



# MORRISON-MAIERLE INC.

CONSULTING ENGINEERS

Working  
COPY



ENGINEERS — EARTH SCIENTISTS — PLANNERS

STRUCTURAL

WATER RESOURCES

ENVIRONMENTAL

TRANSPORTATION

53

PD-APP-192  
ASN=34541

## MONTHLY PROGRESS

### REPORT

JANUARY, 1984

MAURITANIAN RURAL ROADS

682 - 0214

CONTRACT NO. AFR-0214-C-00-3045-00

CONSULTANT: MORRISON - MAIERLE, INC.



## 2. PROJECT DESCRIPTION

The specific objective of this Project is to provide road construction and for rehabilitation of some 205 Km of track between Kaedi - M'Bout - Selibabi - Gouraye to all weather standards to make the Guidimaka/Gorgol area more accessible to commercial and social service.

## 3. PROJECT DATA

### 3.1 Road Location and Length:

Kaedi - M'Bout	(110 Km)
M'Bout - Km 70	(completed by UNDP)
Km 70 -- Selibabi	(49 Km)
Selibabi - Gouraye	(46 Km)

### 3.2 Road Design Criteria:

2 lane 80 Km/hr all waether earth road  
5.5 meters in width (7.0 meters)  
60 cm road section (45 cm base x 15 cm surface)

### 3.3 Construction Period and Cost

24 month period beginning May 1983  
and ending May 1985.  
US\$ 6,000,000.

- \* Base course 7.90 meters wide - changed inslope to give 7.0 meter finish grade - Two scrapers (3.5 meters each) passing need 7.0 meters

## 4. PROJECT PROBLEM'S AND CONSULTANT'S RECOMMENDATIONS

### 4.1 Replacement and spare parts continue to present some problems. Lack of the above mentioned materials has caused the project to suffer and only minimum production has taken place.

Consultant's action and handling of the above has been marginal to say the least. Problems in proper requisition format and lack of communications has made the problem worse. As of the time of writing and with the help of Mr. Poulin, we believe things will improve. Records as to what has been ordered and when it was ordered are being brought up to date. With this in hand the Consultant will not only follow the progress but will be in a position, if need he, to push for orderly and prompt deliveries of the procurement items or at least know the status of the same.

- 4.2 Lack of reliable transportation is also a problem. There is now two Toyotas, 404 Peugeot, Mercedes, Unimog and a Jeep Cherskee in running order. The Peugeot and the Jeep are only used in the camp area due to lack of spare tires.

The Consultant has repeatedly reported this monthly and will not belabor it anymore. Both tires and replacement vehicles are very near to being a reality.

- 4.3 The new shop facility is no longer a problem. The shop facility is presently under construction and is scheduled for completion around the 1st of April.

- 4.4 ANTICIPATED PROBLEMS

SURFACE COURSE CONSTRUCTION - DUMP TRUCKS

The application of the surface course to the constructed base section will be done by using two different construction methods. Scrapers will be used on short haul distances while dump trucks will be used for the long haul distances.

Exploration continues as much as possible on a daily basis for new sources of surfacing material. To date there have been two different sources of surfacing material discovered. The first source is approximately 2.6 Km to the east of Km 70. The second source is approximately 200 meters west of Km 75.

We are confident that we will continue to find new sources of surfacing material along the route though at this time it is difficult to speculate on location because much of the surfacing material found to date was only discovered after removing 1-2 meters of overburden,

As construction proceeds we are discovering that the present fleet of trucks is failing to maintain the same daily rate of production (lineal meters) as the scrapers. Records to date indicate the scrapers are out producing the trucks by a factor of approximately 1.5 times.

Each day of operation the trucks fall a little bit further behind the scraper operation. The problem is further compounded considering that the trucks haven't even started the final surface course and are now just working on the second course.

The main reason that truck production is so low is directly related to truck availability. Average truck availability for a 2 month period from November 29th to January 25th was 2.3 trucks per day available and working on road construction.

The present truck fleet is composed of 6 trucks. The 6 trucks and their operational status are listed below:

<u>TRUCK NUMBER</u>	<u>STATUS</u>
6004 - 1	Down-requires rear tandem oil seals
6004 - 3	Down-requires engine overhaul
6004 - 4	Down- trunion housing
6004 - 5	Operational
6004 - 6	Operational
6004 - 7	Operational

Each truck listed also requires the following major repairs plus other minor repairs specific to each unit to return them to an acceptable level of reliability.

1. Major overhaul of the tandem axle trunions and shafts.
2. Rebuilding of dump body floors, hoists and hydraulic pumps.
3. Replacement of motor mounts.
4. Replacement of brake drums and shoes.

Though the trucks will require a considerable amount of time, effort and money to rebuild they should by no means be considered as salvage. Each truck can be brought back to a good level of serviceability and then properly maintained at that level. As a side benefit the restoration will provide a very practical type of on the job training for the Mauritanian mechanics.

Once the offshore spares arrive the trucks will have to be taken one by one from production to complete the repair process. Once a truck is removed from production for repairs it should not be allowed to return until all of the repairs are complete. A partial repair of a unit will only compound problems in the future.

Considering several factors such as the ever increasing daily breakdown rate, time required for offshore spares arrival and the total time required to complete truck repairs once the spares arrive it is apparent that the project will soon suffer due to a shortage of trucks available for hauling surface material.

Proposed solutions to hauling the required surface material are as follows:

1. Divert scrapers to the surfacing operation. This will be done and will provide relief in areas where haul distances are not excessive.
2. Convert 1 Mack water truck into a dump truck. This would be possible by using the dump body and other parts from the wrecked Mack dump along with some additional required offshore parts.
3. Purchase additional trucks. This proposal would not even have been considered due to the time required to acquire new trucks and the probability of the introduction of another non standard group of equipment into the construction fleet. The proposal was brought about by the realization of the existence of 3 new Mack dump trucks in Nouakchott. The three Macks are identical to the existing fleet except for the dump bodies. The purchase of 3 new trucks would undoubtedly increase production and provide a cushion to the load on the existing fleet which would allow the necessary repairs to be made.

#### 4.4 DRAINAGE STRUCTURES

The ordering and shipment of drainage structures (culverts) required for the KM 70 - Selibabi section should commence as soon as possible in order to avoid a logistical problem of controlling grading and drainage operations separated by long distances.

#### 5. PROGRESS

##### 5.1 OVERALL

Rural Road construction on the section KM 70 to Selibabi has been completed to approximately Station 9 + 50 Km. Both the 1st and 2nd base Course lifts have been constructed. Both shops, M'Bout and Km 77, working on equipment and maintaining field machines.

##### 5.2 THIS MONTH

Road construction completed this month was from station 6 + 37.6 to 9 + 50 and included all or parts of the 1st and 2nd lifts of base Course, (45 Cm.). Construction completed was done with an average of 2.3 trucks and one 530 loader, two dozers and 2 motor graders. Estimated material placed was 17,650 cubic meters.

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### 5.3 DESIGN

Daily field design and layout by Km 77 personnel going very well. Drainage report complete and has been delivered to USAID/Washington and Mauritania and Mauritanian T.P. Design on overall project a continuing factor.

### 5.4 CONSTRUCTION

1st lift of base course placed from Station 4.20 Km to 9.50 Km.

2nd lift of base course placed from Station 0.00 Km (equals Km 70 UNDP project) to 8.00 Km. No surface placed to date.

### 5.5 ROADWAY MAINTENANCE

No roadway maintenance performed during the month of January except for own use on haul roads and etc.

### 5.6 EQUIPMENT MAINTENANCE

On going daily on all construction and travel vehicles. Equipment maintenance and repair jacket files were opened. Work continued on institution and posting parts numbers on the Cardex system.

### 5.7 TRAINING

Formal training at M'Bout included some electrical and Arc Air cutting classes. Non formal on the job training continues daily at both camp locations.

### 5.8 PROCUREMENT

Requisitions numbering 235 thru 271 have been written and forwarded to USAID/NOK, and include everything from much needed Mack truck parts to Caterpillar Epoxy. Major items received this month included the Arc Air cutting attachment for the welding machine and two (2) Caterpillar 621 B Scrapers.

## 6. QUANTITIES

### A. Planned Roadway Construction

9.80 Km, complete base and Surface course and 20% of the drainage structures.

### B. Actual Roadway Construction

6.60 Km, 1st and 2nd base course only and no drainage structures.

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7. EQUIPMENT PROCUREMENT

- 7.1 Two (2) Caterpillar 621-B Scrapers received from GIRM/NKTT. Arrived on January 25, 1984. The scrapers were put into production on January 29 after checkout and minor repairs at the M'Bout shop.

8. BRIGADE PERSONNEL STAFFING

- 1 Superintendent
- 1 Labor Forman
- 8 Surveyors
- 1 Office Accountant
- 8 Mechanics
- 3 Mechanics Helpers
- 1 Warehouse man
- 7 Greasers and Tiremen
- 2 Checkers
- 2 Welders
- 1 Plumber
- 13 Drivers
- 12 Guards
- 1 Rebarman
- 4 Electricians (2 Auto and 2 Building)
- 1 Mason
- 16 Laborers
- 3 Carpenters
- 11 Operators and Helpers
- 2 Cooks
- 3 House Keepers

9. CONSULTANT'S PERSONNEL STAFFING

- 9.1 David A. Paulson (Acting)  
Chief of Party

- 9.2 Gerard Garneau  
Superintendent
  
- 9.3 John Nicholson  
Field Mechanic (77 Km Camp)
  
- 9.4 Marion Iwankowski  
Shop Mechanic (M'Bout Camp)

NOTE: C.O.P. Lee Albee terminated 21 Jan. 84

10 SUMMARY OF PAYMENT CERTIFICATES

- 10.1 (Force Account Construction Brigade) a total of 101 personnel were on the payroll during January 84.

Total payroll was 1,515,373 UM

Deductions of 172,085 UM for a Net Payroll of 1,343,288 UM

11. FINANCIAL STATUS

Up-to-date Project and Consultant Status not known at this time.

Total as of 30 Nov. 1983 (Donnelly Memo)

US\$ 1,204,782.56

These figures will be up date as soon as possible.

12. PROGRESS CHART

Attached January Use only - will develop new bar Chart and S Curve Stateside

13. SCHEDULED PROGRESS FOR NEXT MONTH

13.1 Procurement

Analize, inventory and prepare requisitions for the 6 month operational requirements for the following offshore purchases:

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- 1) Tires
- 2) Batteries
- 3) Filters
- 4) Oil
- 5) Cutting edges
- 6) Other fast moving spares

### 13.2 Warehouse

Continue updating and expanding the cardex system including posting all offshore requisitions into the system to eliminate duplicate ordering of spares.

Complete a physical inventory at existing spare parts and update cardex system.

### 13.3 Equipment repair and maintenance

- 1) Continue development of a equipment repair and maintenance record system.
- 2) Complete the repair of the Rexnor Roller
- 3) Scheduled repairs are not planned as of this date due to lack of sufficient quantities of spare parts to perform the required repairs. A scheduling process for major repairs will be instituted once the spares are received.

### 13.4 Training

Scheduled training will focus primarily on record keeping tasks in the following areas:

- 1) Warehouse
  - a) Cardex systems (posting part numbers and quantities on order)
  - b) Issue slips (posting parts used on cardex)
  - c) Inventory posting (physical Inventory and posting).

#### 2) Production records

A construction equipment production record system was instituted in late January. Daily production records are now being kept for each piece of construction machinery on the job.

#### 3) Equipment maintenance and repair records

Training will begin on all the necessary tasks involved in maintaining equipment repair and maintenance records.

- 4) Informal on the job training will continue in the areas of equipment maintenance, equipment repair and road construction practices.

### 13.5 Road Construction

#### Base course:

With the arrival of the 2 Caterpillar 621B Scrapers, base course production has increased dramatically. Provided that breakdowns are kept to a minimum daily production should range in the area of 0.5 - 0.9 km per day depending on haul lengths and depth of fill required. Anticipated base construction for the month of February is 13.0 Km.

#### Second course:

Presently the second course application is being accomplished by hauling select material from borrow pits with the Mack Dump Trucks. Second course production is currently averaging approximately 400 meters/day and lagging base construction by about 3 Km. Anticipated second course production should be approximately 8.0 Km.

#### Surface course:

No surface course has been placed on the entire length of the alignment to date nor is any production planned for this month. The rationale for not placing a surface course is as follows:

- 1) Average daily truck availability from November 29th to present has been 2.3 trucks per day available for work. Consequently production rates are low.
- 2) The second course which consists of select granular material is now being used as a surface course.
- 3) Construction priorities are to first construct the base and second which will enable the trucks to operate on a good haul road thereby minimizing equipment failures due to operation over rough terrain.

Problems and proposed solutions to the timely completion of the wearing course construction will be discussed under anticipated problems (Sec. 4.4).

#### 14. VISITORS (M'BOU)

14.1	George POULIN	Jan. 9, 10 & 11
14.2	Larry LARSEN	Jan.20 - 31 incl.
14.3	Dave PAULSON	Jan.20 - 31 incl.
14.4	George POULIN	Jan.25 - 30 incl.

Numerous Mauritians visit the Camp on a daily basis. A log of visitors and titles will be kept starting February 1st. These will not be reported monthly as such, but will be available for inspection.

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MAJOR PLANT AND EQUIPMENT (January)

EQUIP. No.	DESCRIPTION	UTILIZATION	
		STATUS	RATE (%)
6027 - 28	MACK TRUCK w/LOWBOY	RUNNING	100
6008	MACK LUBE TRUCK	RUNNING	100
6007	MACK TRUCK w/HOIST	DOWN	0
6005 - 1	MACK WATER TRUCK	RUNNING	100
6005 - 2	" " "	DOWN	0
6005 - 3	" " "	RUNNING	100
6006 -	MACK FUEL TRUCK	RUNNING	100
6004 - 1	MACK DUMP TRUCK	DOWN	0
6004 - 2	" " "	SALVAGE	0
6004 - 3	" " "	CANNIBALIZED	0
6004 - 4	" " "	DOWN	62
6004 - 5	" " "	RUNNING	95
6004 - 6	" " "	SURVEY TRUCK	80
6004 - 7	" " "	RUNNING	100
6001 - 1	IH TD 20E DOZER	RUNNING	90
6002 - 2	" " "	RUNNING	90
6001 - 1	CHAMPION 720 GRADER	RUNNING	95
6001 - 2	" " "	RUNNING	75
6002 - 1	IH 530 PAYLOADER	RUNNING	100
6002 - 2	" " "	SHOP USE	100
6003	IH 280 BACKHOE	DOWN	0
6012	REXNOR 910 VIBRATOR	DOWN	0
6013	DYNAPAC 22 ROLLER	DOWN	0
6013	WATER TANK & TRAILER	RUNNING	100
6013	" " "	RUNNING	100

MAJOR PLANT AND EQUIPMENT (January)

EQUIP. No.	DESCRIPTION	UTILIZATION	
		STATUS	RATE (%)
6013	WATER TANK & TRAILER	RUNNING	100
6013	FUEL TANK & TRAILER	RUNNING	100
6009	MOBILE WORKSHOP	"	100
6009	WATER STORAGE TANK	"	100
6016	GENERATOR 50 KVA	SALVAGE	0
6017	20	NO ENGINE	0
0214	60	DOWN	0
0214 - 015	18	RUNNING	100
0214	26	RUNNING	100
0214	3.5 (6)	STANDBY	0
6024 - 1	TOYOTA LAND CRUISER	SALVAGE	0
6024 - 2	" " "	RUNNING	95
6024 - 3	" PICK UP	SALVAGE	0
6024 - 4	" " "	RUNNING	100
6024 - 5	" " "	CANNIBALIZED	0
6025	PEUGEOT 404 PICK UP	SHOP USE	100
0214	JEEP CHERSKEE	NO SPARE	10
0214	MERCEDES UNIMOG	RUNNING	30
0214 - S01	CAT. 621 - B SCRAPER	RUNNING	2
0214 - S02	" " "	DOWN	0
0214 - S03	" " "	NO ENGINE	0
0214 - 014	MILLER PORTABLE WELDER	RUNNING	100
0214	STEAM JENNY (2)	NO FACILITIES	0
0214	CONCRETE MIXER	JUNK	0
0214	WATER PUMPS (2)	NO HOSES	0

LUBRICANT INVENTORY

T Y P E	CAMP LOCATION		TOTAL ON HAND	TOTAL RECEIVED	TOTAL USED TO DATE
	ON HAND M'BOUT	ON HAND KM 77			
40 W ENGINE OILS (BBLs)	35	6	41	62 72	(21) ?
10 W HYDRAULIC (BBLs)	0	0	0	5	5
DEXTRON II (BBLs)	3	6	9	10	1
DEXTRON II (5 GAL PAIL)	24	—	24	24	0
DEXTRON II (CASE - 24 QT Cans)	10	—	10	10	0
10 W 40 MULTI - GR (CASE 24 QT Cans)	0	2	2	5	3
M.P.E.P. GEAR LUBE (5 GAL PAIL)	36	—	36	36	0
MULTI - DUTI - 2 (35 - PAIL)	36	—	36	36	0
ANTI - FREEZE (BBLs)	2	1	3	5	2
140 W GEAR OIL (BBLs)	2	4	6	6	0
90 W GEAR OIL (BBLs)	1	—	1	—	
GREASE	8	—	8	—	
10 W 40 MULTI- Gr (CASE 24 QT CANS)	10	10	20	20	0
DETAIL RECEIVING REPORT NOT AVAILABLE AT CAMP					

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JANUARY 31, 1984

FUEL OIL AND LUBRICANT

INVENTORY

DIESEL - FUEL Inventory

CAMP	GENERATOR TANK	STORAGE TANKS	FUEL TRUCK	TOTAL
<sup>1</sup> M'Bout	1320	3060		4380
<sup>2</sup> KM 77	2000	12,000	6000	: 20,000
TOTAL				24,380 L

1 Computed from Tank Stick measurements  
2 Estimated <sup>+</sup> 5%

DELIVERIES

CAMP	DATE	AMOUNT
M'Bout	Dec 26, 1983 Jan 13, 1984	30,000 12,000
KM 77	Jan 25, 1984	12,000 L

USAGE

CAMP	AMOUNT
M'Bout	5,130 L
KM 77	39,244 L
1 Usage is estimated since meter on fuel Truck is inoperative	
44,374 L	

1/b

III      G A S O L I N E   I N V E N T O R Y

On Hand Jan 31, 1984	M'Bout	-	400L
Used this month		-	680L

17.