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EVALUATION STUDY:
STRENGTHENING ROAD
MAINTENANCE PROJECT
(PROJECT # 677-0050)

Chad
May, 1988

FINAL REPORT

Parsons
Brinckerhoff **100**
YEARS

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Development
N'Djamena, Chad
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New York, U.S.A.

STRENGTHENING ROAD MAINTENANCE PROJECT EVALUATION STUDY

EXECUTIVE SUMMARY

1. Introduction

The evaluation of the Strengthening Road Maintenance Project (SRMP) was initiated by the Mission of the United States Agency for International Development in Chad (USAID/Chad) and was performed by Parsons Brinckerhoff International, Inc. (PBI). The Evaluation Study Final Report was completed in May 1988.

2. Purpose and Objectives of the SRMP

The stated goal of the SRMP is to maintain the road network throughout Chad; the stated purpose of the SRMP is to assist the Government of Chad (GOC) in developing a technically competent and financially responsible organization for the maintenance of Chad's road network; the stated objectives of the SRMP are that, at the end of its five-year term, the Office National des Routes (OFNAR) will be capable of regularly maintaining, with its own personnel and equipment, 1,600 kilometers (km) of roads and of financing 50% of its recurrent costs.

The major elements of assistance in the Project are technical assistance of eleven expatriates for institutional development, rehabilitating and equipping workshop facilities and training personnel in equipment maintenance, equipping and training a road maintenance brigade, rehabilitating the 63 km Djermaya-Dandi Road, and operational support.

The technical assistance personnel provided under the SRMP includes a Senior Advisor to OFNAR's Director, under a personal services contract, and ten specialists provided under a contract with Gannett Fleming Transportation Engineers, Inc. (GFTE) (Planning Engineer, Field Engineer, Accountant Advisor, Brigade Foreman, Equipment Foreman, Shop Superintendent, Parts Specialist, Engine Foreman, Machine Shop Foreman, Service Foreman.)

3. Purpose and Methodology of the Evaluation

The purpose of this mid-term evaluation is to determine the progress made towards developing a technically competent and financially responsible road maintenance organization in Chad, determine the effectiveness of the technical assistance (TA) contractor, determine whether the SRMP's purpose and objectives are still relevant and recommend actions to be taken to improve project performance and achieve project objectives.

The evaluation study was conducted by a four-person team assigned by PBI, in collaboration with a financial management specialist assigned by USAID/Chad. The evaluation findings were based on reviews of some five thousand pages of documents, interviews and discussions with more than 60 persons, and dozens of visits to project sites.

4. Findings and Conclusions

The SRMP has assisted in the rehabilitation of some 49 units of heavy equipment and trucks, in the rehabilitation and equipping of OFNAR's central administrative buildings and workshops, and in the establishment of a road maintenance training brigade. These achievements have increased OFNAR's material resources for equipment and road maintenance.

In the area of institutional development, the technical assistance team has introduced certain systems and procedures for the operation and management of the Central Workshop, inventory control, road maintenance planning, and accounting and financial management. Moreover, the technical assistance team is training a staff of 56 in the Central Workshop, 33 persons assigned to the Training Brigade, and other managers and employees of OFNAR. Overall, however, progress toward institutional development has been limited, and the systems established are fragile.

Other international organizations, such as the World Bank, the European Development Fund (EDF), and the African Development Fund (ADF), are also financing (or will finance in the near future) road maintenance projects in Chad. The World Bank has also financed a reorganization study of OFNAR; the likely recommendations of this study would be that a separate organization should be established for the collection of fuel taxes, and that OFNAR should establish separate directorates for road maintenance and for equipment maintenance.

5. Recommendations

In order to improve the effectiveness of the technical assistance, accelerate institutional development, and take into account the operations of other donors, it is recommended that the SRMP:

- continues the technical assistance and support to the Central Workshop, emphasizing training and establishment of appropriate systems and procedures;
- increases the technical assistance provided to the N'Djamena Subdivision;
- continues and systematizes the training function of the Training Brigade until the training of at least two groups of field personnel; and
- streamlines the technical assistance provided to OFNAR's senior management and to the Programming and Financial Divisions to focus on project related aspects.

It is also recommended that the equipment of the Training Brigade and the last group of trained personnel remain in the N'Djamena Subdivision and form two road maintenance brigades. Finally, OFNAR should develop capabilities for the maintenance of paved roads and of bridges.

These recommendations will necessitate some changes in the technical assistance team, as follows:

- Senior Advisor to OFNAR's Director and Planning Engineer: Eliminate these two positions and create a position of Chief of Party/Project Manager. The responsibilities of this new position will include: Management of the technical assistance team; planning, budgeting and coordination of the SRMP; and advising OFNAR's senior management on Project matters. This position should continue through March or June 1990.

- **Field Engineer:** This existing position should be modified to emphasize advising the N'Djamena Subdivision on road maintenance, including work performed by the Subdivision's Brigades and the Training Brigade. This position should continue through December 1989 (and be renamed Road Maintenance Engineer).
- **Accountant Advisor:** Continue this position through December 1989, in order to establish a cost accounting and a double entry accounting system for the SRMP and improve its budgeting and payment procedures.
- **Brigade Foreman and Equipment Foreman:** Continue these two positions through August 1989. An experienced field mechanic should also be assigned to the Training Brigade to ensure the proper maintenance of its some 24 units of heavy equipment and trucks worth about US\$3,000,000. He can be Chadian, if available, or an expatriate/third country national.
- **Shop Superintendent Advisor:** Continue this position through March 1990. His responsibilities should include establishment of efficient workshop management systems.
- **Spare Parts Specialist:** Continue this critical position through December 1989, in order to improve the efficiency and the accuracy of the inventory control system, and train personnel.
- **Engine Foreman:** Continue this position through December 1989, and increase his responsibilities to include the Heavy Equipment and possibly the Electrical Section. Rename this position Engine and Heavy Equipment Specialist.
- **Machine Shop Foreman:** Continue this position through March 1989, to train machinists in the use of the newly arrived machine shop equipment.
- **Service Foreman:** Modify this position. His responsibilities should be (a) to assist in the repair of heavy trucks and light vehicles in the Central Workshop (20% of time) and (b) to assist and train personnel in small repairs and preventative maintenance done at the N'Djamena Subdivision Workshop and in the field (80% of time). Continue this position through December 1989.
- **Short-term Specialists:** These will assist the technical assistance team and could include: a computer specialist to assist in the introduction of computer based systems; a training specialist to assist in the systematization of ongoing training programs; a procurement specialist to improve the SRMP supply and procurement system; an electrician to train the personnel of the Central Workshop's Electrical Section; and others. Total duration: about 12-18 person-months.
- The technical assistance team should also be supported by a qualified Chadian Procurement Assistant to expedite customs clearance and delivery of off-shore procured items, as well as parts and supplies procured locally, and by one or more qualified Chadian Administrative Assistant(s).

The above recommendations are based on the assumption that technical assistance to the Subdivisions of Sarh, Moundou and Mongo will continue to be provided by others; and that after completion of OFNAR's

Reorganization Study, others will provide technical assistance to implement the reorganization, institute planning of routine maintenance of the entire national road network, establish a country-wide program of preventative equipment maintenance improve the overall procurement system, and strengthen financial management.

If USAID and other donors decide to focus their assistance along functional areas rather than geographically, the SRMP could focus on equipment maintenance and could undertake the establishment of a country-wide equipment management and preventative maintenance system, while other donors would assist OFNAR with road maintenance. In this case, the SRMP should provide additional technical assistance for equipment maintenance in the other Subdivisions, and the position of Field Engineer would be eliminated.

6. Lessons Learned

The principal lessons learned from the mid-term evaluation of the SRMP are:

- Procurement of equipment and tools should be started well in advance of the arrival of technical assistance teams, to avoid project delays and waste of technical assistance time.
- Project implementation schedules should be realistic.
- Large, long-term technical assistance teams should be led by a Project Manager and be supported by short-term specialists.
- On institutional development projects, the main role of technical assistance personnel should be to develop systems and procedures and train national personnel, rather than assume operational roles.
- Key long-term technical assistance positions should preferably be staffed with a firm's permanent personnel.

STRENGTHENING ROAD MAINTENANCE PROJECT EVALUATION STUDY

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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: FY 1989 (planned)
 - c. Project Assistance Completion Date (PACD): September 30, 1990
5. Project Funding: AID Grant US\$17,269,000
(US\$27.5 million authorized)
6. Mode of Implementation:
 - a. AID Direct Contractor (10-member technical assistance team):
Gannett Fleming Transportation Engineers, Inc.
 - b. Host-country personal services contractor (Senior Advisor)
7. Project Designers: USAID/Chad, USAID/REDSO/WCA, US Department of Transportation
8. Responsible Mission Officials:
 - a. Mission Directors: John B. Woods, Bernard B. Wilder
 - b. Project Officer: Iqbal M. Chaudhry
9. Previous Evaluations: None

LIST OF ABBREVIATIONS

ADF	African Development Fund
AID	Agency for International Development
CFAF	Communaute Financiere Africaine Francs
DOM	Division Outillage Mecanique (Tools and Mechanical Division)
DOT	Department of Transportation
EDF	European Development Fund
FAC	Fonds d'Aide et de Cooperation
GDP	Gross Domestic Product
GFTE	Gannett Fleming Transportation Engineers, Inc.
GOC	Government of Chad
IDA	International Development Association
IGCE	Inspection Generale et du Controle d'Etat (State Control Agency)
IQC	Indefinite Quantity Contract
IMF	International Monetary Fund
OFNAR	Office National des Routes
PBI	Parsons Brinckerhoff International, Inc.
REDSO	Regional Economic Development Support Office
SRMP	Strengthening Road Maintenance Project
TA	Technical Assistance
US	United States
US\$	United States Dollar
WCA	Western Central Africa

Units of Measurement

mm	millimeter
cm	centimeter
m	meter
km	kilometer

BACKGROUND

Physical and Human Geography

Chad is a landlocked Central African country with an area of 1,284,000 square kilometers, more than twice the size of France. Its current population is estimated at 5.3 million with an annual growth rate of 2.4%. About half the population is under the age of 20. Some 80% of the population lives in rural areas; however, the urban population is growing at a rate three times as high as the growth rate of the total population. The capital N'Djamena has about 500,000 inhabitants.

Chad can be divided into three climatic zones: a northern saharan zone, with rainfall of less than 200 mm per year, which covers about 40% of the country but contains less than 3% of its inhabitants; a central sahelian zone, with rainfall ranging from 200 mm to 800 mm per year, which occupies about 35% of the country and is inhabited by some 57% of its population; and a southern tropical zone with rainfall in the range of 800 mm to 1,200 mm per year, which extends over 25% of the national territory and contains about 40% of the population.

The main economic activity in the saharan zone is nomadic and transhumant livestock herding. In the sahelian zone, the rural population is engaged in rainfed cultivation, mainly of millet and sorghum, and in transhumant and sedentary livestock herding. In the tropical zone, agriculture is well developed and includes production of cotton - Chad's main export product - and of cereals, groundnuts and rice. Locally manufactured products include cotton fiber, cigarettes, sugar, beer, carbonated beverages, soap, edible oils and textiles.

Economic, Political and Social Context

The per capita annual income in Chad is about US\$160, making it one of the poorest countries in the world. Development is constrained by: the country's landlocked position, which results in high transportation costs (the closest port is about 2,000 km away from N'Djamena); long distances between population centers, which hinder political, economic and social integration; and climatic variability, which affects agricultural outputs.

During the past decade, development has been further affected by war, drought, and a sharp drop in cotton prices. An exodus of trained people during the years of wars aggravated the situation. Recent economic reports have indicated that Chad does, however, have several factors in its favor, including: agricultural and livestock potential; untapped mineral resources; a small but growing industrial sector; and a liberal economic system.

Following a three-year devastating civil war, a new government was established in 1982, which launched a successful program of national reconciliation. In 1987, a part of northern Chad previously occupied by foreign forces was liberated and brought under Government of Chad control. Despite pockets of dissident or internationally fomented activities, political stability and the security situation are reported to be the best in more than a decade, which bodes well for on-going and future development projects. The Project Paper's assumptions of an absence of sustained armed conflict and of continuation of efforts toward national unity have been valid and are expected to continue to be so in the foreseeable future.

The country's economy has recovered substantially since 1982, stimulated by the Government and assisted by the international community. In 1985, the Gross Domestic Product (GDP), at 1977 prices, reached 162.3 billion CFAF, thus exceeding its prewar peak of 1977. The GDP contracted by 2.3 % in 1986, mainly as a result of continued weakness in the cotton sector, but it is expected that its upward trend will continue. Government revenues, however, are still very low, partly due to reduced tax receipts on diminished cotton exports.

The Government of Chad, with external assistance, is determined to continue reducing regional economic disparities, improve access to isolated regions, increase the population's standard of living, encourage growth of the private sector, and improve the efficiency of the Administration. The goals of the 1988 - 1993 development program are to complete the post-war reconstruction phase, alleviate the effects of recent droughts, continue the restructuring in the cotton sector, and establish the basis for sustainable growth.

The SRMP has an important role in Chad's development program, since the increased economic activity intensifies both the need and the justification for road improvement - especially in the N'Djamena region, where the Project is concentrated and where commercial transportation requirements are significant.

The Road Transport Sector

Road transport is the principal mode of transport in Chad. The road network comprises about 7,300 km of classified roads, including 4,600 km of national roads and 2,700 km of provincial roads, and some 24,000 km of unclassified rural tracks. Some 1,500 km of roads were originally constructed to improved earth standards and 250 km were originally paved. By 1982, most of the improved earth roads had fallen into disrepair and only about 40 km of paved road remained.

In 1984, the Government of Chad created the Office National des Routes (OFNAR), with responsibility for the construction, rehabilitation and maintenance of the national road network. OFNAR has been given its own source of operating revenues from taxes on imported petroleum products.

OFNAR's organization includes a Directorate, Central Services (including Divisions responsible for Finance, Administration, Programming, Equipment Maintenance, and Equipment Inspection) and Regional Services consisting of two Districts (N'Djamena, which includes the Subdivisions of N'Djamena, Mongo and Abeche; and Sarh, including the Sarh and the Moundou Subdivisions). OFNAR's organization chart is shown in Appendix 5.

Several road rehabilitation programs have been undertaken since 1983. Rehabilitation of some 2,000 km of roads has been completed or is underway, with financing from the European Development Fund (EDF), the United Nations Development Program, and French and Italian aid programs. Additional road sections, totalling 1,300 km, are scheduled to be rehabilitated by 1993, with financing from the World Bank, the African Development Fund (ADF), EDF, the Governments of France and Germany, and other donors.

The Strengthening Road Maintenance Project was the first road maintenance project sponsored by a donor agency in Chad after 1982. The SRMP was approved by AID on June 24, 1985. The Project Grant Agreement was signed on June 29, 1985.

The main components of the Project are: provision of technical assistance and operational support in planning and administering a road maintenance program, mainly in the N'Djamena Subdivision; provision of

equipment, technical assistance, training, and operational support for a Road Maintenance Training Brigade; rehabilitation of OFNAR's Central Workshop facilities, provision of workshop equipment and tools, rehabilitation of unserviceable equipment, and provision of technical assistance and training in equipment maintenance; and rehabilitation of the Djermaya - Dandi Road (63 km) through host country contracting.

A road maintenance project financed by the International Development Association (IDA) over the period 1987 - 1988 covers: technical assistance and equipment rehabilitation and procurement for road maintenance in OFNAR's Subdivisions of Sarh, Moundou and Mongo; rehabilitation and construction of administrative and equipment maintenance facilities in the Subdivisions of Sarh, Moundou, Mongo and N'Djamena; provision of technical assistance to the Ministry of Public Works; and several studies, including a study for the reorganization of OFNAR.

Other road maintenance projects are also planned, with financing from EDF, ADF and IDA.

In February 1988, there was a meeting of donors to coordinate the transport sector investment program in Chad over the period 1988 - 1993.

Project Description

The stated goal of the SRMP is to maintain the road network throughout Chad; the stated purpose of the SRMP is to assist in developing a technically competent and financially responsible organization for the maintenance of Chad's road network; the stated objectives of the Project are that, at the end of its five-year term (Phase I), OFNAR will be capable of regularly maintaining, with its own personnel and heavy equipment, over 1,600 km of roads and of financing 50% of its recurrent costs.

Expected outputs of the SRMP include:

- An organization capable of maintaining 1,600 km of roads annually.
- An effective Central Workshop maintaining OFNAR's equipment.
- A trained work force of 18 managers and supervisors, 42 equipment operators and drivers, and 50 mechanics and shop technicians.
- A rehabilitated road, 63 km long.

Project inputs and activities include:

- A grant of US \$27,500,000 to finance project activities.
- Provision of approximately 34 person-years of technical and managerial assistance to OFNAR, consisting of a Senior Advisor, a Planning Engineer, a Field Engineer, an Accountant Advisor, a Brigade Foreman, an Equipment Foreman, a Shop Superintendent, a Parts Specialist, an Engine Foreman, a Machine Shop Foreman and a Service Foreman.

- Procurement of the following items of road maintenance and rehabilitation equipment: graders, dozers, loaders, compactors, rollers, dump trucks, water trucks, fuel truck, field service and supply trucks, and other support equipment.
- Rehabilitation of workshop and office buildings.
- Procurement of workshop equipment and tools.
- Procurement of spare parts for equipment rehabilitation and maintenance.
- Procurement of vehicles and office furniture and equipment.

The geographic scope of this phase of the SRMP focuses on the N'Djamena Subdivision. A Phase II Project, stipulated to begin in 1990 and be implemented over five years, would continue to provide financial support and technical assistance to OFNAR to allow the geographic scope of its operations to be substantially expanded.

The Project Paper's Project Summary - Logical Framework, Expatriate Level of Effort, Implementation Plan, and Estimated Annual Disbursements of AID Funds are included in Appendix 13.

Responsibilities for the implementation of the major project activities have been as follows:

- Technical Assistance: ten expatriate professionals have been furnished by the US consulting firm of Gannett Fleming Transportation Engineers, Inc. (GFTE), under a contract with USAID; the Senior Advisor has been contracted under a host country personal services contract.
- Procurement: heavy equipment for the Training Brigade has been procured by OFNAR, under a host country contract with SHO-Chad, the Caterpillar dealer in N'Djamena; the trucks for the Training Brigade have been procured by USAID, through a contract with a German Mercedes Benz supplier; the Brigade's rollers, compactors, tractor, and office trailer, and most of the workshop equipment and tools, have been procured by the US firm of Sheladia Associates, Inc., under a its Indefinite Quantity Contract with USAID for procurement; local procurement is done by OFNAR.
- Building Rehabilitation: OFNAR's administrative and workshop facilities have been rehabilitated by a local contractor, under a contract with USAID.
- Road Rehabilitation: this is to be done by an international contractor, under a host country contract.

EVALUATION PURPOSE AND METHODOLOGY

Purpose of the Evaluation Study

This is the mid-project evaluation required by AID evaluation policy and stipulated in the Project Paper. In summary, the evaluation will seek to:

- determine the progress made toward developing a technically competent and financially responsible road maintenance organization in Chad;
- determine the effectiveness of the technical assistance provided;
- determine whether the Project's goal, purpose and objectives are still relevant; and
- recommend actions to be taken to improve project performance and achieve project objectives.

The Statement of Work of the evaluation study (See Appendix 1) lists 14 basic questions which are to be answered with empirical findings. These questions are.

1. What is the progress of the Technical Assistance team toward accomplishment of project purpose, goal, inputs and outputs?
2. Has the TA Contractor provided the required man-months of qualified advisors in proportion to the duration of the project to date?
3. Are the outputs to date of the project clearly measurable and proportional to the planned total outputs, e.g. 50 mechanics, 42 operators, 18 supervisors, trained crews for maintenance or 1,600 km of roads, effective Central Workshop, and 63 km of road?
4. Is the training being imparted both in the Central Workshop and to the Road Maintenance Training Brigade proceeding formally on the basis of a well developed training plan?
5. What improvements, if any, have been introduced by the TA team in the Central Workshop operation and management, related but not limited to establishment of routine and periodic maintenance plans of vehicles and heavy equipment, towards achieving the objective of trained crews and rehabilitated equipment to be deployed for road maintenance?
6. What improvements, if any, have been made in the procedures for procurement, accounting, financial reporting, and control mechanisms with the twin objectives of training the Chadian staff, and the implementation of project activities?
7. Are the procurement procedures utilized by OFNAR compatible with AID Handbook 11? If not, state differences and their impact.

8. Is AID providing the needed input, support and participation in the project implementation actions undertaken by the Technical Assistance Team, the Personal Services Contractor and USAID?
9. Is OFNAR continuing to meet the conditions precedent in the Project Agreement? Does its financial condition reflect its ability to contribute successively increasing recurrent costs as specified in the Project Paper?
10. Is OFNAR adequately benefiting from the advice given by the OFNAR Senior Advisor? What specific improvements or changes have been introduced as a direct result of input from the OFNAR Senior Advisor?
11. Do any logical framework assumptions require re-evaluation/definition, should new assumptions be considered?
12. What adjustments to project implementation plans are required, if any, to maintain 1,600 km of priority national roads by 1990? Is this objective still relevant?
13. Is the Technical Assistance mix still relevant as defined in the Project Paper? Do job descriptions and the evaluation process for team members encourage maximum worker productivity/accountability?
14. Do project objectives remain valid within the context of current donor projects and planned donor activities in the transportation sector?

The evaluation findings, conclusions and recommendations will be used by USAID/Chad and OFNAR to determine how the Project's purpose and objectives can be achieved in a timely manner, to modify project activities, if necessary, and to discuss with contractors modifications of technical assistance deliverables.

Study Methodology

The project evaluation contractor Parsons Brinckerhoff International, Inc. (PBI) assigned a four-member evaluation team consisting of a Development Economist (Mr. Jeremy Hodson), two Senior Civil Engineers (Messrs. Paul J. Couniotakis and Stanley Reich), and an Equipment Specialist (Mr. Dale Carsrud). A Financial Specialist (Mr. Brooke Stallsmith), assigned by USAID/Chad, worked alongside the PBI team to address the study issues pertaining to accounting and financial management systems, OFNAR's contributions to recurrent costs, and OFNAR's local procurement procedures. The evaluation team's field work was carried out over a period of about six weeks.

Based on the 14 questions of the Statement of Work, the evaluation team identified some 150 points of interest addressing in detail all pertinent issues of the evaluation. To systematize research, the 14 study questions and the points of interest were grouped by the evaluation team under the major project elements listed below:

<u>Project Element</u>	<u>Study Question Reference</u>
Technical Assistance Contractor	1, 2, 13, 14
Central Workshop Operations and Management	1, 3, 4, 5, 12, 14
Road Maintenance Training Brigade	3, 4, 12, 14
Procurement of Commodities	6, 7, 8, 14
Advisory Services to Senior Management	, 10, 14
Road Maintenance Planning	12, 14
Financial Management Systems	6, 14
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The evaluation study's findings, conclusions, recommendations, and lessons learned presented in the following sections are also grouped under the above project elements.

A particular focus of the study was to provide as far as possible an appropriate depth of review of the Project, consistent with the stated purposes of the evaluation. Findings are presented as they came to light, but are not represented as typical of the depth to which the evaluation was undertaken. Findings of fact were sought in:

- a review of numerous project reports, items of correspondence, contract documents and relevant studies, totalling more than five thousand pages;
- interviews and discussions with more than 60 persons, including staff of USAID, OFNAR, the technical assistance contractors, other Government of Chad agencies, the US Embassy, and donor organizations; and
- visits to OFNAR's Central Workshop, the Training Brigade site, the N'Djamena Subdivision facilities, and the Djermaya - Dandi Road.

Partial lists of documents reviewed and persons contacted are provided in Appendix 2 and 3 respectively.

The sections of this report pertaining to financial management systems, OFNAR's contributions to recurrent costs, and local procurement of commodities were prepared, with the exception of minor editing, by the Financial Specialist. These sections have been incorporated in this report at the request of USAID/Chad; however, credit and responsibility for these lies with the author and not with PBI.

The extent to which information could be verified and the evaluation study's findings, conclusions, recommendations, and lessons learned are unavoidably constrained by the time and resources available for the study.

FINDINGS

Introduction

This section presents the factual findings of the evaluation study.

Technical Assistance Contractor

- o The technical proposal of Gannett Fleming Transportation Engineers, Inc., for the provision of technical assistance services under the SRMP was ranked No. 1 by USAID. GFTE's price proposal was also the lowest of several "best and final" offers.
- c The contract between USAID and GFTE for the provision of technical assistance services under the SRMP became effective on November 7, 1985. The Notice to Proceed was issued on December 18, 1985. The firms of Roy Jorgensen Associates, Inc. and Lee Wan Associates are subcontractors to GFTE for the provision of some of the technical assistance personnel.
- o The TA Contractor was to furnish nine long-term specialists to fill the positions of Field Engineer, Accountant Advisor, Brigade Foreman, Equipment Foreman, Shop Superintendent, Parts Specialist, Engine Foreman, Machine Shop Foreman, and Service Foreman. The position of Planning Engineer was added to the TA Contract in January 1987. (The position of Senior Advisor to the Director of OFNAR has been filled under a separate, personal services host country contract).
- o There is no provision in the Project Paper nor in the TA Contract for a Procurement Specialist. This function has been covered by the Parts Specialist and the Accountant Advisor.
- o In the original TA Contract there was no provision for a Chief of Party of the TA team. Modification No. 3 of the TA Contract, which became effective on January 1, 1987, stipulated that the Field Engineer is the Chief of Party of the TA team. His Chief of Party duty was overall responsibility for administrative and personnel matters.
- o There is a TA Contractor home office project manager substantially employed on the Project; a field office project administrator (logistician) was assigned in Chad for three months during project start-up. There are no provisions in the TA Contract for assigning short-term specialists and none have been assigned.

- o Of the nine long-term team members named in GFTE's proposal, only one was assigned to the SRMP. None of the originally proposed long-term specialists, and only one of the 17 specialists assigned to the SRMP, had worked with the TA Contractor before.
- o There has been a high rate of personnel turnover. Three persons served as Field Engineers, three as Shop Superintendents, and two persons filled each of four other positions. One position is currently vacant.
- o The first two Field Engineers acted as Chief of Party. Subsequently, in the absence of a Field Engineer, the Brigade Foreman and the Accountant Advisor acted jointly as Chiefs of Party. Since January 1988, the new Planning Engineer has been Chief of Party. He does not have the capability in the French language required by the TA Contract and this has resulted in communications difficulties.
- o The person-months of technical assistance provided through the end of March 1988 averaged 85% of the person-months scheduled. The provided person-months of Field Engineer, Shop Superintendent, Accountant, and Planning Engineer averaged 69% of the scheduled requirements. The provided person-months of the other six team members averaged 93% of the scheduled requirements.
- o The following table shows the person-months scheduled to be provided through the end of March 1988 under the Technical Assistance Contract (and Contract Amendments) and those actually provided:

POSITION	PERSON-MONTHS			Availability
	Total Scheduled	Scheduled through March 86 (1)	Used through March 88 (2)	
Field Engineer (3)	31.0	26.0	20.0	77%
Accountant Advisor	45.0	26.0	21.0	81%
Brigade Foreman (4)	26.0	17.0	13.0	76%
Equipment Foreman	26.0	17.0	17.0	100%
Shop Superintendent (3)	45.0	26.0	17.5	67%
Parts Specialist (4)	36.0	26.0	25.0	96%
Engine Foreman (4)	36.0	26.5	26.0	98%
Machine Shop Foreman	36.0	26.0	24.5	94%
Service Foreman	36.0	26.5	25.5 (6)	96%
Planning Engineer (4)	36.0	15.0 (5)	7.5	50%
TOTAL	353.0	232.0	197.0	85%

Notes:

- (1) The scheduled starting date of the Engine and of the Service Foreman is assumed to be their date of arrival, i.e. January 13, 1986. Similarly, the scheduled starting date of the Brigade and of the Equipment Foreman is their date of arrival, i.e. October 27, 1986. The scheduled starting date of the Planning Engineer is January 1, 1987 and of the remaining five specialists February 1, 1986.
- (2) Including scheduled leaves and short personal leaves.
- (3) Three persons filled this position.
- (4) Two persons filled this position.
- (5) The Planning Engineer position was added to the TA Contract starting January 1, 1987.
- (6) The Service Foreman was terminated on 5 March, 1988 and this position is currently vacant.

- o The professional qualifications and experience of assigned staff, as compared to the requirements stipulated in the Project Paper and the TA Contract, have ranged from very good to marginally satisfactory. On few occasions, insufficient knowledge of French has created and continues to create communications difficulties with counterpart staff and trainees.
- o Overall, the operational performance of the TA team has been good, as could be judged for example from the amount of equipment units rehabilitated, despite difficult working conditions.
- o The high TA personnel turnover, however, apparently has had a negative effect on work continuity, training of counterpart and other OFNAR personnel, and the establishment of appropriate systems and procedures for work planning, operations and management. Particularly affected were OFNAR's Central Workshop Administration, the Programming Division and the N'Djamena Subdivision, whose advisors (respectively the Shop Superintendent, the Planning Engineer, and the Field Engineer, i.e. the key TA personnel) were the least available and/or the most frequently changed. (See following sections for further comments).
- o It appears that the lack of a Chief of Party with responsibility for project management and coordination of the TA team efforts (as opposed to a Chief of Party responsible only for personnel and administrative matters) has often resulted in a lack of direction and coordination of the TA efforts, and a frustration and low morale of the TA personnel. The frequent changes of Chief of Party have aggravated this situation.
- o The TA Contractor has been submitting monthly and quarterly progress reports. These describe the work done during the reporting period, list problems, compare the work done with the work planned for the period, and list objectives for the following month or quarter. With the exception of reports submitted in 1986, the progress reports do not include long-term work plans and project implementation schedules, nor do they show progress made toward achieving the Projects objectives and measurable outputs.

Central Workshop Operations and Management

- o The Central Workshop currently has seven sections, namely the Engine, Heavy Equipment, Heavy Trucks, Light Vehicles, Electrical, Machine Shop, and Body Shop Sections. In addition there is a Central Warehouse located within the Central Workshop but reporting to the Financial Division. Appendix 7 shows the organization chart of the Tools and Mechanical Division (DOM) and of the Central Workshop.
- o Three workshop facilities and one administrative building of OFNAR were rehabilitated under the SRMP. Due to the absence of local architectural and engineering firms, the design plans and contract documents were prepared by USAID/Chad incorporating comments of OFNAR and the TA team. Rehabilitation work, done by a local contractor under a contract with USAID, started in August 1986. The administrative building was completed in December 1986 and the workshop buildings were completed in the period April - August 1987. Several change orders were added to the construction contract to accommodate additional requirements of OFNAR.

- o More than 350 items of workshop equipment and tools, costing a total of about US\$440,000, have been procured by USAID for the Central Workshop, including tools procured from the surplus stock of USAID/Cameroon. About 10% of these items were delivered to OFNAR in the first half of 1987, 40% were delivered in February 1988, and most of the remaining have arrived in N'Djamena and are being cleared through customs.
- o The Workshop areas are, overall, well organized and clean, with sufficient working space. The Central Warehouse space for reception and storage of spare parts and supplies has been insufficient. It is now being expanded with the addition of more rooms.
- o Some 49 units of previously unserviceable heavy equipment and trucks have been rehabilitated at the Central Workshop since January 1986, including nine bulldozers, eleven loaders, eleven graders, two compactors, eight dump trucks, four water trucks and four other trucks. About 15 more units are planned to be rehabilitated once spare parts arrive.
- o As a general rule on the Project, old equipment is not rehabilitated if the required parts cost more than 30-35% of the price of a new unit. It has been noted, however, that several old Berliet trucks (and other outdated equipment) are planned to be/are being rehabilitated using parts costing close to 70% of the price of new equipment.
- o Simple procedures for planning/executing repair work have been established at the Engine Section and have been introduced at the Central Workshop as a whole. A work order is prepared for each piece of equipment to be repaired or rehabilitated. A card is then completed, identifying the equipment and the work to be done, and placed on a centrally located wall board, successively under columns titled:
 - Rehabilitate/Repair
 - Diagnosed/Parts Ordered
 - Under Repair
 - Work Completed

Following completion of work, the card and a description of the work done are filed, thus gradually establishing an historical record on each unit of equipment.

- o An inventory control system has been introduced by the TA team using Kardex cards. There are cards for some 3,000 items. (These will be reduced by removing cards for items that are not stocked, but were specially ordered for equipment rehabilitation.)
- o Spot checks of inventory cards and counts of corresponding inventories done during the evaluation study revealed that for about half the items checked the quantities shown in the cards were different (lower or higher) from the quantities actually in stock.
- o Following disappearances of items during the past several months, the storage areas are being made more secure.



- o Requests for parts or supplies from the Central Warehouse involve filling a requisition form and having it signed by the Chief of the Section needing the part and his counterpart, the Shop Superintendent and his counterpart, and the Chief of the Tools and Mechanical Division (DOM). If the part is not in stock, a long procedure is required to procure the requested parts, involving a total of 19 steps and many signatures. As a result, delays of up to three months to obtain relatively minor and urgently needed parts are common.
- o A preventative maintenance program for rehabilitated and new equipment has not been developed (and is not part of the scope of work of the Central Workshop-based TA team).
- o The TA Shop Superintendent has prepared a plan to computerize workshop operations management and inventory control, and has identified computer and software requirements. Procurement of computers and software is being handled by USAID. A proposal to reorganize workshop operations and institute an equipment management and preventative maintenance program is also being prepared.
- o Training of workshop personnel has been practical/on-the-job. In addition, demonstrations and group discussions are held periodically at the various Sections on specific subjects. The training program developed for 1988 covers workshop operations, as well as management (for supervisory personnel), safety, and computer use (to be taught after arrival of computers).
- o Personnel receiving training includes seven shop supervisors and foremen, 16 mechanics, 11 mechanic aides, 14 other technicians, and 8 parts personnel, for a total of some 56 persons. About ten other persons have been reassigned to OFNAR's field operations, after receiving training at the Central Workshop.
- o Many manufacturers' service manuals (e.g. Caterpillar) are in English.
- o The original roles of the Central Workshop technical assistance team, as stipulated in the Project Paper and the TA Contract, had required them to have operational control of workshop operations. Since early 1988, the TA team's roles have changed to advising and assisting their OFNAR counterparts, who are now more or less in charge of operations.
- o The TA Service Foreman was terminated in March 1988 and the position is now vacant. The remaining specialists include the Shop Superintendent, the Engine Foreman, the Machine Shop Foreman and the Parts Specialist.

Road Maintenance Training Brigade

- o The first Brigade equipment (two graders, two loaders and two dozers, all made by Caterpillar) arrived in Chad in July 1987; eight dump trucks, two water trucks, a fuel truck and two service trucks, from Mercedes, were delivered in October 1987; two vibratory rollers, two sheepsfoot rollers, one tractor and an office trailer arrived in March 1988; two housing trailers arrived in May 1988. Four service trailers were ordered for local fabrication in April 1987. They were delivered in December 1987 but were not accepted due to deficiencies and have to be redone.

- o Some of the equipment ordered/delivered is not the best suited for maintenance of earth roads (e.g. quarry trucks, vibratory rollers). This was apparently due to the earlier requirement that the Training Brigade was to place the gravel surface on the Djermaya - Dandi Road.
- o The TA Contractor prepared a training program for the Brigade, covering supervisors and foremen, equipment operators, drivers, field mechanics and administrative personnel. The primary method of training is through field demonstrations and on-the-job instructions, complemented by limited classroom instructions and demonstrations. Manuals developed by equipment manufacturers are also used.
- o Some training operations started in March 1987 in the city of N'Djamena and on the N'Djamena - Guelendeng and the N'Djamena - Massaguet Roads using old OFNAR equipment. Road Maintenance Training Brigade operations using new heavy equipment started in September 1987.
- o Brigade personnel receiving training includes: three foremen, nine heavy equipment operators, 14 truck drivers, two mechanics, three mechanic aides and two administrative clerks for a total of 33 persons. Additional operators will be added with the arrival of rollers and other equipment. Two more operators have already been trained and transferred to OFNAR's Subdivisions.
- o Equipment operators are to be evaluated monthly, and their performance rated on a scale of 1 to 10. Spot checks made during this study revealed evaluation forms filled through December 1987. Truck drivers are not evaluated monthly.
- o Production work performed by the Training Brigade has included repairs to streets in N'Djamena, repaving the N'Djamena - Linia Road, spot repairs and maintenance on the N'Djamena - Guelendeng Road, and, currently, heavy maintenance on the Guelendeng - Bongor Road. Based on a review of completed work, it appears that the quality of work has been satisfactory, particularly considering the lack of compaction equipment.
- o The TA Brigade and Equipment Foremen have operational control of the brigade. Their performance and training efforts have been apparently good. There appear to be some communications difficulties because of the Equipment Foreman's limited French capability.

Procurement of Commodities

Local Procurement

- o The volume of local procurements is increasing steadily, from a value of 920 million CFAF in 1987 to a projected level of 1,500 million CFAF in 1988.
- o OFNAR's procurement procedures appear to meet the requirements of AID Handbook 11. However, the system is slow and unresponsive to the needs of OFNAR's technical services. It is based on the norms of a public administration rather than the responsiveness and responsibility of a commercially managed organization.
- o The technical assistance team has made recommendations for streamlining the procurement system, some of which have been adopted. However, procurement of spare parts and other

commonly used supplies still requires 19 steps. Once a service has determined a need for parts or supplies, the request must be approved by the Central Warehouse and the Procurement Service before supplier quotations are requested. Once quotations are received, approvals must be obtained from the Supply Service (who sees the dossier four times), the head of the Financial Division (who sees the dossier twice), the OFNAR Procurement Committee, and the Budget Service before the Purchase Order is issued to the supplier. The average time for this process is two months, and it sometimes takes as long as six months. Even "emergency" procurements average one month and may require three months. Appendix 8 illustrates this process diagrammatically.

- o Suppliers in N'Djamena require up to 15 days to provide price quotations, even for minor items, and may require even more time to provide parts or supplies once a purchase order has been issued.
- o All OFNAR procurements are on the basis of purchase orders, because the State Control Agency (IGCE) has ruled that OFNAR is not authorized to maintain a petty cash fund. (A petty cash fund is, however, maintained for SRMP project use.)
- o OFNAR was not authorized to maintain inventories of spare parts until August 1987. These are slowly being built up on the basis of needs assessments submitted to the Financial Division by the technical services.
- o The Central Warehouse and Purchasing and Procurement Services were transferred to the Financial Division from DOM in mid-1987 with the aim of improving financial controls over procurement and inventory. Since the transfer, procurements have been effected within the budgetary process and are not authorized until availability of funds is confirmed in encumbrance records.
- o The IDA financed Road Maintenance Project has established a separate procurement system for the Subdivisions being financed by it, because of the slowness of the central OFNAR system. Although put in place largely for reasons of expediency, this parallel system operates on a well thought out basis of close linkages between administrative and technical services. The IDA Project keeps an inventory only of those spare parts and supplies that are in common use. Its procurement and supply operations are headed by a senior mechanic who thus has the background to orient this service to technical needs. Orders of parts and supplies are based on field reports made by mechanic inspectors who regularly visit work sites to monitor the condition of equipment in use. This ensures that necessary parts and supplies are on hand before scheduled maintenance and that, because fewer equipment breakdowns are unanticipated, equipment spends less time deadlined.
- o The Financial Division is aware of the inadequacies of the current procurement system and has taken steps to remedy them. These include: preparation of guidelines for SRMP procurement of spare parts; establishment of the Central Warehouse as the central receiving point for purchases; procedures for formal competition in bids; and periodic reports to the technical services on their requests for procurement actions.
- o The Financial Division is also studying the possibility of awarding "procurement contracts" to suppliers for delivery of commonly-used spare parts and materials at set prices over a fixed period. It is thought that such contracts could reduce by half the time required for routine procurements.

Off-shore Procurement

- o Major items procured off-shore for the SRMP are:
 - two dozers Cat D7H
 - two loaders Cat 950B
 - two graders Cat 120G
 - eight dump trucks
 - two water trucks
 - one fuel truck
 - one field service truck
 - one field maintenance truck
 - two sheepsfoot rollers
 - two vibratory rollers
 - one tractor
 - one office trailer
 - about 350 items of workshop equipment and tools

- o The Project Paper indicated that preparation of specifications for and ordering of equipment and tools would be done by other short-term contractors before the arrival of the TA team. However, this was not done.

- o Preliminary specifications for the Brigade's heavy equipment (two dozers, two loaders and two graders) were prepared by the TA team in May 1986. Following discussions between OFNAR, the TA Contractor, USAID/Chad, USAID/REDSO/WCA, and SHO-Chad (the Caterpillar dealer in N'Djamena), the specifications were finalized and a host country procurement contract was entered between OFNAR and SHO-Chad in January 1987. The equipment arrived in Chad in July 1987, but without the specified operator's safety cabins. (Arrangements for the supply of cabins have been made.)

- o Preliminary specifications for the Brigade's eight dump trucks, two water trucks, fuel truck, field service truck and field maintenance truck (all Mercedes Benz) were prepared by the TA Contractor in May 1986. Following discussions between all parties concerned, the specifications were finalized and USAID/Chad requested bids from Mercedes suppliers. The bids received exceeded the available budget. Subsequently, quotations for "equal" trucks were requested from Berliet, a French equipment manufacturer. Berliet's quotations were also high. USAID then decided to cancel the bid process and to solicit bids from Mercedes suppliers through the Regional Procurement Services Office (RPSO) in Bonn, West Germany. A procurement contract was finally signed with a German Mercedes Benz supplier in April 1987. The trucks arrived in N'Djamena in October 1987.

- o Preliminary specifications for compactors, rollers, office trailer, tractor and other Brigade equipment were prepared by the TA Contractor in June 1986. Lists of workshop tools and equipment were prepared in May 1986. Following discussions between all parties concerned, a Work Order for the procurement of the above equipment was placed with the Indefinite Quantity Contractor (IQC) for AID procurement in October 1986. Following clarifications of specifications, invitations for bids, and evaluation of same, purchase orders for the bulk of the equipment and tools were placed by June 1987. The supplementary Brigade equipment arrived at OFNAR in March 1988, about half of the workshop tools and equipment arrived in February 1988, and the remaining are being cleared through customs in N'Djamena.

- o Some of the specifications prepared by the TA team for the Training Brigade equipment and the workshop equipment and tools were incomplete or conflicting. This caused delays, while clarifications were being requested by and provided to suppliers, and, due to TA personnel turnover, it resulted in some of the equipment procured not being the equipment originally (intended to be) specified.
- o There was no provision in the TA Contract for any of the TA team members to be assigned off-shore procurement coordination responsibilities.

Advisory Services to Senior Management

- o The Project Paper stipulated that the position of Senior Advisor was to be filled by the US Department of Transportation. When a DOT advisor did not materialize, USAID recruited a Senior Advisor under a host country personal services contract.
- o The Senior Advisor arrived in Chad in early February 1986. He was the only candidate who met the stipulated qualifications for the position - 15 years experience, Registered Professional Engineer, FSI tested capability in French at level 3, and US citizenship. He was not interviewed by OFNAR prior to hiring.
- o His scope of work includes advising and counseling OFNAR's senior management in operational control, organizational structure, delegation of authority, daily management, geographic division of road maintenance responsibility, scope of operations in relation to private sector activities, coordination of donor activities, and road maintenance budgeting, planning and prioritization.
- o The Senior Advisor has been the longest serving person financed under the SRMP and he is fluent in French (and English). However, as reported by OFNAR, USAID, and the Advisor himself, the working relationships between him and OFNAR's senior management are not satisfactory.
- o The Senior Advisor has initiated and followed through several actions, such as repairing streets in N'Djamena, repairing some bridges and drainage structures, landscaping behind OFNAR's offices, arranging for banks to pay interest on OFNAR's bank deposits, and others. Reactions to these initiatives were mixed.
- o There have been no identifiable or reported improvements or changes in OFNAR's management as a direct result of input from the Senior Advisor. Some general observations and recommendations have been made by the Advisor on the need to delegate authority, simplify procurement procedures, improve maintenance planning and budgeting, contract some of OFNAR's work to the private sector, and decentralize operations. However, these observations and recommendations have often been simplistic, not specific/implementation oriented, or repetitions of recommendations made by others.
- o A review of project correspondence revealed that the Senior Advisor had not complied with all the reporting requirements in his contract. Moreover, the reports submitted often lack substance.
- o USAID/Chad and OFNAR have expressed their dissatisfaction to the Senior Advisor due to his poor performance and have stressed the need for improvement.

Road Maintenance Planning

- o The Programming Division of OFNAR forms part of the Central Services (See Appendix 4) and also supervises the Bitumen Brigade. It is a small division, consisting of a Chief and two assistants.
- o Programs for routine road maintenance are prepared by the Districts and Subdivisions. Technical assistance for planning, budgeting and allocation of resources for road maintenance in the Subdivisions of Sarh, Moundou and Mongo is provided under the IDA sponsored Road Maintenance Project.
- o The position of Planning Engineer advisor to the Chief of the Programming Division was added to the TA Contract in January 1987, after unsuccessful attempts to fill this position with a DOT advisor or a personal services contractor.
- o The Planning Engineer's duties include classification and numbering of Chad's road network, development of a road inventory, allocation of equipment to each road maintenance Subdivision, conducting traffic studies, truck weight control, development of geometric, pavement and drainage standards and specifications, road maintenance cost estimating and prioritization, and projection of future resources requirements.
- o The first TA Planning Engineer started work in January 1987, and departed from Chad in July 1987 for medical reasons. (During the period January - December 1986 he had been TA Field Engineer and Chief of Party.
- o During his assignment, the first Planning Engineer reportedly performed prodigiously. Working closely with the Chief of the Programming Division, he classified and numbered some 12,000 km of roads, conducted traffic studies, and prepared a road maintenance programming and planning manual, a road maintenance cost accounting manual, and a report on modern techniques of road network management.
- o The new TA Planning Engineer is also Chief of Party of the TA team. Since his arrival in January 1988, most of his work has involved Chief of Party functions.
- o Since the time the SRPM was designed, other agencies have entered the road maintenance planning area and there appears to be overlapping between the planning functions of OFNAR, the Ministries of Public Works and of Planning, and of other agencies. (For example, the report by the Ministry of Planning presenting the transport sector strategy and development program for 1988 - 1993, included an analysis of needs, a prioritization of projects, and technical guidelines for road system standards.)

Financial Management Systems

- o When the SRMP began, OFNAR used a cash basis, fund accounting system. The Financial Division tracked cash receipts and disbursements only, with no encumbrance or accrual records. Reports on

cash receipts and disbursements were prepared intermittently, at the specific request of OFNAR management.

- o Over the course of project implementation, OFNAR has moved to a system of accrual accounting, although still using single entry bookkeeping. Following recommendations made by the Accountant Advisor, the Financial Division maintains cash, bank, receipt, encumbrance and liquidation journals for both OFNAR and the SRMP. Monthly financial reports are now prepared, presenting OFNAR operations on both cash and accrual bases. Reports on the SRMP local currency budget, however, are still prepared on a cash based, fund accounting.
- o OFNAR's system for encumbrance, liquidation and payment of expenditures is long and cumbersome, with 18 steps, and also reflects the workings of an administrative rather than a commercially-oriented organization. Appendix 9 presents the workings of this system diagrammatically. In addition to the problems of the procurement system, discussed elsewhere, this is a significant hurdle for timely execution of OFNAR's and SRMP's budget and work plans. For example, the Director's signature is required three times in the payment process: for encumbrance of funds by purchase order, approval of payment order after receipt of goods, and signature of the check itself. Even after the Director's three signatures, all checks for both OFNAR and SRMP local currency expenditures must be approved by the State Control Agency (IGCE).
- o The Financial Division has begun implementing a cost accounting system. This is aimed at making it possible to bill OFNAR's divisions for services rendered and materials delivered, thereby putting operations on a more efficient and commercial basis. Monthly cost accounting reports include work orders in progress, expenditures by service, expenditures by vehicle, distribution of fixed assets, and direct cost of completed work orders. Direct labor costs are not included, however.
- o The Financial Division's cost accounting and other reports are not yet fully integrated into decision-making by OFNAR management and technical services. The reports contain no analysis of the meaning and potential use of the financial figures.
- o Through 1987, OFNAR's annual budgets were prepared along the lines of a government organization, with receipts and expenditures presented by "article". For 1988, a more systematic approach was attempted, tying proposed expenditures to work plans and material needs, as well as establishing cost centers with the SRMP's local currency budget prepared as an integral part of this process. As of early April, however, 1988 budgets had not yet been approved for either OFNAR or the SRMP. (The SRMP local currency budget for 1988 was submitted to USAID/Chad late, on March 31, 1988. USAID/Chad found deficiencies in the work plan prepared by the TA team as justification for the 1988 budget.)
- o The Financial Division plans to complete the transition from cash basis, funds accounting to a standard commercial accounting system (i.e., a double entry, General Ledger system) over the course of 1988. One important reason that this has not yet been done is the lack of cost information on nearly 200 pieces of heavy equipment; OFNAR is recruiting consulting services to develop this information.
- o In early 1986, the Financial Division's accounting staff consisted of the Division Chief and two bookkeepers. As of April 1988, the Financial Division has nine professional or semi-professional Chadian staffers. They are organized into six sections, with clear delineations of responsibilities.

- o The Accountant Advisor apparently devotes the majority of his time to accounting for the SRMP local currency expenditures and to administrative tasks for the TA Contractor. In fact, he performs all bookkeeping operations (e.g., making journal entries) and prepares all project-related financial reports. This limits his influence on OFNAR's overall financial management.
- o IDA is financing consulting services in April-June 1988 to design a new commercial type of accounting system for OFNAR.

N'Djamena Subdivision Maintenance Activities

- o The N'Djamena Subdivision is the largest of the five road maintenance subdivisions of OFNAR (See N'Djamena Subdivision Road Network in Appendix 5.)
- o Of the 3,800 km of priority roads to be rehabilitated by 1993, in accordance with the transport sector investment program for the period 1988 - 1993 (See Appendices 11 and 12), the following are located within the N'Djamena Subdivision:



<u>Road Section</u>	<u>Length (km)</u>
N'Djamena - Guelendeng	146 (3)
N'Djamena - Djermaya	30 (3)
Djermaya - Dandi	67 (3)
Guelendeng - Mogo	149 (1)
Guelendeng - Bongor	83 (4)
Bongor - Lai	153 (4)
Djermaya - Massaguet	46 (6)
Massaguet - Ngoura	125 (5) (6)
Ngoura - Bokoro	101 (2)
N'Djamena Bypass	20 (4)
Massaguet - Massakory	68 (6)
Massakory - Bol - Bagasola	260 (2)
	<hr/>
Total	1,248

Notes:

- (1) Rehabilitation completed. Maintenance through 1990 will be done by contractor(s) with EDF financing.
- (2) Rehabilitation is underway.
- (3) Design completed/rehabilitation to start shortly.
- (4) Design is under preparation.
- (5) This road was rehabilitated by FAC in 1984 - 86 but over most of its length it requires new rehabilitation.
- (6) Design has not yet started.

- o Other important road links within the N'Djamena Subdivision include:

<u>Road Section</u>	<u>Length (km)</u>
N'Djamena - Massenya	160
Massenya - Bousso	153
Massenya - Massalassef	125
Bokoro - Massalassef	82
Bir Garat - Faya-Largeau	781
	<hr/>
Total	1,301

None of the above roads are planned to be rehabilitated before 1993. Only the N'Djamena Massenya Road has been receiving some maintenance work.

- o Rehabilitated equipment assigned to the N'Djamena Subdivision by OFNAR includes two graders, one pneumatic tired roller, one loader, one dozer, three dump trucks and one water truck, which form one maintenance brigade.
- o In the period September 1987 - April 1988, the Subdivision's brigade carried out work on the N'Djamena - Linia and the N'Djamena - Ngoura - Bokoro Roads as well as the access roads to the ferries at Bongor and Bousso.
- o The TA Field Engineer is the designated advisor to the N'Djamena Subdivision Chief. It was reported that the second Field Engineer did not spend much time on Subdivision work. This was probably due to his involvement with the Djermaya - Dandi Road design and with Chief of Party functions. The current TA Field Engineer apparently has also spent little time on Subdivision work, being primarily involved with the operations of the Training Brigade.
- o The IDA Road Maintenance Project provides for the rehabilitation of the N'Djamena Subdivision workshop and administrative buildings, located outside OFNAR's main compound.
- o The N'Djamena Subdivision's recurrent costs, including operation and maintenance of equipment, road materials, tools and supplies, and office supplies and operating costs, are financed under the SRMP, with partial, but gradually increasing, contributions from OFNAR.

Djermaya - Dandi Road Rehabilitation

- o USAID had a budget of US\$5.5 million for the rehabilitation of the Djermaya - Dandi Road to all-weather road standards, under a host country contract. A crushed stone surface course was to be placed by the Training Brigade.



- o The road construction cost estimated by OFNAR in 1986 of about US\$15 million was much higher than the available budget. The consulting firm of Parsons Brinckerhoff International, Inc. was contracted by USAID in early 1987 to modify the existing design and prepare a new cost estimate.
- o The modified design provided for a 66 km long alignment, a road width of 7 m, a 25 cm basecourse, a 10 cm crushed stone surface course, and earth fills averaging 0.45 to 0.65 m in height, provided in the areas vulnerable to flooding.
- o The cost of constructing the Djermaya - Dandi Road to the above all-weather road standards and under the then prevailing conditions in Chad's construction market was estimated to be about US\$10.5 million.
- o In order to reduce net disbursements to the budgeted US\$5.5 million, it was suggested that this road be rehabilitated by the Training Brigade, using the newly purchased equipment and the additional funds provided for the Brigade's operations.
- o Eventually, it was agreed between USAID, the World Bank, and the Government of Chad that the Djermaya - Dandi Road would be added to the contract(s) for the rehabilitation of the Djermaya - N'Djamena and the N'Djamena - Guelendeng Roads to be financed by IDA. USAID would transfer the budgeted US\$5.5 million from the SRMP to the World Bank.
- o In December 1987, the TA Contractor stopped working on the preparation of prequalification and bid documents for the Djermaya - Dandi Road. This work was completed by an IDA financed consultant.
- o Bids for the Djermaya - Dandi Road (and the Djermaya - N'Djamena and N'Djamena - Guelendeng Roads) were received in March 1988.

OFNAR's Support of the Project

General

- o The Conditions Precedent to disbursement under the Project Grant Agreement are that the Government of Chad would use its best efforts to pay OFNAR's employees 100 percent of their official salary, would finance at least ten percent of the OFNAR's project recurrent costs during the first year of the Project, twenty percent of such costs during the second year, plus an additional ten percent of such costs each year thereafter for the duration of the Project, and has a system of fuel tax collection to assure that revenues would be sufficient to cover not less than fifty percent of OFNAR's recurrent costs by the end of the five-year Project.
- o Appropriate documentation provided by OFNAR and acknowledged by USAID indicates that up to the present time the Conditions Precedent to disbursement are being met by OFNAR.
- o OFNAR has assigned counterpart personnel, workshop personnel, and Training Brigade trainees in a timely manner overall. Staffing deficiencies, however, are reported to continue to exist in some sections of the Central Workshop (e.g. Engine and Machine Shop Sections). Some of the technicians and trainees reportedly lack the educational qualifications required to perform their assigned tasks properly.

- o OFNAR's senior management supports fully the SRMP and its goals. Counterpart personnel and trainees have worked well with the TA team and have generally been receptive to the advice, recommendations, and guidance given.
- o Many of OFNAR's administrative and operational procedures continue to be cumbersome, and decision making and approval are highly centralized.
- o Due to increased road rehabilitation and maintenance requirements in other subdivisions, OFNAR has assigned to the N'Djamena Subdivision only a small portion of the equipment rehabilitated with assistance from the SRMP.

Contribution to Recurrent Costs

- o The Project Paper called for OFNAR to pay for an increasing share of SRMP related recurrent costs, starting at 10% in the first year and increasing by 10% per year to the level of 50% of project recurrent costs in the fifth year of the Project.
- o Project Implementation Letter (PIL) No. 8 details how OFNAR is to meet these recurrent cost contributions. Recurrent costs are defined as local currency budget line items for heavy equipment operations, light equipment operations, shop supplies, per diem paid to training brigades, road maintenance materials, and administration and utilities, as well as depreciation of project purchased equipment. OFNAR was required to open one bank account into which it would deposit its share of recurrent costs and another account for depreciation funds.
- o According to the PIL No. 8 formula, the Government of Chad (GOC) has exceeded its recurrent cost contributions for 1986 and 1987 by a total of 10,165,628 CFA francs. The GOC has not, however, deposited funds into the depreciation and recurrent costs bank accounts. This is because (a) it has paid the required recurrent cost contributions directly and (b) depreciation schedules have not yet been established by OFNAR's Financial Division for heavy equipment and other fixed assets.
- o Project recurrent costs to date have been far below the levels foreseen in the Project Paper and the Budget PILs for 1986 and 1987. Total payments for recurrent costs, by both AID and OFNAR, were 6.7 million CFAF in 1986 and 16.8 million CFAF in 1987. The Project Paper foresaw recurrent cost levels of 126.0 million CFAF in 1986 and 302.9 million CFAF in 1987, while the budget PILs projected levels of 16.2 million CFAF in 1986 and 375.8 million CFAF in 1987. Appendix 10 details projected AID and OFNAR contributions to recurrent costs in the Project Paper and the Budget PILs for the years 1986 - 1988 as well as actual payments in 1986 and 1987.
- o Under the IDA Road Maintenance Project Credit, OFNAR will pay recurrent costs of 50 million CFAF per quarter through mid-1989. OFNAR has met all of its recurrent cost contributions to date under this project.
- o OFNAR's revenues, principally from fuel taxes, have increased from 559 million CFAF in 1985 to 842 million CFAF in 1987, and are projected to reach 1,000 million CFAF in 1988. IDA is financing a study to identify additional sources of revenue for OFNAR. Based on the above, it appears that OFNAR will have the financial capacity to meet the higher level of recurrent costs implied by the Strengthening Road Maintenance Project as well as other donor projects.

AID's Support of the Project

- o USAID/REDSO/WCA has provided substantial support to the SRMP, in contracting, procurement, and legal issues, and has also promptly provided adequate engineering support as and when requested by USAID/Chad.
- o AID/Washington has assisted in contracting, monitored progress, and provided assistance as necessary.
- o In USAID/Chad, an experienced Professional Engineer has been assigned as Project Manager, assisted by an Administrative Engineer and a Chadian Civil Engineer.
- o The input to, and participation in, the SRMP of USAID/Chad have been substantial. All levels of management have been actively involved, including the AID Representative(s), the Project Committee (consisting of the Program Officer, the Project Development Officer, the Controller, and the Project Manager) and most particularly the Project Manager, supported by the Administrative Engineer.
- o USAID/Chad monitored the Project, pressed for progress, flagged violations and non-performance of contract-stipulated requirements, and scrutinized OFNAR's budget proposals and claims for reimbursement submitted by the TA Contractor.
- o Often, the USAID Project Manager actually "managed" the SRMP rather than supervised it. (This was necessitated by the extended vacancies and turnover of key TA personnel, but was also a result of the Project's design, which did not provide for a TA Contractor Project Manager in Chad.)
- o Regarding the rehabilitation of OFNAR's administrative and workshop facilities, USAID/Chad prepared the designs, contracted with a building firm, and directly supervised construction.
- o There were major delays in off-shore procurements by USAID and its agents of workshop equipment and tools, and of equipment for the Training Brigade.
- o USAID/Chad does not have personnel experienced in AID procurement and contracting. This has resulted in some delays, while clarifications and guidance regarding procurement and contracting matters were being requested and received from other USAID Missions.

Other Road Maintenance Activities

- o The SRMP was the first road maintenance project sponsored by a donor agency in Chad after 1982. More recently, other organizations, such as the International Development Association (IDA), the African Development Fund (ADF), and the European Development Fund (EDF), have also sponsored road maintenance projects.
- o Some 1,200 km of roads have recently been completely rehabilitated. Rehabilitation of another 800 km is underway. A total of about 3,300 km of priority roads are planned to be rehabilitated by 1990,

and another 500 km between 1991 and 1993, for a total of 3,800 km. (The transport sector investment program for 1988 - 1993 is shown in Appendix 11 and its sources of funding are shown in Appendix 12.)

- o IDA's 1987 - 1988 Road Maintenance Project covers: maintenance of already rehabilitated roads; rehabilitation of OFNAR's workshop and administrative buildings in the Subdivisions of N'Djamena, Sarh and Moundou, and construction of such facilities in Mongo; provision of technical assistance to the Ministry of Public Works and to OFNAR's Subdivisions of Sarh, Moundou and Mongo; and equipment rehabilitation and procurement.
- o The technical assistance component of the IDA sponsored project includes provision of: technical advisors to the Subdivision Chiefs of Sarh, Moundou and Mongo; equipment specialists in the Subdivisions of Moundou Sarh and Mongo for equipment rehabilitation and maintenance; field engineers in the Subdivisions of Moundou and Sarh to train operators, drivers and field mechanics on-the-job; an advisor to the Chiefs of the N'Djamena and the Sarh Districts; a technical advisor to the Director General of Public Works; an advisor to the Ministry of Public Works Studies Bureau; a geotechnical/materials specialist; and other experts. New road maintenance equipment procured under the IDA Project includes two dozers, two loaders, five graders, five pneumatic tired rollers, nine dump trucks, six water trucks and two flat-bed trucks.
- o ADF-financed road maintenance activities include: procurement of small dump trucks, water trucks, pedestrian compactors, concrete mixers, and other equipment for routine road and bridge maintenance; and training of OFNAR's subdivision and field personnel, to be provided by four specialists, in management and administration, equipment maintenance, equipment operation, and road maintenance operations.
- o During 1988 - 1990 EDF will finance maintenance by contractor of the Sarh - Guelengdeng Road, and maintenance by OFNAR of the Sarh - Moundou - Lere Road. Technical assistance and equipment procurement for the latter will also be financed by EDF. Technical assistance personnel will include one project coordinator based in N'Djamena, one project manager, two brigade foremen and two brigade mechanics. Equipment to be procured includes two dozers, three loaders, six graders, four pneumatic tired rollers, twelve dump trucks, four water trucks, two flat-bed trucks, two transport trailers and two service trucks.
- o The Federal Republic of Germany is interested in financing road rehabilitation and maintenance activities in the Abeche Subdivision.
- o Several studies are also financed under the IDA Road Maintenance Project. They include a reorganization study of OFNAR, a study to improve the accounting system of OFNAR, and a study to evaluate the prospects for increasing OFNAR's revenues from petroleum taxes and other sources.
- o The first phase of OFNAR's Reorganization Study has been completed. Some of the preliminary recommendations are to create another organization for collecting the petroleum taxes destined to finance road maintenance, to transfer OFNAR's road maintenance planning function to the Ministry of Public Works, and to create a separate equipment maintenance directorate within OFNAR.
- o The second phase of the Reorganization study should be completed by about July 1988. In addition to final reorganization recommendations, the Phase-2 report is expected to include a

training needs analysis of OFNAR's personnel and to identify additional requirements for training and technical assistance.

- o A new IDA-sponsored transport sector project, planned to start in 1989, would provide technical assistance for institutional development and for implementation of OFNAR's reorganization, and would finance rehabilitation of selected roads, periodic maintenance of rehabilitated roads, construction of rural roads, and, to a lesser extent, routine road maintenance by OFNAR.

CONCLUSIONS

Introduction

The SRMP, with some delays, has successfully: assisted in the rehabilitation of a large number of previously unserviceable road equipment; rehabilitated OFNAR's central administrative and workshop facilities and procured the necessary equipment and tools for their operation; and established and equipped a Road Maintenance Training Brigade. These achievements have increased OFNAR's physical capability to maintain roads and equipment.

The SRMP has also initiated the establishment of systems and procedures to develop OFNAR's institutional capability to plan and manage road and equipment maintenance operations, and has contributed designs and funds for the rehabilitation of the Djermaya - Dandi Road under a host country contract.

Based on the factual findings of the Evaluation Study, this section of the evaluation report presents conclusions relative to actual versus planned SRMP implementation progress, major or persistent problems affecting implementation, and relevance of SRMP's purpose and objectives to Chad's current and planned road development programs.

Technical Assistance Contractor

- o Overall, the TA Contractor has assigned qualified personnel to the SRMP. However, there has been a high rate of personnel turnover.
- o The performance of most TA team members and the progress of the TA team toward achieving the measurable, physical outputs of the SRMP have been good.
- o The frequent changes of senior level personnel or their unavailability have affected progress toward institutional development. Lack of effective leadership, a result of project design as well as of circumstances, has often dissipated TA team efforts and affected morale.
- o The often conflicting roles of the TA team members, requiring them to be advisors/trainers as well as to exercise operational control, has resulted in some confusion and frustration.
- o Factors that contributed to the high rate of personnel turnover have included: difficult living and working conditions and often inadequate logistics support, which frustrated personnel; failure to staff

key positions from the TA Contractor's permanent staff, or previously known personnel; and often hasty recruitment and termination decisions.

Central Workshop Operations and Management

- o The number of heavy equipment and trucks retrieved from the field and rehabilitated exceeds the Project Paper's expectations.
- o Rehabilitation of Central Workshop facilities, which was completed in August 1987, and procurement of workshop equipment and tools, of which the last major shipment arrived in N'Djamena in March 1988, were significantly behind schedule.
- o Procedures for planning and executing repair work and an inventory control system have been introduced, but not yet firmly established. The current parts distribution and procurement system is cumbersome.
- o On-the-job training is being provided to some 56 workshop personnel, which exceeds the number originally expected to be trained and will permit OFNAR to meet the increased equipment maintenance demands resulting from the increased road maintenance activities throughout Chad. Development of training materials by the TA team has been limited.
- o Without a preventative equipment maintenance system, maintenance of new and rehabilitated equipment in good operating condition will be difficult.

Road Maintenance Training Brigade

- o Training Brigade operations started behind schedule due to late equipment arrival. The first group of some 33 trainees has completed about 70 percent of the training cycle, rather than having completed it and the second group having completed about 50 percent of their training, in accordance with the Project Paper schedule.
- o Current rates of work and training progress appear to be good.

Procurement of Commodities

Local Procurement

- o OFNAR's system of procurement and purchasing is not adapted to the needs of efficient project implementation.
- o OFNAR management and the Financial Division are aware of this problem and are looking for ways to improve the situation.

Off-shore Procurement

- o Major delays have been experienced in the off-shore procurement of Training Brigade equipment and workshop tools and equipment, the last shipments of which had just been delivered at the time of the evaluation.
- o These delays were caused by: the failure of short-term technical assistance personnel to prepare specifications, and consequently of USAID to place orders, prior to the arrival of the TA team; delays in subsequent preparation of specifications and initiation of procurement; and the long line of communications involved (OFNAR - TA Contractor - USAID/Chad - procurement agent - supplier), which required some six steps in answering queries.
- o In view of the long procurement periods usually required for AID commodity procurement, the Project Paper's implementation schedules of 6-12 months for procurement and delivery of equipment were too optimistic.

Advisory Services to Senior Management

- o The Senior Advisor has not been effective in advising and counseling OFNAR's senior management.
- o The Senior Advisor has followed through some relatively minor undertakings, but in the important areas of organizational development and management, long-term planning, budgeting, prioritization, and coordination of donor activities, his recommendations have been inadequate.

Road Maintenance Planning

- o Through the efforts of the first TA Planning Engineer in the first half of 1987, manuals on road maintenance planning and management were prepared and planning was initiated. However, the road maintenance planning function of OFNAR has not been well defined nor developed.
- o Several organizations are currently involved in road maintenance planning, resulting in duplication of efforts.

Financial Management Systems

- o OFNAR's Financial Division has made progress in moving from simple, cash basis administrative bookkeeping to a system of accrual accounting that can track receipts and disbursements as required by Section 121(d) of the Foreign Assistance Act. The Accountant Advisor has had an important role in these improvements. However, a comprehensive, commercial-style accounting system that will develop widely-used cost accounting data and will enable OFNAR to become financially responsible is not yet in place.
- o The Financial Division is better staffed and organized now than at the beginning of the SRMP.

N'Djamena Subdivision Maintenance Activities

- o In the period September 1987 - March 1988, maintenance work by the Subdivision's brigade was done on less than 300 km of roads, covering a limited geographic area.
- o Limited technical assistance has so far been provided to this Subdivision by the SRMP.
- o Of the 1,248 km of priority roads within the N'Djamena Subdivision, some 500 km will have to be maintained by OFNAR in the period 1988 - 1990, the remaining being under rehabilitation or maintenance by others. In addition, other, lower priority, road sections also need to be serviced (e.g. N'Djamena - Massenya, 160 km long). The N'Djamena Subdivision has insufficient equipment to maintain these roads in a satisfactory manner.

Djermaya - Dandi Road Rehabilitation

- o The agreement reached that the Djermaya - Dandi Road will be rehabilitated under a World Bank project and that, in exchange, USAID will give to the World Bank US\$5.5 million (USAID's budget for this Road's rehabilitation) ensures that the Road will be rehabilitated at a cost to USAID not exceeding its budget, and at the same time enables the Training Brigade to focus on maintenance of other roads within the N'Djamena Subdivision.

OFNAR's Support of the Project

- o OFNAR has supported the SRMP and has assigned counterpart staff and trainees in a satisfactory manner. However, only a small amount of the equipment rehabilitated under the SRMP has been assigned to the N'Djamena Subdivision, which is the focus of the Project.
- o OFNAR has honored its commitment to meet an increasing share of SRMP recurrent costs and it ought to be able to continue to do so over the life of the Project.

AID's Support of the Project

- o USAID has had a significant input to and participation in the SRMP and has supported it fully.
- o Following completion of critical, production oriented, activities of the SRMP, more attention should now be given to the institutional development objectives of the Project.

Other Road Maintenance Projects

- o Since the inception of the SRMP, several other donors have entered the road maintenance and rehabilitation field in Chad.
- o OFNAR will be responsible for maintaining 3,800 km of priority roads by 1993, rather than 1,600 km as was projected in the Project Paper.

- o The Subdivisions of Sarh, Moundou, Mongo and Abeche receive/will receive technical assistance, equipment, and financing from other donors.
- o The SRMP will have to be redefined to take into account the other on-going and planned road projects.

RECOMMENDATIONS

Introduction

The specific recommendations presented below are based on the Evaluation Study findings and conclusions. They propose solutions to major or persistent problems affecting project implementation progress and suggest rectifications to improve project performance.

Modifications to the SRMP are also suggested, to improve its effectiveness and take into account other road maintenance projects in Chad. In general, it is recommended that the SRMP:

- continues the technical assistance and support to the Central Workshop, emphasizing training and establishment of appropriate systems and procedures;
- increases the technical assistance and support provided to OFNAR's N'Djamena Subdivision;
- continues and systematizes the training function of the Training Brigade until the training of at least two groups of field personnel; and
- streamlines the technical assistance provided to OFNAR's senior management and to the Programming and Financial Divisions, to focus on SRMP related aspects.

USAID should coordinate the modifications to the SRMP with the road maintenance activities planned by other donors, especially IDA's Transport Sector Project, currently under preparation. USAID should also start planning for the follow-on Phase-2 of the SRMP now, to avoid the delays experienced during the first half of this phase.

The recommendations made below are based on the assumption that technical assistance to the Subdivisions of Sarh, Moundou, Mongo and Abeche will be provided by others; and that after completion of OFNAR's Reorganization Study, others will provide technical assistance to implement the reorganization, institute planning of country-wide routine road maintenance, establish a program of preventative equipment maintenance covering all the Subdivisions, improve OFNAR's overall procurement system, and strengthen financial management.

Additional options are discussed under the subsection titled Suggested Adjustments to the SRMP as a Result of Other Road Maintenance Activities.

Technical Assistance Contractor

- o In assigning future, if specialists, the TA Contractor should ascertain the willingness of the individual to be assigned and complete his contract. Financial incentives should be increased as much as is practicable.
- o Assigned personnel should have the required capability in French.
- o The TA team should be led by a Chief of Party with responsibility for project management and coordination of the TA efforts, (as opposed to a Chief of Party for personnel and administrative matters only).
- o Senior Advisor and Planning Engineer: Eliminate these two positions and create a position of Chief of Party/Project Manager. The responsibilities of this new position will include: Management of the technical assistance team; planning, budgeting and coordination of the SRMP activities; and advising OFNAR's senior management on Project matters. This position should continue through March or June 1990.
- o Field Engineer: This existing position should be modified to emphasize advising the N'Djamena Subdivision on road maintenance programming, scheduling, budgeting, and management including work performed by the Subdivision's Brigade(s) and the Training Brigade. This position should continue through December 1989 (and be renamed Road Maintenance Engineer).
- o Accountant Advisor: Continue this position through December 1989 (focusing on the SRMP), in order to establish a cost accounting and a double entry accounting system for the SRMP, and to improve the Project's budgeting and payment procedures.
- o Brigade Foreman and Equipment Foreman: Continue these two positions through August 1989. More emphasis should be placed on: training supervisory personnel, who will in the future train operators and technicians; evaluating the progress of Brigade trainees regularly, to detect areas of deficiencies requiring more attention or to identify trainees ready for (earlier) graduation; and teaching safe driving.
- o An experienced field mechanic should be assigned to the Training Brigade to ensure the proper maintenance of its some 24 units of heavy equipment and trucks worth about US\$3,000,000. He can be Chadian, if available, or an expatriate/third country national.
- o Shop Superintendent Advisor: Continue this position through March 1990. His responsibilities should include establishment of efficient workshop operations and management systems, including: procedures for equipment diagnosis, repair work planning and monitoring, recordkeeping, parts and supplies procurement and distribution, and equipment preventative maintenance; and introduction of computer based systems.
- o Spare Parts Specialist: Continue this position through December 1989, with emphasis on improving the efficiency and the accuracy of the inventory control system, training personnel, assisting shop foremen and parts personnel in identification of parts, and introducing a computer based inventory control system.

- o Engine Foreman: Continue this position through December 1989, and increase his responsibilities to include heavy equipment and possibly electrical repair work. Rename this position Engine and Heavy Equipment Specialist.
- o Machine Shop Foreman: Continue this position through March 1989, to train machinists in the use of the newly arrived machine shop equipment.
- o Service Foreman: Modify this position. His responsibilities should be (a) to assist and train personnel of the N'Djamena Subdivision Workshop in small repairs and preventative maintenance done at the workshop and in the field (80% of time), and (b) to assist in the reparation of heavy trucks and light vehicles in the Central Workshop (20% of time). Continue this position through December 1989.
- o Short-term Specialists. These would assist the technical assistance team and could include: a computer specialist to assist in the introduction of computer based systems; a training specialist to assist in the systematization of ongoing training programs; a procurement specialist to improve the SRMP supply and procurement system; an electrician to train the personnel of the Central Workshop's Electrical Section; and others. Total duration: about 12-18 person-months.
- o The technical assistance team should also be supported by a qualified Chadian Procurement Assistant to expedite customs clearance and delivery of off-shore procured items as well as parts and supplies procured locally, and by one or more qualified Chadian Administrative Assistants to assist the Chief of Party in daily administrative and TA team logistics support activities.
- o The TA team should coordinate efforts and cooperate closely with the technical assistance personnel provided under the IDA, ADF, EDF and other road projects.
- o The TA Contractor's Progress Reports should: include a long-term work plan and an implementation schedule for achieving the SRMP objectives; indicate progress made during the reporting period; identify slippages; and discuss ways to improve performance. It is suggested that the Monthly Progress Reports be more comprehensive, that the Quarterly Progress Reports be discontinued and that annual reports and work plans be submitted at the same time as the Project's annual budget submissions.
- o The TA Contract should be amended to reflect the above changes in job descriptions and periods of assignments and to specifically stipulate the requirements for institutional development.

Central Workshop Operations and Management

- o During the second half of the SRMP, more emphasis should be placed on institution building and on establishing the systems that have been introduced.
- o The simple procedure introduced for monitoring repair work progress should be followed, and not allowed to fall into disuse. The TA Shop Superintendent should ensure this.

- o Old, unserviceable equipment, requiring for its rehabilitation spare parts costing in excess of 30-35% of the price of a new unit should not be rehabilitated, but instead should be cannibalized or scrapped.
- o In preparing lists of spare parts to be ordered for the rehabilitation of old units, care should be taken to order the appropriate parts, in order to avoid delays caused by incomplete orders and/or the costs incurred in procuring parts in excess of requirements and which cannot be used elsewhere.
- o Regular physical counts of parts and supplies in stock should be made to correct the discrepancies between actual inventories and the amounts shown on the Kardex cards. Cards corresponding to specially ordered items which are not stocked should be removed from the Kardex files and filed elsewhere.
- o Posting of the Kardex inventory cards should be done with better care and immediately after the receipt or issue of parts and supplies. Additional training and supervision of the Kardex employees are required.
- o The spare parts and supplies distribution procedure should be simplified. Instead of five signatures for a requisition, two only should be required: either the Workshop Section Chief, or his counterpart, and either the Central workshop Chief, or his counterpart.
- o OFNAR's procurement system must be simplified. Possibilities for improvement include establishing long-term procurement agreements with selected low-cost and reliable suppliers to avoid the constant need of requesting three or more quotations for every single purchase; and establishing budgets to avoid the need for the Financial Division and OFNAR' Director approving each transaction. Implementation of the above recommendations could reduce by half the procurement steps and time. (Also, see recommendations under Procurement of Commodities subsection below.)
- o Additional efforts are required to structure the ongoing practical training. When available, service manuals should be in French. Simple posters and signs should be purchased or developed and placed throughout the workshop as reminders to employees of what to do and what not to do. (Possible areas to be covered: safety, quality of work, unauthorized used of tools, pilferage, etc.)
- o Preventative equipment maintenance procedures should be developed for use by the Subdivision workshops and field brigades. (This could be addressed within the scope of OFNAR's re-organization and could be implemented by others).
- o The role of the N'Djamena Subdivision Workshop, located outside OFNAR's compound, should be reviewed and properly defined to avoid duplication with Central Workshop operations.

Road Maintenance Training Brigade

- o Training Brigade production work should continue to be planned and executed in conjunction with the road maintenance requirements in the N'Djamena Subdivision.

- o OFNAR should assign to the Training Brigade two of the pneumatic tired rollers rehabilitated under the SRMP.
- o Additional efforts are required by the TA team to structure training. Preventative maintenance and safe driving should also be covered. With the arrival of the office trailer, proper recordkeeping and performance evaluation reporting should be followed up.
- o Training in bridge and drainage structures maintenance and repair should also be provided by the Training Brigade.
- o Trainees performing satisfactorily should be released earlier and assigned to Subdivisions. Some of the best trainees, who are judged to have the capacity to train others, should be trained in training techniques so that they can train others in the Subdivisions.
- o It is advisable that the first group of Brigade "graduates" return to the Training Brigade a year or so after graduation to receive short refresher training. Trainees graduating later should also receive refresher training, (if the Brigade continues for more than two years).
- o Training Brigade operations should continue for a total period of at least two years (i.e. through August 1989) to meet the increased demand for operators and field personnel resulting from the increased road development activities in Chad. (The feasibility of continuing the Training Brigade operations beyond two years and/or of establishing a permanent equipment operator's training program, possibly under Phase-2 of the SRMP, should be examined.)
- o The last group of the Brigade graduates and the Brigade's equipment should be assigned to the N'Djamena Subdivision and form two routine road maintenance brigades.

Procurement of Commodities

Local Procurement

- o The 19 step local procurement system needs to be streamlined. Thresholds should be established for procurements requiring the approval of the Procurement Committee and the Director, so as to remove unnecessary steps. The Procurement Service should be delegated the authority to approve small procurements. This could reduce the time required for procurements by up to several weeks.
- o "Procurement contracts" should be established and let as quickly as possible, to reduce delays in routine procurements. Procedures for these contracts should be as streamlined as possible. For example, once a contract is let, requirements for formal competition, approval by the OFNAR procurement committee and approval by the OFNAR Director should be waived on individual purchases within an approved amount.
- o The procurement and inventory system installed under the IDA Road Maintenance Project should be evaluated as a possible model for improvements in the SRMP and the central OFNAR procurement systems. Eventually, the two (or more) parallel systems should be merged.

- o Preferably, a Procurement Division should be established within OFNAR, outside the Financial Division and the Tools and Mechanical Division (DOM). This would ensure that procurement is done in a timely manner to meet the needs of the Central Workshop and the Subdivisions and that at the same time appropriate budgetary and financial controls are exercised. A short-term Procurement Specialist should be assigned to improve this function and train procurement personnel. (OFNAR's central procurement system could be addressed within the scope of the Reorganization study)

Off-Shore Procurement

- o It will be preferable to implement future off-shore procurement through host country contracts, with assistance from the TA team in Chad and/or the TA Contractor's home office. Even though there may be some difficulties due to OFNAR's lack of experience with USAID procurement regulations, host country procurement would enhance institution building and should be preferred.
- o A Chadian national should be recruited by the TA Contractor, or OFNAR, to assist with expediting customs clearance and delivery of shipments.

Advisory Services to Senior Management

- o As discussed in the Technical Assistance Contractor subsection, it is recommended that the Senior Advisor position be eliminated. The Chief of Party of the TA team would advise and interface with OFNAR's senior management on SRMP matters.
- o Recommendations made to OFNAR's senior management must be specific, well thought out, and presented in a way to permit decision making and action taking.

Road Maintenance Planning

- o The Programming Division and the SRMP should develop road maintenance productivity and cost data, to be used in planning and budgeting.
- o Since road maintenance programming for the subdivisions of Sarh, Moundou and Mongo is now also done by the Monitoring Unit (cellule de suivi) at the District level, the TA team, in collaboration with the Programming Division, should focus on maintenance planning for the N'Djamena Subdivision, including development of road-specific maintenance plans and schedules, budgeting, and allocation of personnel, equipment, and financial resources, taking into account the requirements of the Subdivision and the resources of OFNAR. (The programming function of OFNAR is being studied and redefined within the scope of OFNAR's Reorganization Study.)

Financial Management Systems

- o As a service organization, the Financial Division should seek better integration of its product - the cost accounting and other financial reports and analyses -- with the needs of its consumers - OFNAR's management and technical services. This will require a more active role in, first, surveying the information needs of these consumers (what cost and economic information do they need to

know that is not already available to them?) and, second, marketing its services (how might the monthly report on direct costs of work orders improve the efficiency of, say, DOM).

- o OFNAR's annual budgeting process needs to be improved and formalized. Preparation of an annual budget should begin in July of the preceding year (rather than in September, as was the case for 1988), with the budget submitted to and approved by the Board of Directors no later than mid-December. Formats and timetables for submission of work plans and budgets should be established before July, and should be strictly adhered to. The Financial Division has a twofold role under the programmatic supervision of OFNAR's Director: first, establishment of the overall financial envelope based on estimates of OFNAR's revenues; and second, ensuring the consistency and timeliness of the technical divisions' submissions.
- o Transition to the new, General Ledger system of double entry accounting should proceed as rapidly as possible, to foster the development of a commercial management style at OFNAR. The Financial Division should proceed with this even if all fixed assets have not yet been valued. At the very worst, the Financial Division can assign arbitrary values and depreciation schedules to the assets and make subsequent adjusting entries once the asset evaluation has been carried out.
- o The system for encumbrance, liquidation and payment of expenses should also be brought into line with more commercial standards. As a first step, the OFNAR Director's three signatures could be reduced to one, probably on the check for payment, with the Chief of the Financial Division authorized to approve encumbrances, liquidations and payment orders. Also, OFNAR should not have to obtain prior approval from the State Control Agency (IGCE) for each check it issues; annual reviews or audits by State Control would be far more meaningful and less cumbersome.
- o OFNAR or the TA Contractor should hire an Assistant Accountant to undertake, under the Accountant Advisor's supervision, the bookkeeping tasks now performed by the Advisor. This will free the Advisor to focus on larger project financial management issues, as well as on training the Financial Division's staff and helping them implement improved financial management systems such as the new cost accounting reports and the General Ledger accounting system.
- o To the extent that improvements to OFNAR's central financial management system are being introduced by others, the role of the Accountant Advisor should be more focused on the requirements of the SRMP.

N'Djamena Subdivision Maintenance Activities

- o As discussed in the Technical Assistance Contractor subsection, the TA Field Engineer should provide increased technical assistance to the N'Djamena Subdivision, in planning, scheduling, budgeting, coordinating and supervising road maintenance. A TA Service Foreman should spend about 80 percent of his time with the N'Djamena Subdivision Workshop, now being rehabilitated under the IDA Road Maintenance Project.
- o The Training Brigade production work should be executed taking into account the Subdivision's road maintenance requirements. Upon completion of the Training Brigade's operations, the Brigade equipment and the last group of graduates should remain within the Subdivision and be added to its resources.

- o OFNAR 's Bitumen Brigade should be placed under the direction of the N'Djamena Subdivision, and strengthened with new equipment, in anticipation of the requirement to maintain some 200 km of paved roads within 2-3 years. Donor coordination and preparation of specifications and planning for the procurement of paved road maintenance equipment should start now.
- o OFNAR should assign some additional equipment to the N'Djamena Subdivision (e.g. two graders, one loader, one pneumatic tired roller, two-three dump trucks, one water truck).
- o Contracting of labor intensive maintenance operations (e.g. culvert cleaning and repair, fixing potholes) to local private contractors should be considered.
- o Procurement planning for the additional road maintenance equipment that will be required to maintain some 1,250 km of priority roads after 1990 should start now.

Djermaya - Dandi road Rehabilitation

- o The agreement that this road be rehabilitated under a World Bank sponsored host country contract, in exchange for a USAID contribution of US\$5.5 million, should be implemented.
- o USAID should be reviewing the implementation of this project, including adopted design standards, and construction quality, progress and costs, and also use the information obtained to plan future projects.

OFNAR's Support of the Project

- o OFNAR should adopt recommendations made by the TA team to streamline procurement procedures and, in general, decentralize decision making.
- o OFNAR should designate an OFNAR Project Manager for the SRMP, who, reporting to OFNAR's Director, would coordinate the SRMP activities with USAID and the TA Contractor.
- o OFNAR and USAID/Chad should closely monitor OFNAR's continued ability to meet its recurrent cost commitments as the rate of project implementation and disbursements steps up.
- o Procedures described in PIL No. 8 should be reviewed and revised if necessary. Specific attention should be focused on the use of the two bank accounts and on presenting the recurrent cost data on the basis of accrual rather than cash accounting.

AID's Support of the Project

- o If the Evaluation Study recommendation that the Chief of Party of the TA team is also the Project Manager is implemented, USAID/Chad should supervise and monitor the SRMP rather than be actively involved in its management.

- o AID should coordinate the remainder of the SRMP and future road projects with other donor activities.
- o The Procurement Planning Guidance of AID Handbook 11 should be applied for future procurement and used during preparation of follow-on Project Papers or amendments.
- o It would be desirable that USAID/Chad be strengthened with resident or TDY specialists in procurement and contracting.

Suggested Adjustments to the SRMP as a Result of Other Road Maintenance Activities

- o The SRMP's goal, purpose, and objectives need to be redefined to take into account other, recently started or planned, road maintenance projects in Chad.
- o The recommendation of the Evaluation Study is that the SRMP be modified to focus its institutional development efforts on the Central Workshop and the N'Djamena Subdivision (including the Subdivision's road maintenance and workshop activities). The Training Brigade's last group of graduates and the Brigade's equipment should be assigned to the N'Djamena Subdivision. Advisory services to OFNAR's senior management and to the Programming and Financial Divisions should be streamlined and focused on the SRMP aspects of OFNAR's operations.
- o A modified Logical Framework reflecting the above recommendations is shown in Appendix 6.
- o Other options are available for each of the major elements of the SRMP, which are briefly discussed below:

Advisory services to OFNAR's senior management, and to the Programming and Financial Divisions: Continue institutional development attempts in these areas. It would be very difficult, however, for the SRMP to be effective in these undertakings, since OFNAR's activities are now several times larger than anticipated at the beginning of the SRMP, as a result of road projects financed by other donors. (The planning and financial management functions of the SRMP would be more effective if they were Project-specific.)

Equipment Maintenance: If it is decided among donors to provide assistance to OFNAR across functional areas (e.g. road maintenance, equipment maintenance, financial management), rather than geographically, the SRMP could focus on equipment maintenance and on the establishment of a country-wide equipment management and preventative maintenance system. This undertaking would require the provision of additional technical assistance for equipment inspection and maintenance in the other Subdivisions. (Under this alternative, the SRMP would stop providing technical assistance for road maintenance, and the position of Field Engineer would be eliminated.)

Road Maintenance Training Brigade: Expand and prolong its operations to train the larger number of field personnel that will be required to maintain some 3,800 km of priority roads by 1993, rather than the 1,600 km anticipated during the

SRMP design; also, operate the Brigade in other Subdivisions to provide training in road maintenance under different soils and climatic conditions. These can be viable options, which could be considered in coordination with training activities financed by other donors, and could be implemented under a Phase-2 Project.

N'Djamena Subdivision: Let other donors (e.g. IDA) finance technical assistance for the Subdivision's road maintenance and workshop activities. This option would have the merit of uniformity of technical assistance provided to the Subdivision of N'Djamena and to those of Sarh, Moundou and Mongo). It could, however, create some coordination difficulties between the current operations of the Training Brigade and those of the N'Djamena Subdivision's brigade(s), and between the operations of OFNAR's Central Workshop and those of the N'Djamena Subdivision's Workshop.

Recurrent Costs Financing: Expand the SRMP's scope to include financing of road maintenance recurrent costs beyond the N'Djamena Subdivision. To the extent that funds are available, this would be a possibility.

- o The OFNAR Reorganization Study, currently underway, will result in recommendations, which when and if adopted will certainly affect the SRMP. It is recommended that a study be undertaken by USAID to redefine the SRMP's goal, purpose, and objectives, in close collaboration with OFNAR, IDA, the TA Contractor, the Ministries of Public Works, Planning, and Transport, and other organizations involved in, or planning, road maintenance projects in Chad.

LESSONS LEARNED

Introduction

The main lessons learned during the first half of the SRMP are presented in this Section.

Project Design

- o The Project Paper correctly determined that the purpose of the SRMP should be to develop a technically competent and financially responsible organization for the maintenance of the road network in Chad. The Project Paper stated that the SRMP would be implemented through eleven expatriate professional and technical personnel, two of which were to be provided under an agreement with the US Department of Transportation (DOT) and nine under a contract with a US consulting firm. (A weakness of the Project's design was to separate the two most senior TA persons from the nine other team members, and to not designate a Chief of Party with responsibilities for project management, coordination of the technical assistance efforts, and supervision of the TA team.)
- o The Senior Advisor and the Planning Engineer to be provided by DOT were to have had advisory roles, while the nine expatriates to be provided by a consulting firm would have had mainly operational and supervisory roles within OFNAR's Central Workshop and Road Maintenance

Training Brigade, and would have provided on-the-job training to OFNAR personnel. There appears to be some inconsistency between the SRMP's stated purpose and the prescribed roles of the technical assistance personnel, i.e. TA personnel with operational and supervisory roles can get things done (e.g. rehabilitate equipment, maintain roads) and can also train individuals working with them, but in order to develop a technically competent organization, technical assistance personnel must also develop and establish systems and procedures. However, requirements to develop and establish such systems and procedures were not specifically stipulated in the scopes of work of the TA team members.

- o The Implementation Plan in the Project Paper scheduled many activities to be largely completed prior to the arrival of the TA team, including: procurement of shop tools and equipment, project vehicles and surveying and soils testing equipment; rehabilitation of buildings; preparation of specifications and procurement of Training Brigade equipment; and preparation of preliminary training plans, and preliminary road contract plans. Expecting to achieve the above (and more) in a period of 6-7 months with the assistance of few short-term consultants and under very difficult working conditions was unrealistic. (In fact, more than two years have been required to complete many of these "early" activities; the assignment of most technical assistance personnel following the Project Paper schedule, which assumed that the above described activities would be completed prior to the TA team's arrival, resulted in frustration of the newly arrived personnel, in some waste of technical assistance time, and in the non-assignment of specialist personnel to do the uncompleted, or even unstarted, activities, e.g. training specialist to prepare training plans, architect and/or facilities engineer to design and supervise the rehabilitation of buildings, specifications/procurement specialist to prepare equipment specifications and procure same.)

Technical Assistance Contractor

- o In selecting a contractor to provide long-term professionals it is important to consider:
 - previous experience of the firm on similar projects;
 - availability of key personnel within the firm's own staff; and
 - willingness of proposed personnel to be assigned.
- o Technical assistance contracts should require that proposed candidates be available for assignment, with only limited relief clauses.
- o Cost competition for projects such as the SRMP should be avoided since it may result in an inability of the selected low-cost firm to attract and keep qualified resident professionals.
- o A Project Manager position should always be provided on large, multidisciplinary, long-term technical assistance contracts.
- o Resident personnel must be supported by home office and short-term specialists (e.g. for the SRMP, in the areas of procurement, equipment specifications, training programs, computers, financial management, soils engineering)

Central Workshop Operations and management

- o Workshop tools and equipment should be ordered well before the arrival of technical assistance teams who are going to use them.
- o In order to produce immediate results, it is often expedient that TA personnel assume operational roles. However, in doing so, the institutional development aspects of TA invariably suffer. It is therefore necessary to provide for the development of systems and procedures by the TA personnel and for their gradual phaseout as national staff become experienced in the use of these systems and procedures.

Road Maintenance Training Brigade

- o Procurement of equipment to be used for training must be started well before arrival of the trainers. The guidance provided in AID Handbook 11, Chapter 3, Section 3.1 "Procurement Planning" should be followed to avoid project delays and waste of technical assistance time.

Procurement of Commodities

- o Centralization of procurement (e.g. OFNAR's for local purchases and USAID'S through the IQC off-shore procurement contractor) can result in long delays due to the long communication and/or approval channels involved.

Advisory Services to Senior Management

- o It is desirable that several candidates be interviewed prior to selecting a senior level advisor.
- o Selecting of applicants using rigid, and often inappropriate, criteria may screen out otherwise qualified candidates.
- o Since a successful advisory role depends on both the qualifications of the advisor and on the personal chemistry between him and the person receiving the advice, the latter should participate in the selection of the his advisor, (particularly for senior level positions).

Road Maintenance Planning

- o The Planning Engineer position should have been part of the TA Contract from the beginning of the Project. This could have resulted in earlier filling of this position and in the integration of the planning function with the road maintenance and equipment maintenance activities.

Financial Management Systems

- o The efforts, qualifications, and experience required to establish adequate financial management systems should not be underestimated.

N'Djamena Subdivision Maintenance Activities

- o Donor agencies should coordinate their efforts closely

Djermaya - Dandi road Rehabilitation

- o The costs of road rehabilitation projects should be estimated carefully, to avoid delays caused by insufficient budgets.

OFNAR's Support of the Project

- o The requirement that OFNAR gradually increases its financial contributions to the SRMP has been an important and well thought out element of the SRMP.

AID's Support of the Project

- o Unrealistic project implementation and procurement schedules hinder the success and increase the costs of projects.

Other Road maintenance Activities

- o Development projects should not be designed in isolation, and should have built-in provisions for their modification to take into account similar activities undertaken by others.

STATEMENT OF WORKI. ACTIVITIES TO BE EVALUATED

Project Authorization Number: 677-0050
Project Title: Strengthening Road Maintenance
Cost: \$27,500,000
Life of Project Dates: 6/29/85 through 9/30/90
Project Life Assistance Completion Date: 9/30/90.

II. PURPOSE OF THE EVALUATION

a. Reason for Evaluation. The principal technical assistance contract with GFTE was signed in November 1985. When this technical and management evaluation takes place, about February 1988, the project will be 25 months old, using January, 1986 as the starting point for project implementation. The evaluation, to be preceded by a non-federal financial audit, is therefore consistent with the audit component of the financial and management audit planned in the Project Paper. USAID/Chad, with pre-audit assistance from the Investigator General's Office/Dakar, Senegal, has recommended that the management review portion of the aforementioned financial audit should be included in this work order instead.

b. Key Management Issues. The evaluation will seek to determine the effectiveness of the present mix of skills among the expatriate technical assistance team members; if all of the positions are desirable or if additional or different skills should receive greater attention.

c. Who Will Use Evaluation Results? The evaluation will be used by USAID/Chad and OFNAR to determine how, if at all, the project goals and objectives can be achieved based on the current Project Paper milestones. AID/Washington and other interested readers will be especially attentive to the link

between project implementation progress and the stated project purpose of developing a technically competent and financially responsible organization for the maintenance of the road network in Chad.

d. How Will Evaluation Findings and Recommendations Be Used? The evaluation findings and recommendations will be used by USAID/Chad and OFNAR to modify project activities and as a basis for discussions with contractors regarding technical assistance deliverable under their contracts and to modify project activities if and as necessary.

III. PROJECT BACKGROUND

The Strengthening Road Maintenance Project was instituted with the purpose of assisting the Government of Chad to develop a technically competent and financially responsible organization for the maintenance of the road network in Chad. In pursuing these objectives, the U.S. Government has authorized the expenditure of \$27.5 million over a five year period. The Government of Chad (GOC) contribution is \$5.0 million. The major elements of the project are:

1. Technical assistance in planning and administering a road maintenance program;
2. Training, equipping, and operational support of a road brigade;
3. Rehabilitating and equipping of workshop facilities, and training in equipment maintenance;
4. Rehabilitation of a 63-km length of road under a host country contract.

The GOC has established an agency, Office National des Routes (OFNAR), within the Ministry of Public Works, Housing and Urbanism whose main purpose is to maintain the national road network. OFNAR's operating funds are derived from tax receipts from petroleum product imports. As the country progresses in the development of an infrastructure, and as economic recovery from the effects of the civil war continues, OFNAR revenues are expected to increase, enabling it to augment its capacity and operational level. The GOC is aware that a second project phase will depend on OFNAR success in meeting its recurrent costs targets under the present project.

The project is being implemented through eleven expatriate professional and technical personnel (totaling 34 person years). Ten of these personnel are being provided by a U.S. consulting firm, Gannett Fleming Transportation Engineers, while the remaining person, whose responsibility is to serve as an advisor to OFNAR's Director regarding daily and long term management of the organization, is being provided through a personal services contract.

Gannett Fleming's responsibilities include:

1. Furnishing 10 expatriate personnel for the following positions: Planning engineer, field engineer, accountant advisor, brigade foreman, shop superintendent, equipment foreman, parts specialist, engine foreman, machine shop foreman, and service foreman.
2. Project financial management including direct control of expenditure for U.S. dollar project funds, joint control of local currency project funds, advising OFNAR on procedures used to account for local currency expenditures, and oversight of procurement by OFNAR of project funded materials.

3. Operational control of central workshop facilities and operations.
4. Supervision of operation and management of road brigade.
5. Technical support to GOC in contracting for rehabilitation of Djermaya-Dandi road, particularly in preparation of bid documents and construction specifications, contractor prequalification, bid analysis and award, and construction inspection and supervision of contractor execution of the work.

IIIB. IMPLEMENTATION

The status of implementation of the main project activities is as follows:

OFNAR BUILDING REHABILITATION. Four buildings were rehabilitated to facilitate the management and training objectives of the project.

PROCUREMENT ORDERS. \$3 million worth of Caterpillar and Mercedes trucks have been received and are currently being used by the training brigade. In addition, \$1 million worth of shop tools for the central workshop and equipment for the training brigade have been ordered through an IQC firm and delivery is expected to be completed by July, 1988. \$118,000 of spare parts for heavy equipment repair have been ordered and a waiver has been approved increasing by \$700,000 the \$300,000 authorized in the project paper for procurement of spare parts. The present waiver authority is now \$1 million. Two trailers for the training brigade have been ordered.

TRAINING. Training for the training brigade, and central workshop personnel is in progress.

DJERMAYA-DANDI-ROAD. Bid documents are near completion. A decision to proceed with this road rehabilitation activity is pending confirmation that the expected cost of the road will not exceed the funds available for this project component.

EQUIPMENT RECOVERY. Equipment recovery is ahead of schedule. fifty-one pieces of heavy equipment have been recovered from the field to date.

COMPUTER NEEDS. An assessment of OFNAR computer needs has been completed. Computer procurement should be completed by March, 1988.

IV. STATEMENT OF WORK

1. What is the progress of the Technical Assistance team toward accomplishment of project purpose, goal, inputs and outputs?

The Evaluation Report must provide empirical findings to answer the questions that follow. Conclusions (interpretations and judgments), findings and recommendations should be based on an assessment of the results of the evaluation exercise.

The report must provide a section discussing Lessons Learned that may emerge from the analysis.

2. Has the TA Contractor provided the required man-months of qualified advisors in proportion to the duration of the project to date?

3. Are the outputs to date of the project clearly measurable and proportional to the planned total outputs e.g. 50 mechanics, 42 operators, 18 supervisors, trained crews for maintenance of 1,600 kms of roads, effective Central Workshop and 63 kms of road?

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4. Is the training being imparted both in the Central Workshop and to the Road Maintenance Training Brigade, proceeding formally on the basis of a well developed training plan? Is it on schedule, if not, state problems.

5. What improvements if any have been introduced by the TA team in the Central Workshop operation and management, related but not limited to establishment of routine and periodic maintenance plans of vehicles and heavy equipment; towards achieving the objective of trained crews and rehabilitated equipment to be deployed for road maintenance?

6. What improvements if any have been made in the procedures for procurement, accounting, financial reporting, and control mechanisms with the twin objectives of training the Chadian staff, and the implementation of project activities?

7. Are the procurement procedures utilized by OPNAR compatible with AID Handbook 11? If not, state differences and their impact.

8. Is AID providing the needed input, support and participation in the project implementation actions undertaken by the Technical Assistance Team, the Personal Services Contractor and USAID?

9. Is OPNAR continuing to meet the conditions precedent in the Project Agreement? Does its financial condition reflect its ability to contribute successively increasing recurrent costs as specified in the Project Paper?

10. Is OPNAR adequately benefiting from the advice given by the OPNAR Senior Advisor? What specific improvement or changes have been introduced as a direct result of input from the OPNAR Senior Advisor?

11. Do any logical framework assumptions require re-evaluation/definition, should new assumptions be considered?

12. What adjustments to project implementation plans are required, if any, to maintain 1,600 kms of priority national roads by 1990? Is this objective still relevant?

13. Is the Technical Assistance mix still relevant as defined in the Project Paper? Do job descriptions and the evaluation process for team members encourage maximum worker productivity/accountability?

14. Do project objectives remain valid within the context of current donor projects and planned donor activities in the transportation sector?

VA. Method of Data Collection

Data Collection shall be done by means of:

A. Review of:

USAID Project Implementation Reports
TA Contracts Monthly Progress Reports
TA Monthly Financial Reports
USAID's Monthly Financial Reports, Project Correspondence
Files-Memos, Letters, Cables, PIO's, PILS, and Waivers
Contract Documents

B. Personal interviews, conferences and discussions with the project staff, mission Project Committee, TA contractor, OFNAR and by internal discussions within the team.

C. Site visits to:

- OFNAR's Central Workshop;
- Training Brigade site;
- OFNAR's Maintenance Subdivisions.

VI. TEAM COMPOSITION

The Evaluation Team will consist of the following recommended members unless changed following discussions with USAID/Chad, provided the changes do not result in an increase in the overall dollar value of the work order.

1 Economic Development/Evaluation Specialist (Team Leader)

2 Senior General Engineers

1 Senior Workshop Superintendent

1 Certified Public Accountant with experience in Highway Programs

5 TOTAL

VII. REPORTING REQUIREMENTS

(A) Draft Report: A summary of the report in French and English must be prepared and discussed in draft with OPNAR, USAID/Chad, and contractors at least three working days prior to the evaluators departure.

(B) Final Report: A final report should be prepared in French and English reporting all the findings. The report should reach USAID/Chad (via a world wide courier service such as DHL) within one month after evaluators depart N'Djamena and should comply with the following reporting requirements:

As described in the attached A.I.D. Evaluation Handbook A.I.D.'s required format for evaluation reports is as follows:

- Executive Summary
- Project Identification Data (See Handbook Appendix A)
- Table of Contents
- Body of the Report
- Appendixes

THE EXECUTIVE SUMMARY states the development objectives of the activity evaluated; purpose of the evaluation; study method; findings, conclusions, and recommendations; and lessons learned about the design and implementation of this type of development activity. (See Handbook Appendix B for more detailed instructions)

THE BODY OF THE REPORT should include discussion of (1) the purpose and study questions of the evaluation; (2) the economic, political, and social context of the project; (3) team composition and study methods (one page maximum); (4) evidence/findings of the study concerning the evaluation questions; (5) conclusions drawn from the findings, stated in succinct language; (6) recommendations based on the study findings and conclusions, stated as actions to be taken to improve project performance. This section of the report should not exceed 40 pages. More detailed discussions of methodological or technical issues should be included in the Appendixes.

APPENDIXES should include 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 may include a brief discussion of study methodology and technical topics if necessary.

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APPENDIX 2

LIST OF DOCUMENTS CONSULTED

The documents and items of correspondence consulted by the Strengthening Road Maintenance Project (SRMP) Evaluation Team include:

Government of Chad Decree No. 057/PR/MTPMP/84 concerning the Organization, Functioning and Establishment of Resources for the Office National des Routes (ONAR), February 5, 1984

Project Identification Document, SRMP, AID, 1984

Project Design SRMP, Human Resources Needs Assessment, Isaac Tedambe, 1985

Project Paper, SRMP, AID, 1985

Project Grant Approval Request, AID, 1985

Project Grant Agreement between the Republic of Chad and the United States of America for the SRMP, 1985, and Amendments

Request for Proposals (SRMP)

Technical Proposal for Technical Assistance Services for SRMP, submitted by Gannett Fleming Transportation Engineers, inc., 1985

Procurement Implementation Orders/Technical (PIO/T):

677-0050-3-50014 Contract between USAID/REDSO/WCA and Gannett Fleming Transportation Engineers, Inc., 1985, and Amendments Nos 1, 2 and 3

677-0050-3-50053 Contract with M. Allmanestianu, 1986

677-0050-3-50054 Support Services Contract, 1986

677-0050-3-50055 Contract for Rehabilitation of ONAR Buildings, 1986

677-0050-3-50066 Contract for Administrative Engineer (USAID), 1986

677-0050-3-50068 Contract for Road Engineer Specialist, 1987

677-0050-3-50073 Contract for Services of Road Engineer Specialists (Parsons Brinckerhoff International, Inc.), 1987

677-0050-3-70016 Contract for Services of a Sociologist, 1987

677-0050-3-70022 Contract with Kooh and Mure (Coopers & Lybrand), for Financial Audit of the SRMP, 1988

677-0050-3-70023 Sociologist (Preparation of Report), 1988

677-0050-3-70027 Contract with Parsons Brinckerhoff International, Inc., for the SRMP mid-term Evaluation Study, 1988

Procurement Implementation Orders/Commodities (PIO/C):

677-0050-3-50056 Procurement of Disposable Duplicate Tools, 1986

677-0050-3-50051 Procurement of Vehicles, 1986

677-0050-3-50061 Procurement of Mercedes Trucks, 1986

677-0050-3-50062 Procurement of Caterpillar Equipment for OFNAR, 1986

677-0050-3-50064 Contract with Sheladia for Procurement of Shop Tools and Equipment, 1986

677-0050-3-70019/28 Procurement of Microcomputers, Spare Parts and Software, 1988

Project Correspondence (memos, letters, cables, etc.), 1984 - 1988

Project Implementation Letters

Project Implementation Schedules

USAID Project Implementation Reports

Project Budgets

Project Financial Matters

Project Recurrent Costs

Project Vehicle Waivers

Progress Reports:

Gannett Fleming Transportation Engineers, Monthly and Quarterly, 1986 - 1988

M. Alimanestianu, 1986 - 1988

M. Spiegel, Planning Engineer, 1987

Minutes of Project Meetings

Travel Requests and Trip Reports

Training Programs:

Road Maintenance Training Brigade Program, Gannett Fleming, 1987

Atelier Central Programme de Formation, Gannett Fleming, 1987

Manuel de Comptabilite Analytique du Cout de l'Entretien Routier , M. Spiegel , 1987

Manuel de Systeme de Programmation et de Planification de l'Entretien Routier ,
M. Spiegel , 1987

Techniques Modernes de Gestion des Resaux Routiers, M. Spiegel, 1987

Bid Documents, Djermaya - Dandi Road; Ministry of Public Works, 1986

Design Modification and Construction Cost Estimate, Djermaya - Dandi Road,
Parsons Brinckerhoff International, Inc., 1987, Final Report

International Conference for the Economic Development of Chad, August 1985:

Volume 1 - The Development Program

Volume 2 - Description of Projects

Follow-up Meeting on the Geneva Round Table of December 85, Transport Sector,
February 1988:

Volume 1 - Presentation of the Strategy and of the Development Program for
1988 - 1993

Volume 2 - Appendices

Reunion de Suivi de la Conference de Geneve sur le Secteur Transports, Proces Verbal,
2 Mars, 1988

Programme de Rehabilitation et d'Entretien Routier (1986 - 1991), BCEOM, 1986:

Rapport General

Annexes

Rapport Complementaire Expertise du Materiel

Report and Recommendation of the President to the Executive Directors on a Proposed
Development Credit to the Republic of Chad for a Highway Maintenance Project,
International Development Association (IDA), July, 1986

Plan d'Action "Projet Entretien Routier Tchad", Direction Generale des Travaux Publics,
1987

Programme de l' Office National des Routes pour l' Annee 1987

Etude de Reorganization de l'Office National des Routes, Louis Berger International, Inc.,
Rapport de Premiere Phase, Janvier 1988

Proposition d'Etude, Reorganization du Systeme Comptable de l'Office National des Routes
du Tchad, Fiduciaire de la Tour, Decembre 1987

Rapport d'Evaluation, Projet de Rehabilitation et d'Entretien Routier, Republique du
Tchad, Fonds Africain de Developpement, Septembre 1987

Projet Sectoriel des Transports, Mission de Pre-evaluation de l'IDA, Aide-Memoire,
13 Fevrier, 1988

Agreement Between the Government of the Republic of Chad and the United States of America on Economic, Technical and Related Assistance, 22 September, 1986

Program Rationale, Chad, Major Development Constraints, USAID/Chad, 1987

Economic Report on Chad, US Embassy, N'Djamena, Chad, 1988

World Bank Economic Memorandum on Chad, 1987

World Debt Tables, 1987 - 1988 Edition, Volume II, Country Tables, Chad, The World Bank

International Monetary Fund (IMF) Staff Report for the 1987 Article IV Consultation and Policy Framework Paper Under the Structural Adjustment Facility, May 1987

Ordonnance No. 11 bis/PR/87 Instituant une Taxe Unique Interieure de Consommation sur Certains Produits Petroliers, 23 Juillet, 1987

APPENDIX 3

LIST OF PERSONS CONTACTED

The Strengthening Road Maintenance Project Evaluation Team interviewed and/or had discussions with the following individuals and agencies:

Ministry of Public Works, Habitat and Urban Planning

Mr. Kassire Delwa Coumakoye, Minister
Mr. Nakoye Nana, Director General
Mr. Benbooh Ewam, Director, Public Works
Mr. Ahmat Nene, Inspector General
Mr. Isseini Gegoum Gami, Director, Control Division
Mr. Henri Desormiere, Technical Advisor
Mr. Hugues Alexandre, Technical Advisor
Mr. Jacques A. Baillon, Advisor to the Director General
Mr. Claude Rouveyrol, Chief of Party, Road Maintenance
Mr. Michel Beaufils, Advisor to the Chief of the Studies Division

Office National des Routes (OFNAR)

Mr. Daoussa Deby, Director
Mr. Ganda Mayoumbilla, Deputy Director
Mr. Djimet Ahmet, Chief Financial Division
Mr. Monodji Mbaidoum, Chief Programming Division
Mr. N.K. Nandet Sarria, Chief Tools and Mechanical Division
Mr. Gossadina Djoinata, Chief N'Djamena District
Mr. Djimounbaye B-ra, Chief N'Djamena Subdivision
Mr. Nang-Yadji Bouloidal, Chief Central Workshop
Mr. Bakoura Djedder, Chief Machine Shop Section
Mr. Rimtoide Natiana, Chief Body Shop Section
Mr. Kodingar Sow-Baye, Chief Engine Section
Mr. Djekole Ndadoum, Chief Heavy Equipment Section
Mr. Mele Mahamat, Chief Electrical Section
Mr. Abdelaziz Ahmet, Chief Central Warehouse
Mr. Ngari Batemengar, Training Brigade Foreman
Mr. M. Font, Advisor to the Districts of N'Djamena and Sarh
Mr. Claude Laurin, Advisor to the Mongo Subdivision Chief

United States Agency for International Development (USAID)/Chad

Mr. Bernard D. Wilder, AID Representative
Mr. Cary Kassebaum, Program Officer
Ms. Dianne Blane, General Development Officer
Mr. Leroy Jackson, Program Development Officer
Mr. Iqbal Chaudhry, Chief Engineer, SRMP Project Manager
Ms. Kathleen LeBlank, Controller
Mr. Myron Tomasi, Executive Officer
Mr. Kurt Fuller, Agricultural Development Officer
Ms. Ana Williams, Administrative Engineer (PSC)
Mr. Abdoul Hamandjoda, Assistant Engineer
Mr. Kevin Guild, Administrative Officer (DMS)
Mr. Isaac Tedambe, Training Specialist

United States Embassy in Chad

Mr. John Blane, US Ambassador to Chad
Mr. Eric Allison, Economic Officer
Mr. Louis Nigro, Political Officer
Mr. Mike Williams, Regional Security Officer

Gannett Fleming Transportation Engineers, Inc.

Mr. Donald M. Slean, Project Manager (Home Office)
Mr. John Ypsilantis, Planning Engineer/Chief of Party
Mr. E.J. Danforth, Field Engineer
Mr. David Holmes, Accountant Advisor
Mr. William Drysdale, Brigade Foreman
Mr. Dwayne Polerecki, Equipment Foreman
Mr. Andre Lambert, Shop Superintendent
Mr. Roger Burton, Parts Specialist
Mr. Dominique Firreri, Engine Shop Foreman
Mr. Azzedine Hanafi, Machine Shop Foreman
Mr. Dennis Tremblay, Service Foreman

Personal Services Contractor

Mr. Mihai Alimanestianu, Senior Advisor, OFNAR

The World Bank

Mr. Amadou Cisse, Principal Engineer

United Nations Development Program (UNDP)

Mr. Francois Tissot, UN Coordinator and Head UNDP
Mr. Pierre Helson, FAI/UNDP Coordinator

Fonds d'Aide et de Cooperation Francais (FAC)

Mr. Jacques Lemerle
Mr. Bernard Tessier

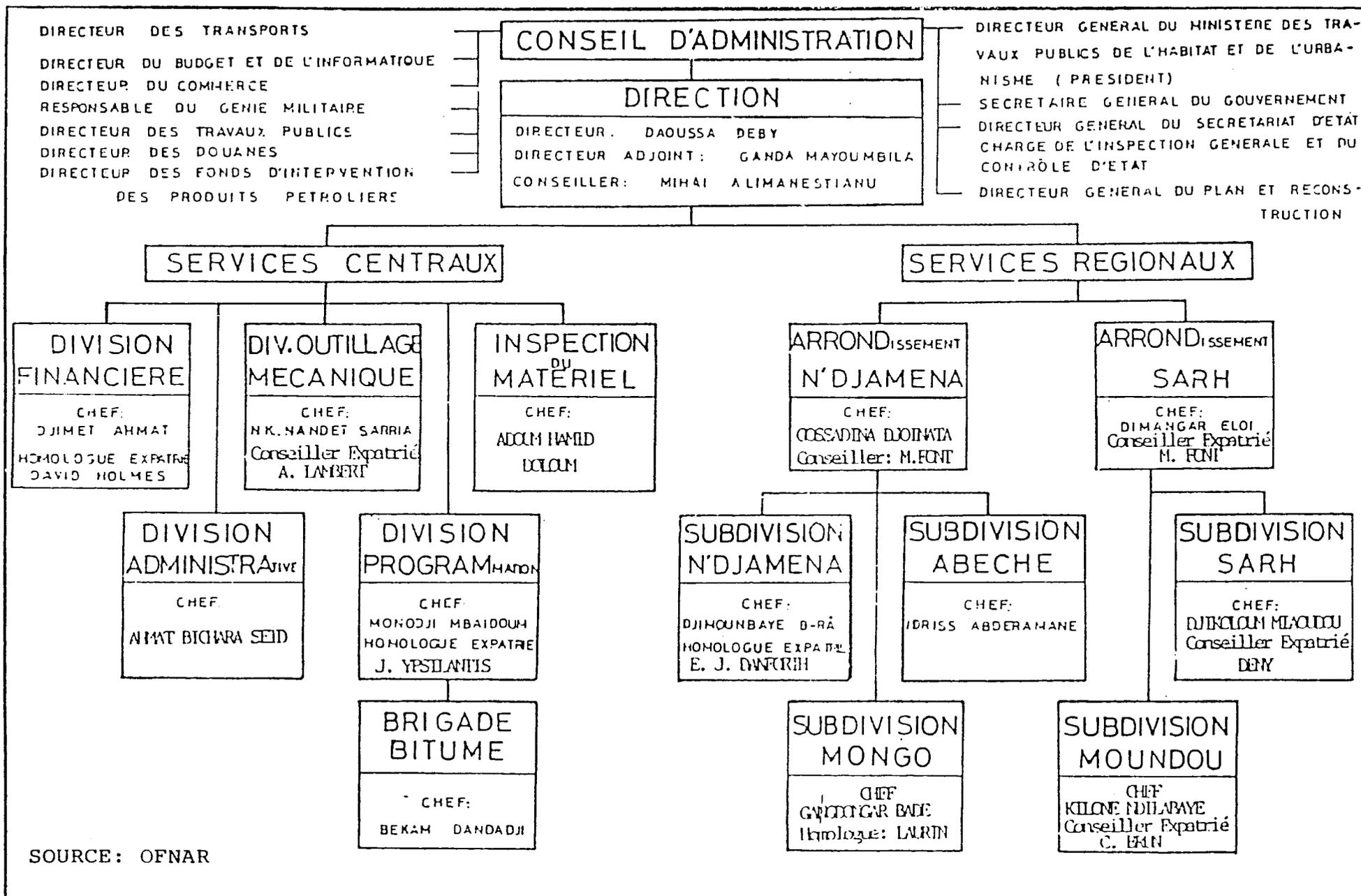
Kooh et Mure (Coopers & Lybrand)

Mr. Alistair Impey
Mr. Celestin Mboukem

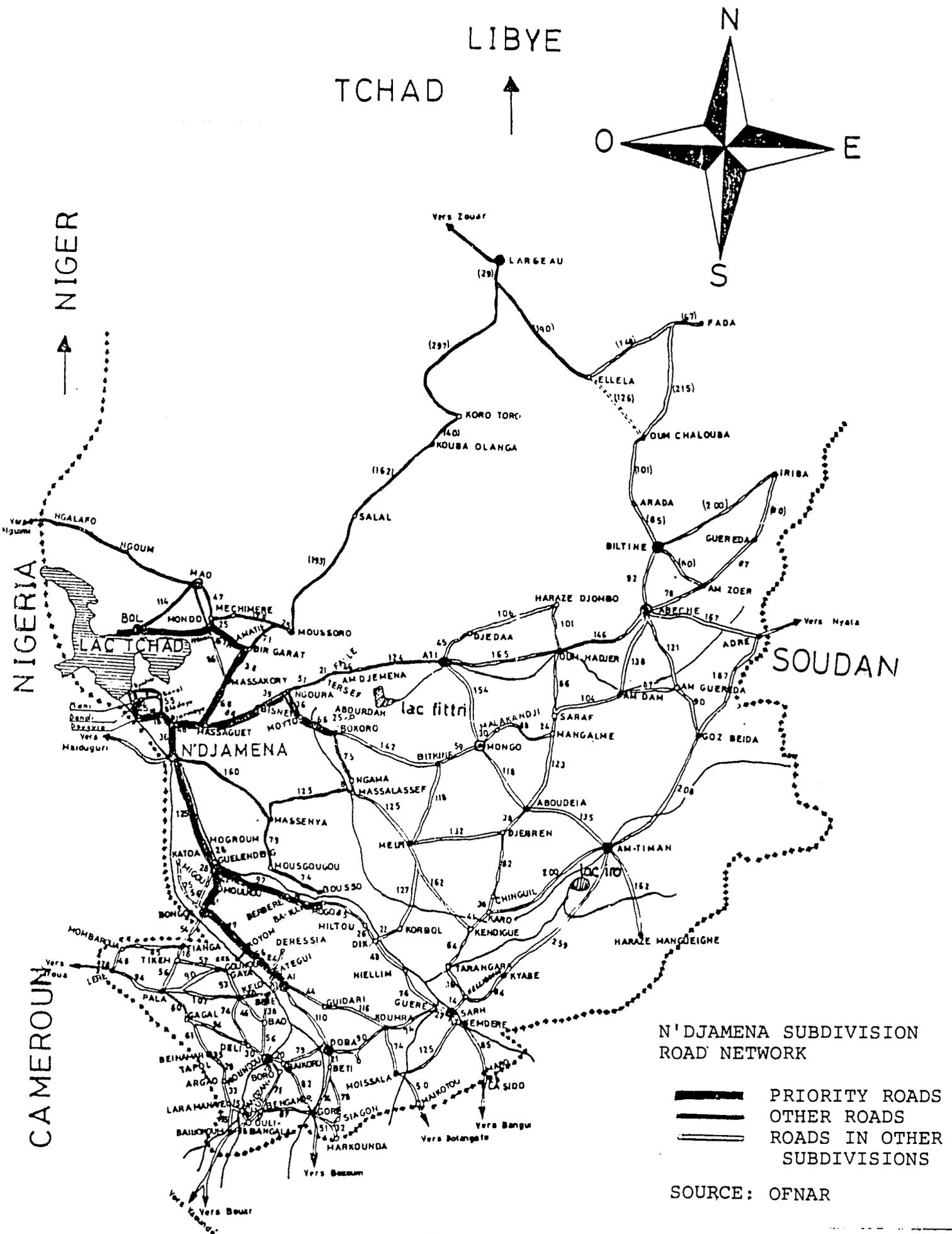
Other Persons Contacted

Mr. Michael I. Kingery, ex Assistant Director and Chief Engineer, REDSO/WCA
Mr. Alex E. Mansour, Civil Engineer
Mr. Paul Libiszowski, SRFMP Team Leader
Mr. Bako Michel, SRFMP Member
Mr. H.T. Bui, Project Manager, OFNAR Reorganization Study
Mr. Noor, Manager, SHO TRACTAFRIC

ORGANIZATION CHART



SOURCE: OFNAR



CURRENT LOGICAL FRAMEWORK

LOP from FY 85 to FY 89
 Total US Funding \$27.5 Million
 Date Prepared May 1988

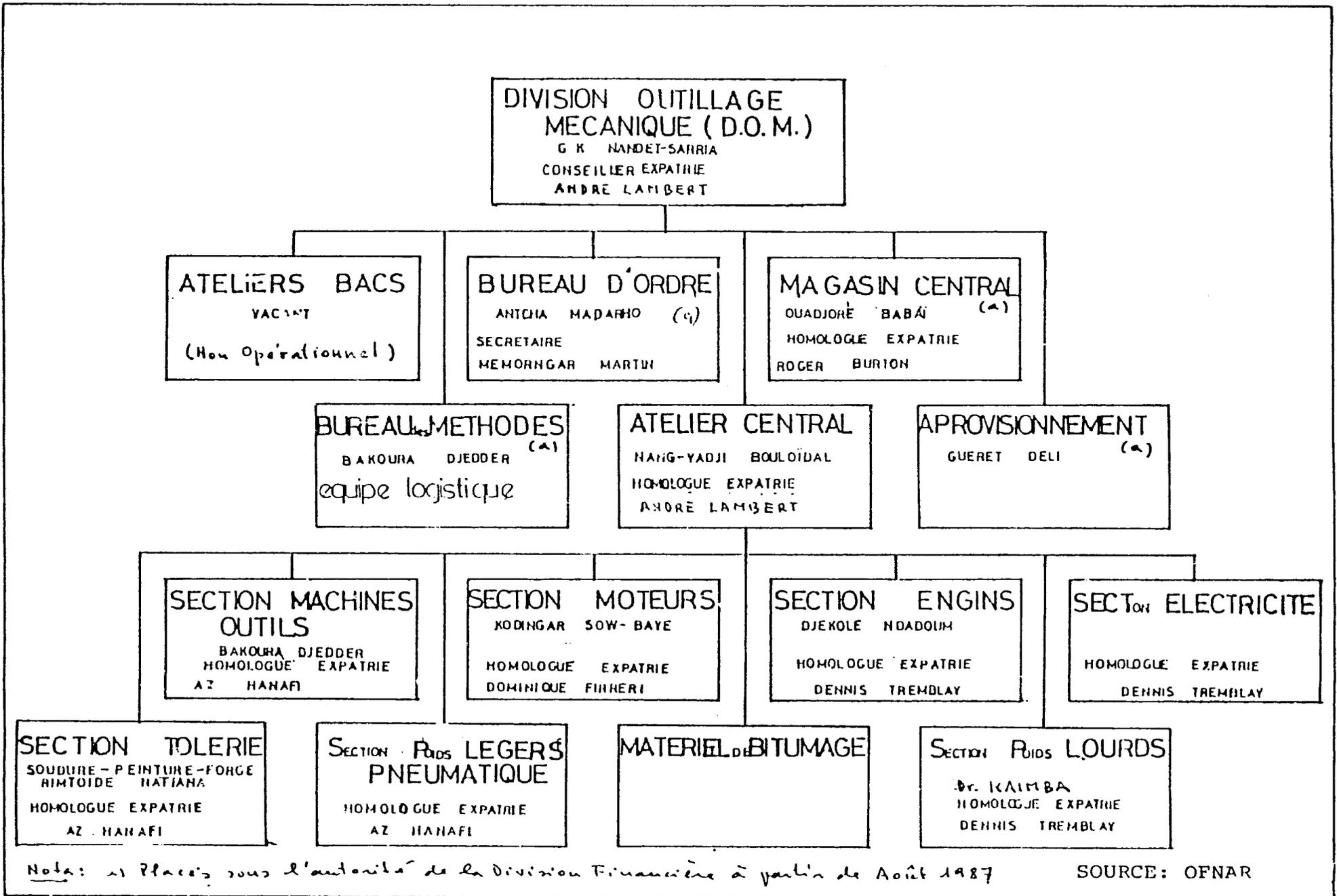
Project Title & Number: STRENGTHENING ROAD MAINTENANCE 677-0050
 NARRATIVE SUMMARY

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Program Goal:	Measures of Goal Achievement:		
To maintain the road network throughout Chad.	1. Increased volume of vehicular traffic on rehabilitated and maintained roads. 2. Increased longevity of road network. 3. Reduced vehicle operating costs.	1. Traffic counts. 2. Records of OFNAR and Ministry of Public Works. 3. Other published statistics of the GOC.	1. Absence of sustained armed conflict. 2. Continuation of efforts towards national unity. 3. Increased economic activity generated over next three years.
Project Purpose:	Conditions that indicate purpose has been achieved:		
To develop a technically competent and financially responsible organization for the maintenance of the road network in Chad.	1. OFNAR regularly maintains roads. 2. OFNAR assumes 50% of project related recurrent costs.	1. Project evaluations. 2. Ministry of Public Works and OFNAR records. 3. Project progress reports.	1. Resources allocated by the GOC supplemented by donor contributions are adequate to support the growing costs of road maintenance.
Outputs:	Magnitude of Outputs:		
1. Rehabilitation of equipment. 2. Trained OFNAR staff. 3. Road maintenance crews functioning and supported by OFNAR capable of accomplishing road maintenance in the N'Djamena Subdivision. 4. Workshops equipped and operating to repair and maintain equipment and vehicles. 5. Road between D'Jermaya and Dandi rehabilitated.	1. Some 50 units of heavy equipment and trucks rehabilitated. 2. Trained personnel: - 50 Mechanics & Shop Techs - 42 Operators & Drivers - 18 Supervisors & Mgrs. 3. Trained maintenance crews in field all year maintaining 1300 km of roads, mainly in the N'Djamena Subdivision. 4. Central & N'Djamena Subdivision workshops maintaining OFNAR equipment. 5. 63 km. of road.	1. Project evaluations. 2. Site inspections. 3. Contractor reports. 4. OFNAR records and reports.	1. Contractor provides technical assistance for institutional development and training for road maintenance and for Central Workshop management/operations. 2. Adequate staff in terms of quality & numbers is furnished to OFNAR. 3. The D'Jermaya-Dandi Rd. is rehabilitated under a host country contract sponsored by the World Bank with a USAID contribution of US\$ 5.5 million.
Inputs, Activities & Types of Resources:	Projected Costs (\$000) (1)		
	<u>US</u>	<u>GOC</u>	
1. Technical Assistance	6436	-	1. Contractor reports.
2. Commodities	9395	-	2. Project progress reports.
3. Road and Facilities Rehab	5600	-	3. USAID Controller records.
4. Other costs	6069	5144	
TOTALS	27500	5144	1. Suitable expatriate personnel with acceptable language available. 2. GOC can furnish adequate candidates for training. 3. GOC can meet its recurrent cost contribution requirements.

(1) Source: USAID/Chad

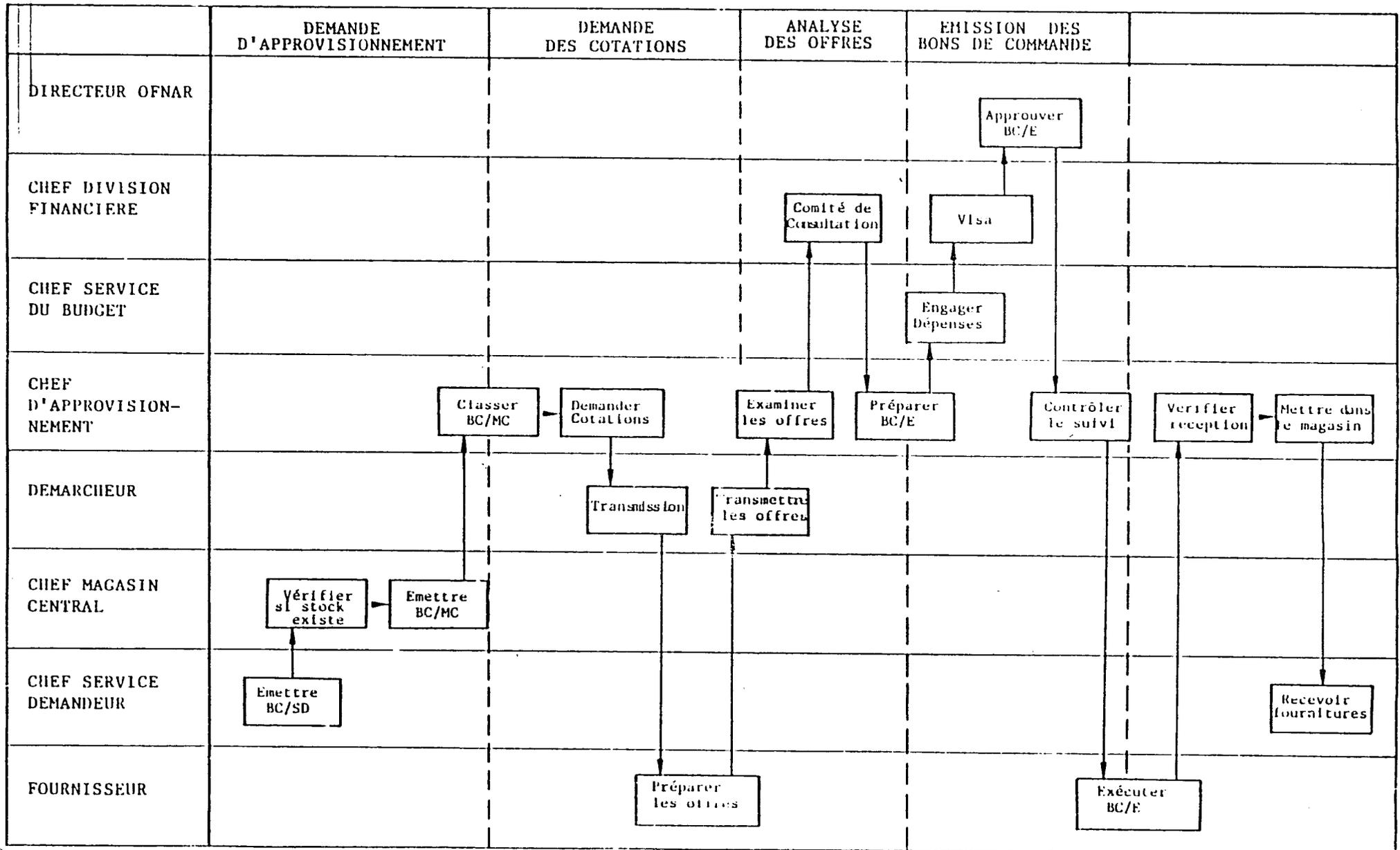
CENTRAL WORKSHOP

ORGANIZATION CHART



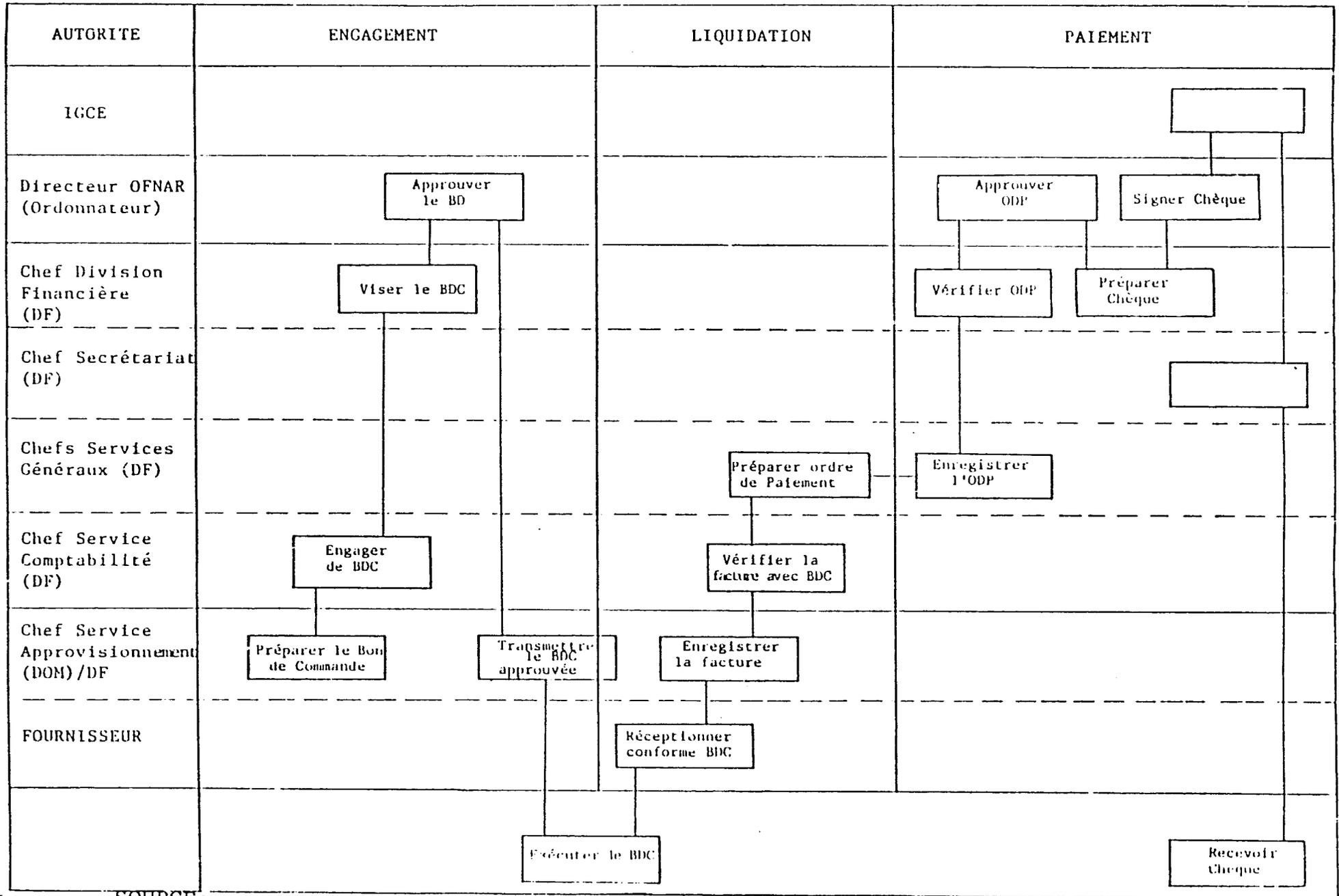
LOCAL PROCUREMENT CIRCUIT

CIRCUIT D'APPROVISIONNEMENT LOCAL



SOURCE: Etude de Reorganization de l'OFNAR, Rapport de Première Phase

CIRCUIT D'ENGAGEMENT / LIQUIDATION / PAIEMENT



SOURCE: Etude de Reorganization de l'OFNAR, Rapport de Première Phase

Strengthening Road Maintenance Project (AID No. 677-0050)
 Recurrent Cost Analysis
 (Millions of CFA francs)

Period	Per PP (1)		Per Budget		Actual Payments (3)	
	A.I.D.	OFNAR	A.I.D.	OFNAR	A.I.D.	OFNAR
86-1 (4)	25.2	6.3	3.7	0.4	0.0	1.1
86-2 (4)	25.2	6.3	3.7	0.4	0.0	1.1
86-3 (4)	25.2	6.3	3.7	0.4	0.0	1.1
86-4	25.2	6.3	3.7	0.4	.0	3.3
Total 1986	100.8	25.2	14.6	1.6	.0	6.6
87-1	53.0	22.7	75.2	18.8	0.9	1.0
87-2	53.0	22.7	75.2	18.8	3.6	2.5
87-3	53.0	22.7	75.2	18.8	2.4	3.4
87-4	53.0	22.7	75.2	18.8	2.4	0.6
Total 1987	212.0	90.9	300.6	75.2	9.3	7.5
88-1	74.5	50.0	76.4	32.7	n.a.	n.a.
88-2	74.5	50.0	76.4	32.7	n.a.	n.a.
88-3	74.5	50.0	76.4	32.7	n.a.	n.a.
88-4	74.5	50.0	76.4	32.7	n.a.	n.a.
Total 1988	297.9	199.8	305.5	130.9	n.a.	n.a.

Explanatory notes:

- (1) PP figures are from Table 1, p. 13. Dollars are converted into CFA francs at PP exchange rate of 450 CFAF:\$1.
- (2) Project budget items 8, 13, 14 & 19.
- (3) Cash payments per quarterly recurrent cost reports.
- (4) Pro-rated. First project recurrent cost report covered the quarters 1, 2 & 3 of 1986.

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PROGRAMME DES INVESTISSEMENTS DU SECTEUR DES TRANSPORTS

Ref : INVESTPL.FOM I A

N° FICHE	P.M. EN COURS 1987 (1)	en MILLIARDS de F.CFA						MONTANTS PROJETS 1988-1993		
		1988	1989	1990	1991	1992	1993			
A : ROAD INFRASTRUCTURE										

1/ REFECTION ROUTES										
	LONGUEUR/KM									
1	SARH-MOUNDOU-LERE	623	0,500					0,000		
2	N'DJAMENA-GUELENGDENG	146		5,000	7,000			12,000		
3	GUELENGDENG-SARH	379	0,500					0,000		
4	N'DJAMENA-DJERMAYA	30		2,500	1,000			3,500		
5	DJERMAYA-MASSAGUET	46		0,500	1,000			1,500		
6	MASSAGUET-NGOURA	125			0,800	0,700		1,500		
7	NGOURA-MONGO	303	0,750	1,050	0,200			1,250		
8	MONGO-AM TIMAN	253	0,400		0,300	1,400		1,700		
9	MONGO-ATI	154		0,400	0,500			0,900		
10	MONGO-OUH HADJER	228			0,150	3,000		3,150		
11	OUH HADJER-ABECHE	146			0,300	1,000		2,000		
12	ABECHE-ADRE	167				0,700		2,000		
13	ABECHE-BILTINE	92				1,000	1,200	2,200		
14	DJERMAYA-DANDI	67		1,000	1,200		0,600	2,800		
15	CONTOURNEMENT DE N'DJAMENA	20		0,500	2,000	1,500		4,000		
16	MASSAGUET-MASSAKORY	68				1,300		1,300		
17	GUELENGDENG-BONGOR	83			1,200			1,200		
18	BONGOR-MOUNDOU	250		1,500	1,500	0,300		3,300		
19	MAIKORO-GORE-BEDAYO	110		1,000				1,000		
20	GORE-GORE	102					0,700	0,700		
21	SARH-SIDO	122		0,400	0,500			0,900		
22	MASSAKORY-BOL-BAGA SOLA	260		5,100	3,100	1,500		9,700		
	TOTAL A-1/ REFECTION	3774	2,250	18,950	20,750	11,300	3,000	1,200	0,000	55,200
2/ ENTRETIEN ROUTIER										

23	ENTRETIEN COURANT		0,800	1,100	1,500	1,800	1,800	1,800	1,800	9,800
24	ENTRETIEN COURANT INTENSIF FED			1,400	1,400	1,400				4,200
25	ENTRETIEN PERIODIQUE							1,300	1,200	2,500
	TOTAL A-2/ ENTRETIEN		0,800	2,500	2,900	3,200	1,800	3,100	3,000	16,500
	TOTAL A/ INFRASTRUCTURE ROUTIERE		3,050	21,510	23,650	14,500	4,800	4,300	3,000	71,700
	A REPORTER PAGE SUIVANTE		3,050	21,510	23,650	14,500	4,800	4,300	3,000	71,700

SOURCE: TRANSPORT SECTOR:
PRESENTATION OF THE STRATEGY AND OF THE DEVELOPMENT
PROGRAM FOR 1988-1993

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REPUBLIQUE DU TCHAD

PROGRAMME DES INVESTISSEMENTS DU SECTEUR DES TRANSPORTS

Ref : INVESTPL.FON 1 B

en MILLIARDS de F.CFA

N° FICHE	EN COURS							MONTANTS PROJETS 1988-1993
	1987 (1)	1988	1989	1990	1991	1992	1993	
REPORT DE LA PAGE PRECEDENTE	3,050	21,510	23,650	14,500	4,800	4,300	3,000	71,750
B : AIR INFRASTRUCTURE								
32	AEROPORT DE N'DJAMENA	0,400	0,200	0,200	0,500	0,500		1,900
33	AEROPORT DE FAYA	0,400	0,250					0,650
34	AEROPORTS SARKH-MOUNDOU-ABECHE	0,400	2,900	2,180				5,350
35	AEROPORTS SECONDAIRES	0,400	0,600	0,620				1,620
TOTAL B / INFRASTRUCTURE AERIENNE	0,000	1,500	3,850	3,000	0,500	0,600	0,000	9,550
C : INSTITUTIONAL STRENGTHENING OF M.T.H.U.								
26	RENFORCEMENT OFNAR/ IDA	2,500	4,000			0,700		4,700
27	RENFORCEMENT OFNAR/ USAID	1,780	1,110	1,610	0,900			3,650
28	RENFORCEMENT PARC MATERIEL / FED		1,530					1,530
29	PARC MATERIEL ET FORMATION / FAD		1,100	0,100				1,200
30	REHABILITATION DE L'E N T P		0,300	0,200				0,500
31	SERVICE DE CONSULTANTS		0,300	0,500	0,200			1,000
TOTAL C/ RENFORCEMENT INSTITUTIONNEL MTPHU	4,280	8,340	2,410	1,100	0,700	0,000	0,000	12,550
A REPORTER PAGE SUIVANTE	7,330	31,450	29,910	18,600	6,000	4,900	3,000	93,800

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REPUBLIQUE DU TCHAD

PROGRAMME DES INVESTISSEMENTS DU SECTEUR DES TRANSPORTS

Ref : INVESTPL.FCN 1 C

en MILLIARDS de F.CFA

N° FICHE	EN COURS							MONTANTS PROJETS 1988-1993
	1987 (1)	1988	1989	1990	1991	1992	1993	
REPORT DE LA PAGE PRECEDENTE	7,330	31,450	29,910	18,600	6,000	4,900	3,000	93,860
<u>D : INSTITUTIONAL STRENGTHENING OF M.T.A.C.</u>								
36	FORMATION PERSONNEL AERONAUTIQUE CIVILE	0,080	0,070					0,150
37	RENFORCEMENT INSTITUTION AVIATION CIVILE	0,100	0,190	0,110				0,400
38	RENFORCEMENT INSTITUTIONNEL M T A C	0,200	0,110					0,310
39	RENFORCEMENT TRANSPORTEURS TCHADIENS	0,100	0,200					0,300
40	ETUDES DEVELOPPEMENT TRANSPORTS	0,200	0,200	0,200				0,600
41	FORMATION PERSONNEL M T A C	0,100	0,100					0,200
42	RENFORCEMENT CAPACITE TRANSIT A DOUALA		0,800	0,500				1,300
43	RENFORCEMENT MOYENS MAINTENANCE DAC	0,050	0,050	0,050	0,050	0,050	0,050	0,300
TOTAL D/ RENFORCEMENT INSTITUTIONNEL MTAC	0,000	0,830	1,720	0,860	0,050	0,050	0,050	3,560
Pour memoire Dépenses 1987	7,330							
COUT TOTAL DES INVESTISSEMENTS 1988-1993		32,280	31,630	19,460	6,050	4,950	3,050	97,420
.....								
COUT TOTAL DU PROGRAMME 1988-1990		32,280	31,630	19,460				83,370
COUT TOTAL DU PROGRAMME 1991-1993					6,050	4,950	3,050	14,050

NOTE : (1) Cette colonne concerne les financements déjà accordés qui ont débuté en 1987 et qui se poursuivent au delà de cette année

R E C A P I T U L A T I F G E N E R A L			
	BESOINS TOTAUX	AIDES PREVUES	A RECHERCHER
1988/1990	83,370	58,620	-24,750
1991/1993	14,050	6,020	-8,030
TOTAL 1988/1993	97,420	64,640	-32,780

REPUBLIC OF CHAD

AID (F.CFA BILLION)

TRANSPORT SECTOR INVESTMENT PROGRAM

REF : INVEST.FOM 2 AT 10/12/87

DATA SHEET NUMBER	TOTAL 1987-1993	IDA	FUNDING OBTAINED AND IN COURSE OF NEGOTIATION						UNDP/FAI	NATIONAL	TOTAL FUNDING PAID 1988-1993	EXPENDITURE COMMITTED 1987	FUNDING TO BE OBTAINED
			USAID	FAD	FAC	GFR	EDF						
BROUGHT FORWARD	71,760	15,500	1,600	3,600	1,250	3,200	5,560	9,800	10,800	51,310	3,050	-20,450	
B : AIR TRANSPORT INFRASTRUCTURE													
32 NDJAMENA AIRPORT	1,900									0,000	0,000	1,900	
33 FAYA AIRPORT	0,650									0,000	0,000	-0,650	
34 SAHIL, MOUNDOU AND ABECHE AIRPORTS	5,380					0,270				0,270	0,000	5,110	
35 SECONDARY AIRPORTS	1,620									0,000	0,000	-1,620	
TOTAL B : 1988-1993	9,550	0,000	0,000	0,000	0,000	0,270	0,000	0,000	0,000	0,700	0,000	-9,280	
C : MTRU INSTITUTIONAL STRENGTHENING													
26 OFNAR/IDA	4,700	4,000							0,300	4,300	2,500	-0,400	
27 OFNAR/USAID	3,620		3,620							3,620	1,780	0,000	
28 EQUIPMENT/EDF	1,530						1,530			1,530	0,000	0,000	
29 EQUIPMENT/FAD	1,200			1,080					0,120	1,200	0,000	0,000	
30 REHABILITATION OF ENTP	0,500									0,000	0,000	-0,500	
31 CONSULTANT SERVICE	1,000	1,000								1,000	0,000	0,000	
TOTAL C : MTRU INSTITUTIONAL STRENGTHENING	12,550	5,000	3,620	1,800	0,000	0,000	1,530	0,000	0,420	11,650	4,280	-9,000	
CARRIED FORWARD	93,860	20,500	5,220	4,680	1,250	3,470	7,090	9,800	11,220	63,230	7,330	-30,630	

REPUBLIC OF CHAD

TRANSPORT SECTOR INVESTMENT PROGRAM

REF : INVEST.FOM 2 AT 10/12/87

DATA SHEET NUMBER	TOTAL 1987-1993	IDA	FUNDING OBTAINED AND IN COURSE OF NEGOTIATION						UNPD/FAI	NATIONAL	TOTAL FUNDING PAD 1988-1993	EXPENDITURE COMMITTED 1987	FUNDING TO BE OBTAINED
			US/AID	FAD	FAC	GFR	EDF						
BROUGHT FORWARD	93,860	20,300	5,220	4,680	1,250	3,470	7,090	9,800	11,220	63,230	7,330	-30,630	
C : MTAC INSTITUTIONAL STRENGTHENING										0,000	0,000	-0,150	
36 CIVIL AVIATION PERSONNEL TRAINING	0,150									0,000	0,000	-0,400	
37 CIVIL AVIATION INSTITUTIONAL STRENGTHENING	0,400									0,300	0,000	0,000	
38 MTAC INSTITUTIONAL STRENGTHENING	0,310	0,310								0,300	0,000	0,000	
39 DOMESTIC CARRIERS	0,300	0,200				0,100				0,600	0,000	0,000	
40 TRANSPORT SECTOR DEVELOPMENT STUDIES	0,600	0,600								0,200	0,000	0,000	
41 MTAC PERSONNEL TRAINING	0,200	0,200								0,000	0,000	-1,300	
42 ENHANCEMENT OF DOUALA TRANSIT CAPACITY	1,300									0,000	0,000	-0,300	
43 STRENGTHENING OF DAC MAINTENANCE RES.	0,300	-											
TOTAL D : MTAC INSTITUTIONAL STRENGTHENING	3,560	1,310	0,000	0,000	0,000	0,100	0,000	0,000	0,000	1,410	0,000	-2,150	
TOTAL INVESTMENT COST	97,420	21,810	5,220	4,680	1,250	3,570	7,090	9,800	11,220	64,640	7,330	-32,780	
TOTAL COST OF 1988-1990 PROGRAM	83,370	21,810	5,220	4,680	1,250	3,570	7,090	9,800	5,200	58,620	7,330	-24,750	
TOTAL COST OF 1991-1993 PROGRAM	14,050	0,000	0,000	0,000	0,000	0,000	0,000	0,000	6,020	6,020	0,000	-8,030	

APPENDIX 13

EXCERPTS FROM THE PROJECT PAPER

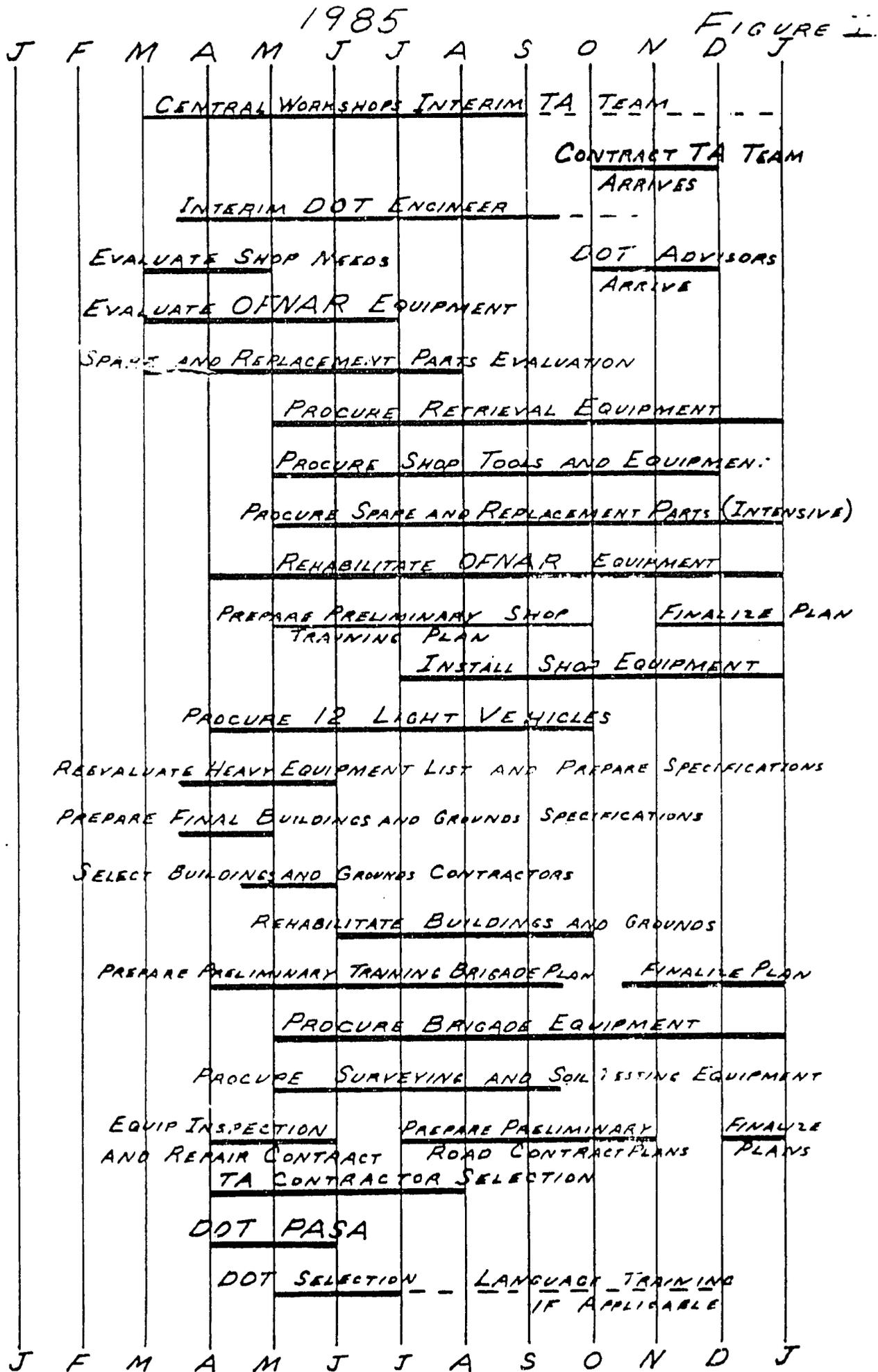
- A. Project Summary - Logical Framework
- B. Project Implementation Schedule
- C. Estimated Annual Disbursement of AID Funds by Activity
- D. Expatriate Level of Effort

PROJECT SUMMARY - LOGICAL FRAMEWORK

LOP from FY 85 to FY 89
 Total US Funding \$27.5 Million
 Date prepared - February, 1985

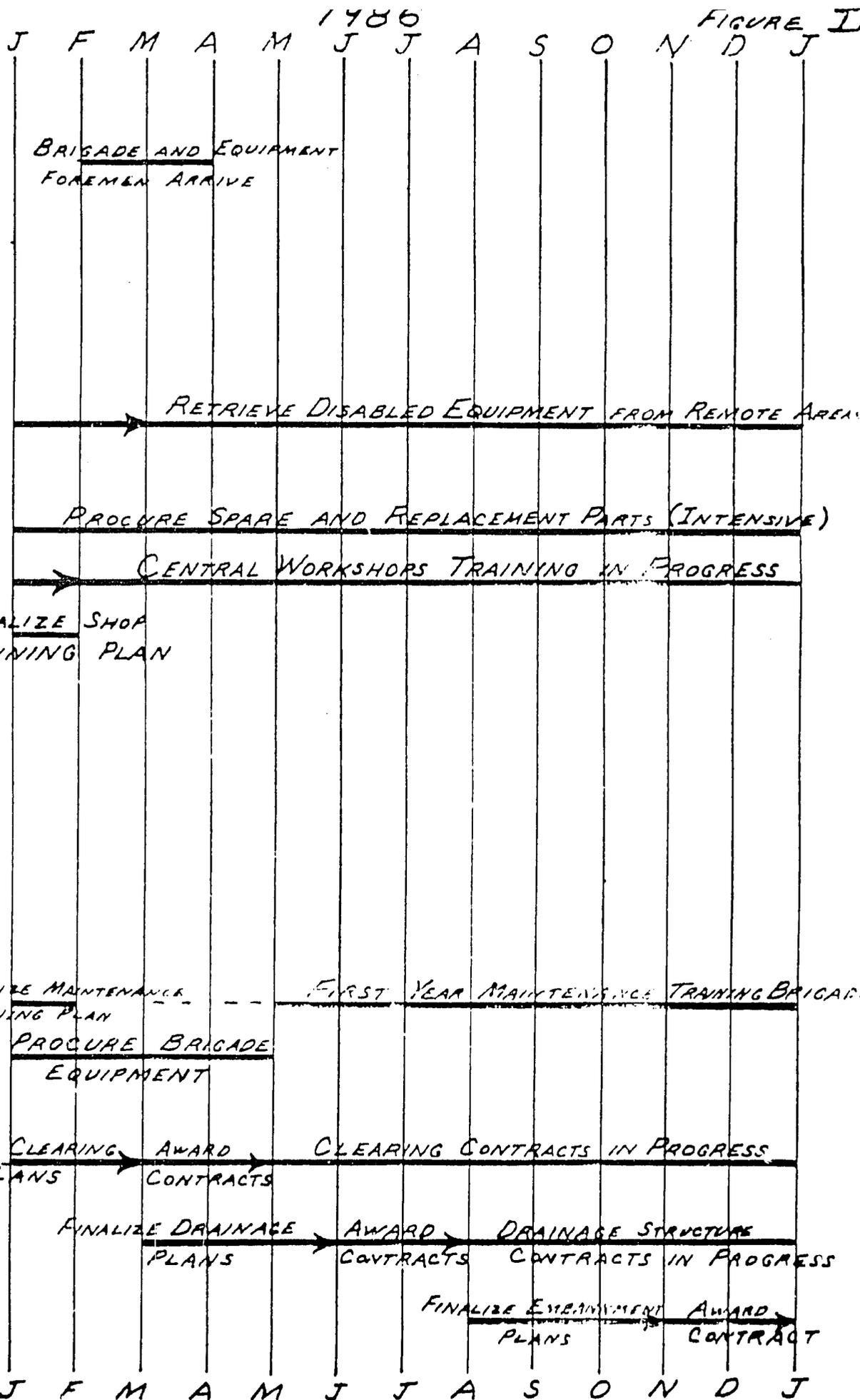
Project Title & Number: STRENGTHENING ROAD MAINTENANCE 677-0050

NARRATIVE SUMMARY	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTION
Program Goal: To maintain the road network throughout Chad	<u>Measures of Goal Achievement</u> 1. Increased total volume vehicular traffic on rehabilitated, updated and maintained roads. 2. Increased volume of agricultural production and ag inputs carried on the road network. 3. Increased longevity of road network. 4. Reduced vehicle operating costs.	1. Records of OFNAR and Ministry of Public Works. 2. Other published statistics of the GOC.	1. Absence of sustained armed conflict 2. Continuation of efforts toward national unity. 3. Increased economic activity generated over next five years.
Project Purpose: To develop a technically competent and financially responsible organization for the maintenance of the road network in Chad.	<u>Conditions that Indicate purpose has been achieved:</u> 1. OFNAR road maintenance crews regularly maintaining 1600 km. of roads. 2. OFNAR central workshop regularly maintaining OFNAR equipment in good operating condition. 3. OFNAR assumes 50 % of project-related recurrent costs.	1. Project evaluations. 2. Ministry of Public Works and OFNAR records. 3. Project reports.	Resources allocated by the GOC, supplemented by donor contributions, are adequate to support the growing costs of road maintenance.
Outputs: 1. Fully trained local staff managing OFNAR. 2. Road maintenance crews functioning and supported by OFNAR capable of accomplishing road maintenance. 3. Central Workshop equipped and operating to repair and maintain equipment and vehicles. 4. Road between Djermaya and Dandi rehabilitated.	<u>Magnitude of Outputs.</u> 1. Trained personnel: - 50 Mechanics and Shop Technician - 42 Operators - 18 Supervisors and Managers 2. Trained maintenance crews in field all year, maintaining 1600 km. of roads. 3. Central Workshop maintaining OFNAR equipment. 4. 63 km. of road.	1. Evaluations. 2. Site inspections. 3. Contractor reports. 4. OFNAR records and reports.	<u>Technical Assistance</u> 1. Contractor has operational responsibility for road maintenance training and for Central Workshop operations, under OFNAR direction. 2. Chad transport economy remains open to private sector initiatives. 3. Adequate staff in terms of quality and numbers is furnished to OFNAR.
Inputs; Activities & Types of Resources	<u>Level of effort (\$000)</u>		
1. Technical Assistance	U.S.	GOC	1. Contract quarterly reports.
2. Commodities	6437	-	2. Project quarterly reports.
3. Road and Facilities Rehab.	4955	-	3. USAID Controller records.
4. Other Costs	5960	-	
5. Inflation and Contingencies	4493	3497	
TOTALS	5661	1647	1. Suitable US personnel available with acceptable language capability. 2. GOC can furnish adequate candidates for training.
	27500	5144	



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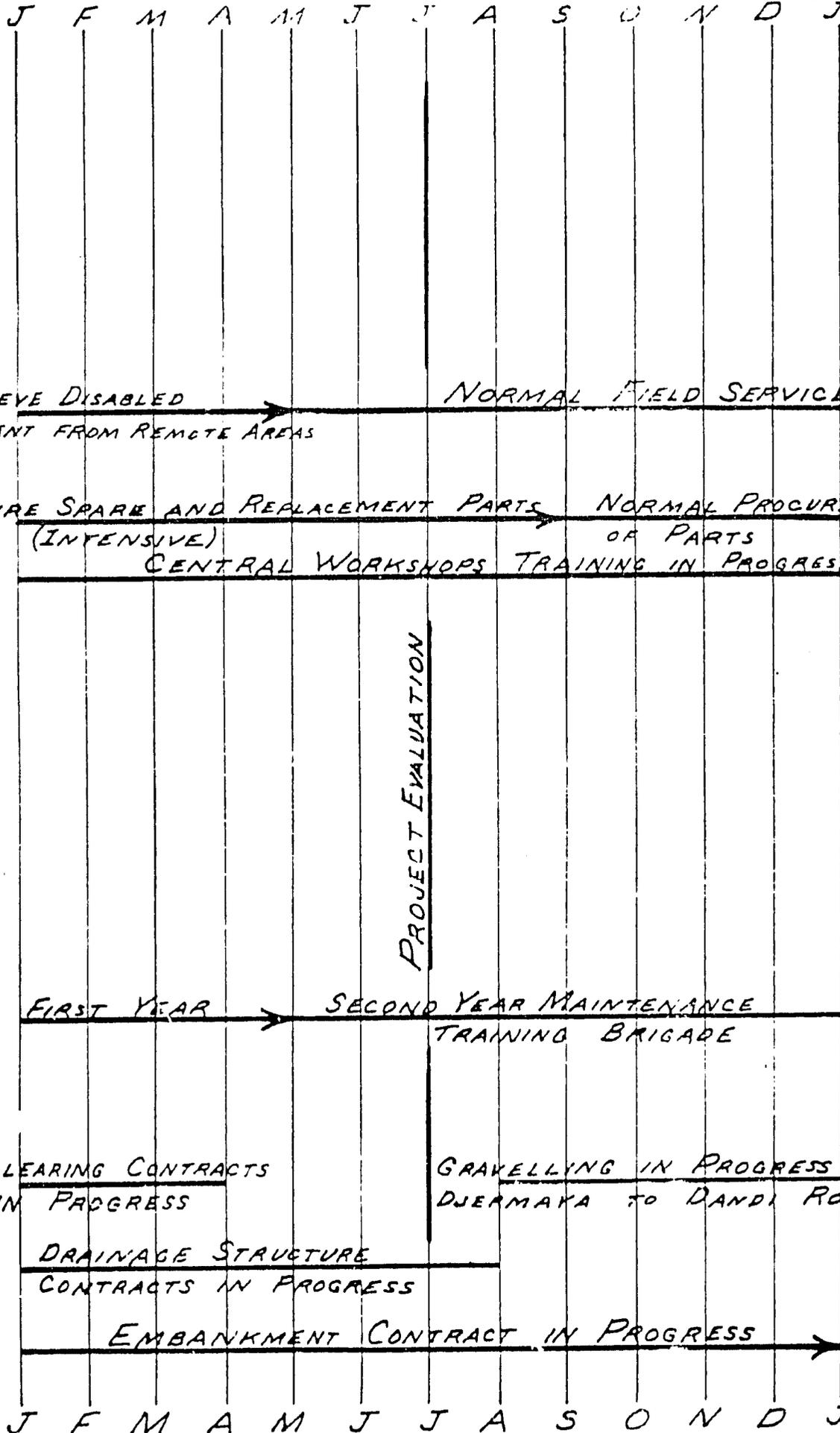
FIGURE II.9



11

1987

FIGURE II



RETRIEVE DISABLED EQUIPMENT FROM REMOTE AREAS

NORMAL FIELD SERVICE

PROCURE SPARE AND REPLACEMENT PARTS (INTENSIVE)

NORMAL PROCUREMENT OF PARTS

CENTRAL WORKSHOPS TRAINING IN PROGRESS

PROJECT EVALUATION

FIRST YEAR

SECOND YEAR MAINTENANCE TRAINING BRIGADE

CLEARING CONTRACTS IN PROGRESS

GRAVELLING IN PROGRESS DJERMAKA TO DANDI ROAD

DRAINAGE STRUCTURE CONTRACTS IN PROGRESS

EMBANKMENT CONTRACT IN PROGRESS

J F M A M J J A S O N D J

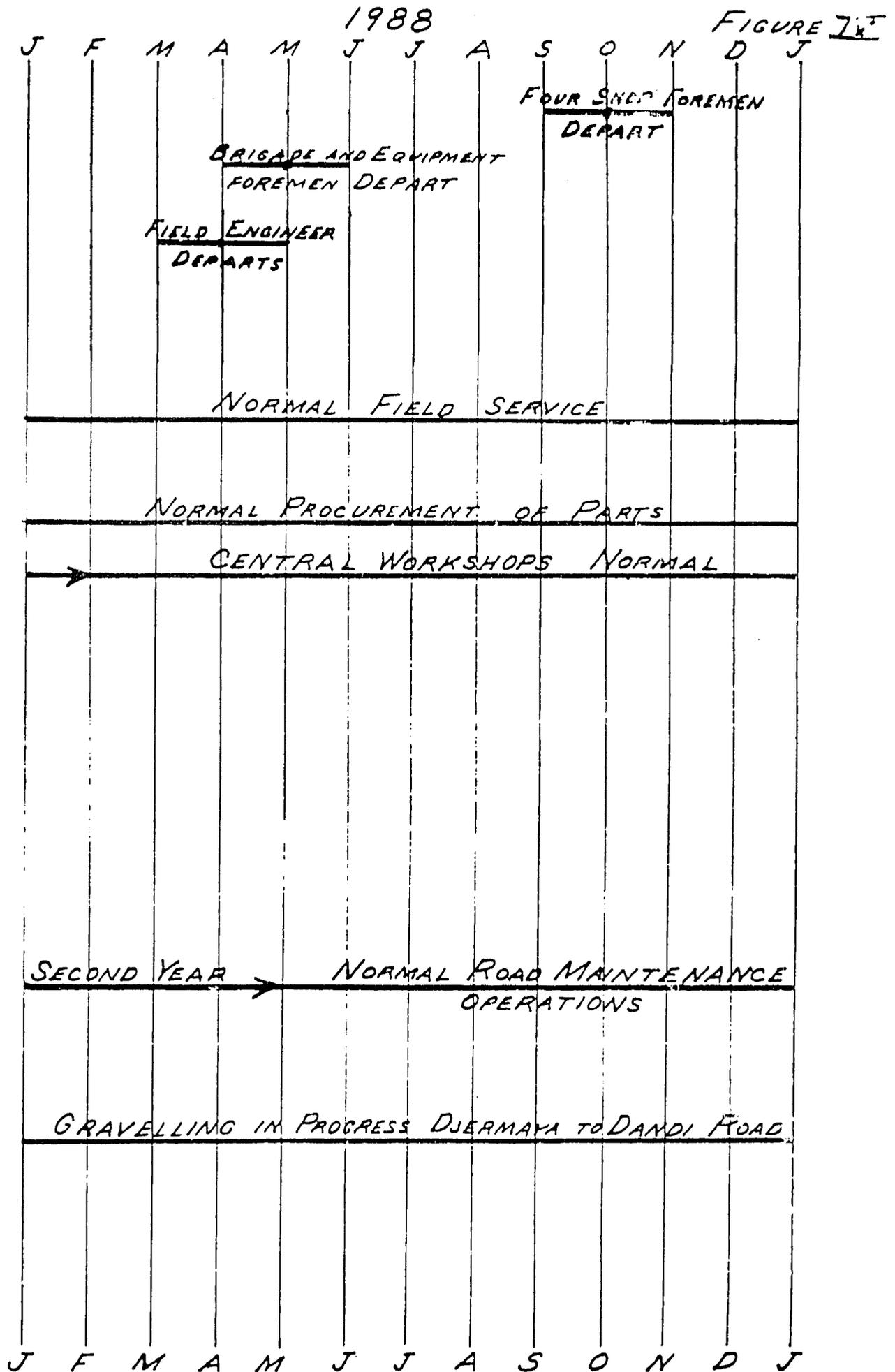
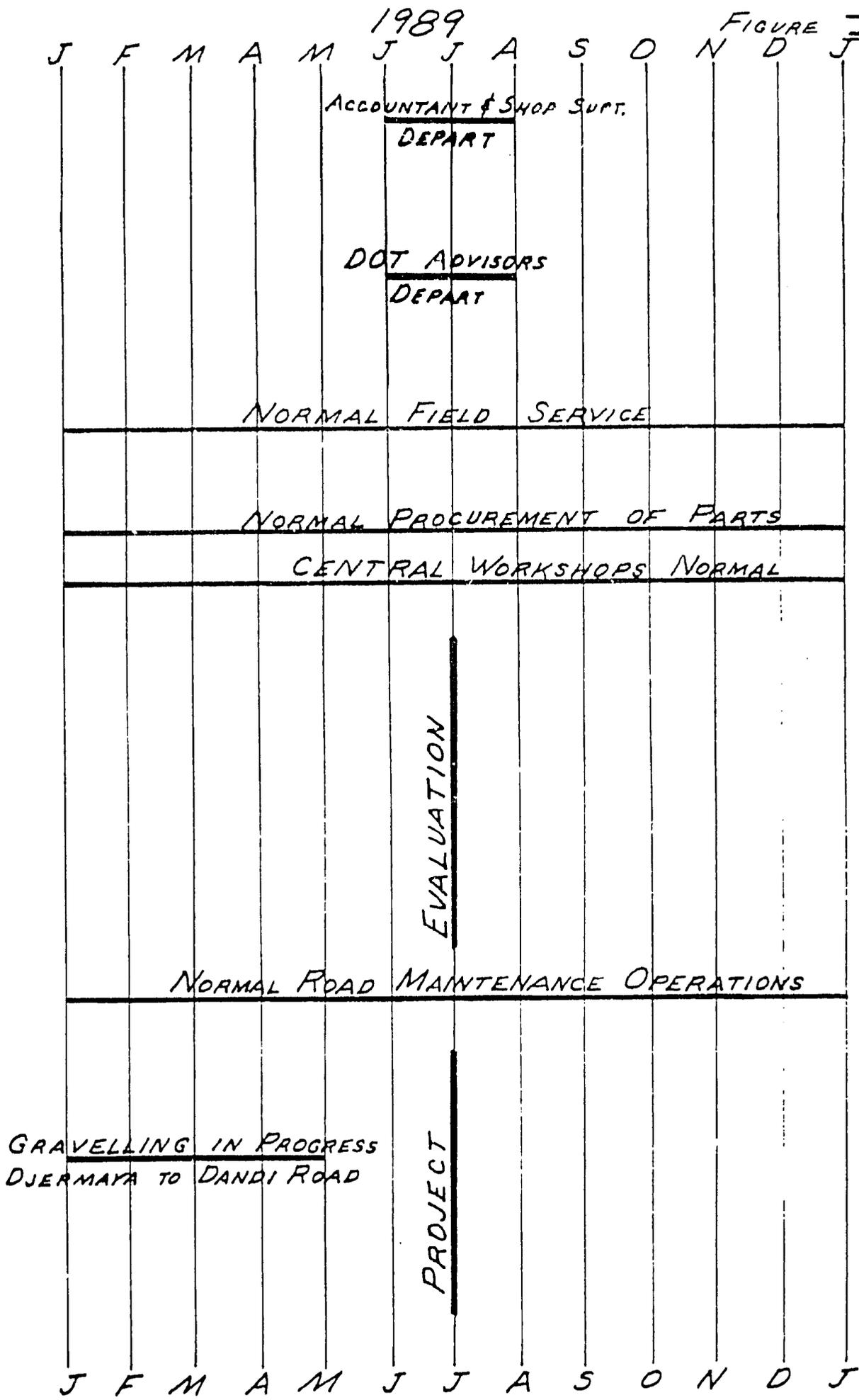


FIGURE IV



ESTIMATED ANNUAL DISBURSEMENT OF AID FUNDS BY ACTIVITY (\$ 000)

Inputs	1st Year	2nd Year	3rd Year	4th Year	5th Year		Total
<u>Technical Assistance</u>							
DOT PASA	142	212	221	212	133	FX	920
TA Contract	674	1544	1689	1178	201	FX	5286
Short Term	50	50	50	50	25	FX	225
<u>Commodities</u>							
Heavy Equipment	1550	250	50	-	-	FX	1850
Light Vehicles	175	-	-	30	-	LC	205
Machine & Hand Tools	300	200	-	-	-	FX	500
Recovery Spare Parts	150	150	-	-	-	FX	300
Road Maint. Materials	-	200	600	600	600	LC	2000
Furnishings & Equip	100	-	-	-	-	FX	100
<u>Contractor Services</u>							
Buildings Rehab.	150	-	-	-	-	LC	150
Road Rehabilitation	-	2000	2000	1510	-	LC	5510
Equipment Recovery	150	150	-	-	-	LC	300
<u>Other Costs</u>							
Admin. Support Services	8	33	33	33	16	FX	123
Rent and Utilities	9	36	36	36	18	LC	135
Training	10	10	10	10	-	LC	40
Vehicle O&M	5	60	60	60	60	LC	245
Trng Brigade Equip O&M	-	650	650	-	-	LC	300
Hvy Equipment Transport	-	100	100	-	-	LC	200
Other Equip Operations	-	100	500	700	1000	LC	3000
Evaluations and Audits	-	-	75	-	75	FX	150
Subtotals	3473	5745	6074	4419	2128		21839
Contingencies (15%)	521	862	911	663	319		3276
Inflation (5% compounded 0.0500, .1025, .1576, .2155)	-	330	716	801	538		2385
GRAND TOTAL	3994	6937	7701	5883	2985		27500

EXPATRIATE LEVEL OF EFFORT

<u>DOT PASA Positions</u>	<u>Mo.</u>	<u>-----1985-----</u>	<u>====1986====</u>	<u>-----1987-----</u>	<u>====1988====</u>	<u>-----1989-----</u>
		<u>JFMAMJJASONDJFMAMJJASONDJFMAMJJASONDJFMAMJJASONDJFMAMJJAGON</u>				
Advisor to Director, OFMAR	45	xxxxxxxx	RRxxxxxxxx	HLxxxxxxxx	RRxxxxxxxx	xxxxxxxx
Advisor to OFMAR Planning	45	xxxxxxxx	RRxxxxxxxx	HLxxxxxxxx	RRxxxxxxxx	xxxxxxxx

DOT total	90					
<u>Contractor Positions</u>	<u>Mo.</u>	<u>-----1985-----</u>	<u>====1986====</u>	<u>-----1987-----</u>	<u>====1988====</u>	<u>-----1989-----</u>
		<u>JFMAMJJASONDJFMAMJJASONDJFMAMJJASONDJFMAMJJASONDJFMAMJJAGON</u>				
Advisor to OFMAR Controller	45	xxxxxxxx	RRxxxxxxxx	HLxxxxxxxx	RRxxxxxxxx	xxxxxxxx
Workshop Superintendent	45	xxxxxxxx	RRxxxxxxxx	HLxxxxxxxx	RRxxxxxxxx	xxxxxxxx
Engine Maintenance Foreman	36	xxxxxxxx	RRxxxxxx	HLxxxxxx	RRxxxxxxxx	
Machine Shop Foreman	36	xxxxxxxx	RRxxxxxxxx	HLxxxxxx	RRxxxxxxxx	
Service Foreman	36	xxxxxxxx	RRxxxxxxxx	HLxxxxxx	RRxxxxxx	
Parts Specialist	36	xxxxxxxx	RRxxxxxxxx	HLxxxxxx	RRxxxxxx	
Field Engineer	45	xxxxxxxx	RRxxxxxx	HLxxxxxx	RRxxxxxx	
Brigade Forman	26		xxxxxx	RRxxxxxx	RRxxxxxx	
Brigade Maint Forman	26		xxxxxx	RRxxxxxx	RRxxxxxx	

Totals	317			HL = Home leave	RR = R & R	

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