

PW-AAU-395 53
● ISN-30820

CHEMONICS
CONSULTING DIVISION
PROYECTO SECTOR AGRICOLA II
MACA - USAID

PROGRESS REPORT
DECEMBER 1979 THROUGH JUNE 1980

SUBMITTED TO
THE MINISTRY OF RURAL AFFAIRS AND AGRICULTURE

BY
CHEMONICS INTERNATIONAL CONSULTING DIVISION

CONTRACT GOB/AID 511-111

SEPTEMBER 30, 1980



CHEMONICS

CONSULTING DIVISION
PROYECTO SECTOR AGRICOLA II

La Paz, ~~MACA~~ ^{USA} September 30, 1980

Eng. Lucio Arce P.
Director General of Agriculture
Ministry of Rural Affairs and Agriculture
La Paz

Dear Eng. Arce:

Chemonics takes pleasure in presenting its third progress report under contract GOB/AID 511-111 covering the period from December 1979 through June 1980.

It is our hope that special attention will be given to Section VI which recommends several actions that would make the efforts of our technicians even more effective. Section VII which presents conclusions and forecasts future activities is also of special importance.

Chemonics requests a meeting with yourself and other authorities of MACA as soon as possible to review the report. We thank you for your kind cooperation.

Sincerely yours,

Preston S. Pattie
Preston S. Pattie
Chief of Party

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SECTION I INTRODUCTION

This progress report covers the period from December 1979 through June 1980, thus marking the completion of one year of effort under the Chemonics contract. The report period is extended over seven months so that future semi-annual reports will correspond to the calendar year.

At the beginning of the report period, the team consisted of three long-term technicians:

- o Mr. Robert Sparks, Technician in Organization and Methods
- o Mr. James Wilkinson, Land Clearing Technician
- o Dr. Preston Pattie, Chief of Party and Technician in Sector Planning.

On February 2, 1980, Mr. Les Rios joined the team to fill the position of Heavy Equipment Maintenance Technician in the Chaco. In June, Dr. Adriel Garay arrived in Bolivia to work in conjunction with the Seed Department of MACA; Dr. Garay is based in Santa Cruz.

Efforts during the period included a number of short-term experts beginning with Dr. David Freeman and Dr. Rafael Martínez who provided assistance to ERTS and MACA in establishing a Center of Data Processing for the Agriculture Sector, each working for one month. In the area of Marketing and Processing of Fruits and Vegetables, three short-term technicians provided assistance: Dr. Frank Masson and Mr. Manuel Silva assisted CODETAR for a total of three months' effort. Dr. Waldo Heron worked with CORDECH for about 6 weeks, and also for the University of Tarija for another 3 weeks.

Additionally, use of short-term support included the contracting of Mr. Lester Hook for two weeks to purchase two combines for the Chaco. Just before the end of the report period, an expert in Sector Planning, Dr. David Zimet arrived to assist with the development of a linear programming model of the agriculture sector.

The next section describing the Chemonics contract in Bolivia gives the

background behind each of these programs, as well as providing an explanation of the overall focus of technical and managerial responsibilities of Chemonics. This section is considered to be of primary importance since its purpose is to provide continuity to Chemonics' efforts among varied projects over time. It is hoped that our client, MACA and also USAID consider seriously the managerial difficulties confronted by the contractor as described herein.

Section III reports progress in three technical areas of responsibility which relate to institution building. These are Sector Planning, Organization and Methods and Data Processing. Section IV shows progress in field activities oriented to lifting constraints in the agriculture sector. These technical areas include Land Clearing, Seed Improvement, and Processing/Marketing of Fruits and Vegetables. A final Section reporting progress relates to steps taken in Project Management and Administration. For each technical area, an overview provides background information and states objectives for the report period. Secondly progress is reported and compared with defined objectives. Then recommendations are stated.

Section VI summarizes recommendations for each technical area and for overall project management and administration. Finally Section VII provides overall conclusions and forecasts regarding objectives for the next six months.

SECTION II
PROJECT DESCRIPTION

A. Introduction

The purpose of this section is twofold. The principal objective is to crystalize for MACA, USAID, and other interested parties, Chemonics' contractual role in service to the Bolivian Agricultural Sector. Secondly, we wish to provide a historical perspective within which to view contract progress reported in later sections of this document. This definition and analysis, offered at the midpoint in Chemonics' two year contract, will provide a useful reference document for our clients, MACA, CODETAP and other agencies involved in the project.

The 'Project Description' section is organized as follows:

- o a general overview of the contract between Chemonics and MACA for the provision of technical assistance under the Agricultural Sector II Project,
- o an explanation and analysis, from the contractor's perspective, of the technical scope of work mandated by the contract,
- o a general description of contract management responsibilities,
- o a discussion of Chemonics' philosophy concerning the nature and role of a host country contractor working in Bolivia.

Appearing as an annex to this section are two charts: one linking technical work areas to the clients served; and the other giving details of personnel and level of effort provided under the contract to date.

B. Contract History and Structure

On May 10, 1978, Chemonics submitted to MACA its proposal to provide technical assistance under the USAID-financed Agricultural Sector II Project. After receiving top rank among the bidding firms, Chemonics was invited by MACA to begin contract negotiations in July of 1978. Due to a postponement suggested by MACA, negotiations commenced in late August. After three weeks of negotiation, agreement had been reached between the contracting parties,

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MACA and Chemonics, and a contract prepared for required approvals and signatures. Owing to budgetary concerns, however, USAID/B did not approve the contract.

A second session of negotiations, held in late November of 1978, yielded a significant reduction in the estimated two-year contract budget. Again agreement was reached between MACA and Chemonics. USAID gave preliminary approval of the contract, including the revised budget. After several subsequent revisions in contract format and language, the contract, in its final form, was fully signed and approved on May 4, 1979. Actual work on the contract began shortly thereafter, following a one week project preparation trip to Bolivia by the Chief of Party. A contract orientation session was held in Washington, D.C. in late May and the initial Chemonics' team began work in Bolivia on June 10, 1979.

The contract for technical assistance under the Agricultural Sector II Project is a host country contract, meaning that the legal relationship is between the contractor, Chemonics, and the Government of Bolivia (represented by MACA) as client. It is a CFFF (cost reimbursable plus fixed fee) contract financed by both loan and grant funds from USAID. Grant funds are used to finance the services of seven long-term technicians, totaling 150 person months, plus home office supervisory and procurement assistance, estimated at 4 months over the two year contract period. General project operating costs are also financed by the grant portion of the contract. Thirty person months of short-term technical assistance are also included in the contract and are financed by loan funds. Of the estimated \$ 1.5 million total contract value for two years, approximately 12% is loan financed and 88% grant financed.

The scope of work stipulates that the contractor shall advise and assist MACA in the implementation of the Agricultural Sector II Project which seeks to increase productivity and incomes in Bolivia's small farm sector, focussing primarily on the central and southern intermountain valleys, and to stimulate agricultural development in the eastern lowland valleys. "Advising

and assisting MACA" means that the contractor will provide the technical and management services of a field team consisting of both short- and long-term experts and various support services from the contractor's headquarters in Washington, D.C. The long-term services (7 experts) are designed to assist MACA in four substantive areas defined in the contract: seed technology development, agricultural sector management and coordination, land clearing operations and small farmer credit expansion.

In the Request for Proposals, there was no provision for assigning contract management functions to a particular technician nor was there allowance for additional level of effort to accomplish management tasks. In Chemonics' proposal, this issue was raised. Our argument, based on prior experience with large, complex, multi-disciplinary projects, was that, ideally, a full-time, non-technical Chief of Party should be assigned to the contract to undertake the heavy management functions.

MACA and USAID conceded that the management and logistics of a project involving seven team members, a minimum of four technical activities, three work sites and numerous clients would be considerable. However, they were adverse to increasing the level of effort to accommodate a full-time Chief of Party. Chemonics reluctantly accepted this decision and the contract management functions were assigned, on an implied part-time basis, to the Sectoral Planning Technician. Short-term services provided under the contract are not tied to specific technical areas, but rather, are to be used to supplement the technical work of the long-term technicians and to respond to any other technical needs identified by MACA. It should be noted that this flexibility with respect to the utilization of short-term consultants under the contract was specifically requested by MACA and agreed to, during negotiations, by both Chemonics and USAID.

With this brief summary of the contracting process and the structure of the contract as background, we turn now to a discussion of the project substance.

C. Analysis of Technical Work

Rather than presenting a detailed restatement of the technical scope of work for each technician, this section provides an interpretation or analysis of the substantive work required by the contract.

There have been two important changes in the original scope of work since fielding the team in June 1979. These are:

- * The decision by USAID with agreement on the part of MACA and Chemonics to delete responsibilities in small farmer credit from the contract,
- * An agreement between MACA and Chemonics that a full-time Chief of Party is needed for supervision of technical work and also that a full-time Agricultural Sector Planner is needed. Both of these responsibilities fell on one individual in the initial contract.

Neither of these changes have been formally approved via a contract amendment. Nevertheless, on an informal basis Chemonics has been told to regard these decisions as final, by USAID in the first instance and by MACA in the second. The number of long-term technicians assigned to different technical areas before and after the changes are summarized in the following table.

<u>Technical Area</u>	<u>Number of Consultants</u>	
	<u>Original Contract</u>	<u>Current Understanding</u>
Sectoral Planning	1/2	1
Organization and Methods	1	1
Data Processing	1	1
Land Clearing	2	2
Seeds	1	1
Credit	1	0
Technical Supervision	1/2	1
<hr/> Total LT technicians	<hr/> 7	<hr/> 7

In addition to the above, long-term technicians, Chemonics has responded to a number of requests by MACA to provide short-term consultants in marketing and processing of fruits and vegetables, which in effect creates another technical area for which Chemonics accepts responsibility.

An analysis of these technical areas will demonstrate the contractor's perception of the project and clarify the substantive linkages in a project which, on the surface, has many disparate elements.

Three of the long-term technicians work the area of "sectoral management and coordination". In a broad sense, Chemonics views the work of these technicians, based in La Paz, as an institution building effort. Here Chemonics provides advice and assistance in sectoral planning, data management and organization and methods, all for the unified objective of upgrading MACA's institutional capability to perform these important functions in service to the Bolivian agricultural sector. Chemonics Chief of Party is also heavily involved in the supervision of these activities and providing direct support to MACA. Specific tasks undertaken in this technical area include: designing and implementing an agricultural sector linear programming model for use in data compilation and analysis required for planning; assistance in organizing an agricultural data management department within MACA; and review and evaluation of administrative structures and procedures in order to improve MACA's operational efficiency in the agricultural sector. Despite the extreme variety of tasks just mentioned, there is the common thread of institution building which guides Chemonics' work and gives direction to the overall substantive area.

Other components of the Agricultural Sector II technical assistance contract are designed to assist Bolivia in overcoming specific resource constraints to agricultural productivity, and as a result, increase the incomes of small farmers. Chemonics' seed technologist will be working to improve the production, quality control, and processing and distribution of certified seed, while promoting the collaboration of the public and private sectors in these efforts. Increasing the availability of improved seed is essential to

improving yields in basic food grains, thus increasing productivity, incomes and the general quality of life among small farmers. Two Chemonics technicians working in the Chaco Húmedo region of southern Bolivia are dedicated to reducing another constraint to agricultural production: land availability. They are assisting various regional development institutions (primarily CODETAR) in land clearing operations and water resource development in order to increase the availability of suitable land for crop and livestock production.

Short-term assistance in fruit and vegetable processing and marketing, provided to CODETAR, CORDECH and the University of Tarija, with MACA's concurrence, has been most active and indeed has become another major technical area of the contract. It should be stated that Chemonics views the work in fruit and vegetable processing/marketing as appropriate to overall contract objectives, owing to its importance in Bolivian agricultural development. It is also a priority technical area identified by our client, MACA.

Again, underlying the seemingly unrelated tasks of Chemonics' effort in the field, is a guiding theme of overcoming small farmer production constraints through resource development and provision of needed inputs.

To summarize, Chemonics is involved in a number of activities and serving a variety of clients in the agricultural sector. These are summarized in Chart No. 1 of the annex to this section. To guide our work in this complex project we have adhered to certain basic objectives, institution building and reduction of resource constraints among small farmers. Despite these guiding objectives, however, supervision of several technical areas involving many clients places an extremely heavy management burden on the contractor, in particular the Chief of Party. The basic tasks involved in project management are discussed in the section that follows.

D. Project Management

While contract management is often overlooked by project designers or envisaged as a secondary concern requiring little or no level of effort, it is, realistically, the cornerstone of successful technical assistance.

There are two geographical locations where project management takes place. One is the field (Bolivia) where the Chief of Party is fully responsible for technical supervision of team members and for general administration and logistics. The other location is the contractor's home office (Washington, D.C.) where the Project Supervisor and Procurement Manager have direct and constant responsibility for Ag. Sector II. The Project Supervisor backstops the project on a regular basis, makes supervisory trips to the field, confers with the Chief of Party regarding project problems and keeps an eye on the contract budget and overall progress. The Procurement Manager makes purchases, and arranges for the shipping of project commodities and, when requested, performs procurement functions in the field. It should be noted that home office project management functions, when performed in Washington, D.C., are generally not a direct cost to the contract, but rather are covered by overhead. Only when home office management personnel are working in Bolivia, at the request of MACA, are their services billable to the Ag. Sector II contract. There is daily telex communication between the two project management sites allowing for prompt resolution of problems and quick response to requests for information, commodities, etc.

The Chief of Party's management responsibility falls into the two broad categories of management and supervision of technical areas and general project administration and logistics. Below we list the various tasks for which Chemonics' COP bears primary responsibility:

1. Management and Supervision of Technical Areas

- o Assist host agencies initiate and plan project activities.
- o Develop detailed work plans for advisors in conjunction with their counterparts.
- o Supervise, on a regular basis, technical progress of advisors according to work plan goals.
- o Visit work sites to identify and resolve operational problems.
- o Provide technical backstopping by obtaining requested information, short-term experts, etc.
- o Develop job descriptions for needed short-term personnel.

- o Elaborate work plans for short-term personnel.
- o Supervise the work of short-term personnel.
- o Review the reports of all personnel and ensuring the reports are accurate, complete and consistent with work plan objectives.
- o Serve as liaison and coordinator of project work among MACA, secondary client institutions and USAID.
- o Provide direct advice in technical activities where the COP possesses particular expertise, such as planning and data processing.
- o Prepare semi-annual reports on project progress.
- o Participate in project evaluations.

2. General Administration

- o Hire, train and supervise local support staff.
- o Supervise contract finances and accounting.
- o Prepare all correspondence and documentation required for approvals, etc.
- o Supervise procurement from the field.
- o Establish and supervise schedules for the use of vehicles and all project commodities.
- o Negotiate, sign and oversee, on behalf of Chemonics, all legal arrangements required for project operation, ensuring full compliance with Bolivian law.
- o Communicate regularly with Chemonics' home office.

It was hoped that, over time, the percentage of time allocated to contract management by the Sectoral Planning Technician/Chief of Party would stabilize at approximately 50% leaving half of his time for substantive work in agricultural planning. Indeed as shown in the table below, time utilized in project administration has decreased dramatically from the earlier periods which required establishment of offices, purchases of furniture, hiring staff, etc. Roughly another 10 percent of time is allocated to special non-contract requests of MACA for which the Chief of Party is responsible. This includes acquisitions arranging for office space and supervising acquisitions under the T-059 project. The area of responsibility now occupying more time than any other is the manage-

ment and supervision of technical areas which demands nearly half the time of the Chief of Party. Without this constant supervision, Chemonics feels that none of its technicians would be provided with an environment in which substantive progress could reasonably be expected. Hence the Chief of Party has felt obligated to attend to technical supervision of various other projects before placing major emphasis on duties as technician in Sector Planning. Hence the latter area has received less attention than is desired.

UTILIZATION OF TIME BY CHIEF OF PARTY

Activity	May-November 1979	Dec. 1979 - June 1980
Percent of Time		
Duties as Chief of Party:		
Project Administration	66	28
Non-contract Support of MACA	11	9
Technical Supervision	14	44
Duties as Sector Planning Technician:	9	19
TOTAL:	100	100

In February of 1980, Chemonics' Project Supervisor from Washington, D.C. and the Chief of Party assessed this problem with a view toward resolving it, in a realistic way. A paper, entitled "Notes for Discussion" was prepared and discussed with USAID and MACA. Briefly, this paper explained the situation and suggested several alternatives for complying with Chemonics' contractual responsibility in sectoral planning while simultaneously responding to the demands of contract management. The paper was well received and resulted in the eventual preparation of a proposed contract amendment to eliminate the sectoral planning responsibilities from the Chief of Party position (except on a supervisory basis) and contract a full-time agricultural planner for the vacant seventh position. As of the date of this report,

this approval of this amendment is still pending.

Having described the history and content of Chemonics' project management role in Ag. Sector II, we turn now to a brief discussion of the nature of host country contracting which has guided both our substantive and administrative work.

E. Approach to Host-Country Contracting

As a host-country contractor working in Bolivia, Chemonics' philosophy has been to provide support to MACA in on-going, priority programs within the agricultural sector. Our role is to advise, assist and support our client, MACA. It should be noted that Chemonics, as the contractor, does not control the identification nor funding of technical programs in which our advisors participate. These decisions must lie with the client, MACA, and are governed, to large extent, by the underlying project agreement with the financier, USAID. In our work in Bolivia and elsewhere, Chemonics encourages this "collaborative style" of project management wherein the host-country client assumes ultimate leadership responsibility and authority.

On a theoretical level and from interpretation of our contract, there can be little debate that the above described approach is the appropriate one for a host-country contractor. Further, we find that the approach is generally appreciated by MACA and USAID. However, at times, commitment to this approach on an operating level has caused delays in decision-making which, in turn, inhibit the implementation of our work. Political changes in Bolivia and consequent changes in counterpart personnel often leave the contractor without guidance and direction and force the contractor to work in a vacuum. Chemonics' posture has been to accept this political reality and to operate, as consistently as possible, according to our basic host-country contracting philosophy. We must urge, however, that in the remaining year of our contract, our client MACA, recognizes its responsibility with respect to Chemonics and attempts, to the extent possible, to provide the leadership necessary to keep work on Ag. Sector II moving according to schedule.

MACA's functions in project management include:

- o Definition of job descriptions of vacant positions.
- o Assignment of technical counterparts to long-term consultants.
- o Review and approval of work plans.
- o Constant review of counterpart relationships to ensure maximum utilization of consultants, especially in activities oriented toward training.
- o Elaboration of terms of reference for short-term technicians.
- o Feedback on reports of short-term technicians.
- o Coordination with Chemonics in acquisitions and other support activities not specified in the contract.
- o Review of semiannual progress reports and feedback to clarify objectives.

In the next three sections we provide a description of the progress realized in each technical area. Section III covers Sectoral Management/Planning, Organization and Methods, and Data Processing. Section IV reports progress in field work --Land Clearing, Seeds, and Fruits and Vegetable Marketing. Section V addresses progress in Technical Supervision and project management. In each technical area, objectives are defined in the general overview, progress is reported, and finally a summary is provided and suggestions for improvement are made.

Chart No.1

DESCRIPTION OF CURRENT PROGRAMS UNDER THE CONTRACT
OF TECHNICAL ASSISTANCE BETWEEN MACA AND CHEMONICS

<u>Activity</u>	<u>Beneficiary Institutions</u>
Sectoral Planning	Office of Sectoral Planning and Statistics Division, MACA/La Paz.
Organization and Methods	Administrative Analysis, MACA/La Paz.
Data Processing	Statistics Division, MACA/La Paz and ERTS Program.
Land Clearing	CODETAP/Yacuiha and Villamontes
Seeds Improvement	Seeds Department, MACA/La Paz and Santa Cruz and CIAT in Santa Cruz.
Fruits and Vegetables Processing and Marketing	CODETAR/Tarija, CORDECH, University of Tarija, with pending requests from CODETAR, CORDECH and the Association of Citrus Producers in Tarija.

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Chart No. 2DETAILS ON CHEMONICS' PERSONNEL AND LEVEL OF EFFORT UNDERTHE CONTRACT OF TECHNICAL ASSISTANCE WITH MACA

<u>Activity</u>	<u>Technician</u>	<u>Contract Duration</u>	<u>Starting Date</u>	<u>Work Site</u>
Sectoral Planning	- Dr. Preston S. Pattie	24 months ^{1/}	10 June 1979	La Paz
	- Pending amendment for long-term advisor	18 months	-	La Paz
	- Dr. David Zimet	3 months	22 June 1980	La Paz
Organization and Methods	- Mr. Robert Sparks	24 months	16 June 1979	La Paz
Data Processing	- Vacant position for long-term advisor	18 months	-	La Paz
	- Dr. David Freeman	1 month	14 Feb. 1980	La Paz
	- Dr. Rafael Martinez	1 month	4 May 1980	La Paz
Land Clearing	- Mr. Les Rios	24 months	10 June 1979 ^{2/}	Yacuiña, Palmar
	- Mr. James Wilkinson	24 months	10 June 1979	Yacuiña, Villamontes
Seeds Improvement	- Dr. Adriel Garay	18 months	15 June 1980	Santa Cruz
Fruits and Vegetables	- Dr. Francis Masson	2 months	25 March 1980	Tarija
	- Mr. Manuel Silva	1 month	17 April 1980	Tarija
	- Dr. Waldo Heron	2 months	22 April 1980	Chukuisaca
Acquisition	- Mr. Lester Hook	2 weeks	March 1980	Santa Cruz

^{1/} Most of this time the technician worked as Chemonics Chief of Party, leaving only 25% of time for planning.

^{2/} Mr. Rios started on February 3, 1980, replacing another technician who began the project on June 10, 1979.

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SECTION III
PROGRESS IN INSTITUTION BUILDING

A. Agriculture Sector Planning

1. Overview

The objectives for the first six month period of 1980 were to help reorganize the economic analysis and planning functions of MACA so as to strengthen these activities, and to initiate work on a Linear Programming Model as a tool for data compilation and analysis needed for a Five Year Plan.

Prior to this period, little effort had been made in agriculture sector planning due to two factors:

- o The administrative workload required of the Chief of Party, who also has responsibilities in planning, occupied a large amount of time.
- o MACA lacked a coherent on-going program for economic analysis aimed at planning and policy formulation.

In an effort to overcome these difficulties, Chemonics attempted to redistribute the use of time of the Chief of Party and place more emphasis on planning. A memo was submitted to the Director General of MACA in January expressing a desire to get moving in this important technical area. The memo presented four alternatives for formulating a planning program in MACA involving the use of advisors. Further, if none of these four options was acceptable, the memo suggested a fifth option requiring the redirection of Chemonics' responsibilities to other technical areas. A recommendation was made to form a committee that would study the means of strengthening the planning and economic analysis functions and thus set in motion a process for developing the next five-year plan.

No response was received to this proposal. However, in February, MACA approached Chemonics about providing the services, full-time for three months, of an agricultural planner to assist in restructuring certain units

within MACA related to planning: OPS, Statistics, Administrative Analysis, Budget Programming, and Economic Studies. Chemonics agreed, enthusiastically, to undertake this work after the Agricultural Symposium in March.

Eased on the assumption that this restructuring would materialize, and thus create a favorable environment for agricultural sector planning, Chemonics decided to seek definition of its long-term role in this area. Therefore, on February 20, a second position paper was presented to MACA and USAID, again outlining alternatives regarding Chemonics' role in planning; but this time, initiating a change in contract resources dedicated to this activity. The most desirable alternative was based on the assumption that the restructuring of OPS and other offices would come about. It involved a redefinition of the seventh position, earlier specified for work in small farmer credit, to one employing a long-term agricultural sector planner. This was agreed to by all parties, and a letter for the Minister's signature was prepared, asking USAID to maintain funding for this position until it could be formally redefined.

The First National Agricultural Symposium, held in March 1980, set new directions in agricultural planning. This Symposium led to the formulation of two commissions: one responsible for development of a general five year plan and the other to devise a plan for institutional restructuring in the agricultural sector. Both commissions were to submit final reports within 90 days of the appointment of their members. These reports would be taken up in Congress to develop necessary legislation for financing and restructuring of the sector.

In an effort to assist the first commission, a work plan was drawn up by OPS, Statistics and Chemonics involving three months of intensive work on the Linear Programming Model of the Agriculture Sector available in MACA. This work plan assumed the provision of a short-term advisor from Chemonics to participate full-time in this effort. Accordingly, in early April, Chemonics received a letter from the Minister requesting three months of full-time, short-term assistance in planning. However, this letter failed

to give specific approval for an additional technician. Chemonics' Chief of Party made an effort to provide some of the needed assistance until this issue was made clear but, due to project management duties, could not devote the required full-time assistance. On May 9, Chemonics met with the Minister, the Subsecretary, and the Director General, as well as personnel from OPS and Statistics to clarify our responsibilities in planning and other areas. After a brief review of the MACA/Chemonics contract, the Minister made the decision that the contract should be amended, redefining the seventh position to one for a full-time planner, and that this advisor should be contracted as soon as possible. The amendment was prepared, but despite considerable effort, had not reached the Minister for his approval by the end of the report period.

Interpreting the various events in the report period, it was reasonably clear that Chemonics was expected to respond to an immediate need to provide assistance, on short notice, to coincide with the commission's work on the five year plan. Concurrently, we had moved (pending signature of the amendment) to a redefinition of the contract's seventh position to one in the planning area on a long-term basis. Owing to the time lag involved in fielding a long-term technician, Chemonics offered, as an interim solution to both requirements, a short-term specialist in agricultural planning. Approval for the technician was given on June 20th, he arrived in La Paz 3 days later.

2. Progress

In early March, Chemonics' Chief of Party attended the "Prices and Marketing Subcommission" of the First National Agricultural Symposium. Though in a non-participant status, suggestions were made to assist personnel of MACA who were active participants. A great deal of knowledge was attained concerning the problems and organization of the Agricultural Sector. The Symposium was a valuable experience for all that attended, and set important goals for future work in the sector.

Largely as a result of the Symposium, MACA began efforts in conjunction with Chemonics to bring the Linear Programming Model of the Agricultural Sector into operation. The relevant materials were gathered, and a plan of action was prepared, specifying that a three-man technical team would head the project, one from OPS, one from Statistics, and one from Chemonics. An additional member from OPS was to be incorporated into the team later. Other necessary manpower needs were specified. Financing for computer use was offered by USAID in coordination with another individual interested in working on the project, Dr. Joe Goodwin of the University of Florida. Dr. Goodwin had been working on demand equations to be used in the demand side of the model. A proposal outlining the above was presented to the Minister on April 11, receiving his approval. This proposal was also presented to the commission responsible for the Agricultural plan on April 16. At this time, serious work on the model began.

The existing Linear Programming Model that was to be made operational was developed by Dr. Allen LeBaron while under contract to USAID. Later, Dr. LeBaron extended the model while working for CID in Bolivia. The lack of source data was, not surprisingly, the principal problem with the model, and unfortunately, few notes were left behind to describe the data sources used in the final tableau. Initially the technical team assumed that the 1976 sector studies of MACA were the principal base of enterprise budget information. However, after deciphering the entire tableau corresponding to the first of 14 zones in the country, it was found that the data did not correspond to any one known source. Without any documentation as to the methods of gathering data and the sources, the technical team had rather serious doubts concerning the usefulness of the current model. After contacting Dr. LeBaron and others, the team reached a decision to begin fresh on a new data base, starting with the 1978 National Agricultural Sector Survey.

The data from the 1978 survey had been entered onto magnetic tape only a short time earlier, and was not yet available for general use, due to editing requirements. However, approval was given to use some of the information for limited purposes, namely entry into a model that would serve for

demonstration purposes. Meetings were held with USAID, MACA and INE to attain access to the tape and financing for a computer program to pull out the relevant information.

A FORTRAN program was prepared by Chemonics to list the data by zone, crop and level of technology based on use of commercial fertilizers, irrigation, and mechanization. Although the program was ready by May 12, financing was not available until the end of the month. It was run on CENACO's digital equipment with the assistance of personnel from the ERTS program. Results were turned over to MACA the first week of June.

In summary, during the period covered in this report, a great deal of effort was made in initiating work on the Linear Programming Model, including use of about 30 percent of the Chief of Party's time over a three month period and the starting of a short-term technician just before the end of the period. The necessary steps were taken to organize a technical team in MACA to carry out work in planning advocated in the Symposium, the existing L.P. model developed earlier was completely reviewed; new data sources were identified and analyzed; and data from recent survey was processed by computer for building a new model. Little progress was made concerning the institutional reorganization of the Ministry with regard to the planning function. For Chemonics to participate actively in this activity requires a mandate from MACA, which has not been consistently present.

3. Suggestions

As emphasized in Chemonics' last progress report, we feel that advancement in the technical area of planning requires the reorganization and strengthening of MACA offices that deal with economic analysis and planning. For a detailed suggestion of accomplishing this institutional strengthening, we refer the reader to our previous progress report, dated January 24, 1980. Chemonics stands ready to assist in this effort, to the extent and in a capacity deemed appropriate by MACA.

Our second suggestion is largely contingent upon the first. Provided MACA increases its resources for planning, we would recommend stronger

allocation of technical advisory resources to this effort. The procedure for obtaining additional technical assistance is Ministerial approval of the proposed contract amendment which would redefine the vacant seventh contract position to that of a full-time agricultural planner. As currently proposed, this person would focus most of his/her time on the development of a new linear programming model for utilization in data compilation and analysis required for the five-year plan, 1981 through 1985.

The proposed amendment simultaneously creates a position for a full-time planner while deleting specific planning functions from the Chief of Party's job description, though he would maintain supervisory/advisory responsibilities over this technical area. The net effect of this amendment would be to raise the contract level of effort assigned to sectoral planning from the current level of less than half of one technician's time, to a level of one full-time technician plus supervision by the COP. Again, we wish to stress that this increased effort in planning is only feasible if provided within an improved institutional context.

B. Organization and Methods

1. Overview

During the first few months of the Chemonics contract in Bolivia, work in Organization and Methods was of high priority and specifically oriented to cooperating with a commission assigned the task of restructuring of MACA. After the changes that occurred in November 1979, new directions for this effort were not immediately set by MACA. Chemonics presented a work plan before the start of this report period heavily oriented toward continuing efforts in the restructuring of the Ministry, but found that MACA was in a process of redefining its approach in anticipation of the upcoming Agricultural Symposium.

In an attempt to better utilize resources, the Chemonics technician and his counterpart presented an interim work plan to the Director General of MACA in January. The strategy was to define areas of work appropriate

for an interim period that would lay the groundwork for any future efforts in institutional restructuring or in upgrading of administrative systems. This attempt met with limited Ministerial support, so a new work plan was developed placing a review of personnel as first priority. Action on this plan did not come until after the Agricultural Symposium held in March. Meanwhile, other immediate demands were placed on the Office of Administrative Analysis which required the support of Chemonics' technician.

The First National Agricultural Symposium gave a new impetus to efforts at institution building in the Sector. One of two commissions appointed after the Symposium was assigned the task of developing a new plan for restructuring the Public Agricultural Sector. In conjunction with this work, a special group was formed to conduct a study on current personnel resources within the Sector and to make recommendations for improvement. Since this focus coincides with many of the ideas presented earlier by the Chemonics' technician and his counterpart, they were asked to organize the work group and design and conduct the study.

From the above, it can be seen that objectives for the O & M. Technician's work during this period were not clearly defined at the outset. Instead, MACA was preparing for the Agricultural Symposium which would establish new directions and help define Chemonics objectives for work with the restructuring effort. Hence, Chemonics supported MACA in preparing background information for use in the Symposium. After the Symposium, the objective was to gather information for use in a national study of personnel needs and current capabilities in the Agricultural Public Sector.

2. Progress

Prior to the Agricultural Symposium in March, the Office of Administrative Analysis focused on a series of immediate needs expressed by MACA for background information. Chemonics' technician in Organization and Methods took a major responsibility in the following:

- * Reporting on the current situation and future needs of the Office of Administrative Analysis. This was done to insure the availa-

bility of resources to that Office, assuming a future heavy involvement in institutional development.

- * Preparing a background paper on the institutional organization of the Agricultural Sector for the Symposium. This document was utilized directly by commissions at the Symposium to develop policy recommendations for the Sector.
- * Reviewing and summarizing a series of reports presented to the Minister from each decentralized agency concerning the restructuring proposal prepared in October, 1979. It was found that most comments were oriented toward defending the current structure of decentralization.
- * Presenting a special report at the request of the Minister on the current MACA structure, including the objectives and functions of each office.

The technician attended the National Agricultural Symposium in Santa Cruz and assisted with the work of the Legal/Institutional subcommission. A great deal of emphasis was placed on institutional development by most subcommissions at the Symposium, and the technician benefitted in large measure by witnessing the interaction among public authorities, individuals from the private sector, and representatives of producer groups. A summary of recommendations stemming from the Symposium was prepared by the Chemonics Specialist.

At the joint request of MACA and USAID, the technician participated in a two day seminar for planning a regional extension project for three departments in southern Bolivia. The seminar, held in Sucre, was very intensive, covering aspects of institutional organization and extension methods related to working with campesino leaders.

In late March, a technical team was appointed in the Ministry and assigned the task of undertaking a complete review of personnel currently working in the Agricultural Public Sector. With the appointment of the Chemonics technician and his counterpart as team leaders, efforts became

focussed on a major project directly corresponding to the specialist's responsibilities in institutional development. The idea of the study is to examine specific functions performed by offices of MACA and decentralized agencies, and compare those functions with the quantity and quality of personnel responsible for carrying them out. The study includes personnel in La Paz and all departments. Contact was also maintained with the new commission appointed to develop a plan for restructuring. The idea was that this study will complement the commission's activities, since suitable personnel must be available for implementation.

After determining the general approach and methodology of the study, forms for collection of data from personnel files and for conducting interviews were designed. In May and June data was gathered in La Paz, and visits were made to the departments. Specifically the Chemonics technician collaborated in gathering information from the SNTC and from all agencies in the Department of Chuquisaca. Procedures for analysis of the information were designed.

Other activities of the Organization and Methods technician included:

- * Helping draft a statement of MACA's doctrine for the new restructuring commission appointed in March,
- * Assisting in a cost analysis study of local milk producers in Chuquisaca. This work coincided with the trip taken for information gathering on the personnel study, and was requested by the Departmental Director of MACA in Chuquisaca.

In summary, the lack of established objectives at the beginning of the report period hampered progress in Organization and Methods work until the Symposium held in March. Four work plans were presented and considered by MACA before arriving at a definition of responsibilities for an interim period. The Organization and Methods technician was able to help in preparation for the Symposium, but was not utilized to his full capability. The Organization and Methods technician, who also serves as deputy COP placed considerable effort in contract administration at times when Chemonics'

COP was occupied in Sector Planning, including data processing activities. The objective of gathering data for an in-depth national study of personnel was met.

3. Suggestions

It is probably inevitable that MACA will go through periods in which new directions are being established for institutional reorganization. To best utilize the capacities of experts, we recommend formal approval of the long-term work plan presented in February which involves studies that are basic to any restructuring effort to be considered in the future.

We also recommend relocating the Office of Administrative Analysis in the MACA building to permit closer contact with MACA officials. Strengthening of this office with additional qualified personnel is also required.

C. Data Processing

1. Overview

Just before the first of December 1979, the job description for the long-term data processing technician was approved by MACA. The goal was to fill this position as soon as possible. With a normal three-month recruitment period (initial contact thru field placement), it was our intention to fill this position by the end of March. The program objectives from April through June were to establish a data processing unit in the Statistics Department of MACA, and initiate the procurement of computer hardware for this unit.

Under the T-050 loan agreement, USAID funds were allocated for the purchase of computer hardware to satisfy the specific data processing needs of MACA. By the end of 1979, a series of consultants' reports on MACA's data processing requirements had been written, but no plan of action for the hardware/software procurement had been developed.

In January 1980, the Minister of Agriculture signed an agreement with the Director of the ERIS program in Bolivia to provide \$130,000 in USAID loan

funds for the purchase of computer hardware for digital display and analysis of satellite images of ERTS. The rationale behind the agreement was that outputs of ERTS could be useful to MACA and other institutions of the Sector especially for agricultural sector planning. People at the technical level of MACA were concerned that if this amount was utilized for the ERTS program funds might not be left in the loan from USAID to satisfy MACA's own internal needs for computer hardware and software. This concern was formally expressed to the Minister.

2. Progress

Recruitment for the long-term computer processing technician began in December, and two strong candidates were presented to MACA on the 29th of February, 1980. Unfortunately, one of these candidates decided to accept a position in the United States and withdrew a few days after presentation. MACA then requested Chemonics to reactivate the search for candidates. After continued efforts, another field of candidates was presented at the end of June 1980.

Meanwhile, in an effort to move the project forward, two short-term experts were contracted. Dr. David Freeman was employed for one month to coordinate with ERTS, USAID, and MACA in determining needs for digital display equipment for the ERTS program in Bolivia. In the company of the Director of Statistics, MACA, Director of ERTS/Bolivia, and personnel from USAID/Bolivia, Mr. Freeman visited the Laboratory for Application of Remote Sensing (LARS) at Purdue University, and the IPM Scientific Center in Mexico City before coming to La Paz in mid February. After a review of the ERTS/Bolivia program, Mr. Freeman prepared a comparative evaluation of the capabilities of these three institutions based on current hardware, software and personnel. From this evaluation, hardware needs of ERTS/Bolivia were developed to increase capacity in digital display and analysis of remote sensing data. In addition, a mini computer was suggested to operate and control the different peripheral equipment and connect to a mainframe computer. The latter would not be purchased by ERTS, instead, space would be

rented on an existing machine in La Paz. Mr. Freeman visited YPFB and CENACO where space on mainframe computers is available, and after some analysis of their capacities, recommended connection to the IBI' computer at YPFB.

During the course of this work, it became apparent that both MACA's needs for a mini computer coincide with those of ERTS. Though a 'mini', this machine is high speed, and has as much capability as full size computers of a few years ago, and thus can satisfy most of MACA's requirements. The mini required for the ERTS program would be utilized less than half time, pointing to obvious cost advantages from joining efforts of the two institutions.

Freeman contacted vendors and made recommendations on specific hardware configurations. Results of this work were presented to MACA, ERTS and USAID, including an analysis of the usefulness of improving ERTS' data information systems and cost estimates of peripherals and the mini computer. Results of Dr. Freeman's work were published and distributed on April 17.

Meetings between MACA, ERTS, USAID and Chemonics continued during April resulting in a calendar of activities to coordinate efforts for the procurement of computer hardware. Following MACA approval, Chemonics employed Dr. Rafael Martínez for three weeks beginning May 4 to assist MACA in identifying its needs for data processing and to write exact specifications for hardware, software and method of purchase. For the purchase to be accomplished, MACA and ERTS must reach an agreement regarding funding, location of the equipment, access to computer services, and operation of the computer. Dr. Martínez also had strong responsibilities in helping define this relationship.

Upon arrival of Dr. Martínez, a work plan was developed in coordination with the Statistics Department of MACA. Earlier reports done under the CID contract were reviewed and a series of sessions were scheduled with institutions in the Agricultural Public Sector considered to be major potential users. These included departments of the MACA as well as decentralized institutions such as Agrarian Reform and the Agriculture Bank. This step was essential in defining the final configuration of hardware and software, as

well as personnel needs for the new data processing unit.

Guidelines for the MACA/ERTS agreement were drawn up and discussed in detail with both institutions. Special emphasis was placed on needs for highly qualified personnel to operate and maintain the computer equipment and develop needed software and data management systems. The issues regarding computer purchase, installation and location were included. Throughout the month of March, Dr. Martinez participated in a series of meetings aimed at defining the relationship between MACA and ERTS as well as coordinating with USAID on funding issues.

Vendors of equipment were contacted to obtain cost approximations which accompanied the specifications for the equipment purchase. Recommendations regarding the organization of the data processing unit were developed, including specific personnel needs and suggestions for training programs. At the request of the Director General of MACA, Chemonics assisted in coordinating a meeting of all interested parties on ~~March~~^{MAY} 23, at which time the final recommendations were discussed in detail. A report containing these recommendations was completed and distributed on ~~March~~^{MAY} 29.

The first draft of the MACA/ERTS agreement (completed late ~~March~~^{MAY}) proposed that the data processing unit not be placed in the Statistics Department of MACA, but instead that a separate processing center be established. The new center would provide data processing services to public institutions of the Agriculture Sector for a fee. By charging for services provided, use of the center would be regulated, and funds would be raised to meet salary demands of more highly qualified personnel necessary for the task. By the end of June, a second draft of this agreement was in process. Action must be taken to formally establish this center before the purchase of hardware and software can proceed. Meanwhile, however, work in data systems management is needed in various institutions of the sector to prepare for future utilization of mechanized data processing.

In summary, during the seven months of the project covered by this report, two short-term consultants worked seven weeks, both focusing on

steps leading toward computer purchase and establishment of a data processing capability for the Agricultural Public Sector. This resulted in definition of computer hardware and software needs of MACA and ERTS, specifications for equipment purchase, and a process to legally establish a data processing center. Many of the original assumptions and conditions of the basic program changed during the period due to the linking of MACA and ERTS, but the main objectives remain the same. Significant progress was made by MACA with Chemonics' support in the two objectives stated earlier: establishing the data processing unit or center and initiating hardware/software procurement.

3. Suggestions

The rapid advancement of this project hinges on the establishment of a data processing center. Hence we hope that the final agreement between MACA and ERTS be formulated and action taken as soon as possible.

A decision is needed on Chemonics' long-term technician in data processing. This technician should be in country well ahead of computer purchase to focus on: 1) data systems management in various institutions which will be future users of the computer, 2) recruitment of personnel for the center, 3) training in data management and automated data processing, and 4) preparation of the facility for reception of the hardware.

Chemonics is available to assist in the future with the details of the procurement in any manner desired by the Ministry.

SECTION IV
PROCESS IN FIELD ACTIVITIES

A. Land Clearing

1. Overview

Two Chemonics' technicians assist CODETAR in the implementation of its land clearing program in the Chaco area of southern Bolivia. One technician is assigned to land clearing operations and the other works in heavy equipment repair and maintenance. During the first part of the report period the CODETAR repair facility in Palmar Chico received relatively little attention on the parts of Chemonics and CODETAR because of lack of tools and materials to adequately operate a maintenance program. Few spare parts were kept on hand to make needed repairs and perform routine maintenance. Consequently the principal objective of Chemonics' adviser in heavy equipment repair during the early part of 1980 was to set up an operating shop including the installation of the various pieces of equipment, establishment of maintenance schedules for field mechanics and systems of control for tools and materials. In terms of shop management, systems were devised to set up a spare parts stock, control the inventory and distribute parts to shop personnel. These activities imply significant on-the-job training of local personnel in planning systems and design of facilities. Since this report period covers harvest in the Chaco, the heavy equipment technician assisted with the preparation and maintenance of equipment used in CODETAR's farm machinery pool.

During the period two peanut harvesters were retired from customs, two soybean harvesters were purchased for CODETAR, and another two soybean harvesters were borrowed from CBF. The new equipment required assembly, testing and adjustment, while the two older CBF machines required major overhauls thus resulting in a major effort on the part of Chemonics' technician to prepare the equipment for operation.

Objectives for Chemonics' Land Clearing Technician focussed first on economic analysis of land clearing operations and later planning for the 1980

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land clearing season, which began in June. The former activity implies a compilation of data from previous years operations, data analysis and a presentation of the analysis to CODETAR. In his presentation the land clearing technician recommended ways to improve efficiency and thereby reduce costs.

Planning field activities included recommendations on mode of operations and visits to the field to identify clients and develop strategies on movement of equipment and support personnel. During this period new methods of land clearing were to be identified and demonstrated. A final objective for this technician was to support CODETAR's agricultural activities during the harvest season.

2. Progress in Maintenance of Heavy Equipment

After his arrival in Bolivia, the Heavy Equipment Technician met with administrators of CODETAR and shop personnel to establish functions for each person and systems to be used in management of the shop. Chemonics' adviser began work on the design of shop facilities and a plan of operations to establish a workable maintenance program. Specific pieces of equipment were inspected and lists of needed parts were drawn up and presented to CODETAR. This equipment included:

1. International tractor-trailors.
2. Peanut harvesters and diggers.
3. IDEAL soybean harvesters borrowed from CBF.
4. D7G Caterpillar tractors.

An office was established in the shop to accommodate the Chemonics' technician and his counterpart, Ing. Carlos Urdininea.

Based on the shop design, materials were requested for construction of work tables and warehouse facilities for parts. The lathe and vertical drill were set up, although is still not operational due to a lack of parts and tool attachments. A welding area was set up apart from other shop activities and functions with the use of a portable welder.

Assistance was given in constructing a fence around the two hectare

area of the shop. The grounds and interior of shop buildings were cleaned and organized, to establish a routine of maintaining equipment, tools and facilities in neat order. A new schedule was established for workers.

Heavy welding equipment cannot be used until the shop's generator is installed. Plans were made for the installation of two grease units, a permanent one for the service ramp at the shop, and another to be mounted on a truck for field servicing of tractors. Unfortunately, the second unit had to be removed from the truck due to other general uses for which the truck was needed.

Routine maintenance on Caterpillar tractors including replacing faulty fittings to stop oil leaks in the hydraulic systems. Air filters were cleaned along with the magnetic and hydraulic oil filters. Outboard bearings on final drives were retightened to prevent oil leaks. Special wrenches and seals will be needed to accomplish a more complete job on final drives in the future. The CATS were given routine maintenance checks, including oil changes, putting seven of them in operable condition since March 1980.

Other routine maintenance work included rehabilitating two IDEAL combines after necessary parts were received, and assembling the new peanut and soybean harvesters purchased for CODETAR by Chemonics.

The two new peanut diggers both lacked several major components, but one complete digger was assembled by taking parts from the other. The bottom panel of an IDEAL combine was repaired after presenting difficulties in the field and one FIAT tractor was assembled and tested for field work.

In the important area of parts supply and inventory control the Chemonics' technician played a special role. A parts warehouse was organized in a separate building close to the main shop and kardex systems were set up to control the use of parts and inventory, with minimum and maximum limits set. To help manage fuel inventory, two diesel tanks of 20,000 liters each and one tank for gasoline were installed at the shop.

The heavy equipment technician assisted in the purchase of clutch parts

for the FIAT tractors, parts for International tractor trailers, hydraulic hoses which had fittings mounted in Tartagal, Argentina, filters for CATS, and other minor items.

A large stock of oil and grease was purchased by COMETAR for long-term needs of the program. Meanwhile, it was learned that the stock of spare and repair parts for the Caterpillar tractors (financed by the USAID T-059 loan) had been off-loaded in Buenos Aires early in the year. To date these parts have not been re-shipped to Polivia.

The Heavy Equipment Maintenance Technician spent a good deal of time on training activities during this reporting period. The training dealt principally with a study of the design and organization of the shop, including a welding area, a service ramp and grease racks, a tool room, a lath and drill press area, a parts warehouse, an office, etc. Shop organization and maintenance system were fully covered. However, the initial lack of tools hampered this aspect of work, and, of course, the amount of actual training that could be carried out. The Bolivian counterpart was given training to improve his knowledge of the use of tools and management of personnel.

Guidance in the area of repair and maintenance included changing the practice of disassembling machinery to discover problems. Instead, emphasis was placed on the need to have parts and tools on hand before initial disassembly is begun. Regarding field operations, it was recommended that operators work consistently with the same machine; this practice will minimize maintenance difficulties and maximize the useful life of machines.

Other specific training included teaching mechanics the proper clutch adjustments on CATS to prevent burnt out bearings, and explaining power dividers to drivers of Internationals. Maintenance books were lent to drivers and operators, and specific points were discussed in detail.

In summary, equipment maintenance objectives were met with the exception of a completely installed shop. This has been delayed due to lack of tools and equipment, a problem that is becoming crucial as time goes by. Indeed, without

electric power and a fully equipped lathe, much of the repair work that will be needed in future months will have to be sent out to private shops in Yacuiba or Santa Cruz.

3. Progress in Land Clearing

At the request of CODETAR, Chemonics' land clearing technician prepared an economic analysis of the land clearing operation along with cost projections for 1980, based on alternative amounts of land to be cleared --400, 800, and 1200 hectares. Effects of the devaluation of the Bolivian peso and increases in the real cost of diesel fuel were especially noted. A summary of expenses was included showing operation costs and amortization of equipment. Naturally, costs per hectare reduce drastically as number of hectares increases closer to the full capacity of the equipment. This study and the resulting recommendations were presented and discussed fully with CODETAR personnel in February. After this meeting, a series of monthly reports were prepared by Chemonics' technician for the benefit of the client.

Other cost analysis were done to help determine appropriate prices for work by CATS, farm implements and peanut and soybean harvesters. Another cost analysis completed at the request of the Integral Cooperative in Yacuiba was presented to USAID. At the Cooperatives request the technician reviewed a feasibility study on the acquisition of three soybean harvesters.

Recommendations were made to CODETAR regarding collection of data in the field in order to determine what crops were planted and other information relevant to the 1979-80 agricultural season. Rain gauges were purchased by Chemonics and a plan for their utilization developed in conjunction with IBTA.

Planning for field activities included organizing clients by zone to assure the rational use of machinery during the harvest. Detailed recommendations were made on the organization of initiating harvest operations regarding the use of personnel, tools, control of equipment and method of contracting with clients. A form was developed for daily control of harvesters. In April, two logistics maps were prepared to delineate the areas to be harvested, one for Yacuiba-Sachapera, and one for Villamontes.

At the beginning of the land clearing season, clients were located and assistance was given in planning the movement of machinery to work areas. It was suggested to CODETAR that machines be concentrated in one or two areas at the same time, rather than dispersing them to four or five areas, in order to facilitate support and supervision. This suggestion was well received, and the decision was made to schedule services within set dates for given areas so as to assure all clients equal treatment.

The technician assisted in the assembly of a planter and cultivator and calibrated the planter in the field. Three harrows were also assembled. Trial runs were made with new cultivators and operators were instructed as to correct wheel width, and distances and depths of blades. Assistance was provided in preventative maintenance and manuals prepared giving special precautions for the conditions of the Chaco. A list of parts was made up for International trucks.

Few new practices in land clearing were tried during the report period. Materials and labor requirements to build a tree pusher were developed and discussed with the client. Also, Chemonics was requested to contract a short-term technician to demonstrate the use of chain land clearing in the Chaco. However, final approval was delayed until the chain was cleared from customs and transported to Yacuiba, which had not occurred before the end of the report period.

Training activities included development of courses on preventative maintenance and operation of land clearing equipment. Operators were trained on use of the Rome Plow, emphasizing field adjustment. Guidance was provided to operators concerning parameters of the work to be performed, i.e., in what condition land should be left to satisfy the farmer/client, taking cost into consideration. Field instruction was provided on the operation and preventative maintenance for combines.

Finally, mechanics were instructed on correct valve clearance adjustments for Fiat tractors, and a practice session was held.

Other general kinds of support in the Chaco provided by the Land Clearing

Technician included inspection of a drainage canal north of Yacuiba and recommendations to tractor operators on method of improvement. An air compressor was inspected, problems identified and assistance provided with repairs. Also, a special "fishing" tool was built to recover a pump lost at the bottom of a water well in Pocitos. This effort resulted not only in saving an expensive pump, but also the well itself.

In June of 1980 CODETAR decided to change the Land Clearing Technician's base to Villamontes to provide assistance to the field supervisor responsible for that area, Ing. Oscar Paz. A work plan was prepared and preparations were made to comply with this request.

In summary, a great deal of effort was made during the report period in economic analysis and planning of future operations both in agricultural activities and land clearing. Field activities outside of soybean harvesting were at a minimum; however, the land clearing technician helped with several special activities described above and in the next section'

4. Progress in Other Areas Related to Land Clearing

In March 1980, Chemonics was requested by MACA and USAID to proceed with an emergency procurement of two soybean combines for the Chaco. Since the capacity of existing harvesters in the Chaco was not nearly adequate for the number of hectares planted to soybeans, and harvest was to begin in April, Chemonics faced a great deal of pressure to ensure that the machines be delivered quickly to CODETAR. Chemonics' Land Clearing Technician and Chief of Party began visiting suppliers in Santa Cruz during early March to ascertain equipment availability before the arrival of our acquisitions expert from Washington, Mr. Les Hook. Available machines in Santa Cruz did not meet specifications; however, with the kind assistance of Mr. Juan Steer, former USAID employee, arrangements were made to purchase one unit from CIAGRO which would later be replaced from the factory. Another smaller machine was provided by Masanas. Thanks to the fine cooperation of Mr. Carlos Ferro of USAID, "trámities" were cut to a minimum and both harvesters were in Yacuiba by the end of March, two weeks before the beginning of harvest.

Other support included helping obtain quotes for purchase of 18 radios for CODETAR, assistance in the transport of vehicles and equipment from La Paz to Yacuiba, and providing liaison among CODETAR, MACA and USAID regarding acquisitions and customs liberations. Other smaller acquisitions were undertaken and reimbursed directly by CODETAR. Assistance was provided by Chemonics' administrator on the use of Kardex systems in the Yacuiba office of CODETAR.

In Tarija, Chemonics' Land Clearing Technician prepared a cost analysis of equipment used for road construction. New costs were shown after the peso devaluation to establish hourly rates to be used for work for in the private sector. Services were provided to the Tarija feed plant and recommendations were made regarding equipment maintenance and modification.

5. Suggestions

The purchase of tools and equipment for the Palmar shop should be the highest priority of MACA and CODETAR to ensure that major investments already made are fully utilized. For Chemonics' technician in heavy equipment maintenance to fulfill his responsibilities adequately, it is crucial to have the proper tools available for the training of counterparts and other personnel involved in the project.

We also recommend terminating the Land Clearing Technician at the end of the 1980 land clearing season and replacing him with a soils expert for a one to three month period beginning in January. There is a pressing need to analyze the effects of erosion in the Chaco, including the Chaco Humedo, where cultivation is being intensified due to the construction of water reservoirs, coupled with clearing of small parcels of land for pasture improvement. The latter activity will very likely reduce erosion problems by permitting a more even dispersion of livestock over the region, thus reducing intensive grazing around existing water holes, which are limited in number. However, expert advice is needed to ensure a rational utilization of natural resources, particularly land.

B. Seed Improvement

1. Overview

Terms of reference for the long-term seed position were agreed upon with MACA prior to the beginning of the report period. MACA also requested that the position not be filled until July 1980, thus making it possible for the technician to cover two agricultural seasons during his 18 month contract. Candidates were presented to MACA and Dr. Adriel Garay was chosen for the position. He began work in Bolivia in mid June.

The initial objective was for Dr. Garay to visit various seed installations in Bolivia and assess the current status of the seed program.

2. Progress

After making initial contacts Dr. Garay and Chemonics' Chief of Party accompanied Ing. Anibal Guzmán, Director of MACA's Seed Department, to Santa Cruz. Meetings were held with public and private groups in which principal problems regarding seed quality were discussed. By mutual consensus, it was decided that Chemonics' advisor should place priority emphasis on soybeans, corn, rice, wheat and potatoes. Geographical areas of concentration for the three lowland crops should be Santa Cruz and the Chaco.

During late June and early July visits were made to the Seed facilities in Santa Cruz, the Chaco, Tarija, Potosí, Sucre, and Cochabamba. Specifically, the centers visited include the seed processing plant in Warnes, fields production of winter crops in Santa Cruz, Abapó-Izozog Project in the Chaco, Experimental Station "Gran Chaco" near Yacuiba, Seed Department of MACA in Yacuiba, Seed Processing Plant in Tarija, seed production areas near Tarija and San Juan del Oxo, Seed Plant in Betanzos, Experimental Station "Chinoli" in Potosí, seed facilities in Sudañez, IBTA offices in Sucre, the Seed Processing Plant in Cochabamba, and the Toralapa and San Benito Experimental Stations in Cochabamba. Excellent cooperation was received by MACA and other personnel in all areas, which helped the Chemonics' advisor develop a brief report including guidelines for a work plan.

3. Suggestions

Coordination with the Seed Department of MACA has been very positive. Development of a work plan and assignment of specific counterparts for the many facets of work in seed improvement should be the next step, in which Chemonics hopes MACA will be heavily involved.

Additionally, installation of processing machinery in the plant at Warnes appears to be a critical element in developing a comprehensive seed improvement program. Hence in order to insure efficient use of resources dedicated to this program, we recommend prompt action.

C. Processing and Marketing of Fruits and Vegetables

1. Overview

This technical area is not defined in the MACA/Chemonics contract, but instead has developed due to requests for short-term technical assistance from several institutions. In January, 1980, CODETAR and CORDECH each made requests to MACA for help in designing marketing systems and elaborating specifications for equipment needed for fruit and vegetable handling and processing. In the case of Tarija, emphasis was placed on fresh fruit and vegetable marketing and peach drying on a small scale. CODETAR's plan is to expand processing capacity in stages and increase fruit production at the same time. In Chuquisaca, a pre-feasibility study had been elaborated for a complete line of processing facilities. Here, technical input was requested regarding the specific equipment required, including cost estimates, as an input into a final feasibility study. Emphasis was placed on organization of the plant and coordination with growers. Fresh fruit handling and marketing was included later as a necessary element in this project.

After consideration of these requests, MACA authorized Chemonics to provide the needed assistance. The MACA/Chemonics contract contains 30 man-months of time for short-term consultants financed with T-059 loan funds of USAID. In designing the contract, MACA expressly maintained flexibility over the use of this assistance to facilitate meeting requests such as these. Chemonics' COP visited Tarija and Sucre to define more specifically the tasks to be performed. Two consultants were first recruited for the work with CODETAR; a third person was brought in later to assist CORDECH.

In May, another request was received by MACA from the University of Tarija for a similar kind of assistance in designing a laboratory for teaching methods of fruit processing. Since the needs for trained personnel will become acute once the commercial scale projects of CODETAR and CORDECH begin operations, the University's training program is complimentary to the other projects. MACA authorized the use of two consultants for this work, for a total of one man-month of effort.

Before the end of the report period, additional requests were received from CODETAR for work in vegetable processing, from CORDECH for marketing studies at the national level, and from the Association of Citrus Growers of Tarija, also for marketing studies. These requests are currently pending.

The objectives for this reporting period, developed upon receipt of the requests, were to initiate studies that would result in: (1) recommendations for a fresh fruit and vegetable marketing project in Tarija and specifications on equipment needed; (2) dimensions for a fruit processing facility in Chuquisaca, suggestions on the organization and management of this facility, and equipment specifications for it; and (3) specifications for a fruit processing laboratory for training purposes for the University of Tarija, plus suggestions on a training program. Later in the period, the time frame changed with regard to the Tarija work and Chemnics was requested to complete the report in May, if possible. Also, during the course of the work in Chuquisaca, fresh fruit packing was included.

2. Progress

Dr. Francis Masson arrived March 25 to begin work on fresh fruit and vegetable marketing in Tarija. Rains that had washed out a bridge en route to Tarija, and changes in LAB flights, delayed his arrival to Tarija. Upon arrival, a detailed work plan was developed in coordination with CODETAR involving field visits and the gathering and analysis of market data from Tarija, Sucre and La Paz. The time frame of the work plan overlapped with a second technician who would be responsible for equipment specifications.

Field visits were conducted to explore aspects of product availability and quality, production and handling methods, as well as the growers interest in cooperating with a centralized marketing organization. Existing local producer cooperatives were assessed in terms of organizational strength and economic viability. In Tarija, contact was maintained with the central cooperative, CERCAT, the association of fruit and vegetable producers, and with German volunteers involved in cooperatives and improvement of fruit

production. In Sucre, contacts were made with Acción Loyalista (ACLO) which operates a farmer market, with CORDECH, and with the Marketing Department of MACA. Marketing data was gathered in La Paz, Sucre and Tarija for analysis leading to recommendations on the mode of operation of a fresh fruit packing plant.

Mr. Manuel Silva arrived on the 16th of April for a two week assignment in Tarija. His input was vital in determining the dimensions of the packing plant and providing guidelines on fruit drying. Once the overall strategy was defined, specifications were written for recommended equipment. Catalogues and cost estimates were gathered in the USA for inclusion in the final report, which was presented in draft form to CODETAR in June. Before leaving Bolivia, the consultants also prepared a special report for CODETAR and MACA on the feasibility of tomato processing in Tarija, advising that careful study is needed before investing heavily in this project. Alternative means for initiating a modest program were outlined.

The work in Chuquisaca began on April 22 with the arrival of Dr. Waldo Heron. A trip was scheduled to the Valley of Cinti, the principal fruit producing area of the department. From there, Dr. Heron and two CORDECH counterparts visited Tarija where a general meeting was held with CODETAR and all three Chemonics' technicians, plus the OOP, to compare progress made on both projects. Recommendations being formulated for Tarija were discussed amply with the participation of the CORDECH representatives. It is felt that this kind of coordination can help prevent duplication of efforts among departments that could cause an oversupply of some products in limited national markets.

After completing observations on the agriculture of the area and updating estimates of raw material availability, Dr. Heron made recommendations concerning methods of cultivation. Then a plan of operations for the processing plant was elaborated, and notes provided regarding engineering aspects of processing fruit, including canning, drying and making jams and nectars. Dimensions of the plant were then determined, which led to recommendations on

specific process lines and equipment. Catalogues and cost estimates were obtained in the United States. These are to be included in the final report, which is expected to be available by August, 1980.

Dr. Heron also accepted the assignment of writing specifications for the University of Terija's training laboratory. Approval of this work was received at the end of June, hence no progress can be reported.

In summary, work in the area of fruit and vegetable marketing and processing has become a technical area of concentration for Chemonics during this report period. It is felt by Chemonics to be an appropriate work area, in substantive terms, for several reasons:

- focus on small farmer productivity,
- located in a geographical area associated with Agricultural Sector II,
- a program priority previously suggested by USAID Project Manager, and
- a request issuing from a secondary client specified in the Chemonics contract (CODETAR).

Perhaps the overriding rationale for Chemonics' collaboration stems from the fact that our primary client, MACA, expressed interest in utilizing unassigned contract resources to this technical area. Concentrating a good deal of short-term time in one specific technical area enables the contractor to have a more meaningful and consistent role in defining the development priorities of the agricultural sector.

In total three technicians worked on this program for a total of 19 weeks between March and June. All of the original objectives involving initiation of three separate studies were met. The first of these was delivered in draft form to CODETAR during June.

3. Suggestions

Chemonics feels that fruit and vegetable marketing and processing should be viewed as a continuing program. Certainly the principal responsibility over Chemonics' involvement in this technical areas lies with MACA, and we feel their continued leadership is beneficial to all parties. Each of the three pending requests mentioned earlier should be considered promptly.

In addition, increased coordination among the regional development corporations of Tarija, Chuquisaca and also Cochabamba, as well as other institutions, is needed to prevent overinvestment in production processing facilities. Hopefully, an overall plan guiding the activities in each department could be elaborated in function of market limitations. Chemonics has helped initiate some interaction, but leadership by MACA is required to establish a more formal process of coordination.

SECTION V

PROGRESS IN PROJECT SUPERVISION AND ADMINISTRATION

A. Overview

Project supervision and administration involves two basic functions, one the management and supervision of technical areas described earlier, and the other administration of the project as a whole, including supervision of a local staff. Both functions are primarily the responsibility of Chemonics' Chief of Party in Bolivia, who has also been active in Agricultural Sector Planning. However, the Organization and Methods Technician, who also acts as Deputy Chief of Party, assisted with project administration during the reporting period. For the future we are working under the assumption that a long-term specialist will be approved to assume contractual responsibilities in planning. This assumption is based on a decision reached by the Minister of Agriculture.

Objectives in supervision of technical areas for the report period include the initiation of work plans for the second year of activities, and defining and filling of vacant positions in seed improvement, data processing, and planning (the seventh position of the contract originally specified for small farmer credit). Other objectives were to improve our reporting mechanism so as to make it more efficient in terms of time occupied and usefulness to our clients, and to continue cultivating a relationship with MACA whereby Chemonics can provide more needed support in policy decisions. That is, a goal was to demonstrate to MACA how to best utilize the technical assistance resources of the contract. On the contract administration side, the major goal was to turn more responsibilities over to local employees, thus permitting the OCP to be more effective in the supervision of technical areas.

B. Progress in Supervision of Technical Areas

The previous sections of this report dealing with progress in each technical area reflect much of the work accomplished in the supervision of

those programs. Hence, the highlights are summarized here by listing major activities.

1. Sectoral Planning

- * Assisted the Office of Sectoral Planning and the Department of Statistics in developing a proposal to work on a linear programming model. Participated in elaborating a detailed work plan for this model.
- * Prepared a job description for a short-term technician in sector planning and linear programming. When this consultant arrived in La Paz, helped develop a detailed work plan.
- * Reached an agreement with the Ministry on a contract amendment to place a long-term technician in the Office of Sector Planning.

2. Organization and Methods

- * Presented a work plan to the Ministry for formal approval.

3. Data Processing

- * Supervised a short-term technician who identified hardware/software needs of FRTS.
- * Arranged a series of meetings with MACA, FRTS, and USAID to further explore the possibilities of combining efforts to establish a data processing unit for the agricultural public sector.
- * Edited the draft of technician's final report and presented it to MACA.
- * Developed a calendar of activities to guide efforts toward reaching an agreement between MACA and FRTS.
- * Together with the Director of the Department of Statistics of MACA, wrote a job description and selected a short-term specialist to define MACA's needs for computer hardware and software, and write specifications for purchase of equipment.
- * Helped coordinate meetings between MACA, FRTS, and USAID to establish the method of purchase and organize a data processing

center.

- * Presented candidates for the position of long-term technician in data processing.

4. Seed Improvement

- * Participated in orientating the new long-term technician in seed improvement. Reached agreement with MACA as to work assignment and priorities.

5. Land Clearing

- * Established a system of monthly reporting and formal recommendations to CODETAR.
- * Helped orient the new Heavy Equipment Maintenance Specialist who began work in February.
- * Edited a special report submitted to CODETAR by the Land Clearing Technician.
- * Participated in meetings in La Paz, Tarija and Yacuiba concerning plans for the 1980 land clearing program.
- * Reached important decisions with CODETAR regarding the best means of coordination on the part of Chemonics.
- * Prepared a work plan for the Heavy Equipment Maintenance Specialist and presented the plan to MACA.
- * Assisted in the acquisition, of two combines and 18 radios for CODETAR. Also assisted with a series of smaller purchases.
- * Established a new work plan for the land clearing technician involving a change in work site from Yacuiba to Villamontes. Conducted an evaluation of work progress of Chemonics in this area.

6. Marketing and Processing of Fruits and Vegetables

- * Prepared job descriptions in coordination with CODETAR, CORDECH, and the University of Tarija for three separate, but related, pieces of work.

- * After fielding two technicians in Tarija, developed work plans and provided backstopping by maintaining contacts with various institutions and by gathering market data.
- * Edited a special report on tomato processing and presented it to MACA.
- * When a third position was fielded for Chuquisaca, initiated a meeting of the two departmental development corporations (CODETAR and COPDECH) to improve efforts at coordination of their programs.
- * Edited a summary of recommendations made to COPDECH.
- * Participated in the elaboration of information for final reports.
- * Helped select two specialists for the work requested by the University of Tarija.

In summary, work plans were completed for O & M, Heavy Equipment Maintenance and Land Clearing and another is being developed for Seeds Improvement. The seed position was filled; candidates were presented for the Data Processing vacancy. A job description was developed for a full time planner. All short-term consultants in data processing, fruits and vegetables, and planning have had work plans developed from their job descriptions, and have prepared final reports.

C. Progress in Contract Administration and Logistics

Administration includes activities related to accounting, local staff supervision, vehicles, support to expatriate personnel, contract procurement and customs clearances, reporting, coordination with MACA and USAID and internal firm management. A few of the principal activities from January through June are outlined below.

1. Local Staff Administration

- * Prepared bi-weekly work schedules for office staff.
- * Utilized efforts of the local administrator in procurements.
- * Increased capacity for translating reports through contracting outside persons.

- * Defined new position for bookkeeper/secretary and recruited a qualified individual.
- * Planned methods for evaluation of local personnel.
- * Maintained control over utilization of time of local employees.
- * Took steps to adjust per-diem rates of local employees.

2. Reports and Evaluations

- * Established a system of report preparation and distribution.
- * Signed contract amendment with MACA and USAID to change frequency of regular reports to semiannual rather than quarterly.
- * Distributed quarterly report for period from August through November, 1979.
- * Participated in an informal evaluation of the project with USAID.

3. Logistics

- * Worked out details of office arrangements in La Paz, Yacuiba, and Santa Cruz.
- * Reviewed insurance policies of Chemonics with respect to vehicles, office and household furniture, and liability, and brought insurance up to date.
- * Received project vehicles and returned three Jeeps to MACA.
- * Received last shipments of household furniture.

The general objectives in contract administration have been met by better utilizing local staff and thus allowing the COP to focus much of his attention on technical supervision.

D. Suggestions

1. Technical Supervision

Chemonics fully accepts the responsibility for management and supervision of the technical assistance input into programs specified in our contract and others identified by MACA. However, the continued involvement

of MACA is essential to guide the consultant's activities in ways most beneficial from the perspective of Bolivian institutions. All programs in which Chemonics collaborates need constant review and guidance, which can only be given by persons having the authority to make decisions for the Bolivian Government. Chemonics' role in the provision of technical assistance is to respond to these decisions promptly and effectively in order to provide maximum support to our client. Hence, the success of Chemonics' efforts hinges, in large measure, on coordination with MACA and other client institutions. Therefore we strongly recommend regular weekly meetings with the Director General of MACA and others from the sector for the purpose of reviewing our contract, work plans, progress and problems, and making decisions on crucial substantive and administrative matters.

2. Contract Administration

Since August 1979, Chemonics has occupied a rented office outside the Ministry, financed by T-059 loan funds of USAID. This funding was arranged by MACA who bears responsibility under our contract for providing office space. Authorization for rental payments was originally given until December 1979, then extended to September 1980, at which time MACA would either make space available elsewhere or assume responsibility for the rent payments. Though the space currently occupied is adequate, Chemonics believes there are overriding advantages to having office space in the MACA building itself be substantial. The principal advantage would be the increased daily contact with the client occasioned by close physical proximity.

SECTION VI
SUMMARY OF RECOMMENDATIONS

In each of the technical areas for which progress is reported, and in the area of project management and administration, suggestions are made with the intent of improving efficiency of the contractor's efforts. The more important suggestions are restated here for reference:

1. Offices in MACA having functions in economic analysis, sector planning and statistics should be reorganized and strengthened.
2. Contingent upon the realization of recommendation number 1, technical assistance in the area of planning should be increased.
3. Approval is needed on the Work Plan of Chemonics' Organization and Methods Technician and support should be provided for the personnel study currently underway.
4. Additional qualified personnel are needed for the office of Administrative Analysis.
5. The Data Processing Center should be formed and steps taken to proceed with acquisition of computer hardware.
6. The equipment and machinery needed for the shop at Palmar Chico should be acquired immediately.
7. An evaluation of soils characteristics in the Chaco Humedo and Chaco Seco is essential to insure that projected land uses in the area are appropriate.
8. Machinery for the Seed Processing Plant in Warnes needs to be installed.
9. Chemonics should be authorized to proceed with a national marketing study of processed and fresh fruits and vegetables.
10. Regular weekly meetings between MACA authorities and Chemonics' Chief of Party should be held to review work plans, progress and problems.

11. Chemonics' offices in La Paz should be incorporated into the central MACA building.

The realization of many of the suggestions stated above require concerted efforts on the parts of MACA, USAID and Chemonics. Because of the complex nature of project management, Chemonics places special emphasis on recommendation number 10 above, which suggests weekly meetings between MACA and Chemonics. Many of the concerns expressed earlier would disappear if more continuity could be provided on the part of our client regarding project management. Until this basic requisite is fulfilled, the client and contractor will not be able to formulate consistent objectives, nor will progress accomplished under the contract be satisfactory to all concerned.

SECTION VII
CONCLUSIONS AND FORECAST

A. Conclusions

This report marks the completion of one year of work under contract GOB/AID 511-111. Progress in some technical areas such as land clearing and marketing of fruits and vegetables has proceeded despite political disturbances. Other areas such as Sector Planning and Organization and Methods, which are highly geared to directions set by MACA authorities have at times suffered due to lack of continuity.

As stated earlier the major problem faced by Chemonics regarding project management is the lack of continuity on the part of our client. Because of the great variety of activities in which our firm is involved, it is essential that MACA provides coordination through a single authority who is familiar with the specific terms of the MACA/Chemonics contract. Since the responsibilities of the Director General of Agriculture cover a wide number of projects and programs of MACA he is usually most informed about the technical role Chemonics can perform and about the resources available under our contract. Hence the Director General is specifically named in the Chemonics contract as Project Manager. Luckily, changes in personnel in this position during the past year have not greatly affected coordination of Chemonics efforts in any on-going projects. Unfortunately, however, a major problem arises when different MACA authorities make direct requests of Chemonics which are not first approved by the Project Manager. In some instances, Chemonics has been asked to perform tasks for which personnel are not available, and in others, technicians are required to suspend efforts on on-going projects for which they are responsible and change directions to other activities for which their responsibility is not clear. The first of these situations occurred when Chemonics was asked to give full-time support to the Office of Sector Planning, but no authorization was given to provide a full-time planner, either long-term or short-term. The second situation came about in relation to work in Organization and Methods adviser who has responsibilities in institutional restructuring. Only after the Agricultural Symposium was

action taken on the third work plan which provided the needed support to undertake a sectoral personnel study. In addition, the counterpart to which this adviser was assigned became isolated from the mainstream of Ministry activities, thus creating further ambiguities in the role of the adviser at decision making levels. Lacking any firm guidance from a single authority in MACA, the technician was asked to assist with a number of technical and administrative activities, many of which do not contribute directly to the primary objectives stated in the contract.

By assigning one individual as Project Manager to represent MACA in matters concerning Chemonics, these detrimental situations can be avoided. It is essential it do so in order that contract resources be utilized to best advantage. Providing continuity in this manner would naturally be of benefit to MACA and Chemonics, and would also benefit individual Chemonics Technicians and their counterparts.

B. Forecast

Forecasting future progress is difficult especially in relation to the advisers working in institutional development in La Paz. Naturally Chemonics will make every effort to adjust to new priorities and directions set by our client, nevertheless, we feel strongly that work that was begun during the current report period should be continued to its completion. In Sector Planning this includes the development of a linear programming model of the agriculture sector. After completion of this trial model, it is our desire to participate in a reorganization of the Planning and Statistics Offices. In Organization and Methods our first intention is to complete the personnel study including analysis and recommendations. This report is scheduled to be presented in November. The implementation phase will depend upon actions taken by MACA. Chemonics' work in data processing depends on the formation of a data processing center, the acquisition of computer hardware, and selection of a long-term technician. Chemonics hopes all three actions can be taken within the next report period and that the center can begin operation in the first quarter of 1981.

An increase in land clearing activities including construction of water reservoirs in the Chaco Seco is projected. Hence, Chemonics expects that both its technicians in Yacuiba will be fully utilized from June through November in operational efforts. It is hoped that their activities can be oriented to great extent toward on-the-job training rather than simply accomplishing routine work tasks. The extent to which training occurs will depend upon the counterparts assigned to work with the technicians. In relation to Seed Improvement, it is expected that a work plan will be prepared and approved to which future activities can be geared. One essential element of the plan will be the installation of machinery in the Warnes Plant which should be started before the end of 1980. In the area of Processing/Marketing of Fruits and Vegetables, Chemonics hopes to proceed with the national marketing study which will form the basis of planning and coordinating fruit production and processing projects among departments.

Finally with reference to project management, Chemonics hopes to formalize the two agreements reached earlier with MACA and USAID which will enable Chemonics to dedicate an adequate amount of time to technical supervision and coordination, while also removing ambiguities over responsibilities of the Chief of Party in Sector Planning. It is also hoped that the difficulties regarding project management on the part of MACA will be overcome.