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CONSTRUCTION SERVICES COMPANY

PD-BAQ 381

OFFICIAL PROJECT
DOCUMENT

F I N A L R E P O R T

Swaziland

Technical Assistance Project

AID/afr-C-1592

OVERSEAS CONSTRUCTION SERVICES
COMPANY

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December 29, 1983

Mr. William Gohn, Contract Officer
Regional Operations Division - Asia
Office of Contract Management
Agency for International Development
Washington, D. C. 20433

Our Reference: 645-147
Project No. : 645-0068
Contract No. : AID/afr-C-1592

Dear Mr. Gohn:

The following information is a combination of several contractual reports. The entire publication is considered the Final Report due at the end of the Swaziland Land Development Contract. It also contains travel and budget information for the final six months of the contract. Although they were already submitted to the Agricultural Development Officer in Swaziland, we have included the End of Tour Reports for the last three advisors to leave the project site. These include pertinent information and final recommendations relative to the future of the program.

A portion of the information has been taken from our Management Systems Report submitted in June of 1983. It provided background on the project up until that time. More recent data was secured from Mr. Tennison and Mr. Boyd during their Home Office visits in mid December. These combinations of information provide an overview of the project and present recommendations from the men in the field with a final summary from the Home Office.

Although the total objectives of the project in regard to land development were not accomplished, OCS feels that within the narrow confines of their equipment maintenance project many goals were attained. Counterparts were trained, warehouse systems established, a training program developed, and

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field maintenance procedures put into operation. Much still needs to be done to fully implement the programs established, but the foundation for a total maintenance system was developed. OCS is ready to provide the necessary services to fully implement the program when and if USAID decides to provide the GOS with additional funding.

It is hoped that this report supplies the necessary information on the development of the project and provides recommendations that will be helpful in future planning for agricultural development in Swaziland.

Sincerely yours,

OVERSEAS CONSTRUCTION SERVICES COMPANY

Joseph L. Mauck

Joseph L. Mauck
Senior Vice President

JLM:vkb

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BACKGROUND

The U.S. Agency for International Development established an agricultural development program in Swaziland with the basic strategy of "addressing the short- and long-term problems of inadequate management systems and an acute shortage of well-trained manpower in the areas of management, administration, and development skills". (Original RFP). Overseas Construction Services Company (OCS) had a contractual agreement with USAID to fulfill that portion of the program which deals with "the efficient and prompt maintenance and servicing of the heavy equipment employed in the Land Development Section (LDS)". (OCS Contract Article I, B.)

The objective of the OCS project as stated in Article I, A of the contract was:

A. <u>Objective</u>

To assure that maintenance responsibilities of the existing Government of Swaziland (GOS) Rural Development Area (RDA) workshop are met efficiently and effectively.

The project was originally started with another expatriate team in September 1978. Problems developed with the earlier team during the first year and OCS signed a contract for the

project in October of 1979. A team was mobilized in November and on the site the following month.

Overseas Construction Services Company submitted an extensive Semiannual Report in June of 1980. The report was basically a planning paper with the recommendations for the development of the technical training program, a management system and the selection of training materials. President Ken Rogers and Dr. Tom Dean visited Swaziland in April 1980 to secure information for the report. Suggested procedures were developed with team members, and GOS and AID personnel, then supplemented and submitted by the Home Office.

The report in regard to the management system was preliminary in nature. Additional information and a reorganization plan within LDS were needed before any definite plan could be submitted. It was requested that OCS delay any further report until a new reorganization plan for LDS be approved by the Department of Establishments and Training. No report of a plan being approved was ever received and no request for a management system was made until after the audit of July 1982.

A new Team Leader was assigned by OCS in October 1981, as well as a new Supplies Advisor and Mechanic Instructor. Shortly thereafter TransCentury brought in two field engineers and the operator trainer left and was not replaced. A new Agricultural

Development Officer and a new Mission Director for AID were also assigned in the fall of 1981. The work of the Field Mechanic Supervisor was considered complete and he was phased out during the fall of 1982.

The changes led to the necessity of a period of orientation for everyone and delayed progress on a reorganization which could lead to a management system.

It was recognized that problems exist in not having a cohesive operational unit within the LDS. The field engineers were brought into staff positions under one chief of party and later into line positions. Efforts were made to establish greater cooperation and coordination with LUPS. The work in the RDA's was more closely supervised and a more comprehensive reporting system was established. Mr. Sukati and Mr. Tennison put a management system into operation, even though a formal plan had not been submitted or approved.

In January 1983 Mr. Sukati and Mr. Tennison submitted an update on the progress of the management system. It is felt that this summary should be included as a part of this report. The items included were as follows:

1. Within the first few months of the contract a proposal was submitted to the Department of Establishments and Training

(DET) requesting permission to appoint counterparts and to reorganize along the lines of three major responsibility areas: Manager, Technical Operations, in charge of all field operations and the workshop; Manager/Administration; and Manager of Parts and Supply. There was also a request for the additional persons to implement this change.

2. In March, 1980 we repeated our request for reorganization and specifically requested that the Field Maintenance Unit be removed from the responsibility of the Workshop Manager and have the Field Maintenance Supervisor report directly to the LDO.

3. In July, 1981 after considerable study by the LDO and the ADM/MGT Advisor and in consultation with the Ministry of Agriculture and Cooperatives a request for additional staff and major reorganization was submitted through the MOAC to the DET. The major theme of this exercise was similar to the previous organization with the Manager, Technical Operations supervising all field work and the workshop, but the Manager, Supplies, was moved under Manager/Administration.

4. The next major management proposal and reorganization, dated 1 January 1982, was an attempt to form an organization that would function with existing personnel and make

provisions for possible expansion. It provided for a "Mechanical Superintendent" to supervise the mechanical portion of the LDS, including the workshop, Field Maintenance, Parts and Supply and Training. It changed the engineering positions from line to staff function, placing the Swazi Unit Supervisors directly under the LDO.

5. In February, 1982 we received unofficial permission to appoint counterparts for the OCS team members. Appointments were restricted to existing LDS personnel and they had to be on a strictly temporary basis.

6. The current Land Development Section proposed organization has been prepared in anticipation of a major audit by the Department of Establishments and Training, which was promised for October, 1982. It involved a request for 37 additional positions. The Mechanical and Administration portions of LDS remained much the same as 1 January 1982. The operations portion was expanded to include an Operations Manager and 4 Construction Engineers and/or Unit Managers. The Engineer/Unit Manager positions would conform to existing MOAC districts and would be recruited through promotions from Unit Supervisors or external assistance contracts.

Following this report considerable time and effort were spent in preparing organizational charts and paper flow patterns for

all aspects of the LDS operation. Involved personnel were consulted and revisions were made. The lack of long-range planning from LUPS and of an approved organizational structure from DET made it difficult for Mr. Sukati and Mr. Tennison to establish formal projections.

Mr. Mauck arrived from the OCS Home Office May 1, 1983, and received the material prepared by Mr. Tennison. While in the process of preparing a management report based on increased activities in the LDS, information was received that there had been a sharp cut in operating funds for the Section. This meant that it would be difficult to carry out the projects as planned and that the organizational structure would have to be revised to meet the new budget limitations. At first this seemed to be a depressing state of affairs.

However, after much study it was decided that the reduction in work offered a challenge and an opportunity to create a more efficient operation within the LDS. With fewer projects, a reduction in staff, and less equipment in operation it would be possible to establish and monitor more closely a true accountability system. Qualified personnel could be selected and trained. Reporting procedures could be formalized. The computer could be programmed and a data bank of up-to-date information established. Equipment could be fully serviced and maintained in excellent condition for future use. Those projects

selected for completion could be properly supervised and an implementation schedule developed by LUPS.

A major problem in the current program had been a lack of cc ordination due to the fragmentation of authority, the large number of personnel, and an increasing number of projects. This slowdown appeared to offer an opportunity to mesh all the gears within the system and create an efficient operation.

Recommendations for a revised and reduced program were developed and presented in the June 1, 1983 Management Systems report. Since complete information regarding the budget constraints was not available, the proposed structure was tentative, awaiting future developments. Unfortunately very little developed during the next few months. The opportunities inherent in the budget reductions were not utilized. Due to political pressure no personnel retrenchment was made and the excessive number of employees was maintained.

The DET has not yet made the personnel and organizational audi it promised months ago. Therefore, no organizational structur revisions for the LDS have been made. The considerable amount of time and effort spent on developing a more efficient and effective organizational plan, has been wasted up to this point.

No permanent status has been given to the counterparts or other key personnel as recommended in the June report. This greatly limits their influence and their initiative. The warehouse and the training counterparts have been trained, but without permanency and authority they are hesitant to exercise their roles. No deputy LDO was ever appointed, so Mr. Sukati is left without any assistance. These and other leadership positions need to be reviewed by the DET and given the status necessary to carry out the functions of their assignments.

Only a few of the LDS projects have been worked on during the past few months. These have included road maintenance and water usage projects. Some programs have continued because construction materials were purchased on last year's budget. Only $40,000 was available for construction materials this year. Lack of materials coupled with the shortage of gas, oil and spare parts has led to the forced reduction in the LDS program. Much of the equipment has been parked. Most of that which can be moved has been taken to Unit 4, but a great deal of it has just been left where it broke down. It is estimated that 70% of the equipment was down as of December 1, 1983.

Due to the shortage of parts and lubrication supplies, field maintenance has been greatly reduced. This has contributed to very low morale in both the workshop and the field.

Work on the field maintenance camps has also been halted. Three of these were nearing completion. These should be finished and maintenance staffs assigned. The equipment can then be more easily maintained and unused equipment kept safe and operable.

One accomplishment was the assignment of 4 assistant unit supervisors. Since the unit supervisors are assigned to such large territories, these assistants were greatly needed. This will allow increased direction and supervision of the unit projects.

The computers were finally received with one assigned to the main office and one to the warehouse. The one at the warehouse was put into operation after much difficulty. This will be discussed in the Spares/Supplies Advisor section. The one at the LDS office was never brought on stream. It was decided that with the departure of the expatriates and no trained LDS personnel it would be best to store the equipment until qualified people are available to operate it.

The lack of a long-range land use plan continues to be a major problem for the effective operation of the LDS. This concern was presented in the June report and continued efforts were made up until the end of this contract. The lack of a unified sense of direction between planning and construction has been detrimental to this project from the beginning. The Administrator/Management Advisor made every effort to coordinate

activities and made recommendations for cooperative planning. Due to the fragmented organizational structure of the project this was impossible to accomplish. A more unified approach should be established in any future endeavors.

More specific information and related recommendations will be made in the following material.

LAND DEVELOPMENT ORGANIZATION AND MANAGEMENT

Within recent years the Land Development Section has grown from a small section with less than 100 men and a few tractors, engaged mostly in terracing, to a large organization with over 600 persons, and has become highly mechanized, utilizing over 200 pieces of major equipment engaged in road construction, dam construction, terracing, irrigation and domestic water systems.

The organizational structure has changed very little. In 1975 there were an assistant Land Development Officer (the present LDO), three USAID Contract personnel, the LDO, a Construction Engineer, and a workshop mechanic advisor. The equipment had grown to a considerable amount of modern equipment including 10 Caterpillar D-7 dozers, 3 D-4 dozers, 2 D-6 dozers, 4 Wabco scrapers, and 15 graders. Personnel numbered only about 275, divided into 5 working units and the workshop. Records indicate they were quite productive.

In 1979 personnel and equipment dramatically increased through the present USAID project. The equipment and personnel approximately doubled. USAID provided six contract personnel and the

Government of Swaziland now provides in excess of 600 persons, 21 that are permanent and pensionable, and the remainder through project funds on a more or less temporary or, at least, a non-permanent basis. The permanent and pensionable personnel include key persons such as the LDO, the Workshop Manager, the Unit Supervisors, and assistant Unit Supervisors, the Executive Officer, one assistant accountant and one typist. Permanent and pensionable positions normally cover all personnel required by GOS to be budgeted on an annual or recurrent basis, with the remainder of personnel paid for from project funds. In the past there were plenty of project funds and with the permanent and pensionable posts greatly restricted by the Department of Establishments and Training, and with very little review of the hiring of personnel with project funds, the LDS expanded to its present position.

To perform the work the LDS is now actually doing in all 18 RDA's it should have an organization shown on Chart LDS-1, including an additional 37 permanent and pensionable positions. We would also require a budget of approximately 6 million emalangeni, and increased assistance from the Land Use Planning Section. LDS-1 is officially what is being requested from the Department of Establishments and Training. It also shows existing personnel and their internal relationship.

The Mechanical Superintendent position and concept have actually been in effect since January, 1982 and was proposed by the worksh-

manager and was part of an agreement that established the Supply Section, the Field Maintenance Section, and the Training Section, along with counterparts for the OCS team.

The two Construction Engineers were initially assigned as "staff" when they arrived in January 1982. The Unit Supervisors, five at the time, reported directly to the LDO. (See Chart LDO-4.) Now the two construction engineers are in line positions directly responsible for all operations within their areas.

Ideally the four construction engineers should be stationed at the four existing MOA&C districts and would function very much like junior Land Development Officers. Where the Unit Supervisor are constantly on the move following the projects or work, the engineers would be closer to the district organization, supervising the unit supervisors that happened to be assigned within their district at that time, and providing much needed continuity to the program. They would also be in a much better position to establish and control a maintenance program that has been recognized many times as a major need. It was thought, for some time, that these positions could possibly be filled through the promotion and development of the Unit Supervisors. However, in reconsideration, it is noted that the Unit Supervisors by background, education, and training are on-the-job foremen and part of the existing problems can now be contributed to their being asked to assume management roles. The positions of the District Construction Engineers are management roles similar to that of

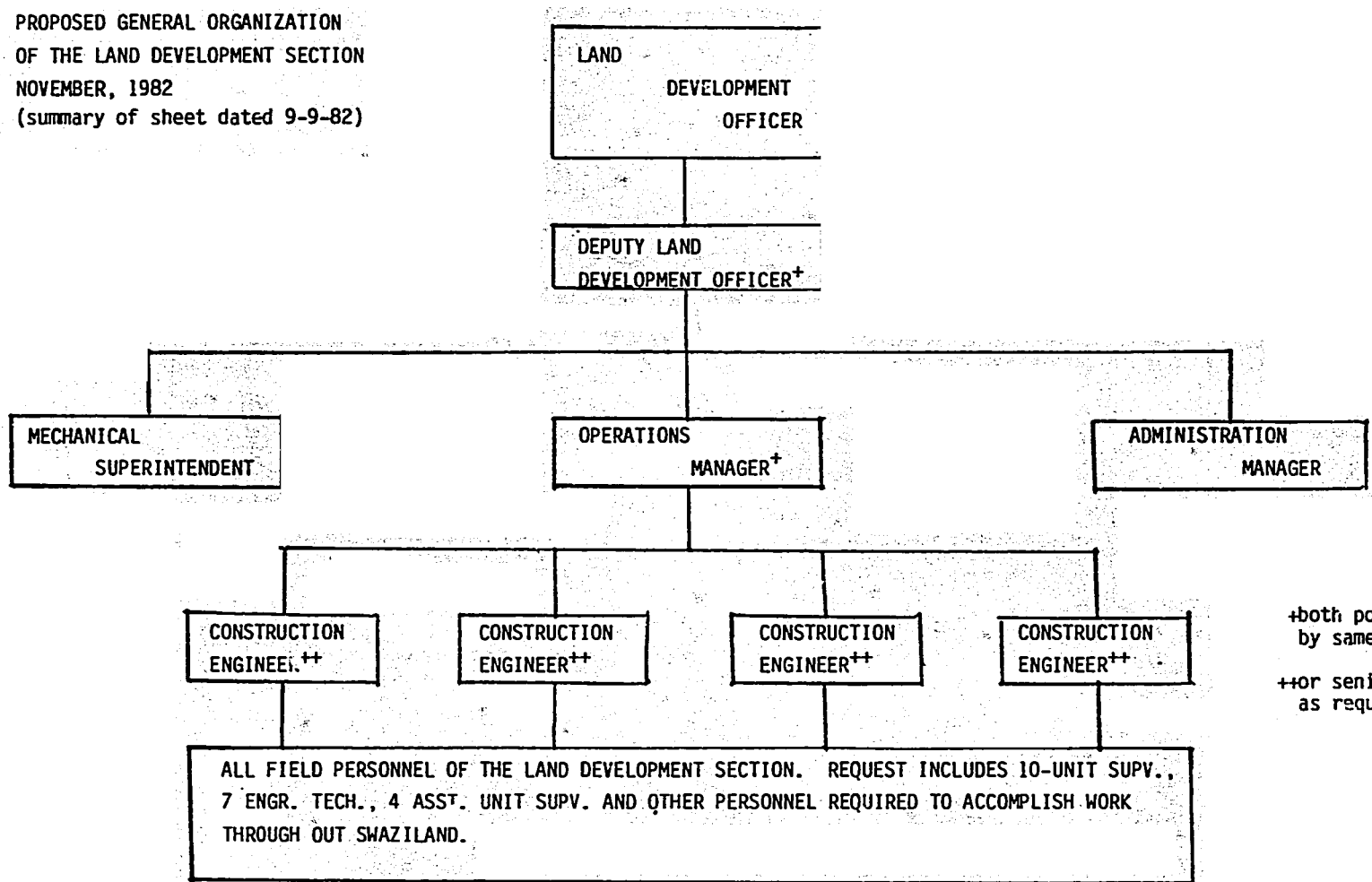
the LDO, but closer to the work for more effective control. It will be some time before there are suitable Swazi personnel available to assume these roles.

Existing budget and personnel limitations dictate a much smaller organization, similar to Chart LDS2. Even for a minimum operation the program requires that Establishment and Training be requested to grant at least five new positions. In priority order they are the Deputy LDO, the Mechanical Superintendent, the Out Station Manager, the Supply Manager, and a Senior Accountant. This would comply with the initial GOS/USAID project agreement, if not to the letter, then to the intent, and would be understandable in view of the current budget.

Additional information and recommendations were presented in the June 1, 1983 Management Systems report. As of the end of the project no action had been taken on any of these recommendations. The budget limitations and the failure to take any action on the part of GOS officials have left the entire program in limbo for the last six months.

The "End of Tour" report of the Team Leader follows this section. His comments and recommendations sum up most of the management concerns regarding this proposal. Other team member reports will be included following brief background summaries and their recommendations are related to the overall management structure.

PROPOSED GENERAL ORGANIZATION
OF THE LAND DEVELOPMENT SECTION
NOVEMBER, 1982
(summary of sheet dated 9-9-82)



+both positions occupied by same person if necessary

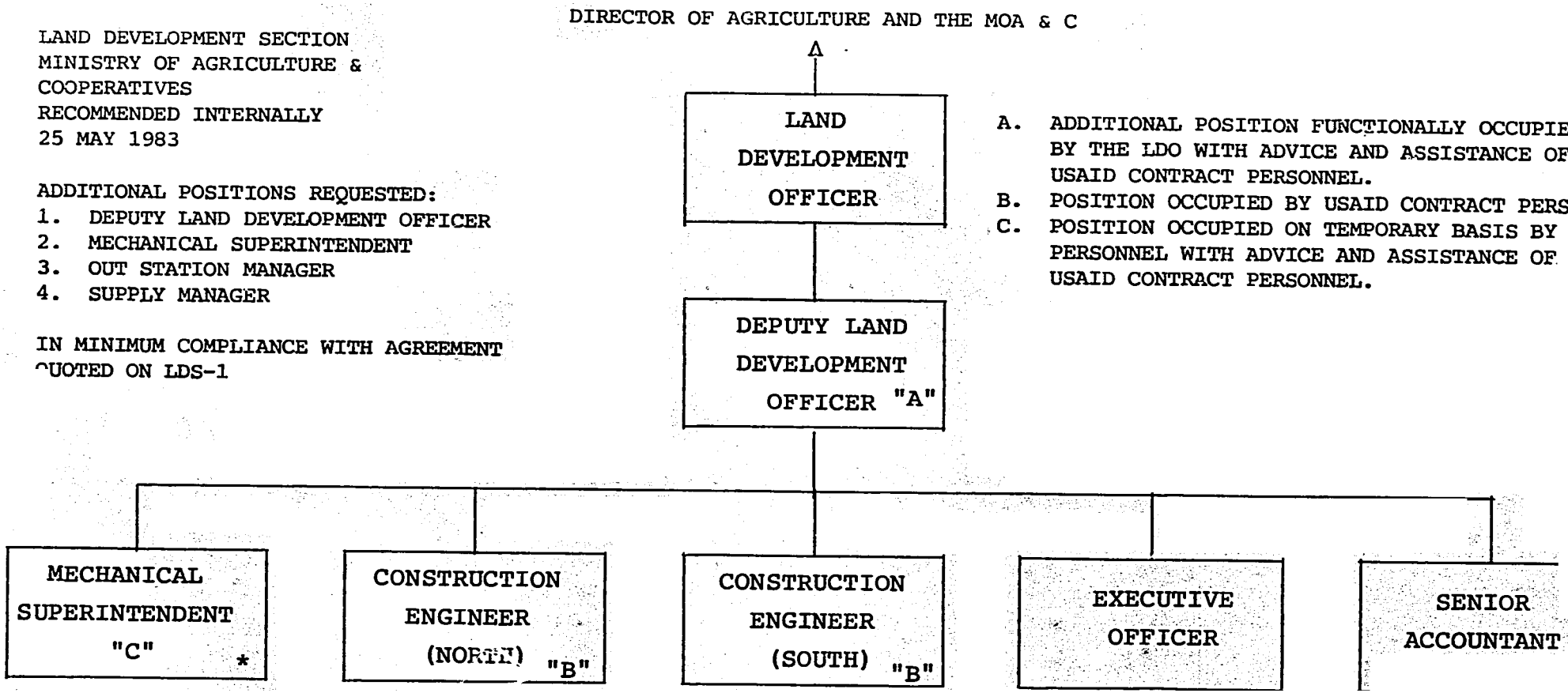
++or senior unit supvisor as required & recommended

LDS 1

LAND DEVELOPMENT SECTION
MINISTRY OF AGRICULTURE &
COOPERATIVES
RECOMMENDED INTERNALLY
25 MAY 1983

ADDITIONAL POSITIONS REQUESTED:
1. DEPUTY LAND DEVELOPMENT OFFICER
2. MECHANICAL SUPERINTENDENT
3. OUT STATION MANAGER
4. SUPPLY MANAGER

IN MINIMUM COMPLIANCE WITH AGREEMENT QUOTED ON LDS-1

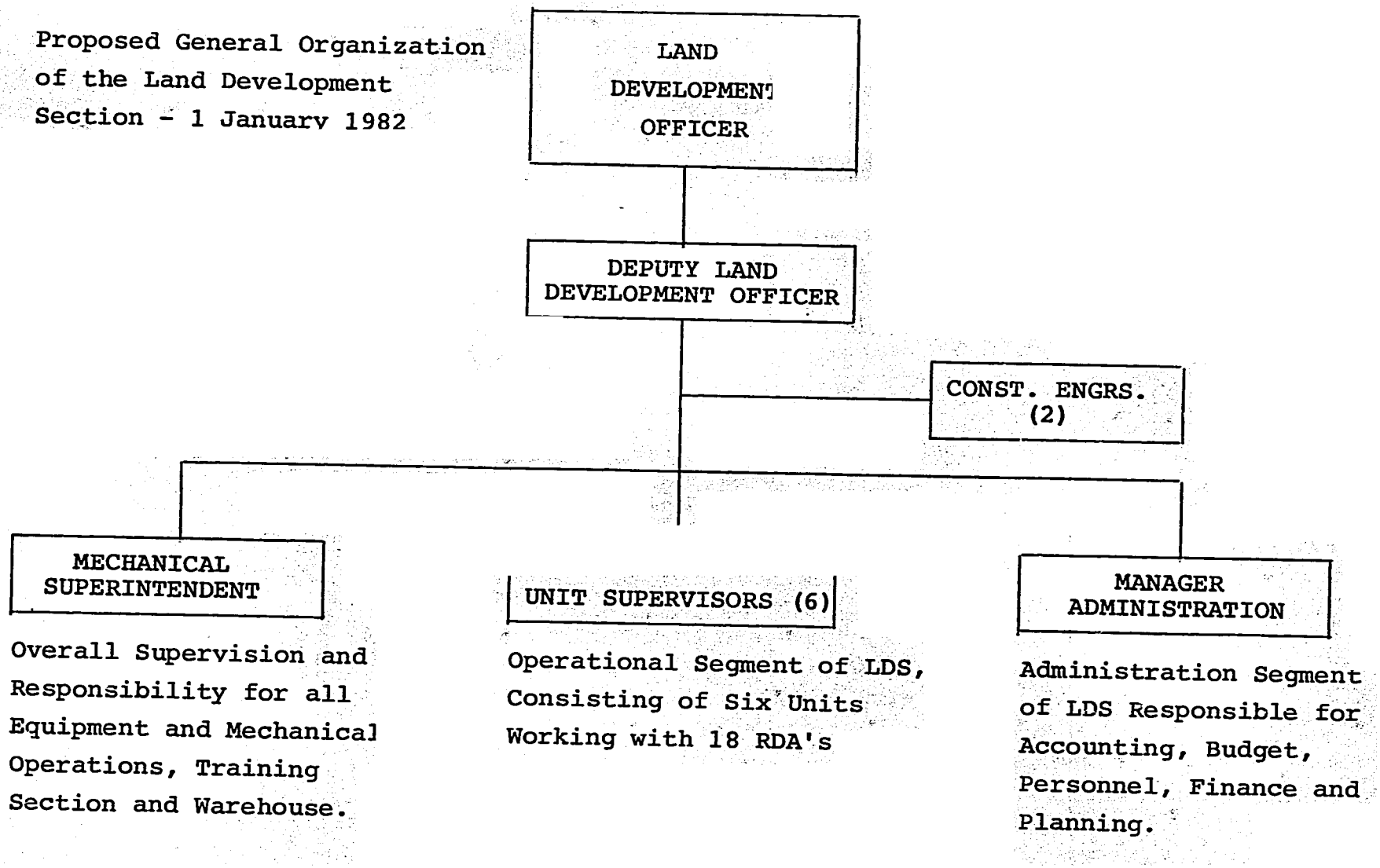


A. ADDITIONAL POSITION FUNCTIONALLY OCCUPIED BY THE LDO WITH ADVICE AND ASSISTANCE OF USAID CONTRACT PERSONNEL.
B. POSITION OCCUPIED BY USAID CONTRACT PERSONNEL
C. POSITION OCCUPIED ON TEMPORARY BASIS BY GOS PERSONNEL WITH ADVICE AND ASSISTANCE OF USAID CONTRACT PERSONNEL.

Overall responsibility for all equipment and mechanical operations, organization per charts, CWS-3 & FM-2	Complete responsibility for all land development operations in north. At this time units 3A, 3B, 5, and parts of 4. See Charts LDS-1.	Complete responsibility for all land development operations in the south. At this time units 1, 2, 6, and parts of 4. See charts LDS - 1.	Responsible for all personnel, property and equipment accountability, and periodic reports. Internal office security & supervision.	Continued responsibilities for all accounting including payroll, vouchers, taxes, provident book & invoices.

*See MS-1

Proposed General Organization of the Land Development Section - 1 January 1982



CENTRAL WORKSHOP

I. BACKGROUND

The Central Workshop was built at the very beginning of this project and had been operating under its present manager for many years prior to the arrival of current USAID Contract personnel. The manager exercises strict control of operations at the workshop. Sometimes this is an advantage and other times it presents hindrances to the improvements of the program. Mr. Shongwe has considerable influence over the men at the workshop and has power to influence decisions both in and outside the workshop. Some violations regarding the usage of men and materials were noted by team members.

In the early part of the project attempts were made to isolate the workshop manager and remove him from involvement with procurement and field maintenance, at least officially. Numerous organizational charts were prepared with the end proposition to limit the sphere of influence of Mr. Shongwe. With the coming of the new team in November 1981, it was decided that the only hope of progress or improvement would be with the cooperation and assistance of the workshop manager. The training advisor and the parts and supply advisor were instructed to assist where possible, but to stay out of the management of the workshop. This worked for the first

few months and some progress was made. But as necessary reforms were instituted opposition was encountered and Mr. Shongwe opposed anything that threatened his control of the workshop - both budget and personnel. Operations almost came to a standstill with Mr. Shongwe's absence due to a political involvement and his failure to delegate authority.

A weakness during the first few years of the program was the failure to appoint counterparts. Finally in early 1982 the Land Development Officer, in cooperation with the Workshop Manager, appointed on a temporary and informal basis the counterparts for Parts and Supply, Field Maintenance Supervisor, and the Training Manager.

II. CURRENT PROGRAM

There are currently 85 people working at the Central Workshop. This is an excessive number of people for the amount of equipment to be repaired. There is also a lack of overall coordination and control within the workshop. Eighty-five persons working on perhaps ten different machines or repair-related tasks would be difficult to supervise even under ideal circumstances, but with a loose organization and ineffectual delegation of authority, it becomes a chaotic situation.

At this time the workshop manager has too many responsibilities that keep him away from the workshop a great deal of the time. Without proper delegation of authority, very little happens when he is absent.

A growing concern has been the increased amount of workshop property that has disappeared during the past few months. No documentation has been prepared in regard to the missing items, so no action has been taken. It is important that established procedures be followed in order to curtail this activity.

The record keeping and reporting system at the workshop has also been very lax. A paper flow system has been established and would work very well with proper implementation and supervision.

When equipment is brought in for repair a job sheet is prepared and men are assigned to the task. They then determine the problem and the parts needed. The procedures outlined by the Parts/Supplies Department are then followed. When the work is completed the job sheet is returned to the office for recording. A breakdown in the system seems to develop at this point.

A procedure has been developed for filing information on each piece of equipment and a large board constructed to give an up-to-date visual record. However, it appears that these are not maintained properly. More supervision is needed in the office to keep the board up to date and to maintain accurate records on equipment.

Daily work reports are required of the manager and/or foreman. These are not always completed or are incomplete or inaccurate. Firm direction is needed in this area, also.

Recommendations regarding the workshop are included in the Team Leader's report, in other related areas and in the general summary.

END OF TOUR REPORT

PROJECT MANAGER

The report "Study, Evaluation and Recommendations for the Operations, Management, and Information Systems of the Land Development Section" dated 1 June 1983 is considered as the background for this report.

This reference adequately covers the present status of the Land Development Section as related to the Rural Development Program and the relationship of the writer and his activities over the past two years. It was completed in June of this year and clearly states accomplishment, recommendations, and forecasts and problems. I should not think that an in-depth repeat of this would be appropriate; however, the following is submitted for clarity and emphasis:

I. BUDGET

The 1983-84 Land Development Section budget reduction was not so much a cut from the Government of Swaziland as it was a withdrawal of funds normally supplied by donors. In fact, in many ways there had been a surplus of funds over the past few years that had contributed to many of the problems of the LDS. There was always a push to keep the equipment working, many times without proper planning. It also contributed to mismanagement problems that have formed habits that will be difficult to break.

Since May 1983 when the LDO was informed of the budget situation, at least four requests have been sent to the Ministry requesting assistance and guidance. There has been no reply. With the uncertain management of the MOA & C this is understandable, but certainly not defensible. The LDO has continued to try and operate and this will result in his being blamed for a great many situations over which he had no control. I have recommended many times that he close operations and wait for instructions.

II GOVERNMENT OF SWAZILAND

There can be very little progress with the current personnel rules and regulations of the Department of Establishments and Training. The LDS has expanded from a very small section with five tractors to a huge organization with an estimated 15M in equipment and at times close to 650 employees. The organization is critically short of top, middle, and lower management. It cannot continue to operate as presently structured. The LDS has attempted to by-pass the controls of the DET with the temporary appointments of counterparts and this has had some benefits, but they will be very short-lived without adequate meaningful recognition

The GOS basic procurement system is not appropriate for development programs and has prevented the utilization of available funds in the past. It has created a situation where the best suppliers refuse to do business with the

GOS. We have had many situations where suppliers have not been paid for three years and finally gave up and refused to do business.

III. EQUIPMENT

The attached list is the equipment that has been supplied under the program. All that remains to be received that has been ordered are the two drawbars for the D-8's and many spare parts. All of this should be received by February 1, 1984.

Receiving and Inspection Reports signed by Mr. Boyd and the counterpart are on file in the LDO's office. Receiving and Inspection Reports for all equipment received and signed by the LDO are on file in the USAID office.

Under the original agreement there still remains to be purchased two diesel construction pumps and a steam cleaner GOS requested that these be purchased locally to ensure a lasting supply of parts. GOS still wants these items, but there have been problems getting approval to purchase locally.

The only other item that I would recommend for consideration is the purchase of a land clearing chain which is required for proper utilization of the recently purchased D-8's.

There has been a great deal of criticism regarding the purchase of the D-8's and I feel, at this point, we should give them a chance to prove their capabilities. The chain should cost about E15,000 and, frankly, I believe, if properly handled, LDS could have the finest land clearing operation around and justify the recommendations that go back as far as 1975.

The following material has been received:

Equipment Received on 645-0068:

4 Sheeps Foot Rollers
3 9 Cubic Foot Concrete Mixers
5 Rome Scrapers
1 Caterpillar 915 Backhoe
1 Caterpillar 950 Wheeled Front End Loader
1 Caterpillar 225 Hydraulic Excavator
9 Champion Motor Graders
5 John Deere Track Type Tractor W/Angle Blade and Drawbar (850)
4 John Deere Track Type Tractor W/Blade and Ripper (850)
4 John Deere Track Type Tractor W/Angle Blade and Backhoe (550)
1 John Deere Track Type Tractor Front End Loader & Backhoe (850)
2 Towner, Land Plane Toe Type
1 Core Drill, Trailermounted
3 Soil Compactor, Hand Controlled
2 Vibrator, Concrete
1 Hyster, Fork Lift Truck
6 Agricultural Wheel Tractors and Accessories
2 Davey Air Compressors, Trailer and Accessories
Mack Trucks
1 Low Loader with Tractor
4 Dump
1 Wrecker
4 Water Tankers
4 Lubrication
4 Stake Body
4 Tilt Trailers
6 Culvert Forms

1 Small Parts Cleaner
4 Tool Sets, Mechanical with Chests
4 Ford Service Trucks
10 Toyota Pickups

Equipment Received on 645-0068-02

4 Ford Service Trucks
4 Mack Lub Units
1 Mack Low Loader with Truck
2 Mack Fuel Trucks
4 Mack Flat Bed Trucks
4 Mack Dump Trucks
3 Mack Water Trucks
4 Tool Sets, Complete with Chests
10 Fuel Tanks, Trailer
2 Schramm Air Compressors, Trailer Mounted
2 Caterpillar, D-8
1 Caterpillar, Self-propelled compactor, 815B W/Dozer Blade
3 Champion Graders, 740A
3 I.H. 3288 Wheeled Agricultural Tractors
3 Ford Pickups

The tractor accessories, 3 trailer mounted diesel pumps, and a steam cleaner are in the process of being acquired locally to assist in maintenance. An 8-ton crane was deleted as in excess of needs. There were also 2 other pickups purchased with grant funds.

IV EVALUATION OF A. M. SUKATI, LAND DEVELOPMENT OFFICER

This man should be given a medal by the Governments of Swaziland and the United States of America. For a time that is unbelievable, he has been the single management source that has been responsible for all the accomplishments of the Land Development Section. He has been subjected to pressures from both governments, asked to accomplish the impossible, and placed in numerous positions that could be considered illegal. He has continued to be optimistic in the face of impossible difficulties, long working hours, and incompetence from all sides. Despite

all this he still provides leadership and effective management to get the most out of all persons assigned to the LDS.

However, in many ways his performance is predictable. His education, background, and experience have provided him with the tools necessary to do the job, but, if he leaves, be prepared for the worst to happen. No single man could possibly move into his shoes.

RECOMMENDATIONS

1. The need to correct the budget and organization problems is obvious, yet they cannot be corrected without a properly planned program. I do not believe this can be accomplished by personnel who are now in the country. It has been suggested that AID have Fisher return to prepare such a new program. To this I can only add that his team should include a heavy equipment specialist, such as G. W. Miller, who worked on the original program in 1977.

2. With or without the above planning, or even an adequate budget, the LDS must be provided additional key personnel as recommended in the CID Evaluation and Hunting Report. These would have to include a Deputy LDO, Mechanical Superintendent, Senior Accountant, Cost Accountant, Field Maintenance Foreman, Property and Supply Manager, Four Construction Management Engineers, and at least 6 more Unit Supervisors.

3. Workshop Concerns

a. Any dialogue about the present or future Land Development Programs would have to be predicated on the removal of Sidumo Shongwe. To think you can work with him, around him, or through him is sheer folly.

b. Future workshop programs must include, as a minimum, an American workshop manager working with appropriate counterparts for at least two years. There should also be a training advisor and a parts and supply advisor.

c. The LDS Headquarters should be moved to the Workshop Area.

4. LDS Technical Assistance Organization

a. The organizational structure should be similar to that proposed in the original Project Review Paper, Swazi Infrastructure Support, 690-0068, dated May 18, 1977.

b. Also as recommended by the CID Evaluation, Hunting Report, and my June 1, 1983 report, it would be in everybody's interest if the LDS could go parastatal. This may be the only way to save the equipment.

5. The LDS needs an annual budget of approximately 7 million emalangeni to operate the present fleet 70% of the available time. Plans are being made to increase the RDA's from 18 to 30. Preparation should be made for this eventuality and appropriate funds allocated.

6. USAID should continue to offer assistance only if the above recommendations are met to some degree.

PARTS AND SUPPLIES

MANAGER/SUPPLIES ADVISOR

I. BACKGROUND

The purchasing of parts and supplies and the organization of the warehouse were major concerns early in this project. Prior to the granting of assistance there was little organization, spares and supplies were scattered throughout the workshop area and small parts were stored in one tiny room behind the workshop. A new warehouse was built in mid 1979 and an inventory and check-out system was established.

Mr. Chris Steward established the present system and he was followed by Mr. James Andrews. Both of these men had some difficulties adjusting to the responsibilities of the position and Mr. James G. Boyd assumed the role of Advisor in October of 1981.

With Mr. Boyd's arrival the warehouse was expanded to include second-floor shelving and additional storage space, and the ordering, receiving and dispersal systems were modified. A computer was ordered to improve inventory control, cost-accounting and to expedite purchasing procedures. The current program and future needs will be discussed in the sections to follow.

II. CURRENT PROGRAM

A. Inventory

During the past year the warehouse issued over 750,000 emalangeni in spare parts. A large inventory is maintained due to the shipment of parts from the factory with the purchase of equipment. However, many of these items are slow-moving and are occupying space which could be used for needed parts.

The following list shows the value of the spare parts currently in the warehouse, broken down into the different types of equipment being used:

Caterpillar	E418,715.92
Wabco	97,413.12
John Deere	90,313.33
Champion	181,212.12
Galion	72,012.05
Mack	49,937.81
International Harvester	23,666.39
Toyota	15,475.87
Ford	8,135.01
Ateco Ripper	7,843.29
Elliott Lube Body	2,910.36
Davey Air Compressor	2,507.80
Gilson Concrete Mixer	1,257.06
Power-Mate	1,081.61
Filters	5,445.20
Oshkosh	12,000.00 est.
Komatsu	10,000.00 est.
Land Rover	3,500.00 est.
Leyland	2,500.00 est.
Electrical Spares	2,500.00 est.
Vee-Belts	500.00 est.
TOTAL	E1,008,926.94

A large shipment of parts was received for Mack Trucks and Champion Graders this past year. For this reason an accurate account of parts movement cannot be determined for them. The following percentage of line items moved in the major lines:

	1981	1982	1983
Caterpillar	16%	35%	35%
John Deere	1%	10%	15%
Galion	36%	39%	40%

There has been little change in the percentage of line items that have moved during the past years. But without a procedure to get rid of slow-moving parts, it will be difficult to improve much more.

Additional parts are on order and should be received within the next few months. Parts will be coming in from:

John Deere
Caterpillar
Mack Truck
Champion
International Harvestor

These will present a storage problem and will not meet the day to day need for operational parts such as filters, belts, etc.

B. Operational Procedure

Parts are ordered and received by the Warehouse Manager. A supply of parts is maintained by regular checks of

the inventory and purchase orders are issued to replenish the necessary items. Parts are also ordered on an emergency basis when a specific item is needed and is not in stock. Purchase orders may now be signed by Mr. Gina and Mr. Shongwe. However, they must be co-signed by Mr. Sukati.

The procedures for ordering and issuing parts were presented in the June 1983 Management Systems report. These procedures are still followed except for the involvement of the computer in the processing of some parts. This will be discussed in a later section.

On the June report it was recommended that the warehouse be placed in charge of oil, batteries and tires and that secure areas be established. No funds were available to provide security, so some new procedures were established. Batteries were moved into the warehouse and the old battery had to be turned in before a new one would be issued. An oil issue sheet was developed and all oil removed from a barrel had to be accounted for before a new one would be opened. New tires are no longer stockpiled at the warehouse. Requests for new tires must be approved and they are secured directly from CTA and mounted on the vehicle.

This has eliminated many of the problems at the workshop, but there are still many concerns regarding the dispensing of gas, oil and parts in the field. Some sort of a check system needs to be developed and infractions prosecuted.

C. Counterpart

No counterpart was assigned to this position until early in 1982. As in the other counterpart assignments, it is a temporary position since it has not received full approval from the DET. Mr. Clement Gina was selected for the position from the mechanics in the workshop. He attended SCOT for three years, served his apprenticeship and is now a Grade II Heavy Plant Mechanic. Mr. Gina was sent to the United States in January of 1983 to receive training in procurement procedures in a program sponsored by the Afro-American Purchasing Company. During his stay he received instructions at the AAPC office in New York City and visited several heavy equipment manufacturing plants.

Mr. Boyd has worked closely with Mr. Gina to prepare him for managing the warehouse. It is important that Mr. Gina receive permanent status from DET so that he can assume responsibility for the total operation.

D. Computer

The new computer for the warehouse arrived in August. The earlier report outlined the plans Mr. Boyd had for utilizing the computer in his operation. Unfortunately no training was offered by the company that installed the equipment and Mr. Boyd had to call upon the assistance of Mr. Arden Weise in LUPS to put the system into operation. Mr. Boyd then developed his own program using the dBase II system. He taught two assistants, Miss Dludlu and Mr. Nkayane, to operate the equipment. They entered over 7,000 of the approximately 10,000 cardex items in the warehouse into the computer. This included all the new Champion parts which were received in the fall. Maximum and minimum quantities were entered for each item and reorder reports were programmed.

In November USAID brought in some experts with the intention of putting in a "simplified" system, but after they saw how well the dBase II program was working, they recommended that it be continued and no changes made.

The skills of Miss Dludlu and Mr. Nkayane are limited. To insure the continued utilization of the computer, additional assistance will be needed. The services

of a computer consultant should be secured on a regular basis or a full-time, trained and experienced person hired. The computer can be of great assistance to the warehouse operation, but it needs continuous supervision from trained personnel.

END OF TOUR REPORT

PARTS AND SUPPLIES ADVISOR

The two-year contract here has, as a whole, been very frustrating. If you wanted to do manual labor jobs and keep quiet, everything was fine. If you started making management recommendations you soon ran into a brick wall. The driver in the warehouse is a good example. I tried for over a year to have him removed, or at least replaced, by someone who could speak and read English to help in the warehouse. Most of his time was spent sleeping and he is the highest paid person there. Mr. Shongwe would always tell me that he was going to move him next week or next month. So far he is still here sleeping. It was the same thing with people working on private cars. We have lost untold oil, batteries, and tires through lax security and private cars coming into the workshop.

The money that was wasted on outside repairs during 1982 would have been a big help this year. Over E20,000.00 was spent on several Galion transmission repairs. When the local authorized dealer said that the cost should not exceed E7,500.00, E44,000.00 was spent repairing a D4D transmission, when a new one could have been bought for E10,800.00. Engines, starters, and alternators were handled the same way. We have autoelectricians in the workshop repairing private starters and alternators, yet the ones for LDS have to be sent out for repairs. It is the same

thing with engines. Hardly a day goes by that a private engine is not being overhauled in the workshop.

I get reports that people in supervisory roles are running petrol stations at their homes. The oil and petrol has to be coming from LDS service trucks.

It really bothers me when Swazis come up to me in private and want to know why USAID doesn't do something.

The 1983-84 budget was less than half of what we received last year. The cut itself was bad enough, but due to the inability and the inefficiency of the LDS accounts section, over E200,000.00 worth of items ordered and received last year will have to be paid this year. During shutdown from the first of March until the thirteenth of June, we were without purchase order books. From the fourth of August until the fourth of October and from the first of November until early December we were without them again. That makes a total of six and a half months out of this calendar year so far that we have not had purchase order books. It is very hard to run a parts department correctly when you have that kind of ordering restrictions.

We received a computer in August of this year. I wish that it could have arrived six months sooner. If it had been made operational before I left, it might have been kept up. But with

no one to encourage them, I am afraid it will never be utilized. Miss Dludlu says that she will enter all of the data, but she will need formal training and someone to call in case of problems.

RECOMMENDATIONS

It is recommended that the following actions be considered:

1. Change the management at the workshop. It may have to be changed more than once to get away from Mr. Shongwe's influence.
2. Stop the missuse of equipment through new management, new drivers or whatever it takes to control it.
3. Create permanent positions for the following:
   a. Outstation Manager
   b. Parts Manager
   c. Training Manager
   d. Senior Accountant
   e. Computer Operator and Assistant
   f. Storeman
4. If transmissions, engines, etc., are going to be sent out for repairs, set up a system to monitor the price and quality of the work being done.
5. Stop all private cars from coming into the workshop and all repairs on private cars.
6. If work is to be done to other government vehicles, have the requests come through proper channels.

7. There needs to be expat help in the following:

   a. Warehouse for 12 months. During that time the GOS needs to add a clerk to help with the paperwork.

   b. Workshop for 24 months. This person will need the full cooperation of the GOS. To make the workshop function the way it is supposed to, there will have to be some people fired. When he tries to stop all of the private cars and repairs that go on there, there is a good chance of strikes and possible violence.

   c. Someone in the field to help on equipment maintenance and control for at least 12 months.

8. Move field mechanics to the field and put them under the unit supervisors.

9. Return junked and obsolete equipment to C.T.A.

10. Increase the number of units to make the larger ones more manageable.

11. Try to standardize the equipment. We have equipment from twenty-three different manufacturers to stock parts for.

12. Try to introduce an incentive system to help motivate the employees.

TRAINING PROGRAM

SENIOR MECHANIC INSTRUCTOR

I. BACKGROUND

The mechanic training program at the LDS workshop was slow in getting started, but has improved rapidly during the last two years. When the first mechanic instructor, Mr. Ray Feather, arrived there was no organization, no training materials, and a very inadequate classroom. Efforts were made to order materials and build a new classroom. Progress was very slow.

While waiting for some action, training needs were assessed, plans were made and informal instruction was offered on the workshop floor. When Mr. Feather left, Mr. Ed Nystrom arrived and continued to push for the construction of the classroom and placed orders for training equipment and materials. He became involved in the workshop operation and received and inspected much of the new equipment which was arriving. However, Mr. Nystrom proved unsatisfactory and was replaced by Mr. Robert Van Westen in November of 1982. The current training program has been developed by Mr. Van Westen with the assistance of the Project Director, the LDO and the Workshop Manager.

During the first two months of Mr. Van Westen's residency, concentrated efforts were made to complete and equip the classroom. The room and office were soundproofed, painted and air-conditioned. Audiovisual equipment was received, and training materials worth several thousand dollars were added. Also, during this time specific needs were assessed, teaching syllabi prepared, students identified and an organizational structure established. At the same time informal instruction continued on the workshop floor. The current program started formally in January of 1982.

II. CURRENT PROGRAM

A. Classroom Instruction

During the first month of Mr. Van Westen's residency a two-year program of classroom training was established and has been followed rather closely. A list of subjects covered follows:

COURSE TOPICS

Safety and Use of Tools	Jan.-Feb. 1982 (Continues as a part of all courses.)
Fundamentals of Engines	Mar.-June 1982
Friction Clutches and Torque Converters	July 1982
Brake and Booster Systems	August 1982
Differentials and Final Drives	September 1982
Welding	October 1982
Engines, (Floor and Lab)	November 1982 (Classroom being remodeled.)
Principles of Hydrualics	Jan.-April 1983
Hydraulic Systems	May-June 1983
Batteries and Fundamentals of Electricity	July 1983
Generators, Regulators, Etc.	August 1983
Transmissions	Sept.-Oct. 1983
Electrical Systems	Oct.-Nov. 1983

Lubrication, shop economics and work relations have been integrated into the above units when applicable.

Although the schedule varies, the students generally spend about six hours each week in the classroom and six hours in either the laboratory or the workshop.

A complete syllabus was prepared for all courses. John Deere and Caterpillar training materials provided the basis for the instruction. Slides, tapes, transparencies and work books were utilized. The material was also supplemented with training manuals and maintenance, repair and parts guides from Champion, Galion and Mack companies.

At the beginning of the program all mechanics in the workshop were required to attend classes. Gradually some were given other assignments and attendance was based upon need and the desire to advance. Monthly attendance averages for the classes were as follows:

	1982	1983
January	84	40
February	85	36
March	80	36
April	83	39
May	83	33
June	72	30
July	69	36
August	69	28
September 64	64	31
October	Welding Class II	26
November	Classroom repaired, training conducted on workshop floor and in lab.	
December	R & R - Classes suspended.	

Due to irregular attendance a complete evaluation program is difficult. Unit tests are administered and personal evaluations are made. The final evaluation, of course, is in being able to pass from one grade to another. However, on the basis of informal evaluations the following number of students were rated as having satisfactorily passed the courses.

	No. Attending	No. Passed
Safety and Tools	84	76
Engines	69	65
Champion Graders	39	39
Welding	11	11
Power Trains	39	35

The results of Grade Tests for men in the workshops are listed below:

August 25-36, 1982:
Grade II Heavy Plant Mechanic Test
13 attempted, 6* passed.

November 29 - December 3, 1982:
Grade III Heavy Plant Mechanic
14 attempted, 13 passed.

Grade III Motor Mechanics
5 attempted, 4 passed.

*Included several field mechanics who had been unable to attend classes.

November 19 - December 3, 1982:
Grade III Electrical Systems
4 attempted, 3 passed.

May 2-4, 1983
Grade I Heavy Plant Mechanic
8 attempted, 8 passed.

October 3-5, 1983:
Grade II Heavy Plant Mechanic
12 attempted, 2 passed.

November 28-30, 1983:
Grade III Heavy Plant Mechanic
13 attempted, 9 passed.

B. Training by Equipment Dealers

Liaison was established with various equipment dealers in Swaziland, South Africa and the United States. Training sessions on repair and maintenance were conducted by Champion, John Deere, Galion and Caterpillar. A major one-week training program was conducted by Champion Graders in March of 1982 in which 39 students received certification. Eutectic and Castolin conducted a welding school in October of 1982 and eleven students completed this program. Galion also conducted a two-day school and John Deere offered training in December of 1982.

Mr. Van Westen received additional training in December of 1982 at the John Deere Training Center in Moline, Illinois and then attended a special orientation session at the home office of Champion Graders in January 1983.

C. On-the-Floor Training

The program started with on-the-floor training and this continues to be an important segment. The mechanic instructor went about the shop offering assistance and answering questions. This provided timely guidance and training. The advisor put the machine shop in operation and offered assistance there, as well as in the welding shop.

While offering assistance on the floor 25 engines were rebuilt. These have contributed to the start of a component storage area where engines can be kept for immediate exchange while the malfunctioning one is either repaired or sent out for a complete overhaul. This reduces downtime considerably, since an engine can be replaced in a few days, while sending one out for an overhaul can take several months.

D. Field Unit Training

Efforts were made early in the program to conduct classes for field maintenance personnel, but due to the demands upon their time attendance was sporadic, so the classes were discontinued.

The program for upgrading the field operation was to assign workshop mechanics to the field when they had completed training at the shop. Five of the 13 mechanics who passed the Grade III examination in December are now working in the field. A weekly class on maintenance techniques was established and those field mechanics available attended as well as shop mechanics.

III. FACILITIES

A. Classroom

The classroom situation has been previously mentioned,

but it should be further noted that building and equipping the classroom were important early steps in implementing a training program. It was essential to have a quiet, comfortable area in order to maximize the level of instruction. This phase of the program has been completed after months of effort and negotiation.

B. Training Equipment and Materials

The program started with a few basic operators and mechanics manuals that came with the equipment. During the first six months of the contract OCS recommended the purchase of the necessary audiovisual and reproduction equipment. This material was finally received at the end of 1981 and has been a major asset to the program for the last two years. The OCS Home Office purchased and shipped several thousand dollars' worth of training materials from John Deere and Caterpillar. This included training manuals in many subjects and the accompanying slides, filmstrips, video cassettes, transparencies and student workbooks. These were not authorized until the fall of 1981 and have been arriving on a need basis since that time.

Additional classroom and office equipment was purchased by GOS, shortly after Mr. Van Westen's arrival. The

classroom is basically well equipped at this point, but additional training materials will be needed as the program develops.

C. Laboratory

Shortly after the start of a formal training program a teaching laboratory was established. It was equipped with a complete tool set, engine stands, work benches, an injection tester, a valve lathe, engine models and other training and repair equipment. This has been a valuable aid in providing supervised learning experience.

D. Workshop

The workshop will be discussed in more detail in another section, but some areas of its operation relate closely to the training program. The Mechanic Instructor was instrumental in putting the machine shop in operation. Much new equipment was available, but had not been set up for operation. Now the drills, presses and lathes are utilized for both training and routine repair. The welding shop and surrounding area was cleaned up and reorganized. Routine cleaning periods were established. A tool checkout system was put into operation and a large board was constructed to record the maintenance and repair history of each piece of equipment.

IV. COUNTERPART

For the first two years no counterpart was designated for the Mechanic Instructor. Finally a person was appointed to become the Director of Training even though it is a temporary position and has not been officially approved by the DET. This person was selected from the mechanics on the floor. He is Mr. Tom Nkambule. He has several years of training at the Swaziland College of Technology (SCOT), was a Grade II Mechanic at the time of his selection, and has now passed the Grade I examination. Mr. Van Westen worked closely with Mr. Nkambule, and he was able to handle most of the classroom instruction while Mr. Van Westen worked in the laboratory and the workshop. They planned the programs together and worked closely in student evaluation. When Mr. Van Westen left Mr. Nkambule took over full responsibility for instruction and has continued to offer classes. He prepared the students and assisted in the testing for the Grade III examination in November.

Mr. Nkambule needs to have his position approved by the DET so that he can have the status of a permanent position. When this is done he should be sent to the United States for additional training leading to a degree in heavy equipment.

V. RELATIONSHIP WITH SCOT

Mr. Van Westen established a close liaison with the administration and staff of the SCOT. He offered assistance in the planning of their new heavy equipment training facility and in the development of their new curriculum. Mr. Van Westen was on the Advisory Board of the Heavy Plant Training Program and a board member for both the development and the administration of tests for heavy plant mechanics. GOS workshop facilities were used for the administration of Grade tests and Mr. Van Westen participated in the evaluations. He was also a member of the Minimum Wage Advisory Board.

END OF TOUR REPORT

MECHANIC INSTRUCTOR

3 October 1983

I arrived in Swaziland November 1, 1981. For the first three months I had to set up the classroom and make a study of each of the people in the workshop and also in the field. After this was done we divided the people into groups. This took a lot of time as we had to interview each person. Then I had to take inventory of all the training aids and equipment that was available. Then when this was done, I started to hold classes. The first class was held on January 11, 1982. This was to show the people how to use hand tools. We had three classes a day for four days a week. There were six groups with 10 to 11 in each group. We also had the Field Mechanics in class on Fridays. For the three weeks we had a total of 289 students attending class. In this class we showed them the right way to use tools and also safety. We also taught the use of shop equipment in the classes. During this time I got the drill presses working, the power saw, the shaper, and the metal lathe. I also had the welders make three engine stands. We taught the students how to operate this equipment.

In February, 1982, I got my counterpart. He then started to help with the classes. I would explain the lesson in English and he would explain it in Swazi. In February, 1982, we arranged to have a class here on Champion Motor Graders. On March 1, 1982,

Mike Eperjesy from Champion Motor Graders was here for five days. We had 39 people attending this Training Program. Tom and I helped him with the program. We still were teaching hand tools. We were into the use of micrometers and feeler gauges. For safety Mr. Shongwe and I purchased some fire extinguishers. This was done according to an order from the Fire Chief. We also had some films on safety from Caterpillar that we showed. During the showing of the films we had eight people from Barlows here to see them. We also had two meetings with the people from S.C.O.T. about the training.

In April we started with the basic engine systems. We had a difficult time doing this because we had only one book; the same was true with hand tools. We had to make copies of the book. This went on for two months. Then in June, with the help of Mr. Shongwe, we got books for all the students. This was a big help and things began to work better. In August, 1982 we had a Grade II Test here at the Workshop. S.C.O.T. had to use the workshop here as they haven't any heavy equipment to test with. Eleven people took the test and six passed. In November, 1982 we had the Grade III Test here. In November I was appointed to the Trade Testing Panel. This is the panel that makes up the tests. We had 14 people take the Grade III Test and 13 passed. Also at the same time we had five Motor Mechanics take the test at S.C.O.T. and four passed. Four people also took the Auto Electrical Grade III Test and three passed.

In December, 1982 I went back to the States for the Holidays and while there went to the John Deere Company to find out about some things with which we were having trouble. I also went to the Champion Grader School for four days. After I returned, we started in with power trains. We had to move along, as there were a lot of things to be done yet and time was running short. We did start to rebuild the engines in the shop as a class assignment with Tom and me telling and showing them how to do it. We stayed with power trains for five months. During that time we did work in the shop and also had one class with Galion Graders and three classes on welding fundamentals. We started classes on preventive maintenance for equipment one day a week. We went out in the field with the people and showed them what had to be done. Then, in June of 1983, we had the people who were going to take Grade I Test in class for two hours each day. In July, 1983 we had the Grade I Test here. Eight from the workshop and field took the test; all of them passed. The test was made up by the Trade Panel at S.C.O.T.

We started with electrical systems in July, 1983. That subject should be finished by the end of September. While teaching and getting the classes organized, I also helped in the shop where there was a need for me. A few things that were accomplished since I arrived were:

1. 35 people passed their Grade Tests.
2. Got all the shop equipment working.

3. Got a new air compressor for the shop.
4. Got new tools for lab work.
5. Got classroom redone.
6. Started training a counterpart.
7. Established training programs with all appropriate equipment dealers.
8. Cooperated with the Workshop Manager, Workshop Foreman, Field Maintenance Supervisors and S.C.O.T. on training and work requirements.
9. Had a Management Training Program.
10. Fixed up a library of manufacturers' maintenance manuals.

recommendations for the future are:

1. Send counterpart to U.S. to school.
2. Have a class on hydraulics. The books for this class are available.
3. Start a training program with engines once more, including detail in the overhauling of them. This also applies to power trains, differentials, and electrical systems.
4. Arrange for more dealers to have training programs.
5. Have the untested people take the Grade III Test and all others who have accumulated the required time move up to the next test.
6. Work with the people in the shop more.
7. Set up a tool room so that the tools are kept under better control.

8. Train someone else to help my counterpart when I leave.

These are just a few of the things that should be done. With all of the new equipment, there is going to be a lot of training that has to be done with the people who are going to operate it and repair it. I feel that this training should go on for as long as there is equipment that needs repair.

FIELD MAINTENANCE

MECHANICAL FIELD SUPERVISOR

I. BACKGROUND

The field maintenance program got off to a faster start than any of the other project activities. Mr. James Yoder was the only Mechanical Field Supervisor. He started with a few tools in his own car and went out and located down equipment and began repairs. He gradually received pick-ups, more tools and finally well-equipped service and lubrication trucks. He selected good mechanics from the workshop and trained them in maintenance procedures.

For a time the field maintenance operation was removed from any supervision by the Workshop Manager. However, it was felt that for effective maintenance there needed to be a close relationship between maintenance and repair. The field operations are now a part of the workshop program and under the direction of the Mechanical Superintendent.

With the selection of the counterpart, Mr. Enoch Msithini, the field maintenance program moved forward and in November of 1982 Mr. Yoder was phased out and Mr. Msithini assumed full responsibility for the operations.

II. CURRENT PROGRAM

Field maintenance is now an organization of 70 persons, including 32 heavy plant certified mechanics (Grade I, II, and III), 12 untested mechanics or apprentices, two welders, two auto-electricians, 19 drivers, 3 assistant drivers, and one control clerk.

Equipment includes 8 service trucks, 8 lube trucks, 3 low loader trucks and miscellaneous transport vehicles.

The normal day starts with the men obtaining instructions, assignments, and the parts and supplies for the day. This takes until around 10:00 a.m., then they drive to the equipment to be serviced, arriving around 1:00 or 2:00 in the afternoon. They service or repair the equipment as necessary and return to the Central Workshop as near to 5:00 p.m. as possible. In the past government regulations permitted returning to the workshop after 5:00 p.m.; now this is punishable by a fine in excess of 200 emalangeni.

Because of the amount of time wasted and the obvious wear and tear of equipment and personnel, the LDS planned to build maintenance and repair shops at the eight operational units throughout Swaziland. Three of these were well on their way, up until the budget cuts. It is recommended that these be completed as soon as possible to provide more efficient field maintenance.

Each of the eight sections is now headed by a master mechanic, assisted by a repair mechanic and a service mechanic, and each of these is assisted by an untested mechanic. Each repair mechanic has been assigned a mechanic repair truck and driver, and each service mechanic has been assigned a lubrication truck and driver.

Currently repair work is scheduled in response to requests from the unit supervisors, engineers, LDO and others that notice the need for such repairs. A job order is written and arrangements are made to get equipment to the workshop The parts and repair procedures are followed as developed by the Parts and Supplies Department.

In the daily reports of the Unit Supervisors, the status and location of all equipment is supposed to be reported. These are to be submitted weekly for review at the LDS. In order to maintain accurate records on equipment, these reports should be submitted on a regular basis.

Equipment is now being scheduled for service on reports from the field as to the number of hours worked by the machines. A service request is submitted and completed when the work is finished. Problems of checking service and repairs reported to have been completed have routinely developed and resulted in personnel reassignments.

The development of a preventive maintenance and service schedule that would reflect the service requirements of the LDS has been prepared. The schedule and proper forms have been submitted to involved personnel, but proper utilization has not yet been established. Efforts to implement the system should be encouraged. Further recommendations regarding field maintenance are included in other sections of this report.

SUMMARY

In reviewing the previous material it is obvious that this project has been met with some successes and many frustrations. Administrative and budgetary concerns caused most of the frustrations. Despite these some major objectives of the project were accomplished. These were presented previously in more detail. A brief outline of the major ones is presented below:

I. Organization & Management

A. New organizational plans were developed.

B. Many new personnel were added and some permanent and pensionable positions were filled.

C. Counterparts were named and trained.

D. Construction Engineers were placed in line positions and made responsible to the LDO.

E. The Executive Officer position was filled.

F. A large amount of equipment and spare parts was ordered and received.

G. Four Assistant Unit Supervisors were named.

H. A new radio system was ordered.

I. A reporting system was instituted.

J. Computers were ordered and received.

Left

II. Warehouse and Supplies

A. A new warehouse was built and expanded.

B. An inventory system and issuing procedures were established.

C. Tighter controls were developed.

D. A counterpart and staff were trained.

E. Over $1,000,000 in spare parts were received.

F. A total record and reporting system was instituted.

G. A computer was installed and an inventory program developed.

III. Mechanic Training Program

A. Trainees were identified.

B. Training materials were secured.

C. A well-equipped classroom and office were established.

D. A training laboratory was equipped.

E. The machine shop was put in operation.

F. A counterpart was trained.

G. The welding shop was put in operation and a welding class was conducted.

H. Training programs were conducted by equipment dealers.

I. Engine stands and workbenches were built.

J. Forty-five persons passed Grade Tests.

K. Established liaison with Swaziland College of Technology.

L. Sponsored a Management Training Program.

M. Set up a library of manufacturer's maintenance manuals.

IV. Field Maintenance Operation

A. Set up a maintenance schedule and reporting system.

B. Secured tools, service and lubrication trucks and low loader trucks.

C. Organized and staffed eight service sections. Assigned service and lubrication trucks to each section.

D. Started the construction of workshops in each section. Three are nearly completed.

E. Trained a counterpart and turned the operation of the field program over to him.

F. Utilized the training program to upgrade the field mechanics as much as time would allow.

RECOMMENDATIONS

Recommendations are presented in more detail throughout this report. A brief listing of the more important ones are presented here for easy reference.

I. Organization and Management

A. A long-range plan for land use is necessary for efficient operation within the LDS.

B. Closer coordination and cooperation must be established between planning and construction.

C. The DET should appoint permanent personnel for key positions within the LDS (See Team Leader report) and approve a new organizational plan.

D. The GOS should adequately fund the operations of the LDS.

E. The present workshop manager must be removed and a new person appointed.

F. The LDS offices should be moved to the workshop.

G. Unused equipment should be parked in a secure storage area and properly maintained.

H. A new proposal for expatriate assistance should be developed after the GOS has met the above conditions. All expatriates involved should operate under one contract with centralized leadership.

II. Warehouse Operation

A. Create a permanent position for the current counterpart who is functioning as the warehouse manager.

B. Provide training and supervision for the maintenance of the computer inventory system at the warehouse. Expand the program to include equipment records and cost analysis.

C. Make plans for providing additional storage space, at least for redundant spares.

D. Establish tighter controls on outside repairs, emergency purchasing of parts and the repair of unauthorized equipment.

E. Remove the current workshop manager and make a new appointment.

F. Standardize equipment as much as possible.

G. Provide expatriate assistance for at least 12 more months.

III. Training Program

A. Make the current counterpart/training assistant a permanent, pensionable assignment.

B. If the plan in the June '83 report is not followed, continue the training program by repeating the schedule with more in-depth instruction.

C. Establish close liaison with SCOT for the future transfer of training responsibility.

D. Develop more dealer training programs.

E. Arrange for field mechanics to be more involved in the training activities.

F. Bring in expatriate assistance to work more closely with the workshop and field operations.

IV. Field Operations

A. Field maintenance should assume responsibility for unused and stored equipment.

B. Tighter controls should be established on gas, parts and lubricants.

C. The three field workshops nearing completion should

be finished, equipped and staffed.

D. There should be closer cooperation with the training advisor on providing more training for field mechanics and operators.

E. The services of an expatriate master mechanic should be provided to offer mechanical assistance in the field and in the workshop.

This summary of accomplishments and recommendations presents a brief overview of the equipment maintenance project completed by OCS during the past four years. Due to a number of constraints the project was slow in developing and just as progress was being made organizational and budgetary problems within the GOS hampered future growth. The services of expatriates seemed unnecessary at this point even though the objectives of the total land development program had not been met.

It would appear that once the constraints upon the project from with the GOS have been resolved, assistance from USAID would again be beneficial. This is especially true in regard to maximizing the utilization of the extensive investment in heavy equipment and in providing GOS with a viable program in agricultural development.

OCS has had a commitment to the success of this program and feels frustrated in leaving while knowing that there is much

more to be accomplished. Its services are available on short notice to provide interim assistance or long-term guidance for future land development activities in Swaziland.

PERSONNEL MOVEMENTS
SWAZILAND CONTRACT

July 1, 1983 - January 1, 1984

October 12	- Mr. Robert Van Westen departs Swaziland for U.S.A. at end of contract period.
December 6	- Mr. Ken Rogers arrives Swaziland on end of contract Home Office visit.
December 8	- Mr. Rogers departs Swaziland for U.S.A.
December 9	- Mr. and Mrs. Perry Tennison and Mr. and Mrs. Gilbert Boyd depart Swaziland for U.S.A. at end of contract.

BUDGET INFORMATION
January 1, 1984

CATEGORY	BUDGETED AMOUNT (AMENDMENT #8)	To Jan. 1 1984	BALANCE
SALARIES AND WAGES:			
Home Office (Professional)	36,690	$34,825.00	$1,865.00
Home Office (Direct Support)	31,800	33,124.50	(1,324.50)
Field Office	590,144	575,138.42	15,005.58
Consultants	18,200	---	18,200.00
INDIRECT COSTS:			
Home Office	514,394	$485,426.49	$28,967.51
Field Office	158,169	149,536.02	8,632.98
ALLOWANCES:			
(Per Diem) (Education) (Watchmen)	77,269	$80,550.30	($3,281.30)
Logistics	23,685	23,685.00	0.00
Water, Sewer, Fuel	4,790	5,882.97	(1,092.97)
TRAVEL-TRANSPORTATION-SHIPPING:			
U.S.A.		$8,431.61	
International		120,186.03	
Household Effects (Ship & Store)		70,585.38	
Rent-a-Car		2,154.31	
	$176,363	201,357.33	(24,994.33)
OTHER DIRECT COSTS:			
Visas - Medical	$2,965	$2,365.06	$599.94
Postage, Telephone & Power	16,448	16,143.58	304.42
Miscellaneous (Job Photos)	10,000	10,903.47	(903.47)
Insurance	35,000	35,799.55	(799.55)
TOTAL ESTIMATED COST	$1,695,917	$1,654,737.69	$41,179.31
PROFESSIONAL FEE	97,234	97,234.00	0.00
GRAND TOTAL	$1,793,151	$1,751,971.69	$41,179.31

The contract officially ended as of December 31, 1983. All work was completed in country and the submission of this report fulfills all contractual obligations. The final amount of the Professional Fee was included in the January 1, 1984 Payment Certificate (S-52). Additional Payment Certificates will need to be presented as final bills arrive. The major items remaining will be the bills for the freight shipments and the furniture storage removal expenses for Mr. Tennison and Mr. Boyd. These will be submitted each month as received. All outstanding bills should be settled within the 120 days allowed following the end of the contract.