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**Evaluation of
Agricultural Marketing Development Projects
(660-0026 and 660-0028)**

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I. INTRODUCTION

Projects 660-0026 and 660-0028 share the goal of stimulating agricultural production by improving access to markets. The primary means of achieving this goal are to upgrade 364 kms. of feeder road in the case of project 026 and approximately 100 kms. of arterial road that link Kikwit and Idiofa in 028. Project 026 also includes the improvement of two river ports; Project 028 has a training component that has helped to establish a road construction training center.

A. Project 026

The Loan Agreement was signed in September 1979. In the almost seven years since the signing of that document only about 73 out of the 364 kms. of project road have been rehabilitated. Since 1983, the primary factors impeding road improvement activities have been the lack of a full time project engineer and excessive equipment down time caused by a lack of spare parts. Last month a graduate civil engineer was assigned to the project who has the knowledge to construct earthen roads with the somewhat problematic soils of the area. The equipment problem should be resolved by a procurement and equipment expert who will help in providing a plan for the repair of existing equipment as well as providing support for the timely procurement of spare parts in the future. Given the expertise and operable equipment (at least 10 trucks by 1-1-87) the project should be on track for improving the remaining 261 kms. of road before PACD in September 1989.

B. Project 028

This Loan Agreement was signed in September 1981. Implementation was held until 026 got underway. The Project is just getting on track. The Chief of Party (COP)/Engineer arrived in January 1986 and the Master Mechanic followed in April. All project road construction equipment is scheduled to be in Zaire by early 1987 when construction can really start.

The current major project issue is discussion of road surfacing material raised by the COP. He has proposed using a manufactured gravel surfacing material instead of the clay-sand material specified in the project paper. This modification would change the scope of the project, and might cause an 18 month delay by introducing a technology (rock crusher) that Office des Routes (OR) is not capable of maintaining. Therefore this evaluation recommends not accepting the gravel road proposal as submitted by the COP unless the disadvantages noted above can be overcome. Construction of a road built to the standards on the project paper is possible within project budget and time constraints.

The other 028 activity, the OR Training Center in Lubumbashi, is a large success. USAID can be proud to have been a major contributor to its development. The goal, of providing training for over 200 road construction personnel per year, has been more than doubled.

II. TECHNICAL ASSISTANCE (026)

The project 026 technical assistance consists of a Chief of Party (Engineer) and Chief Mechanic. The work requirements are (1) dirt road and port engineering, (2) efficient utilization of equipment for road rehabilitation and, (3) repair and maintenance of the equipment. The first and last items are covered at present by the engineer and mechanic. The second item, the actual supervision of road rehabilitation at present is the responsibility of the engineer. He does not currently have time to devote the full attention that this task demands. The project has been without a full-time engineer since its inception and therefore basic tasks such as road design work and borrow pit selection have not been completed. The COP also has considerable talent to offer to the design and construction of the ports at Panu and Dibaya-Lubwe. A proposed bridge at Mangai will also require time. Finally it is essential that the COP have sufficient time to devote to organizational problems that will require frequent trips to both Kinshasa and Kikwit. It is evident that an expatriate construction foreman should be on site full-time to maximize the use of equipment. The sooner the project engages such a foreman the better off it will be. The foreman's scope of work should specify that he spend 5 and 1/2 days of work on site per week.

At present the Chief Mechanic appears to spend an average of approximately four days per week on site. This is because his family must live in Kikwit and it was agreed from the outset that he could visit each weekend. With the project activities moving farther and farther away from Kikwit it will not be acceptable for the Chief Mechanic to travel to Kikwit every weekend after mid-1987 and the Chief Mechanic should remain on site 5 1/2 days out of a normal working week.

After the construction foreman has spent six months on site, it may be possible for the COP to devote less time to the 026 project and more time to other AID projects. (Project funding levels will not permit both a foreman and engineer to be assigned to the project on a full time basis.) Given the number and magnitude of AID engineering projects in Zaire and the talent of the COP this seems to be a more efficient solution than removing the construction foreman from the job.

Recommendation:

- Provide a road construction foreman on the Project 026 technical assistance team.

III. ROAD STANDARDS (026)

The current standard of "good earth roads" for project 026 is appropriate given the low traffic volumes (less than ten vehicles per day) and the existing environmental conditions. The standards have been generally outlined by the COP and informally accepted by OR. They include a 4.5 meter traffic width with side ditching. In problematic areas (poorly graded sand or clayey sections) where vehicles are prone to bogging down or in areas where the road is sunken below the surrounding terrain the road will be sufficiently wide to allow two trucks to pass. This will minimize the possibility of a bogged down truck completely stopping traffic. Further, an emphasis is placed

on outlet ditching (saignees) to provide positive drainage away from the road. Culverts will be placed on as needed. Surfacing material will only be used on difficult stretches of road (again sandy or clayey). This material will be taken from borrow pits adjacent to naturally good sections of road. These good sections of road occur frequently so haul distances will be minimized. The COP has stated he will establish guidelines concerning the particle size distribution and the Atterberg limits of acceptable surfacing material. These standards represent a practical philosophy and should be formally embraced by OR.

Recommendation:

- OR formally accept the standards developed by the COP/OR for project 026.

IV. EFFECTIVENESS OF SINGLE ROAD BRIGADE (026)

The single road brigade (agreed to by O.R. May 1985) has been effective in improving the Musele-Panu Road. There are sections that still require surfacing but on the whole the road is passable at an average speed of over 60 kms/hr. by a passenger vehicle. If anything the road (based on original specifications) is generally wider than it needs to be. One or two culverts may need to be constructed but the road generally conforms to the standards developed by the COP.

A priori the single brigade method of road construction as opposed to two brigades (used previously) provides a concentration of equipment that lends itself to optimal road rehabilitation efficiency. It is much easier to supervise activities that are close together not to mention providing fuel, material, personnel, and other logistical support. It eliminates parallel administrative structures that encumber the chain of command.

V. REPORTING (026)

On project 026 there is a gap in reporting to USAID between the departure of COP John Loftin in March 1985 and the arrival of COP George Gendarme in May 1986. With the arrival of Mr. Gendarme reporting has been continued and no problems are anticipated in this area. USAID/Zaire personnel have frequently traveled to the work site during the absence of a site supervisor and have filed reports. This has partially filled the reporting gap but there is no substitute for reports written by supervisors with first hand knowledge of the situation. On the OR side, reporting has been continued by the brigade chief. These reports are not normally received by USAID.

VI. UP 250

UP 250 is the basic OR management unit that provides project 028 and 026 with basic operational support for road rehabilitation purposes. This means personnel, construction materials such as cement and reinforcing steel, as well as fuel. In principle, UP 250 is also responsible for providing technical oversight for the project although the presence of AID-financed technical assistance on the project indicates that UP 250 is not expected to carry the full load in this area.

A. Chief

In terms of the overall UP250 organization the UP Chief is the one who makes or breaks the operation. Officially he is the one through whom all requests for personnel, materials and fuel must pass. The remainder of the organization will probably be very responsive when the Chief issues a directive.

The current history of the UP 250 Chief has apparently been up and down. The early reports of brigade 210 indicate that he was a useful resource in road works. After he returned from a 1984 trip to Japan it seems that his work significantly deteriorated to the detriment of project 026. To OR's credit they are transferring the Chief to a less important U.P. and promoting a man who has done a good job. There has been some discussion at the brigade 210 level that a new UP should be created to support project 026 and 028 but this should certainly not be considered at this time. It appears that problems with UP 250 have been with the direction and not with the organization itself.

B. Personnel

In terms of personnel UP 250 will provide both projects with the full gamut from site foremen down through mechanics, chauffeurs and manual laborers. Project 026 is more representative of UP 250 personnel than 028 since the latter project has yet to begin construction activities. In discussions with the technical assistance team they find the personnel provided them to be reasonable. The thing that is required is qualified supervision (expatriate if necessary). A good example of this is the case of the soils engineer who is quite knowledgeable in discussions of road surfacing material but produces questionable compaction test results. Also, it came out in discussions that the number of mechanics and clerical workers on the project are inadequate to keep up with the current brigade demands. The regional OR technical director stated that these demands could be met with additional personnel.

C. Wages

The subject of salaries for project assigned personnel is a hot issue. The project workers assert they should be paid higher wages working on relatively intense production-oriented rehabilitation works than those OR employees that work on lighter maintenance work under less pressure to produce. The project personnel are also expected to move from place to place on a much more frequent basis than the majority of OR personnel who are sometimes assigned to one location on a permanent basis. The average monthly salary for brigade personnel is approximately \$44/month to which should be added OR incentive pay to increase production which increases wages 240%.

USAID has discussed the possibility of AID-financed incentives for OR project personnel. Informally OR seems interested, especially given the fact their incentive system is not effective and results merely in a salary increase. OR is interested in a system that would actually boost production. The present system merely makes the OR salary scale competitive with the private sector. A primary flaw with the OR incentive system is that local OR personnel are not in a position to give an employee less than the maximum

bonus. Anything less would apparently result in massive discord. This makes it doubtful that OR would be able to continue such a system after the departure of the expatriate personnel who originate and implement it.

Despite the fact that OR will in all likelihood not be capable of continuing the incentive system after the departure of the technical assistance team it is recommended here that such a system be implemented. This recognizes that the type of activity funded by AID is different from regular OR road maintenance activities. Expatriates are being employed to run an efficient rehabilitation operation and need real incentives to motivate workers to produce. It is recommended that two types of incentives be offered. The first would be up to 100% of the employees base salary depending upon total brigade production and individual work production. The second incentive would be overtime pay if an employee works more than the standard 45 hour week. A reasonable figure for this would be time and a half for extra hours Monday through Saturday and double time on Sundays. This system will only be effective if there is a full-time expatriate construction foreman on site to monitor work performance, assuring bonuses and overtime are only paid when warranted.

D. Fuel

A particular problem in the past has been with providing the 026 project with fuel. In discussing this problem with both OR and expatriate personnel all agreed it was caused by a lack of storage facilities near the 026 project. It is impossible to deliver fuel by barges during the dry season (construction season) to Kikwit due to low water levels. They argue that this problem has been solved by the installation of a 400,000 liter tanks at Kikwit and the purchase of several 6,000 liter plastic tanks that will store fuel at the work sites. The COP has also stated he believes he can greatly increase the project fuel efficiency by consolidating equipment work activities and limiting the use of construction equipment as transportation vehicles, apparently a common practice. A previous 026 project engineering report estimated fuel consumption on the project to be twice what it should be for the work completed.

Recommendation:

- USAID pay work bonuses and overtime to personnel on projects 026 and 028.

VII. EQUIPMENT

A. SGMP

SGMP is the organization within OR responsible for providing equipment maintenance service to OR. The SGMP center responsible for 026 and 028 is located in Kikwit, a four to six hour drive from the present project campsite. SGMP provides spare parts warehousing and major equipment repair that cannot be completed at the work site.

A tour of the existing SGMP facility showed it to be only marginally adequate for its current responsibilities. In particular the spare

parts warehouse is filled to capacity with parts and the workshops as well as yard are littered with equipment carcasses and broken parts that congest the facility.

Despite the overall disorganized impression obtained by touring the facility, there are encouraging signs. An inspection of the parts warehouse indicated that the parts are catalogued and can be located in a few minutes time on the shelves. The facility seems to have the basic tools and equipment necessary to perform the repairs required.

Later this year SGMTP will acquire a much larger facility on the edge of Kikwit. UP 250 will take over the old facility, and OR/Bandundu will be serviced by the new one. The new facility is presently occupied by a contractor, COFRAS, which is currently constructing a paved road from Kikwit to a point 60 Kms. to the East. These facilities include a spacious garage, warehouse, and office complex, as well as a large yard. This facility should certainly help improve the functioning of SGMTP 270.

For the past several years a young Belgian Civil Engineer has been the director of the SGMTP 270 in Kikwit. He has been good at setting up a management system, but the position really requires a master mechanic with good organizational skills, particularly given that there is only one expatriate position. Fortunately a replacement technical advisor has been recruited who is a master mechanic and has years of experience at the Kivu regional Branch of SGMTP, and in fact originally established SGMTP 270. Given the current appearance of the SGMTP facility he will be a welcome addition.

B. Spare Parts

SGMTP 270 is responsible for providing spare parts to project 026. To do this it must pass a requisition to SGMTP headquarters in Kinshasa which will in turn order the part. Until the recent acquisition by the project of two Caterpillar graders none of the heavy equipment was of a make sufficiently common in Zaire so that spare parts were stocked for it. Since all the old equipment was manufactured in the US that is where the spares need to be ordered. Hence SGMTP/Kinshasa requests USAID to procure the parts. USAID passes the order through a procurement agent in the US who is responsible for finding the lowest cost supplier and either surface or air freighting it to Zaire. Once in Zaire it takes at least two weeks for the parts to clear customs and longer if no one continually follows the process.

The documentation of all the spare parts procurement problems would require more space than is available here and may wrongfully implicate people. It appears that USAID has taken steps to improve the system, however, the system is yet to be proven. Given that a lack of spare parts on project 026 has been and continues to be a major constraint to achieving the project road rehabilitation goals it is recommended here that USAID Kinshasa engage a US procurement/heavy equipment spare parts expert to be responsible for assuring that spare parts are provided on a timely basis to the project. Ideally this position would be full-time in Kinshasa so the person could evaluate requests for parts and take action as soon as receiving the request. This position could be justified with project 028 and particularly when project 105 with its major road construction component comes on line. If USAID cannot justify a full-time procurement position it should continue to

bring a person in on an as-needed basis and maintain contact with the person when he is in the US. That person could follow-up on orders and identify problems as they arise. It cannot be overemphasized that the person in this position should have a thorough knowledge of road construction equipment as well as AID procurement regulations.

C. Additional Equipment (026)

At the time of the Project 026 site visit on June 16-17, five of 14 project 026 trucks were operational and of those only three were fully operational. Although relatively minor parts are required to put many of the trucks back into service both the COP and Chief Mechanic have expressed the need to replace the fleet of 1982 Ford trucks with five Mack dump trucks of 8m3 capacity. In discussing this situation with a Procurement/Equipment Specialist, he suggested the possibility of reconditioning the trucks instead of replacing them. This specialist is currently on a short term consultancy for USAID/Kinshasa and is qualified to evaluate the mechanical status of each truck. He should do so as soon as possible to determine whether some of the trucks are worth rebuilding. At least two different alternatives exist for reconditioning the trucks. The first that should be considered is the SGMTP 270 garage. The new advisor for the center has stated this may be possible on a one truck per month basis. If SGMTP is not capable of doing the job it would probably need to be done by a major private garage in Kinshasa.

During the site visit it was pointed out by the Chief Mechanic that a portable diesel powered welder/generator is needed to make field repairs. At present it is necessary to remove the broken part from the machine and bring it to camp for welding with a welder run off a camp generator. This is not a major item and should be purchased locally.

The COP has requested two house trailers to replace the existing ones. These would be for the Chief Mechanic and Construction Foreman who are to live on site full time. Unfortunately the project budget and the time required to procure the trailers preclude their purchase. It is recommended the USAID provide support for the improvement of living conditions on site. This could consist of constructing an additional room or a porch on the front of the house trailers to provide more space. These could be made out of locally available materials or possibly prefabricated walls and roofs that could be broken down and erected again on a concrete slab at the new site. The COP has indicated he is satisfied with housing made from locally available materials. This type of housing shouldn't be expensive to construct at each new work camp.

Recommendations:

- Engage a heavy equipment specialist to determine if Project 026 trucks should be rebuilt.

- USAID engage a full time procurement/equipment expert to improve the spare parts supply for AID financed road construction. Procure a welder/generator locally for project 026.

VIII. ROAD MAINTENANCE (026)

A. Manual Maintenance

During a visit to the 026 project road many workers were seen working on road maintenance. As well-intentioned as those laborers may be, the techniques they were using seemed to have only marginal effects on the road condition. Apparently the hand road maintenance skills present in years past have substantially decreased. Therefore the training of hand maintenance foremen should be given a high priority.

In the case of the 026 roads all maintenance is to be done by hand according to the OR Regional technical advisor, M. Le Carre. The level of maintenance is to be upgraded by training the hand maintenance foremen (capita), who supervise ten laborers in the maintenance of twenty kilometers of road. All hand maintenance is to be done through contracts with the major entrepreneurs of the area. The contract for the section of road already constructed or to be constructed in the next year (Panu - Petit Kasai) is to be let to Fernandes. In visiting a facility of Fernandes it was obvious he has an organization sufficiently large to manage the hand maintenance activities for the 026 roads. He has a large fleet of over twenty trucks and an operating palm oil plant. He has the facilities to repair both his trucks and palm oil processing equipment. Most of his trucks are front and rear axle drive indicating the poor conditions of the road. Mr. Fernandez himself was in Belgium at the time of the evaluation. Apparently he personally manages the business and his foreman was either reluctant or unable to answer most questions concerning road maintenance. He did tell us the company is using hand labor to maintain the five km. stretch of road between the project road and company headquarters. This road was found to be passable, but certainly not in good condition. Given that most of Mr. Fernandes's trucks are four wheel drive it may not be worth it to him to keep a road in good condition.

B. Mechanized Maintenance

Hand maintenance can be adequate where the local soils provide a reasonable road surface. In areas where soils are problematic it is necessary to haul in soil from known borrow pits in order to fill pot holes and ruts. The hauling of this soil in the 026 area requires a truck. This problem will be minimized at the outset if the project is able to stockpile good road surfacing soil by the side of the road in difficult areas, as planned by the project engineer. However, eventually heavy equipment will be required to restock the material. It would be desirable to assign a grader, a compactor and a watering truck to the maintenance of 026 road. This equipment could work in those areas that deteriorate faster than hand maintenance can handle and could also fill gaps between road completion and the training of qualified hand laborers. Such an equipment team would build a road up by grading and compacting rather than digging it down which grading alone tends to do in this area. With the recent addition of two new graders and compactors USAID should insist that at least one of the old graders and compactors be assigned to the completed road sections.

The project engineer has established a system with OR of certification of completion of sections of rehabilitated road. The certification is done by both the Project Engineer and the Director of UP

250. After certification that portion of the road will be placed under a maintenance program and removed from the rehabilitation program. The certification includes a recommendation for the type and quantity of maintenance that is required. This system seems appropriate. If maintenance is not being accomplished USAID will be able to work with OR to improve the system before PACD.

Recommendations:

- Work with and support OR in its program to support training of manual maintenance supervisors.
- In collaboration with O.R. develop a suitable, sustainable mix of manual and mechanical maintenance. O.R. assign at least one grader and compactor to road maintenance work on completed sections of project 028.

IX. ROAD WEARING COURSE MATERIAL (028)

The 028 COP has proposed using a sand-gravel mixture for the wearing course on the project road between Kikwit and Idiofa. The gravel would be produced by quarrying rock and running it through a project-funded crushing plant. Assuming that the sand-gravel mixture has the proper size gradation and plasticity this surfacing material would hold up much better to traffic than the clay-sand type surface specified in the project documentation (Project Paper, Loan Agreement, ORT Contract).

The problems with this proposal are money, time, and the complexity of manufacturing the gravel. Estimates by an equipment and a quarry specialist indicate that \$1.1 million or more in additional funding would be required by the project to buy the equipment necessary for the quarrying and crushing operation (see table 1 next page). The project would be delayed at least 18 months until the equipment arrives. Such an operation has many inherent complexities. It will be difficult to run such a plant even with the presence of the ORT Construction Foreman who has extensive experience in such quarry operations. With his departure at the end of the project it is not likely the crusher would ever be operated again by OR. Further, the quarrying and crushing operation would require a full time technician supervising rock blasting and another running the crusher. This is in addition to the foreman supervising daily road construction. Hence two additional technical assistant positions would be required on the project.

Considering the limitations of the gravel road proposal O.R. has suggested the possibility of buying gravel from COFRAS and is currently exploring this alternative.

The COP has pointed out that the ORT Technical Services Contract specifies a ten year Design Life. In fact when referring to a Design Life with respect to a road it is assumed normal road maintenance requirements are satisfied. For this road maintenance is the responsibility of OR. This is spelled out as a Covenant in the Project Loan Agreement.

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X. ROAD MAINTENANCE (028)

Maintenance is a problem in this country. USAID needs to continue to work with OR in an effort to upgrade road maintenance levels in Zaire. This is particularly necessary for roads such as Kikwit-Idiofa that has a moderate level of traffic (not to mention rainfall) which will progressively deteriorate the road if it is not continually maintained. The following discussion of maintenance requirements applies to a sand-clay road. A graveled road would require considerably less maintenance.

Maintenance will mean frequent (monthly) grading and compacting of the road. This operation entails grading material from the shoulders to the middle of the road, adding water if necessary and rolling on it a sufficient number of passes with an appropriate compactor to achieve an acceptable density. For the 028 road this means the full time assignment of a grader, compactor and water truck.

Less frequently required maintenance is the addition of surfacing material to replace that lost from erosion and thrown off the road by traffic. This type of maintenance will be required every several years. The equipment needed for this work includes a bulldozer, front loader, grader, dump trucks, water trucks and compactor.

Recommendation:

- Project 028 should maintain the original design specifications of a clay-sand road instead of changing to a gravel road, unless improved specifications can be applied without increasing the project dollar budget. OR and USAID should agree on project specifications.

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Table 1
Proposed Rock Crushing Plant

Project 660-0028

<u>Item</u>	<u>Description</u>	<u>\$ Cost CIF (EST)</u>	
		<u>Unit</u>	<u>Extended</u>
1.	1-Unit primary crusher 10/24 jaws		130,000.00
2.	1-Unit secondary crusher		130,000.00
3.	20 percent spares for crushers (40% shipping)	26,000.00 + 40%	72,000.00
4.	2-Loader-HD Rock-bucket 3yd ³ min	125,000.00	250,000.00
5.	*1-Tractor (bulldozer) equal to D-7		175,000.00
6.	2-Air track rock drill	80,000.00	160,000.00
7.	2-600/800 CGM air compressor	45,000.00	90,000.00
8.	1-400AMP DED portable welder		10,000.00
9.	1-Generator set - 100 Kw.		22,000.00
10.	Drill steel and bits		12,000.00
11.	Small air compressor (125 CFM) with pavement breaker and rock drill hose etc.		15,000.00
12.	Shop tools, gas outfit, grinders, master mechanic tools set, etc.		10,000.00
	Sub Total		1,076,000.00
	Contingency 10%		108,000.00
	Grand Total		1,184,000.00

*This project has only one bulldozer another may be required even if a rock crusher is not ordered.

XI. PORT IMPROVEMENT (026)

Project 026 is programmed to improve the Ports of Panu and Dibaya-Lubwe. Currently there are virtually no existing facilities at these ports; they are merely points along the shore where the water is sufficiently deep to for a barge to come close enough to the shoreline to be loaded. Project 026 will finance the construction at each of the ports of a permanent platform on which ONATRA will install a fixed crane that will be installed along with a pair of floating docks which will be attached to the platform and extend into the river.

On June 17 a visit was made to the Panu port. Two partially loaded barges were grounded along the shoreline waiting for a rise in the river so they could depart. Several loaded trucks were also waiting to discharge more produce on to the barges when the water levels rose. The proposed port improvements at Panu should enable the loading of these barges in deeper water so the grounding problem will be solved.

Aside from the problems of ports, the installation of navigational aids would improve the year round navigability of the Kasai river. This type of improvement is planned in the 098 project and are beyond the scope of 026.

Summary of Port Improvements Transactions

September 1979	Loan Agreement Signed
June 1982	ONATRA advertise Port Improvement IFB as a turn key project i.e. both design and construction
Late 1982	ONATRA selects SOTRAF as a contractor.
Late 1982	USAID rejects the turnkey concept and instructs ONATRA to separate the design and construction elements.
Early 1983	IFB for Port Design Advertised. ONATRA decided to give the contract to CADIC but approval from the Commissaire d'Etat didn't arrive until the end of 1983.
Early 1984	Design began, ONATRA was presented with four options by CADIC for the crane platform. ONATRA selected an option that called for building the platform with gabion.
April 1985	Design complete. IFB advertised for port construction.
July 1985	Bids received. The two best proposals gave alternatives to the gabion construction.
	AUXELTRA BETON proposed sheet piling platform construction at both ports
	SOTRAF proposed piles at Panu and a caisson at Dibaya-Lubwe.
February 1986	ONATRA selected the AUXELTRA BETON proposal.

- March 1986 USAID rejects the AUXELTRA BETON bid for technical reasons. Instructs ONATRA to accept the SOTRAF bid or restart the bidding process.
- April 1986 ONATRA instructs CADIC to modify the port designs to correspond with criteria agreed upon by AID.
- June 1986 CADIC submits revised plans, which are given to the two preselected contractors.
- July 1986 (planned) Contractors resubmit proposals to ONATRA who selects contractor.

XII. BUDGET

A. Project 026

The unearmarked funding for project 026 totals approximately \$500,000. This must be divided among spare parts, equipment, and a construction foreman. The construction foreman will cost approximately \$300,000. This would leave \$200,000 for equipment and spare parts. Assuming the 14 project trucks can be rebuilt for \$15,000 each this item will cost \$130,000, leaving \$70,000 for parts. If they are replaced by five larger trucks at a cost of \$70,000 each the cost would be \$350,000. In the latter case additional funding would definitely be necessary. In the former case funding may be sufficient if the COP/Engineers responsibilities are gradually shifted to other projects and a portion of his costs are shifted to those projects. This would be possible with a competent construction foreman on site full time.

B. Project 028

Project 028 also has approximately \$500,000 in uncommitted funding. This amount is approximately what will be needed for spare parts purchase, leaving a small contingency. Thus, if 028 proceeds as planned in the project paper no additional funding will be required. If the road standards are upgraded in a manner that increases dollar costs the project would need to explore different options for obtaining these funds.

XIII. LUBUMBASHI TRAINING CENTER (028)

Basically the OR Training Center in Lubumbashi is a sound organization. USAID can be proud to have financed its beginning. In the three years since its inception it has more than surpassed its goal of training 200 OR personnel per year. In 1985 over 400 trainees benefitted from the training sessions.

The success having been noted, there are still improvements to be made. The strongest section is the mechanics. The equipment operation section is weaker than the mechanics section and the civil engineering section is just beginning to function this year.

The strength of the mechanics section is indicated by the truck rebuilding program completed this year. All OR's ten year old 12-ton Hino trucks were brought to the Lubumbashi training center where they were mechanically reconditioned by the drivers and mechanics who are assigned to them in the field. They were sent to SGMP/Lubumbashi for any necessary body work and emerged appearing brand new. It should be noted that the mechanics section has been supervised to date by an expatriate.

The equipment operation section is not as strong as the mechanical section due to a lack of heavy equipment assigned to the center as well as a lack of expatriate supervision. There has also been a problem with the Zairian head of the driving section who has recently had his own driving privileges of OR vehicles suspended which gives a sense of his level of responsibility. Personnel at that center stated that this person will either improve or will be removed from his position.

Due to the lack of operable heavy equipment (it has an inoperable front loader as well as compactor) center operators are taken out to train on actual OR work sites. This has the disadvantages of reducing production and conducting training in remote areas which the supervisory personnel of the center infrequently have time to travel to.

In the Loan Agreement for the project, the GOZ is responsible for providing equipment for training. Unfortunately there is little equipment available exclusively for training. A good future donor contribution to the center would be to provide sufficient equipment to establish a training brigade that would maintain roads near Lubumbashi at the same time as training personnel. Given USAID budget restrictions this is not given as a recommendation here. A field visit to an OR road brigade in the process of training new equipment operators indicated trainees were learning to operate equipment without unduly slowing operations. There were, however, several corrections made by accompanying OR supervisory personnel that indicated a need for additional field leadership.

Earlier this year the Civil Engineering section brought all UP Directors to Lubumbashi for technical training in such things as bridge construction and road maintenance. However, this section when fully developed will offer a full range of courses such as surveying and soilmechanics as well as train foremen for manual road maintenance. Because it is in its inception this section requires a full-time qualified civil engineer for one or two years to help develop the program. This person would also be helpful in ensuring the quality of training for the equipment operators.

In taking an overall look at the Center it would be desirable to continue the funding of two expatriate positions for at least the next year and preferably for two. This is especially because training takes place over such a large area and the training program is still under development. In conversations with USAID personnel this funding may come from project 105.

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Recommendation:

- USAID continue funding at least one technical assistant position at the training center and two positions if it is within USAID budget limitations (project 105).

XIX. DATA COLLECTION AND PROJECT MONITORING

In monitoring the effects of projects 026 and 028 USAID should confine itself to the most direct indicators--transit times, traffic frequency and data from transporters on costs and itineraries. More extensive socio-economic evaluation should be carried out under projects 098 and 102. It will be difficult to separate the effects of improved roads from other factors affecting prices and marketing practices in Bandundu (liberalization of agricultural prices, increased demand for food in Kinshasa and in Kasai, migration patterns, availability of credit, etc.). It would be even more difficult to separate individual project effects, especially since the major construction under 026 and 028 will take place while 098 and 102 are also under way. It would be better to carry out a few simple monitoring exercises directly connected with road usage, to repeat them at appropriate intervals, and to report them in some regular way, rather than to do a one-time socio-economic survey.

The following data should be collected: (1) traffic counts at key locations, at first on a monthly basis, and later at intervals to be determined; (2) OR vehicle counts for the Bulungu ferry and for the ferries that operated before completion of the Ivang and Koreama bridges; (3) transit times on key stretches of project roads as construction proceeds; (4) informal interviews with truckers at Bulungu and at Idiofa or Kikwit, and with two or three large merchants.

The detailed plans for these actions and initial data gathering could be carried out by a USAID summer intern. The traffic counts should be started in July and August. The COP of project 028 already has plans for such monitoring to be carried out at Idiofa by ex-Peace Corps Volunteers beginning in July. The COP of 026 should be involved in recruiting for similar surveys at Mateko, Sedzo and Ngenkong. The intern should copy and process the OR data available at Bandundu and make plans to collect future data on the Bulungu ferry at appropriate intervals. He should review past trip reports in connection with item 3, setting up a simple table that can be added to as USAID staff and consultants drive over the same project roads in later trips.

There has been no formal collaboration to date with the DARD's Bureau d'Etudes, or with other Zairian statistical agencies. In 1984 plans were under way to collect information on road transport and on market prices in the DARD's Direction des Marches, Prix et Credit de Campagne (DMPCC) and on private river transport in the Transport Department's Groupe d'Etudes, Economie et Planification (GEEP, now GET). The intern should establish contact with the DMPCC and perhaps with GET to learn what data has been collected and to arrange for access to future data if appropriate. The question of more wide-ranging collaboration with Zairian research institutions will be considered under projects 098 and 102.

Annex I

SCOPE OF WORK FOR EVALUATIONS OF AGRICULTURAL MARKETING PROJECTS 660-0026 and 660-0028

I. PROJECT DESCRIPTION

The purpose of these projects is to facilitate the access of small cultivators to the agricultural marketing system in Kwilu subregion, Bandundu region. This will be done by upgrading two national roads. The first road runs between the key towns of Kikwit and Idiofa; the second runs from the major asphalt road in Kwilu to the Kasai river. Project 028 also supports the Lubumbashi Training Center, one of three centers forming Office de Routes's national basic training system for road equipment operators, mechanics, and other technicians. Office des Routes (OR) is the implementing agent for this project. The PACD for Project 026 is September 13, 1989; the PACD for Project 028 is September 30, 1988.

II. EVALUATION PURPOSE

This joint evaluation of Projects 660-0026 and 660-0028 constitutes a Routine Implementation Evaluation. Both Project 026 and Project 028 evaluations will determine whether the actions taken over the past year are appropriate and effective for implementing project activities planned for 1986 and 1987. The evaluator will also determine if recommendations from previous evaluations and in-house reviews have been effectively implemented and will recommend what must be done to complete project objectives by PACD.

III. EVALUATION TEAM AND ITINERARY

The evaluation will be conducted by a construction engineer who speaks French fluently and who has had several years' experience constructing roads in Africa (preferably Zaire).

The evaluator will interview project personnel and USAID Project Officers and review project documentation in Kinshasa. He will visit project work sites at Mosele (026 work site) and in Kikwit (028 work site). A draft of the evaluation report must be submitted two days before the evaluator's debriefing with Mission staff. A final evaluation report must be submitted before the evaluator's end of contract in country.

IV. EVALUATION REPORT

The evaluation report must be limited to 15 pages and prefaced by an executive summary of no more than two pages. The evaluator will address the questions and issues listed below, as well as pertinent evaluation issues listed in the Zaire FY87 ABS. Any recommendations presented in the report must appear in "actionable" form, with an "action agent," and a date by when the recommended action must be completed.

V. EVALUATION ISSUES

A. Project Management

1. Is the Project 026 technical assistance team of a Chief of Party-Engineer and Chief Mechanic adequate for the work planned for 1986-87?
2. Is the current standard of "good earth roads" for Project 026 appropriate for the Kasai - Bulungu - Panu and Panu - Mangai - Dibaya Lubwe roads? Discuss.
3. How effective has the single, newly-formed road brigade for Project 026 been in improving the Musele - Panu road? Is the single brigade the most effective organization for working on the Kasai - Bulungu - Musele section of the project road?
4. Do the changes made in Project 026 organization and implementation over the last year: technical assistance team, construction standards, additional equipment, methods of construction, work crews, provide for the most sensible and effective means to build the project roads? Discuss.
5. Is the Project 028 Chief of Party's proposed method of road construction using an "artificial gravel" appropriate and sufficient to build the Kikwit-Idiofa road to the project specifications? Is the road crew for Project 028 organized and administered in the most effective manner?
6. Are the project reports to USAID timely and adequate so that USAID can monitor project activities? What additional information should be included in these reports? Discuss.
7. Discuss the role and capacity of U.P. 250: organizational structure and personnel available, salaries and payment schedules, reporting procedures, equipment and materials. Does U.P. 250 provide adequate technical oversight of project road construction? What is its responsibility to Projects 026 and 028, and how well does it respond to the requests and needs of the projects?

B. Equipment

1. Discuss the role and capacity of SGMTP 270 (Kikwit): organizational structure, operating procedures, equipment and materials available. Is SGMTP 270 able to obtain spare parts and do necessary repairs in an efficient manner?
2. What procedures are required to ensure that spare parts are obtained promptly?
3. What additional equipment is necessary to implement Project 026 or 028 activities?

C. Ports

1. Are the USAID actions planned in addition to those already specified for Project 026 adequate to improve the efficiency and reliability of river transport? Discuss.
2. Record transactions which have taken place concerning improvement of the ports.

D. Budget

1. Review project budgets. Will the projects require increased dollar funding?

E. Data Collection

1. How can USAID regularly collect data on road traffic and road benefits, so as to be able to monitor the social and economic effects of the Agricultural Marketing Development projects?
2. Has USAID collaboration with such Zairian institutions as the Department of Agriculture's Bureau d'Etudes and the Institut National de Statistiques proved effective in gathering and analyzing data in Bandundu? Discuss.

F. Maintenance.

1. What kind of road maintenance, manual and mechanical, is required for the project roads? Is Office des Routes maintenance program for the project roads adequate?
2. What level of support, financial and personnel, is required from O.R. to maintain these roads? What training of personnel is required?
3. What is the private contractor's (Solbena) capability? Are there other private contractors who can manage manual road maintenance programs?

G. Training Center. Briefly review the Lubumbashi Training Center. Is continued USAID assistance recommended, and is additional equipment or supplies needed?

H. Other Issues

1. What has been the result of USAID discussions with the GOZ about the countrywide problem of earth and granular surfaced road maintenance? What additional points should be discussed about improving and monitoring the O.R. road maintenance program?