training consists of, and failure to discuss the funding problem known to be the main recurrent problem for road maintenance in Africa;

**Engineering errors:** Characterized by the failure to clearly envisage the road maintenance equipment needs for maintenance brigades in Chad, to set standards for road maintenance, and to establish quality control;

**Implementation errors:** Characterized by the lack of close coordination between the parties and close monitoring of the implementation of the project components;

**Management errors:** USAID failed to recognize the impact of PASET on SRMP (the problem was discussed at length in a March 3, 1989 Memorandum but failed to take a global view of the problems and concluded that there was no need for the Project Paper revision);

Three main lessons could be derived:

- Project monitoring needs to be both detail-oriented (on a daily basis), and global, allowing a clear vision of the goal.
- Project needs to be revised when the assumptions are no longer valid.
- Project redesign needs to be mandatory when the system takes major shocks.

Some specific recommendations follow:

- Future USAID project officer of road maintenance projects must be a civil engineer with relevant field experience;
- A Training Specialist must be appointed when projects have a training component, in addition to the training conducted by the TA;
- Baseline and end-of-project socio-economic study must be done for every project if USAID is concerned about assessing the socio-economic impact of the project.
- Final evaluation of a project must be carried out before the departure of the TA team and before the end of the project.

The Summary Table 3.1 summarizes the findings of this evaluation.

**Table 3.1  
Evaluation Summary**

**Project Specific Achievements**

Beyond the project

1. Central and ARN workshops' equipment and furnishing
2. Set-up the basis for workshop procedures
3. Some equipment is left with a 2-3 year life
4. Construction of wells
5. Participation in the Dandi road construction

During the project

1. Road training brigade
2. Bituminous brigade
3. Maintenance of part of the road network

**Project Specific Shortcomings**

1. Training: poor training for mechanics, electricians, operators
2. Road maintenance program: never reached 750 km per year
3. OFNAR obligations toward recurrent costs: never fulfilled its quota
4. Private sector involvement: failure to involve PMEs
5. Equipment procurement: failure to evaluate the real needs
6. Wells: failure to share them with the population
7. Average maintenance cost per km: too expensive

**Overall Shortcomings**

Conceptual

1. Failure to define what road maintenance is
2. Failure to foresee the need of equipment amortization to sustain the initial investment
3. Unrealistic expectation of OFNAR financial capacity
4. Failure to define what training consists in
5. Failure to discuss the funding problem for road maintenance

Engineering

1. Failure to specify road maintenance equipment needs correctly
2. Failure to set up standard for road maintenance
3. Failure to establish quality control

Implementation

1. Lack of close coordination between parties
2. Lack of close monitoring of the implementation of the project components among parties

Management

1. Failure to recognize the need for revising the project paper

**Transcending Lessons**

1. Project monitoring must be detail oriented (day to day management), and project management must be global
2. Project must be revised when the assumptions are no longer valid
3. Project redesign should be mandatory when the environment of the project changes

**Specific Recommendations**

1. USAID project officer of road maintenance projects must be a civil engineer with prior field experience
2. Need for a Training Specialist in addition to the TA doing the training
3. Mandatory baseline and end of project socio-economic study to assess project impact
4. Need to carry out the final evaluation of a project before the departure of the TA team and before the end of the project

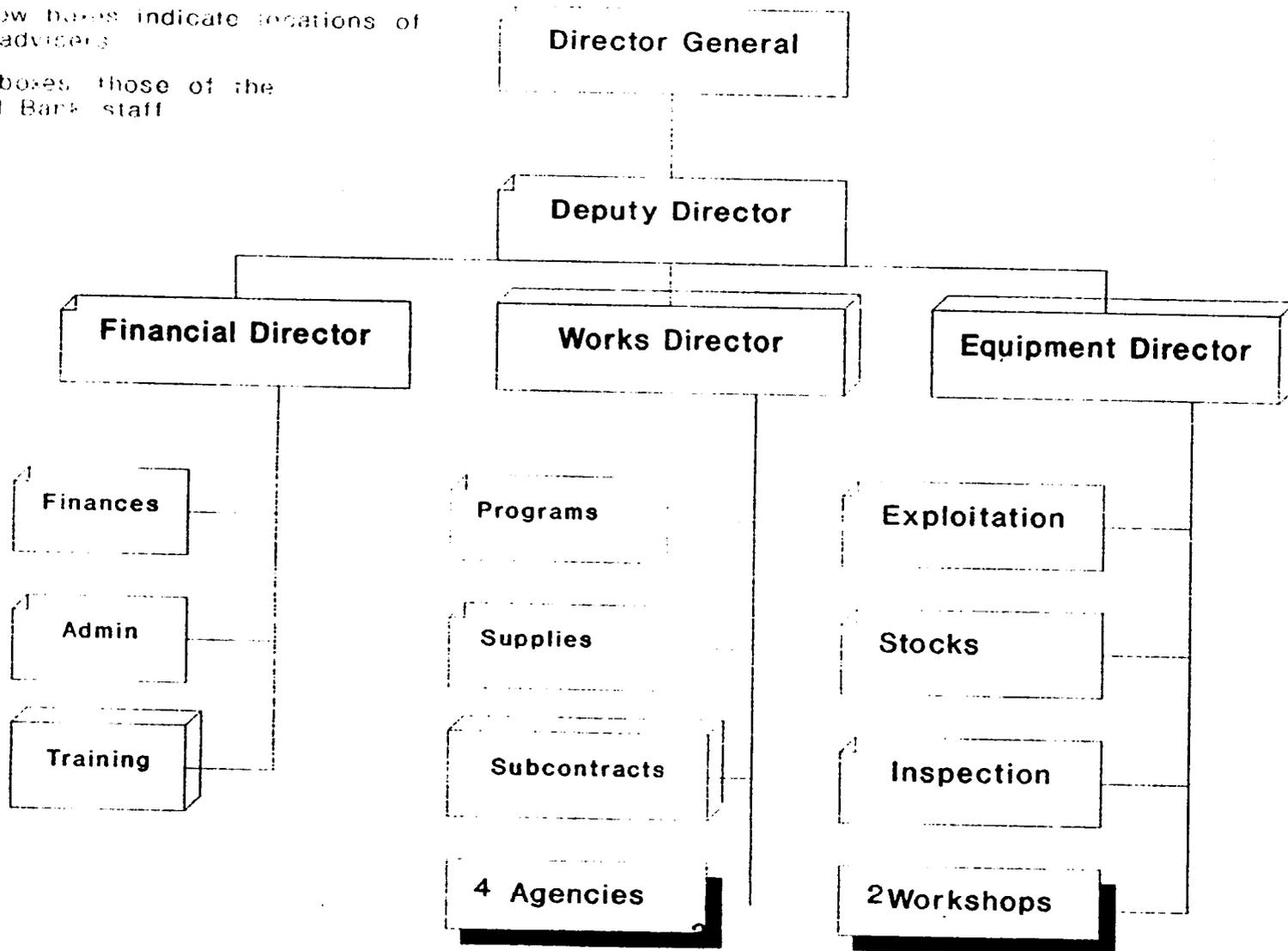
## **Annex 1: OFNAR Organization Chart**

# ORGANIZATIONAL CHART

OFNAB - 1993

Shadow boxes indicate locations of LBIH advisers

3 D boxes those of the World Bank staff



## **Annex 2: Priority Network**

REPUBLIQUE DU TCHAD

UNITE - TRAVAIL - PROGRES

-----  
MINISTERE DES TRAVAUX PUBLICS  
ET DES TRANSPORTS  
-----

DIRECTION GENERALE

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DIRECTION DES ROUTES *ten*

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DIVISION DE L'ENTRETIEN *g*  
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ARRETE N° 044/MTPT/DG/DR//DE/94

Portant Répartition du Réseau Routier  
Prioritaire par Délégations Régionales  
du Ministère des Travaux Publics et des  
Transports.

Le Ministre des Travaux Publics et des Transports

- Vu la Charte de Transition,
- Vu le Décret n°282/PR/93 du 09/04/93, portant publication de la Charte de Transition,
- Vu le Décret n°728/PR/93 du 09/11/93, portant désignation du deuxième Premier Ministre de Transition,
- Vu le Décret n°742/PR/93 du 13/11/93, portant nomination des Membres du Gouvernement de Transition,
- Vu le Décret n°10/PR/94 du 18/01/94, portant remaniement du Gouvernement de Transition,
- Vu le Décret n°003/PR/MTPT/94 du 13/01/94, portant organisation du Ministère des Travaux Publics et des Transports,
- Vu l'Arrêté n°003/MTPT/DG/DR/94 du 09/02/94, portant Organisation et attributions de la Direction des Routes,

Sur proposition du Directeur des Routes

A R R E T E

## Chapitre I - Dispositions générales

Article 1 : - Le réseau routier prioritaire à la charge du Ministère des Travaux Publics et des Transports est reparti entre les Délégations Régionales selon les dispositions du présent arrêté.

## Chapitre II - Répartition du Réseau Routier

Article 2 : - Les itinéraires du réseau routier prioritaire sont repartis par Délégation Régionale du Ministère des Travaux Publics et des Transports comme suit :

### a) - Délégation Régionale du Centre-Ouest

- N'Djaména - Dourbali	103 km
- N'Djaména - Guelengdeng	146 km
- Guelengdeng - Bongor - Koyom - Eré	169 km
- Guelengdeng - Mogo - Kouno	280 km
- Koyom - Laï	60 km
- N'Djaména - Djermaya	26 km
- Djermaya - Massaguet - Ngoura - Bokoro	274 km
- Djermaya - Dandi	66 km
- Massaguet - Massakory - Bol - Baga Sola	306 km
- Walia - N'Guéli	6 km
- Voie de contournement	20 km

TOTAL -----  
1.456 km

### b) - Délégation Régionale du Nord-Est

- Abéché - Adré - Frontière Soudan	174 km
- Abéché - Biltine	92 km
- Abéché - Oum Hadjer	146 km

TOTAL -----  
412 km

### c) - Délégation Régionale du Sud-Ouest

- Moundou - Léré - Frontière Cameroun	329 km
- Doba - Laï	104 km
- Doba - Goré	95 km
- Kélo - Eré	58 km
- Kélo - Laï	74 km
- Mbaïkoro - Bedaoyo	113 km
- Moundou - Bolarobou	115 km
- Pala - Fianga	72 km
- Doba - Moundou	100 km

TOTAL -----  
1.060 km

### d) - Délégation Régionale du Sud-Est

- Sarh - Doba	200 km
- Sarh - La Sido	126 km
- Sarh - Kyabé	98 km
- Koumra - Moïssala	74 km
- Kemdéré - Moïssala	127 km
- Sarh - Kouno	125 km

TOTAL -----  
756 km

e) - Délégation Régionale du Centre

- Mongo - Aboudéïa - Am Timan	258 km
- Mongo - Mangalmé - Oum Hadjer	231 km
- Mongo - Bokoro	201 km
- Bitkine - Melfi	118 km
- Bokoro - Gama	75 km
- Mongo - Ati	154 km
	-----
TOTAL	1.037 km

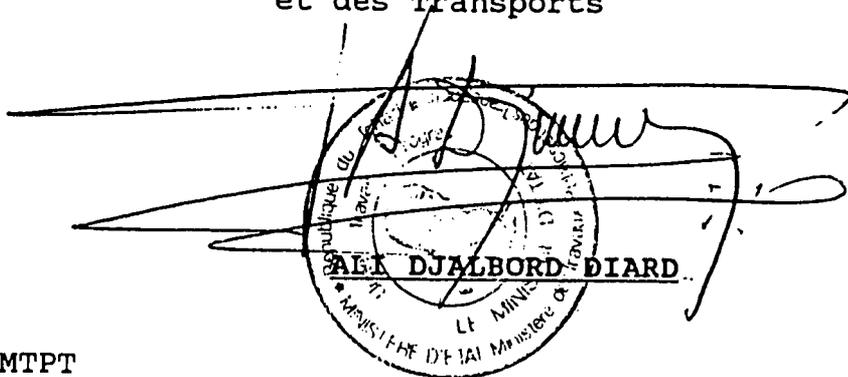
Chapitre III - Dispositions finales

Article 3 : - Le présent arrêté abroge toutes dispositions antérieures contraires.

Article 4 : - Le Directeur Général du Ministère des Travaux Publics et des Transports, le Directeur des Routes et les Délégués Régionaux sont chargés de l'application du présent arrêté qui prend effet à compter de sa date de signature et qui sera enregistré partout où besoin sera.

Fait à N'Djaména, le 28 MARS 1994

Le Ministre des Travaux Publics  
et des Transports



The image shows a handwritten signature in black ink over a circular official stamp. The stamp contains the text 'REPUBLIQUE CENTRAFRICAINE' at the top, 'LE MINISTRE DES TRAVAUX PUBLICS ET DES TRANSPORTS' around the perimeter, and 'SALI DJALBORD DIARD' in the center. The signature is written in a cursive style across the stamp.

Ampliations :

- Toutes Directions du MTPT
- Délégations Régionales du MTPT
- Archives

## Type de routes

### I - Routes bitumées

1 - Croisement Farcha -croisement Goudji	6 km
2 - Croisement Goudji - Pont de Chagoua	9 km
3 - Pont de Chagoua - Walia	3,5 km
4 - Walia - N'Guéli	6 km
5 - N'Djaména (croisement Goudji) - Djermaya	26,30 km
6 - N'Djaména (Walia) - Guelengdeng	144,20 km
7 - Djermaya - Dandi	60 km

**Total routes bitumées → 255 km ≈ 260 km**

### II - Routes en terre réhabilitées

1 - Djermaya - Massaguet	46 km
2 - Massaguet - Massakory	68 km
3 - Massaguet - N'Goura	123 km
4 - N'Goura - Bokoro	103 km
5 - Bokoro - Bitkine	143 km
6 - Bitkine - Mongo	59 km
7 - Massakory - N'Gouri	84 km
8 - N'Gouri - Carrefour Bol	85 km
9 - Carrefour - Bol - Bol	12 km
10 - Carrefour Bol - Baga Sola	56 km
11 - Abéché - Biltine	92 km
12 - Mongo - Abou Déia	123 km
13 - Guelengdeng - Mogo	149 km
14 - Mogo - N'Guéré	227 km
15 - N'Guéré - Sarh	27 km
16 - Sarh - Banda	25 km
17 - Banda - Maro	82 km
18 - Maro - Sido (frontière RCA)	19 km
19 - N'Guéré - Koumra	83 km
20 - Koumra - Doba	88 km
21 - Doba - M'Baïkoro	78 km
22 - M'Baïkoro - Moundou	26 km
23 - M'Baïkoro - Goré	86 km
24 - Goré - Bédaoyo (frontière RCA)	27 km
25 - Moundou - Kélo	97 km
26 - Kélo - Bélé	50 km
27 - Bélé - Pala	56 km
28 - Pala - Léré	94 km
29 - Léré - Frontière Cameroun	27 km
30 - Mongo - Eref	76 km
31 - Abéché - Moura	49 km

**Total routes en terre réhabilitées → 2360 km**

### **III - Routes en terre non réhabilitées**

1 - N'Djaména - Dourbali	101 km
2 - Bokoro - Gama	82 km
3 - Bitkine - Melfi	110 km
4 - Mongo - Ati	154 km
5 - Abou Déia - Am Timan	135 km
6 - Eref - Mangalmé	46 km
7 - Mangalmé - Oum Hadjer	109 km
8 - Oum Hadjer - Abéché	146 km
9 - Moura - Adré	117 km
10 - Guelengdeng - Bongor	83 km
11 - Bongor - Koyom	80 km
12 - Koyom - Lai	68 km
13 - Lai - Doba	108 km
14 - Doba - Goré	95 km
15 - Koyom - Eré	8 km
16 - Eré - Kélo	43 km
17 - Béré - Kélo	41 km
18 - Lai - Moundou	174 km
19 - Moundou - Boulorabou (ftière Cam.)	123 km
20 - Pala - Fianga	72 km
21 - Koumra - Moïssala	74 km
22 - Kemdéré - Moïssala	123 km
23 - Sarh - Hellibongo	16 km
24 - Hellibongo - Kyabé	84 km

**Total routes en terre non réhabilitées → 2192 km ≈ 2200 km**

### **Annex 3: Rehabilitated Roads**

**LISTE DES TRAVAUX DE REHABILITATION  
EXECUTES DEPUIS LES CINQ DERNIERES  
ANNEES**

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DATE DEBUT et FIN	AXE	TYPE DE TRAVAUX	FINANCEMENT	MONTANT 100 000 F CFA
1989-1991	- N'DJAMENA-GUELENGDENG	Bitumage	IDA/TCHAD	9.585
1989-1990	- N'DJAMENA-DJERMAYA	Bitumage	IDA/TCHAD	1.856
1989-1992	- DJERMAYA-DANDI	Bitumage	IDA/TCHAD/USAID	3.511
1988-1991	- MONGO-ABOU DEIA	Route en terre	IDA/TCHAD	1.700
1992-1993	- MONGO SAOUR-GALBAK	Route en terre	IDA/OPEP/TCHAD	1.900
1991-1992	- Contournement de N'DJAMENA	Bitumage	BAD/TCHAD	1.600
1993-1994	- PONT SUR LA LOUMIA et travaux confortatifs	Ouvrage d'art	IDA	900
1986-1990	- MASSAGUET-MASSAKORY- BOL-BAGASOLA	Route en terre	ITALIE	43.400 (*)
1991-1993	- VOIRIE DE N'DJAMENA	Routes bitumées	IDA/TCHAD	5.400

**N.B** : 1° - les prix en CFA sont ceux avant dévaluation

2° - (\*) - montant en lires italiens.

CPR/DR

le 03.08.94

**Annex 4: Statement of Work**

## BACKGROUND

The Chad Strengthening Road Maintenance Project was authorized on June 24, 1985 as a five-year, \$27.5 million activity with a Project Assistance Completion Date (PACD) of September 30, 1990. In its lifetime the project authorization has been amended three times. The first was on July 26, 1988, when the budget was revised from three years to five, the paragraph on the Djermaya-Dandi road was deleted from the Project Agreement, and a sub-grant from AID to the World Bank for rehabilitation of the aforementioned road was approved. The second amendment on August 31, 1989, increased life-of-project funding by \$2.26 million for a new total of \$29.76 million and extended the PACD to March 31, 1992. At this time, AID assistance was focused on OFNAR's N'Djaména Regional Agency given World Bank and other donor assistance to OFNAR's main office and other regional agencies and the project indicators were modified. The third amendment on July 15, 1991, increased project funding by \$3.345 million for a total of \$33.105 million and extended PACD by 18 months to September 30, 1993. The fourth and final amendment extended PACD by 12 months to September 30, 1994. The purpose of the final amendment was to allow sufficient time for a final evaluation of the project and the transition of OFNAR into a new organization, Société Nationale d'Entretien Routier (SNER). This transition, orchestrated by the World Bank, coincided with the end of the project and created many difficulties in accomplishing proper project close-out and permitting a final evaluation. As a result, the USAID/Chad Mission judged it in the interest of the U.S. government to delay an evaluation until after the OFNAR-SNER transition was completed.

The original goal of the project is to maintain Chad's road network and to assist the Government of Chad (GOC) in developing a technically competent and financially responsible organization for the maintenance of the road network. The National Roads Office (OFNAR) is the implementing agency and the object of the project's institutional strengthening efforts. The major elements of the project include the following:

- Technical assistance in planning and administering a road maintenance program, primarily in the form of a technical assistance team.
- 2. Training and equipping a road brigade and providing operational support, namely for the N'Djaména Regional Agency.
- 3. Rehabilitating and equipping workshop facilities and training in equipment maintenance.

Since the beginning of the project there have been two technical assistance teams assigned to the project, Gannett-Fleming Transportation Engineers Inc. from 1985-1989 and Louis Berger Intl. from 1990 to 1993, three different USAID project managers including the current GDO/T since October 1991 and various project assistants. Due to the length of the project and various

Changes in personnel throughout its lifetime the implementation progress to date has had varying degrees of success. Until recently in the project the difficulty in mobilizing and retaining long-term technical assistance personnel as a contributing factor to delays in project implementation. Changes in government and instability in the country have also adversely affected the project. For these reasons, the impact of the project on developing OFNAR's institutional capabilities has been less than anticipated. Nonetheless, commodity procurement, training, and rehabilitation activities have been accomplished and there was a marked recuperation in project implementation and management during the last year of the project due to improved collaboration among the administration of OFNAR, USAID, and Louis Berger.

Due to limited project funds, 23 person-months were reduced from the original work plan of LBII and a progressive demobilization of LBII personnel coinciding with the end of the 1992-93 road maintenance campaign was accepted by USAID. The Road Maintenance Engineer departed on April 19, 1993 followed by the Field Operations Adviser and the Field Maintenance Adviser on May 15. The Central Workshop Adviser left on June 1, 1993. The short-term adviser in charge of building rehabilitation left on July 15 and the Engine/Motor Workshop Adviser departed on August 1. The Chief of Party and the Financial Adviser remained until PACD. There are currently no members of the LBII technical assistance team remaining in Chad.

In November 1992 the principal lenders operating in Chad and the government of Chad held a meeting in Paris coined "PST II" during which the World Bank (WB) and the Ministry of Public Works (MTP) began planning the transformation of OFNAR into a private firm. USAID/Chad was only involved in the preliminary discussions of the transition of OFNAR to the Société d'Entretien Routier (SNER). (This is perhaps due to the fact that USAID decided to end its funding to the Chadian transport sector.) The WB and MTP contracted with the French consulting firm, BCEOM, to design and implement the transition. The initial transition period was slated for the months of July, August, and September 1993 and, in preparation, OFNAR would end all road maintenance activities as of June 30. Based upon informal discussions, the timeline for the transition during the months leading up to the USAID project ACDD of September 30, were as follows: By June 30, the interim director general for OFNAR would be named, OFNAR employees would be released and paid for June and July, and a submission for approval of the creation of SNER would be made to the transitional government; by July 15, SNER would be founded, the director general for SNER would be named, and OFNAR activities would be phased out; August 1 - September 15, necessary OFNAR property would be transferred to SNER, the structural and material organization of SNER would be made, SNER personnel would be selected and hired, and SNER would begin preparations for the coming maintenance campaign; on September 30, the new road maintenance campaign by SNER would begin and the contracts would be designated for the remaining road maintenance outside of the SNER.

On June 30, 1993, OFNAR released all employees and paid their salaries and "preavis" for the months of June and July. For July and August, a select workshop personnel were offered two-month contracts to rehabilitate the road maintenance equipment in preparation for the 1993-94 campaign under SNER. USAID-funded spare parts were used through PACD to rehabilitate OFNAR road

maintenance equipment but all procurement and deliveries to OFNAR ended as of July 15. In addition, all project heavy and light equipment was transferred to OFNAR as of June 21, 1993. The project formally ended on September 30, 1993.

Despite the transition timeline outlined by the WB and GOC, from September 1993 to present, the transition of OFNAR to SNER has encountered numerous delays relating to GOC and WB approbation of the creation of SNER. Finally, in February 1994, an administration was named to SNER, consisting of the former administrators of OFNAR. An official liquidator was also named to OFNAR to liquidate all remaining OFNAR capital, unclaimed by SNER, and to resolve outstanding accounts. OFNAR and SNER currently coexist, but will cease to do so upon the official termination of OFNAR in August 1994.

#### ARTICLE I - TITLE

Strengthening Road Maintenance Project, No. 677-0050

#### ARTICLE II - OBJECTIVE

The purpose of this activity is to perform a final evaluation of the Strengthening Road Maintenance Project and evaluate the transition of the Office National des Routes (OFNAR) to the Société Nationale d'Entretien Routier (SNER).

#### ARTICLE III - STATEMENT OF WORK

The objectives and tasks set forth in this work statement shall be answered on the basis of objective empirical evidence with emphasis on the achievements and/or shortcomings of the project upon its completion, the lessons learned from the implementation of the project, and the transition from public service office to a private sector entity.

Specifically, the evaluation will respond to the following questions:

(a) What has been the progress in achieving the original objectives of the project as far as specific in-puts and out-puts?

The evaluation team shall consider the most recent evaluation by Deleuw, Mather Inc. in 1992 as a point of departure in evaluating project progress towards original project objectives through the end of the project in 1993. This shall then be incorporated into a final evaluation of the project which takes into account progress over the life of the project. The following questions shall serve as a point of departure, realizing that the current non-operational status of OFNAR will render many aspects of this evaluation daunting. The contractor shall be specific as to sustainable and non-sustainable outputs with supporting evidence and reasons explaining why.

1. Were the OFNAR Central Warehouse and N'Djaména Subdivision Workshop better equipped for regular supply and equipment maintenance work than before the project? Did the staff receive sufficient training to repair and maintain equipment and vehicles that they were not capable of before? Consider the training they

received in electrical systems, hydraulic systems, machine tool operation, and tool construction under the project in evaluating staff repair capabilities now as compared to before the project.

2. How well were operating procedures for Workshop operation established?

3. Were the 550 kilometers of roads targeted in the N'Djaména Subdivision maintained adequately to permit ordinary vehicular traffic?

4. Were OFNAR road maintenance crews trained, equipped, assigned to and working with the N'Djaména Subdivision? (Note that the N'Djaména subdivision has been integrated into the OFNAR-SNER transition and operations ended after the 1992-93 campaign. Consider only the road maintenance campaigns through 1993 in answering this question.)

5. How well did OFNAR do in achieving its obligations towards recurrent costs and project participation?

(b) How successful and effective were the technical assistance teams, OFNAR and USAID in insuring the timely provision of satisfactory inputs to accomplish the project's planned outputs? The contractor shall discuss the success of these organizations in collaborating and coordinating with one another to achieve project outputs.

(c) What impact has the project had on socio-economic structures and elements such as farmers, consumers, markets, transporters, the environment, and women? Specify the positive and negative impacts for each of the above. With regard to gender issues, the evaluation shall also address the following questions:

1. How were the interests and roles of women (compared to men) taken into account in the design, appraisal and implementation stages of the project?

2. In what ways did women (compared to men) participate in these processes?

3. What were the effects, positive or negative, of the project concerning women's (compared to men's) access to income, education, and training, and with respect to workloads, role in household and community, and health conditions?

4. How were the interests and role of women (compared to men) taken into account in the evaluation stage?

5. Were significant factors concerning women (compared to men) overlooked at the appraisal stage?

6. Were gender-specific data available for each of the project stages, i.e. design, appraisal/approval, implementation, monitoring and evaluation?

7. Are the results achieved by the project equally sustainable for men and

omen beneficiaries?

) Were the effects of the project produced at an acceptable cost compared with alternative approaches and what are alternatives for the future? Consider, for example, dirt road maintenance costs in Chad in comparison to similar projects in Africa. How does the cost vs. output ratio for this project compare to similar projects in Africa?

) Were the project objectives and strategy for their achievement valid with the arrival and participation of other donors in the transport sector, such as the World Bank, and how does this fit into PST 2 and long-term sustainable projects and results in the future? Consider, in particular, the transition of OFNAR to SNER, taking into account the specific tasks noted below in the summary of tasks.

) Assuming the potential for USAID activity in addressing road maintenance concerns, what are the future possibilities for contributing to the Transport sector in Chad? The contractor shall consider, among others, the following:

- Feeder Roads
- Dirt Road Maintenance
- Paved Road Maintenance
- Heavy Equipment Contributions
- Feasibility Studies in the Transport Sector

) What have been the achievements of the project in integrating the private sector into road maintenance and what can be done to encourage private sector input in the future?

#### Summary of Specific Tasks

1. Assess actual versus planned inputs and progress towards achieving the outputs, purpose(s), and goal(s) of the project.
2. Assess the relevance of the project's goals and purposes with specific reference to both the GOC's and USAID/CHAD's development strategy.
3. Evaluate the effectiveness of USAID/Chad's management role. (Improvements needed or positive actions?)
4. On the basis of the findings and analysis related to the above tasks and objectives, what conclusions can be drawn or lessons learned which are relevant for the future?
5. In light of the transformation of OFNAR to SNER, the contractor evaluation team shall address the following:

- a) Describe assess and evaluate the objectives of the GOC and the World Bank in restructuring OFNAR?
- b) How efficient were the steps taken to transform OFNAR into SNER, in particular concerning the use of USAID-funded OFNAR resources in constructing SNER?
- c) Describe, assess and evaluate the transition timetable as it was planned and executed?
- d) Was the transition realistically attainable and is it sustainable? (The contractor shall consider the objectives, preparation/ planning, planned implementation, and sustainability.)
- e) Given the institutional change taking place, will the activities formerly carried out by OFNAR be sustained by SNER?
- f) If SNER activities are sustainable, what are the advantages as well as the disadvantages for the transport sector in Chad in the present and the future?

#### ARTICLE IV - REPORTS AND DELIVERABLES

No later than five days after the team's arrival in Chad, the contractor shall present to USAID/Chad a detailed outline of the evaluation report, a work plan for the team as a whole and for each team member. The outline shall be based on the discussions between the Team Leader and the USAID/Chad General Development Officer for Special Projects and on the scope of work described above plus any needed adjustments for each team member shall also be presented along with his/her work plan.

At least five days before the team's departure from Chad, a draft report in French and English, including major finding, conclusion and recommendations, shall be submitted to USAID/Chad and the appropriate GOC agencies for their review and feedback. The General Development Officer for Special Projects will set a date for the team's oral briefing on the draft report, at which time USAID/Chad will provide comments to be incorporated in the final draft of the document. The final typed draft report shall be presented to USAID/Chad prior to the team's departure from Chad.

The final evaluation report shall be mailed to USAID/Washington, not more than two weeks after the team's departure from Chad. The document including its annexes shall be typed in single space and submitted in ten copies in English and ten copies in French together with the diskette(s) containing the files for both versions, using Wordperfect 5.0/5.1.

The following evaluation report outline is provided for guidance. The finalized outline will be based on the discussions between the team leader, the General Development Officer, and the Evaluation Officer, as previously indicated.

## Evaluation Report Outline

### EXECUTIVE SUMMARY

- I. Project Background (The development objectives of the project.)
- II. Purpose and Method of the Evaluation.
- III. Findings.
- IV. Conclusions.
- V. Recommendations.
- VI. Lessons Learned.

### MAIN TEXT OF THE REPORT

- I. The purpose and study questions of the evaluation.
- II. The economic, political, and social context of the project.
- III. Team composition and study methods (one page max.).
- IV. Evidence/findings of the study concerning the evaluation questions.
- V. Conclusions drawn from the findings, stated in succinct language.
- VI. Recommendations based on the study findings and conclusions.

This section of the report shall not exceed 40 pages. More detailed discussions of methodological or technical issues shall be included in the Appendixes.

### APPENDIXES

These shall include, at the least, a copy of the evaluation scope of work, the most current logical framework as pertinent, a list of documents consulted, and individuals and agencies contacted. Additional appendixes will include a brief discussion of study methodology and technical topics if requested.

### ARTICLE V - TECHNICAL DIRECTIONS

Technical Directions during the performance of this Delivery Order will be

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provided by USAID/Chad, Samir Zoghby, pursuant to Section F of the contract.

#### ARTICLE VI - TERM OF PERFORMANCE

- A. The starting date is: July 10, 1994  
The estimated completion date is: September 2, 1994
- B. Subject to the ceiling price established in this Delivery Order and with prior written approval of the COTR (see Block No. 5 on the Cover Page), the Contractor is authorized to extend the estimated completion date, provided that such extension does not cause the elapsed time for completion of the work, including the furnishing of all deliverables, to extend beyond 30 calendar days from the original estimated completion date. The Contractor shall attach a copy of the COTR's approval for any extension of the term of this Delivery Order to the final voucher submitted for payment.
- C. It is the Contractor's responsibility to ensure that the COTR approved adjustments to the original estimated completion date do not result in costs incurred which exceed the ceiling price of this Delivery Order. Under no circumstances shall such adjustments authorize the Contractor to be paid any sum in excess of the Delivery Order.
- D. Adjustments which will cause the elapsed time for completion of the work to exceed the original estimated completion date by more than 30 calendar days must be approved in advance by the Contracting Officer.

#### ARTICLE VII - RELATIONSHIP TO USAID/CHAD

The evaluation team shall work under the direct supervision of the USAID/Chad General Development Officer for Special Projects (GDO/SP) and the Evaluation Officer. Frequent meetings will be held between the GDO/SP, the Evaluation Officer, the team leader, and the team in order to monitor progress and/or changes on the work plan, the report outline, or the report itself. Approval of deliverables rests with the AID Representative.

All in-country travel must be approved by USAID/Chad in advance.

#### ARTICLE VIII - AID LOGISTICAL SUPPORT

USAID/Chad will provide basic office space, office equipment, and transportation for field trips outside N'Djaména. Mission vehicles may be provided, as available, for official business within the city of N'Djaména and contractors may need to use taxis at times. If access to computers is essential to contractor work efficiency, contractors are advised to bring portable units with them and WordPerfect 5.0/5.1 is recommended.

The contractors may have check cashing and health unit privileges as authorized by the United States Embassy. In order for a contractor to be given check cashing authorization, a letter of guarantee from his/her employing company must be on file with the Embassy. The letter, which can be hand-carried by the contractor, must say that the contract company will guarantee funds if the

employee's personal check is returned for any reason. Until the letter is on file, the contractor will be authorized to cash only travelers checks at the Embassy cashier. Access to the Embassy Health Clinic is limited to life-threatening emergencies and requires that the contractor present proof of medical clearance issued by the Department of State Medical Office. Each contractor must get all necessary vaccinations before his/her departure for Chad because no vaccinations will be given at the Embassy Health Clinic.

The USAID/Chad Mission, with the concurrence of the U.S. Embassy/N'Djaména, must cable or fax specific authorization for each contractor to enter Chad with the planned date of arrival and departure, prior to the consultant's departure from the U.S. Contractors must have Chadian entry visas before they are authorized to travel. If contractors desire expeditor assistance, the Mission must have received the request three work days (Monday through Friday) in advance of arrival in Chad.

The contractors shall be responsible for all other logistical support not mentioned above.

#### ARTICLE IX - WORKDAYS ORDERED

##### A. Functional Labor

<u>Categories</u>	<u>Work Days</u>	<u>Fixed Daily Rate*</u>	<u>Total</u>
Team Leader (Christine Bernardeau)	41	\$1,078.74	\$44,228.34
Highway/Rural Road Engr. (Michael L. Scott)	32	1,078.74	34,519.68
Senior Transport Economist (Graham Gleave)	32	1,078.74	<u>34,519.68</u>
		TOTAL	113,267.70
		Rounded to	113,268.00

\*Based on a multiplier of 3.25.

B. Subject to the ceiling price established in this Delivery Order and the prior written approval of the COTR, the Contractor is authorized to adjust the number of work days actually employed in the performance of the work by each position specified in this order. The Contractor shall attach a copy of the COTR's approval to the final voucher submitted for payment.

C. It is the Contractor's responsibility to ensure that the COTR approved adjustments to the work days ordered for each functional labor specialist do not result in costs incurred which exceed the ceiling price of this Delivery Order. Under no circumstances shall such adjustments authorize the Contractor to be paid any sum in excess of the ceiling price.

#### ARTICLE X - CEILING PRICE

(1)	
For Work Ordered	\$113,268
(2)	
For Other Direct Cost	\$ 35,368
Ceiling Price (1) + (2)	\$148,636

The Contractor will not be paid any sum in excess of the ceiling price.

#### ARTICLE XI - USE OF GOVERNMENT FACILITIES AND PERSONNEL

- A. The Contractor, and any employee or consultant of the Contractor, is prohibited from using U.S. Government facilities (such as office space or equipment), or U.S. Government clerical or technical personnel in the performance of the services specified in the Contract, unless the use of Government facilities or personnel is specifically authorized in the Contract, or is authorized in advance, in writing, by the Contracting Officer.
- B. If, at any time, it is determined that the Contractor, or any of its employees or consultants, have used U.S. Government facilities or personnel without authorization, then the amount payable under the Contract shall be reduced by an amount equal to the value of the U.S. Government facilities or personnel used by the Contractor, as determined by the Contracting Officer.
- C. If the parties fail to agree on an adjustment made pursuant to this clause, it shall be considered a "dispute" and shall be dealt with under the terms of the "Disputes" clause of the Contract.

#### ARTICLE XII - EMERGENCY LOCATOR INFORMATION

The Contractor agrees to provide the following information to the Mission Administrative Officer on or before the arrival in the host country of every contract employee or dependent:

- A. The individual's full name, home address, and telephone number.
- B. The name and number of the contract, and whether the individual is an employee or dependent.
- C. The Contractor's name, home office address, and telephone number including any after-hours emergency number(s), and the name of the Contractor's home office staff member having administrative responsibility for the Contract.
- D. The name, address, and telephone number(s) of each individual's next of kin.
- E. Any special instructions pertaining to emergency situations such as

power of attorney designees or alternate contact persons.

ARTICLE XIII - LOGISTIC SUPPORT

The Contractor shall be responsible for all logistic support required in the performance of this Delivery Order, except that the mission will engage an administrator to handle in-country arrangements.

ARTICLE XIV - ACCESS TO CLASSIFIED INFORMATION

The Contractor will not have access to classified information.

ARTICLE XV - DUTY POST

The Duty Post for this delivery order will be N'Djamena, Chad, and surrounding areas.

ARTICLE XVI - WORK WEEK

The Contractor is authorized up to a six-day work week with no premium pay.

## **Annex 5: List of Documents Consulted**

## List of Documents Consulted

- Assessment of Program Impact, USAID/Chad, Fiscal Year 1991
- Bilan au 31-12-1991, OFNAR, MTPT
- Bituminous Paving Maintenance Planning for the 1992-1993 Work Program, Louis Berger International Inc., N'Djamena, March 23, 1992
- Bordereaux des Prix, Travaux d'Entretien Courant
- Bordereaux des Prix, Travaux de Rehabilitation des Routes
- Bordereaux des Prix, Travaux d'Entretien Periodique
- Chad Strengthening Road Maintenance Project, Final Workplan for the Technical Assistance Team, October 1991- September 1992, Louis Berger International, Inc., November 1991
- Chad Strengthening Road Maintenance Project, Project Paper, USAID, June 25, 1985
- Comptes Economiques: 1983-1993, Direction Generale, Direction de la Statistique, des Etudes Economiques et Demographiques, Ministere du Plan et de la Cooperation, Septembre 1993
- Contrat-Programme entre la Direction des Routes et l'Office National des Routes pour l'Annee 1991-1992, Direction des Routes, Ministere des Travaux Publics et des Transports
- Contrat-Programme entre la Direction des Routes et l'Office National des Routes pour l'annee 1992-1993, Ministere des Travaux Publics et des Transports
- Contrat-Programme entre la Direction des Routes et l'Office National des Routes pour l'Annee 1992-1993, Direction des Routes, Ministere des Travaux Publics et des Transports
- Convention de Financement entre la Communaute Europeenne et la Republique du Tchad, Convention No. 5357/CD, Programme General d'Importation, Appui a l'Ajustement Structurel, Lome IV
- Country Program Strategy Update, 1992-1996
- Cout des Travaux Effectues sur le Materiel USAID, Periode 92-93
- Etude d'Evaluation: Projet de Renforcement de l'Entretien, prepared for USAID/Chad, prepared by Parsons Brinckerhoff, Rapport Definitif, Tchad, Mai 1988
- Evaluation Study: Strengthening Road Maintenance Project, Final Report, prepared by Parsons Brinckerhoff International, Inc., for USAID/Chad, May 1988

Liste du Materiel, SNER

Local Currency Budget Studies for 1988, SRMP, Gannett Fleming Transportation Engineers, Inc.

Marche N0. 46/TPT/DR/93, Travaux d'Entretien Courant des Routes en Terre, Massaguet-Massakory, Djermaya-Massaguet, Massaguet-Ngoura et Bokoro, Direction des Routes, Ministere des Travaux Publics et des Transports

Marche N0. 13/TPT/DR/93, Travaux d'Entretien courant des Routes Bitumees, Direction des Routes, MTPT

Materiel Remis par l'USAID, Direction du Material, SNER, Juin 1993

Modification de l'Etude et Devis Estimatif, Route Djermaya-Dandi, Republique du Tchad, SRMP, prepared for USAID/Chad, prepared by Parsons Brinckerhoff International, Inc. Rapport Definitif, Juin 1987

Participation of PME's in the Maintenance of Primary Roads in the N'Djamena

Participation of PME's in the Maintenance of Primary Roads in the N'Djamena Agency, prepared by Louis Berger International, Inc. for USAID/Chad, March 4, 1992

Plan d'Action Informatique, OFNAR, prepared for USAID/Chad, prepared by LBII, Novembre 1991

Plusieurs Aide-Memoires de la Banque Mondiale Concernant PST2

Preliminary Consideration for the Privatization of the Maintenance of Roads in Chad, Strengthening of the Road Maintenance Project, Louis Berger International, Inc. June 6, 1992

Principaux Indicateurs Macro-Economiques, Direction Generale, Direction de la Statistique, des Etudes Economiques et Demographiques, Ministere du Plan et de la Cooperation, 24 Juin, 1994

Proces-Verbal des Negotiations entre la Republique du Tchad et l'Association Internationale de Developpement, Concernant un Credit pour le Second Projet Sectoriel des Transports (PST2), Washington, 15 Mai 1993

Programme Detaille d'Entretien Routier pour la Campagne 1992-93, Agence de N'Djamena, Office National des Routes, Projet d'Appui a l'Entretien Routier au Tchad, Louis Berger International, Inc.

Project Implementation Report, October 1, 1992 to March 31, 1993

Project Implementation Report, April 1, 1993 to September 30, 1993

Project Implementation Report, September 30, 1993 to March 30, 1994

- Project Identification Document, Strengthening Road Maintenance Project
- Quarterly Reports of Project (7), Strengthening Road Maintenance Project, January 1, 1992 to September 30, 1993, Louis Berger International Inc.
- Rapport de Fin de Mission, Sections Electricite et Formation, OFNAR, by Christian Evrard, LBII, Janvier-Mars 1992
- Rapport Annuel N0. 12, Direction des Travaux, Office National des Routes, Annee 1992
- Rapport du Comite Technique Charge des Negociations et du Suivi du Programme d'Ajustement Structurel, Secretariat General de la Presidence, Rapport No. 1, 11 Juillet 1994
- Rapport de Mission, Section Electricite Automobile, OFNAR, Christian Evrard, Louis Berger International, Inc., Octobre 1990- Mai 1991
- Rapport d'Evaluation Provisoire de l'Office National des Routes en Liquidation, Administration Provisoire, OFNAR, 9 Juin 1994
- Rapports de Campagne, Direction des Travaux, Office National des Routes, 1991-92, 1992-93
- Relevés de Routes Revetues du Tchad, Volume I, Louis Berger International, Rapport, USAID/Chad, Octobre 1992
- Relevés de la Route Bitumee du Tchad, N'Djamena-Guelendeng, Volume I, Louis Berger International, Rapport, USAID/Chad, Fevrier 1993
- Republic of Chad: Private Transport Industry Report, prepared by Erol Haker and Thomas Lenaghan, for USAID/Chad, N'Djamena, Agricultural Marketing and Technology Transfer Publication No. 59, April 1994
- Road Reconstruction Project, Staff Appraisal Report, Republic of Chad, the World Bank, March 21, 1988
- Second Evaluation Study: Strengthening Road Maintenance Project, Project No. 677-0050, prepared by DeLeuw Cather International Limited, for USAID/Chad, March 1992
- Societe Nationale d'Entretien Routier, Statuts
- Strengthening Road Maintenance Project, Chad, Phase I Final Report, prepared by Gannett Fleming Engineers and Planners, for USAID/Chad, October 1990
- Strengthening Road Maintenance Project, Final Project Report, Contract No. 677-0050 C00-0010-00, prepared by Louis Berger International, Inc., for USAID/Chad, September 30, 1993
- System for Research on the Social Aspects of Road Use and Maintenance, prepared by Ellen P. Brown, for USAID/Chad

Tchad, Rapport 1992, Cooperation au Developpement, UNDP, Aout 1993

World Development Report 1994, Infrastructure for Development, published for the World Bank, Oxford University Press, New York, NY, June 1994

**Annex 6: List of Persons Contacted**

## List of Persons Contacted

### Government of Chad

#### Ministry of Public Works and Transport

Nana Nakoye, General Director  
Ahmat Nene, Coordinator  
Elvam Bamboh, Road Director  
Ndoumedjina Doumadingar, Data Bank  
Ibrahim Nassour, Field General Inspector  
Michel Lefebvre, Technical Assistant  
Casimir Rabesoa, Technical Assistant

#### Bureau National De Frets

N. Khalil D'Abzac, General Director  
Ali Moussa, Computer Service

#### Ministere du Plan et de la Coordination

Gognin Gomdigue, Statistics, Economic Studies, and Demography Director  
Jean Boursicot, National Account Expert, DSEED

#### Tresor

Moustapha Tchari, Service Fiscalite Petroliere

#### Compte Autonome d'Entretien Routier (CAER)

Tapol, Accountant

#### Office National des Routes

Beade Dionrio, Administrator  
M. Sanga, Accountant for OFNAR Liquidation  
M. Bernard, Material Appraiser for OFNAR Liquidation

#### USAID

Richard Fraenkel, AID Representative  
Samir Zoghby, General Development Officer for Special Projects  
Touba Bedingar, Agriculture and Marketing Technology Transfer Project Officer  
Iqbal M. Chaudry, General Engineer Officer, previous Project Officer (1985-1988)  
Djime D. Adoum, Evaluation Officer

Delegation de la Communaute Europeenne

Giacomo Durazzo, Rural Development Counsellor  
Egbert Holthuis, Economic Counsellor

PNUD

Abel Morbe, National Economist

Societe Nationale d'Entretien Routier (SNER)

Daoussa Deby, Director General  
Abouna Oumar, Administrative and Financial Director  
George Rols, Equipment Manager, TA  
M. Kabo, Equipment Deputy Manager  
Eloi Dimangar, Operation Manager  
Pascal Cacciuttolo, Construction Manager, TA

Others

Christian Dalzon, Agency Director, Bouygues  
Inza Soumahoro, Auditor, Deloitte & Touche  
M. Ganda, Director, Entreprise Tchadienne de Travaux Publics (ETTP)  
Christian Cabibel, Director, Groupement Entretien Routier (GER)

**Annex 7: Rapport Mecanique et Ordre de Travail**

SNER

ORDRE DE TRAVAIL

OT/13

Date d'ouverture de l'OT

N° DE L'OT

N° Code Parc

250694

E4060340

000001

MATERIEL

Marque MERCEDES	Type 2628
N° de série 322088	Arrangement

Provenance

...

Compteur Km / Hr

...

MOTEUR

Marque	Type
N° de série	Arrangement

TRAVAUX DEMANDES

EN PL MO EL MS EX

N° Fiche Inspection

...

- Vidange moteur avec filtre à huile
- Remplacement de filtre à gaz
- Vérification des niveaux d'huile et d'eau
- ...

25.06.94

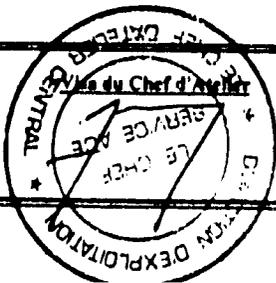
*[Signature]*

TRAVAUX EXECUTES

Date de fermeture de l'OT:

250694

- Vidange avec filtre à huile
- Remplacement du filtre à gaz
- Nettoyage et soufflage du filtre à air
- serre des supports du tuyau d'échappement
- Reparation de la bécille de débrayage
- graissage



Visa du Service Inspection

*[Signature]*

Visa du Directeur du Matériel



SNER

ORDRE DE TRAVAIL

OT/13

Date d'ouverture de l'OT

05 07 90

N° DE L'OT

01040360

N° Code Parc

CTR005

MATERIEL

Marque	Type
N° de série	Arrangement

Provenance

Base

Compteur Km/ Hr

125411

MOTEUR

Marque	Type
N° de série	Arrangement

TRAVAUX DEMANDES

EN PL MO EL MS EX

N° Fiche Inspection

Grid for inspection number

Mise en charge de batterie

huile et à gazol.

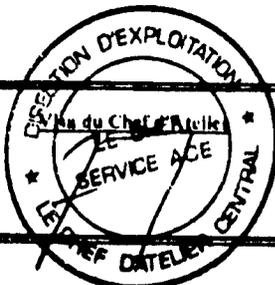
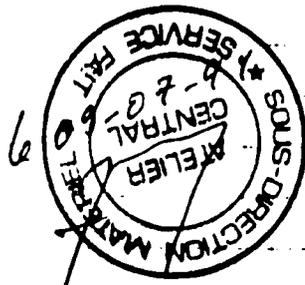
05-07-90

TRAVAUX EXECUTES

Date de fermeture de l'OT:

09 07 90

1. Vidange moteur avec remplacement des éléments filtrant à huile et à gazol.
2. Nettoyage des filtres à air.
3. Contrôle et perfection des niveaux d'huile de BV, BT et ponts.
4. Prélèvement des batteries et leur mise en charge.



Visa du Service Inspection

Visa du Directeur du Matériel

Signature



CODE: CCE023

# RAPPORT MECANIQUE

CHANTIER: Crelendeng - Bongo

An: 1994 Mois: Juin

AGENCE: Zone Sud RESPONSABLE: M. M. M. M.

N° OT	CdT	KM/hrs	DATE	DESIGNATION DES TRAVAUX	M.O	N° Bds	PIECES / REFERENCES	CdP	MONTANT
(55)		19472	19	Véhicule immobilisé du 19 au 19-6-94 - Remplacement d'un bouchon			Bouchon du réservoir à carburant 50 10051026 801		23140
	EN	19591	8	Nettoyage du filtre à air -	1H				
	EX	19591	14	lavage de l'engin -	3H				
	VE	20106	23	Vérification des niveaux	1H				
	EN	20311	25	graissage de l'engin -	1H				
		20430	27	Vidange du moteur,					
(35)	EN			Remplacement des éléments filtrant	1H		Filtre à Huile Réf: 901 5000670.670-	901	8850
	VE	21008	30	Vérification de la boulonnerie	1H				

31990

EFFICIENCE

Marche: 11

Panne: 00

Arrêt: 15

Relevé compteur

Début de mois: 19472

Fin de mois: 21008

Total mois Km/hrs: 1536

ETAT GENERAL DE LA MACHINE

Véhicule en bon état de fonctionnement.

CONSUMMATION

Carburant:	753
L. moteur:	25
L. hydrau:	
L. 80/140:	
Grasse:	01

CODE: N481022				RAPPORT MECANIQUE			CHANTIER: Rouge - Bokoro		
An: 1994 Mois: Juin							AGENCE: Rouge		RESPONSABLE: <i>[Signature]</i>
N° OT	Cd T	KM/Hrs	DATE	DESIGNATION DES TRAVAUX	M.O	N° Bds	PIECES / REFERENCES	Cd P	MONTANT
87	FN	6864	01	Vidange Rotueur	2 <sup>h</sup>	11723	filtre à huile / 1R 0658	PO	3841
88	RP	6864	01	Echange dents de scarificateur	1 <sup>h</sup>	11722	Dents scarif / 645230	OAS	19352
89	RP	6871	02	Réparation de chambre à air	2 <sup>h</sup>	11726	tip-top / N° 7 <sup>b</sup> et 3	PNE	1699
90	RP	6904	08	Echange dents de scarificateur	1 <sup>h</sup>	11733	dents scarif. / 645230	OAS	67732
	RP	6904	08	Réparation de la roue de secours	2 <sup>h</sup>	11734	tip-top / N° 7 <sup>c</sup> et 5	PNE	1998
91	RP	6913	09	Echange de lame d'usure	2 <sup>h</sup>	11735	Lame d'usure / 4T2244	OAS	239720
92	RP	6951	17	Echange de décauteur	1 <sup>h</sup>	11739	Décauteur de gressil / 8N9803	PD	8359
	RP	6960	23	Echange de lame d'usure	2 <sup>h</sup>	11748	Lame d'usure / 4T2244	OAS	239720
93	VE	6964	24	Verification de tous les Niveaux des boîtiers	2 <sup>h</sup>				

82.100

EFFICIENCE		Relevé compteur		ETAT GENERAL DE LA MACHINE		CONSOMMATION	
Marche: <input type="checkbox"/>	<input checked="" type="checkbox"/>	Début de mois:	<input type="text" value="6857"/>			Carburant:	<input type="text" value="2741"/>
Panne: <input type="checkbox"/>	<input checked="" type="checkbox"/>	Fin de mois:	<input type="text" value="6996"/>			L. moteur:	<input type="text" value="10"/>
Arrêt: <input type="checkbox"/>	<input checked="" type="checkbox"/>	Total mois Km/Hrs:	<input type="text" value="139"/>			L. hydrau:	<input type="text"/>
						L. 90140:	<input type="text" value="41"/>
						graisse:	<input type="text" value="8"/>

## Annex 8: Road Inspection Reports

## Road Inspection Reports July and August 1994

(A selection of photographs demonstrating a main feature on each of the ARN project roads inspected during the 1994 Final Evaluation has been included under Annex 12.)

### **N'Djamena to Linia 30 km**

#### Inspection Report -

The N'Djamena to Linia road was inspected on the 17th July 1994. It is recorded as having been treated by "Reprofilage Lourd" in 1989 and by "Reprofilage a Sec" in 1990. In 1991-92 the routine work on this road was included in the program and work was recorded as having been carried out. In 1992-93 the road was deleted from the program.

New embankment areas over culverts have lost both shape and top width. Locations still exist where culverts are required. There are other areas where the drains have silted up from lack of maintenance and the formation floods. There are also lengths of side drains having no outfalls. The present bad condition of the road shows how easily the investment on this and other earth roads can be lost if they are denied the two annual grading treatments of the minimum standard maintenance provision.

#### Recommendations -

Items identified for urgent work are the need for culverts at km 4.2, 14.7, 18.7, 21.5 and 26.3 and the raising of the road formation around km 0.5, 6.5, 17.5, 22.5 and 27.5. The average IRI was about 11. The theoretical road width is six meters but where the road is on embankment erosion it has reduced the top width by two to three meters. The increased cross slope, where eroded, means that extra width cannot be used safely in wet weather. Zero chainage was the roundabout in N'Djamena where the bituminous surface ended.

### **Djermaya to N'Goura 171 km**

#### Inspection Report -

An inspection was made on the 22nd July 1994 of the Djermaya to N'Goura road which was maintained by the project from 1986 to 1991. The road was found to be in a very poor condition over 129 km of its 171 km length. The remaining 42 km were in the process of undergoing maintenance by "Reprofilage Compactage" after which the surface condition could be classed as good.

The work is being carried out by SNER using correct procedures with good results. At the N'Goura end of the road however, the drainage work and culvert installation was incomplete. As a result the road had been cut by flood waters and was virtually impassable thus completely negating the good effect of the other work being carried

out. According to the records this road was supposed to have received Category 1 to 3 treatment over its full length in 1992-93 and in addition 60,000 m<sup>3</sup> of fill was to have been placed to raise the grade and rehabilitate it in its worst areas. In reality less than 40 percent of the target was achieved.

Virtually the whole length of the section of road inspected remains low and is raised little more than 200 mm above the original ground level, sidetracks were in use over 25 km or 15 per cent of the length.

**Recommendations -**

Causeways or culverts are still needed at not less than twelve locations, km 87.1, 93.3, 94.6, 103.5, 123.0, 148.0, 152.4, 201.3, 201.7, 202.8 and 207.5. The average formation width is a nominal six meters but erosion has reduced much of it to five meters.

To lift the road at least 600 mm above the ground would require about 500,000 m<sup>3</sup> of fill at a cost that should not exceed \$2.5 million on this and the subsequent roads inspected.

All chainages accord with the kilometer post system.

**Guelengdeng to Boussa (M'Bere) 35 km.**

**Inspection Report -**

The first 30 kilometers of the road from Guelengdeng to Boussa and Mogo was inspected on the 29th July 1994. This road was reported in the LBII Quarterly Report for April to June 1992 as being assigned to the ARN Brigades for maintenance in lieu of the N'Goura to Bokoro road which was to be maintained instead by the private sector. FED equipment was to have been assigned to the ARN Brigade for that work in the 1992 -93 campaign. The condition of the road was bad and there was no evidence of the that the road was graded, drained and reshaped within the past two years. The average IRI was estimated at 11.

**Recommendations -**

The section from km 160-170 from N'Djamena (km 15-25 from Guelengdeng) was noted as being particularly low, wet and weak and requires raising urgently. The nominal top width of the road was six meters but erosion had reduced much of it to three meters. To build the 30 km of the road that was inspected up to a height of about one meter above the ground would require about 195,000 m<sup>3</sup> at a cost that should not exceed \$1 million.

**Guelengdeng to Bongor 85 km**

**Inspection Report -**

An inspection of this road was carried out on the 5th of August 1994. The road is stated to have been maintained in both 1991-92 and 1992-93 campaigns but with little

being added in a way of additional fill material. During the period 1988-89 the project rehabilitated part of the road and lifted it with an additional 260,000 m<sup>3</sup>, this was enough material to lift 23 km by about one meter and is assumed therefore to have created the section of good road between km 207 and km 230.

The road condition can be summarized as:

km 145-183	Fair	IRI.6-8, width 3-4m.
km 183-207	Weak	IRI.8-10, width 3-4m.
km 207-230	Good	IRI.4-6, width 6-9m.

The inspection finished at km 240.

Recommendations -

The condition of this road demonstrates what can be achieved if work is concentrated upon rehabilitation rather than basic maintenance grading.

To lift the rest of the section inspected would require a maximum of 700,000 m<sup>3</sup> at a cost of about \$3.5 million, this remaining section is not in a swamp area and a possible reduction of material of perhaps 20-30 percent might be possible.

Bad areas are at km 167, 174, 183, 190-197 and from 233 onward for an unknown distance. At km 236.9 the road is being undercut by the River Chari and must either be relocated further away or else bank protection by gabions and groins or a retaining wall will be needed, relocation would be the economic option. Culverts or causeways are needed at km 203, 206, 234.2 and 239.5.

**Djermaya to Dandi 67 km**

Inspection Report -

This section of road was completed using a combination of USAID and IDA funds under an IDA contract. The work was carried out during the period from November 1988 to April 1992.

The road has a graded crushed stone base and a wearing course of single coat bituminous surface dressing. The nominal pavement width was for a seven meters wide bitumen surface.

The present average IRI is in the range 4-6 from km 0-43, 3-5 from km 45 to 63 and 5-7 from km 63 to 67.

Recommendations -

The pavement and surfacing stone is weathered rhyolite from Dandi quarry. Some crushing of the softer stone is now evident and flushing is occurring in the wheeltracks in the Djermaya bound lane.

Longitudinal cracking is also visible and can probably be attributed to the expansive

nature of the fill material. The side slopes were designed at 1 in 2. A recognized method of countering longitudinal cracking of this type is using a flatter side slope.

Some ravelling is also occurring and the road would benefit from a fog seal enrichment.

The older sections of this road will be due for a periodic resurfacing by 1995-96 and the most economic means for this would be to apply a slurry seal. Crack sealing was carried out by the bitumen brigade under LBII supervision between September 1992 and March 1993. Cracking is now re-establishing itself and regular maintenance should be carried out.

### **General Comments on Design and Maintenance Practices**

Many of the pipe culverts have been built without proper headwalls and shoulder erosion is occurring at such locations. Current international practice is to use pipes of 1.0 m diameter minimum size, smaller pipes cannot be cleaned out.

The use of round culvert pipes in combination with a flat country cross section is usually uneconomic. Pipe culverts have a poor discharge capacity at low heads of water and the provision of adequate waterway areas plus a safe cover over the pipes can result in an excessive need for fill.

Where streams are seasonal, shallow and of short duration the construction of well designed causeways would function effectively, whereas a culvert creates more scour damage, has a greater chance of being blocked and needs the grade-line to be raised to provide effective cover over it. Alternatively precast box culverts are a good low alternative but are more expensive and require good production quality control.

Causeways (radians) could be constructed of in-situ concrete, or of bitumen surfacing on a stabilized base with concrete edge strips or of riprap stone blockwork.

Culvert location in flat terrain is imprecise because water flows can be easily rerouted. A common solution is to provide balancing culverts at regular intervals with outlet drains to prevent the road from being overtopped.

## **Annex 9: Equipment Purchase and Selection**

## Equipment Purchase and Selection

Equipment selection for the project was not given sufficient priority or research. LBII in their reports make ample comment about compactors purchased for the project that were unsuited to the work type and the materials to be handled and complained regularly of the difficulties of operating the brigades effectively without a low-boy trailer.

There are two basic rules governing equipment selection, these are even more important in underdeveloped countries such as Chad:

- Simplicity and versatility
- Mobility

### Simplicity and Versatility

Vibrating wedgefoot rollers were purchased for this project. They are heavy, cumbersome, and require skilled maintenance of the engine, metalastic bearings and drive belts as well as a technical understanding of materials and compaction. No tractors were listed for pulling them but as a roller for earthworks a powerful one would be required. It is suggested that a twin drum non-vibrating sheepsfoot roller drawn by an agricultural tractor would have served the purpose better. In general if only two rollers were to be purchased for the project the best and most versatile choice would have been multi-tired pneumatic compactors in the upper weight range (20-30 t).<sup>1</sup>

### Mobility

Equipment should be easily transportable. If a low-boy was not available the equipment chosen should have been capable of being transported on a tipper or flatbed truck. The choice of Caterpillar D7H bulldozers made the tip truck option impossible therefore a low-loader was essential.

If there are going to be difficulties in obtaining transport for bulldozers and compactors on a project, it is essential that the loaders can win material for themselves and are therefore equipped with hydraulic rippers. This simple and economic provision was overlooked and an advantage lost.

Correct equipment selection was fundamental to the performance and success of this project and the lack of it was a cause of lost work output that became increasingly apparent in the last two years.

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<sup>1</sup> The project instead obtained rubber tired compactors from OFNAR but they were old, extremely unreliable and continually reduced the effective work output because of breakdowns. New rubber tired compactors were fundamental to the project's success.

### **Equipment Replacement and Amortisation.**

The Project Paper took into account the proposed project duration of at least ten years with the construction equipment being provided in year one and provision for a depreciation account so that the equipment could be replaced at the end of its economic working life. However, OFNAR never had the financial means to set up the account and USAID never insisted on it. The project also relied heavily on the use of rehabilitated equipment salvaged from throughout Chad, but took no account to the fact that this equipment would have to be replaced before the end of the project. Six to ten years is often considered the age range within which many items of equipment should be replaced.

As the project proceeded it was obvious that the amount of downtime on many of the older items, such as rubber tired compactors obtained from OFNAR, was excessive. Since neither OFNAR nor the project had an ability to purchase or hire replacement equipment they were caught in a vicious circle. No compactor, no compaction. No compaction and the rest of the work would be short lived and wasted.

The failure to provide for equipment replacement would normally leave a vacuum after completion of the project that can only be filled by another donor taking on the responsibilities of equipment maintenance and its ultimate replacement. The major items are already seven years old and approaching the end of their economic life. In this instance however, they have been purchased by SNER so their replacement will depend entirely upon the profitability of that organization over the next three years.

**Annex 10: SRMP USAID Expenditures 1992-93**

**Annex Table 2.2**  
**SRMP: USAID Expenditures 1992-93**  
in US\$ 1000

Element	Cumulative Expenditure to Period End									Budget			UnderSpend		Expend 1992-93
	Dec 1991	Q1 92	Q2 92	Q3 92	Q4 92	Q1 93	Q2 93	Q3 93	Q4 93	PIL 37	PIL 33	Reduction	vs PIL 37	vs PIL 33	
1 Long Term Advisor	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	0.0	0	0.0	0.0
2 TA Contract	7,221.6	7,382.2	7,677.4	8,017.8	8,535.0	9,027.8	9,463.9	9,585.0	9,591.8	9,630.0	9,614.2	(15.8)	38.2	2.4	2,370.2
3 Short Term TA	78.0	351.8	351.8	351.8	355.4	374.8	385.0	387.4	390.3	395.8	395.8	0.0	5.5	5.5	312.3
4 Heavy Equipment	3,252.4	3,416.4	3,656.4	3,629.9	3,696.0	3,695.6	3,695.6	3,695.6	3,695.6	3,886.5	3,866.5	(20.0)	190.9	170.9	443.2
5 Light Vehicles	256.3	246.7	270.5	270.5	315.2	315.2	315.2	315.2	315.2	315.2	315.2	0.0	0	0.0	58.9
6 Misc. Equipment	751.1	751.1	751.1	773.1	812.5	822.1	822.1	822.1	822.1	822.1	822.1	0.0	0	0.0	71.0
7 Road Mtce Equip	1,804.8	1,972.4	1,972.4	1,972.4	2,016.7	2,071.7	2,473.5	2,473.5	2,473.5	2,473.5	2,473.5	0.0	0	0.0	668.7
8 Road Mtce Materi	253.9	253.9	253.9	253.9	253.9	254.3	275.8	275.8	275.8	275.8	275.8	0.0	0	0.0	21.9
9 Furn/Office Eqmt	372.9	373.0	375.3	373.9	376.0	377.8	360.8	390.8	330.8	360.8	360.8	0.0	0	0.0	7.9
10 Building Rehab	623.4	623.4	623.4	623.4	623.4	668.9	736.6	736.6	736.6	736.6	736.6	0.0	0	0.0	113.2
11 Road Rehab	5,130.3	5,530.3	5,530.3	5,530.3	5,534.5	5,534.5	5,534.5	5,600.0	5,600.0	5,600.0	5,600.0	0.0	0	0.0	469.7
12 Eqmt Recovery	108.7	108.7	108.7	108.7	108.7	108.7	108.7	108.7	108.7	108.7	108.7	0.0	0	0.0	0.0
13 Admin Support	428.7	440.8	446.6	457.4	457.4	457.4	457.4	457.4	457.4	547.0	547.0	0.0	89.6	89.6	28.7
14 Rents/Utilities	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	0.0	0	0.0	0.0
15 Training (HC)	119.0	194.9	194.9	159.2	166.8	166.8	166.8	166.8	166.8	177.6	177.6	0.0	10.8	10.8	47.8
16 Vehicle O&M	255.7	250.6	250.6	250.6	250.6	250.6	250.6	250.6	250.6	259.4	259.4	0.0	8.8	8.8	(5.1)
17 Training Brigade	526.2	526.2	526.2	526.2	526.2	526.2	526.2	526.2	526.2	526.2	526.2	0.0	0	0.0	0.0
18 Water Wells	165.1	211.4	211.4	287.6	379.1	413.9	439.1	439.1	439.1	582.1	582.1	0.0	143	143.0	274.0
19 ARN Support	2,190.9	2,307.0	2,423.0	2,752.7	3,082.2	3,294.5	3,493.3	3,633.5	3,538.9	5,161.3	5,153.4	(7.9)	1,622.4	1,614.5	1,348.0
20 Evaluation & Audit	120.9	225.2	263.9	238.8	238.8	308.7	308.7	308.7	308.7	760.8	760.8	0.0	452.1	452.1	187.8
<b>TOTAL</b>	<b>24,132.9</b>	<b>25,639.0</b>	<b>26,360.8</b>	<b>27,051.2</b>	<b>28,201.4</b>	<b>29,142.5</b>	<b>30,306.8</b>	<b>30,636.0</b>	<b>30,551.1</b>	<b>33,112.4</b>	<b>33,068.7</b>	<b>(43.7)</b>	<b>2,561.3</b>	<b>2,517.6</b>	

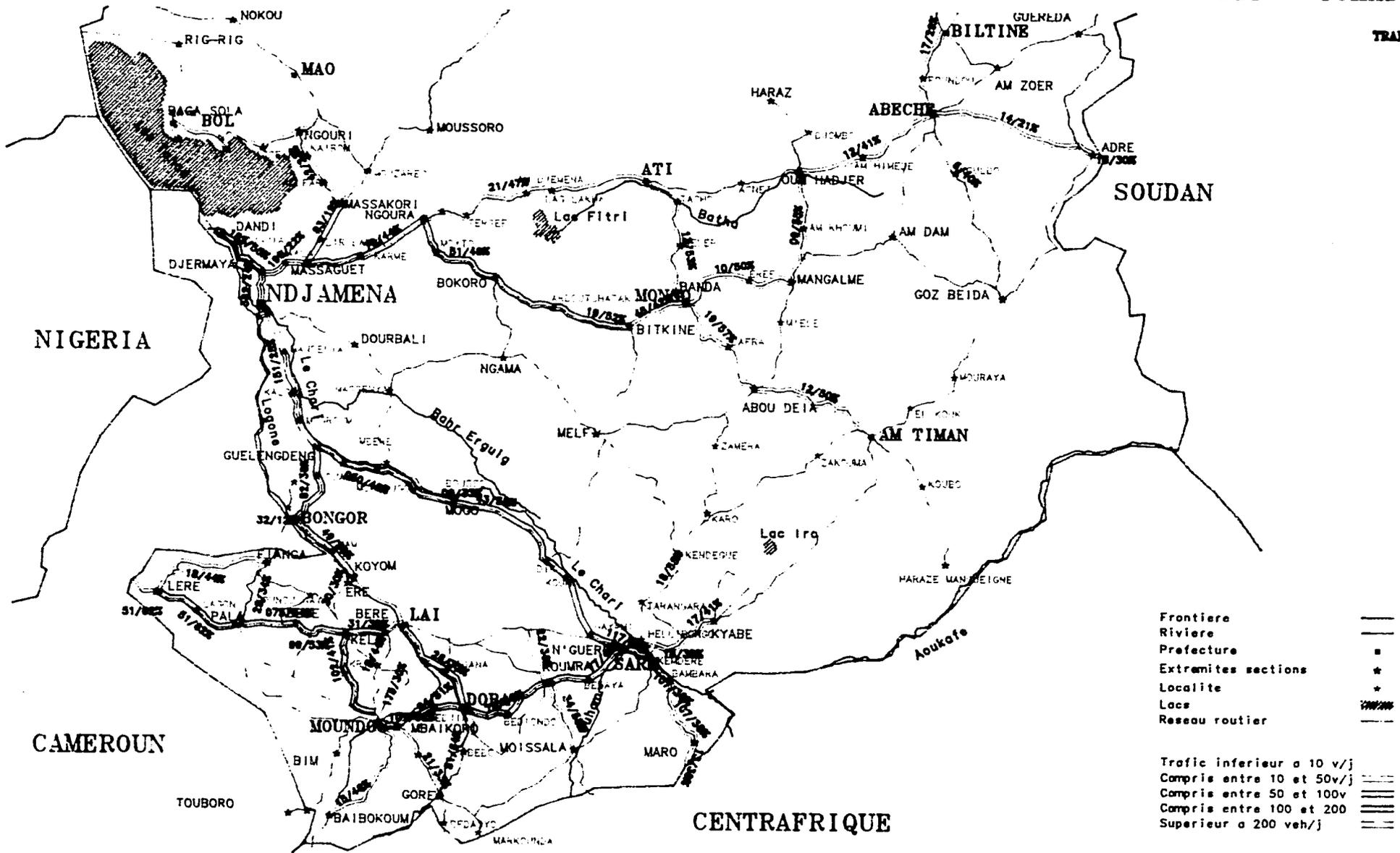
Source: Controller's Office

Element	Total 1991	Quarterly Expenditures								Total 1992-93	Available Budget		UnderSpend	
		Q1 92	Q2 92	Q3 92	Q4 92	Q1 93	Q2 93	Q3 93	Q4 93		PIL 37	PIL 33	vs PIL 37	vs PIL 33
TA Contract (1,2,3)	7,741.2	434.4	295.2	340.4	520.8	512.2	446.3	123.5	9.7	2,682.5	2,726.2	2,710.4	43.7	27.9
Equipment (4,5,6,7)	6,064.6	322.0	263.8	(4.5)	194.5	64.2	401.8	0.0	0.0	1,241.8	1,432.7	1,412.7	190.9	170.9
Road Rehab	5,130.3	400.0	0.0	0.0	4.2	0.0	0.0	65.5	0.0	469.7	469.7	469.7	0.0	0.0
Water Wells	165.1	46.3	0.0	76.2	91.5	34.8	25.2	0.0	0.0	274.0	417.0	417.0	143.0	143.0
OFNAR Support (13,19)	2,619.6	128.2	111.8	340.5	329.5	212.3	198.8	140.2	(94.6)	1,376.7	3,088.7	3,080.8	1,712.0	1,704.1
Other	2,412.1	175.2	41.0	(62.2)	9.7	117.6	92.2	(10.0)	0.0	373.5	845.2	845.2	471.7	471.7
<b>Total</b>	<b>24,132.9</b>	<b>1,506.1</b>	<b>721.8</b>	<b>690.4</b>	<b>1,150.2</b>	<b>941.1</b>	<b>1,164.3</b>	<b>329.2</b>	<b>(64.9)</b>	<b>6,418.2</b>	<b>8,979.5</b>	<b>8,935.8</b>	<b>2,561.3</b>	<b>2,517.6</b>

Source: USAID Controller's Office

## **Annex 11: Maps**





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## **Annex 12: Inspection Photographs**

## Inspection Photographs

This Annex includes a selection of photographs demonstrating a principal feature on each of the project roads inspected during July - August 1994.

### Sheet 1 - N'Djamena to Linia Road.

This road was graded in 1991-1992 but not in 1992-1993 and the condition is now bad. If investment is not to be wasted earth roads must be given Category 1 and 2 treatment every year as a basic minimum.

### Sheet 2 - Djermaya to N'Goura Road.

The photograph shows Category 2 maintenance work (Reprofilage avec Compactage) being carried out by SNER under the 1993-1994 mini-campaign.

### Sheet 3 - Guelengdeng to Boussa/Mogo (M'Bere) Road.

The photograph shows a section of low, unrehabilitated, poorly drained road on an area of pervious saturated clayey sand, the road is impassable in wet weather.

### Sheet 4 - Guelengdeng to Bongor Road.

A section of good quality rehabilitated road formation built up during the 1988 to 1989 period with the help of USAID. (The surface is of a sandy clayey loam).

### Sheet 5 - Djermaya to Dandi Road.

A road having a wearing course of a single layer of surface dressing. The road was reconstructed under USAID-IDA funding during the period 1988-1992. Bitumen hardening is now apparent and the road is in need of a "fog-seal" as a low price short term measure or preferably a slurry-seal as a periodic maintenance treatment. Crack sealing is also due.

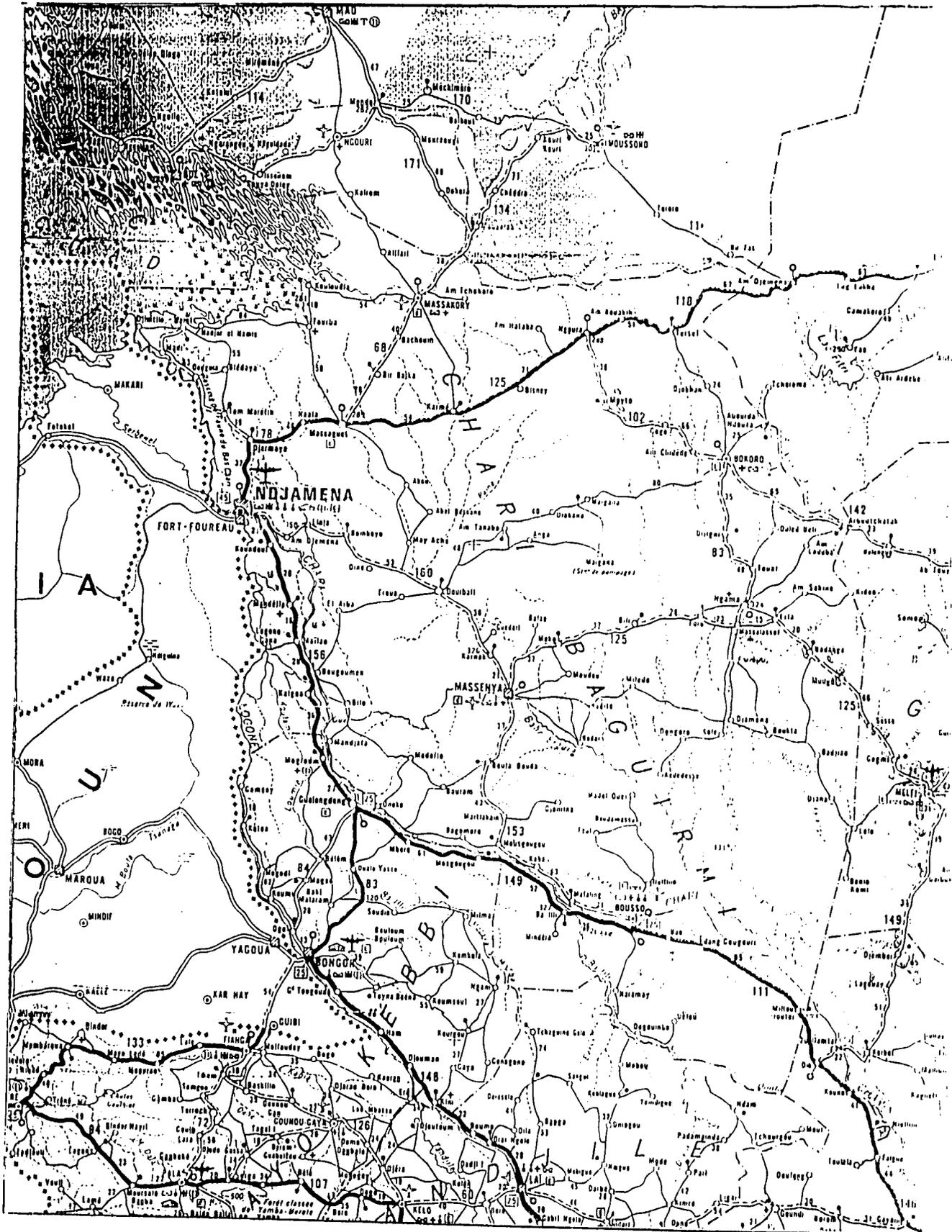


PHOTO SURVEY FORM

Date. 17/7/74

Negative Film No. 1535/14

Country. TCHAD



Comments Fill, 1m, unmaintained, shape lost, form w = 3m  
Km. 20 + 100

Looking To. NDJAMENA

Road From. NDJAMENA

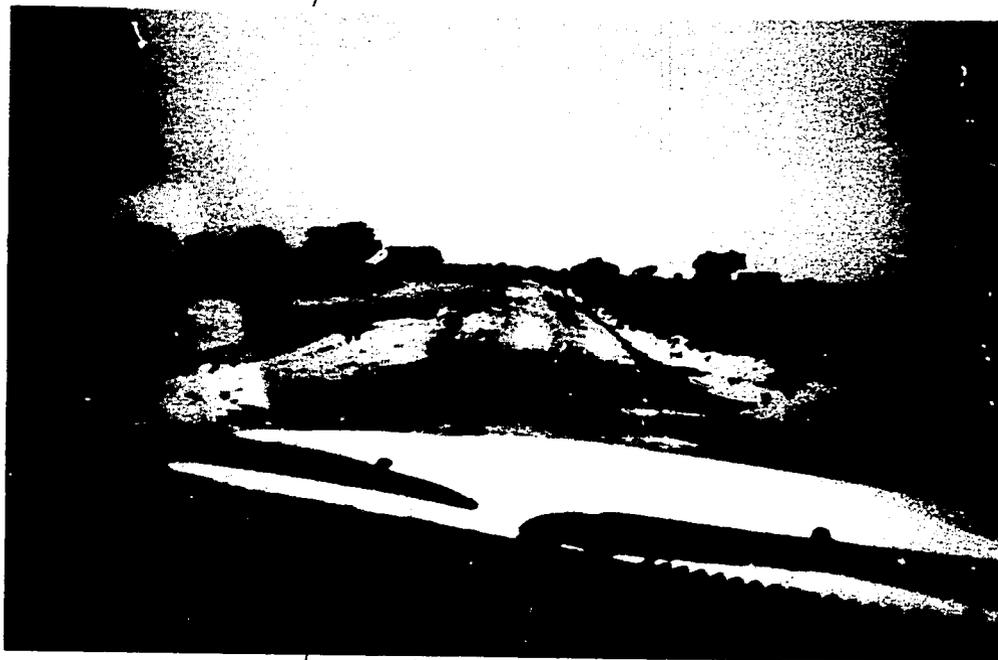
Road No.

To. LIANIA  
Region.

Date. 17/7/74

Negative Film No. 1535/15

Country. TCHAD



Comments Unformed up, low wet area  
Km. 15 + 800

Looking To. NDJAMENA

Road From. NDJAMENA

Road No.

To. LIANIA  
Region.

PHOTO SURVEY FORM

Date. 22/7/94

Negative Film No. 2019/22 Country. TCHAD

Date. 22/7/94

Negative Film No. 2019/15 Country. TCHAD



Comments ALBARET COMPACTOR. REPROFILAGE LOURD (SNER)

Km. 166+600

Looking To. DJERNAYA

Road From. DJERNAYA

Road No.

To. NGOURA

Region.

Comments REPROFILAGE LOURD, CAT 1200. GRADER - SNER

Km. 166+100

Looking To. NGOURA

Road From. DJERNAYA

Road No.

To. NGOURA

Region.

Sheet No. 2  
11/94

PHOTO SURVEY FORM

Date. 29/7/94

Negative Film No. 2019/37

Country. TCHAD



Comments SECTION IMPASSABLE. EDF MAINTAINED 1988-91  
Km. 177+000  
Looking To. QUELENGENI  
Road From. QUELENGENI To. MOGO  
Road No. Region.

Date. 29/7/94

Negative Film No. 2019/36

Country. TCHAD



Comments SECTION IMPASSABLE. FED FUNDED 1988-1991  
Km. 177+000 W=5m  
Looking To. MOGO  
Road From. QUELENGENI To. MOGO  
Road No. Region.

ROAD LACKS DRAINAGE AND SHAPE, UNMAINTAINED FOR  
AT LEAST TWO YEARS?

PHOTO SURVEY FORM

Date. 5/8/94

Negative Film No. 2384/22 Country. TCHAD



Comments Rehabilitated road. Im fill, lean surface  
Km. 220+000  
Looking To. GUELENGDENE  
Road From. GUELENGDENE To. BONJOR  
Road No. Region.

Date. 5/8/94

Negative Film No. 2384/21 Country. TCHAD



Comments IRI 4-6, Rehabilitated road. (USAID 1988-1990)  
Km. 220+000  
Looking To. BONJOR  
Road From. GUELENGDENE To. BONJOR  
Road No. Region.

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PHOTO SURVEY FORM

Date. 19/7/94

Negative Film No. 1535/25

Country. TCHAD



Comments NOTE SEUR AROUND CULVERT

Km. 35 - 000

Looking To. DJERNAYA

Road From. DJERNAYA

Road No.

To. DANDI  
Region.

Date. 19/7/94

Negative Film No. 1535/24

Country. TCHAD



Comments

Km. 35+000

Looking To. DANDI

Road From. DJERNAYA

Road No.

To. DANDI  
Region.

**Annex 13: Comments from Daoussa Deby, SNER General Director,  
and former OFNAR General Director**

**SOCIETE NATIONALE  
D'ENTRETIEN ROUTIER**

**SNER**

*CRÉE PAR LA LOI N°006/PR/93  
DU 27 DÉCEMBRE 1993*

**DIRECTION GENERALE**

**N° 242/DO-SNER/94**

**OBJET:**

Observations portant  
sur le projet de rapport  
d'évaluation du projet  
N° 677 - 0050/USAID - TCHAD.

N'djamena, le 02 septembre 1994.

**RAPPEL DES OBJECTIFS DU PROJET.**

Ce projet avait intervenu au Tchad à une période assez difficile. Les infrastructures Routières Nationales étaient complètement détruites par plusieurs années de guerre. L'administration en charge de l'entretien routier n'avait alors aucun support matériel, financier voire même humain pour faire face aux besoins les plus élémentaires du secteur des transports en général et le sous secteur routier en particulier. Devant les besoins de plus en plus pressants du secteur le gouvernement a créé l'office National des routes ( OFNAR ). Tout était à refaire.

C'est dans ce contexte de dénuement total que ce projet a été conçu sur la base d'un certain nombre d'objectifs prioritaires repartis en deux phases de cinq ans.

La première phase qui a débuté en 1985 et fini en fin septembre 1993, s'était fixé comme objectif prioritaire le renforcement de l'entretien routier par la mise en place d'une organisation techniquement compétente et financièrement responsable. Le cadre approprié pour atteindre cet objectif fut bien l'Office National des Routes.

L'analyse d'état des lieux a permis de jeter les bases des axes d'intervention fixées comme suit:

- La réhabilitation des installations des services centraux de l'OFNAR ainsi que leur équipement;
- L'équipement des ateliers centraux;
- Acquisition des matériels roulants et lourds pour deux brigades d'entretien routier;
- La réhabilitation des équipements lourds;
- La formation du personnel de ces deux brigades d'entretien routier;
- L'acquisition des véhicules légers pour le suivi des actions du projet;
- L'appui institutionnel;
- L'Assistance technique
- La Construction de la route Djarmaya - Dandi.

## OBSERVATIONS

En dépit de tout ce qu'on peut dire au sujet de ce projet, nous qui avons l'honneur d'être l'un des principaux collaborateurs de l'USAID dans la conception et la mise en oeuvre de ce projet, pensons que les objectifs définis ci-dessus sont globalement atteints. En conséquence, nous émettons des réserves sur les conclusions négatives de ce projet de rapport. Nous ne pouvons faire notre des telles conclusions qui nous semblent tirées très hâtivement dans la mesure où la mission reconnaît elle même les difficultés liées à l'absence d'interlocuteurs avertis en général et du consultant chargé de la mise en oeuvre du projet en particulier.

Grâce à ce projet, l'OFNAR a atteint des performances techniques et des capacités opérationnelles efficaces, qui lui ont permis d'amorcer la voie de la privatisation sans beaucoup de difficultés. C'est pourquoi nous trouvons grave que la mission estime que les effets du projet sont annulés par l'option de la privatisation. Nous nous permettrons de rappeler que l'USAID a toujours été partie prenante dans les négociations TCHAD - BAILLEUX de fonds sur le secteur des transports. La politique de la promotion du secteur privé a toujours été la préoccupation de la communauté des bailleurs dont l'USAID. En ce qui concerne l'OFNAR, nous rappelons que l'option privé n'a pas été une improvisation, bien au contraire elle a fait l'objet d'une composante à part entière du PASSET. Le stade actuel de la privatisation était bel et bien conçu d'avance au PASSET. Il n'y a jamais eu de désarroi, bien au contraire un enthousiasme pour aborder l'option privé.

On dit que la seconde phase du projet a été écourtée à cause du PASSET qui est perçu comme une négation. Notre perception est tout autrement dans la mesure où nous estimons plutôt qu'il y a eu une complémentarité très positive entre les deux projets. Autant que nous sachons, la première phase du projet a pris fin avec un dépassement du délai d'exécution ainsi que de l'enveloppe financière prévue. S'il n'y a pas eu la seconde phase, nous croyons qu'il s'agit beaucoup plus d'une décision interne à l'USAID que des réels problèmes liés au PASSET cité en bon émissaire.

Par ailleurs, la contribution de l'OFNAR dans les charges récurrentes du projet a été non seulement effective mais a connu un dépassement de plus de 50 millions de CFA dont nous avons eu à réclamer la compensation par le projet comme convenu au début, avec documents à l'appui en son temps.

A notre avis, le seul point négatif du projet a été l'instabilité qui a marqué l'équipe d'assistance technique. D'une manière générale, nous soulignons que le projet 677 - 0050/USAID/TCHAD a donné des résultats très positifs.

En conséquence, nous pensons que ce rapport n'a pas cerné réellement l'exécution du projet dans ses réels contours. Tant que tous les acteurs chargés de la mise en oeuvre de ce projet ne sont pas mis à contribution, il est difficile de croire à un rapport d'évaluation extérieur fiable après plus d'un an de fin de projet.

DAOUSSA DE  
Directeur Général

