



FINAL REPORT FOR THE
MALI LIVESTOCK DEVELOPMENT PROJECT
(MALI LIVESTOCK II 1977-1982)
(MALI LIVESTOCK I 1979-1982)
CONTRACT NUMBER REDSO/WA 77-96

Presented to:
MINISTERE DE L'ELEVAGE, DES EAUX ET FORETS
DIRECTION NATIONALE D'ELEVAGE
REPUBLIC OF MALI
and
USAID/BAMAKO

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FOREWORD

On 11 February, 1977, Chemonics Industries, Inc. entered into a contract (REDSO/WA 77-96) with the Government of the Republic of Mali (GRM) whereby the International Consulting Division of Chemonics would provide technical assistance to the GRM in conjunction with certain development projects financed by the Government of the United States through its Agency for International Development (USAID).

Article I E 4 of the contract requires that the contractor provide to the GRM and USAID a final report to be due "not less than ninety days following the completion of field services or termination of this contract." The contract further requires that the report "shall provide a discussion of the progress of the Project(s), along with recommendations of the Contractor for future GRM activities and for other eventual contractors of the GRM if considered desirable." The chapters which follow constitute the report called for by the contract.

The original intention of the contractor was to submit the report in two parts, the first to follow shortly upon the completion of the majority of the field work which occurred in July 1981, and the second to cover the period 1 July, 1981 to 31 December, 1982. Because of the prolonged indisposition of the author originally assigned to write it, it was not possible to submit the report in two parts. The complete report is being submitted herewith to cover the entire period from 11 February, 1977 to 31 December, 1982.

CHAPTER I
INTRODUCTION AND SUMMARY

A. Introduction

The International Consulting Division of Chemonics Industries, Inc. has prepared this final report in order to fulfill its contractual obligation set forth in Article I E 4 of the contract REDSO/WA 77-96 between the Government of the Republic of Mali (GRM) and Chemonics Industries, Inc. Although we have attempted to be thorough in our discussion of contract activities, it is manifestly impossible to cover all of the myriad details inherent in a project as complex as the Mali Livestock Sector Project. The report does include, indeed emphasizes, a "discussion of the activities of the team and a discussion of the progress of the project, along with recommendations of the contractor for future GRM activities and for eventual contractors to the GRM...."

Consistent with the above statement, and consistent with the assumption that the report will be read primarily by those who have had some direct involvement in the project, the report is designed more to present lessons learned than to provide an historical narrative of events. Some historical material is nonetheless essential to an understanding of the project and has been included.

It is appropriate to point out that from USAID's perspective, the Livestock Sector Project is an amalgamation of two different projects: Mali Livestock I, ECIBEV, as the marketing element, and Mali Livestock II as the production element of an overall sector project. From the viewpoint of the GRM, they are and remain two very separate and distinct entities. In the interests of clarity and historical accuracy, we treat the two elements as separate projects in this report. In this connection, it should be noted that in

1975, the contractor responsible for providing technical assistance to Mali Livestock I was Experience Incorporated, not Chemonics. At the conclusion of its contract in June 1979, Experience Incorporated submitted a final report covering its activities and those of the project up to 30 June, 1979. For this reason, the early period of Mali I, ECIBEV, will not be covered in detail in this report.

It is also important to state that for the greater part of the period covered by the report, both projects, Mali I and II, were under the direction of the Malian Office of Cattle and Meat, OMBEVI (Office Malienne du Betail et de la Viande), an entity of the Ministry of Rural Development. This reporting relationship was particularly important with respect to Mali II, whose director always reported to the Director General of OMBEVI. With respect to Mali I, although the Director General of ECIBEV was theoretically independent of OMBEVI, he in fact reported to the Director General of OMBEVI in most if not all respects until the GRM was restructured in 1980. At that time, responsibility for both Mali I and II passed from OMBEVI and the Ministry of Rural Development to the Ministry of Livestock, Water and Forests (Elevage, Eaux et Forets).

At the same time the GRM was restructured, supervision of part of Project Mali II, the New Lands Activity, passed from the Director of Mali II to the Director of the Central Veterinary Laboratory. The latter had originally been responsible only for technical supervision of the New Lands Activity and for providing the activity with technically qualified personnel.

The consequences of the organizational changes of 1980 were not only some confusion before things were more-or-less sorted out but also some misunderstanding and difficulty meeting the demands of three masters (four if one adds USAID) instead of two, as was formerly the case. The difficulty

was, of course, compounded by the fact that each organization had different interests and objectives.

In the report, we have tried to cover all aspects of the different projects, although space and time have limited the treatment in some areas. The report is divided into seven chapters, of which this "Introduction and Summary" is the first.

Chapter II discusses the Chemonics contract and its history. Although the contract and its amendments, thirteen in all, are available in the files of the GRM and USAID, the brief recapitulation in this chapter should help to set the stage for the remainder of the report. Perhaps it will also enable the GRM and prospective contractors to avoid similar difficulties in the future.

Chapter III is the most detailed chapter of the report. It discusses all major contract activities undertaken by Chemonics between April 1977, when the first Chemonics specialist arrived in Bamako, to December 1982, when contract activities ended. A limited amount of coverage is given to the pre-contract period.

Chapter IV presents a summary of both accomplishments and failures of the project, divided according to four contract time periods and individual project activities.

Chapter V focusses on the main problems encountered by Chemonics in carrying out its contract work. Some of the problems highlighted deal with deficiencies in Chemonics' own performance. Thus, Chapter V leads directly into Chapter VI, a self-evaluation of Chemonics' performance over five and one-half years. This evaluation is particularly necessary, in our view, because Chemonics never received a formal evaluation of its work for the entire contract period.

The final chapter, VII, presents a number of recommendations which have come out of this work.

B. Summary

1. Background

Livestock, whether cattle, goats, sheep, or camels, has always been the mainstay of the nomadic and semi-nomadic people of the Sahel. Dependent almost entirely upon the availability of grazing land and water, these people are at the mercy of the rains which nourish the grasses and fill the wells. Times of drought are times of death and disaster. Until the early 1970s, the people of the Sahel in Mali managed to eke out a living despite the harsh conditions and despite occasional, severe droughts. Then, beginning in 1969, there occurred an almost unprecedented drought which has continued with occasional relief to this day. The result had been catastrophic. In the Sahel, livestock and people died by the thousands. The countries of the Sahel sought international aid to feed their people, by now homeless and without resources. Outside assistance was needed not only to feed starving people but also to reconstitute their means of support: herds of livestock. The United States, through the Agency for International Development, began providing immediate relief in the form of foodstuffs. Later, in conjunction with the GRM, it began to examine ways to provide long-term assistance to the people of the area to enable them to become self-supporting once again. Out of this examination there grew, among others, two major projects pertaining to livestock. The first was Project Mali Livestock I, to be operated by ECIBEV. The second was Project Mali Livestock II, or Mali II.

2. Project Mali Livestock I, ECIBEV

Mali I originated in 1971 from a request of the GRM for U.S. Government assistance to overcome the annual

shortage of meat suffered by urban domestic consumers, principally in Bamako, the capital city, and in the urban area in and around Segou, a provincial capital. The USG acceded to the request. Following several studies, USAID designed a project ostensibly to meet the needs expressed by the GRM. The project objectives were stated as follows.

- To support the overall economic and social development objectives of the GRM through greater commercialization of the livestock sector.
- To assist the GRM to achieve a higher level of self-sustaining productivity in the livestock sector for export and domestic consumption.

Further, the Grant Agreement which was later signed indicated that the overall objective was to be:

- The development of livestock production and marketing systems in Mali.

In view of the commonly accepted principle that to be meaningful, objectives must be as specific and concrete as possible, it is useful to examine the objectives for Project Mali I. It is clear to us that they are far too general to be useful to the individuals or organizations actually charged with the task of attaining them. Unfortunately, this is a criticism that can be levelled at almost every objective established in the basic design documents pertaining to livestock projects in Mali. More will be said on this matter in a later section of the report.

In 1974, three years after the original request, the Grant Agreement was signed by the two governments. The agreement provided financing for several cattle production and marketing efforts to take place close to market centers. Activities were to be carried out by a newly created state organization known as the Etablissement de Credit et d'Investissement Betail-Viande, or ECIBEV, with the technical

assistance of an American consulting firm. The project eventually was entitled "Project Mali Livestock I" and involved:

- A credit program to enable small, sedentary farmers to undertake individual cattle fattening programs (called "Embouche Paysanne").
- The construction of a one-thousand-head capacity feedlot at Tienfala, together with a managed forage production area.
- The construction of a second feedlot at Segou.
- The development of a range management and grazing facility within the Doukouloumba Forest Reserve.

In the following year, 1975, a contract for technical assistance was awarded to Experience Incorporated with Checchi and Company as the major sub-contractor. The contract called upon Experience Inc. to provide a team of experts composed of a Range Management Specialist (who would also act as Chief of Party and team administrator), two Animal Husbandry Specialists, a second Range Management Specialist, and a Credit Specialist.

Following the arrival of the experts, the GRM and USAID insisted upon a modification of the contract with Experience Inc. whereby the latter would build the Tienfala Feedlot under "force account" procedures, e.g., without an outside general contractor. The feedlot was completed in the spring of 1979 but only after severe difficulties, especially with respect to financial matters, purchasing, and shipping of heavy equipment from overseas. The feedlot at Segou was never built, largely because adequate financing was not provided, was not available, or was used for other purposes.

On the other hand, the embouche paysanne (small farm credit) program was an immediate success. Farmer participation increased over three hundred percent in three years. According to an evaluation of the program, the cash income

for each participating farmer averaged between MF 10,000 and MF 12,000. Loan recovery was almost 100 percent.

The grazing facility at Doukouloumba was never completed, although some ten thousand hectares were protected by firebreaks constructed under the project. Some land in the Doukouloumba Reserve was cleared for pasture, but work on the waterpoints and the installation of wind-driven pumps has been slow and incomplete. Fortunately, local herders have access to the nearby Bani River which flows, albeit at a reduced rate, all year in this locality.

Under Mali I, ECIBEV also made credit available to entrepreneurs and livestock owners to permit them to buy cattle for fattening for the local market. They were also given access to the Tienfala Feedlot. The object was to ensure a supply of meat in the metropolitan market of Bamako during the normally short supply period occurring in the later months of the dry season. This credit and feeding program has been less successful than the peasant credit program largely as a result of poor financial controls over funds, poor evaluation of credit risks, and the lack of collection efforts on the part of ECIBEV.

For a variety of reasons, Experience Inc. declined to bid for a renewal at the end of their contract in June 1979. Chemonics was asked to provide the necessary technical assistance, through the services of a Feedlot Management Specialist, a short-term Agronomist to help with the forage program at Tienfala, and later, a Marketing Specialist. Chemonics' first Mali I contract period thus extended from 1 July 1979 to 30 June 1980. At the end of that time, the contract was renewed for an additional year, and the services of a Financial Management Specialist were added. The contract was again renewed for an additional year beginning 1 July 1981 but only for the services of the Feedlot Management Specialist.

During the period of the Chemonics' Mali I contract (which was then called "ECIBEV" and now called "Marketing"), serious efforts were made by ECIBEV management to increase the embouche paysanne program, to continue the development of the grazing facility at Doukouloumba, upgrade the physical plant at Tienfala and increase the efficiency of feedlot staff. At the same time, efforts were made to increase the amount of forage grown at the feedlot, and to bring the financial situation under control, but with only limited success. These matters are covered in more detail in Chapter III.

3. Project Mali Livestock II (Mali II)

The GRM Five Year Plan for the period 1974-78 established a stratification strategy whereby the Sahel was to serve as a production area, providing young beef cattle which would then be fattened in the more fertile areas of the country, and from there, moved to both domestic and overseas markets. In an effort to help the GRM implement this strategy, which was part of the larger program to rehabilitate the livestock sector after the great drought of the early seventies, the USG through USAID agreed to finance, in part, a project with three distinct but complementary activities, each having the characteristics of an independent project. In 1975, a Grant Agreement was signed by the USG and the GRM, creating Project Mali Livestock II. Despite the disparate characteristics of its major components, it was to be managed by one director and served by one staff. These three components were the Sahel Grazing Activity (Activite Paturages Saheliens), the New Lands Activity (Activite Terres Nouvelles) and the Training and Communications Activity (Activite Formation et Communication). A fourth component, although not initially an "activity" in the organizational sense, was a study of small ruminant herds in Mali. It

rapidly took on the attributes of an activity when the GRM assigned a staff, a director, and limited resources to undertake the study. It will thus be treated as an activity for the purposes of this report.

a. Sahel Grazing Activity (Activite Paturages Saheliens or APS)

The Sahel Grazing Activity was headquartered at Dilly, some 350 kilometers north of Bamako at the end of an extremely poor road which become practically impassible during the rainy season. The primary objective of APS was the improvement of livestock production in the western Sahel. The activity overlapped to some degree with the UNDP-FAO Mali 71/523 project which got under way in 1971, beginning with the construction of buildings to house staff, supplies, and administration as well as visitors. This center, which became operational in 1973-74, was known as the "Centre Pilote d'Elevage Sahelien de Dilly" or CPES.

The FAO project had been designed to persuade the population in a test area near Dilly to adopt new methods to improve their lives and their methods of raising livestock. In particular, the project staff made an effort to improve animal health by providing not only information but also medicines and animal health services. The effort at "animation rurale" (rural extension) was considerable and quite successful, but the lack of resources available to the center restricted the overall effect. It was only natural that the GRM sought to continue and improve the FAO effort at Dilly by adding the new resources represented by the USAID Grant Agreement of 1975. Thus, the FAO-financed effort, which continued at some level all during the period of the contract, was to be complemented by the AID-financed APS. Indeed, the same staff that had managed the FAO project was charged with implementing the APS. Unfortunately, the

overlap led to some serious difficulties stemming from what might be termed professional jealousies. These problems were eventually mitigated but never entirely eliminated.

In any event, the APS, under the nominal direction of headquarters staff in Bamako, undertook to introduce to the local population modern methods of range management, including the building of firebreaks to protect the natural forage, the development of cattlemen's associations, the improvement of existing water points and the addition of new ones. A major effort was also made to communicate with the population on a two-way basis.

Over the period of the contract, the APS staff succeeded in improving the exchange of information, increasing the number of water points, persuading the villagers to form associations, and creating over three hundred kilometers of primary, secondary, and tertiary firebreaks, preserving forage that in previous years would have burned in range fires. That there was mismanagement of resources by the APS, there can be no doubt; but there is also no doubt that a good many of the difficulties encountered at Dilly were caused by the inability of the project and USAID staff to meet legitimate needs of the APS in a timely fashion and to a satisfactory extent. Despite such problems, some progress was made toward the objectives of the APS.

b. New Lands

The second major component of Mali II was the New Lands Activity (NLA). The principal idea behind the creation of this activity was its potential for recovery of land rendered agriculturally unusable by the presence of the tse-tse fly, the vector of the disease trypanosomiasis. Thus, if it could be proved economically feasible to eliminate or control the fly, more cattle could be moved from the Sahel into a zone where they could be fed on relatively

good pasture (compared with that in the Sahel proper), with ready access to water. From there, the herds could be prepared for the move to markets, whether domestic or foreign. With this possibility in mind, the GRM designated three specific areas or zones for preliminary study in the 900-1300 mm. rainfall belt. Following completion of the preliminary study, a choice of one of the three zones was to be made for intensive entomological, ecological, protozoological, and economic study. Finally, the economic feasibility of an eradication or control program in the selected zone would be determined.

The NLA succeeded in attaining its objectives but only after long months of effort. There were serious delays due to the lack of material and financial resources, and there were numerous misunderstandings and personnel difficulties on the part of both the GRM and the contractor. A major complication resulted from the creation by AID/Washington, without reference to USAID/Bamako, of a trypanosomiasis research unit at the Central Veterinary Laboratory (CVL), partially staffed by experts from Texas A & M University. CVL was to furnish trained personnel and technical supervision of the New Lands Activity, although the latter was to function under the administrative control of the Director of Project Mali II. This very evident conflict was in large measure overcome, but there was always some waste involved in having two units so closely allied in trypanosomiasis research. It would have been better to have carried out the research at the Central Veterinary Laboratory using all available resources. This fact was finally recognized, and the NLA finally found its home at the CVL, but the change occurred too late in the project to have significant impact.

c. Training and Communications Activity

The third major activity of Mali II was Training and Communications (Activite Formation et Communication). Its two fundamental objectives were:

- To train livestock extension agents to transmit information about new production methods to the pastoral population and to act as agents of change
- To be the channel for two-way communications between the GRM and the rural population

To achieve these ends, a training center was to be constructed at Sotuba with a secondary, more austere, center at Dilly. Both were to be manned by a fully trained staff capable of teaching and demonstrating the requisite subject matter. Although a great deal of effort went into getting Sotuba construction under way, it was not until 1981 that real progress was made and building began. Even then, the financial resources originally allocated for construction of the center were no longer sufficient, or available. The plan for a center at Dilly was virtually abandoned. During the period of the contract, the activity was housed in temporary quarters at Sotuba and was forced to share these quarters with the Chemonics team for two years. Chemonics' participation in the activity ended on 30 June 1981.

In addition to the problems posed by inadequate office and classroom facilities, Training and Communications lacked the physical and financial resources to carry out its tasks efficiently and well. Often reduced to begging transportation for its students and staff, chronically short of paper and reproduction facilities, the activity nevertheless managed to turn out graduates with a basic understanding of their subject matter and tasks and with a remarkable "esprit," considering the conditions under which they lived.

d. Other Activities

In addition to the three major activities cited above, the project was expected to provide support to certain outside agencies of the GRM. Among such efforts were:

- The development of the Toronke station as a research facility to support livestock projects in the Sahel
- The improvement of staff capabilities of the Institute of Rural Economy by providing on-the-job training to some of its personnel in the New Lands Activity
- The reinforcement of the Central Veterinary Laboratory by providing on-the-job training to some of its personnel in the New Lands Activity
- The development and execution, by OMBEVI and ECIBEV, of a marketing test in the context of "stratification"
- The development of a language training program with the object of teaching English to Malians selected for training in the United States and teaching French and local languages to expatriate personnel assigned to the project

With respect to the first four tasks above, neither the resources nor the time were available to devote to them. In particular, no formal on-the-job training was or could be undertaken because of time and resource constraints, and neither OMBEVI nor ECIBEV had the expert and material resources to undertake a serious marketing test, although recommendations to this effect were made by Chemonics' Marketing Specialist, Dr. De Beca. On the other hand, the development of a language school was successfully undertaken

and even proved to be self-supporting. The Malian Director deserves great credit for this success. He not only proved to be a good manager; he proved capable of using technical assistance to very good advantage.

e. Small Ruminants

Although addressed here as a separate project, the Small Ruminants Study was originally a part of Mali II, in that its origins lay in an amendment to the Grant Agreement of 1975 between the USG and the GRM, which gave birth to Mali II. While both Mali I and II addressed themselves to the livestock sector, no existing project devoted itself to a consideration of the small ruminant population in Mali and its economic significance. Recognizing the need for basic data, USAID agreed to provide funds for a discrete study of small ruminants.

Under the terms of the agreement, the study was to be carried out under the aegis of Mali II but with a very limited amount of technical assistance, provided by a consulting firm from the U.S. under a host-country contract. In fact, Mali II decided to "subcontract" the work back to OMBEVI, using OMBEVI experts assisted to a limited degree by Chemonics' short-termers.

The Small Ruminants Study got under way in mid-1979 when the GRM appointed a director, OMBEVI assigned personnel, and USAID provided funds and two recently purchased Toyota four-wheel-drive vehicles. Over the months which followed, Chemonics furnished, on demand, the necessary short-term experts. The study encountered several difficulties, however. One of the expatriate experts proved unacceptable to the Director General of OMBEVI. Those experts who remained found that the facilities needed to carry out their work were not always immediately available. This situation led to delays and time overruns not acceptable to two of the expatriates, who finally left without having had the oppor-

tunity to complete their tasks. Follow-on work necessary to complete the study was also not carried out.

4. General Observations

It should be apparent that the Livestock Sector Project, combining as it did Mali I and II and the Small Ruminant Projects, with their many, varied, internal facets, was a highly complex undertaking. Subsumed under the sector project were five very different activities each having different objectives and making different demands upon the human, material, and financial resources available. Adding to the technical complexity of the project and its components was the problem of communication in every sense of that word. Almost all of the project activities were separated geographically and were served by very poor means of communications. An extreme example was the Sahel Grazing Activity, located some 350 km. from project headquarters in Bamako at the end of a road which is practically impassible at certain times of the year and is bad in any case. There is no telephone, the radio service is sporadic due to poor maintenance and lack of parts. Another example was the Grazing Activity at Doukouloumba Forest Reserve, over 200 km. from ECIBEV headquarters in Bamako. While the road is much better than the one to Dilly, travel to the activity took time and resources. There is also no telephone or radio communication.

Communications in Mali, whether telephonic, telegraphic, radio, vehicular, rail, or aircraft are generally in short supply. This one physical factor created a very serious, if not the most serious, managerial problem for the project staff and complicated to an almost impossible degree the issuance of instructions on a timely basis, the movement of logistic support, the proper supervision of project activities, and the receipt of feedback from the field. It is safe

to say that the failure of the project design to allow for these conditions resulted in delays in project implementation and serious increases in cost. Even more lamentable is the fact that once project personnel--both USAID and the GRM--became aware of the problem, no real effort was made to overcome it. One instance alone is sufficient to illustrate this gap. There was much talk about installing a radio net, mobile and fixed, to tie together units in the field and the project direction. Nothing was done. Lack of funds was cited as the cause, but we believe it to be insufficient, given the very great need for such a system.

An additional complicating factor, this time consciously built in from the beginning, was that managerial responsibility for some elements of the project was assigned to organizations outside the project. Thus, the Institute for Rural Economy was not only required to furnish trained personnel to New Lands, it was also supposed to provide technical supervision of the activity's Socio-Economic Section. Similarly, the Central Veterinary Laboratory was supposed to provide trained personnel to the Entomological and Protozoological Sections of New Lands and to supervise their technical efforts. Somewhat analogous situations existed with respect to the Livestock Service (Service Elevage), Hydraulic Service (Service Hydraulique), and the Rural Engineering Service (Service Genie Rurale). It is also true that OMBEVI, USAID, and various ministries of the GRM played roles that inevitably affected, for good or ill, the livestock project. Sometimes, the absence of appropriate action created an ill effect, and other times, outside intervention proved to be excessive, or detrimental, or not in keeping with project goals.

An early example of the above was the Earth Satellite Corporation study performed at the request of USAID. The study, based upon satellite imagery, was supposed to provide

basic information on soils and vegetation in the Dilly area for the following purposes:

- Planning and implementing an extensive grazing project in the (Dilly) area
- Providing baseline data on the soil and vegetation resource for subsequent evaluation of the ecological impact of project interventions
- Providing the vegetation, soil, and entomological surface water information necessary to permit an informed choice among the three candidate areas in the New Lands Activity

From the point of view of project personnel in both the New Lands and the Sahel Grazing Activities, the results of the study were less than useful. From the point of view of the project direction, the funds spent for the study would have been better used for some less esoteric and more useful product such as mobile two-way radios or cement for water points in the Dilly area. It is certain at any rate that the entomological information concerning tsetse fly distribution proved erroneous compared with data collected by entomological teams on the ground. And the range management experts also found that ground reconnaissance provided more accurate and extensive data than that contained in the satellite study.

We have already mentioned the competitive overlap between the Texas A & M research effort on trypanosomiasis at the CVL and the efforts of the Entomological Section of the New Lands Activity. Similarly, we have mentioned the overlap between the Sahel Grazing Activity and the FAO project at Dilly.

Fortunately, the problems of conflict of interest, and overlapping terms of reference were finally resolved, but the fact remains that problems did occur and had to be put to right at some cost in time and temper--and sometimes money.

5. Project Financing

Before moving to a discussion of Chemonics' role in the project, it would be useful to point out the project funding arrangements. In accord with the approach used with increasing frequency in the 1970s, the project involved the transfer of considerable resources from the United States to Mali, many of which did not pass through the technical assistance contract and did not directly involve the technical assistance contractor.

Basically, there were three vehicles for resource transfer: the technical assistance contract, which consisted principally of personal services and a few commodities; equipment and commodities financed directly by AID; and a "Joint Fund," contributed to by both AID and the GRM (although mainly by AID) which financed most of the investment activities and most of the operating costs. The contractor was, of course, responsible for accounting for the costs passed through the technical assistance contract. The Joint Fund was operated jointly, as the name implies, by AID and the GRM, with working-level responsibility in the hands of the Malian Project Director and the USAID Project Officer. Both were required to sign checks above FM 1,000,000 (generally about \$2,000). The accounting for this rather large fund was the responsibility of the Financial Director of the project.

A major problem with this system was that it took some time for the GRM to appoint a Financial Director, and then there were problems in the accounting and financial management work done by both the initial appointee, Mr. Wague, and his eventual replacement, Mr. Frantao Cisse. As time went on, Chemonics did begin to play a larger role in the accounting and management of these project funds, until June of 1980, when Chemonics' Administrative Officer, Mr. Richard Pronovost, was actually appointed Financial Director of the

project. Since that time, the quality of financial management has markedly improved and, in Chemonics' view, the project has become a model of financial management. But we should stress, again, that for the first three project years, when the largest sums were being spent, the operation of the Joint Fund was essentially carried out by Malian project personnel, with occasional help from USAID, and with very little help from the contractor.

6. The Role and Responsibilities of Chemonics

Between 1977 and 1979 Chemonics had a contractual responsibility to provide technical assistance only to Mali Livestock II. After 1 July 1979 Chemonics took on the added responsibility of the Mali I and Small Ruminants Projects. As often occurs, the position of the contractor, Chemonics, was somewhat ambivalent with respect to project activities and varied between the extremes of providing advice and executing tasks. Officially, and despite the contractual assignment of certain tasks to Chemonics, the projects were, in fact, the responsibility of the agencies of the GRM, monitored in all respects by the funding agency, USAID.

In the early days of the project, when there were relatively few Malian counterparts, Chemonics personnel were required to execute program tasks directly. Even though the USAID-GRM program document called for a complete Malian project organization to be in place prior to the arrival of contract staff, in fact, in the first month following their arrival, there was no Malian Project Director, and there were no office facilities to accommodate him, his staff, and Chemonics' team members. A temporary solution was to place the contract staff at Sotuba, including the Chief of Party, while his counterpart, the Project Director, and most of his staff were housed at OMBEVI, some 12 km. from Sotuba, with no telephone or radio communications. Coordination or

discussion required the displacement of personnel from one location to another. The consequences were misunderstandings, delays, irritation, and more delays. Only after more than two years were the two staffs housed together at OMBEVI. In Chemonics' opinion, the delay cost a great deal in the loss of human understanding which would have been achieved had the two staffs been housed together from the beginning. Fortunately for all concerned, the first Chemonics Chief of Party was a man of ferocious energy and considerable intelligence who gained and held the confidence of the Malian staff. Unfortunately, not all his successors possessed either his energy nor his extensive knowledge of the project, nor did they have, initially, the daily access to the Malian Project Director necessary to establish bona fides.

In any case, when the first Malian Director, Dr. Almouzar Maiga, was appointed, he made abundantly clear to all concerned that the responsibility for the execution of project tasks lay with the Activity Chiefs under the rather close supervision of the Project Director, Dr. Maiga, and the Director General of OMBEVI, Dr. Boubacar Sy. The Chemonics team members then reverted to the status of advisors, although on some occasions, they were delegated implementation authority for certain limited tasks. The fact that responsibility and authority were vested in the Malian Director and Chiefs of Activities meant that they also controlled all project resources. In effect, this meant that no task requiring resources could be carried out without the prior approval of the Director or the Activity Chief, including those tasks assigned Chemonics under the terms of the contract, since Chemonics had no resources of its own. This clearly constituted a major weakness in the contract, since responsibility cannot be fixed if neither authority nor resources are provided.

The one exception to the general rule that contractor personnel acted as advisors and not executants was that Mr. Richard Pronovost, as mentioned above, was appointed to the position of Director of Finances, Mali II, in 1980. This was a line position reporting directly to the Project Director and not to Chemonics' Chief of Party. This singular exception was made at the insistence of USAID and the Malians in an effort to develop an effective financial management system which would permit the Project Director to exercise adequate financial control, something that was lacking from the first days of the project.

In addition to providing technical assistance, Chemonics also served as a procurement agent. Initially, Chemonics procurement activities were limited to the purchase and shipping of commodities financed under the contract, mainly technical support items and audio-visual equipment. Other support items were obtained directly by USAID (vehicles) or through the Afro-American Purchasing Center (AAPC). In mid-1977, however, Chemonics was asked to undertake procurement of some project equipment not financed under the contract. This activity gradually expanded over the life of the contract as Chemonics demonstrated a high level of competence in the work.

7. Host-Country Contract

At this point, it is important to underline that the technical assistance was provided by Chemonics using the mechanism of a "host-country contract," that is, a contract negotiated directly between Chemonics and the GRM (as opposed to a contract directly between Chemonics and AID or USAID). AID's general policy is to use host-country contracts wherever and whenever possible. The determinants of the contracting mechanism are the ability and willingness of the host country to enter into and manage a technical assistance

contract, as perceived by the USAID Mission and AID/Washington. Since the USAID-financed programs in Mali began to expand in 1975, most institutional technical assistance contracts have been of this type, in marked contrast to most other West African countries. A major result has been to put the contractor and the host government institutions into a close contractual relationship and greatly strengthen the role of these institutions in project management. Later chapters discuss this and other aspects of the contract.

CHAPTER II

THE CHEMONICS CONTRACT

A. Pre-Contract Activities

In this chapter, we discuss the chronology of the Chemonics technical assistance contract for the Mali Livestock Project. This discussion is necessary because Chemonics' contractual relationship continued over a five-and-one-half-year period under the original contract and a total of thirteen amendments. Many of the amendments, especially those of June 1979, 1980 and 1981, which essentially continued contract and project activities for additional years, also served to modify the level of effort and the content of the work to be performed. It is not possible to examine the work done over this five-and-one-half-year period without an understanding of the contractual changes.

The chapter is organized in two parts, the first, a brief discussion of pre-contract activities by other entities than Chemonics, and the second, a breakdown of the Chemonics contract into the four major contract periods: 1977-79 (two years), 1979-80 (one year), 1980-81 (one year) and 1981-82 (one and one-half years).

Over the course of these four major segments, the level of effort and the areas of responsibility fluctuated rather widely. In the first two years, 1977-79, Chemonics had twelve long-term advisors and was responsible for the three basic project components of Mali Livestock II, in addition to project management and ancillary activities such as marketing. The second period, 1979-80, was the busiest for Chemonics, with fourteen long-term advisors, and responsibility for additional marketing activities such as ECIBEV management and the Tienfala Feedlot. The third period, 1980-81, saw major reductions in the level of effort

for the three basic components, but continued activity in marketing and increased attention to vehicle maintenance and financial management. Chemonics had ten long-term advisors during this period. The last period, the eighteen months from July 1981 through December 1982, was basically a holding period with only two long-term advisors, one in financial management for Mali Livestock II and the other in marketing for ECIBEV.

1. Studies and Participant Training

In June 1975, the GRM and USAID agreed to finance a project jointly "to support the development of livestock production and marketing in Mali." After signing the agreement but before issuing requests for proposals for technical assistance, USAID and the GRM initiated activities which were, in the view of USAID, designed to prepare the way for project start-up. Parenthetically, these "preparatory" activities used up one full year of the three-year financing originally allocated by USAID, an occurrence which was to have serious consequences for the project, and contributed little of real value toward the achievement of project objectives.

The preparatory activities involved, among other things, three major studies. The first of these, mentioned earlier, involved the use of satellite imagery by the Earth Satellite Corporation to inventory range and vegetation resources in the Dilly Pastoral Zone for "the purpose of locating project investments and serving as a benchmark ecological study of the area." The effort also used imagery interpretation for the New Lands in an effort to predict tsetse fly habitat and thus facilitate the work of ground teams making tsetse fly surveys. The study was also to include complementary "hydrogeologic information available from various GRM agencies and socio-economic data gathered by UNDP/FAO experts

stationed at Dilly." Not only did the survey not provide an ecological benchmark, but the hydrogeological information proved to be ephemeral. Furthermore, there were no UNDP/FAO experts stationed at Dilly who were producing socio/economic data. The one exception was a French Sociologist, Marianne Rupp, who did produce some outstanding material, which was nonetheless of marginal value to the project.

The second study was an assessment of the financial aspects of the livestock sector performed by a team of U.S. academicians. Following its on-the-ground survey, this team made several recommendations to increase GRM revenues, which could then be used to finance livestock sector developments. The study seems to have had little effect, however, upon the ability of the GRM to finance livestock sector investments. And, in any event, the GRM, over the course of project implementation, found that it was unable to meet even those financial obligations to which it had originally agreed.

The third study was designed to determine the ability of the GRM to provide qualified personnel at upper, middle, and lower levels to staff livestock development projects (such as Mali I and II). According to the authors of the study, the GRM was in a position to provide trained and competent personnel at the upper level but it could not do so in adequate numbers at the middle and lower levels. In Chemonics' opinion, both Mali I and II and the Small Ruminants Activity suffered from a severe lack of trained and competent personnel at all levels, although there were, of course, notable exceptions. In any case, the preliminary study did not seem to have alerted either USAID or the GRM to the practical impossibility of providing adequate numbers of qualified staff to ensure the success of projects as complex as Mali I and II. The shortfall in competent personnel had a most deleterious effect on both.

The fourth major preliminary activity undertaken was the design of a Project Performance Tracking System (PPT) "for

planning and scheduling program implementation," and the preparation of the first annual work plan and financial plan. A U.S. consultant was employed to train Malian staff at OMBEVI in the use of PERT and PPT. Unfortunately, the instruction seems to have been both superficial and incomplete. The consultant does not seem to have played a role in the creation of the first annual work plan or financial plan, although a "schedule of events" was developed by OMBEVI staff, based on the training they had received. Further, neither USAID nor the GRM seemed to be aware of the basic need for an operational plan setting out the details of who does what, when, where, how, and with what: in short, a detailed operations plan establishing personnel requirements, tasks, and logistic arrangements. No realistic financial plan could therefore be drawn up without such a basic document. To the best of our knowledge, no such document was ever developed nor was a valid financial plan created.

Another preliminary activity was to determine the need to send Malian personnel to the United States for training in a number of technical disciplines. USAID and the GRM made plans to send twenty-five students to degree courses and ten to specialty training. Since training periods ran up to four years, it was obvious that only a few Malians so trained would be available to participate in the formative years of the project. Thus, the benefit of the activity was to be realized at some future date but not, unfortunately, during the most crucial years of the project. Nonetheless, in Chemonics' opinion, the need for qualified personnel in Malian project implementation is so critical that we believe that USAID funds are well spent in such efforts, better, in many ways, than in the purchase of materiel or even in local projects. Furthermore, we hope that future projects will benefit from the training received by personnel under this project.

In addition to the preparatory activities related above, USAID financed certain others which, while not directly related to the project, were considered by USAID as complementary. Among these was USAID funding of space and equipment for the Central Veterinary Laboratory, which were to be made available to the soon-to-be-created Entomological Section of New Lands. The space never was made available, and this lack of facilities hampered the New Lands Activity from start to finish. Most of the equipment was eventually acquired over the course of the project.

Another complementary activity was research to be carried out by sociologists and economists assigned to OMBEVI on questions related to livestock production and marketing. The project does not seem to have benefitted from any such research effort; at any rate, we have been unable to identify the output of the research if indeed it was undertaken. Knowing how few resources were ever made available to OMBEVI, it is difficult to believe that it was able to carry out such a task.

One complementary activity which did not have a direct and beneficial impact on the project was the initiation of a language training course and the creation of a Mali II Language School. It was set up to teach English to Malians selected for schooling in the United States and to teach French to expatriates assigned to the project or to USAID. This effort was and is a success for which the Malian staff deserves great credit.

Another complementary activity foreseen by USAID as preliminary to project implementation was the initiation by OMBEVI of research studies into internal and external marketing patterns in Mali. The purpose of the studies was to identify and test means to foster market intervention to improve linkages among the Sahel Grazing Activity, the modern

domestic sector and the export channel. Again, these studies seem not to have been carried out as anticipated. If OMBEV did carry them out, we are unaware of them.

2. The RFP and Chemonics Proposal

In September 1976, fifteen months after the signing of the Grant Agreement 688-12-130-203, the GRM issued a Request for Proposals from consulting firms judged capable of providing the necessary technical assistance. Chemonics International Consulting Division responded to the solicitation with a detailed proposal dated November 24, 1976. Chemonics proposed to carry out the work with several subcontractors including Checchi and Company and Salut.

Chemonics response to the RFP was based upon the provisions in that document as well as the results of a proposal meeting in Washington D.C., on October 14th, 1976. At that meeting, two major elements of contractor responsibility were eliminated, and a modification of the New Lands Activity was introduced as a result of the planned assistance to the CVL of Texas A & M University under a different contract. Equally important to Chemonics' proposal preparation were the discussions in Bamako between the Director of Chemonics International, Mr. Teele, and GRM officials in early November of 1976.

In its proposal, Chemonics made clear certain strong reservations it had with the provisions of the RFP regarding:

- The manner in which the GRM and the contractor carry out the work.
- Benchmarks which would measure progress.
- Benchmarks which would measure success.
- Project plans presumably drawn up by the GRM, but of which Chemonics was ignorant.

Hindsight is always better than foresight. As a consequence of several years experience with Mali I and II, Chemonics feels that its reservations should have been more extensive and specific. Comments to this effect appear later.

B. The Contract (1977-79)

1. Negotiations

Following negotiations between representatives of the GRM, USAID, and Chemonics in January and February 1977, a contract was agreed upon between the GRM and Chemonics and approved by USAID. The contract, REDSO/WA 77-96, became the legal basis for the performance of work by Chemonics on behalf of the GRM.

2. Terms

Under the terms of the contract, Chemonics was required to "provide a field team consisting of long- and short-term experts as well as the services of the headquarters (home office) in order to ensure to the GRM technical assistance, assistance in administration and project management" in four specific areas.

These have been introduced in Chapter I, and discussed in detail in Chapter III. Here we outline them in contract terminology.

The first of these required the "establishment and operation of a training, communications, and research program centered at the National Center for Zootechnical Research (CNRZ) of Sotuba with an outreach center in the Dilly area. The program to be oriented toward support of the development of livestock production." The principal objective of the program was to train a corps of extension agents or "agents

of change" who were to act as intermediaries between Sahelian herders and the GRM in its efforts to introduce new and better ways of livestock production. This element of the project was designated as the "Training, Communications and Research Activity" (Activite Formation, Communications et Recherches).

The second area involved the "further development of a livestock research and development center at Dilly in the Sahel and the development of water points, firebreaks, roads, cattle trails, and one market either in the Dilly area or of influence to the Dilly area, and the furnishing of other needed equipment. In addition, the institution of improved technological practices (nutrition, health, etc., and management of the range resources, carried out in part through an expanded extension program in which the herders (local population) participate." This unit was designated as the "Sahel Grazing Activity" (Activite Paturage Sahelien).

The third area involved a series of studies in two phases pertaining to the tsetse fly problem. In Phase I, studies were to be carried out on the tsetse fly and its elimination, on development requirements to optimize the economic returns from an eradication program, and the cost benefit of an eradication and land development program. Three possible sites were to be examined and the most promising selected for detailed study and a possible pilot fly eradication program in Phase II. Studies on the tsetse fly and trypanosomiasis were to include the following: fly surveys, ecological studies, and geographic studies regarding access and studies of trypanosomes. Some studies were to be carried out directly by the contractor; others were to be carried out by other institutions and the results used by the contractor and others as inputs to the overall research effort. This program unit was designated as the "New Lands Activity" (Activite Terres Nouvelles).

The fourth area called upon the contractor "to assist the GRM, mainly the Project Director, in the overall management of the project." Project management was confided to a Malian Project Director assisted by a Deputy and a small administrative staff, including a Director of Administration and Finance. Each of the major activities cited above was headed by a Malian designated as the Chief of Activity. The GRM made clear to the contractor and his personnel that responsibility for the project remained in Malian hands in the persons of the Project Director and the Activity Chiefs who held executive authority over all aspects of project implementation. The contractor, on the other hand, was to be fully "responsible for the administration of his personnel and for the management of equipment and commodities put at his disposal."

3. Tasks (1977-79)

The tasks set out in "Article I - Scope of Work" of the initial contract were prefaced by the statement that the contractor would be "responsible for assisting the GRM in carrying out a large number of individual but interrelated tasks" which would be developed in annual plans to be drawn up in December of each year of project implementation. Nevertheless, certain tasks were listed for which the contractor would be largely or solely responsible. The contradiction between "assistance" and "execution" would create problems of considerable dimensions during the course of project implementation, as will be seen later. (In later amendments, the wording was changed to make it absolutely clear that the contractor assisted, rather than executed, tasks.)

The contract tasks were originally divided into two time periods, "1977" and "1978 and beyond." For 1977, exceptions

to the general rule that the contractor was to assist the GRM were listed as follows:

Article I B 1. Specific Tasks for 1977, para. b. Livestock Development in the Sahel, (3) Research on Sahel Animal Product and Management: The contractor shall plan and initiate a program of research into the best techniques for animal production and management in the Dilly area.

Article I B 1. Specific Tasks for 1977, para. c. New Lands (1) Studies in the Three Projected Areas: In order to permit the GRM to select one area from among the three candidate areas for detailed study and possible test eradication program, a series of studies will be carried out. The studies will be carried out under the overall direction of the Central Veterinary Laboratory. The contractor will be responsible, under the CVL and the Project Director for the New Lands Activity, for ensuring that the studies are carried out, either through his own efforts working with project staff, or by coordinating the studies carried out by other entities, Malian or foreign. The studies include (a) overall studies of the three areas already carried out by Earthsat, (b) tsetse fly surveys, (c) research into the impact of trypanosomes, (d) ecological studies, (e) geographic access studies.

Contract terms under "Tasks for 1978 and beyond" (i.e. to 30 June 1979) retained the term "assist" with three exceptions, as follows.

The contractor will be responsible for the development of a communications program and for the preparation of communications materials. This program and these materials will be used in the extension program in Dilly and in other parts of Mali. (TC & R Activity)

After the choice of the test area, the contractor will conduct detailed studies which will include: ecological studies, entomological studies, and the preparation of a distribution map of tsetse fly species. The contractor will collaborate with the Texas A & M project, located at the CVL, which will determine improved eradication techniques for tsetse flies.

The contractor will be responsible to assure that the research on the two types of cattle (trypano-tolerant and trypano-susceptible) is being conducted. (NL Activity)

4. Level of Effort (1977-79)

Under the terms of the contract, the contractor was to provide 288 work months of long-term expert assistance and 72 of short-term assistance. In actual fact, 321 total work months were provided.

5. Personnel, (1977-79)

The contract provided for a total of twelve long-term advisors as follows: Training and Communications, three advisors; Sahel Grazing, three, including one hydrogeologist; New Lands, three, including two entomologists and one economist; other areas, three advisors, including a Chief of Party, one Construction Engineer and one Marketing Specialist. As noted above, the contract also called for a large number of short-term assignments in several different fields.

The original intention was to have all long-term team members in Mali by June 1977. This was much later than the GRM or USAID had originally intended, since the contracting process had taken longer than expected. In any event, the first team members arrived on May 1, 1977, and the last in late August 1977. The delays were caused by recruiting problems and difficulties coordinating selection and approval of candidates by the GRM. In reality, the delays were advantageous in that, in May, very few elements of the project were in place: there were as stated, no Malian Project Director, counterparts, housing, office space, office equipment or any other facilities to support the team's

operation. These were all acquired over the summer, through hard work by the team and Malians assigned to assist.

Almost as soon as the twelve-member team was in place, changes began to occur in personnel. In November 1977, the Dilly Range Management Specialist, Mr. Marchal, left at the request of the Project Direction. He was replaced by Dr. James Naylor. In December 1977, Mr. Teele, the original Chief of Party and Director of Chemonics International Consulting Division, departed and returned to Washington as planned, and was replaced as Chief of Party by Dr. Robert Reeser. In April 1978, the GRM requested the replacement of Dr. Jerome Baiman, the Economist on the New Lands Team. This position was filled by Dr. Robert Reeser, who stepped down from the Chief of Party position to take up the economics work. As Chief of Party, Dr. Reeser was temporarily replaced by Mr. Dave Dupras of Chemonics' home office, and then by Mr. William Crosson. In July, 1978, it was decided that a Business Manager/Accountant was needed both to manage Chemonics' affairs on the project and to serve as an advisor to the Financial Manager of the project. Mr. Lewis Norton took the position, which resulted in a significant improvement in Chemonics' administration. The GRM did not view Mr. Norton's responsibility as extending to the financial management of the Joint Fund and the overall project, however; thus the hoped-for improvements in those areas were not made.

In the summer of 1978, continuing problems in the Sahel Grazing Activity resulted in a GRM request for the removal and replacement of the Animal Husbandry Advisor, Mr. Voelkel. He departed in October 1978 and was replaced by Mr. Gary Slocombe, who was relieved in turn in April 1979, also at the request of the GRM. Mr. Naylor left Mali in September 1978, and decided not to return as a long-term team member; he did return periodically as a short-termer. This series of events meant that, toward the end of the first contract period,

Chemonics had no effective long-term technical assistance at Dilly, which severely weakened the program there.

In addition to its long- and short-term expatriate staff, Chemonics engaged a large, local-hire support staff which was essential to its operations. Included were a bookkeeper, bilingual secretaries, translators, an office assistant, drivers and others. The local staff grew slowly as the contract progressed but was rather large by the second contract year. Its size was necessitated by the fact that Chemonics was responsible for virtually all of its own logistic and production support, since neither USAID nor the Malian agencies with which Chemonics worked (OMBEVI, CVL, etc.) were in a position to provide support. For example, Chemonics' office in Bamako had to translate and produce the large volume of reports, training materials and daily correspondence generated by a project of this size.

C. The Contract (1979-80)

1. Negotiations

During the first year of project implementation, it became increasingly apparent that the original estimate of the time needed to carry out tasks for all components of the project had been extremely optimistic. By the end of 1978, it was apparent to all that drastic revisions would have to be made in the tasks and the time allocated to achieve them and that an extension of the contract with Chemonics would have to be negotiated. Finally, USAID agreed to find the financing necessary both to carry on project work and to extend the contract termination date. USAID insisted that the project and contract be funded for only one year and that the time would be used by USAID to redraft a livestock project to replace Mali II. Thus, the "interim" year indicated a period during which Mali II would "mark time" or

"hibernate" while awaiting rebirth in a somewhat different form after 30 June, 1980.

During the spring of 1979, despite assurances by USAID that an extension would be funded, nothing concrete transpired. Neither the GRM nor Chemonics was in a position to carry on beyond June 30 from a legal or financial point of view, and it was impossible to obtain guarantees, other than unofficial ones, with respect to contract funding. Nevertheless, the Director of Chemonics International decided that the chances for continuation were good, and that terminating work on the project in March or April would have a devastating effect on the project. Therefore, Chemonics continued to provide personnel and to carry out project work through June, accepting an exposure of approximately \$300,000 had the contract not been renewed and had Chemonics been faced with closing down operations and repatriating the team in July. Ultimately, USAID and the GRM decided to continue the project, on a one-year, interim basis. Chemonics and the GRM negotiated a contract amendment in early July, and the amendment was signed on July 12, 1979, retroactive to July 1.

The negotiations themselves were carried out in a few days but were rather heated at times. The GRM negotiators stressed delays in implementation and deficiencies in the performance of some Chemonics team members. Chemonics accepted these criticisms to some degree, but also stressed the deficiencies in project management by the GRM, particularly in the areas of vehicle management and maintenance, slowness in decision-making, slowness in disbursing operating monies from the Joint Fund and frequent misuse of technical assistance personnel. The resulting contract amendment, and verbal understandings reached during the negotiations, appeared to pave the way for improvement in several areas.

It should also be recognized that despite Chemonics' willingness to accept the risk of continuing operations with no assurance of a contract amendment, the uncertainties did cause a disruption and slowdown of the work in the final months of the first contract period. Several team members were planning to leave the project, or decided to leave in face of uncertainty, local staff were in a similar position, leases had to be terminated and, in general, attention was diverted from the work to termination and renewal problems.

2. Terms

The basic provisions of the amendment remained much the same as the original contract. It extended the termination date to 30 June, 1980; however, its scope was increased to include technical assistance to Project Mali Livestock I (ECIBEV) and a very limited amount of technical assistance to the Small Ruminants Project. As mentioned, Small Ruminants, technically an element of Mali II, was being controlled by OMBEVI, acting as "sub-contractor" to Mali II. In addition, the need for a rational maintenance program for equipment and vehicles was recognized and an auto maintenance expert appointed. There was also a change in emphasis to the effect that the contractor was principally responsible for providing technical experts to assist the Malian officials responsible for executing project tasks. The change was made to conform to Malian views that Malian officials were responsible for all aspects of administration and execution of project tasks despite the ambiguities contained in the contract.

3. Tasks (1979-80)

The contract extension called for the contractor's assistance in furthering the Training, Communications and

Research Program both at Dilly and Sotuba. Unfortunately, perhaps, the contractor was again held responsible for the formulation of the communications program and the preparation of materials. Although this issue is covered in the next chapter, it is appropriate to point out once again that the contractor never had the necessary authority to allocate resources (human, material, or financial) to fulfill this obligation. Such authority rested entirely with the Malian directors and chiefs of activities, as it should have. With the shortages of project funds that became more and more pronounced with the passage of time, adequate funds never were available to carry out the communications program as originally envisioned.

In the case of the Sahel Grazing Activity, the tasks for which the contractor was to provide assistance were reduced to range management and participation in certain market activities in the Dilly area carried out by Malian personnel.

Assistance to the New Lands Activity was to bring about completion of those tasks which had been delayed and completion of cost benefit study of a control or eradication program.

With respect to ECIBEV, or Mali I, the contractor was to provide assistance in managing the Tienfala Feedlot. Provision was also made for the services of a marketing specialist if needed, to assist in the marketing and purchasing programs.

The Small Ruminants sub-project was to be given technical and administrative support by the contractor, although again, no provisions were made to enable the contractor to provide administrative and logistics support.

The extension also confirmed the contractor's responsibility to assist the Project Direction in the execution of its administrative and managerial tasks.

4. Level of Effort (1979-80)

The contract extension called for an effort of two hundred work months. Of these, 168 were to be long-term (fourteen people) while short-term experts were to account for thirty work months and the home office was to provide an additional two work months.

5. Personnel (1979-80)

As noted above, the level of effort for this "interim" year was actually higher than in the first two years: fourteen long-term advisors rather than twelve. The increase was accounted for by the fact that Chemonics took over some of the activities under Mali Livestock I formerly carried out by Experience Inc.

The basic long-term staff was allocated as follows: Training and Communications: three advisors (two in training, one in communications); New Lands, three advisors (one in entomology, one in protozoology, one in economics), Sahel Grazing, no long-term, short-term only; Mali Livestock I, three (one in feedlot management, one in forage crops and marketing, one in financial management); and other areas, four advisors (Chief of Party, Business Management Advisor, Construction Engineer and Vehicle Maintenance Advisor). In fact, this totals only thirteen advisors; the final position, that of Range Management Specialist for Sahel Grazing, was never filled as a long-term position; it was covered by Dr. James Naylor as a short-term specialist.

The changes from the first contract period to the second reflect the change of emphasis noted above in some areas of the project. However, the actual personnel changes were even more drastic, which reflected in some cases decisions on the part of team members not to continue with the project, and, more importantly, dissatisfaction on the part of the GRM with

the performance of some team members. In Chemonics' view, some of this dissatisfaction was justified by the quality of the performance, or the unfortunate personality traits of some team members; in other instances, however, it was not justified and resulted from GRM selection of unsuitable candidates when given a choice by Chemonics, or untenable working conditions faced by some of the advisors.

In any event, the following team members departed during the summer of 1979: Citron, Communications (replaced after a long gap by Daniel Dravet); Souder, Hydrogeologist (position abolished, replaced by short-term); Reeser, Economist (replaced by Philippe Ballan, who was replaced in turn by Alexandra Shaw); Van Wettere, Entomologist (replaced by Malik Awan, a Protozoologist); Norton, Business Management (replaced by Richard Pronovost). Chemonics was faced with the need to replace these five individuals, either long-term or short-term, and recruit staff members for the new positions of vehicle maintenance advisor, three Mali I positions, and numerous short-term positions.

To fill these positions, and to do so in a way which would respond to the GRM's desire for high quality staff, many home-office resources were devoted to recruiting and a very extensive screening process carried out for all candidates. In addition, an effort was made to coordinate recruiting with the visit of Dr. Fernand Traore, then Project Director, who was in the United States for an AID-funded seminar. In this way, Dr. Traore had the opportunity to interview candidates in Washington (and Paris) prior to making a final selection. At the end of the process, Chemonics was able to provide a number of excellent candidates for all positions.

In addition to replacing the team members who were leaving their positions, several new positions were filled. These included Mr. Mike Asselin, who was selected for the post of Feedlot Management Specialist (ECIBEV) and Dr. Tito

de Beca for the post of Forage Expert and Agronomist, ECIBEV. The latter was also an expert in marketing and thus provided in one person the services of two specialists. Mr. Marcel Adam was selected for the post of Financial Management Specialist (ECIBEV), but for a variety of reasons, he left the project early to return to Canada. To occupy the new post of Automotive Expert (Mali II), Mr. Nicholas Louis was selected. Held over from the original contract were: Mr. William Crosson, Chief of Party; Mr. John Wagner, Engineer; Mr. Kay Wilkes, Range Management (TC&R), Mr. Joe Spatrisano, Animal Husbandry (TC&R), and Dr. Sam Okiwelu, Entomologist (NLA).

In early September, Mr. Dupuy joined the team as a short-term expert in hydrology. He remained until mid-November. In October, Drs. Paul Martin (D.V.M. and Specialist in Animal Surveys) and De Vivies (Socio-Economist) joined the team as short-term experts to assist the Director of the Small Ruminants Project and to carry out the ground work with Malians assigned to that project. Mr. John Lippert arrived shortly thereafter to provide statistical assistance to Small Ruminants but left after only a few weeks of work. Dr. de Vivies left in mid-November following serious delays in his work due largely to the lack of transport. He was replaced by Dr. Bardet on 6 March, 1980, who also left shortly after arrival, finding the conditions and facilities provided for the work inadequate. He did, however, leave behind a very capable report of his work. Dr. Naylor arrived in September and left in January 1980, having spent the interim at Dilly as the Range Management Specialist with the Sahel Grazing Activity.

D. The Contract (1980-81)

Negotiations

The period 1 July, 1979 to 30 June, 1980, or the "interim year," was to be used by USAID to design a new

project which would encompass the entire livestock sector, taking into account the work already done in the two major livestock projects, Mali I and II.

In spite of the fact that, during the 1979-80 period, Chemonics was supplying its highest level of effort under the contract, and covering the widest range of activities, the livestock projects themselves were largely on hold. USAID continued to provide significant sums of money, but uncertainty about the follow-on effort had a deleterious effect on progress. Thus it was a difficult period for all personnel--Malian, Chemonics and USAID.

By the end of 1979, it was apparent that USAID and the GRM would not be able to launch a new project in time to have a new team in place by July 1980, when the Chemonics contract was due to expire. And again, USAID and the GRM were unable to guarantee to Chemonics any continuation of the contract beyond June 1980. Therefore, it was necessary to begin planning for an orderly shutdown of project and contract activities, a task which generally requires several months lead time. In March 1980, Chemonics began making administrative arrangements--terminating leases, turning in equipment, furniture, generators, etc. These measures cost the project a great deal of money but were essential to an orderly termination. At the last minute, USAID agreed to fund another interim year, and on the basis of that agreement Chemonics and the GRM negotiated another renewal.

During negotiations, Chemonics was informed that only slightly more than \$1 million was available for services in the following year, and that a level of effort of ten long-term advisors was desired. Chemonics' Director, Mr. Teele, advised that the amount of money was about \$300,000 short, and that a new amendment would have to be negotiated early in 1981 or the team would have to terminate long before June 30,

1981. The observation was noted and Contract Amendment Number 5 was signed on July 20, 1980, almost a month after the expiration of the prior amendment. As predicted, more money was eventually needed, and another amendment, Amendment Number 7, was negotiated and signed in March 1981, adding the necessary monies to carry the project through June of that year.

2. Terms (1980-81)

The terms of the new contract were generally the same as had been obtained in the original one, but there was a further clarification of the advisory role of Chemonics. The company was to provide specialists who would assist and advise GRM officials charged with the implementation of project tasks. No longer was Chemonics assigned any executive responsibilities which it had neither the means nor the authority to carry out. This change represented the most concrete acceptance to date of the advisory role of the Chemonics specialists. In short, a de facto situation received de jure recognition.

There were, however, still exceptions to this rule. One was officially recognized in an amendment to the contract, in that the Automotive Maintenance Expert was to be fully responsible for the supervision of the new project garage and its maintenance activities. The second exception arose from the desire of USAID and the GRM to bring order to the financial management of Mali II. Thus, in Amendment 6 to the contract, an expatriate financial expert was provided by Chemonics to man the post of Financial Manager, Mali II. The third exception, at the behest of the Director General, OMBEVI, called for the Feedlot Expert to assume the direction of the feedlot at Tienfala.

Another new provision in the 1980-81 amendment was the assignment of specific project vehicles to the contractor for

use by contractor personnel in the discharge of their duties. This was a much needed reform. For a long time, the lack of transport at the immediate disposal of the team had hampered many of their efforts.

3. Tasks (1980-81)

For the first time in the contract, the term "marketing" was used to describe the Project Mali I (ECIBEV) and the term "production" to describe Mali II. The tasks in the original contract and amendments (to June 30, 1980) remained, but the scope of work assigned to the contractor at this stage was much more limited than before.

a. Marketing

The contractor was to assist ECIBEV by providing an expert in feedlot management as an advisor both to the Director General and the Malian designated as Feedlot Manager. In fact, the Director General finally authorized the Chemonics specialist to direct the feedlot operation himself in order to improve the situation rapidly, but with the intent of finding and appointing a competent Malian manager. In addition, the contractor was required to provide an agronomist to assist in the expansion and improvement of the forage program at Tienfala and an expert in financial management to assist ECIBEV in developing sound accounting and financial management systems. The three experts were expected to assist ECIBEV in the expansion of the feeder program for entrepreneurs as well as the embouche paysanne program.

b. Production (Mali II)

The contract called upon Chemonics to provide expert assistance and advice under several headings. The first was the Sahel Grazing Activity (Activite Paturage Sahelien or APS). The commitment was to provide short-term specialists, at the request of the Project Director, to APS staff in continuing the development of the "test perimeter" at Dilly. Potential developments included completion of water points, maintenance of firebreaks, implementation of range management plans, and studies of the ecology and conditions of the range.

The commitment to Training, Communications and Research was to provide a Communications Specialist to help the Chief of Activity in the development of and training in communications techniques both in Bamako and in Dilly.

With respect to New Lands, Chemonics was to provide the services of a Protozoologist and a Land-use Economist to assist the Chief of Activity to complete the work started in 1977 and, particularly, to complete the cost-benefit analysis of an eradication or control program.

With regard to project management, the contractor was to provide the services of an Automotive Maintenance Expert to advise on maintenance of equipment and vehicles and to establish a project (Mali II) garage. In addition, Chemonics was required to fill the post of Financial Manager, Mali II, who would function directly under the Project Director, occupying what had previously been a Malian post. Expert assistance was also to be provided the Language School.

4. Level of Effort (1980-81)

The level of effort called for under the contract extension was 121 work months of which 108 were long-term, twelve short-term and one for home-office support.

5. Personnel (1980-81)

The contract renewal called for a reduction in personnel to a level of ten long-term advisors. Among the positions abolished were: Construction Engineer, Range Management Specialist (TC&R), and Animal Husbandry Specialist (TC&R). As a consequence of the reduction, Mr. Wagner (Engineer), Mr. Wilkes (Range Management), and Mr. Spatrisano (Animal Husbandry) left the project. Mr. Louis, the Automotive Specialist, declined to remain on the project on the grounds that he had neither the means nor the authority to develop and enforce a proper maintenance program. On the other hand, Dr. de Beca remained as Marketing/Forage Specialist, ECIBEV, as did Mr. Theriault, the Financial Management Specialist. Mr. Theriault was later replaced by Mr. Paul Carbonneau on a short-term basis. To replace Mr. Asselin as Feedlot Specialist, Chemonics recruited Mr. Joe Feffer, a man of considerable experience in his field. Dr. Awan, the Protozoologist for the New Lands Activity, remained, as did Ms. Shaw, the Land-Use Economist. Dr. Okiwelu, Entomologist for New Lands, left the project in August 1980 after a short extension to complete some field work. To replace Mr. Louis as the Automotive Specialist, Chemonics recruited Mr. Henry, like Mr. Louis, a French national. Mr. Dravet remained as the Communications Specialist in TC&R, the last Chemonics expert assigned to that activity. Mr. Pronovost, who had occupied the position of Business Manager for Chemonics and Financial Advisor to Mali II, moved to the newly created position of Director of Finance for Mali II. He was temporarily replaced in the Business Manager position by Mrs. Joy Lucke and later by Mr. George Desilets. Mr. Crosson remained as Chief of Party.

Upon the conclusion of the contract extension, all of the above personnel left the project except Mr. Pronovost and

Mr. Feffer, who were retained under another contract extension for the period 1 July, 1981 to 30 June, 1982, and later to 31 December 1982.

E. The Contract (1981-82)

1. Negotiations

During most of the contract period, 1 July 1980-81, both elements of the project, Mali I and II, suffered serious financial difficulties. These, in turn, called into question USAID financing for a continuation of activities. Consequently, there was little hope of restructuring the two projects to consolidate the gains that had been made and "starting over" under better conditions. USAID had, in fact, inaugurated a study which was intended to be the precursor of an entirely new, and greatly expanded, project which would encompass existing elements. But as time went on, it became clear that USAID could not complete its study and process it through AID/Washington in time to ensure the continuation of Mali I and II on the same terms as before, with a fairly large technical assistance element.

Finally, shortly before the close-out date of the contract, another extension was agreed upon by both USAID and the GRM to retain the services of Mr. Pronovost as Director of Finance, Mali II, and Mr. Feffer as Feedlot Management Specialist, Mali I. These two specialists thus remained for the period 1 July 1981 to 30 June 1982, later extended by several amendments to December 31, 1982.

2. Terms

The terms of the contract extension called upon Chemonics to provide the services of a Feedlot Management Specialist to assist the Director General of ECIVEB in the

operation of the feedlot at Tienfala and a Financial Management Specialist to act as Director of Finance for Mali II.

3. Tasks

The tasks assigned to the Financial Management Specialist for Mali II were to "assume the duties and responsibilities of the position of Director of Finance, Project Mali Livestock II" and to be "directly responsible to the Director of the Project..." The task assigned to the Feedlot Management Specialist at ECIBEV was to "assist in the management of the Tienfala Feedlot."

4. Level of Effort (1981-82)

The level of effort called for under this extension (Amendment No. 8) was twenty-four (later thirty-six) work months of long-term time and one month for home-office support.

5. Personnel (1981-82)

Mr. Pronovost was carried over from the previous period as the Director of Finance, Mali II, and Mr. Feffer was carried over as the Feedlot Management Specialist for ECBEVI.

CHAPTER III
CONTRACT ACTIVITIES, 1977-1982

A. Introduction

This chapter represents a major undertaking. It attempts to provide a coherent description of contract activities over a five-and-one-half-year period and to do so in a way which will hold the reader's attention. The material is organized both chronologically and by activity. The chronological division is the same as that used in Chapter II, i.e., according to the four periods of the contract: (1) the original contract 1977-79; (2) the period covered under Amendment 3, 1979-80; (3) the period covered under Amendment 5, 1980-81; and (4) eighteen months during which Chemonics had only two advisors on the project, July 1981 through December 1982.

As is described in the first two chapters, the Mali livestock project was highly complex. Substantively, it involved a minimum of three, and usually more components, some divided into sub-activities (for example, Training and Communications). It required management on the part of the contractor and the Project Direction of many, varied resources beyond the normal human resources involved in any technical assistance project. Further, it included several major and minor construction projects, none of which were the direct responsibility of Chemonics; but with which Chemonics, through the Construction Engineer and in other ways, was closely involved.

Each of the four contract periods is described in accordance with the following list of activities.

- Contract and Project Management
- Training and Communications

- Sahel Grazing
- New Lands
- Marketing
- Construction
- Small Ruminants
- Procurement
- Participant Training
- Evaluation

B. First Period, April 1977-June 1979

This was the period of the initial contract. At the time of negotiation and signing, in February 1977, this was to be the period of performance of the entire contract, although Project Mali Livestock II was designed as a five-year project, and it was the initial intention of the GRM and USAID to continue for considerably more than two years. As noted in Chapter II, the contract team was to be twelve long-term advisors (one Chief of Party; three in Training and Communications; three in New Lands; three, including the Hydrogeologist, in Sahel Grazing; and two centrally located in Bamako, the Marketing Economist and the Construction Engineer). The project in this period consisted of three basic activities: (1) Training and Communications; (2) Sahel Grazing; and (3) New Lands. There was also a marketing activity and considerable peripheral work.

There is a temptation to discuss both contract and project management in great detail. Contract management demanded a major proportion of Chemonics' time and energies during most of the five and one-half years of the contract, and certainly during the first two years. Chemonics had notable successes and failures in this area, and the lessons learned were many and valuable. Project management by the

Malian Project Direction, with some input from USAID and Chemonics, was characterized by serious problems and deficiencies which had a major impact on the results of the overall effort. These lessons and recommendations are highlighted in later chapters of the report.

Despite the importance of management, however, we prefer to focus in Chapter III only on its most fundamental aspects so that we can give adequate coverage to the substantive work of the project.

1. Contract and Project Management

- a. Contract Management

- (1) Requirements

The requirements for contract management were very heavy indeed. The contract was initiated during the period when AID was taking the position that contract teams were essentially on their own with respect to support of field personnel. Therefore, the Chemonics team, aided by the home office, was almost entirely independent of USAID or GRM support. A twelve-person team, plus short-term specialists, in a country with many logistic problems, created a very heavy management burden on Chemonics. Since this was the first completely autonomous contract team Chemonics and its Director had ever managed as a company, a great deal had to be learned "on the job." Chemonics was responsible for financial management, housing, transportation, both international and in-country, communications, formalities with the GRM, shipping and most other support requirements. In certain areas, the American Embassy or USAID did provide support, as in the case of medical assistance, check cashing and limited pouch privileges, but since a major percentage of

the Chemonics team was non-American, these benefits did not apply to the entire team.

(2) Personnel

To provide a high level of contract management, Chemonics initially had a Chief of Party assisted by a small local staff and home-office personnel who, however, were not charged directly to the contract. The initial Chief of Party was Chemonics Director of International Consulting, Mr. Thurston Teele. In December 1977, after nine months in the position, Mr. Teele was replaced by Mr. Robert Reeser, and Mr. Teele returned to Washington and became, in addition to Director, the Home-office Supervisor for the project. Mr. Reeser served as Chief of Party until December 1978, when he was replaced by Mr. William Crosson. In the spring of 1978, it became obvious that the contract management requirements were too much for a single Chief of Party supported by a small local staff, and Chemonics was authorized to add a Business Management Advisor/Accountant to the team. This individual was able to assume the accounting duties and much of the day-to-day administration, freeing the Chief of Party for more substantive work. We should stress, however, that even this two-person management staff is a bare minimum for a project and team of this size and complexity.

(3) Financial Management

Under this contract, Chemonics had very extensive financial operations in Mali. In addition to normal project operating costs, such as local per diems, local staff salaries, fuel, supplies and services, equipment and spare parts, Chemonics also managed and financed an array of procurement activities both within and outside of the

contract. Chemonics was also required at times to advance considerable sums to the project itself, when releases from the Joint Fund were delayed. This called for very heavy advances from Chemonics in the United States to Chemonics/Mali, and very extensive and occasionally difficult accounting. The first Chief of Party, Mr. Teele, did the accounting himself; since he is not an accountant, the results were not terribly good. Mr. Reeser is not an accountant either, and it became obvious that a professional accountant was required. It was intended that this accountant or Business Advisor, initially Mr. Adams and subsequently Mr. Norton, would also assist the Project Financial Director with accounting for the Joint Fund, but this assistance was not welcomed and therefore, not effectively given.

(4) Housing

During this first period, the project rented houses for the Chemonics team members and the Project Director. Chemonics was initially responsible for major initial modifications to make the houses acceptable for expatriate use and then for subsequent repairs. This was a major undertaking, since it is difficult to obtain such work and even more difficult to ensure good quality. Some of the repairs were financed by the landlords under pressure from Chemonics (very few, however, since Chemonics was not paying the rent), some from the Chemonics contract, and most from the Joint Fund. For the day-to-day repairs, after attempting several approaches, Chemonics settled on a maintenance contract with the Central Veterinary Laboratory.

(5) Furniture and Appliances

The contract required Chemonics to supply furniture and appliances for the team. (It did not provide for generators, due to an oversight in the negotiations.) As soon as funding for the contract was in place, in April 1977, Chemonics home office started the lengthy process of procuring twelve sets of furniture and appliances. Since the Chemonics Procurement Department had not yet been established, procurement went rather slowly. The items were not assembled and packed until August, although the team had been arriving in Bamako over the summer, and were anxious to begin normal living. USAID approved a request by Chemonics for air shipment to speed things up, and two flights of a C-130 were chartered to bring in most of the furniture. Chemonics itself handled the movement through customs, movement to leased warehouse space and delivery to the individual houses. This was a very large operation, and the air freight was certainly expensive. It appears to have been justified, however, since the last four units, sent by sea, sat in Abidjan for an extended period of time, and then were cleared and brought to Bamako at great expense. Generators were obtained using the Joint Fund with the approval of the Project Director, and were eventually installed in the houses and some of the office locations.

Parenthetically, we would like to note that the furniture and appliances originally provided in 1977, and managed since that time by Chemonics, are still largely serviceable in 1983. This in spite of numerous movements in and out of storage facilities and houses and use, in most cases, by more than one family. We believe this is an excellent record, a tribute to our team members over the years, and an example of what can be done by responsible people who know that replacements for misused property will be hard to obtain.

(6) Vehicles

As with many projects, vehicles represented a very major problem in this project. Since vehicles were under the control of the Project Direction, not Chemonics, they are discussed under Project Management, below.

(7) Communications

Communications between the team and Chemonics/Washington were mainly by telex, supplemented by pouch mail and telephone. As with most projects, considerable use was made of "hand-carried" mail by travelers between Bamako and the United States. Generally, communications between Washington and Mali were satisfactory.

(8) General Backstopping

The Chemonics office in Washington provided a very wide range of backstopping services to the team. These included procurement, recruiting short-term personnel, orientation and briefings, transportation from the United States to Mali, shipping of personal and project effects, etc. In common with other contractors, Chemonics often used a system of shipping large numbers of footlockers via excess baggage, thus avoiding delays and customs problems, and saving large amounts of contract funds.

Another important backstopping task performed by the home office in Washington was maintaining relationships with the three subcontractors who provided personnel to the technical assistance team: Checchi and Company, SaLUT and Pan African Development Corporation. In Mali, all personnel were supported and managed by Chemonics, but several of the

team members were actually recruited, employed and paid by these other firms. This fact occasioned considerable liaison between Chemonics/Washington and the home offices of these companies in Washington, Columbia, Maryland and New York City, respectively. Chemonics' home office also managed the cash flow to the team, and in several instances to the project itself, performed the necessary accounting and prepared the detailed monthly invoice for approval by the GRM and payment by AID. During the 1977-79 period, contract backstopping was handled at various times by Dr. Philip Moeller, Mr. Teele and Ms. Sandra Miller. The Accounting Services were provided first by Ms. Cheril Thomas and then by Ms. Merita Howard Jackson. The extensive procurement work (see Project Management below) was carried out mainly by Chemonics' then Procurement Manager, Mr. Lester Hook.

(9) Management of Substantive Work

The above is a somewhat superficial listing of the activities which comprise contract management in a project such as Mali Livestock II. Another activity would be the supervision of the substantive work, which is shared by the contractor, the Project Direction and USAID. The contractor's responsibility in this area is vested in the Chief of Party and, to a lesser and more remote extent, the Project Supervisor in the home office. It is typically exercised through (1) work plans, (2) day-to-day supervision of the team and (3) the reporting function. The three Chiefs of Party provided by Chemonics carried out these functions with varying degrees of success.

With respect to work plans, the initial work plan was purportedly for the entire two years of the contract, and was set out in the contract, mainly in Annex A. The contract itself was set out in fairly general terms, whereas Annex A, derived from work done in the PERT planning process carried

out before the contract was negotiated, was extremely specific (and, as it turned out, far too optimistic). From April 1977 to April 1978, the Chemonics team, led by the Chiefs of Party, made every effort to adhere to the work plan. In April 1978, after several months of effort, a new work plan was prepared, with targets which were considerably scaled down. Many of these reduced targets were met before the end of the first contract period.

The contract reporting system, instituted in May 1977, consisted of a detailed monthly report in English and French. It provided specific information on progress directly tied to the activities, targets, and "Critical Path Indicators" listed in the work plan, Annex A to the contract. Although it was not possible to meet all of the targets, Chemonics believes that this reporting mechanism was excellent in that it required the contractor to report problems and failures as well as accomplishments. Monthly reports were prepared for each month during the first contract period.

In view of the difficulties of directly supervising eleven other team members, the geographic and substantive spread of the work, and the fact that Malian personnel were in charge of each activity, much of the Chief of Party's supervision was exercised through the Activity Chiefs, one each for Training and Communications, New Lands and Sahel Grazing. By this means the Chiefs of Party made every effort to provide substantive supervision of the work, especially to ensure adherence to the project goals and work plans and to review the written work produced. The sheer volume of the written work made it difficult at times and impossible at others to ensure a high degree of quality control. In later stages of the contract, Chemonics' Publications Department in Washington assumed much of the quality control and production responsibility for major reports.

b. Project Management

As noted above, and elsewhere in the report, project management, its style and its deficiencies, had, in Chemonics' view, a very heavy impact on the project. Whereas we analyze management problems extensively elsewhere, here, we attempt to provide a basic, summary description of the main elements of project management as we view them. We divide the discussion into seven subsections: institutional arrangements, management personnel, counterparts and lines of authority, financial management, facilities, vehicles and commodities.

(1) Institutional Arrangements

The institutional arrangements for Project Mali Livestock II were complex. Three institutions had direct responsibility for implementing parts of the project: OMBEVI, the Central Veterinary Laboratory (under the Livestock Service), and the Institut d'Economie Rurale (IER). Fortunately, all three were elements of the Ministry of Rural Development. The lead institution was OMBEVI, which provided the Project Director and was the institutional home of most of the activities including Training and Communications and Sahel Grazing. The CVL and the IER were presumably jointly responsible for the New Lands work, the former for the scientific side, the latter, the economic. In fact, the IER played a very small role in the activity. Other institutions with which the project had to work, and on which it depended for important contributions, were the Service Hydraulique, the Service Elevage and Genie Rural (the Rural Engineering Department).

As noted, OMBEVI provided the Project Director. This Director had a line position within OMBEVI, but during most of the period, devoted the bulk of his time to the management

of the project. The overall project supervisor and signatory authority was the Director General of OMBEVI. The Project Director was responsible for securing the cooperation of the other institutions, which was done through a combination of informal day-to-day contacts, formal meetings of various types, and the interchange of memoranda, letters and documents requesting and granting approvals of various requests and proposals. This coordination rarely involved Chemonics directly, but it did have a major impact on our work. Although the two Project Directors who served during the first period made strong efforts to ensure adequate coordination, and considerable coordination actually was achieved, there were nonetheless breakdowns in coordination which hurt the project.

(2) Management Personnel

At the start of the contract period, the senior GRM official involved in the project was Dr. Boubacar Sy, Director General of OMBEVI. Dr. Sy had participated in the design of the project and had been the chief negotiator for the GRM on the Chemonics contract. There was no Project Director; the intended Director, Dr. Allasane Toure, was unavailable because of injuries suffered in a traffic accident in Paris. After the Chemonics team had been in Bamako a month, Dr. Almouzar Maiga was named Project Director. In a similar manner, the project had no Financial Director for some months until Mr. Baba Wague was named in July 1977. Midway through the first two-year period, all three of these individuals were changed: Dr. Sy left to become Directeur de Cabinet of the Ministry of Rural Development, Dr. Maiga was promoted to the post of Director General of OMBEVI, where he continued to be closely involved with the project, and Dr. Fernand Traore, formerly Director of the CNRZ at Sotuba, became the Project Director. Mr.

Frantao Cisse replaced Mr. Baba Wague as Financial Director. Eventually, Dr. Allasane Toure joined the Project, initially as Deputy Project Director.

The list of management personnel should also include the chiefs of each of three activities. (These are discussed more fully under the individual activity sub-sections.) There were considerable delays in appointing these Activity Chiefs, as with other counterparts, but once they were appointed, there was a reasonable degree of stability in their tenure.

The Training and Communications Chief was initially Mr. Mory Coulibaly. Within a relatively short time, in February 1978, he was replaced by one of the other counterparts in that activity, Mr. Oupre Berte.

In New Lands, the eventual appointment was Dr. Ahmadou Telly, who remained in the position for the entire life of the contract. Dr. Telly, an energetic individual with a strong desire to see the work progress, was, however, in an anomolous position in that he was officially required to report to the Director of the Central Veterinary Laboratory, Dr. Sylla, but was physically separated from Dr. Sylla and had the tendency, political strength and bureaucratic skill to operate largely independently. This mode of operation, independent of CVL, coupled with the complication of having a second tsetse fly research project in country with Texas A and M University as the contractor, tended to result in continual confusion, disagreement and some duplication, which all the efforts of Chemonics and TAMU contract personnel could not completely eliminate.

With respect to Sahel Grazing, the Activity Chief (also the Chief of the CPES or Dilly Center and the 1,300,000 ha. pastoral zone) during most of the period was Aboubacrine Aya Ayala, a native of the Sahel and a herding expert who, in Chemonics view, was unqualified and unable to manage a program as complex as this one.

Although often well qualified technically, virtually all of the management personnel assigned to the project lacked specific management training and experience and were seriously unprepared for the management tasks thrust upon them. An exception, in our view, is Dr. Sy, who remained with the project only a short time. More importantly, these individuals lacked the resources needed to manage such a project properly. Nevertheless, Chemonics believes that, with the exception of the Sahel Grazing Activity Director, all made real efforts to manage the project as well as possible.

(3) Counterparts and Lines of Authority

In addition to the management personnel mentioned above, the GRM provided a variety of other counterparts to carry out the project. Some Chemonics team members had a counterpart during the entire period; others, such as the Hydrogeologist and Construction Engineer, had them more sporadically. Virtually all counterparts were existing GRM employees of OMBEVI, Livestock Service, IER or some other agency. There were frequent changes for various reasons, including departures for participant training under this or other projects.

The management styles or lines of authority are discussed in Chapters I and II, and are important because of the impact on project operations. The project was a Malian project managed by Malian personnel. Chemonics was working under a host-country contract, which removed the ambiguity, often found under direct AID contracts, concerning the real client for Chemonics' services. Therefore, the Project Director was in charge of the project, under the general supervision of the Director General of OMBEVI and the even more general and sporadic overview of the "Conseil Paritaire." The Chemonics' Chief of Party had the Project

Director as counterpart, but it was not a relationship of colleagues or equals, but of supervisor and subordinate. The same was true with other counterparts, especially at the level of Malian and Chemonics Activity Chiefs. The Malian was the chief; the expatriate, the advisor and subordinate. The fact that the Chemonics advisor was supposed to be providing, inter alia, on-the-job training to his supervisor, obviously made for a difficult situation. The result was that Chemonics' advisors had to depend, in most cases, on Malian personnel working in the Malian bureaucratic system for key decisions and much of the implementing action. This meant that the management skills of the Chemonics team members were underutilized or lost, and that the project and its resources were not managed as well as they could have been.

This management style evolved during the early months of the contract, in 1977. Initially, there were few counterparts and the Project Direction was new. Chemonics initially had control of most of the available resources, since its contract was activated and the Joint Fund was not. In the early months, the Chemonics team operated relatively independently under the direction of the Chemonics Chief of Party. However, as the Malian Project Direction put its personnel in place and the Joint Fund was activated, thereby giving control of most of the project resources to the Malian Project Direction, the management style described above was introduced. During the rest of the contract period, the project was managed by the Malian Project Direction with relatively little management input from Chemonics. Chemonics frequently made suggestions, provided staff assistance and pushed for a bigger role, but with limited success.

(4) Financial Management

As discussed in Chapter I, the financial management of the project was, for the first three years, entirely in the hands of the Malian staff with some input from USAID. Thus, during the 1977-1979 period under discussion here, Chemonics had virtually no financial managerial role. Chemonics did (1) provide financial support by making some initial advances to the project before the Joint Fund was activated, (2) spend considerable project funds by making approved purchases and then getting reimbursement from the Joint Fund, and (3) provide very limited technical assistance to the Financial Director, especially after the arrival of the Chemonics Business Management Advisor in the summer of 1978. This minor input was inadequate to prevent serious financial mismanagement of the project which tended to impede progress and result in considerable waste, as determined in later reviews by USAID.

(5) Facilities

The provision of facilities for the operation of the project was a responsibility of Project Management. Facilities were inadequate for the entire first two years, and this inadequacy had a very serious effect on the achievement of project goals. In essence, when the Chemonics team began to arrive in May 1977, there were no facilities at all available for them. Chemonics was obliged to try to find office, laboratory and storage space for a twelve-person team, short-termers and a local Malian staff, all working on several different activities. It was even necessary to find space for some of the counterpart staff.

The project plans called for the construction of a new second floor (premier etage) wing in the OMBEVI building to

house the Malian and Chemonics Project Direction and some other activities. This work had barely started when the team arrived, and was not finished during the first two years of project/contract activity. Further, although a major element of the project called for establishing and operating a training and communications center on the property of the Sotuba National Livestock Research Center (CNRZ), and for constructing an elaborate facility to house the center, no progress whatever had been made on the construction when the team arrived. Indeed, during the initial visit by Chemonics to prepare the proposal for the contract in late 1976, and again during negotiations for the contract in February 1977, the GRM took the position that, since there was no training and communications facility constructed, and since the plans called for the construction of the facility within a year or so, it would be preferable to delay the start-up of the Training and Communications Activity for a year. Chemonics disagreed, and with the help of the Assistant Director of CNRZ, located a small compound of warehouses and storage buildings on the CNRZ site which were being used in a minimal way by the national milk company, Mali Lait. We obtained tentative agreement that these facilities could be used as a temporary Training and Communications Center. The GRM accepted the idea, arranged for the warehouse to be made available and agreed to a prompt start-up of the Training and Communications Activity.

With the arrival of the first members of the Chemonics team in May 1977, it was quickly determined that there was no space available at OMBEVI or anywhere else in Bamako to house personnel. It was therefore decided to use the Sotuba warehouse for the Chemonics team as well as the Training and Communications Activity. With the assistance of the first Malian counterpart assigned, Mr. Diarra Kieta, Chemonics undertook to transform the warehouse into an office and training facility, initially advancing the project over FM

3,000,000 for the purpose, since the Joint Fund had not been activated. This very small facility, located eleven km from Bamako and without a telephone, served as the site for all project activities except those at Dilly for the first nine months of the project. In January 1978, the New Lands team moved out, but Chemonics' main office remained there, sharing the limited space with the Training and Communications Activity, until July 1979, a period of over two years.

The New Lands Activity was intended to be housed in the Central Veterinary Laboratory, also at Sotuba but two km from the CNRZ, with the socio-economic activity possibly at the IER office in Bamako. However, although the CVL had a number of empty laboratories, it had little or no spare office space. Further, the CVL was desperately short of operating funds and its Director, Dr. Sylla, took the position that any activity housed at the facility would have to contribute heavily to the operating cost. The sum required was far beyond the resources which Mali Livestock II had allocated for office space. Finally, the Activity Chief, Dr. Telly, preferred a Bamako location. Therefore, until space in Bamako could be made available, the New Lands team had to share the Sotuba space with the rest of the team. This meant no laboratory could be established, and storage space for the large amount of equipment needed was inadequate. In January 1978, space in the Virology Lab of the Livestock Service in Bamako was made available, and the New Lands team was able to have minimally adequate space there. This relocation allowed the training center to be established using the vacated space at Sotuba.

At Dilly, the facilities problems were never solved. The Dilly Center was financed and constructed under an FAO project, as discussed in Chapter I. Project Mali Livestock II included plans and funds to carry out further construction at Dilly, including offices and quarters for expatriate and Malian staff members. Although numerous plans were made (see

Sahel Grazing and "Construction" below), nothing was built by the project. During the early days of Mali Livestock II, FAO financed the construction of three additional small "banco" (mud) buildings, one of which was used as living quarters for a Chemonics technician. Otherwise, Chemonics personnel used the guest quarters at the facility which were never satisfactory. No office space was ever made available.

Thus, during the first two contract years, all Chemonics personnel, expatriate and local, and many of the counterparts, were housed in temporary and generally substandard facilities. We should add that, without considerable innovation and energy on the part of Chemonics personnel, there would have been no facilities at all, and the project would have been greatly delayed.

(6) Vehicles

The project was reasonably well supplied with vehicles, financed not by the Joint Fund but by AID and also procured by USAID. In the first few months of the contract, vehicles were assigned directly to Chemonics and placed under the control of the Chief of Party. After several months, official control reverted to the Project Direction, which made certain vehicles available to the contractor but limited the numbers of such vehicles and their use. Further, and most important, vehicle maintenance was carried out by the Project Direction using the repair facility at OMBEVI, a facility which was grossly inadequate in terms of both personnel and equipment. The rest of the large project vehicle park was used by Malian project personnel. This situation continued for most of the contract period.

It quickly became clear that vehicles were being abused and that maintenance was totally inadequate. Some of the abuse was by Chemonics personnel, in large part because

vehicles had to be shared among team members so that no individual member was responsible for the condition and maintenance of an individual vehicle. Much of the abuse was by Malian project personnel and especially drivers, who drove at excessive speeds and generally failed to provide daily water and oil checks. The result was a very rapid deterioration of vehicle condition, with large numbers of vehicles "down" for extended repairs, all too frequent destruction or "redlining" of vehicles as economically beyond repair, and consequently, a serious shortage of vehicles to carry out the work.

The above is the briefest summary of the vehicle problem on this project. It has been repeated, in our experience, in other projects where control over vehicle management was not retained by expatriate personnel. The problem is documented in much more detail in various reports made by Chemonics staff, especially Mr. William Crosson, during the course of the project.

(7) Commodities

The project required, from the beginning, a large number of commodities. During negotiations, the GRM made an initial decision not to procure most of the commodities through the Chemonics contract; the contract provided only for technician support commodities (furniture, appliances, etc.) and a large supply of audio-visual equipment. As noted, USAID handled the procurement of vehicles directly. Office furniture and some classroom equipment was ordered by USAID through AAPC. It took a year to arrive.

Initially, no provision was made for the procurement of other commodities, including camping equipment, office supplies, scientific equipment, etc. In the early months of the contract, a system was developed under which Chemonics

handled all of this procurement. Local procurement, in Mali, was handled directly by the team, with reimbursement from the Joint Fund. Overseas procurement, in the United States, was handled by Chemonics' Procurement Manager, using dollars advanced by Chemonics and reimbursed in FM by the Joint Fund in Mali. Chemonics then used these FM to finance its local contract operations, thus reducing the requirement to send dollars to Mali for this purpose. Needless to say, this procedure required considerable accounting, some major cash advances and attendant risk by Chemonics. Chemonics' only reimbursement for the effort was the direct and indirect charges for the time of the Procurement Manager in Washington. The system worked very well and the project was well supported in this respect.

This concludes the outline of the systems which evolved for contract and project management during the first contract period, 1977-1979. Significant changes are recorded in a similar, although much briefer, sub-section under the second, third and fourth contract periods below. We now proceed to an accounting of the work done on the individual activities during the first period.

2. Training and Communications

The Training and Communications activities are normally grouped under a single heading because they are very closely associated. We prefer to discuss them as a single entity first, to set out the pre-contract evolution of these activities, and then to treat each activity individually for purposes of clarity.

a. Pre-Contract Evolution and Contract Provisions

The basic purposes of the Training and Communication Activity in the project were (1) to contribute

to the creation of a trained cadre of personnel in the livestock and range management fields to staff this and other livestock projects; and (2) to develop and implement methods of two-way communication between project personnel and the target population (livestock herders, mainly in the Sahel) to introduce new methods and improve the quality of those methods.

As is usually the case, the training and communication concept evolved during the planning and early implementation years of the project. For purposes of this discussion, we take only the first and the last of the project documents, the original 1975 Project Paper and the Chemonics contract, leaving out other intermediate documents such as the Project Agreement, the Request for Proposals and Chemonics' proposal, all of which revised or commented upon the same concept.

In the May 1975 Project Paper, the Training and Communications Activity is summarized as follows:

2. Training and Communications: Through in-country training programs, assure that well-trained Government personnel are available for the livestock sector activities to meet needs over the next several years; also sensitize herder groups and train select herder group leaders, especially as a means to facilitate execution of the Sahel Grazing Activity. Considerable participant training is also included.

This rather general statement is amplified considerably on pp. 53-59 of the Project Paper. The paper states that two main groups are to be trained: technical personnel who already have general training and background in livestock, to be trained as broad-based livestock and range management extension agents (six months of training); and actual participants in the livestock system (herders, traders, etc.), who would receive lower-level training in environment and animal production. The communications program was to complement the training program, and by opening up good

communications between the technicians and the herders, lead to mutually agreeable approaches to improved animal production and range management.

Returning to the technician training, the Project Paper states that the objective was to train one hundred engineers and two hundred technicians in animal production and range management. (Such training was stated not to exist in Mali at the time.) The trainees would then work in two-man teams with the veterinary nurses to provide a broad range of services to the herders. The intent was clearly to use individuals already in the employ of the GRM ministries as candidates for training, because it was assumed they already had considerable prior training, but were underutilized for lack of funded programs.

The Project Paper comments that it would be best to use an existing training institution, and mentions three: the IPR (Rural Polytechnic Institute) at Katibougou, the School for Veterinary Nurses in Bamako and the Sotuba Research Station. The decision was to place this project-financed Training and Communications Center at Sotuba and thereby strengthen the existing program through the addition of a new one, including new resources, and a very elaborate new set of buildings and facilities--dormitories, library, classrooms, etc.

This rather vague statement of an elaborate training program, aiming far beyond the boundaries of the rest of Mali Livestock II, was considerably transformed in subsequent discussions and documents. But the main lines remained the same: a new training and communications effort, centered at Sotuba with additional work at Dilly, aimed at training personnel for the Livestock II and other livestock projects in Mali. In its proposal, Chemonics elaborated on these themes considerably, adding a variety of other training

courses. These included short courses for more senior Malian officials who were administering livestock/range management projects and who were not fully acquainted with some of the technical subjects. One example was a short course in range management, which is not taught or fully understood in either Mali or France, where many Malians have been educated. The later documents, and Chemonics proposal, also introduced the concept of project personnel carrying out livestock and range management research at Sotuba in connection with the training program, a reflection of the American concept that teaching and research should be associated.

In contract negotiations, the GRM made it clear that the project was going to be a tenant at the CNRZ/Sotuba, and not be involved in any way in its operation. Also, it was made clear that the research component would not be included, except possibly in a very limited way. It was agreed that only three advisors, including the Communications Advisor, would be assigned to this activity, rather than the four which had been envisaged.

The initial contract broke down the tasks for each activity into "specific tasks for 1977," for which there already existed a work plan, and "tasks for 1978 and beyond" for which detailed work plans were to be prepared each year. The pertinent sections of the contract are set out below. They show that the target of the effort was considerably narrowed, aiming at the elaboration and implementation of training programs for "encadreurs" and, in connection with the marketing program, for traders and marketers. In 1978, the requirement to help organize the training center is introduced. We also wish to note that, in spite of the admonitions during the negotiations, the responsibility for carrying out research (without defining either the kinds of research or the resources) remained. Chemonics accepted this clause because we still believed that research should be

carried out and hoped that we could find the resources to do it.

The pertinent paragraphs of the contract follow:

1. Specific Tasks for 1977

a. Training, Communications and Research

(1) Elaboration of Programs

The Contractor will assist in the preparation of training, research and communications programs at Sotuba and Dilly, as follows:

- teaching programs
- teacher training programs
- training programs for women
- communications program aimed at livestock development and marketing at Dilly (included in this is the production of communications materials)
- long- and short-term research programs into livestock and forage production located at Sotuba and at Dilly.

(2) Program Implementation

(2a) Teacher training:

The Contractor will assist in organizing a training program for teachers for the training centers at Sotuba and Dilly.

(2b) Training of "encadreurs"

The Contractor will assist in the training and the assigning of a first group of encadreurs in the Dilly area. During the same time some of the "encadreurs" already working in the field will be retrained.

(2c) Livestock marketing

The Contractor will assist in initiating a program for the collection, analysis and diffusion of market information, including supply, demand, prices and other information from various livestock markets. Further he will assist in the training of cattlemen, cattle traders and butchers.

(2d) To the extent possible, the Contractor will assist with the implementation of all the other programs mentioned above relying on the existing physical and logistic infrastructure.

For 1978 and beyond:

a. Education, communication and research

The Contractor will continue to assist with the ongoing teacher training program and with curriculum development. He will give his assistance to the implementation of the training program for extension personnel including "encadreur", "animateur" and "animatrices", herders and other personnel associated with the project and working in the Dilly area and in other areas of Mali.

The Contractor will assist with the organization of the training center and with the communication center to be established for the production of audio-visual materials and other training materials at Sotuba. The Contractor will be responsible for the development of a communication program and for the preparation of communication materials. This program and these materials will be used in the extension program in Dilly and in other parts of Mali.

A limited program aimed at animal production research and range management research will be worked out and implemented at Sotuba and Dilly.

The Contractor will give his assistance to the collection, the analysis and the diffusion of animal marketing information.

b. Training Activities

(1) Organizing the Approach

The contract language above does not give any guidance about the content of the training programs or their participants. The whole question of the program's organization, and the details of establishing a training institution were left to be worked out. It is important to underline, however, that although the training program was theoretically being grafted onto an existing training institution at Sotuba, in fact this was not the case. CNRZ/Sotuba's sole contribution to the program was to provide, on loan, an empty warehouse and some ancillary buildings, with very limited amounts of water and electricity. It was left to the project to establish a training (and communications) institution complete with administrative and teaching staff, facilities and curriculum.

Since it seemed clear that Chemonics' role was mainly curriculum development, teacher training and training monitoring, the first step, in May and June, was a study of the livestock and range management environment and the existing training institutions in Mali. Visits were made to livestock installations in the Bamako area and in Dilly, as well as to the IPR in Katebougou and the School for Veterinary Nurses in Bamako. Preliminary ideas for the curriculum and the overall program were prepared, although they were not completed until after the arrival of the third T & C staff member, Mr. Wilkes, Range Management Specialist, in July.

Nevertheless, in early June, after the appointment of Dr. Almouzar Maiga as Project Director, an important meeting was held to determine the broad lines of the training program. Chemonics was advised that the first cycle of

encadreur trainees would be ninth grade graduates, not twelfth grade graduates as planned. Chemonics had proposed using some or all of the seven existing encadreurs in the Dilly area, hired under the FAO project, as resource persons. They would, at the same time, receive some technical training, but this proposal was rejected. Decisions had not been made as to the identity of the trainers to be trained, but it was agreed that Chemonics specialists would begin to lay out the broad lines of their ideas on curriculum. Chemonics noted that, since there was no training institution in place, the project was going to have to establish one, a major undertaking. This was clearly a Malian responsibility, to be carried out with advice from Chemonics. Since such a large effort was required, it seemed unfortunate to limit the use of the training institution, even in the first year, to the training of twenty low-level technicians. Chemonics suggested a variety of other, shorter training efforts. The decision, however, was to restrict activities to the training of encadreurs only.

Over the summer, the Malian counterparts were appointed, and it was decided that these individuals (MM. Coulibaly, Berte, Cisse and Kieta) would also be the teaching staff. M. Mory Coulibaly was also appointed Activity Chief and, theoretically, Director of the training institution. Also over the summer, Chemonics and Malian staff, and Dr. Walton Johnson, short-term Specialist in Non-Formal Rural Education, spent considerable time in Dilly working with the herders and existing encadreurs to determine the best approaches for training. It was agreed that the ideal training program would be in the same format and use the same systems as the encadreurs would use to impart information to the herders. This was, of course, an ideal. Given the traditional attitudes about classroom teaching methods and the preference for the lecture system, it was not possible to carry the approach very far. In August, another major meeting was held

between Chemonics and Malian training staff, the Chief of Party and the Project Director, during which the main lines for the curriculum were agreed upon. A full range of topics in livestock (including virtually all animals), range management, communication techniques, civics, first aid and even French language was requested.

(2) Curriculum Development and Teacher Training

During the fall of 1977 and the first month of 1978, a great deal of time was devoted to combined curriculum development and teacher training. Essentially, working together on the curriculum was intended to, and did, result in simultaneous teacher training. This method was forced on the project by lack of time and personnel, and the inappropriateness of more conventional training by the advisors, given that the Malian "trainees" were in charge of the work. The curriculum development approach was essentially based on a review of technical and teaching material from the United States and elsewhere, comparisons with the Malian situation, and the preparation of written lesson plans for translation into French. At the same time, the curriculum provided a considerable amount of field work even in Bamako, with visits to the Sotuba Station facilities, the Poultry Project, slaughterhouse, etc. The program also provided for an extended, practical field training program at Dilly at the end of the Sotuba session.

(3) Establishing the Center and Program

Simultaneously with curriculum development and teacher training, Malian and Chemonics staff established the center and training program. After considerable difficulty, M. Coulibaly, in cooperation with the Dilly Cen-

ter, arranged for examinations to be held in Dilly in order to obtain students from that area for training and subsequent return to Dilly as encadreurs. The availability of training for employees of other projects was advertised, and candidates were nominated by those projects. Students were to be named and brought to Bamako in December, to permit the program to begin in January 1978, but various delays resulted in a February start. In the end twenty candidates were selected, ten from Dilly and the others from Projet Riz Segou (two), Haute Vallee (five) and OACV (three). Of these, eighteen eventually finished the program, an excellent record.

Great efforts were made to prepare the physical space. The New Lands team moved to Bamako in January, allowing the Chemonics' office to move into the vacated end of the building and Training and Communications Center to occupy the rest, with offices and a large classroom. An ancillary warehouse was emptied and converted into a dormitory for the twenty students. Minimal food service arrangements were made with a woman living on the premises, a small outdoor movie theater was set up by the communications team, and a major, not entirely successful, effort was made to improve the sanitary facilities. These efforts, carried out with very few resources and very slow decision-making on the part of the Project Direction, consumed a great deal of the time and energy of project staff and Chemonics advisors.

(4) The First Training Cycle

The first training cycle for the eighteen encadreurs took place from February 6 through July in Sotuba. The subjects were presented, normally by the Malian team member, using the course materials prepared by Malian and Chemonics staff and written, in most cases, by the Chemonics advisor. Material covered included livestock, crops, range

management, communications and marketing. During much of the period, the communications team assisted by taking photographs and preparing visual aids. Communications personnel also handled training in communications, which included interviewing techniques, note-taking, presentation of material, use of visual aids, group dynamics and the like. The Sotuba portion of the cycle ended in mid-July, 1978.

Earlier, in June, Chemonics and Malian staff began very extensive preparations to carry out the practical training segment at the Dilly Center. As noted, the logistics and administration at Dilly were very weak even with respect to its own program requirements, and thus it was not possible to depend on the center to provide logistics for the lengthy training program involving eighteen students and several teaching staff. Minimal cooperation with the center was arranged, including the use of some facilities, but it was necessary to procure and amass a large number of supplies, including tents, camping equipment and cots as well as teaching and technical equipment. Some equipment had been procured in advance from the United States, and some was borrowed from other project activities, notably New Lands. In late July, the move to Dilly was made, and the logistical arrangements immediately put to the test by a violent sand storm which blew down many of the tents and generally disrupted proceedings.

Nonetheless, the practical phase of the training was accomplished. A variety of field exercises in range and livestock management were conducted. Students were then divided into four groups and stationed in villages with an existing encadreur. They were visited in rotation by the teaching staff and put through various technical and communications exercises. The students also participated in a broader exercise put on by the communications group on preventing and fighting forest fires. Practical training was completed in late October 1978, and the trainees and staff returned to Sotuba for an evaluation of the program and graduation on November 3.

Evaluation of the program indicated that it was a very good first effort. The encadreurs received a great deal of training and were adequately prepared to be effective in the field. Problems included inefficiencies caused by the logistical problems, and the unsuitable nature of some of the course material, which turned out to be too academic for the needs of the students and somewhat beyond their capabilities to absorb. It was also concluded that Chemonics personnel should participate more in the daily training, in spite of the weak French language capability of two of the three advisors. In general, however, Chemonics and Malian personnel worked well together.

(5) The Second Training Cycle

Based on these evaluations, Chemonics advisors and Malian staff spent November-January revising course material and publishing it in more permanent training manuals. Several of these were issued in the spring of 1979 and used for the second cycle.^{1/} That cycle began with

^{1/} These training manuals represented a significant undertaking on the part of Malian and Chemonics staff, which was not fully appreciated by the Project Direction or USAID at the time. Five manuals were prepared in both English and French. Four were authored by Joseph Spatrisano, Chemonics Animal Husbandry Specialist, and Oupre Perte, his technical counterpart and simultaneously Chief of Training and Communications Activity. The fifth, on Range Management, was by Kay Wilkes, Chemonics Range Management Specialist, and two counterparts, Oumar Cisse and Kalidou Diallo. The manuals were:

- Livestock Production, Part I, 138 pages
- Livestock Production, Part II, 115 pages
- Crop Production, 85 pages
- Livestock Extension Methods and Techniques, 13 Pages plus questionnaire
- Range Management, 100 pages including annexes.

twenty-four students in late February 1979 and was scheduled to continue, with a shorter and more focussed segment at Dilly, until early September. During the revision of the materials, the eight first-cycle encadreurs were taken to Dilly by Mr. Wilkes and M. Diallo and, with the assistance of Dilly Center personnel, placed in their village locations. At the same time, center personnel, with whom the encadreurs worked, and to whom they reported, were given a thorough briefing on the content of the training program and the accomplishments of the encadreurs.

The second cycle was carried out at Sotuba in much the same manner as the first, with the improvements in teaching materials and methods having a positive effect. The material was considered more practical in orientation and at a more appropriate level for ninth grade graduates.

c. Communications Activity

The communications activity was designed to establish a two-way communication system between the herders and Malian livestock and range management technicians, and government generally, and to provide audio-visual support to the training program and other parts of the project. As such, the activity was rather diffuse and beyond the capabilities of a single advisor. Chemonics' advisor, Mr. Jon Citron, an audio-visual specialist, was selected because of the specific hardware requirements of the communications

These manuals were written, translated and produced in two languages under the very difficult conditions which prevailed at the temporary Training Center - An impressive performance. They were far from perfect in content and did require revision following their use in the second training cycle.

activity. To cover the various elements of communications theory and the development of comprehensive communications approaches, Chemonics also supplied the services of short-term specialists, notably Mr. Ben Tisa. Mr. Tisa performed a number of useful studies and contributed a steady stream of communications ideas to Mr. Citron and his counterpart, Mr. Keita, but was unable, because of the short-term nature of his assignment and overall lack of project resources, to see many of his ideas through to implementation.

(1) Physical Developments

An immediate requirement for the communications program was a facility for performing audio-visual work, including a darkroom. Shortly after the project got under way, Messrs. Citron and Keita established a basic studio in one of the Sotuba offices and a temporary darkroom in a used packing case placed in a corner of the office. Later, a more permanent darkroom was established in one of the small ancillary buildings near the warehouse. Using these facilities, and camera equipment and materials purchased by Chemonics under the contract, Mr. Citron conducted an on-the-job training program for Mr. Keita and prepared a stockpile of photographs and slides on all aspects of the project and its work. The compiling of this visual library continued throughout the first contract period. The photographs and slides were put to a wide variety of uses in the training programs, in communications programs and with the herders in the Dilly area, in promoting the overall project and for a variety of outside functions requested by the GRM or USAID.

(2) Training Programs

As suggested in the discussion of the training program, the communications team provided considerable input. For each cycle, the communications team handled the communications training and provided audio-visual support to the other curriculum segments. Because of Mr. Citron's excellent French and rapport with the trainees, he greatly assisted in maintaining their morale during the long period in which they were living under poor conditions at an isolated spot (Sotuba) away from home. This included arranging a weekly film showing, using films borrowed from a variety of sources. Mr. Citron was also instrumental in managing the Dilly segment of the training and in supporting and training the students when living in the villages.

(3) Specific Communications Activities

Rather than attempt to describe all of the communications work undertaken by Messrs. Citron and Keita, other personnel assigned or hired, and lab and short-term experts such as Mr. Tisa, a few sample activities are selected.

(a) Test Tapes and Visual Aids

Early in the project, in July 1977, a taped message was prepared in Bambara and Peulh concerning the project and the need for communications with the herders. Copies were delivered to target villages where it was known that cassette recorders were available. On a later visit to the villages, feedback was obtained on the effectiveness of the message. At the same time, a number of visual aids were prepared and tested in Dilly area villages. The results

were, in some cases, unexpected and led to modifications in the visuals.

(b) Audio-Visual Demonstration

In January 1978, as part of an evaluation of the Training and Communications Activity, a demonstration of the use of photographs and other visuals was made for the Project Director, USAID personnel and others. It was highly effective.

(c) Photographic Support--New Lands

In March, a series of over forty photographs of New Lands tsetse survey activities was prepared and published to illustrate the report of Dr. Crans, short-term Entomologist on the project. In the same month, photographic work was done to assist in the commemoration of the fiftieth anniversary of the Sotuba Center.

(d) Posters to Support Sahel Grazing

Over a several month period in mid-1979, the communications team worked with DNAFLA on the production of a series of posters to be used as part of the program of sensitizing herders in the Dilly area to improved production and range management themes being promoted by the project.

(e) Campaign Against Fire

To support an overall campaign against range fires in the Dilly area (including firebreaks, fire-fighting equipment and training provided by the Sahel Grazing Activity), the Communications Activity prepared and delivered an integrated campaign on fire prevention and fire

fighting including cassettes, posters and themes for village meetings. Over a longer period, film footage on fire prevention and fighting was shot, then sent to Chemonics/Washington for developing, and returned to Mali for review and editing. It was also used as the basis for taking additional footage. This activity eventually resulted in the completion of a lengthy film prepared in several languages during later contract periods.

(f) Livestock Seminar, Dilly

In March 1979, the communications team helped put on a three-day livestock seminar for Dilly herders. In addition to logistic support, the team provided audio-visuals including slides and films, and in turn, filmed much of the proceedings for use in future seminars of this type.

(4) Comments

The Communications Activity accomplished a great deal in the first two years of the project, but was always troubled by disagreements among the various parties, including the Project Direction and USAID, as to what its main role should be. The usefulness of the training and audio-visual support to this project and others is very clear, but progress in establishing effective communications between the technicians and the herders was slow at best, as is frequently the case. In retrospect, it might have been preferable to have a long-term communications specialist in addition to the audio-visual specialist, Mr. Citron.

In July 1979, when the second contract period got under way, Mr. Citron decided not to continue with the project and Mr. Daniel Dravet, a communications specialist, replaced him.

Mr. Citron's contribution to the project during his two-year assignment was a major one.

3. Sahel Grazing

a. Introduction

The Sahel Grazing Activity represented an effort by the GRM and AID to carry out a direct impact program to respond to the damage caused by the drought. It was aimed at rationalizing and improving animal production and range management systems to produce more meat while causing less damage to the range resource. For AID, it was the one project element in both Mali Livestock I and II which actually impinged directly on the Sahel. For the GRM, it was one piece of an overall project to improve livestock production, range management and, generally, the well-being of the herders in the entire Western Sahel (Sahel Occidental).

b. Pre-Contract Evolution and Contract Provisions

As with Training and Communications, we first present a brief summary of the evolution of this activity, using the original 1975 Project Paper and the Chemonics contract as two ends of the evolutionary process. In this instance, it should be pointed out that the Mali Livestock II Project included a number of actions under the Sahel Grazing rubric which did not concern the contractor. One sizable activity was the animal health program; the project was to supply large amounts of pharmaceuticals and feed supplements with little or no assistance from Chemonics. Therefore, the statement of work in the contract should not be taken as the entire project statement of work at that stage. Nonetheless, the comparison is interesting.

(1) Project Paper

The summary statement on Sahel Grazing was brief indeed:

1. Sahel Grazing Activity: Selective interventions in a defined project area within the Sahelian Zone and programs to increase communications with livestock owners and obtain their cooperation on phased modifications of rangeland use. The area agreed upon by the Ministry of Production (later Ministry of Rural Development) for this activity is the Dilly area in the Western Sahelian Zone.

A detailed presentation of this activity is considerably longer and is found on pp. 42-53 of the Project Paper. The document states that the interventions would be carried out in an extensive manner within the administrative capability of the GRM. That is, they would not be equivalent to an intensive, tightly controlled livestock and range management scheme. They would include a full range of activities: water development, firebreaks, access roads, herder organization, administrative infrastructure (for management and training--housing is not mentioned), vehicles, other inputs such as pharmaceuticals and salt supplements. There was considerable discussion of the communications requirements, and the tie to the Training and Communications Activity was stressed. Most importantly, the entire effort was to be experimental. The document recognized that there are many unanswered questions about the feasibility and effectiveness of such interventions, and this uncertainty was to be dealt with by planning, experimentation (with various approaches to water development for example) and evaluation.

In subsequent discussions and documents, the feasibility of various interventions was discussed in detail, usually at a high level of sophistication. Naturally, Chemonics was not involved in most of these discussions, but we did participate

in the pre-proposal conference held in Washington in the fall of 1976, and covered many of these points in detail in our proposal.

(2) Chemonics Contract

During negotiations for the Chemonics contract, relatively little time was devoted to sophisticated discussion of the feasibility of given interventions. The intent of the GRM was to obligate Chemonics to assist in carrying out the project work, as set out in the initial project work plan prepared during the planning and PERT exercise described in Chapter II. Thus, the 1977 tasks included assistance with the Dilly Market, cattle trails, research and the development of improved technical packages, and preparation of a development plan for the area, including water points and firebreaks. The "1978 and beyond" contract version was essentially the same. During the negotiations, Chemonics' objective was to arrive at a reasonable contract, and we were not disposed to try to devote large amounts of time to a further debate (based on our proposal arguments) on the merits of the work.

The contract language follows:

1977

b. Livestock Development in the Sahel

(1) Dilly Market

The Contractor will assist in the various phases of the development of the animal market at Dilly, including planning and design, ordering of equipment, and price estimation and, if necessary, the ordering of bids for construction work and supervision of construction and installation of equipment.

(2) Cattle Trails

A cattle trail, with water points, holding pens and other facilities, from Dilly to Nara and from Nara to Kati, with a possible spur to Banamba, is to be established to support the development in the Dilly area. The Contractor shall, using available data and supplemental study, assist in the preparation of plans and cost estimates.

(3) Research on Sahel Animal Production and Management

The Contractor shall plan to initiate a program of research into the best techniques for animal production and management in the Dilly area. This research will include a study of existing practices to determine those which are the most successful and a review of research results in Mali, elsewhere in Africa and other parts of the world, and discussions and workshops with the herdsmen themselves. On the basis of this research, the Contractor will assist the project staff in the preparation of a package of recommended techniques for use by extension agents and 'encadreurs' in the Dilly area, after approval by the GRM. The Contractor will assist in the elaboration and implementation of a test animal buying program. The animals will be destined for a feedlot program under management of ECIBEV. The Contractor will also assist in carrying out research into motivations of the herdsmen, particularly constraints and possible incentives to increasing the offtake rates among the herdsmen in the Dilly area.

(4) Water Points and Firebreaks

Using to the extent possible previous studies, the Contractor will assist in the preparation of a basic plan for the development of water points, temporary or permanent, and firebreaks in the Dilly area. The plans shall include cost estimates. In this connection the Contractor shall assist in discussions and negotiations with "Service de l'Hydraulique et de l'Energie" or other possible contractors regarding costs and terms of a prospective contract for the development of water points.

1978 and beyond:

b. Livestock Development in the Sahel

The Contractor will assist in the elaboration and implementation of extension programs consisting of animal production and range management techniques.

Based on technical and sociological studies that are already available, the Contractor will organize workshops for herders and cattlemen involved in cattle marketing. The Contractor will assist with the creation of the first herder associations.

The Contractor will assist with the supervision of the construction of water points, firebreaks, cattle trails, vaccination corrals, and dipping vats.

The Contractor will assist with the construction and equipping of the Dilly market.

To meet these requirements, the contract provided a Range Management Specialist, an Animal Husbandry Specialist, a Hydrogeologist (to assist on the water activity) and a Construction Engineer whose assignment was to give engineering support to all project activities, not just Sahel Grazing.

c. Resource Constraints and Problems

Before moving ahead to describe Chemonics' undertakings in response to these contractual requirements, we believe it necessary to provide a summary of the difficulties faced by Mali Livestock II and Chemonics in trying to do the work. This is one of several discussions of such problems, and we regret the apparent preoccupation with such matters to the detriment, perhaps, of a discussion of the work. However, it is not possible to understand the work without a clear idea of the context. Further, an understanding of the context is perhaps more useful to future project planners than a knowledge of accomplishments.

(1) Controversial Nature of the Work

Any program of interventions (as opposed to research) in the Sahel is controversial. After several years of work in the field, and the preparation of our own, self-financed study of the subject^{1/}, we are convinced that there are virtually no range management actions which one can take in the Sahel which have the unequivocal support of a majority of the experts in the field. It should be understood that lack of agreement on the validity of each and every action makes any attempt to implement a program very difficult. This would not have been the case, of course, if all parties had accepted the fact that the interventions were experimental and if the resources had been provided to conduct base line studies, control groups, evaluation, etc. However, the target population, the herders, could not be expected to understand (or accept) an experimental project, and the GRM did not either. The feeling of the GRM was that the research had been done, and that the Sahel Grazing Activity represented the implementation stage.

(2) The Pre-Existing Project

The Sahel Grazing Activity of Mali Livestock II was grafted onto a pre-existing FAO-financed project. In theory, the FAO project was paving the way for the larger AID-financed project. It was sensitizing the herders to intervention and carrying out a variety of small, somewhat experimental interventions of its own, including fire-fighting, animal feeding, vegetable gardening, millet milling and very small-scale reforestation. The FAO project

^{1/} Range Management and Livestock Development in the Sahel,
Pirie M. Gall, April 1982.

had financed the construction of the Dilly Center, including a small office, small warehouse, three large individual family houses, a guest block with three sleeping quarters, a kitchen and bathroom block, an automotive garage, a deep well and a generator. There was no housing for lower-level Malian staff. The facility was well designed for the FAO project; it provided reasonably comfortable living for a small expatriate and Malian staff, and basic survival and working facilities. It also provided excellent support for the sensitizing and small intervention intent of the FAO project, but was not satisfactory for the kind of major mobilization Sahel Grazing was supposed to bring. Further, the GRM was very pleased with the FAO project, in part because it did provide a very impressive physical facility in a difficult, isolated location, and in part because the main expatriate advisor, a French sociologist well acclimated to the Sahel, was able to assist in implementing minor interventions with little friction with the Malian staff. Finally, these small interventions were also non-controversial and, almost by definition, feasible and effective within their modest targets.

The FAO project had established a "test zone" within the overall Dilly Pastoral Zone, and was concentrating its efforts within that zone. The test zone had been selected with the small intervention project in mind, and was the most highly favored part of the zone with respect to ecology and human and animal population. When the Sahel Grazing Activity came to select its test perimeter, it had to choose an area with the opposite characteristics, one which was underpopulated and underutilized.

To summarize, Chemonics and the Sahel Grazing Activity were required to carry out a complex, controversial project on top of, and using the facilities of, a popular, relatively straightforward and relatively successful FAO-financed project. This situation definitely put Sahel Grazing and Chemonics at a disadvantage.

(3) Environment at Dilly

The Dilly area is a very difficult place in which to work and live. It is in a 500 mm. rainfall area with a short rainy season in the summer, when movement is extremely difficult because of mud, and a long dry season which is extremely hot. The area is 350 km. from Bamako over poor roads, and there are few supplies to be found locally. Both non-Sahelian Malians and expatriates must bring in most of the food and all of their other supplies. There are few diversions. Most people, Malian or expatriates from outside the area, find it difficult to live and work there for long periods of time. Most would find it necessary to have a high level of imported infrastructure--housing, electricity, etc.--in order to be comfortable. A few individuals, Malian and expatriate, are able to accept the environment as a challenge; they are the successful ones. Fortunately, the project had some of these individuals on both the expatriate and Malian sides, but not enough.

(4) Personnel

To carry out its responsibilities under this activity, Chemonics furnished four advisors: a Range Management Specialist, initially Mr. Marchal, then Dr. Naylor; an Animal Husbandry Specialist, initially Mr. Voelkel, then Mr. Slocombe; a Hydrogeologist, Mr. Souder; and a Construction Engineer, Mr. Wagner. A certain amount of short-term specialist support was also available. All of these individuals were able to make a contribution to the project to varying degrees. None was entirely satisfactory.

In range management, Chemonics was faced with the continuing problem of finding a French-speaking range management specialist. There are few available now, and

fewer in 1977. Those who do exist are much sought after, and usually for positions in locations far superior to Dilly. Chemonics recruited several individuals more or less suited to the job, but none was entirely suitable because of either technical or language deficiencies. Offered the choice among them, GRM selected Mr. Joseph Marchal, who had little formal knowledge of range management, but considerable practical knowledge of African livestock production. As a Belgian, he was fluent in French. His inadequacies in range management caused his dismissal after a few months. He was replaced by Dr. Naylor, who had no French but is extremely knowledgeable in range management and extremely well acclimated to work in the Sahel. His work was invaluable. Unfortunately, his dissatisfaction with the management of the Dilly Center and the lack of resources for work (see below) resulted in his request to change from a long-term member to a short-term one, moving back and forth between the project and his home in New Mexico, resulting in a loss of continuity.

In Animal Husbandry, the first advisor was Mr. Travis Voelkel, a well-qualified expert on African livestock production. Mr. Voelkel made significant contributions to the project, but differing philosophies of work and management, and Mr. Voelkel's difficult personality, eventually made his working relationships intolerable, and he was asked to leave. His replacement, Mr. Slocombe, turned out to be completely unsuitable to the position, and he also left. Chemonics ended the first contract period with no one in the position.

The Hydrogeologist position represents an interesting case. The position was not in the original project design or in the RFP. During negotiations, Dr. Sy decided that the provision of water wells was so important to the project, and

therefore the project was so dependent on the Service Hydraulique, which was not under the Ministry of Rural Development, that the project needed its own technical expert in this area. The intent was to hire a project hydrogeologist to liaise with the Service Hydraulique, to ensure that priority was given to the project's water-seeking and well-drilling requirements. The expert was to provide quality control over the work of the Service Hydraulique and generally represent the project's interests.

Chemonics agreed to the desirability of this post, and provided the GRM with four candidates. Three were relatively young Frenchmen with varied but limited experience in desert water projects. The fourth candidate was an American hydrologist, senior in age and experience, but without French. The latter, Mr. Souder, was selected. As project implementation began, it was obvious that Mr. Souder, lacking French and bureaucratic experience in the French-African milieu, could not fill the role envisaged. Therefore, he was assigned to carry out preliminary water surveys and field liaison with the Service Hydraulique when that service moved into the project area to drill test and production wells. This role, while useful, did not accomplish what was originally desired, and this failure was at least partly responsible for delays and errors in the project's water development activities.

With regard to the Construction Engineer, Mr. Wagner was well qualified for his post, but he was responsible for all aspects of the project, not only Sahel Grazing. Thus, his time with Sahel Grazing was limited. As discussed under "Construction," he did do a great deal of design work for construction projects at Dilly, most of which were never funded by USAID and so were not implemented. He also managed the construction of the airfield at the center, which Chemonics believes was a major contribution to the goals of the project.

(5) Philosophy

Philosophical differences between Chemonics personnel (and Chemonics as a firm) and Malian management caused many problems in the project, and especially, Sahel Grazing. A few examples will suffice. Although there were differences even among the expatriate personnel, the general view of the Chemonics team was that, in carrying out field work away from the center, technicians should be independent and their field work made easier by certain minimal amenities. These included ample camping equipment of good quality, vehicle modifications, radios and support personnel, such as a field cook/camp servant. The Malian approach was to travel very light, stay in the villages and have the villages supply food and lodging. Consequently, Malian management opposed and largely impeded Chemonics' efforts to equip its team members for field work (calling it the "East African safari complex"). Since Chemonics personnel generally rejected the inefficiencies involved in staying in the villages, where social obligations consume much of the working time, they were obliged to follow their "safari" system with grossly inadequate equipment. The same philosophical differences applied at the Dilly Center itself. Chemonics argued for maximum comfort given the basic situation, in order to promote efficiency. An example was a proposal to install screens on the windows to allow the use of interior lights so that paper work could be done at night. The Malians considered screens an unnecessary luxury, and generally opposed most suggested physical improvements.

(6) Management

Differences in philosophy were closely associated with differences in management approach, a constant problem in the implementation of the Sahel Grazing

work. Basically, the Activity Chief, who was also Chief of the Dilly Center and of the Pastoral Zone, was not skilled in management. Even with the best will, there would have been serious management problems. Philosophical differences aggravated the situation. The management of the center was essentially designed to allow for survival of personnel in the environment, the implementation of small interventions under the FAO project and the provision of certain services, mostly transportation, to important members of the wider Dilly community. Requirements such as effective support for Malian technical personnel at the center, and effective support for the work of Chemonics and Malian personnel on the demanding interventions of Sahel Grazing were a low priority. Thus, little attention was paid to the needs of the Malian technicians (for whom Dilly was a real hardship post) or the encadreurs (who were treated like very low-level civil servants, rather than as the vanguard of the project, as they should have been). Further, in the all-important area of vehicle maintenance and vehicle allocation, the management failed disastrously. As discussed elsewhere, vehicles were seriously abused and badly maintained. Despite the fact that most of the vehicles at the center were furnished under Project Mali Livestock II (a few were from the FAO Project) the needs of Mali II, especially those activities headed by the Chemonics team, received very low priority. Consequently, the work was frequently delayed for lack of transportation.

d. Project Management Style

The Sahel Grazing Activity was managed in a rather interesting style. On a day-to-day basis, management was carried out through dialogue and in some cases conflict between the two Malian Sub-Activity Chiefs, Messrs. Lamine Ba and Muslim Maiga, and their Chemonics counterparts, with

ultimate control over resources, personnel and vehicles, exercised by the Chef du Centre, Mr. Aboubacrine. Policy, general guidelines and review were exercised from Bamako, predominantly by the Project Director and/or Director General of OMBEVI, and to a much lesser extent by the Chemonics Chief of Party. Periodically, meetings were held at Dilly to review work plans and performance and set new directions. These meetings were large, involving twenty to thirty people including USAID, Chemonics, FAO project personnel and Malian staff, and lengthy, usually several days. Normally, there were no prior agenda, few specific action assignments and weak follow-up. It was not, in Chemonics' view, an ideal way to direct a project of this kind.

e. Activities

With this background in mind, we proceed to an account of the main elements of the work performed, and not performed.

(1) Dilly Market and Cattle Trails

Virtually no work was done on these activities, specifically mentioned in the contract, either by Chemonics or any other project element. With respect to the Dilly market, the major design effort was not made because, in agreement with the Project Direction, the Chemonics Construction Engineer had many higher priorities. Chemonics did not pursue the issue, because, based on the observations of the Marketing Advisor, Mr. Balmir, and many other observers, improved cattle markets are essentially a waste of money in Mali. They require extensive management and government control, and are perceived by traders as interference in the marketing process. The traders simply set up informal, parallel markets and avoid them. A proposal

by Chemonics in 1978 whereby the Marketing Advisor would carry out a detailed study of this issue was rejected by Project Direction.

On the matter of cattle trails, the requirement for Chemonics' assistance seemed to be inserted into the contract by the GRM almost as an afterthought. In any case, there was never any serious effort to request Chemonics' assistance. Certain studies, which consisted of putting in water points and cattle-holding areas at strategic points along the way from Nara to Kati near Bamako, were carried out by FAO-financed advisors at OMBEVI in Bamako, and Chemonics' Marketing Advisor provided some assistance. To our knowledge, the actual construction work was never done.

(2) Research

The contract provided for extensive research into herder motivation and existing livestock and range management practices, to be followed by preparation of technical packages for the encadreurs to use once trained and placed in the field.

The sociological research requirement was essentially a sequel to the excellent work done earlier in the Dilly area by Mlle. Marianne Rupp, and elsewhere in the Sahel by other scholars. Although this requirement was in the contract, the Malian Project Direction did not give it a high priority, and Chemonics was allowed no long-term sociologist to provide a continuing research effort. Chemonics was able to provide several short-term specialists over the first two years, including Dr. Walton Johnson, Mr. Ben Tisa, Ms. Gladys Kuoksa and Mr. and Mrs. Gerald Cashion. These individuals were asked to conduct research specifically aimed at the needs of the project, especially, to study probable responses to the work of the encadreurs, and to propose changes and make recommendations for range management interventions. With the

exception of Ms. Kuoksa, who became seriously ill early in her assignment, all of the short-term specialists carried out their studies and contributed useful reports which added to the body of knowledge about the Sahel and its people. Unfortunately, Chemonics did not do an adequate job of integrating the research results into the encadreur training or range management programs.

Research on livestock and range management practices per se was never done, although a great deal of livestock production and range survey work was carried out. The failure to make a concerted effort to study existing practices, prepare preliminary technical packages, and follow these with trials, modifications and more trials, is regrettable. An attempt was made. Mr. Marchal, the first Range Management Specialist, did begin a study of existing practices during the first few months of his service at Dilly. His efforts were opposed by the Dilly Center personnel and were perceived to be interfering with the herders, and perhaps "spying." This opposition was confirmed by the Project Direction. It is an understandable reaction of African officials who have seen many critical studies of their culture, and it was no doubt aggravated by Mr. Marchal's approach, particularly because he was not a trained research specialist.

(3) Forage Research

Although not included in the contract, and not supported or desired by the Project Direction, a certain amount of applied research on range and forage was carried out. These efforts can be cited as another example of the differences in philosophy between expatriates and Malian administrators. The expatriate frequently wishes to try grasses or systems (such as haymaking) which are successful elsewhere. He is also normally unwilling or

unable to take the time to review any previous research results which might be pertinent, often because the documents cannot be found or are written in a language he does not know. The Malian attitude is that all necessary research has been done (this is normally untrue), that expatriate advisors always prefer to do research rather than implement a project, and that now is the time to implement. In this instance, another project, the "Production Premiere du Sahel," Dutch-financed, was carrying out extensive surveys and some research on Sahelian grasses, and the Chemonics team was able to share results and make the effort more efficient.

In any event, one major, practical research effort was the making of hay at the Dilly Center. A hay meadow was cleared of undesirable bushes. At the proper time, the hay was cut (by hand the first year, with hand-operated Jari mowers procured by Chemonics the second), dried and stored. Subsequently, nutrition tests were run throughout the year on the hay and on the grass from which the hay was made which was left standing through the dry season. The results evaluated and reported by Mr. Voelkel showed that the hay retained nutritive value far better than the grass. In further testimony of the value of hay, the several tons produced each year were used throughout the dry season for feeding the animals of highest value in the Dilly zone, the horses used by village chiefs, encadreurs and others.

During the 1978 rainy season, Mr. Voelkel added another feature to the haymaking effort by building a barbed wire fence around the hay meadow. The purpose was to protect the hay from casual grazing and to demonstrate quality fence-making techniques to the herders. The fence proved to be extremely well made and an effective demonstration.

Although from a scientific point of view, the haymaking was successful, it would require a more comprehensive approach if large-scale haymaking is to be introduced as a method of keeping more animals in the Sahel during the dry

season, thus avoiding the losses of weight and condition occasioned by the long transhumance. A main problem is that haymaking comes at the same time as the millet harvest, which is much more important. Chemonics proposed to do a more comprehensive study to find ways to resolve the constraints, but the prejudice against haymaking is widespread in Mali and approval, and resources, were never obtained.

Messrs. Marchal and Voelkel also carried out several trials of introduced grasses. The first-year trials were not successful because they went in too late in the rainy season. At the October 1977 project meeting at Dilly, the Project Direction decided that very little if any forage research should be done because Dilly is not a research station. It was agreed to construct several enclosures to permit long-term observation of the progress of undisturbed vegetation toward climax, and also to continue with the hay experiments, both activities to occur under the direction of the Research Station in Niono.

Additional forage research was done in 1978 under the leadership of Dr. Naylor, working with Mr. Ba and Mr. Zeze Dembele. The team sampled, clipped and weighed 105 one-meter square plots in areas that had been lightly grazed and unburned. The average yield was 2,000 kg per ha, similar to other findings. It was then determined that, in a range management plan with twenty-five percent of the land resting each year, the area could support one animal unit per four ha. Further studies, in the form of strip transects 2 x 100 meters, were carried out to obtain data on forage composition. These data and others were eventually used as part of the range management plan for the test perimeter prepared under the leadership of Dr. Naylor.

(4) Initial Water Surveys

During the first year of the project, from June 1977 to June 1978, basic water survey work was performed by Mr. Souder, the Chemonics Hydrogeologist. As noted, since Mr. Souder was not qualified to handle the liaison between the project and Service Hydraulique in an effective way, he used his time to carry out water surveys. Methods included the study of existing wells, shallow augering in the Valley of the Serpent and other likely spots, the study of air photographs combined with extensive ground surveys, discussions with well-drilling crews operating in the Dilly area under other projects, etc. Most of this work was done with inadequate equipment (and transportation). Mr. Souder also spent considerable time in Bamako trying to acquire better equipment. By June 1978, he had acquired a great deal of knowledge about the hydrogeologic characteristics of the area, and had prepared a series of maps showing both the Service Hydraulique and the project's range management personnel where the most likely ground water sources would be. This work was helpful in planning the test perimeter, but less so than expected because of the political requirement to put most of the new wells in places where they could be used as village wells as well as stock wells, with new villages springing up around them in some cases.

(5) Test Perimeter Planning

At the October 1977 meetings at Dilly, the tenor of the conversation foreshadowed the eventual decision to concentrate Sahel Grazing Activities on a smaller test zone, also referred to as the "test perimeter" or management test area. Chemonics' proposal for a series of pilot interventions in such an area, generally the underinhabited area south of the Vallee du Serpent (and thus

from ten to fifty km from the center) was sent back for refinement and a closer relationship with existing conditions. The period from then until March 1978, a period which saw the first Range Management Specialist, Mr. Marchal, depart and his replacement, Dr. Naylor, arrive, was devoted in part to surveys of the potential test perimeter by both the range management and livestock personnel. In addition to the forage studies mentioned above, livestock population and herd structure studies were carried out by Mr. Voelkel, while Mr. Souder concentrated his hydrogeological studies in the area. The area was also surveyed for possible surface water point locations. In March 1978, the Chemonics team and counterparts presented a detailed recommendation for the establishment of a test perimeter of about 140,000 ha (about ten percent of the entire Dilly Zone) in which a full complement of interventions (wells, surface water points, fire breaks, limited re-seeding and a simple rest-rotation system managed by herder associations) would be conducted. The approach was agreed to, and the Director of OMBEVI, Dr. Sy, gave his full support and agreed to devote considerable time to the effort. Dr. Ousman Guindo was named as his special assistant to follow the work.

The following month, April 1978, an extended meeting took place at Dilly, chaired by Dr. Sy, where more detailed plans were made, including plans for the delimitation of the test perimeter south of the Vallee du Serpent, the development of herder associations, and draft agreements between the associations and the project for cooperation on firebreak construction in return for wells. Dr. Naylor and his counterparts immediately began more detailed planning including laying out the courses of the firebreaks, of which nearly 500 km were needed. Further water surveys focussed on the test perimeter, and further herd composition studies were also made. Since the entire area is at a considerable distance from Dilly, many days were spent in the field, still

with inadequate field equipment and unreliable vehicles. On one occasion, a single landrover containing Dr. Naylor, Mr. Ba and a driver broke down in the morning in a very isolated spot. Dr. Naylor, a man in his sixties, had to walk thirty km through the desert, under a cloudless sky with very high temperatures, in order to get help. Although this incident graphically illustrated the need for better vehicle maintenance and mobile radios, and Chemonics renewed its efforts to obtain both, there was no action.

The final plans were completed and presented in June 1978. They included range management plans with maps and rest-rotation systems, a limited re-seeding program for badly disturbed areas, plans for surface water points and wells, layout of the primary, secondary and tertiary firebreaks, proposals for construction methods, and other possible range management interventions (various water capturing systems for example). The package included cost estimates, draft organization documents and bylaws for the herder associations (prepared by the FAO advisor, Mr. Baudry, and the OMBEVI sociologist at Dilly), various approaches to finishing wells and extracting the water from them and plans for herd management.

(6) Test Perimeter Implementation

The implementation of the test perimeter plan was the main focus of the Sahel Grazing Activity during the second contract year, from June 1978 through June 1979. Although resource limitations of all kinds made progress difficult, considerable progress was made nonetheless.

(a) Firebreaks

The first priority in the test perimeter was firebreaks, since it was considered imperative

to reduce the amount of forage lost to fire, and also because the firebreaks serve as access roads. Firebreak delineation actually started as part of the planning process. Once delineated, the following procedure was used. First, crews were sent in to clean out the trees and larger brush, growth which would resist a scraper blade. The primary firebreaks were built by the project entirely, the others were built in part through the efforts of the newly formed grazing associations. Once the major brush was removed, the breaks were marked with colored flags (procured in the United States by Chemonics) and generally prepared for the scraper. In some cases, the flagging had to be repeated, as the local population removed the flags for their own purposes, not knowing their significance. It had been hoped all along that the project would purchase a grader or front end loader to complete the firebreaks, but this was not approved by USAID. In October and November 1978, the services of a contract grader were obtained and thirty km of primary firebreaks were cleared. The system was to clear two blade-width strips five m apart, and subsequently, when conditions were right, to do a controlled burn in the center. An additional forty-five km of primary firebreak was cleared in one strip, when the driver quit, thus halting operations for a considerable period. Secondary breaks were cleared by the grazing associations, using the following procedure: two strips were cleared by oxen and plowed three km apart, with the center strip burned when conditions were right.

In all, some 330 km of firebreaks were constructed during the fall of 1978 and spring of 1979. This fell short of the nearly 500 km planned, but was a very major accomplishment given the location of the area, 350 km from Bamako and ten to forty or more km from the only source of supply, Dilly. It involved setting up camps in the test perimeter for the labor crews and occasionally the team members, supplying them with landrovers and a truck, always

subject to breakdown and totally without radio communication. The program was successful. Observations indicated that range fires burned over much less of the range than normally and therefore, there was more forage than usual. Based on further observation, the cattle feeding in the area which did not go on transhumance, or in any case remained longer in the zone than usual, were in much better condition than those from other parts of the Dilly Zone. Unfortunately, there were neither resources nor authority to prepare any sort of objective study to verify these observations.

(b) Fire Prevention and Control

In addition to the construction of firebreaks, a major effort was made to improve the overall fire prevention and control program in the test perimeter, and the Dilly Zone as a whole. Working with the communications team, meetings were held with village leaders and the encadreurs (the original encadreurs, since the first cycle of new encadreurs were not yet in place) in November 1978. Newly designed and manufactured fire swatters (made from scrap leather) were demonstrated and given out and fire suppression training given. The extension effort included a number of schools in the area as well.

(c) Wells

With the decision to move forward on the test perimeter, arrangements were made for the Service Hydraulique to bring its equipment into the test perimeter to locate the exact points for well drilling and, eventually, to drill test and production wells. The seismic crew began work in June of 1978 and carried out geophysical surveys using three methods: electrical resistivity, sounding and refractory surveys. Mr. Souder, armed with his annotated

aerial photographs and maps, worked with the crews and indicated where the surveys should be made. Work continued until it was shut down by muddy conditions in August. The work started up again in October and continued into December. Numerous positive locations were found and marked for test drilling as soon as the drilling rig could be made available. The rig was, in fact, made available in December and test drills were done. Test drilling continued sporadically until April 1979. Although there were numerous dry holes, a considerable number also gave indications that useful amounts of water could be produced. After additional analysis, it was determined that a total of seventeen possible points could be developed as producing wells. The development itself could not be started until after June 1979, which puts it into the next contract period.

(d) Surface Water Points

Surface water points, which are made by deepening a natural depression where water tends to collect during the rainy season and, sometimes, lining it to prevent or reduce drainage, are highly regarded in range management because of their relatively low cost, the absence of operating costs and mechanical breakdowns (as opposed to pumps, for example), and because they are not "permanent." This means that they do not, or need not, provide water year round and can be programmed to run dry at a certain point so that livestock will move away. From the standpoint of range management, this system stops further consumption of the forage in the area, permitting it to survive and regenerate. During the early months of the contract, considerable attention was given to surveying existing surface water points (marres) to determine whether they might be made to last longer into the dry season through deepening and/or lining with bentonite or plastic sheeting. No action

resulted, but when the test perimeter was planned and laid out on maps, several surveys were done to locate potential sites for surface water points.

The original range management plan called for fourteen surface water points. As time went on and emphasis was placed on the firebreak program, the number was scaled down to five and eventually to one. The detailed design work for the water point was done by Dr. Naylor, Ms. Wilkes and the Construction Engineer, Mr. Wagner. It was determined that the soil at the site chosen was such that it could not hold any reasonable natural slope under pressure from grazing animals; thus, an arrangement to keep the animals away would be required, along with a hand pump to deliver the water. It was further determined that no mechanical equipment could be obtained; it was necessary to design and build something by hand, a very large undertaking. The design called for three inter-linked cisterns with a total capacity of 1,500 cubic meters of water, enough for five hundred animal units for one hundred days.

Construction started in April 1979 and did not go well. Trying to construct a cistern of this size by hand, thirty km from the base of operation with limited supplies and transportation proved to be slow work. It was not completed by the time the rainy season came, and when the rains came, the cisterns started to fill up and then caved in, since there had not been any opportunity to provide lining. Repair work and lining with mud bricks continued after the rains, but the whole effort turned out to be a lesson in how not to build surface water points. Unfortunately, it was not possible to build any additional, improved surface water points during the life of the contract.

(e) Grazing Associations

As noted above, planning and assistance in forming herder grazing associations was the responsibility of the Malian staff and Jacques Baudry, the

FAO sociologist, but the Chemonics team, mainly Dr. Naylor, provided some technical input. The program appears to have been quite effective: the associations did provide large amounts of labor to build the secondary and tertiary firebreaks. Over the months, as the various interventions were being implemented, Dr. Naylor met with the associations to present the range management plans and especially the rest-rotation schemes which were to be put into effect once the new wells were in operation. Generally, the plans were well received.

(f) Comments

During the first two years of the contract period, Sahel Grazing was considered to be the most troubled and least effective of the three major project activities. Certainly the management and logistics problems which plagued the project as a whole were most serious with respect to this activity. Further, Chemonics' personnel were less suitable and less effective in this activity than in the other two. A notable exception to this statement is Dr. Naylor, but unfortunately, he came late to the activity and all too soon reverted to the status of short-term specialist. Thus his service on the project was intermittent. On the other hand, as the above narrative shows, a considerable amount of work was done and the stage was set for a great deal more in the final years of the project. Unfortunately, USAID decided that although the Mali Livestock II project should continue on an interim basis, initially for one year and eventually for three and one-half years, very limited resources would be devoted to the Sahel Grazing Activity because of management difficulties and what were perceived to be meagre results. Thus, after June 1979, Chemonics was limited to short-term personnel in Dilly, notably Dr. Naylor

and Mr. Dupuy, Hydrogeologist, and their work merely served to complete that which was begun earlier (e.g., the wells). From the perspective of 1983, this result seems to be regrettable.

4. New Lands

a. Introduction

The New Lands activity was a separate activity, not really related to Training and Communications or Sahel Grazing, but grafted onto the Mali Livestock II Project for administrative convenience. We believe that this was a good approach. New Lands required a very high level of logistic support, which could be given with relative efficiency under the umbrella of a larger project. Attempting to implement this project independently would have been extremely costly.

New Lands represented a very innovative approach to dealing with the problem of trypanosomiasis, the vector-borne cattle (and human) disease which prevents large areas of Africa from being effectively used for livestock production. Two approaches are used to combat it: eradication or control of the vector, the tsetse fly (Glossina); and the treatment of cattle, either to protect them from the disease or to attempt to cure it after infection. Tsetse fly eradication or control programs are inevitably expensive and not always successful, especially in the long run, because of reinfestation. They also have serious ecological consequences.

Large areas of Mali, in the southern, higher rainfall areas, are known to be infested with tsetse flies, which does inhibit the production of cattle, especially the more productive Zebu cattle. There is, therefore, a definite desire to reduce or eliminate the disease. The New Lands

activity was aimed at determining the extent of tsetse fly infestation and trypanosomiasis in southern Mali and the cost of eradication or control. Further, it was intended to determine the benefits of such a program, by determining, first, the costs of infrastructure and other developments needed to take advantage of disease control, and then, the economic benefits which would result. In other words, it represented a possibly unique effort to make an economic decision whether to embark upon a tsetse fly eradication program.

b. Pre-Contract Evolution and Contract Provisions

The 1975 Project Paper summarized the New Lands Activity as follows:

3. New Lands Activity: Through tsetse fly eradication and land use management, open new lands to cattle production. In a two phase program: (a) develop Malian capacity in tsetse fly survey and eradication and aid in the completion of initial ecological and land use planning studies, and; (b) financial and technical assistance in tsetse eradication and land development in an area to be selected in the higher rainfall zone. Funding for the first phase is included in the present Project Paper and would be obligated upon conclusion of the Grant Agreement. Funding for the second phase is recommended for authorization in the Project Paper with obligation (by means of an amendment to the Grant Agreement) subject to the completion of the necessary technical and socioeconomic studies and the preparation of detailed plans.

The New Lands Activity is discussed in detail on pp. 29-42 of the Project Paper. It provides interesting reading. Phase I activities, essentially the survey and analysis phase, are further described as follows.

a. Conduct general fly surveys and map location of the different fly species and associated vegetation conditions;

b. Conduct studies of fly ecology, identifying preferred habitat and feeding and breeding patterns in order to identify the most suitable technique of eradication, prevention of reinfestation and surveillance to assure sites remain fly free;

c. Develop land use plans and estimate cost of fly control/eradication and those of necessary physical improvements; and

d. Select initial site for test operations, conduct detailed site survey and develop plans including cost estimates and feasible analysis for the test site.

Activities a and b will be carried out by the Entomology Section of C.V.L., activity c jointly by OMBEVI and IER and activity d in a collaborative fashion between the three agencies and AID.

An important aspect of the preparatory work related to the planning of a test site will consist of the plans and preparations carried out by the GOM for the management of the site after it has been developed. Such plans will, of course, be based in part upon the results of the surveys and the physical planning of the project. In addition, however, the GOM will need to address such questions as the utilization of the site as between livestock and crop production purposes, which ethnic groups will be eligible to utilize the sites, pastures and land and in what manner, how the site will be administered, including the participation of communities themselves, and what incentives, facilities and regulations will be required to protect the newly opened areas from overstocking and environmental degradation.

Phase II is described as the test control/eradication activity, in other words, implementation of an actual eradication program to test its effectiveness. Three alternate sites for the test eradication work are suggested, with a map giving the general locations. The map is reproduced on the following page because the three alternate zones were the basis of the project work performed by Chemonics and Malian staff. However, it should be noted that, in the Project paper, the three zones were offered as part of Phase II, the test eradication phase. Apparently,

they were not to be used as a basis for Phase I, which was to be carried out either without geographic limit, which is difficult to imagine, or in all three alternate zones.

The institutional organization of the work, as set out in the Project Paper, called for entomological studies to be carried out by the Central Veterinary Laboratory (CVL), and economic studies by OMBEVI and IER. It was recognized that the management of a large fly survey effort would put a severe strain on CVL, which was not set up for such field operations, but the conclusion was that CVL would benefit from the experience. The plan called for CVL to employ three senior tsetse fly specialists, including one survey and one ground spray officer, although there was no indication where these three Malian officials would be found. For technical assistance, a three-person entomological team was proposed, one Glossinologist, one Protozoologist (to study the incidence of the disease) and one Tsetse Eradication Operations Officer. Significantly, although the Project Paper recognized the importance of the Protozoologist, the position was not provided in the AID funding; it was to be financed by "another donor." Eventually, no other donor was forthcoming and the position was added to the Chemonics' team, but unfortunately not until late in 1979. With respect to the economic and land-use studies, the Project Paper was not very clear on the technical assistance requirements, because it was thought that this work could in some way be combined with other land-use survey and planning work contemplated for AID financing. Clearly, at the Project Paper stage, economic and land-use work was expected to be very elaborate indeed.

By the time the Chemonics contract was negotiated in February 1977, the New Lands Activity had evolved to a considerable extent. Another contract, with Texas A and M University, had been negotiated and signed in AID/Washington, with little consultation with AID/Bamako or the GRM. It

provided for research into tsetse fly behavior and potential eradication and was also based at CVL. The idea of including economic and land-use work in the large, AID-financed, land-use program had been discarded, presumably because that project was delayed. Thus, the economic work was included in the Chemonics contract. The concept of three alternate zones was retained, as were the exact locations of the zones, in spite of adjustments in the boundaries made by the Earthsat Corporation Study. The use of the three alternate zones was moved forward to Phase I. Chemonics was asked to provide three advisors: two Entomologists, one of whom was experienced in eradication and control, and one Land-Use Economist. No Protozoologist was included, as indicated above, largely because the position was omitted from the Request for Proposals and because none of the negotiators of the contract, American or Malian, was fully aware of the importance of that position. The scope of work set out in the contract follows:

1977

c. New Lands

(1) Studies in the Three Projected Areas

In order to permit the GRM to select one area among three candidate areas for detailed study and possible test eradication program, a series of studies will be carried out. The studies will be carried out under the overall direction of the CVL. The Contractor will be responsible, under the CVL and the project director for the New Lands Activity, for ensuring that the studies are carried out, either through his own efforts working with project staff, or by coordinating the studies carried out by other entities, Malian or foreign. The studies include (a) overall studies of the three areas already carried out by Earthsat, (b) tsetse fly surveys, (c) geographic access studies.

(2) Land Use Studies

The contractor will assist in establishing a supplemental training program in land use studies at the IER and will assist in land use studies in the three candidate areas.

(3) Selection of a Test Area

On the basis of the above studies, the Contractor shall assist the GRM to select one of three projected areas for further intensive study and possible eventual trial eradication program.

(4) Further Studies and Cost Benefit Analysis

Following selection of the area, the Contractor shall assist in the planning and implementation of a series of more detailed studies into the approach and costs of an eradication program, the development requirements and development costs needed to optimize the returns from the eradication program and the benefits to be realized for the selected area.

(5) Studies of Trypano-Tolerant and Trypano-Sensitive Animals

The Contractor will assist in the planning and implementation of a research program comparing the performance of these two types of animals under traditional and improved livestock production and management conditions in tsetse-infested areas.

1978 and beyond

c. New Lands

After the choice of the test area, the Contractor will conduct detailed studies which will include: ecological studies, entomological studies, and the preparation of a distribution map of tsetse fly species. The Contractor will collaborate with the Texas A&M project located at the CVL which will determine improved eradication techniques for tsetse flies.

The Contractor will assist with the cost-benefit determinations of an eradication program in the test area.

The Contractor will participate in the training of Malian personnel involved in the eradication program.

The Contractor will assist the IER in the land use planning studies to determine the optimum utilization of the new lands in the test area.

The Contractor will participate in testing the eradication techniques on small parcels of land to

determine the efficiency of the eradication techniques and their effects on the environment.

The Contractor will be responsible to assure that the research on the two types of cattle (trypano tolerant and trypano susceptible) is being conducted.

It is understood that, if the results of the studies mentioned above establish the feasibility to conduct an eradication program on a larger scale, a contract extension will be put into effect.

c. Preliminary Work--Summer of 1977

Because of changes in personnel and prior commitments of those eventually selected for the three technical assistance posts, the three long-term New Lands team members did not arrive in Mali until late August and early September 1977. To avoid a five-month loss of time, Chemonics brought in a short-term Entomologist experienced in eradication techniques, Dr. Wayne Crans. Dr. Crans spent considerable time with the newly appointed Chief of the New Lands Activity, Dr. Telly, laying out general plans for the tsetse surveys. He also prepared and obtained approval for a long list of supplies and equipment, from camping equipment to small boats to laboratory equipment, needed for the surveys and subsequent analysis. Although these had to be financed out of the Joint Fund, not the Chemonics contract, Chemonics was asked to undertake the procurement. (This procurement incidentally resulted in Chemonics' establishing a Procurement Department and undertaking procurement work outside its technical assistance contracts.) The advance work done by Dr. Crans permitted the survey operations to begin relatively quickly after the arrival of Drs. Okiwelu and Van Wettere in August 1977.

d. Personnel

As noted, the long-term personnel arrived in late August. Two Glossinologists, Dr. Okiwelu and Van

Wettere, were responsible for the tsetse surveys, working under the direction of Dr. Telly and, initially, with only one counterpart, M. Boure. The team was well chosen in that Dr. Wettere was very field-oriented and did an excellent job of organizing and managing the logistics of the field work. Dr. Okiwelu was an experienced scientist who ensured the quality of the survey work and eventually, the laboratory work, and undertook most of the report writing. The Land-Use Economist was Dr. Jerome Baiman.

e. Selecting the Zone: Entomology

The first task was to conduct entomological and economic surveys of the three candidate zones in order to recommend to the GRM and USAID a single zone for detailed study and, presumably, eventual tsetse fly eradication and economic development. Since the entomological and economic activities followed separate paths and resulted in separate reports (and even different recommendations), they are discussed separately.

(1) Extent of the Task

The task of conducting tsetse fly surveys in three candidate zones was very large indeed, much larger than had been imagined at the time of contract negotiation or project formulation. We suspect that none of the individuals actively involved in the project design had undertaken on-the-ground tsetse fly surveys over a large area (totalling over 40,000 sq.km. or 4,000,000 ha.) in a country like Mali. Most tsetse surveys are either from the air, based on vegetation patterns, etc., plus very small area ground work, or are carried out on the ground in relatively small areas. These New Lands surveys had to be detailed enough and cover the area well enough to permit solid analysis of the location

and intensity of the tsetse fly population. The Chemonics team, working with Dr. Telly, had to assemble all necessary equipment, engage a team of capturers, technicians and support personnel, train them, and mount extended trips of twenty or more persons in isolated areas of the country to collect flies in sufficient quantity to permit analysis. Under primitive field conditions, field notes had to be prepared, specimens preserved and initial analysis performed.

(2) Organizational Arrangements

The original intent was to have the CVL manage this work and, presumably, to house the activity at CVL's modern laboratory facilities. However, the individual appointed as Activity Chief, in July 1977 was Dr. Ahmadou Telly. Dr. Telly had a strong preference for locating the work in the compound of the Livestock Service in Bamako, largely because he wanted to operate as independently as possible from the Director of the CVL. At the same time, although the CVL had laboratory space, it did not have office space in surplus and, as noted elsewhere, the Director felt the need to collect major financial contributions from any activity using the facilities in order to meet the CVL's very large operating costs. Thus, there was no question of locating at CVL. For the first several months, the activity was located at Sotuba with the Training and Communications Activity; in January 1978, it moved to newly vacated space in the Virology Lab of the Livestock Service in Bamako. This provided space to support the survey work, and also the economic work, but was inadequate for a laboratory. It was not until late 1979 that more space could be made available and a laboratory set up.

The activity was directed by Dr. Telly, who exhibited vast energy in obtaining resources to hire and clothe the

capturers and other field personnel, provide training and keep the survey work going. Inevitably, there were never enough resources.

(3) Preparations

In September and October 1977, preparations for the field work were carried out. These consisted of receiving and organizing equipment sent from the United States, designing the traps (a minor modification of Challier traps developed in Upper Volta) and supervising local manufacture of over one hundred of them, selecting and training capturers and general planning. In October, several one-day trial surveys were undertaken in various locations of Zone 1. Numerous riverine species of tsetse (G. palpalis and G. tachinoides) were caught, but none of the savanna species, G. morsitans. The trials were excellent practice and also demonstrated the need to live in the field, because flies are most active and subject to capture in the early morning.

(4) Methods Used

Survey methods differed over time, and on the basis of local conditions, but were generally as follows. A survey team consisted of one Chemonics team member as leader with one counterpart, (either Dr. Okiwelu, Dr. Van Wettere, or Dr. Crans, who returned and participated as a short-termer) one or more technicians, up to twelve or fifteen capturers, plus support personnel (camp boys, cooks and drivers). They would move to and set up camp in a preselected location. Movement would be by truck, when there was one available (Chemonics rented trucks on numerous occasions when the project truck was broken down or diverted to other use) and several landrovers. Each morning or evening, the capturers would put out the traps or, if they

were already in place, would check the baskets for flies. The flies would be collected and brought to camp for preliminary identification and storage. The traps were moved frequently and generally visited every twenty-four hours. In addition to the traps, a variety of other collection methods was used, including capture by hand net using as bait either a black cloth carried by two other capturers, the back of another capturer, the back of a vehicle or a cloth carried on the back of a bicycle. The team requested bait oxen on numerous occasions, since these are very effective in attracting tsetse flies, but the project never supplied them. The capturers were also trained in the art of searching for pupae of flies on the ground or on trees, and this method was used at times. Obviously, it was important to keep exact field notes on where traps were placed, what flies were caught on what day, and the detailed results of the other search methods. Because of the difficulty of field operations, and human error, there were instances where field records were improperly kept or lost. It became evident that strict quality control is difficult but essential in surveys of this kind.

The specimens were dissected and analyzed, and reports written on the results back at the office. Chemonics personnel, particularly Dr. Okiwelu, were kept busy providing reports on various aspects of the surveys and their results. In all of this work, close liaison was maintained with the Texas A & M team working at CVL.

(5) Surveys

Full-scale surveys started in November 1977 (only two months after the arrival of the team) and were carried out as follows: Zone 1, November, re-surveyed in March 1978; Zone 3, December; and Zone 2 in January and February. In March 1978, an evaluation of the survey work

was carried out at OMBEVI, and the work was well accepted. During the evaluation, the team took the opportunity to point out the logistical problems it faced in carrying out these surveys. They centered around inadequate transportation, including the frequent lack of an appropriate truck to carry equipment (carrying the equipment by landrover was tried, but was most unsatisfactory), lack of personnel, inadequate equipment for personnel (even boots for the capturers, who had to work all day in the bush) and, most importantly, radios for the vehicles. Some improvements were made, but the supplies and equipment were never really adequate for the task.

(6) Report and Recommendations

A report on the results of the surveys was prepared in April and May, and submitted in June 1978. Writing, translation and production under the conditions which prevailed was a major task. The fifty-page report set out all of the results, including notations where inadequate recording of data left blank areas, and made its recommendations. The recommendation was that Zone 1, along the Niger River north and east of Bamako, be selected on the basis of the probability of a successful tsetse control operation (it has a northern edge free of tsetse), comparative costs and other factors. The report noted that it might be desirable to adjust the boundaries of the zone, since the original boundaries were arbitrary and provided no natural barrier to reinfestation to the south.

f. Selecting the Zone: Socio-Economics

The work of the economics team did not go nearly so well, in part because of difficulties with the institutional arrangements, and in part because of problems

with the first Land-Use Economist, Mr. Baiman. Although the socio-economic work was to take place at IER, and IER was to provide both counterparts and individuals to be trained in land-use surveys, IER did neither. The project was advised that no office space was available at IER and no trainees could be provided. Only one counterpart, Mr. C. Kamate, was provided, meaning that the entire socio-economic team consisted of two people.

Nevertheless, the team started work on three fronts. First, library research was performed on the economic parameters of each of the three zones, mostly by M. Kamate. He faced many problems, including the unavailability of copies of existing reports and refusal in many cases to release documents. Another major problem which made all of the economic work much more difficult was the fact that the boundaries of the candidate zones did not follow administrative boundaries, so that existing data, always based on administrative units (cercles and arrondissements) never coincided with the candidate zones. Chemonics made several efforts to change this, by proposing zone realignments to conform to administrative boundaries, but all such proposals were rejected. It should be noted that the zone boundaries were not particularly well-suited to the ecological work either, since they followed neither natural ground features nor possible natural tsetse fly barriers. They were totally artificial lines on a map, like many political boundaries.

The second approach was field work. A questionnaire was prepared by Messrs. Baiman and Kamate. With the land-use team travelling and sharing camping facilities with the entomological teams, the questionnaires were administered to large numbers of villagers in the zones. In January, Chemonics was able to employ Dr. and Mrs. Gerald Cashion,

Bambara-speaking sociologists, to assist in the surveys, which helped considerably. A great deal of raw data was collected.

The third thrust, proposed by the Chief of Party, was to interview knowledgeable people living in Bamako but originating from key areas of the candidate zones, on the socio-economic aspects of their home areas and the attitudes and desires of the people. This was tried once or twice, but was opposed by Mr. Baiman and others as not being adequately scientific.

In March 1979, the New Lands evaluation meeting was very critical of the socio-economic work, commenting unfavorably on the lack of involvement of IER and also the content of the questionnaire and some of the survey methods. It was also felt that the process was taking too long and that the selection of the zone would be unreasonably delayed. This prophesy turned out to be all too true. The field surveys were completed in April and Mr. Baiman began the task of tabulation and analysis of the data. Although he worked on this effort through May and into June, little progress was made, in part due to illness and in part to personality problems which finally resulted in a joint GRM/Chemonics decision to remove him from the project. This was done in late June, and Dr. Reeser, the Chief of Party, took over the work, with Mr. Dupras from the Chemonics home office taking over the Chief of Party duties on an interim basis.

With Dr. Reeser in charge, the land-use effort was considerably reorganized. A comprehensive report outline was prepared as well as a new research plan, based in part on Mr. Baiman's data, but also on a great deal more document research. Some input was obtained from IER, in the form of discussions and approval of the research plan and outline, and the provision of two new IER counterparts, Messrs. Klengolo Traore and Ousmane Sanogo. Dr. and Mrs. Cashion remained to assist in the reformulated effort. Following the research, sixteen criteria for zone selection were developed, scored 1 to 10, and applied to each of the three zones. In the analysis, it was determined that Zone 2, the Boucle de Baoule region, was the first choice, followed by Zone 1. The actual report, in English and French (as with all Chemonics reports under the contract) was submitted in September with the above recommendation. The report, submitted in fifty copies, was about 160 pages long. It included, for each of the three zones, estimates of area, population, crop production, livestock numbers (by type), and descriptive material on water resources, infrastructure and socio-economic parameters. The report was discussed and evaluated in October and the content and methodology approved.

g. Selecting the Zone: The Decision

The Malian Committee for the Coordination of Studies in Agricultural Development, charged with the selection of the zone based on the recommendations of the New Lands Activity, met on November 28, 1978, and selected Zone 1, thus basically accepting the views of the entomological team over the socio-economic team. The effort of carrying out the preliminary surveys and writing the reports to assist in decision-making, and the

decision-making process itself, took fifteen months from the arrival of the Chemonics team members assigned to the work. In the course of doing the work, however, a great deal was learned, both about the socio-economic and tsetse fly data in the areas and about the process of carrying out surveys in rural Mali.

h. Detailed Studies in Zone 1: Entomology

The entomological team took advantage of the six-month period between the completion of its initial report and the decision on Zone 1 to provide more training to personnel and to carry out additional surveys and research on various aspects of tsetse fly infestation in this part of Mali. One output was a twenty-two page paper by Dr. Okiwelu on tsetse control, as well as shorter notes on the control of trypanosomiasis and animal health in general. Time was also spent in working with Chemonics' Procurement Department to purchase additional laboratory equipment to support the surveys and related research.

Once the zone was selected, it was necessary to begin detailed surveys in that zone, but the team was faced with very serious shortages of personnel and materiel. The main problems, as usual, were vehicles and camping equipment. The camping equipment had been subject to very hard use during the initial surveys, and some of it was damaged, destroyed or lost. With larger teams, and the socio-economic team as well, it was necessary to order more, as well as more durable, equipment, able to take the heavy punishment involved.

In January, the entomological team began extensive fly surveys in the area to the south and east of Zone 1, in an effort to obtain fly distribution data and, more importantly, to find a natural barrier to reinfestation which would justify moving the boundary of the zone. The

surveys lasted most of the spring. Valuable data was obtained, but no natural barrier was found, so it was decided not to change the zone, at least not for entomological reasons. A twenty-six-page report of the surveys and results was presented in May.

With the Chemonics contract coming to an end in the spring of 1979, and no assurance that it would be renewed or, if renewed, that the New Lands Activity would continue, no major effort was made to carry out the detailed surveys in Zone 1 itself. Rather, efforts were concentrated on finding laboratory space, training new personnel recruited and hired by Dr. Telley, and planning for the detailed surveys should the contract be extended.

Thus no detailed entomological studies of the selected zone took place during the initial two-year period of the contract. The preliminary studies aimed at selecting the zone had taken far more time than planned, although, in retrospect, the planned time frame had been unreasonably optimistic. Six months were lost while the socio-economic team caught up, and the zone was selected, and the final six months were used for the important, although secondary, task of surveying outside the zone in hopes of finding the all-important natural barrier to reinfestation. Finally, the fact that the contract was coming to an end cost time due to uncertainty about future funding.

i. Detailed Studies in Zone 1: Economic

In January, 1978, Dr. Reeser and his counterpart made an extensive analysis of the requirements and available resources for the economic study. As noted above, the requirement was to prepare a development project for the zone which would allow Mali to derive maximum benefit from a tsetse fly eradication program, or some other program to reduce the incidence of trypanosomiasis. The

program was to permit a major expansion of Zebu livestock production in the zone. Based on that production effort, and the trypanosomiasis control program recommended by the entomological section, cost estimates for both programs were to be prepared and a calculation made of the potential benefits in order to justify both programs. Dr. Reeser and his counterpart determined that there were too many gaps in the information available in Mali (on costs of production for example) and too many variables in the equation to permit the job to be done in any reasonable length of time with the available resources. They proposed to begin the overall work, but at the same time, design and implement a series of mini-projects in a single area (Segou Cercle) to yield some of the basic data. Considerable work was done on this concept, including field work in the Segou area during the spring. However, in late spring, the Project Direction decided against the mini-project concept and decided that it wished to remain with the original approach, assuming the renewal of the Chemonics contract.

j. Trypano-Sensitive/Tolerant Cattle

The Chemonics contract contained a requirement to carry on research on the relative productivity of trypano-sensitive (mainly Zebu) and trypano-tolerant (mainly N'Dama and N'Dama crosses) cattle in a tsetse fly area. The objective was to determine if improved animal husbandry with the tolerant N'Dama breed, which can survive in the tsetse zone, could accomplish increases in livestock productivity which would otherwise be obtained through tsetse control. Chemonics considered this an interesting project activity, and was more than willing to undertake it. In our contract proposal, we suggested adding a young, French-speaking veterinary paramedic to the team to work with local staff and, if possible, counterparts from CVL, to carry out the

work. In negotiations, the GRM left the requirement in the scope of work, but declined to approve the assignment of the para-vet on the grounds that Mali has many under-employed veterinarians. As the project progressed and the Chemonics team, especially the Chief of Party, became heavily burdened with the work at hand, Chemonics decided it preferred not to undertake this work without an expatriate coordinator. Therefore, with the assistance and cooperation of the Project Direction, the task was shifted to CVL and the Texas A&M (TAMU) team.

k. Comments

Although the work was considerably delayed, the New Lands Activity was able to produce two excellent reports on the selection of the zone. As the first contract period ended, the entomological section was ready to proceed with the detailed surveys. The need for a protozoologist had become obvious and the Project Direction was prepared to add one if the contract was renewed. The socio-economic work, which had been off to a good start, came to a standstill. The situation was made worse when the GRM advised Chemonics that, even if the contract were renewed, it preferred another Land-Use Economist to Dr. Reeser.

5. Construction

The Mali Livestock II project called for a large investment in construction, mainly of the new Training and Communications Center at Sotuba, and additions, including a small training center, at Dilly. Other construction requirements included the surface water points at Dilly, the Dilly Market, cattle trails, etc. It had been decided before the preparation of the RFP that the technical assistance contractor would not be asked to do the

construction work. The decision was doubtless influenced by the problems encountered under Project Mali Livestock I, where the technical assistance contractor had been asked to do construction, despite the fact that technical assistance contracts are neither priced nor designed for this purpose. The construction was to be handled by the GRM and USAID, and, incidentally, was to be well underway by the time the contractor arrived. In fact, it was not. In an effort to expedite the construction work, Chemonics was then asked to provide a Construction Engineer whose role, essentially, was to act as a catalyst among the Project Direction, USAID, the consulting engineers (normally Genie Rurale, the Rural Engineering Service of the Ministry of Rural Development) and the construction contractors. Chemonics provided the services of Mr. John Wagner, who arrived in July 1977 and did serve as an effective catalyst in the process.

In the following discussion, each of the major construction projects is briefly presented, with emphasis on the role of Chemonics. It should be noted that, in addition to the major construction projects, Mr. Wagner assisted with a great many other activities, such as house and vehicle maintenance programs.

a. Sotuba Center Construction

This was a very major construction undertaking. The plans called for a total of over twenty buildings to house the center. It had been decided to engage Genie Rurale to do the detailed design work, prepare the tenders, select the contractor, with input from the project, and oversee the construction. For well over a year, Mr. Wagner worked with Genie Rurale to motivate them to complete the design work and to help settle disputes between Genie Rurale and the project over fees and similar matters. In December 1978, the plans were completed and

submitted to the Project Direction and USAID for approval. The USAID Agricultural Development Officer requested a number of changes. For two months, Genie Rurale refused to do any further work until both USAID and the Project Direction agreed that the changes should be made. Agreement was transmitted to Genie Rurale in March 1979 and the plans were finished in June 1979. A very long delay indeed.

b. Sotuba Center Boxcar Storage

The project and its various activities were always short of storage space. Chemonics rented warehouse space for much of its equipment, and in the beginning, material was stored in one of the rooms at the temporary center at Sotuba. In an effort to alleviate the shortage, USAID took advantage of an offer of surplus American boxcars available for the cost of transportation only. USAID ordered the cars and they were delivered in March 1978. Mr. Wagner spent several months on a part-time basis arranging the assembly of the boxcars at the rail yards, preparing the site and installing the concrete platforms to hold the cars. After installation, a further effort was required to punch and bar ventilation holes and install shelving. When the work was completed, the boxcars made quite serviceable small warehouses, but it was undoubtedly a rather time-consuming and expensive way to obtain storage space.

c. Dilly Construction

Over the two-year period, numerous efforts were made to (1) upgrade the newly built banco buildings at Dilly, (2) improve the guest houses used by Chemonics personnel, (3) build at least two new, quality houses for Chemonics expatriates and (4) build a training center and support buildings. Chemonics succeeded in upgrading the

banco houses to some extent, and one served as housing for Dr. Naylor during his entire assignment at Dilly. The guest houses were never improved, mainly because the Project Direction objected to Chemonics' changing buildings provided by the FAO. On the major construction projects, Mr. Wagner prepared numerous basic designs and spent considerable time both with Genie Rurale and with private contractors trying to get detailed designs and cost estimates. Although much work was done, the actual construction was not performed because USAID became disenchanted with the Sahel Grazing Activity and was reluctant to finance major construction. This failure to finance major construction at Dilly was greatly resented by the GRM and made it even more difficult for Chemonics to continue working in the area after June 1979.

d. Dilly Airstrip

The Dilly airstrip was the one construction project on which Chemonics essentially acted as general contractor, managing the entire project, doing the design, obtaining approvals from the Civil Aviation Department, contracting the heavy equipment and supervising the work. The airstrip was not originally part of the project. However, as work began at Dilly, Chemonics was concerned about the amount of time and transportation required to get people to and from Dilly, either by road (eight hours each way) or by air (a flight to the Nara airstrip, met by a landrover, and a ninety-minute drive to Dilly, thus a three-hour round trip for the landrover, plus waiting time). Among other things, this meant that a one-day visit to Dilly allowed only four hours at the site, since it was necessary to take off and land in Bamako in daylight. The alternative, for a one-day visit, was a three-day trip, one day each way for coming and going by road. Further, there

was a potential danger in having to evacuate someone who was sick or injured within a reasonable amount of time and in acceptable comfort.

Therefore, Chemonics proposed that the project build a small-plane, laterite-surfaced airstrip at the center. The proposal was accepted by the Project Direction in October 1977. Mr. Wagner worked with the Civil Aviation Department and Public Works on the plans, and with Dilly Center personnel on selection of a site, quite close to the main buildings of the center. The assistance of the center was also obtained in locating a source for laterite within a few kilometers. In November, Mr. Wagner, who had been working very closely with Public Works, discovered that a Public Works bulldozer had suddenly become available in the Dilly area and quickly made an agreement to use it and some trucks to move laterite to the site. The agreement with Public Works required Chemonics to supply all fuel, lubricants, spare parts and food for the crews. These were assembled by Chemonics in Bamako and loaded on a Public Works truck. Unfortunately, 10 km. out of Bamako, the truck collided with a train, resulting in a total loss of the truck and cargo. Chemonics had to replace all of the supplies, locate another Public Works truck, and repeat the shipment. This event delayed earthmoving operations until December.

The construction work was carried out in December and completed in January. The resulting airstrip was 910 m. long by 30 m. wide, with an additional 600 m. of taxiway. The strip was laterite filled to a depth of 15 cm. At the same time, additional earthmoving was done at various points around the center and a stockpile of laterite established to support future construction projects. The entire cost of the airstrip was about \$50,000. It served as a model of construction work, demonstrating what can be done if a project is pursued with energy and efficiency.

For the balance of the contract period, the airstrip was used to support operations at Dilly. There were maintenance problems, notably the frequent failure of the center to keep the grass cut after rains.

Another annoying problem was the tendency for project drivers to use the airstrip as a drag strip, a practice which damaged both the airstrip and the vehicles. It ultimately resulted in a column by syndicated American columnist Jack Anderson, who featured an article about an "airstrip built in the desert by AID and used only as a drag strip." The criticism, used as part of a larger condemnation of the AID program, was, of course, manifestly unfair. In a single instance in the summer of 1978, the airstrip justified the effort and expense when it was used for the medical evacuation of a Chemonics team member, Ms. Barbara Cashion, who was very seriously hurt in an auto accident. The airstrip may well have saved her life.

6. Marketing

The marketing component of Mali Livestock II was very limited. Chemonics' scope of work in this area was buried in the contract under Training, Communications and Research, as follows (see also the section above on Training and Communications):

1977

(2c) Livestock Marketing

The Contractor will assist in initiating a program for the collection, analysis, and diffusion of market information, including supply, demand prices and other information from various livestock markets. Further, he will assist in the training of cattlemen, cattle traders and butchers.

1978 and Beyond

The Contractor will give his assistance to the collection, the analysis and the diffusion of animal marketing information.

Chemonics provided the services of a Marketing Economist, Mr. Louis Balmir, to carry out this scope of work. Mr. Balmir arrived in Mali with the first group, in May 1977, and was requested by the Chief of Party to assist in the project start-up work by interviewing candidates for the local staff. Thus, he was somewhat delayed in embarking on the marketing tasks.

In any event, he was in a difficult position. OMBEVI had in place a marketing office, staffed by a combination of Malian personnel and expatriate advisors under other, non-AID projects. They were undertaking a variety of research projects in marketing. There was considerable skepticism, well-taken, about OMBEVI's chances for setting up an effective marketing service, given the difficulty of existing market controllers, stationed at improved markets, in getting meaningful price and quantity information. Chemonics decided that it would be best if Mr. Balmir, and his counterpart, visit as many livestock markets as possible as a first step. Accordingly, over the next several months, field trips were made to three different regions of the country and over twenty livestock markets were visited. At the markets, which were mostly unimproved, local markets, but sometimes improved and controlled markets, Mr. Balmir and his counterpart observed buying and selling operations and talked with the participants--herders, middlemen, final buyers and butchers. Considerable information was gathered and put into detailed field trip reports. A fourth field trip, to the Gao area, was postponed indefinitely in April 1978, when the Project Director requested that Mr. Balmir concentrate his energies on the marketing aspects of the Dilly program. Mr. Balmir accordingly spent much of April in Dilly working with other team members and with Dr. Sy on the plans for the test perimeter (see Sahel Grazing). He

prepared a proposal with fifteen recommendations in marketing cattle from Dilly. The proposal was subsequently rejected by the Project Direction as too general. It was revised to incorporate more specific suggestions, and at the same time, a series of questionnaires was prepared to enable market controllers in the Dilly area to gather market information for broadcast by Radio Mali. Eventually, both the overall program for Dilly and the specific program for collecting and broadcasting information were rejected, and it was decided that Mr. Balmir should leave the project.

In retrospect, Mr. Balmir's assignment was ill-conceived. There was little chance that OMBEVI could mount a market information program no matter how much research and planning were done. Given the limited resources available to OMBEVI, to do so would probably not have been justified, unless a donor was willing to underwrite the entire process. Even then, given the preference of marketing participants for secrecy, and their distrust of government intervention in the marketing process because of the danger of taxation, such a program might not have been very helpful.

It should also be stated that Mr. Balmir was not the man to undertake this assignment. He carried out useful field research, but his background and experience did not prepare him for the bureaucratic manoeuvring which would have been necessary to get an action program launched. Nor was he able to come up with proposals sufficiently specific and detailed to permit others to take action.

This form of marketing assistance was not continued in subsequent contract periods. Chemonics' subsequent work in marketing took the form of assistance to ECIBEV in the feedlot and related marketing programs of Mali Livestock I.

7. Small Ruminants

Small ruminants, mainly sheep and goats, are important to the economy of Mali and other Sahelian countries, but tend to be ignored by livestock development projects. Such was also the case with Mali Livestock II. This fact was recognized, belatedly, by USAID and the GRM, and a special project aimed at small ruminants was developed. The project was to take place in three phases: (1) the collection, in Mali, France and elsewhere, of documents on the subject of small ruminants, coupled with analysis of their contents and the major gaps in the information available; (2) an extensive field survey in Mali, following the lead of a recent study by the French organization, CEDES; and (3) a series of small, pilot development interventions in the field designed to test possible development projects. The project was designed to be carried out almost entirely by Malian staff, with a total of only twenty-four work months of foreign technical assistance over a three-year period, compared with more than 700 work months to be provided by Malian professional staff.

At the time of contract negotiations in February 1977, and again during project start up in May 1977, Chemonics was asked if it would be willing to undertake technical assistance for Small Ruminants as an adjunct to its regular work under Livestock II. Although Chemonics had serious doubts about the practicality of the project design, and the ability of OMBEVI to mount the large effort required, we advised that we were interested.

A few months later, we were informed that AID/Washington wanted to make the Small Ruminants Project a Section 8A set-aside, i.e., for minority contractors. Chemonics pointed out that, although the potential contract was a small one, it was definitely not suitable for a set-aside because of the extreme difficulty of supporting

the contractor's personnel in Mali, if not done as part of a larger project, and because the contractor would have too little input to be able to exercise control over the results. Nonetheless, the project was made an 8A set-aside and RFPs issued to 8A firms. Three responded. All recognized the inadequacy of the twenty-four work-months of technical assistance, and proposed much higher figures, the most realistic about 123 work-months. The GRM rejected all three as unresponsive and returned to the idea that Chemonics do the work. This entire process was very lengthy, with delays at each step of the way (including a month or more lost when the proposals were mishandled between Washington and Mali). The matter was ultimately left for the Chemonics' amendment in the spring of 1979, covering the interim year.

8. Procurement

Chemonics established a Procurement Department in the home office in Washington during the summer of 1977 in order to respond to the request of the Project Director to handle equipment procurement for the New Lands Activity. During the balance of the first two-year period, Chemonics was asked to carry out a wide variety of project procurement, some of an emergency nature. One example was a rush procurement, with delivery within a few weeks, of a cattle scale needed for a marketing effort at Dilly. Before the end of the period, Chemonics was also asked by the Chief of Party of Mali I to undertake some procurement for that project. This was done by charging time and other procurement services costs to the Chemonics contract under an agreement with the Project Director. In general, procurement services were well performed and the project enjoyed good support. Materiel shortages, which were serious, were generally caused by the unwillingness or inability of the project to authorize purchases rather than by failures in the procurement system.

9. Participant Training

The project included a significant level of participant training, whereby Malians were sent to American universities for training in range management and other subjects. Some of the training was initiated before the Chemonics team arrived. In any event, the project did not require any assistance from Chemonics in this area, and, in fact, Chemonics was frequently not informed of selections or impending departures. We believe this is a mistake, since the technical assistance contractor can play a useful role in the process even if he has no formal responsibilities.

As the project progressed, some of Chemonics' counterparts were selected for training in the United States, such as Oumar Cisse, counterpart to Mr. Wilkes, and Diarra Kieta, counterpart of Mr. Citron. In these cases, Chemonics had a greater influence and the training was tied more closely to the needs of the project. Chemonics staff discussed the training with the candidates and made program recommendations. These recommendations were discussed with the USDA training personnel contracted by AID to handle the training, and with personnel in the universities selected. On the arrival of the participants in Washington, Chemonics' home office supplemented the support given by USDA to ensure that the participants had a meaningful experience while in English language training. Once the Malians were at their respective universities, contact, mostly of a personal and supportive nature, continued. When they returned to Mali, they were assisted with re-integration into the project by Chemonics personnel. All of this assistance was provided as part of Chemonics' normal work, and did not result in any increased cost to the project.

10. Evaluation

The Mali Livestock II Project had its early and only evaluation during the first contract period, in the summer of 1978, after one year of activity. The evaluation was part of an overall livestock sector evaluation which included Mali Livestock I and II, the CVL assistance program (staffed by PASA personnel) and the TAMU contract. The evaluation was a joint effort, with a large American evaluation team assembled by the Consortium for International Development and an even larger Malian team with personnel drawn from every participating and interested agency.

In Chemonics' view, stated at the time, the American team had serious deficiencies. Its eight members were all well qualified in their technical areas (agronomy, animal science, sociology, veterinary medicine, entomology, extension and economics) but virtually none had ever had extensive field experience in Africa under a host-country contract, and only the team leader could speak reasonably fluent French. Thus, the team was well able to detect deficiencies in the relevant technical areas, but unable to make recommendations for improvement which were feasible in the context of the project. To our knowledge, only one team member, the Economist, Mr. Sieber, gave significant attention to this factor. Further, the Malian evaluation team could not be expected to recognize the importance of management deficiencies as a fundamental problem.

A second problem was the limited contact the evaluation team had with the Chemonics team. The Chemonics Director, and former Chief of Party, spent a few hours with the evaluation team in Washington and again in Bamako, and the team made brief visits to various activities, including the one in Dilly, but this was not really sufficient.

The third and most important problem was that the Chemonics team never derived any benefit from the evaluation work. There was no formal or informal meeting at the end of the evaluation when the evaluation team gave its findings and recommendations. Because of several controversies between the evaluation team and USAID, no evaluation report was ever published and even informal versions of the individual papers were not made available. Instead, the USAID Agricultural Development Officer decided to use the results of the evaluation first as an input to a master evaluation which he intended to issue, and then as an input to a new Project Paper. The latter was finally completed, some years later. The evaluation team did publish informally a document entitled "Mali Livestock Sector Redesign Report" (undated), which summarized very briefly the redesign recommendations of the team and then included copies of papers by the individual team members prepared in August and September 1978. This document was never provided to either Chemonics or the GRM in a way which could lead to a consideration of the recommendations.

Nevertheless, Chemonics has reviewed this document with some care. The comments and recommendations relating to Mali Livestock II and Mali Livestock I (which is also pertinent since Chemonics became technical assistance contractor for that project in July 1979) are very uneven. A few were followed by the team. But the great majority represented good ideas which nonetheless would have required major amendment in the project agreement and technical assistance contract, the latter principally by adding more, and more academically qualified, staff. There is no recognition in most of the recommendations of the time and intricate steps required to accomplish the changes. And, of course, there was no comprehensive, integrated proposal, so many of the recommendations are mutually incompatible.

As a result, a very expensive and time-consuming evaluation had little or no impact on the course of the project for the next three years. It presumably had some impact on the design of the follow-on project, which finally got underway on January 1, 1983.

We conclude our summary of activities, accomplishments and failures during the first two years of the contract. The following section covers the activities of the first interim year, 1979-80.

C. Second Period, July 1979-June 1980

Amendment No. 3 funded technical assistance for the first "interim" year, or third year of the contract. Briefly, it stated that Chemonics would assume several new responsibilities, notably, work for Mali Livestock I (operation of the Tienfala Feedlot and accounting assistance to ECIBEV) and the Small Ruminants Activity. On the other hand, work on Sahel Grazing at Dilly was sharply curtailed, and, in fact, had to be handled with short-term assignments only. Training and Communications continued as before, and New Lands was expanded with the addition of a long-awaited protozoological component. Below we continue the discussion of activities, following the general pattern of Section B above.

1. Contract and Project Management

Amendment No. 3 provided for relatively little change in contract and project management. The most striking change, discussed under "Financial Management" below, was a severe shortage of operating funds from the Joint Fund. This shortage had a major impact on project progress.

a. Contract Mangement

(1) Personnel

Mr. William Crosson remained as Chief of Party. In September 1979, Mr. Richard Pronovost replaced Mr. Lewis Norton as Business Management Advisor. In the home office, Mr. Dupras was replaced by Ms. Sandra Miller as Project Administrator; Mr. Teele remained as Project Supervisor.

(2) Housing

One significant change in Amendment No. 3 was that Chemonics assumed the responsibility of providing housing, which greatly strengthened Chemonics' hand in dealing with the landlords. However, the uncertainties regarding contract continuation in the spring had caused the termination of many leases, and several new houses were required. The task of getting them ready for occupancy, without significant funds from the Joint fund, was onerous. The problem was complicated by the fact that the electric power supply in Bamako was very bad that year, rendering uncomfortable housing even more uncomfortable.

(3) Furniture and Appliances

Although the size of the team increased, it was not necessary to purchase additional furniture and appliances; Chemonics was able to take over and recondition a few sets used by Experience Inc. personnel under Mali Livestock I. The poor power situation, which meant serious power fluctuations, did cause severe damage to appliances and required extensive repairs.

(4) Vehicles

The vehicle situation in the project remained poor, but the problem was at least acknowledged by the addition of an Automotive Specialist to the team. This topic is covered elsewhere.

(5) Supervision of Substantive Work

The task of supervising the substantive work became even more difficult than before because of the addition of more activities. Rather than three main activities, there were five, plus several sub-activities and support functions. They included: Training and Communications; New Lands (Entomology, Protozoology and Economic sub-activities); Sahel Grazing (Range Management and Hydrogeology sub-activities); Marketing (Feedlot Management and Business Management sub-activities); Small Ruminants; and the vehicle maintenance and construction support activities. This very wide range of activities put a serious strain on the ability of the Chief of Party (and the Malian Project Director) to provide substantive supervision. The Project Supervisor, Mr. Teele, also did what he could to assist from Washington and made several trips to Mali.

(6) Support Staff

The increasing complexity of the work resulted in a major increase in document publication, which required bilingual secretaries and translators. Unfortunately, for much of the period, the secretarial situation was poor, with the top Malian secretary, Mme. Guindo, on extended maternity leave, and another, Mlle.

Danyoko, leaving Mali. There is a shortage of qualified secretaries in Bamako, and the poor working conditions at the OMBEVI office made Chemonics noncompetitive. The Chief of Party did what he could with part-time help and other imaginative solutions to the problem.

b. Project Management

(1) Institutional Arrangements and Personnel

The only change in the institutional arrangements for the second contract period was the addition of ECIBEV, the implementing agency for Mali Livestock I. Although the technical assistance contract tended to lump together Projects Mali I and II (and Small Ruminants), the GRM resolutely, and correctly, insisted that they were separate projects. Therefore, it was necessary for Chemonics to deal with three separate project directors rather than one: Dr. Fernand Traore, Director of Mali II; Mr. Macky Diallo, Director of Mali I and ECIBEV; and Dr. Almouzar Maiga, Director General of OMBEVI, the de facto Project Director for Small Ruminants.

At the activity level, there were few changes. M. Sangare replaced Aboubacrine as Chief of the Sahel Grazing Activity. Unfortunately, the change did not bring a major improvement in the management of that activity. Mr. K. Wague was named Deputy Director of the Small Ruminants activity, and a Deputy Director for New Lands, Dr. S. Maiga, was also named, with good results.

(2) Lines of Authority

As a result of the amendment negotiations and, to some extent, the amendment language, the fact that Malian personnel were in charge of the project work was somewhat clearer and better understood than before.

(3) Financial Management

The project faced very severe financial problems during the first interim year. There were at least two reasons. First, because of high expenditures from the Joint Fund and poor financial management and reporting, USAID became more demanding of documentation before it would release monies to the Joint Fund. Further, the Joint Fund protocol called for ever-increasing Malian contributions to the operating costs of the fund (the other cost elements were one hundred percent USAID-financed). The GRM had difficulty meeting its increasing share and did not do so, with the result that USAID had another reason to delay payments. Secondly, since it was an interim year, USAID insisted on minimizing costs, both capital and operating, as much as possible. The result was a lack of operating funds in every activity, which caused work to be seriously delayed.

One example was the New Lands survey program; many months were lost because there was no money to pay per diems for Malian staff, to purchase fuel, basic equipment or even medicines for the first aid kits. In a few instances, Chemonics resumed the practice of making advances to activities so that the work could go on.

With respect to management of the funds, considerable improvement was achieved in ECIBEV finances, which in prior years had had no expatriate management whatever and had fallen into serious difficulties, requiring a very expensive outside audit. In Mali Livestock II, there was little improvement until the spring of 1980 when Chemonics' Business Management Advisor, Mr. Pronovost, was asked to study the situation and provide some technical assistance to the Project's Financial Director.

(4) Facilities

Facilities remained inadequate, although there were some improvements. The second floor wing of the OMBEVI building was completed, which permitted several members of the Chemonics team and support staff to move in from Sotuba. The move resulted in greatly improved coordination between Chemonics and the Project Direction. There remained, however, the serious problem of frequent power outages, which knocked out the lights, air conditioning/fans and electric typewriters, bringing production work to a standstill. The problem of facilities obviously aggravated the problem of support staff mentioned above. At New Lands, it was eventually possible to obtain more space at the Virology Laboratory so an entomology/protozoology laboratory could be set up. There was no improvement in the facilities at Dilly; instead, serious and continuing deterioration was noted by the short-term personnel who worked there.

(5) Vehicles

As noted, USAID and Chemonics succeeded in persuading the Project Direction of the need for an Automotive Specialist on the Chemonics team. M. Nicholas Louis was appointed. M. Louis did achieve some improvement in the situation, but was hampered by the lack of facilities. The OMBEVI garage was not improved, either with respect to equipment, tools or personnel. Nor was M. Louis given any authority over vehicle assignments, routine maintenance, hiring and training of drivers or driver discipline, except in the case of drivers hired directly by Chemonics. Therefore, little significant improvement was achieved. In the spring of 1980, deteriorating conditions and the

persistence of Mr. Crosson resulted in the approval of the Project Direction to establish a project garage and repair facility, to be reimbursed eventually with monies from the Joint Fund. The facility was not operative until late 1980, in the following period.

2. Training and Communications

a. Contract Provisions

Amendment No. 3 called for a continuation of the training and communications activities started during the first period. In the words of the amendment:

The Contractor will continue to provide assistance in the further training of teachers and the expansion and improvement of training programs for Malian livestock personnel carried out at the Training Center at Sotuba and at Dilly. To the extent approved by the Project Director, the Contractor will assist in introducing additional training programs for personnel other than encadreur trainees, while still continuing training programs for such trainees.

The Contractor will give special attention to assisting in the up-grading of the training given to encadreur trainees in extension methodology suitable for conditions in Mali.

The Contractor will continue to assist in expanding the communications programs, including but not limited to the audio-visual program support to encadreurs and others involved in livestock and related development in Mali.

The Contractor will be responsible for the formulation of the communications program and the preparation of material necessary for this program.

The Contractor will assist Malian project personnel, including encadreur trainees and serving encadreurs, to carry out applied research projects into animal production techniques, forage production and range management. The GRM will ensure that reasonable space is available for this type of research at CRNZ/Sotuba and the APS at Dilly.

The only new element in this package is the requirement to assist encadreur trainees and other Malian project personnel to carry out applied research projects. As noted below, the team made extensive proposals for research, but the resources were never made available.

b. Completion of the Second Cycle

The second cycle of the training of encadreurs was completed in December 1979. The range management segment was given at Dilly, based on extensively rewritten training manuals and a great deal of field work. This segment was taught by Kalidou Diallo assisted by Mr. Wilkes. The course also used the plans for the test perimeter at Dilly as a model for range management planning. Trainees worked directly with the firebreak clearing teams and the herder associations, and then in the villages. Groups of four trainees were sent to six different villages where existing encadreurs were in residence. Here they worked to understand the existing livestock and range management methods and approaches to introducing change.

c. Applied Research

In response to the new contract requirement to assist with applied research projects, Chemonics' advisors in Training and Communications submitted a lengthy list of potential research projects, with suggested steps to carry them out, in September 1979. Research was proposed for Sotuba and the Dilly Center. Each proposal included estimates of the equipment, materials, personnel and operating funds required. The proposals were not acted upon by the Project Direction.

d. Third Training Cycle

It was hoped to begin the third training cycle early in 1980, and examinations were given in December 1979, to forty-two potential candidates from the Dilly area. The team made further modifications in the training manuals, and the new Communications Advisor, Mr. Daniel Dravet, prepared a new communications course for use in the third cycle. However, there were no operating funds available to start the cycle in February as planned. In fact, it was not until May, just before the end of that segment of the contract (and, as it turned out, the departure of two of the three Chemonics advisors to the Activity) that operating funds were found, logistical steps taken and the program started. This was a significant delay, because it meant that the third cycle had to be conducted with little or no input from the Chemonics advisors. It is also true, however, that by that time, the Malian counterparts had developed a good understanding of the material and good teaching methods.

e. Communications

With the departure of Mr. Citron in July, the Communications Activity had no advisor until Chemonics could recruit and field a replacement. The post was difficult to fill, requiring as it did a solid, practical knowledge of all aspects of communications, African experience and fluent French. Mr. Daniel Dravet, a Canadian citizen, was eventually selected, approved and posted to Mali in November 1979.

Mr. Dravet and his counterparts proceeded to carry out the communications work on a broad front. An inventory was made of all communications equipment, and missing items noted and sought. An improved inventory card system was

established to control the use of the equipment. In December, Mr. Dravet and M. Keita spent two weeks at the end of the field training of the encadreurs, monitoring the training and their interaction with the villagers. The monitoring included three-hour discussions with each of the twenty-four encadreurs, further discussions with village leaders and others, and some observations of the interaction of the two. A number of problems were noted. One was that most of the students had had, even at the end of their training, only one extension session with the villagers. There should have been more. There seemed to be a reluctance, and lack of opportunity, for the student encadreurs to have useful contact with the people of the villages in which they were living. Various suggestions were made to correct the problem.

As an additional step to monitoring the program, MM. Dravet and Keita participated at a monthly meeting between the encadreurs and the supervisory staff at Dilly Center. At those meetings, the encadreurs were required to present a monthly report of their activities and findings. It was found that the reports were extremely superficial and that the encadreurs had not been given any guidance or format. The discussion of the reports was equally superficial. Since this meeting was considered an essential link in the two-way communications process, the communications team made several strong recommendations for improvement and designed a reporting format for subsequent use.

The communications team also reviewed the brush fire film footage made earlier, re-worked the script with M. Baudry and others at Dilly Center, identified the gaps in the story and started the lengthy process of shooting additional footage. The film was completed in the following period.

Finally, the communications team experimented with a variety of communications approaches. One was the

broadcasting of a pre-recorded cassette, in Peulh and other local languages and using local music. The broadcast occurred from a landrover and covered a variety of points on brush fire-fighting. It also announced an upcoming program on fire-fighting organized by the Dilly Center and Chemonics personnel. In this instance, the result was poor as few of the villagers came out of their houses to listen to the tape.

In summary, however, considerable progress was made by the communications team in furthering the capabilities of the Communications Activity and its Malian staff. The monitoring of the encadreurs and trainers was also very helpful to the future direction of the program, although discouraging in its immediate effect. In fact, it served to illustrate just how hard it is to prepare a young technician to work effectively among traditional herders.

3. Sahel Grazing

a. Contract Provision

As noted above, at the end of the first contract period, USAID was sufficiently discouraged by the management problems at Dilly, the extreme difficulty keeping advisors working effectively there, and the relatively sparse results, that the activity was downplayed in Amendment No. 3. The amendment did call for a long-term range management specialist for Sahel Grazing, but the Project Direction made it clear that the only person who was acceptable was Dr. Naylor. Dr. Naylor had made it clear that he was available only for periodic visits as a short-term specialist, so the use of a long-term residential advisor was effectively ruled out.

Nevertheless, the contract itself required a rather high level of activity, as follows.

b. Livestock Development in the Sahel

The Contractor will participate in collaboration with project personnel, and especially those of APS/Dilly, to carry out improvement work and to make any other modifications necessary to put into operation range management and animal production plans in the Test Perimeter in the Dilly Pastoral Zone.

The Contractor will participate with project personnel to carry out range management and animal production plans in the Test Perimeter and the Dilly Pastoral Zone as a whole, through the encadreurs and herders associations. This will include, but is not necessarily limited to, assisting with the location and development of water points appropriate to the needs of the range management plans, the construction of fire breaks, the location and improvement of cattle trails, the provision of technical assistance to the Malian staff and the herders in the operation of range management plans, and the carrying out of other interventions which will improve livestock production in the area.

The Contractor will participate in the trial purchases of animals by weight at Dilly, in the training of Malian professionals and in the improvement of the infrastructure of the Dilly cattle market.

b. Range Management Work

In the end, Dr. Naylor had only one short-term assignment during this period, from September to December 1979. Upon his arrival in September, Dr. Naylor found the following situation. The range management plan which he had left had not been put into operation. The surface water point constructed before the rainy season had not been completed and had partially caved in when the rains came. He noted, however, that it had held water, did not leak and could be repaired before the next rainy season. In fact, repair work was never done. The wells which had been drilled as test holes had not been completed for exploitation (this task was being worked on by M. Dupuy, see below). The work of maintaining the primary firebreaks had not started.

Dr. Naylor then organized and carried out a major program of maintaining the firebreaks, working with crews from the center and from the village associations. A great deal of training was also carried out in the process. A total of 430 km. of firebreak was maintained, including fresh burning of the center strips in some cases and six km. of center strip mowing with the jari mowers supplied to the center by the project.

Considerable time was also spent implementing a recommendation for the construction of exclosures, or fenced areas, approved earlier. Exclosures were to be one ha. in size and were designed to keep the range undisturbed by grazing or fire in order to study the natural evolution of the range toward climax. The fencing was a considerable task, working with laborers entirely unfamiliar with the art of barbed-wire fence-making. Two exclosures were completed. Training was also given in sampling vegetation in the exclosures.

Dr. Naylor also spent considerable time redesigning the range management program in the test perimeter to meet some of the objections of the herders. He re-surveyed the area and made recommendations for adjustments in the test perimeter to make its management plan more rational, and made a lengthy list of recommendations for the step-by-step implementation of the plan. Finally, Dr. Naylor spent considerable time giving on-the-job training in fire fighting to personnel from the center and the village associations while actually fighting fires in the area. Inevitably, in the absence of an energetic, experienced technician following the departure of Dr. Naylor, no significant progress was made on implementing Dr. Naylor's recommendations or the management plan.

c. Water Development

Chemonics provided the services of an extremely well qualified Hydrogeologist, M. Jean Dupuy, from mid-September to mid-November 1979. M. Dupuy spent time in the test perimeter visiting the seventeen test wells which showed promise, testing their output, and preparing plans for their completion as producing wells. M. Dupuy was to return to Mali for a second short-term assignment in the spring to supervise the completion of the wells and the possible installation of the hand pumps. However, for family reasons, he was unable to do so. The work on the wells was continued without him, but with a significant delay.

d. Study of Options for the Test Perimeter

In the spring of 1980, it became clear that aside from firebreaks and wells, it would not be possible to implement the full program in the test perimeter within the life of the amendment. Therefore, the Project Director asked Chemonics to undertake a study of optional approaches to the development of the perimeter to be used as a decision-making guide should adequate funds become available at a later date. At that time, of course, it was not known whether there would be a second interim project year, nor whether there would be a full-scale, new project. After considerable discussion, the Project Director issued a scope of work for a comprehensive study of the test perimeter which would include an analysis of the possible approaches. Chemonics assembled a team composed of three regular members of the Chemonics team, Mr. Wilkes, Mr. Wagner and Ms. Shaw (the New Lands Economist), and two short-term specialists, Mr. John Topik, Hydrogeologist, and Mr. Tom Griffin, Rural Engineer. The team made several trips to Dilly and prepared the rough draft of a report by the time the period of

Amendment No. 3 ended. In the following period, the report was sent to Washington for re-writing, editing and publication. Unfortunately, the report had little practical utility, since USAID remained unwilling to make major investments in the test perimeter.

The only real progress in the Sahel Grazing Activity during the 1979-80 period was in the continued maintenance of the firebreaks, with further evidence from the herders that they effectively reduced the amount of forage lost to fire and thus improved the dry-season condition of their animals. Work on the exclosures was continued, and should have long-term research benefits if there is any follow up, and some progress was made on the all-important development of the wells. Little enough progress all in all. On the other hand, what progress there was was directly as a result of the efforts of the short-term personnel supplied by Chemonics. The experience demonstrated, if demonstration were needed, that one cannot expect anything significant to happen in an activity like Sahel Grazing without energetic, long-term technical assistance.

4. New Lands

a. Contract Provisions

Unlike Sahel Grazing, Amendment No. 3 of the Chemonics contract provided for a heavy emphasis on the New Lands Activity. The services of two entomologists and one economist were continued, and a protozoologist added to the team. The objective was to complete the detailed surveys, including the survey of the incidence of trypanosomiasis in the zone relative to the tsetse fly population and other factors, and the economic studies. Unfortunately, shortly after the start of the amendment period, Dr. Paul Van Wettere was recalled by his home institution in Belgium, and

had to leave in November 1979. He was not replaced, because by that time, operating fund shortages were disrupting the survey program. The provisions of the contract were as follows:

c. New Lands

The contractor will work with CVL and IER to carry out a comprehensive study of the cost-benefit and feasibility of a tsetse fly eradication or control program and, with the approval of the GRM and AID, of other programs aimed at reducing the incidence of trypanosomiasis, in the selected New Lands Zone. This work will include the following:

Assisting in the final delineation of the selected zone, the delineation taking into account the needs of the economic study and possible subsequent livestock and other development programs as well as those of the entomological study and possible subsequent control programs.

Using the material already collected on the subject of tsetse flies in the zone, determine the best method of eradicating or controlling the tsetse fly in the zone and the estimated cost of such a program. At the request of, and with the approval of, the GRM and AID, determine and describe alternative methods of attacking trypanosomiasis in the zone. Determine the cost of these alternative methods.

Calculating the cost-benefit ratios and the feasibility of the recommended programs and, if requested, the alternative programs. Making recommendations to the GRM and USAID as to which, if any, package of programs should be implemented.

In the course of working with CVL and IER in the accomplishment of the above tasks, the Contractor personnel shall provide training for Malian personnel assigned to the Activity. The GRM shall provide adequate personnel from CVL and IER to ensure that the tasks can be carried out.

Interestingly, although USAID believed that it was necessary to design and cost a development program for the zone which would complement the tsetse control program, the contract amendment did not so state. The requirement became simply to determine the best method, its cost (and the cost of alternative methods) and the benefit. This was a more reasonable goal.

The discussion of accomplishments and problems for New Lands is divided into three components: entomological surveys (including both tsetse population surveys and ecological surveys), protozoological surveys and the economics work.

b. Entomological Surveys:
Detailed Surveys of Zone 1

Because of the preparatory work which was done in the spring of 1979, it was hoped that the detailed surveys could begin as soon as the contract amendment was signed. The intent was to spend most of the 1979-80 year on the surveys, in order to have ample time to cover the area in both the rainy season and the dry season. Unfortunately, much of the equipment still needed repair or replacement (tents, cots, etc.) and the necessary operating funds were not available. At the same time, the team pointed out that the Challier traps, used the year before, and other auxillary methods of trapping flies, were inadequate for a detailed survey, and they urged that bait oxen be supplied. The questionable reliability of any detailed survey without the use of bait was stressed. As the delays in funding and furnishing supplies continued, the team advised that there was a serious risk of losing the rainy season survey.

Finally, in early September 1979, a minimally adequate fund was assured and the rainy season survey started. Personnel were divided into three sections, two allocated to tsetse population survey, starting from the northern part of the zone and moving south; the third was used for detailed ecological studies on the tsetse fly, needed as a basis for a sound recommendation for tsetse control. Dr. Van Wettere led one survey team, and Dr. Okiwelu, the second survey team and the ecological team working in the Monts Mandingues Forest Reserve, a known habitat of the key G. morsitans savanna species.

The surveys continued until November 13, 1979, when the funds ran out and work had to stop. The tsetse population surveys, which had been designed to cover the entire 20,000 sq. km. of the zone, covered only the northern part. Further, because of a combination of the usual problems-- inadequate transportation, breakdowns, bad weather, bad roads turned impassable by the rains, illness aggravated by the lack of medicines, a shortage of traps and the like-- much of the area surveyed was not done so adequately, and an unreasonably small number of flies were captured. The ecological studies, less dependent on long distance travel and bad roads, went considerably better and good information was obtained.

Following the termination of the rainy season surveys, the results were tabulated and considerable laboratory work was done. Dr. Okiwelu also carried out extensive laboratory training, on fly dissection among other topics. It was hoped to begin the dry season surveys in December, led by Dr. Okiwelu alone because of the departure of Dr. Van Wettere. However, once again, there was the problem of operating funds. None were made available until April 1980, near the end of the dry season. The result was a short dry-season survey in April and May. Since the roads were better, there was less trouble in that area, and a reasonable number of flies were caught.

In June and July, Dr. Okiwelu and his counterpart completed the tabulation of the data and the first draft of the report. Very extensive mapping work was performed by the counterpart, and that work extended into the fall.

The survey results were obviously far from what was hoped for at the beginning of the year. They showed once again the folly of providing expensive technical assistance without adequate transport, equipment and operating funds.

c. Protozoological Surveys

The protozoological work was the new element of the New Lands Activity, and was designed to determine the incidence of trypanosomiasis in the zone. As there was virtually no experience in large-scale surveys of this kind in Mali, the work was dependent on Chemonics' protozoologist, Dr. Malik Awan, who arrived in early September. Dr. Awan started by establishing a small laboratory among the cartons of laboratory equipment still awaiting larger space so they could be unpacked. He also gave basic training in survey procedures to his counterparts and capturers.

The surveys began in October. The basic system was to arrive at a village and, with the often grudging permission of the herders and farmers, draw three blood samples from as many different animals, of as many different types, as possible. The process was laborious because the animal had to be put on the ground first. In order to secure the cooperation of the farmers, a certain amount of veterinary treatment of sick animals was offered by Dr. Awan and the counterparts. Treatment, of course, required supplies of veterinary medicines which were difficult to get, given the funding shortages.

As with the tsetse surveys, it was important to get samples from both rainy and dry seasons. However, since so little was left of the rainy season because of the late start, it was necessary to continue the work during the following rainy season in the summer of 1980. Dry season surveys were beset with the same shortages as the tsetse surveys. In November, Chemonics advanced FM 1,000,000 to allow the work to continue. The work did continue sporadically through the rest of the year, and in the end, about 10,000 slides had been collected and many had been analysed. It was obviously necessary to continue the work

beyond the period of Amendment 3 and this was possible when Dr. Awan's position was included in the amendment of July 1980 (Amendment No. 5).

d. Economic Work

Unfortunately, little economic work was done during this period, mostly because of the deficiencies of the economist provided by Chemonics to replace Dr. Reeser, M. Philippe Ballan. M. Ballan arrived in Mali in late September 1979, having been recruited in France by Mr. Teele. He remained on the project until mid-February 1980. Although apparently a capable economist, M. Ballan exhibited an excessive concern for his housing and other personal matters, to the detriment of his work, and further exhibited a serious inability to work in a team situation as was required for the New Lands work. Mr. Ballan did some interesting background research on the economy of the zone and wrote some useful papers, but was never able to get started on the core of the work. At the same time, he tended to disrupt the work of the other New Lands personnel. Eventually, it was agreed by the Project Direction and Chemonics that he should be replaced.

Chemonics was fortunate to recruit, as Mr. Ballan's replacement, Ms. Alexandra Shaw, an American economist from Reading University in England. Ms. Shaw had considerable experience in the economics of animal health programs in Africa with particular reference to trypanosomiasis. She was a member of a group at Reading which is associated with the Departments of Animal Science and Economics, and specializes in the economics of animal health. She is also bilingual in French and English. Ms. Shaw immediately began to make up for lost time. In April she and her counterpart, Mr. Kamate, prepared a basic working paper for the studies to be done, a paper which noted that in the short time

remaining in the contract amendment, concentration would have to be on methodology and models with rough data, since time would not permit the collection of precise data. Assuming there would be a continuation of the contract after June 1980, it would then be possible to obtain the precise data and complete a proper report.

The paper, entitled "Aspects to be Considered in Developing a Cost/Benefit Approach to the Tsetse/Trypanosomiasis Problem and to Strategies for Dealing With It in Mali and Zone 1," took the position that the best approach would be to determine the financial magnitude of a program to control or eliminate the tsetse vector compared with the existing practice of limited chemoprophylaxis, and compare these costs with the anticipated benefits. These would include the direct benefits from a reduction in losses from morbidity, mortality and treatment costs, and indirect benefits from changes in land use and production methods which would be facilitated by effective control of the disease. There was general agreement with this approach, and the economic team spent the following three months elaborating upon the approach and gathering data.

5. Marketing: Feedlot Management and Accounting

a. Background

Originally, prior to Chemonics' participation, Mali Livestock I had several components, notably the Tienfala Feedlot, the development of the Doukouloumba Forest Reserve near Segou for more intense livestock use, and embouche paysanne, or the small farmer feeding program. By June 1979, the status of Project Mali Livestock I was, very briefly, that the Tienfala Feedlot had been constructed but had operated only in a very limited way. There had been no technical assistance since early 1979.

Embouche paysanne had been a considerable success, and was being operated without technical assistance. Work on the Doukouloumba Forest Reserve had seen some progress, but had not been completed. The technician, supplied by Checchi and Company under subcontract to Experience Inc. had unfortunately died on the job and was not replaced. Little if any further work was done. Project financial management, and financial management of ECIBEV, the implementing agency, had not received any technical assistance under the Experience Inc. contract and was in very serious disarray. USAID had financed a very comprehensive restructuring of the accounts by an outside auditor, and it was obvious that technical assistance was needed in this area.

Chemonics had worked closely with the project since 1977 and had carried out some procurement work for it. The company was pleased to have the opportunity to take over the technical assistance when Experience Inc. decided it did not wish to continue.

b. Contract Provisions

The contract provisions on this activity were the following:

d. Feedlot Management and Marketing

The Contractor shall work with ECIBEV to provide professional management to the Tienfala feedlot. The Contractor will assist ECIBEV with all phases of feedlot management, including planning, establishing of fees, construction, repair and maintenance of facilities, arranging for feed and other inputs, and financial management. The Contractor will be responsible for providing technical assistance to the forage and silage production operations carried out by ECIBEV in support of the feedlot operation.

The Contractor may provide the services of a livestock marketing specialist to assist ECIBEV in its livestock purchase and marketing program, including but not limited to operations related to the feedlot.

The intent, in Amendment 3, was to provide a long-term Feedlot Management Specialist for one year and a short-term Agronomist/Forage Specialist. The latter was to ensure that the production and storage of silage were properly carried out for the 1979-80 feeding campaign. He was also to develop a feed production program for future years. The final item, marketing assistance, was included in the amendment because Chemonics' candidate for Agronomist was also qualified in marketing, and could fill both positions. Amendment No. 4 was later signed to implement this idea.

Although business management and accounting assistance was obviously required for ECIBEV, and the contract provided a technical assistance position for the work, the scope of work in the amendment did not specifically mention this requirement. It was clearly intended and was carried out, however.

c. Feedlot Management

Chemonics recruited a very well qualified two-man team for work at the Tienfala Feedlot, Mr. Michael Asselin as Feedlot Management Advisor and Mr. Tito de Beca, Forage Agronomist, both of whom arrived in early September 1979. They found that the feedlot had been sadly neglected since the departure of the Experience Inc. personnel in early 1979.

The two-man team embarked on a multi-faceted program to prepare the feedlot for the 1979-80 feeding campaign. One element was repair of the equipment. The feedlot had several tractors, wagons, a manure spreader and a silage chopper. Most had been misused and were very much in need of repair. Fortunately, both technicians were skilled in equipment maintenance, and were able to carry out the repair work themselves while simultaneously training the feedlot

mechanic. This activity took considerable time and ingenuity, especially in seeking out spare parts, making them themselves in some instances, and locating specialized equipment. To illustrate the extent of the work, the following is taken from the September 1979 monthly report:

All wagons placed in operating condition, welding done, tires replaced, bearings lubricated, grader welded, repaired and modified for proper use, manure spreader assembled (Ed.: it had been in the possession of the feedlot for some time and used as a wagon--no one had known how to assemble it as a manure spreader), mower assembled, adjusted, parts replaced, disc plow assembled and adjusted and lubricated, tractors repairs, adjusted, tires replaced.

The maintenance work on the feedlot was also started, with the garage cleaned out, organized, spare parts inventoried, and the feedlot pens cleaned up and repairs started. Repair work on the feedlot and the equipment continued in this vein for several months.

The process of cutting, chopping and preparing sileage for the campaign was also started. By December 1979, when Mr. de Beca left, corn had been harvested from about seventy ha. of land and six hundred tons of sileage chopped and stored in four pit silos, three of which had been dug earlier. Two new silos were prepared closer to the feedlot; the original silos were 2.5 km. from the feedlot, thus requiring extensive transport of sileage to feed the cattle. In addition, about one hundred tons of hay were cut and stored loosely to be used as roughage in the ration. The lack of a hay baler made it difficult to make quality hay. A total of eleven fields were scheduled for land preparation for the next growing season, but because of the lack of labor and the slow pace at which they worked, only four fields could be completed. Work consisted of leveling and cleaning of prior crop residue, trees, roots and the like.

In December and January, the feeding operations started. More than four hundred animals were fed in the main feedlot,

for a period of several months, and others were held in the separate quarantine feedlot. The ration (per one hundred kg. live weight) consisted of 3.6 kg. silage from the pit silos, 1.8 kg. of cotton seed purchased from the cotton mill at Koulikoro, .08 kg. of molasses, and hay and minerals on demand. According to the records maintained at the feedlot (which were of questionable validity) the animals gained an average of 932 g. per day on this ration. The four hundred head were far below the capacity of the feedlot, of course, but given the small amount of time in which to repair the facility and get ready for the campaign, the small amount of feed available, the severe shortage of operating funds which affected this activity as well as the others, and the very serious management and personnel problems at the feedlot, it is probably just as well that the animal population was relatively low.

The problems were, indeed, numerous. Many stemmed from the basic fact that the feedlot represented an attempt to run a business operation by a government entity, a difficult proposition in any country. The feedlot was overstaffed in some areas, understaffed in others, had endless maintenance and operator problems with the equipment and the logistics problems any operation in Mali would have 60 km. from Bamako and dependent on Bamako for all support. In addition, the Chemonics personnel were only advisors, and did not have the authority to impose decisions and methods on Malian staff. They certainly could not hire and fire staff. Some of the staff were nonetheless well motivated; others were not.

Specific problems included disagreements over methods of providing feed (supplying the components separately, as the Malian manager preferred, or mixed, as Mr. Asselin wanted), animal handling methods (Mr. Asselin felt that the Malian staff handled the animals too roughly, with resultant injuries and general loss of condition), care and fidelity in the animal record keeping system, approaches to culling

undesirable animals, and the design and use of the dipping vat.

During and after the campaign, Mr. Asselin supervised another clean-up and repair of the facility, and some small capital improvements such as a loading ramp for cattle. Land was prepared and seeded to grow forage for the following year's campaign.

In summary, 1978-79 was the first year significant operations took place at the feedlot, the construction of which started in 1975. The costs were high and, obviously, the operation was not profitable in a commercial sense, but the effort did serve as an excellent demonstration of the feeding process and the operation of a modern feedlot.

d. Business Management

The objective of this assignment was to resume the work started by Deloitte, Haskins and Sells, auditors from Abidjan, and to design and implement a workable accounting and financial management system for ECIBEV which would produce auditable records and useful management information to ECIBEV and USAID. Before he left Mali in the summer of 1979, Mr. Norton, Chemonics' Business Management Advisor, went over the Haskins and Sells report and made several recommendations. Basically, he found the proposed accounting system too complex. Mr. Marcel Adam, recruited as a Chemonics advisor to ECIBEV, arrived in late September and also reviewed the Haskins and Sells material. He too found the recommended system unsatisfactory and proposed a series of changes, and ultimately a new system altogether. In December, the new proposal was accepted by ECIBEV and USAID, and Mr. Adam was asked to bring the ECIBEV accounts up-to-date using the system. He did so. He also made a series of proposals for increasing the accounting staff of ECIBEV and for changing its mode of operation.

These were not accepted. Mr. Adam decided, for personal reasons, to terminate his assignment early and departed at the end of February. He was eventually replaced by Mr. Adrien Theriault.

6. Construction

a. Contract Provisions

After two years of work, the project construction program was finally getting underway. As a result, USAID and the GRM agreed that Chemonics should continue to provide the services of a Construction Engineer to serve as a catalyst to the process. Mr. Wagner agreed to remain with the project after home leave. The contract amendment provided specific language on the subject:

f. Other Tasks

The Contractor shall assist the GRM in carrying out other tasks related to the project. This shall include construction. The Contractor shall not be directly responsible for construction activities under the project but shall participate in the preparation of plans and will collaborate in monitoring the construction work. Further, he will assist in the preparation, and the evaluation of requests for proposals and the drafting of construction contracts with the construction contractors.

Considerable progress was made on the construction program. It is described below under the following headings: Sotuba construction, Dilly water distribution, Dilly vaccination parks, and smaller assignments including New Lands storage, the Dilly Market and Dilly solar pumps. Some of these activities did not get beyond the design stage.

b. Water Distribution at Dilly

The Construction Engineer, Mr. Wagner, was appointed leader of a small Chemonics team to prepare a preliminary report on the best methods of completing the new wells at Dilly and providing for water distribution in a manner which would best contribute to range development. This type of study was especially important because, for local political reasons, most of the wells had been drilled near villages, or sufficiently near that they could be used for human as well as livestock consumption. Thus the danger existed that the range management objectives for the wells--opening up areas previously unavailable for dry-season grazing--would be lost. The report was presented to the Project Director in late August.

c. Sotuba Construction

Construction work on the Sotuba Training Center got under way in this contract period. Mr. Wagner served as an effective catalyst in each step of the process. Sealed bids from potential construction contractors were opened in August 1979 and analysed by both Genie Rural and Mr. Wagner. Before contractor selection, USAID advised that the scope of the construction had to be cut back, and so it became necessary to negotiate these reductions with the bidders. As a result, the contractor was not selected until November 22, 1979. The contract, with the Malian firm, Enterprise Generale, owned by M. Aliou Deita, provided four dormitory units, a dining hall/kitchen combination, one classroom building and a library/audio visual facility, an administration building, a "grand standing" house for the Director of the Center, and all utilities. The contract cost was FM 397 million, something over \$800,000 at the time. The actual contract was signed in December, and the construction work started in February 1980. Part of the

delay was occasioned by the fact that, in spite of the long lead time, IER, the owner of the CNRZ on which the Training Center was to be built, had not formally allocated the land. The construction work progressed during the spring, with Mr. Wagner putting pressure on Genie Rural to provide an adequate level of supervision over the contractor.

d. Dilly Vaccination Parks

The Project Direction suddenly put high priority on the design and construction of three vaccination parks at Dilly, and Mr. Wagner was asked to carry out the work. He designed the facilities in December and January 1980, and submitted the design for approval. The Project Direction approved and USAID agreed to make project funds available for construction of these facilities according to the designs. Tenders were issued to local contractors, bids were received and analyzed and a contractor selected, Metal Kouyate. The parks were then constructed under Mr. Wagner's supervision, up until his departure from the project in June 1980.

e. Other Construction Projects

Work was performed on several other construction projects. The idea of building an improved livestock market at Dilly was revived, and Mr. Wagner asked to prepare the designs. Before doing so, he visited the recently completed livestock market at Nara near Dilly, financed and built under a non-AID-financed project. He found very serious deficiencies in the design and workmanship, and reported these to the donor. He proceeded to design the Dilly market, taking advantage of the lessons learned from Nara. The plans were submitted to the Project Direction and USAID before Mr. Wagner's departure. To our knowledge, the project did not finance actual construction.

Mr. Wagner also assisted in preparing plans for the expansion of the New Lands space to permit the establishment of a proper project laboratory. The laboratory was finally established in early 1980.

Also in early 1980, USAID and the Solar Energy Laboratory of Bamako agreed to the experimental establishment of two solar-powered pumps in the Dilly area. Mr. Wagner was asked to prepare designs and assist in planning the related civil works. This work was also carried out before his departure.

7. Small Ruminants

a. Contract Provisions

The genesis of the Small Ruminants Project is described earlier. Work on this project was carried out in the first interim year, 1979-80, by grafting short-term technical assistance onto the Chemonics contact in Amendment No. 3. The contract language was the result of rather hard negotiations between Chemonics and the GRM. Chemonics, benefitting from two years of experience with the problems of resource availability and control, insisted that it could take very little responsibility for project results with so little input. It was further pointed out that the supervisory and logistics support which Chemonics could provide was limited. Supervision had to come from the Chief of Party, already overburdened, and the Chemonics home office, very far removed from the scene. The Malian negotiators favored giving Chemonics a great deal of responsibility for the final product, but remained unwilling to approve a major increase in the level of effort because USAID funding was not available. They also did not wish to give Chemonics authority over the course of the work. The resulting contract language was a compromise.

e. Small Ruminants (Petits Ruminants)

The Contractor shall provide technical and administrative support to the designated entity of the GRM in carrying out the activity known as the Small Ruminants Study. The parties recognize that this study, as designed by the GRM and AID, is to be carried out largely by Malian personnel. The Contractor will be responsible for training, planning and the implementation of the various phases of the study. He will provide administrative and logistics support.

During the period July 1, 1979 to June 30, 1980, the Contractor shall assist the GRM with Phase One of the Small Ruminants study and the first portion of Phase Two. Phase One shall be the collection and analysis of the information available, identification of gaps, and the formulation of plans to fill these gaps. It will be required for contractor personnel and/or Malian personnel to travel to third countries and perhaps the United States to seek information. Travel and related costs for Contractor personnel shall be provided under this contract, after having been submitted for the approval of the Project Director.

Phase Two of the study shall be a technical analysis of Small Ruminants production in Mali. It will involve extensive surveys throughout the country. The detailed planning and methodology shall be developed by the GRM with Contractor assistance after the completion of Phase One.

b. Start-up

The contract called for three short-term specialists to provide Chemonics' input to Phase I and Phase II of the Small Ruminants Project during the 1979-80 year (which in theory encompassed about one-third of the total calendar time to be devoted to the Small Ruminants Project): an Animal Husbandry Specialist and Team Leader, a Socio-Economist and a Statistician. Chemonics recruited Dr. Paul Martin as the Animal Husbandry Specialist, Dr. Martin de Vivies as the Socio-Economist and Mr. John Lippert as the Statistician. All three were fluent in French.

Chemonics Home-Office Project Supervisor arrived with the first two team members in October to start up the

project. Mr. Lippert joined shortly thereafter. From the start, it was apparent tht resources were not available to carry out the project as it was designed, especially the extensive survey required in Phase II. OMBEVI as the implementing agency had designated Mr. Karamogo Wague as the Project Director, operating under the Director General of OMBEVI, Dr. Almouzar Maiga. But there was virtually no other staff, no vehicles, no office space and very few operating funds. Further, within a very short time, OMBEVI dismissed Mr. Lippert and shortly thereafter, the Socio-Economist left on the grounds that the working conditions were not acceptable. Chemonics replaced the Socio-Economist with a very senior, experienced French Socio-Economist, M. Leon Bardet, but Dr. Bardet also found the working conditions impossible and left the project after a few weeks. Thus, Dr. Martin had to carry out the bulk of the work on his own.

c. Work Performed

Dr. Martin was able to do a considerable amount of useful work, completing Phase I, a major document search and analysis, and identification of gaps in available information, and part of Phase II, the design of a preliminary survey prior to undertaking the major survey.

Dr. Martin first spent time conducting a document search in Mali before returning to France in December to survey the very large collections of documents on the subject in French institutions. His contacts with key personnel in such institutions, including CEDES and IEMVT, were extremely helpful. Chemonics had proposed that at least one Malian member of the Small Ruminants team accompany Dr. Martin to France to gain experience in document search and make useful contacts in the institutions, but this proposal was rejected by the Project

Direction. Ultimately, Dr. Martin provided two reports as a result of his work: "Report on Existing Documentation" and "Report on Insufficiencies in Documentation and Means to Remedy the Situation."

His preliminary survey approach was presented and accepted by the Project Direction in late November 1979. The objectives of the preliminary survey, based on direct collection of information from veterinary posts in rural areas of Mali, were: (1) to obtain basic information needed to consider any immediate actions which might be taken, and to prepare for the more detailed survey; and (2) to give the Malian staff experience in conducting such surveys. Dr. Martin was able to design the preliminary survey and assist in its start-up phase, including a review of some of the early returns of questionnaires filled out by the surveyers at the veterinary posts. As virtually all of these were not prepared satisfactorily, he conducted further training before his assignment ended at the end of March.

With the departure of Dr. Martin, Chemonics was asked to provide no further technical assistance to Small Ruminants in spite of the fact that less than twenty-four work-months of technical assistance had been provided. We understand that the Malian staff continued with the preliminary survey, and a great deal of information was collected. We further understand, however, that at a certain point it was not possible to proceed with the tabulation and analysis of the information, and no further effective work was done. Chemonics believes that this experience corroborates its original contention: that the lack of trained Malian staff absolutely demanded significant amounts of expatriate technical assistance in all phases of the study. And the failure to provide this technical assistance was a fatal weakness in the project design.

D. Third Period, July 1980-June 1981

The first interim project year (1979-1980) had been intended to keep project activities going until a new livestock project could be developed. The new project was not developed during this period, however, and so AID and the GRM decided to continue to work on the project design, and to approve a second interim year for Chemonics. The negotiations, scope of work and personnel are described in Chapter II. In summary, the contract was amended in July 1980 (Amendment No. 5) to permit limited operations to continue for another year. Small additional amendments (Nos. 6 and 7) were later approved to permit Mr. Pronovost to become the project's Financial Director and to provide additional funds. The long-term team was reduced from fourteen to ten, with only New Lands and Marketing (Feedlot) receiving heavy attention. Sahel Grazing and Training and Communications were given only limited assistance. A major effort was made to correct the vehicle maintenance situation by establishing an operational project garage.

1. Contract and Project Management

As noted in Chapter II, a significant change in the wording of the scope of work took place with Amendment No. 5; Chemonics' responsibilities were couched in terms of "providing the services of a _____ specialist who will assist _____." This wording made the "assist" and "advise" relationship clearer. More importantly, it tied each element in the scope of work to a team member. If a team member or his position were eliminated at any time, the work he was to do was also, de facto, eliminated.

a. Contract Management

There were few changes. Mr. Crosson remained Chief of Party. Initially, Mr. Pronovost was the Business Management Advisor. In October, when Pronovost officially became Director of Finance, Mr. Georges Desilets replaced him in the former position. Ms. Joy Lucke served in the position as an interim measure.

(1) Vehicles

The major change in the area of contract management (and project management) involved the use, management and maintenance of vehicles. Amendment No. 5 provided that specific vehicles be assigned to the contractor for the use of specific individuals, and there were enough vehicles to take care of the needs of the reduced team. Although the vehicles assigned were, for the most part, in poor condition, this was still a major improvement and one which, we believe, should have been in effect from the beginning.

Secondly, the scope of work provided for definitive efforts to solve the vehicle maintenance problem. As part of Chemonics' responsibility for providing management assistance, the company was to provide an Automotive Specialist to direct the operations of the Mali II garage. The actual contract language was:

(1) The Contractor will provide the services of a Chief of Party and a Business Manager. These individuals will direct and administer the work of the contract team in Mali. In addition, these individuals will be available to the Project Direction to provide assistance in the planning and management of all elements of the project, although it is expected that the majority of such assistance will be provided to the Production activity.

(2) Further, the Contractor will provide an expatriate automotive specialist (mechanic) who will:

- (a) direct the operations of the Mali II garage,
- (b) train a garage and maintenance manager,
- (c) train mechanics,
- (d) direct and supervise the training of drivers, and
- (e) advise the Project Direction on such matters as vehicle maintenance, repairs, stockage of spare parts, and maintenance scheduling.

With the departure of M. Louis, the task fell to M. Henriey, a skilled mechanic whom Chemonics had hired locally several months earlier to manage the maintenance of the generators and other appliances. Eventually, Chemonics submitted M. Henriey as the replacement for M. Louis on the team, and he was accepted by the GRM and USAID in August 1980. Over the summer and fall, a complete maintenance facility was established and equipped. The Joint Fund did not have the money to finance the construction and equipment, or the large numbers of spare parts which were required for the maintenance work, so Chemonics advanced the funds, the total eventually reaching FM 32,000,000, or over \$75,000. This money was not reimbursed by the Joint Fund until USAID made a special deposit in the fund in April 1981. Thus Chemonics made an interest-free loan in this amount for several months in order to keep this phase of the project moving.

The effect on the vehicle situation was salutary. Although most of the vehicles provided to Chemonics were among the older ones on the project, they were kept in good operating condition and were rarely "down" for very long. Further, a program was started of towing inoperable landrovers from Dilly to Bamako, and rebuilding them at the garage. This was an expensive process, costing perhaps \$2,500 per vehicle for parts and outside services alone, but it did restore the vehicles to project use. Note that new landrovers cost, at the time, about \$15,000 plus shipping.

Unfortunately, not all project vehicles could be handled by the garage because of manpower shortages and, more importantly, lack of funds for spare parts. Chemonics was not able to finance spare parts for all project vehicles. Further, the Chief of the New Lands Activity was reluctant, for a long time, to send his "down" vehicles to the garage, presumably because it was not an official facility. Thus, New Lands continued to have vehicle shortage problems in spite of the availability of the garage.

Until Chemonics was reimbursed for the costs of establishing and equipping the garage, it continued to be a "Chemonics garage" operated entirely by Chemonics. It became a fully fledged "Project Garage" as soon as the payment was made to the Joint Fund in April 1981. From that date, there were some conflicts between M. Henriey and the Malian Chef du Garage over management of the facility. Still, the garage continued to operate efficiently and to ensure a reasonable level of maintenance to project vehicles.

(2) Management of Substantive Work

With the reduced team, and with the main objective in most cases of simply finishing the work, or keeping activities in existence pending completion of the new project design, the breadth of substantive supervision was much reduced. Mr. Crosson was able to devote more of his energies to administration and management assistance to the Project Director (as provided in the scope of work for Amendment No. 5). Further, a significant proportion of the project work at that time involved the publication of several major reports in two languages, including three for New Lands. The extensive editing and production requirements were considered to be beyond the resources of the Chemonics/Bamako office, which was fully occupied with

day-to-day typing and translation work. Also, the Chemonics team did not have, in Mr. Crosson or any other team member, a skilled and accomplished editor in either French or English. Therefore, it was decided to do the major editing and production work in the home office. Unfortunately, with the exception of the New Lands Economic Report, by Shaw and Kamate, the work had to be completed in the absence of the authors, who had submitted their drafts and left the project, and were essentially unreachable. The specific reports are discussed below under the appropriate activities.

b. Project Management

(1) Institutional Arrangements and Personnel

In November 1980, Dr. Fernand Traore was assigned to a six-month position outside of Mali, and Dr. Allasane Toure, who had been associated with the project for some years, replaced him. For the New Lands Activity, the Central Veterinary Laboratory took a more active role in the supervision of the work, replacing Dr. Sylla with Dr. Mody Toure. CVL's main interest was in the entomological and protozoological work; much less interest was displayed in the economic work.

The Director of ECIBEV was also changed, with the departure of M. Macky Diallo. After an interim period, Dr. Ousman Guindo, who had been Deputy Director of Mali Livestock II, was named as the Director of ECIBEV and was thus in charge of the Mali I feedlot and other operations. M. Diallo eventually became Directeur du Cabinet of the Ministry "Elevage, Eaux et Forets."

In the fall of 1980, there was a major change in the GRM with the splitting of the Ministry of Rural Development into two ministries, Agriculture and "Elevage, Eaux et

Forets." The Mali II Project was removed from the overall control of OMBEVI and its Director General, and placed with the Directeur du Cabinet of the Ministry of Elevage, Eaux et Forets, and the Director of the Direction Nationale d'Elevage. The project personnel remained housed at OMBEVI, however, and Dr. Toure remained as Director of the Project.

(2) Financial Management

From the date of the signing of Amendment No. 5, and even before, Mr. Pronovost had been working very closely with the Project Director and Financial Director in an effort to improve the project's financial management and accounting. He had considerable success, and the reports made to USAID were much improved. It had generally been agreed that Mr. Pronovost should be officially appointed to the Financial Director position, leaving M. Frantao Cisse as the Administrative Director, but this could not be done at the time Amendment 5 was negotiated and signed. It was later accomplished in October 1980 through Amendment No. 6,¹ which specifically appointed Mr. Pronovost to the position, and added money to the contract to finance the assignment for the balance of the year. Once officially in the Financial Director position,

¹"The Contractor will provide the services of a financial management specialist who will assume the duties and responsibilities of the position of Director of Finance, Project Mali Livestock II. The Specialist so provided will be directly responsible to the Director of the Project and will not be a member of the Chemonics team in Bamako although he will receive logistic support from the Chemonics element in Bamako."

Mr. Pronovost became a line employee of the Project and came under the supervision of the Project Director. In order to maintain an arms-length relationship with Chemonics, he was removed from Mr. Crosson's supervisory control, although the Chemonics team continued to provide his administrative and logistic support. Mr. Teele, in Washington, became Mr. Pronovost's Chemonics supervisor. In this direct-line role and authority, Mr. Pronovost was able to bring a high level of financial management to the project such that it became a model for other AID-financed projects in Mali.

Unfortunately, although Mr. Pronovost was able to provide good financial management, and even to locate funds in various accounts which could be used for project operating purposes, a severe shortage of operating funds continued throughout the period. The reasons were the same as during the prior period: the GRM had difficulty meeting its financial obligations to the Joint Fund, and USAID, to maintain pressure on the GRM, doled out its funds very slowly. The shortage of funds continued to interfere with project operations, even at their reduced level, and forced Chemonics to advance funds to keep some activities going.

(3) Language School

The project had been providing language training to both Malians and expatriates since its inception. It was one of the more successful project elements. Until Amendment No. 5, Chemonics had little official responsibility with respect to the language program, or language school, except to procure a great deal of equipment and materials. This procurement support continued under the amendment, but in addition, Amendment No. 5 provided that Chemonics was to employ the expatriate advisor to the language school locally. Also, as Financial Director of the project, Mr. Pronovost provided assistance in the financial management of the school.

2. Training and Communications

a. Contract Provisions

Amendment No. 5 retained only a single advisor in this activity, Mr. Daniel Dravet, the Communications Specialist. The scope of work required him to assist the activity in developing communications techniques for the extension program. The contract also suggested the possible use of short-term specialists in animal husbandry, range management and education. These were never requested and therefore were not provided. The relevant contract language follows:

2. Training, Communications and Research

(a) The Contractor will provide the services of a Communications Specialist to assist the Training, Communications and Research Activity (at both Sotuba and Dilly) in the development of and training in communications techniques in the extension program.

(b) The Contractor will provide the services of part-time and short-term specialists as may be required by the Project Direction in the fields of animal husbandry, range management and education (training).

A secondary purpose for retaining Chemonics representation in the T&C Activity was to ensure that the training program continue. This task was not set out as such in the scope of work, but Mr. Dravet did assist in the completion of the third training cycle and the start-up of the fourth.

b. Activities

As required by the contract, Mr. Dravet worked with his counterpart and other Training and Communications

staff in developing additional training aids and presenting communications training to third-cycle trainees. He also spent time in Dilly visiting the first- and second-cycle encadreurs in their villages and monitoring their presentations to the herders and other villagers. Monitoring included taping many of the sessions. The tapes, in Peulh and other African languages, were transcribed and translated for review. The results, which still showed many deficiencies in the presentations, including the accuracy of the information being dispensed, were set out in a report, and were the basis of extensive recommendations for improving the training and supervision of the encadreurs. Supervision, by the moniteur/animateurs at the Dilly Center, was obviously a major problem. The moniteur/animateurs did not visit the villages with any regularity. When they did, or when the encadreurs came into the Dilly Center, the supervision was not of a high level, since the moniteurs/animateurs were insufficiently trained for their work.

Finally, Mr. Dravet continued the extensive work necessary to complete the range fire (feu de brousse) film started by Mr. Citron. In the spring, the filming was completed and the forty-five minute film edited and assembled. It was sent to Washington for sound mixing in Peulh, a very long and difficult job given the communications problems between Bamako and Washington, and the difficulties in working with languages not understood by any of the technicians. The film was not completed until the following period, but has been judged to be very well done, and an effective method of sensitizing herders on the subject of fire. It has since been translated into Sarakole and Bambara, and has been widely shown in rural areas of Mali.

3. Sahel Grazing

a. Contract Provisions

The contract provided no specific personnel for the Sahel Grazing Activity, reflecting continued USAID reluctance to invest significant sums of money under the existing management conditions at Dilly. The scope of work simply required the contractor to be prepared to provide short-term specialists as required. The contract language follows:

(1) Sahel Grazing

The Contractor will provide such short-term specialists as may be required by the Project Director. This personnel will assist the APS with (a) the continuing development of the Test Perimeter, (b) the completion of previously dug wells, (c) the maintenance of fire breaks, (d) the construction of surface water points, (e) the development and implementation of range management plans, and (f) the study or studies of range conditions and ecology using, among other things, the previously built exclosures.

b. Installation of Pumps at Dilly

The only major work done under the contract in this period was the installation of hand pumps in thirteen project-dug wells in the test perimeter which were considered to be worth putting into operation. The work was done by two short-term Chemonics engineers, supported by M. Henriey and Mr. Pronovost. The second engineer was required because of problems and deficiencies with the first.

In December 1980, Chemonics was asked to provide the services of a French-speaking engineer to carry out the installation of hand pumps on the thirteen wells. The pumps, made by Robbins-Meyers of Cincinnati, were of a new design based on a displacing cavity, which means they could operate at very considerable depths. Chemonics recruited Mr. William Zahalka, an engineer of many years' experience, French-speaking. He first spent several days at the offices

and factory of Robbins-Meyers, learning about the pumps and acquiring the necessary tools for installation, and tools and spare parts for repair. This precaution was necessary because the same pumps had been installed elsewhere in Mali by other projects and virtually none of them had worked because of faulty installation.

Mr. Zahalka arrived in Bamako in February 1981. After gathering the necessary equipment in Bamako, he moved to Dilly for the installation. He was initially assisted by Messrs. Henriey and Pronovost, but the logistic support from the Dilly Center was again poor, as was the labor supplied by the center. Several of the pumps were nevertheless installed before Mr. Zahalka became involved in a fight with a driver and was asked to leave the country. Chemonics provided a second engineer, Mr. Andrew Karp, who went to Mali in April and completed the job. He found that some of the work done under Mr. Zahalka's direction was inadequate and had to be done over, particularly the cement slabs around the pump bases. The final installation consisted of putting the pump in place over the well, using a pipe with a double-helix lifting system which extended down to the water level, a large concrete slab around the top of the well and a piping system leading to a watering trough some fifty m. away from the wellhead. This system provided water delivery to cattle and people far enough away from the wellhead to avoid pollution by surface water or animals, as is frequently the case with Sahelian wells.

The effort at installation was difficult and time-consuming, but it resulted in operating wells using hand pumps. In the following period, it became necessary for Mr. Pronovost to supervise the repair of many pumps put out of action by misuse. They have since been repaired and continue to give good service and provide water to a water-deficient area.

4. New Lands

a. Contract Provisions

The task in the New Lands Activity was to complete the studies, including the protozoological studies, and submit reports and recommendations. The scope of work was quite clear.

c. New Lands (CVL)

(1) The Contractor will provide a Socio-Economist and a Protozoologist, who will assist the CVL activity or other designated entity of the GRM in the completion of the on-going feasibility/cost-benefit studies and related studies for a tsetse fly control or eradication program in Zone 1. This assistance will cover protozoological and socio-economic aspects.

(2) The Protozoologist will also assist in the continuing detailed studies of the incidence of trypanosomiasis and trypanosomes in Zone 1 and elsewhere in Mali as required.

(3) The Socio-Economist will also assist in the establishment and initial operations of a socio-economic unit for the economic impact of animal disease and animal disease control programs in the Republic of Mali.

b. Protozoological Studies

The amendment provided the services of the Protozoologist Dr. Awan for the entire year. It permitted him and his colleagues to complete the rainy-season studies which were only partially performed during the prior period, and to do the vast amount of laboratory work necessary to complete the survey.

The rainy-season survey was carried out between July and November 1980, with the usual, severe difficulties in operating funds and personnel. The same approach was used as in the dry-season survey: villages were selected

for study based on geographic and ecological considerations. In each village, blood samples were drawn from about fifty animals, with a representative sampling of the breeds present, plus a few sheep and goats. Three samples were drawn, a thin and thick blood smear from the ear and another from the lymph node (lymph node biopsy smear). In each case, the animal had to be put on the ground in order to draw the samples. For each herd sampled, a questionnaire was filled out covering herd composition and status, general condition of the livestock, history of disease, morbidity and mortality, clinical observations and use of trypanocidal drugs (which is often indiscriminate in Mali). In all, during the rainy-season survey, 3,542 head were sampled (three samples each) which, coupled with the 3,758 done in the dry season, resulted in a total of over 7,000.

The laboratory work started soon after the survey started, and continued for many months. Although Dr. Awan was assigned and had trained laboratory assistants, he viewed and analyzed most of the 21,000 slides himself. The microscopes supplied by the project were excellent, but the laboratory conditions were poor, with the usual power outages knocking out the microscopes and air conditioning. Dr. Awan's report, prepared in association with his two counterparts, Messrs. S. Maiga and S. Boure, was drafted in the spring of 1981 and the detailed maps prepared. The draft was then sent to Washington, after Dr. Awan departed from the project, and edited in both English and French before production. It was delivered in the summer of 1981.

Chemonics believes it to be an excellent report; it provides important information about the incidence of trypanosomiasis in Mali not previously available. The information is analyzed in several ways: by area, animal type, trypanosome type, and in relation to tsetse fly species, among others. The report found that over three percent of the cattle sampled in the dry season were

infected with trypanosomiasis, and over five percent in the rainy season, and that the disease was much more virulent, with more clinical evidence, in the rainy season. The report makes numerous recommendations about future surveys, approaches to control by chemotherapy and chemo-prophylaxis (which need to be rationalized) and the establishment of a Trypanosomiasis Research and Diagnostic Unit at the CVL, based on the lead provided by this work.

c. Entomological Studies

Chemonics had much more difficulty with the completion of the entomological work. The entomological team, led by Dr. Okiwelu, had written numerous interim reports, as discussed above, and had made the results of the final analysis available to Ms. Shaw and the economic team in the summer of 1980. The draft was also submitted to Dr. Telly for approval in late July 1980, before the report could be edited and translated, and before completion of the numerous maps, which were the responsibility of his counterpart. As with Dr. Awan's report, Chemonics decided to do the editing and production work in Washington. Editing, however, required the availability of the maps, and Chemonics made repeated requests to Dr. Telly to send them. Unfortunately, the maps were not made available until the spring of 1981, almost nine months after Dr. Okiwelu's departure. At that point, work resumed in Washington and the report was typed in both languages. However, during the edit and review, inconsistencies were discovered between the maps and the text, and others between the text and the tables included in the text. These contradictions could not be settled without Dr. Okiwelu, then teaching in Nigeria. After lengthy efforts to reach Dr. Okiwelu, he agreed to work on the report to resolve the contradictions, but because of his very crowded schedule, he advised there would be a significant delay.

Chemonics had the choice of publishing the report as written, with the contradictions included, or waiting. Since the key information had already been provided to Ms. Shaw and included in the cost/benefit analysis, which was its primary purpose, and since the report could expect a wide and critical readership because of the importance of the subject matter, Chemonics decided it would not be in anyone's interest to publish a defective report. Dr. Okiwelu is still working on the report. As of the date this final report was written, he had not completed the work.

d. Economic Studies

The economic studies, set out in Ms. Shaw's March 1980 report, were completed during the 1980-81 period. Ms. Shaw continued on the project as a short-term specialist, but as a result of other commitments, she had to leave the project for a few months between October and February.

During her first assignment, from July to October 1980, Ms. Shaw and her counterpart, M. Kamate, continued field and desk research on the report and the calculations of the cost of a tsetse fly control program in the zone, based on the work of Dr. Okiwelu and the Entomological section. She and M. Kamate also prepared first drafts of many of the report sections. When she departed Bamako in October 1980, M. Kamate continued the research in areas where additional information was required. Ms. Shaw returned to Bamako in late February to complete the work. After a short time, she and Chemonics decided that it would not be possible to do so in Bamako given the difficult working conditions and lack of secretarial support. Accordingly, in March, Ms. Shaw was brought to Washington and worked with Chemonics' editor and other home-office staff to produce a 280-page report in both English and French.

The report, delivered to the CVL and USAID/Bamako in July 1981, covers the following areas: a detailed description of Zone I, including the cattle population, agriculture and land use; an analysis of the costs of possible strategies aimed at reducing the incidence of trypanosomiasis in the zone (including treatment and prophylaxis, costs of protozoological work and the costs of a tsetse fly control program); an analysis of the direct and indirect benefits of the eradication of trypanosomiasis; and conclusions. The report compares the costs and benefits of several different strategies (combinations of eradication of the vector, prophylaxis and treatment) and concludes that vector control or eradication is not cost beneficial under the circumstances, and that the strategy of choice is stragey No. 4, prophylaxis of work oxen plus treatment of other cattle (assuming better organized treatment and an end to clandestine injections of animals). The report further states that a definitive answer on vector control would require more information about the costs and effectiveness of the barrier along the southern edge of the zone, required to prevent re-infestation, or the establishment of a much larger zone with or without a natural barrier.

Chemonics believes that the report is excellent and is, in fact, a model of research work of this kind. We fear that it has been insufficiently studied by GRM and USAID officials charged with the responsibility of making decisions about further work in this field. In any event, for Chemonics and the requirements of the contract, it represents an appropriate conclusion to the first phase of the New Lands work. It should certainly be the basis of any future work, should the very considerable sums of money to finance such work become available.

5. Marketing

a. Provisions

The marketing work received considerable attention during this second interim year, with three advisors assigned: a Feedlot Management Advisor, a Marketing/Forage Specialist and a Financial Management Specialist. The contract language follows:

4. Specific Tasks for the Period July 1, 1980 - June 30, 1981

a. Marketing

The Contractor will assist ECIBEV by:

(1) Providing a Feedlot Management Advisor to assist in the management of the Tienfala Feedlot.

(2) Providing a Marketing/Forage Specialist to assist in the expansion and improvement of the forage production and storage program at Tienfala carried out in connection with feedlot operations. He will assist ECIBEV in obtaining data on costs and effectiveness of various types of forage.

(3) Providing a Financial Management Specialist who will assist in the financial management of ECIBEV.

(4) The Marketing/Forage Advisor and the Financial Management Specialist will also provide assistance to ECIBEV efforts to expand the Embouche Paysanne program. This assistance will be concentrated on the buying and selling activities of ECIBEV and on the introduction into the program of farmer-grown forage crops as a partial replacement for cotton seed.

(5) The Contractor will provide the services of a Financial Management Advisor who will provide financial management services to ECIBEV (in its various programs such as the Tienfala Feedlot and the Embouche Paysanne program as described in sub-section a. above) and to the Central Veterinary Laboratory.

b. Feedlot Management

The feedlot management work was quite similar to that in the prior period. Initially, it was handled by

Mr. de Beca, who remained from the prior year. Mr. Asselin had decided not to return, so Chemonics eventually recruited Mr. Joe Feffer, who arrived in November 1980. Prior to Mr. Feffer's arrival, Mr. de Beca had provided technical assistance to the feedlot operation and supervised the harvesting and chopping of corn, sorghum and other forage crops. In spite of difficulties with the equipment, exacerbated by shortages of funds for speedy repairs, a total of 360 tons of silage was prepared for the campaign.

With the arrival of Mr. Feffer, efforts were intensified to prepare the feedlot for a much increased level of use. Repairs were made to many of the structures and some were redesigned for more efficient operation. An effort was started to build a new quarantine pen in a new area, because of the poor location and dilapidated condition of the existing facility; however, this effort was stopped by the Director of ECIBEV. In late December 1980 and January 1981, the campaign started with 970 head of cattle in the program. At the same time, because there was no qualified Malian feedlot manager available, Mr. Feffer was appointed to the post. However, he was not given the necessary authority, and extended negotiations were required before he was given that authority. The feeding season continued for several months, and although problems continued with equipment, personnel, inadequate operating funds, lack of feed and the concomitant need to change rations frequently, significant weight gains were recorded. During the feeding season, Mr. Feffer and, until his departure, Mr. de Beca, continued to carry out improvements in the operations and facilities.

c. Financial Management

Mr. Theriault provided day-to-day financial management services to ECIBEV during most of the period. In

February 1981, there were disagreements between Mr. Theriault and the ECIBEV Director, Dr. Guindo, over the amount and quality of the work being done. Although Chemonics attempted to take remedial steps, Dr. Guindo requested his replacement. Mr. Theriault departed on March 15 and was replaced by Mr. Paul Carbonneau, who remained with the project until the end of the amendment period, June 1981.

E. Fourth Period, July 1981-December 1982.

As discussed in Chapter II, despite effort by both USAID and the GRM, it was still not possible, during the 1980-81 period, to design a mutually acceptable continuing livestock project for Mali. A major problem was a general view in AID/Washington, and USAID/Bamako, that livestock development projects in the Sahel had not been successful. This view was expressed in many forums, including the second livestock and range management conference sponsored by AID/W in November 1980, following up the larger conference at Harpers Ferry in November 1978. A major problem was a continuing inability to obtain agreement among the experts on the best technical approaches, or even whether any approaches, except possibly direct animal health improvement projects, could be counted upon to do any good. Faced with this uncertainty, and falling AID expenditure levels for the Sahel, there were serious questions as to whether such projects should continue. The GRM took the position, with considerable justification, that livestock was still a mainstay of the economy, that progress had been made and that AID should follow through on its commitment. All parties agreed that livestock projects of any kind require very extended periods of time in order to bear fruit. USAID (and Chemonics) felt that any new project should include provisions for much stronger management of project resources.

In any case, it was clear that, if there was to be a new project of any kind, it was important not to lose all momentum gained under Mali Livestock II. Thus, both USAID and the GRM favored a minimal continuation of the project, including a minimal level of technical assistance until a new project could be put into place, or until a decision to terminate such assistance was taken. Two positions, that of Financial Director, Project Mali Livestock II, and Feedlot Management Advisor, were selected for continuation, because (1) they were key to preserving the momentum and integrity of project resources, and (2) the incumbents, Messrs. Feffer and Pronovost, were very well regarded and willing to stay on as a very small team.

Unfortunately, the funds provided in Amendment No. 8, designed to retain the services of these two individuals for another year, were not sufficient to do so. A series of amendments were required, first to allow the technicians to remain in Mali through the end of June 1982, and then, because the new project was still not ready, through the end of December 1982. At that point, the new project was finally ready. The new project, which provided technical assistance largely through a PASA with USDA, plus other contracting arrangements, also provided for the continued services of a Financial Management Advisor and a Marketing Advisor. Chemonics was requested to provide Messrs. Feffer and Pronovost for these positions through a new contract directly with USAID.

1. Project and Contract Management

With the contract reduced to such a low level of effort, with only two team members and few financial resources, project and contract management became much less demanding. Since Mr. Pronovost was still serving in a direct line position as Financial Director of Mali Livestock

II, Mr. Feffer became Chief of Party. In addition to his technical duties at the feedlot, Mr. Feffer represented Chemonics' interests and managed the project equipment and materials assigned to or owned by Chemonics. This included collecting, inventorying and storing furniture and appliances, signing over most of the office furniture and equipment to the GRM and shipping most of Chemonics' documents, especially financial records, back to Washington. Mr. Feffer was also responsible for clearing up loose ends from the prior period, including settling with the landlords, settling utility bills and some outstanding accounts. These were demanding tasks which Mr. Feffer performed very well. Mr. Pronovost assisted when necessary and, in Mr. Feffer's absence, took over the representative role.

2. Marketing

Mr. Feffer devoted most of his time to the management of the Tienfala feedlot. Under his direction, a good sorghum crop for silage was harvested and put in the silos in the fall of 1981. Considerable effort was also put into cleaning and repairing the facilities and equipment for the new feeding season. Unfortunately, when the season started in January, ECIBEV had severe cash flow problems and was unable to purchase cattle or cotton seed and molasses, so only about three hundred head could be put into the feedlot. Since enough silage had been produced, at great effort, for two thousand head, this was very unfortunate indeed. Mr. Feffer was able to take advantage of the low numbers of cattle to introduce improved handling and animal health measures, with a resultant drop of mortality and an excellent demonstration of the methods. Experimentation with the growth stimulant Ralgro was carried out, demonstrating the effectiveness of such practices. In the

spring, as usual, considerable time was devoted to land preparation for the next rainy season.

In short, Mr. Feffer was able to assure the continued operation of the feedlot, but the cash shortage prevented the operation from reaching maximum size.

3. Financial Management

Mr. Pronovost continued to serve as Financial Director during the entire eighteen-month period. There is little specific information to add regarding this work; he continued to perform at a very high level. In March 1982, he assisted a team of auditors provided by AID/W in their investigation of the financial management status of several AID-financed projects including Mali Livestock II. By coincidence, the former Financial Management Advisor to Mali I (ECIBEV), Mr. Carbonneau, was also in Mali at the time of the auditors' visit, serving as Financial Manager of ODIPAC under a new Chemonics contract financed by the World Bank. He was also able to assist in the auditors' review.

This concludes the narrative discussion of the work carried out over five and one-half years, during which Chemonics provided technical assistance to the livestock projects in Mali under Contract REDSO/WA 77-96. In the chapters which follow, Chemonics provides an evaluation of the project and its own performance, including lessons learned and recommendations.

CHAPTER IV
ACCOMPLISHMENTS AND NON-ACCOMPLISHMENTS

A. Introduction

The purpose of this chapter is to distill, in summary form, the accomplishments of Mali Livestock II and Mali Livestock I (after June 1979). It also treats project failures, or things that were not done successfully. The presentation is organized according to individual activities. For each major failure, we offer a very brief statement of what we believe to be the causes. These reasons are discussed in somewhat more detail in Chapter V on "Main Problems Encountered."

B. Training and Communications

1. Training Results

Three cycles of trainees were trained as encadreurs in livestock and range management. The total number, about sixty, was far less than originally intended, but a reasonable number considering the capacity of the GRM to absorb them into the various development programs including the Sahel Grazing Activity.

Based on Chemonics' own monitoring of the trainees, the training was sometimes of questionable quality. The trainees do not appear to have retained or been able to use much of what they learned. The quality of the training did improve over time, however.

Reasons for the questionable quality of the training are several: the academic level of the trainees, the

failure to adapt the training materials adequately to the level of the trainees and the Malian context, the reluctance of both Chemonics and Malian staff to use sufficiently imaginative training methods and, to some degree, the weak training skills (as opposed to subject matter knowledge) of some of the Chemonics personnel.

Virtually no other types of training were provided, in spite of the availability of other training resources, largely because the Project Direction did not feel it was justified.

2. Communications Results

Three cycles of trainees were trained in communications as well. The impact of this training seems to have been minimal, for the reasons stated above. Very useful experimentation and demonstration work was done in communications under both Mr. Citron and Mr. Dravet. It included audio-visual systems for outward communications, and interviews and taping for inward communications. No coherent, comprehensive communications system was established, however. The main reasons were: (1) there was never real agreement among the parties as to what such a system should be; (2) any such system would have been far ahead of the rest of the project, particularly the Sahel Grazing Activity, or any other development project currently in Mali; and (3) there were inadequate resources for any comprehensive communications program, including Chemonics resources--no single advisor could be expected to carry out a comprehensive program--Malian counterparts and financial resources.

Some specific communications outputs were achieved. A good example is the feu de brousse film which has been judged to be excellent by many outside observers and has been used to good effect in Mali.

3. Results in Institution-Building

The project did establish a training institution of good quality which was able to provide a meaningful educational experience to its students. This was done with very inadequate resources, including physical facilities. It was done by people with little experience in setting up and operating a school. With somewhat more resources--the addition of an expatriate advisor with specific experience in establishing training institutions in developing countries, and a Malian counterpart with similar experience--the institution-building could have been very effective.

No institution-building was achieved in communications, for the same reasons stated above, i.e., the failure to develop a comprehensive, coherent communications program.

In our view, the reason additional resources were never provided was that all parties were unclear as to just how much institution-building was desirable. A basic question was whether the project should establish a new training institution, or whether it would be better to work with an existing institution. The documentation made it appear that the logical method of working with an existing institution was being followed, by placing the activity at CNRZ Sotuba. But CNRZ was not in any way a training institution; Sotuba was never more than a landlord to the program. Perhaps, once the new buildings were in place, Sotuba would have been glad to claim the institution and provide it with some institutional legitimacy, but the project effectively ended before the construction was done. Thus, in effect, the project ended up establishing a new institution, without quite enough resources and without a real understanding of the requirements for doing so.

4. Impact on Livestock Development

The impact of the Training and Communications Activity on livestock development in Mali is difficult to evaluate. If the program continues, improves and expands, the impact could be considerable, assuming graduates have solid projects and real resources with which to work. The training program could, in fact, make a major difference in the effectiveness of all livestock development projects in Mali. On the other hand, if we assume the program achieves no more than it did during the life of the project, that is, trains some sixty lower-level encadreurs, then the impact would be quite small.

C. Sahel Grazing

1. Livestock and Range Management Improvements in the Sahel

A plan of physical developments and range management was prepared, on the ground, for the 140,000 ha. test perimeter in the Sahel. Herders associations were formed to work toward implementation of the plan. The minimum, basic physical improvements were made, several hundred km. of firebreaks and about thirteen drilled wells, some in locations where they would increase the area of dry-season forage. Considerable training in fire-fighting and somewhat less in range management was provided. Some increase in animal health services was achieved, although this task had little Chemonics involvement.

These improvements took an unreasonably long time to achieve, with the result that significant project funding--and technical assistance services--dried up before improvements could be effected or evaluated, and before the range management plan could even be tried. Further, many

other possible physical developments, such as surface water points and vaccination parks, were not installed. The effort, therefore, was not really completed or given a fair test.

The reason for the delays and failures was in large part the very weak management of the Malian agencies and personnel, including the management of the Dilly Center, and its "rear base" from Bamako. Also, confusion and competition between the "American" project and the "French" FAO-financed project in the same area, and the resultant disagreements about approaches and erratic decision-making, had negative results. Finally, several of the expatriate staff sent to the Dilly zone were unsuitable for the work.

2. Additions to the "State of the Art"

The Sahel Grazing Activity offered an excellent opportunity to test approaches to range management and livestock in the Sahel and thus to shed some practical light on longstanding debates and disagreements on the subject. There were some achievements, many of a negative nature. Examples include the impracticality of trying to construct surface water points by hand, and the political necessity of providing humans with water before or simultaneously with livestock. Longer-term examples include the exclosures constructed to permit the range to move undisturbed toward climax. If these are followed up, they could provide very useful information.

Generally, however, experimental opportunities were lost. Little rigorous information was obtained about current practices, and no study of the effect of interventions was made. No real forage research was accomplished, and the hay-making research was aborted before it could be completed. No resources were available to make

any sort of rigorous study of the impact of the firebreaks, water points or the grazing associations. Thus, Chemonics' own study of range management and livestock in the Sahel was able to profit very little from the lessons of the Sahel Grazing Activity.

The main reason for this failure, in Chemonics' view, was that the Project Direction rejected serious research proposals, on the grounds that: (1) all necessary research had already been done; (2) Dilly was not a research station; and (3) research would become the goal to the detriment of implementation. Thus, research was simply not permitted. Secondly, the management problems at Dilly made research very difficult if not impossible. Thirdly, no resources were provided for serious research. We should add that most of the team members sent by Chemonics to Dilly were capable of and interested in carrying out applied research.

3. Impact on Livestock Development

Although we are unable to quantify it, the work of the Sahel Grazing Activity did have a significant and immediate impact on livestock and range management in the test perimeter. Water was made available, previously unavailable forage was made available, and forage was saved from fire. Cattle in the area were maintained in better condition than would otherwise have been the case.

D. New Lands

1. Additions to the "State of the Art"

The New Lands Activity had two objectives: (1) a comprehensive series of surveys and studies, both scientific and economic; and (2) some experimental tsetse control work. Both were designed to increase knowledge about the subject

and, possibly, to lead to major efforts to reduce the impact of trypanosomiasis on the Malian economy.

With respect to the first objective, the studies were carried out essentially as planned. The only major change was that the idea of designing and costing a development project to complement trypanosomiasis control was discarded. It remained in the plan for almost three years, but was neither realistic nor practical, and its deletion was a major improvement. The surveys did, indeed, add greatly to the knowledge about tsetse flies, trypanosomiasis and the economics of the fight against them.

The second objective was not achieved because: (1) the accomplishment of the first objective was a necessary prerequisite of the second, and the first was completed only at the end of the project; (2) even had this not been the case, it is unlikely that USAID would have financed a major tsetse control trial given the negative cost/benefit findings of the study and the overall shortage of project funds.

Although the studies were completed, they required about twice as long as planned. We believe that the original planning was overly optimistic; completing all of the required work in two years was highly unlikely. On the other hand, if the first step, selection of the two zones, could have been done on the basis of very brief studies only, which was certainly possible, then a great deal of time would have been saved.

Apart from overly optimistic planning, the work did take much longer than necessary. On the scientific side (entomology, protozoology), the main reasons were the very late recognition by all parties, including Chemonics, of the need for a protozoologist, and the very serious twin problems of poor management and inadequate resources. The impact of inadequate resources is amply described in Chapter III.

With respect to the economic studies, part of the reason for the delay was the impractical design calling for an overly elaborate and demanding cost/benefit study including the creation and costing of a hypothetical development project. Perhaps the principal reason, however, was the inadequacy of some of the economists supplied by Chemonics to carry out the work. A second reason was the failure of IER to participate seriously in the work or to provide enough counterparts. Of the four economists, two were incapable of recognizing that the design had to be changed, or of making any meaningful progress toward getting the work done. Between them, they caused about eighteen months' delay. A third economist, Dr. Reeser, did a credible job in getting the initial report done so that the zone could be selected, and also recognized that the design for the detailed effort was faulty. He was unable to come up with an alternative acceptable to the Project Direction, however. The final economist, Ms. Shaw, was ideally suited to the task. She achieved an acceptable re-design and carried out the work with excellent results.

2. Institutional Development

A great deal was accomplished in this area. The project created excellent field research and survey teams in both entomology and protozoology. Eventually, they were backed with a very fine laboratory in spite of its location in inadequate facilities. An excellent capability was thus created and should have been used for the continued survey work. But with the end of the project, much of the institutional development was lost. Further, the institutional capability should undoubtedly have been located at the Central Veterinary Laboratory, and it is unfortunate that personality and bureaucratic problems prevented this from happening. With respect to the economic

side, Ms. Shaw made a major effort to institutionalize the economic research work, but the lack of interest on the part of IER and its unwillingness to work closely with another agency, the CVL, prevented any real progress in this area.

3. Impact on Livestock Development

Since the New Lands Activity was a study activity, it had no immediate or direct impact on livestock development in Mali. The potential, however, was and is great. The work points the way toward an effective, cost-beneficial program of animal disease reduction in Mali and provides the economic justification which donors need to provide financing.

E. Marketing

This activity was carried out in two entirely separate phases and so is discussed in that way.

1. First Period: Market Research and Information System

The work in this period, consisting of the efforts of one Chemonics advisor, Mr. Balmir, accomplished virtually nothing. A few reports of some interest were prepared but were basically rejected by the Project Direction and their information and recommendations ignored.

The reasons for the failure were two: (1) the manner in which the activity was designed, calling for the establishment of a market information system, of questionable value, and with virtually no resources; and (2) the deficiencies of the advisor, who lacked the flexibility and energy necessary to carve out a useful role and carry out the work. It should also be stated that the Chemonics Chiefs of Party, including the two authors of this final

report, failed to give adequate leadership in this area and to assist effectively in defining a reasonable scope of work for Mr. Balmir.

2. Second-Fourth Period: Feedlot Management and Financial Management

a. Feedlot Management

The management of the Tienfala feedlot was theoretically a straightforward, operational task, involving the production of silage, purchase of other rations, repair, maintenance and actual operation of this facility. The fact that it was a government enterprise with many, bureaucratic inefficiencies, made the task much more difficult. Still, the main objective was achieved: the facility was operated, cattle were fed and there was weight gain, rather than the usual weight loss, during the dry season. Bamako and the export markets benefitted from more and better meat. The technical (if not financial) benefits of dry-season feeding were demonstrated.

Obviously, the operation did not go smoothly. There were relatively minor problems with some of the Chemonics personnel, but generally they did a good job. The management was, as noted, erratic. And cash shortages prevented the feedlot from handling the number of head for which it was designed virtually every year.

b. Financial Management

With Chemonics' assistance, the financial affairs of ECIBEV, in very poor disarray in July 1979, were put into good order. The effort took longer than it should have because ECIBEV resisted giving Chemonics' accountants sufficient authority and because there was excessive turnover among Chemonics personnel--three advisors in two years.

F. Small Ruminants

1. Additions to Information Available

The Small Ruminants Project, in Phase I, did make a small contribution to the information available on small ruminants in Mali and West Africa. It was achieved through the two reports by the Chemonics short-term specialist, Dr. Martin. In our view, the rest of the project work, a partial survey carried out by the Malian staff of the project, was poor and did not constitute a genuine achievement. We believe that this experience demonstrates the need for leadership of experienced personnel, Malian and expatriate, strong management of resources and energetic, high-level support in order to conduct successful surveys of this kind.

2. Institutional Development

This project might have resulted in the creation of a strong small ruminants development unit at OMBEVI. It did not. It did not because resources and management were not provided.

3. Impact on Livestock Development

Since the study did not yield significant useful information, and since no development interventions at all were carried out, or brought any closer to being carried out by the project, we conclude that there was no impact on livestock development, actual or potential.

G. Construction

A certain amount of construction work was accomplished by the project, notably the Dilly Airstrip and the Sotuba Training Center. The former was used to further the aims of the project and thus had a definite impact. The latter was completed after the effective end of the project and thus had no direct impact on it. It may prove of considerable value in the future. Numerous other construction projects were planned and carried through the design stage. Most of them were not actually built because of delays and because USAID declined to provide funds. With the exception of the Dilly Airstrip, the construction work was very slow to materialize. The need to coordinate work through the Malian Project Direction and USAID, working thorough Genie Rurale, proved to be very unwieldy and slow. Chemonics' role, to provide a single engineer as a catalyst, with no power and few resources, was useful but inadequate to speed things up sufficiently.

H. Financial Management, Mali Livestock II

Once Chemonics was able to have a direct impact on the financial management of the project, when Mr. Pronovost became Financial Director in the fall of 1980, a great deal was accomplished to give the project high-quality financial management. This was significant, not only because of the improvement in project management, but also because it demonstrated that an AID-financed project could have the benefit of good financial management if the right expatriate specialist could be given the authority to provide it. Since poor financial management in projects in general was threatening the entire AID assistance program in Mali, this was an important contribution.

I. Summary Comments

In spite of all of the problems, the projects did register significant accomplishments, some of which had a direct impact on the livestock sector of Mali. Many more have potential impact if the basic work can be followed up in the coming years.

CHAPTER V
MAIN PROBLEMS ENCOUNTERED

The previous chapter alludes to numerous problems encountered by Chemonics (and USAID and the GRM) in carrying out the Mali Livestock Projects. In fact, all previous chapters discuss these problems; they were, after all, serious impediments to progress and always uppermost in the minds of most project participants. Here we attempt to organize the discussion of the main problems by discussing them individually, in an orderly if summary manner. The final problem listed, deficiencies in the contractor's performance, leads into Chapter VI, which is a self evaluation of Chemonics' performance on the project.

The main problems covered are: (A) Project Design, (B) Contractual Ambiguities, (C) Conflicting Philosophies, (D) Project Management by the GRM and USAID, (E) Lack of Resources and (F) Contractor Deficiencies.

A. Project Design

The design of the project, carried out over an extended period in the mid-1970s, was deficient in three general respects: it was overly optimistic in its estimates of what could be done in the time available; and it was based on a misunderstanding of the situation, particularly the resources provided; and it did not tie outputs to responsibility and responsibility to authority and resources.

On the first point, we have already indicated where the project design was overly optimistic. All examples need not be repeated, but repetition of two notable ones may be

useful. The New Lands Activity is perhaps the most striking example. Contractor and counterpart personnel were first to carry out two sets of surveys and studies, including a monumental cost/benefit study, and then, after review and approval by the GRM and AID, they were to mount a tsetse control program, based presumably on air and ground spraying, all in the space of two years. The time frame for the livestock and range management developments in the Dilly Zone, which were originally intended to impact on the entire 1,300,000 ha., was also far too short, even if management, personnel and other problems had not intervened.

Before proceeding, we should state that Chemonics shares some of the responsibility for excessive optimism. Although in our review of the project and our proposal preparation, we noted that some points seemed overly optimistic, and made suggestions for improvement, we accepted many of the goals at face value and undertook to meet them. We had an exaggerated idea of the speed at which things could be done.

Our second point concerning the project design--that it represented a misunderstanding of basic realities--is best illustrated by the example of the training program. As discussed above, the project design opted for the sensible approach of using an existing training institution and using project resources to strengthen that institution. Therefore, the training program was sited at CNRZ/Sotuba. But, in fact, there was no training capability at CNRZ/Sotuba, and so Sotuba only provided temporary facilities to house the activity, with no institutional connection at all. In fact, although there was some cooperation from individuals at Sotuba, the institution as a whole did not really provide good support for research, training demonstrations, etc.

A second example was the failure to foresee the inevitable conflict between the FAO project at Dilly, which had built the center and resented the American invasion, and

the Sahel Grazing Activity. Using the benefit of hindsight, it would have been preferable, no doubt, to establish or use a separate facility.

On the third point, the association between outputs and responsibility, authority and resources, virtually all activities provide examples. The project design did not attempt to clarify relationships, leaving it to the implementation phase. The project plan, prepared before Chemonics became involved, purported to assign responsibilities, but did not assign authority or resources. Project designers frequently take the position that it is not in their province to assign responsibilities, authorities and resources. It may not be; they don't have the authority to do so definitively. But Chemonics believes that it should at least be done in the form of a recommendation, in order to show what is needed. Otherwise, the participants begin with differing expectations or in a vacuum.

B. Contractual Ambiguities

A problem which is closely related to the third point, responsibilities and resources, is the ambiguity about roles, responsibilities, and authorities, which resulted from the contract as negotiated between the GRM and Chemonics, and approved by USAID.

Chemonics was well aware of this potential problem during contract negotiations. The GRM wanted to "engage the contractor in the success of the project." We pointed out that we would be so "engaged" but that, unless we controlled the means and the resources, we could not really be held responsible for results. Consequently, the final contract document was open to numerous interpretations.

It was our experience that, in the course of implementing the contract, the signatories and interested parties began to have a better understanding of the motives

which lay behind the contract provisions, and it was often a surprise to find that the interpretations of contract clauses by the various parties was less juridical than subjective, based upon what might be termed a hidden agenda. As a consequence, the differing interpretations were difficult to reconcile. Chemonics, the GRM and USAID often had serious differences, usually stemming from their subjective motivations.

The GRM felt that the contract provided it with technicians who would execute certain tasks for which they were responsible while simultaneously advising and assisting Malian personnel to execute theirs. The officials of the two projects Mali I and II were definite in their view that the experts provided by Chemonics under the contract were employees of the GRM who were to follow the direction of appointed Malian officials. Dr. Almouzar Maiga reiterated this point on many occasions both while Director of the project and later when he became Director General of OMBEVI.

USAID officials, on the other hand, considered the contract as the means by which professional staff would carry out projects designed by USAID and at the same time provide on-the-job training for local or host-country personnel. USAID in many ways considered contractor personnel as "responsible" for execution not merely of contract provisions as written but also for meeting AID requirements for project progress.

Chemonics and its personnel regarded the contract as the basis for collaborative execution of tasks leading to development in specific areas of interest. We found, however, that this view conflicted with those held by USAID and Malian officials. We believe the differences existed at least partly because of the conflicting provisions and ambiguities that occurred in documents basic to the project and, indeed, upon which the contract was based. Admittedly, the contractor had a responsibility for ensuring that

contract provisions were clearly understood by the parties to it but it was only in execution that we realized the great differences that existed in "interpretation" of at least some elements of the contract.

The issue of responsibility, authority and resources, again, is a case in point. The contract called upon the contractor to execute certain tasks yet remained silent on the issue of the allocation of resources and authority. Chemonics finally came to the conclusion that the responsibility for execution could not be split and that it could only lie with the officials who exercised authority and disposed of material means, in other words, Malian project officials. On the other hand, USAID officials insisted that the contractor personnel should be held at least partially responsible for execution. Our final conclusion was that the contractor could be held responsible for the provision of expert advice, but for execution only when provided with authority and resources, both human and material, by the Director of the project.

Thus our experience has led us to believe that only host-country contracts which carefully relate authority, resources, and clearly defined tasks can succeed.

C. Conflicting Philosophies

A third general problem was the existence of conflicting philosophies between the Americans, both Chemonics and USAID, on the one hand and the Malians on the other. This conflict manifested itself most strongly in differing perceptions about research and experimentation. The detailed accounting of the five and one-half years of project activity set out in Chapter III makes this conflict clear. The Americans believed that the project should be geared simultaneously to bringing about improvements in livestock and range management in the Sahel and trying to

resolve the many questions on the subject about which there is little agreement. Although the project design was not entirely clear on this point, it certainly did provide a basis for believing that some level of research and experimentation would be involved. Chemonics followed this lead in its proposal and initial planning efforts. To a small degree, we were able to carry through with some research.

The Malians, however, took the position that this was in no way a research project and, except for New Lands, they opposed any attempt to obtain data in a rigorous way, or to experiment with various interventions. Indeed, the Malian leadership felt that experimentation was actually dangerous to the project because failure, which is an inevitable result of some of the experimentation, was bad for the project image and would discourage the herders from participating. The Malian view was that this was strictly an implementation project, and that the main benefit was the construction of facilities and the provision of water resources, improvements which the herders and other beneficiaries could easily appreciate. The Malians were therefore continually displeased with the slow rate of development in these areas, and most especially with the failure of the project to carry out major construction work at the Dilly Center.

This difference in philosophy resulted in many misunderstandings and differences between the Americans and Malians, and considerable wasted effort. It also meant that very little real information was obtained to shed further light on approaches to improved livestock and range management. It is instructive that, in the new Livestock Project, USAID has insisted on a much higher level of research and experimentation and has, we understand, provided more resources specifically for this purpose.

D. Project Management

Project management was provided largely by the GRM, with some management input from USAID. The contractor's role in project management was very small, except late in the project when the contractor did provide direct financial management service.

Chemonics' view that project management by the GRM was deficient is clearly stated throughout this final report. It was also stated equally clearly through the life of the project itself, in Chemonics' monthly reports as well as numerous other reports. An example of the latter is a memorandum from the Chief of Party, William Crosson, to Mr. Robert Shoemaker, USAID, dated March 16, 1981, which covers the matter of management problems in considerable detail.

As pointed out in that document, an effective management system for a complex project such as Mali Livestock II requires at least the following: (1) a management staff in adequate numbers and with appropriate skills; (2) a system for delegating authority and responsibility, and a system for evaluating performance; (3) a planning capability; (4) an information system with feedback; (5) financial controls and procedures; (6) a logistic support system; and (7) a maintenance and repair capability for vehicles and equipment. Each of these is discussed briefly.

1. Management Personnel

In Chemonics' view, the project was never staffed to provide an adequate level of management. Although there were too few Malian personnel in management positions, the more serious problem was the lack of management training and experience of those assigned to management positions. The

problem varied in seriousness from activity to activity. New Lands and Training and Communication were led by individuals who lacked training in management, but who had leadership ability nonetheless. The Dilly Center, on the other hand, and the Sahel Grazing Activity, suffered from management staff who had neither ability nor training.

It is interesting to note that American and Malian perceptions are very far apart on this point. In 1975, two years before Mali Livestock II began, the senior author of this final report was assisting in the negotiations for the Mali Livestock I contract. The contractors, Experiment Inc. and Checchi, had proposed an additional team member in the form of an administrator and management advisor. The Malians rejected the notion on the grounds that "we already have too many administrators." It may be that there are too many administrators, but there are far too few managers, people who are skilled at assembling resources, human and materiel, and applying them to the implementation of a project in an efficient way.

2. Delegation of Authority and Responsibility

In common with senior personnel in many countries, the Malian Project Direction was always reluctant to delegate authority to lower-level personnel, such as the Chiefs of Activity. They did delegate responsibility, or attempt to do so, but obviously one cannot be delegated effectively without the other. It must be admitted that in many instances, Malian middle management personnel were not particularly well qualified to manage their project activities effectively had authority been delegated. We believe nonetheless that the project would have been better served in many cases had delegation taken place, since the alternative was no action at all.

3. Planning Capability

Outside of an initial PERT training and planning exercise, carried out before Chemonics' arrival, the Malian staff received no significant planning training. There was no capability. Little real planning was done, if we mean plans which include a clear allocation of personnel and material resources to carry out the work. Chemonics was, by and large, not invited to participate in real project planning, except to prepare its own work plans. Chemonics staff were asked on a few occasions for assistance in budget preparation, but the assistance was superficial and not really used at the decision-making stage.

4. Information System

Again, although Chemonics prepared regular monthly reports (not always on time), we were not part of any true project information system. This was theoretically the province of the Activity Chiefs and the Project Direction. In fact, there was no real system, if by system we mean periodic reports from bottom to top, coupled with feedback, and procedures to reach decisions and allocate resources on the basis of the information generated. The result was frustration at all levels and frequent decisions taken in absence of information and without reference to reality.

5. Financial Controls and Procedures

Until the advent of a Chemonics Financial Director, the financial controls over the project were very weak indeed. Budgets were either not made, or were not realistic and not followed. Controls were loose and financial reports were not made or were without meaning. In this particular area, USAID shared some of the responsi-

bility, since the requirement for adequate financial reporting under the project was not enforced, and there was very little effective contact between the USAID Controller's Office and the Malian Financial Director. Chemonics was aware of these problems very early in the project, but had no authority to provide assistance or play any real role in financial management.

6. Logistic Support System

This is an area of special weakness. The project required a very high level of logistic support, involving as it did a great deal of field work in remote areas of Mali. Chemonics provided much of the support but did not have the authority or the resources to do everything required. The general support for the Dilly Center and its activities, for example, was a Malian responsibility. A "rear base" was established to support Dilly, and tied to Dilly by two-way radio. Such a rear base, and the project generally, needed the capability to do the following: plan materiel needs, acquire, receive, provide storage, inventory, issue and transport of materiel and personnel. These are specialized functions which require skill, hard work and resources. These requirements were ignored from beginning to end. No organized systems for procurement, storage, inventory or issue and control were ever established, except by Chemonics for some of the equipment for which we were directly responsible. The project documents ignored this aspect of the project, and thus no provisions were made for expatriate advisors or even specialized Malian personnel.

7. Maintenance and Repair Capability

The project required a great many vehicles and a great deal of equipment, equipment which is costly in Mali and which is inevitably subject to hard treatment by relatively unskilled personnel with little incentive to careful use. No provision for operator training or maintenance was included in the project or contract. Chemonics made major efforts in these areas, for example, in finally establishing a project garage and concentrating on maintenance and repair of feedlot equipment and facilities.

8. Summary

In summary, Chemonics believes that weak project management was one of the major problems encountered in this project, and that it was responsible for many of the project's failures. Further, it is unfortunate that the project did not provide significant assistance in management and thus take the opportunity to serve as a model project in this respect. Since weak management is endemic in many developing countries, a key by-product of AID-financed development projects should be to demonstrate good management. We are pleased that there is a growing realization in AID of this point.

E. Lack of Resources

The problems caused by progressively more severe shortages of resources, mainly financial, have also been clearly shown in Chapter III. In the first two years, there were reasonable amounts of money available to finance project operations, or there would have been if the resources had been better managed. But thereafter, just when the various activities were beginning to make real

progress, resources became scarce and most activities were delayed as a result. Obviously, poor management and lack of resources were closely related; had management been better, fewer resources would have been wasted, and also USAID would have been more willing to make additional resources available. Still, the final three and one-half years were characterized by expensive technical assistance and some material resources (vehicles, etc.) which were seriously underutilized for lack of relatively small amounts of operating funds.

F. Contractor Deficiencies

A final problem encountered in the implementation of this project was deficiencies in the contractor's performance. Although Chemonics rates its own performance on this project above average, given the conditions, our performance was far from perfect. The imperfections contributed to the project's failure to accomplish all of its goals. The main deficiencies were in the areas of: (1) initial planning, specifically, failure to foresee the impact of the inadequacies in the project design, project resources, contract ambiguities and the like; (2) its leadership; and (3) the personnel provided. These points are covered in some detail in Chapter VI which follows.

CHAPTER VI
CHEMONICS SELF-EVALUATION

Chemonics' performance on this project was never formally evaluated during the five and one-half years of the contract. The one project evaluation, in the summer of 1978, was early in the contract period, covered three separate projects and contractors and did not focus specifically on contractor performance. Finally, it was never published as a formal evaluation. Therefore, we believe it would be useful to include in this final report a brief and, hopefully, frank evaluation of our own performance. The purposes are to shed further light on the problems encountered in carrying out the project and to guide Chemonics' future work on projects of this kind. We discuss Chemonics' performance under five headings: (A) project planning, (B) leadership, (C) personnel, (D) contract management, field and home-office, and (E) overall performance.

A. Project Planning

A technical assistance contractor like Chemonics, especially one which concentrates on project implementation rather than design, usually enters into a project after the basic design is complete, and is expected to assist in the implementation of a project as designed. The only opportunities to influence the design, and the planning, are in the preparation of the contractor's proposal, in contract negotiations and then in the preparation and implementation of work plans. In this instance, Chemonics did try to

influence the project design and planning through its proposal. In the negotiations, however, Chemonics clearly failed to pursue design modifications adequately or to insist that ambiguities be cleared up, and resources identified and assigned to the implementation of each activity. This failure was partially a failure to foresee the magnitude of the resource requirements, both within and outside of the contract, and partially the shared optimism of the project designers, USAID and the GRM. It was also caused to some extent by the need to arrive at a negotiated contract.

The result was a contract which was insufficiently clear as to who was responsible for what. Also, an associated work plan prepared earlier as part of the PERT exercise did not identify and assign resources and was excessively optimistic. Subsequent work plans were somewhat better in that they scaled down the targets. They were not prepared in close association with the Project Direction, however, and thus failed to assign specific responsibility, authority and resources.

In short, Chemonics could have made a much greater contribution to the project planning work, especially in the early years when there were reasonable levels of resources to do the work.

B. Leadership

Leadership in a contract such as this is provided mainly by the Chief of Party. Chemonics provided three Chiefs of Party between 1977 and mid-1981, when teams of significant size were fielded. Their performance was decidedly mixed.

We should first point out that the role of Chief of Party for Mali Livestock II was extremely demanding. The role required large amounts of the following: leadership

and charisma, management skill, administrative skill, diplomacy (vis-a-vis USAID and the host government), supervisory skill in many subject areas, writing and editing ability, communications skills, bilingual in this instance, knowledge of AID procedures and regulations, and long hours of work. Individuals with all of these attributes are extremely rare and not easily found.

Chemonics' first Chief of Party, for nine months in 1977, was the principal author of this report, which makes objective evaluation virtually impossible. However, we believe it is fair to say that, despite the planning deficiencies discussed above, he got the contract off to a reasonably good start. Basic management and administrative systems for the contract (not for the project as a whole) were established and operated with reasonable efficiency. However, they were rather rudimentary and had to be made considerably more sophisticated in later years. Relations were good with the GRM and USAID and reporting requirements were well met. In the area of substantive supervision, strong efforts were made to provide it to each of the activities, but it was already clear that a single Chief of Party did not have time to provide an adequate level of substantive supervision while carrying out all of the other required tasks. This led to the assignment of a Business Management Advisor on the team in 1978.

The second Chief of Party, Mr. Reeser, was not very successful. The demands of the position, including most of the areas enumerated above, except for the long hours, were to some degree beyond his capability. This fact was recognized within a few months by Chemonics and steps were taken to replace him as Chief of Party, while retaining him on the team as an economist. Unfortunately, the recruitment of a new Chief of Party took an inordinate amount of time, largely because Chemonics put too much stock in a single candidate who was considered excellent but who eventually

declined the position. In retrospect, Chemonics should have recruited several good candidates in order to ensure that one could be fielded in a timely manner.

Mr. Crosson, the third Chief of Party, served for two and one-half years, and thus covered most of the level of effort under the contract. Mr. Crosson had excellent management and administrative skills, and upgraded these aspects of contract performance to a considerable degree. Indeed, the internal management of the Chemonics team was a model under his leadership. However, Mr. Crosson was somewhat deficient in other respects. The most striking was in substantive supervision of the team; Mr. Crosson provided very little. This was attributable in part to lack of time, since contract administration was very time-consuming, and in part to lack of interest or inclination. It is, of course, difficult to provide substantive supervision in areas where the supervisee is more knowledgeable than the supervisor. Still, this type of supervision is vital and its absence resulted in very poor quality control over some of the work done. Mr. Crosson was also weak in the area of diplomacy, particularly vis-a-vis USAID, which hampered the effectiveness of the team to some extent.

C. Personnel

Providing high quality, effective personnel for development work is extremely difficult. Personnel must be qualified in their professional areas, able to work under difficult conditions and be effective in the ambiguous position of advisor without authority but with some imputed responsibility for results. And in Mali, they must be able to work in French if at all possible.

The provision of technical assistance personnel was a major element of Chemonics' responsibility under this contract. As in the case of leadership, Chemonics judges

its own performance as mixed. We do believe that performance gradually improved over time and in 1980-1981, the last year in which a significant level of effort was provided, we believe it was quite good. This improvement was a result of experience gained and very hard work on the part of Chemonics' home office in recruiting personnel.

Both the relative weakness of the first team and the strength of the later ones are easy to explain. The first team members were largely those included in Chemonics' proposal. The proposal was necessarily prepared in a very short time and the recruiting was also done very rapidly. In many cases, Chemonics was unable to interview candidates directly or obtain adequate references. Later team members were all recruited with more understanding of the requirements and more time. All new team members from 1978 onward were interviewed in person, in some cases by GRM officials as well as Chemonics, and their references were carefully checked. A large selection of candidates was identified and both Chemonics and the GRM had a wider selection from which to choose. Some mistakes were still made, of course, since it is never possible to know for certain how an individual will perform under given working and living conditions.

The general weakness of the first team was aggravated by the fact that Chemonics had no opportunity to provide their orientation before they arrived in Mali. During contract negotiations, Chemonics requested two weeks of orientation which is normally provided in the General Provisions for direct AID contracts, but the GRM declined to grant any orientation at contract expense. Chemonics provided a brief orientation at its own expense, but it was clearly inadequate. We believe a full, two-week orientation would have improved the team's understanding of the project and Mali and would have improved their initial performance as well.

In fairness to the personnel Chemonics provided, we should point out that deficiencies in project management and in contract leadership may have aggravated the performance problems. In several instances, we are certain that individuals would have done better had they received adequate management and supervision. Deficiencies in the project design and ambiguities in the contract relationships also had an adverse effect on the performance of some of the team members, who went to Mali with incorrect perceptions about their real duties and working environment.

D. Contract Management, Field and Home Office

We believe that Chemonics provided very good contract management in both the field and the home office. The field management is covered to some extent under leadership above. Generally, Chemonics managed its personnel and the resources assigned to it in a commendable manner. Contract finances were and are in good condition. Although an in-depth audit of contract finances has not been done by AID, the accounts were always kept in auditable form, and detailed invoices were submitted monthly to the GRM. Project equipment was well-maintained and there were relatively few disappearances, considering the numbers of people and activities involved and the conditions under which work had to be performed. We are particularly proud of the fact that furniture and appliances, most of which were put into service in 1977, are still largely serviceable.

Contract management and backstopping from Chemonics' Washington office was also of high caliber. Chemonics' team was generally considered to be the best supported in Mali. The company also made a special effort to provide procurement support, both within and outside of the contract, and was asked to extend this service to Mali Livestock I even before taking over the technical assistance

for that project. In the latter part of the second and third contract periods, Chemonics' Publications Department provided excellent support, editing, translating and producing several very lengthy reports including those which made up the main contribution of the New Lands Activity.

E. Overall Performance

Overall, Chemonics rates its performance as good but with the reservations mentioned. During contract negotiations and in the first months of contract implementation, a "honeymoon" period in which we had our best chance to influence events, we clearly should have insisted on detailed project planning to establish realistic time frames and to assign specific resources to specific tasks. Also, we clearly should have done a better job providing and supervising team members in the early years, when the basic directions of the project were being laid down and when resources were reasonably adequate. This is especially true in the Sahel Grazing Activity, where specific, resource-based planning was particularly lacking, and where Chemonics' initial personnel assignments were particularly weak. The lack of good planning and good personnel, coupled with all of the other problems in Dilly caused the activity's momentum to be lost, and with it, USAID's taste for major investments in the Sahel. On the other hand, Chemonics was not in a strong position to insist on detailed, resource-based planning, and recruiting top personnel for long-term assignments at Dilly, under the circumstances, was particularly difficult. In other areas, we believe our performance was quite good and justified the confidence placed in us to continue service for five and one-half years and to remain involved in the new livestock project.

CHAPTER VII RECOMMENDATIONS

Chemonics could make a great many recommendations as a result of its experience in Mali over the years. Indeed, we have made numerous recommendations in various reports on the project activities. For this final report, we prefer to concentrate on broad recommendations in three areas: the general content of livestock range management projects; project planning and management; and technical assistance contracting for this type of project in Africa. With respect to specific conclusions and recommendations on livestock and range management in the Sahel, we refer the reader to Chemonics' monograph on the subject, Range Management and Livestock Development in the Sahel, first draft November 1981, final draft, April 1982.

A. General Content of Livestock and Range Management Projects

1. Integrated Projects

The Mali Livestock I and II projects were integrated projects in that they provided for water development, construction of facilities, and training as well as specific range management interventions and, in the New Lands Activity, large-scale surveys and studies, AID-financed capital costs, operating costs, commodities and technical assistance. Such livestock and range management projects have earned a poor reputation at AID because of their apparent lack of success and the very serious management problems which have surfaced, as well as

continuing disagreement among experts about virtually any imaginable intervention which might be tried. We recommend that AID persevere, and continue to provide assistance in this area. Livestock remains a key economic sector in the Sahelian countries. Livestock production methods and range management improvements remain vital to the continued health and effectiveness of the sector. The fact that integrated projects are difficult to implement should not discourage AID from trying; a project which is not integrated, which does not include construction and water development, for example, will have an even smaller chance of success.

2. Quick-Impact Activities

An important element to include in all such projects is activities which are of immediate, perceived benefit to the target population. Livestock and range management projects are of necessity long-term, i.e., considerable time passes before the benefits of most interventions become apparent. In the meantime, they tend to demand sacrifices, real or perceived, from the target population, for example, in the form of labor or changes in the way things are done. If the project can bring some immediate benefits, such as human or animal health improvements through medicines and medical services, village water sources or improved agricultural methods, these can serve to encourage project support while the longer-term interventions are moving forward. The GRM did attempt this in the Dilly area, mostly through small interventions financed under the FAO project. Unfortunately, in Chemonics' view, many of the project participants lost sight of the fact that the small interventions were supposed to pave the way for the major interventions of the AID-financed project, and the two projects ended in competition.

3. Research and Implementation

Chemonics recommends that all major livestock and range management projects include research as well as implementation. It is important to avoid either extreme: projects which are excessively oriented towards research, and require such lengthy studies that no implementation gets done; and projects which eschew study and research such that there is total uncertainty about the validity of the implementation work, and there are no resources to check on its effectiveness afterwards.

This point is easier to recommend than to achieve, particularly given the distrust for expatriates who want to experiment (possibly at the expense of local populations) and carry out research rather than implement improvements which are "known" to be valid. The study and research components must be specifically written into the project and specific resources made available to do the work. This approach probably requires separate technical assistance personnel, since it is rare that the skills and inclination for research and implementation are found in the same individual. If separate personnel are provided, it is vital that they receive adequate orientation and supervision to ensure that each understands, and respects, the role of the other.

B. Project Planning and Management

1. Project Planning

To recommend that AID-financed projects, especially those which involve major investments and operations, be planned more realistically and that the plans include specific responsibilities and resource allocations,

is perhaps to recommend the obvious. But we do recommend resource-based project planning, strongly. In our experience, this level of project planning is rarely done for the Project Paper and Project Agreement, when it should be done. Failing that, it should be done as part of the process of contracting technical assistance, initially by inviting the prospective contractors to carry out this level of planning in their proposals (and giving them time to do so) and then including resource allocation in the contract negotiations and, therefore, in the contracts themselves. Note that this recommendation does not apply to all technical assistance projects, but only those in which the project itself is integrated and thus involves the management and utilization of extensive resources. If it is not considered feasible to perform detailed, resource-based planning as part of the contract negotiation process, it should be the first order of business when the technical assistance contractor begins work, and ample time should be made available for the purpose.

2. Project Management

Chemonics recommends that project management be given the highest priority in planning and implementing integrated development projects. It must be recognized that few host-country project personnel are experienced in management and that certain functions, such as financial management and management of maintenance facilities, pose especially difficult problems. This priority should be reflected in management training programs for host-country personnel. Furthermore, it is important to provide technical assistance personnel with the talent and the mandate to assist directly in the management of the projects.

Such assistance can take several forms. Management specialists can be provided by the technical assistance contractor as part of his regular team. Management personnel can also be provided outside the basic technical assistance contract and assigned to assist several projects. Finally, direct assistance can be provided by USAID itself. We are pleased that AID has recently demonstrated an understanding of the importance of project management and is trying out some of these approaches in new projects in the Sahel. Chemonics would submit that there is room for several approaches, but a major one should be the direct involvement of the technical assistance contractor in all phases of project management.

3. Operating Resources

Integrated development projects such as Mali Livestock II require very considerable operating funds. If these are not provided in the technical assistance contract, they must be effectively provided outside of the contract. Keeping them outside of the contract, as was done in the case of Mali Livestock II, may result in an imbalance, with technical assistance personnel unable to function effectively because of a lack of operating funds. The easier solution, therefore, is to put very considerable operating funds into the technical assistance contract, and we recommend that this be done, for projects such as this one. If USAID or the host government elect to use other methods, it is imperative that ways be found to avoid shortages of the kind that adversely affected this project.

4. Capital Resources; Construction

Capital costs for construction are another matter. In the Mali Livestock II project, Chemonics had a catalyst

role in the construction work, but not a direct contractual role. The construction work went very slowly indeed, except in the two cases, the Dilly airstrip and the maintenance garage, where Chemonics essentially acted as an ad hoc general contractor. It is quite possible that construction work would be done faster and better if the technical assistance contractor also served as a general contractor, with full responsibility, but only if the contractor is given adequate personnel and financial resources. Basically, technical assistance contracts are normally not very suitable for construction work, but they can be made suitable with the inclusion of enough resources. We recommend that, unless it is possible to have the project construction work well under way before the arrival of the technical assistance contract team, then consideration be given to making the technical assistance contractor the general contractor as well; in that case, the contract would be modified to provide adequate personnel (engineering, accounting) and advances of funds to make it feasible for the contractor to accept the responsibility.

5. Project Timeframe

There is general agreement that livestock and range management projects must be long-term if they are to have any hope of success. Having a long-term project means staying with a program on a sustained basis for several years. It does not mean that there cannot be redesign of the project details if necessary, but it is important to avoid too frequent changes in direction and too much uncertainty. The Mali Livestock II Project suffered from these problems. We recommend that AID project managers remember the requirement for sustained effort and provide assurance of project personnel that they have a reasonable amount of time to produce results before the funding is reduced or cut off.

C. Technical Assistance Contracting in Livestock and Range Management Projects

1. Private Sector Contracting

Our first recommendation is somewhat self-serving. However, based on our experience in Mali and elsewhere, we recommend that technical assistance to large, integrated livestock and range management projects be provided through private sector firms such as Chemonics, either individually or in collaboration with universities or non-profit, research institutions. Private firms such as Chemonics have the flexibility to perform widespread recruiting needed to obtain well-qualified, multi-disciplinary teams. They are also more likely to be able to provide the type of management personnel which are so badly needed, and to provide the necessary procurement support and/or construction support. Further, private consulting firms are less likely to have preconceived development theories, or institutional imperatives to satisfy than some research institutions and universities. They can concentrate on giving the host-government and AID the type of personnel, management and support which the project requires.

2. Host-Country Contracting

In spite of the difficulties Chemonics encountered in the Mali Livestock Projects, many of which were directly or indirectly attributable to the host-country contracting mechanism, we believe on balance that the mechanism is a valid one. Its major advantage, of course, is that host-country staff are far more likely to be committed to a project for which they have contractual responsibility. Chemonics has witnessed many projects where the host-government has no contractual role or voice, and where,

largely as a consequence, the expatriate team performs its work in isolation, virtually ignored by host-country staff, achieving no impact whatsoever on the institution they supposedly serve. This was certainly not the case in Mali, with the possible exception of the Sahel Grazing Activity. On the other hand, we strongly believe that host-country contracting cannot mean that the contractor relinquishes all control over project resources and management. We have made this point elsewhere at some length. We wish to reiterate it as a caveat to our overall support for the host-country contracting mode.

3. Length of Contract

We recommend that technical assistance contracts for projects such as this one be of a reasonable length, at least four years. The projects should be of considerable duration, and so should the contract. The Chemonics contract for Mali Livestock II was initially for two years only, and then extended for periods of one year at a time. Each time, the contractor, the team members, the counterparts and USAID all had to live under several months of uncertainty before the contract was extended. Vast amounts of time were lost each year in preparations to close down and then to get started again. The reason for the short contract, according to the GRM, was to give the contractor an incentive to perform well in order to be awarded a contract extension, but this is a very expensive and inappropriate way to provide such an incentive.

4. Contractor Personnel

We do not believe there is any easy solution to the problem of providing effective team members for projects such as this one. A review of the performance of the team

members provided under this project shows few obvious lessons, since the effective team members were young and old, American and non-American, French-speaking and non-French-speaking. However, we do conclude that there is no substitute for solid professional experience in the technical field. Further, recent practical experience in the technical field appears to be important. A second requirement seems to be a history of effective work in difficult environments, with individuals from another cultural background. Personality plays a strong role in success. The effective team members seem, in most cases, to have the ability to get along well with virtually everyone with whom they come into contact, including the other team members, other foreigners and virtually all Malian associates. The least successful project personnel were either technically incompetent or had difficulty getting along with people, or in some cases, both.

We recommend that the contractor be encouraged to examine both the technical competence of candidates for field positions, their experience in carrying out their technical work on a practical level and in culturally varying environments, and their personalities, as demonstrated by their ability to get along with their peers. This examination requires detailed interviewing and, most importantly, careful checking of as many past references as possible, including some not suggested by the candidate himself. We further recommend that USAID accept the contractor's judgment on personnel, once the contractor has followed the above course, and make every effort to ensure that the host government does likewise. Clearly, this type of examination is more useful in predicting success than a comparison of years of experience or academic degrees.

Chemonics also recommends that contractors such as Chemonics be encouraged, if not required, to provide new team members with at least two weeks of orientation at

contract expense. As noted, the General Provisions to AID contracts allow such orientation but do not require it. Host-country contracts frequently do neither. Even when AID contracts allow it, the usual result is a much shorter orientation with relatively little specific information provided on either the country or the project, especially since such information is sometimes difficult to find. USAID should be more demanding on this point.

5. Contract Management

The question of contract management, and support for contractors in this field, is a very live question at the moment. USAIDs are currently seeking innovative ways to provide support for contractors. In the mid-1970s, however, AID shifted in most countries from a posture of providing full support to contractors and contract personnel, to requiring the contractor to be largely self-sufficient. This was the situation which Chemonics faced in Mali, and we were indeed largely self-sufficient. Although we had from the start a full-time Chief of Party position, we did not have an administrative or business management position until about one year later, when the need became acute. Subsequent contractors in Mali have had the two management positions if the team and project were large enough to justify them. Chemonics is quite satisfied with this arrangement and believes it proved to be quite successful. It is important, however, that USAID and the host government recognize how much work is involved in contractor self-sufficiency and provide funds for adequate personnel and other support. Indeed, we believe that, in the years since 1977, we have developed project/contract management techniques which are very effective and should be used as widely as possible. In cases where contractors are less willing and able, or where contracts are too small to

justify self-sufficient operations, however, we recommend that USAIDs continue to seek other solutions, such as establishing contractor support units on a contract basis.

6. Contract Performance Evaluation

We believe that it is most regrettable that Chemonics did not have a formal evaluation of its performance over the four years of large-scale contract operations. We recommend that, even if it is not possible to schedule full-scale project evaluations, that the contractor be evaluated on an annual basis. We recognize that this is the normal policy of AID, but, as can be seen by the present case, this policy is not always followed.