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FINAL REPORT

E V A L U A T I O N O F
MACAL AGRICULTURAL COOPERATIVE SOCIETY, LTD.
SAN IGNACIO, CAYO DISTRICT,
BELIZE.

Submitted to: Ms. Mosina Jordan,
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II. ABBREVIATIONS/ACRONYMS

2.01 The following Abbreviations and Acronyms will be used throughout this report:

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|---|----------|
| 1. Government of Belize | GOB |
| 2. United States Agency for International Development | USAID |
| 3. Belize Livestock Producers Association | BLPA |
| 4. Belize Livestock Development Project | BLDP |
| 5. Artificial Insemination | AI |
| 6. Acting Permanent Secretary | Ag. P.S. |
| 7. Development Finance Corporation | DFC |
| 8. Pound | lb. |
| 9. Gallon | gl. |
| 10. Commodity Credit Corporation | CCC |

III. EXECUTIVE SUMMARY

A. INTRODUCTION

3.01 The Macal Agricultural Cooperative Society, Ltd. (Macal), located in the Cayo District, was formed in 1974 - reactivated in 1984 and operational in 1986 - with the purpose of:

1. Serving the needs of the small farmer;
2. Developing and maintaining a broad membership base.

3.02 In its early years Macal suffered from organizational pains and had extreme difficulties getting operational. It is registered as an agricultural cooperative society and got involved in dairy production upon the advice and encouragement of the Government of Belize (GOB).

3.03 Macal was reactivated in 1984 to serve as the means through which the Government of Belize's (GOB) emphasis in dairy production would be manifested. The GOB's policy actions statement on the dairy industry is attached as Appendix 16.

3.04 The GOB, through the United States Agency for International Development (USAID), decided to assist Macal to become a profitable dairy business and allocated funds to expand Macal's operations and profits and ensure sustainability. The assistance was intended to help Macal develop a sound membership education program with the aim of ensuring an understanding of their role in Macal as a business and also to help them expand their milk production.

3.05 Technical assistance was also provided to help Macal develop as an efficient business through improvement in its management capacity, increase raw milk supply and expand local market opportunities for fresh pasteurized milk. It was also intended to allow Macal to increase its operational profit base through the monetization of PL480, Title II, Section 416 surplus dairy commodities.

3.06 The purpose of this evaluation is to determine to what extent, over the last three years, the project has managed to develop and strengthen its membership, expand its dairying and other businesses and become a viable economic enterprise. Further, this evaluation will determine the impact, if any, of the project on the production of dairy products in particular and agricultural production in general in Belize. Towards these determinations, comparisons of the planned versus actual results of the interventions will be assessed against the purpose, goals and objectives of the project as stated in the Cooperative Agreement/Project Paper.

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3.07 The evaluation will make recommendations that would enable more efficient use of the available resources, and propose workable solutions to any major or persistent problems affecting the implementation process.

3.08 The results of the evaluation is intended to enable USAID to evaluate the overall project effectiveness. The evaluation would also provide the management of the cooperative with a tool to enhance their decision-making capability in the areas of business planning and efficient use of resources. It would also provide feedback on the performance of the Cooperative management and the technical advisors during the project duration. Finally, the evaluation will generate adequate and reliable information and data for identification of potential sources of future financing if determined to be necessary.

B. METHODOLOGY

3.09 A one-month work plan (37 person days) and agenda was developed by the team in consultation with the USAID Mission.

3.10 Visits and consultations were made as follows:

- a) Farm visits to twelve (12) dairy producers throughout the Cayo District including Central Farm, a major non-member producer.
- b) Field visit to Western Dairies plant at Spanish Lookout , Macal's major competitor.
- c) Field visits to two hundred (200) retailers/consumers in San Ignacio, Benque Viejo del Carmen, Belmopan, Orange Walk Town, Dangriga and Belize City.
- d) Interviews with six (6) members of the Board of Directors.
- e) Interviews with all members of Staff.
- f) Interviews/meetings with Government ministries, senior Government officials and members of the USAID office in Belize City.

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- g) Interviews and discussions with the Chief-of-Party and the Pasture Advisor, Belize Livestock Development Project, Phase II (BLDP 2).
- h) An in-depth inspection and evaluation of Macal's Dairy processing plant and facilities by a Dairy Specialist /Technologist from the Panamerican School of Agriculture in the Republic of Honduras, Central America.
- i) Inspecting and reviewing Macal's internal financial and accounting records and systems, analyzing its financial viability, including cost of production analysis and assessing the management/administrative/organizational structures of Macal.

3.11 The Dairy Specialist has submitted a report from which certain recommendations emerged. Information about the project was obtained from individuals and from reports made available to the Evaluation Team by Macal, USAID, BLDP2, the Government of Belize and also from BEST's own records.

3.12 This report was prepared by the Evaluation Team in accordance with the Scope of Work, the Statement of Work and the Action Plan as agreed upon between the Evaluation Team and the USAID Mission.

C. EVALUATION TEAM

3.13 The Evaluation Team consisted of:

- a) Mr. Carlos Santos, Managing Director, BEST, and Team Leader.
- b) Mr. Hildebrandt Codd, Accountant/Business Analyst , BEST.
- c) Mr. Elias Juan, Livestock Production Specialist and Agricultural Business Entrepreneur, San Ignacio.
- d) Mr. Aurelio Revilla, Dairy Specialist/Technologist and Head of the Dairy Department, Panamerican School of Agriculture, Republic of Honduras, Central America.

D. OBSERVATIONS, CONCLUSIONS AND RECOMMENDATIONS

i) PRODUCTION

Observations and Conclusions

- a) Milk production for most farmers is still only a part-time undertaking. The business, therefore, does not get the necessary inputs, management skills and financing required to make milk production financially attractive.
- b) There are enough dairy-type animals (230) within the Macal membership that, given a reasonable level of management and upgrading, can easily supply enough milk to the processing plant to make the business financially viable (Appendices 5 & 5A). The current production can almost be doubled by Macal if all previous producers just started delivering milk again.
- c) Most pastures (80%) are unimproved and would require some investment and adequate extension services to bring them up to acceptable standards.
- d) Except for the better producers, very limited supplemental feeding is done, resulting in low milk yields and uneconomic rates of return.
- e) Although milk quality standards are improving, there is still need to adequately monitor on-farm sanitation and animal husbandry practices.
- f) Production records are not adequately kept.
- g) There is no milk collection system in place today; as a result several farmers have stopped producing, volume has dropped and farmers' confidence in Macal has diminished.

Recommendations

- (a) Macal needs to increase the demand for their finished products so as to be able to utilize all present and future raw milk production. The confidence of the farmers in Macal needs to be restored. At the same time, Macal should fully implement and monitor an educational programme with farmers on milk production. The GOB needs to assign a full-time dairy extension officer to Macal.

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- (b) Macal needs to more fully utilize and coordinate the specialized services being offered in pasture development and animal husbandry.
- (c) A pasture establishment and improvement programme has to be implemented.
- (d) A carefully designed supplemental feeding program needs to be implemented to ensure that maximum benefits are derived.
- (e) Macal must procure funding to enable its members to build or to improve their milking parlor and to implement their pasture improvement program.
- (f) Adequate farm records must be maintained by all producers.
- (g) For Macal to ensure a steady and constant supply of milk, a collection system has to be introduced.

ii) PROCESSING

Observations and Conclusions

- a) Most of the plant equipment and facilities are in good to excellent condition. A new former filler has just been purchased and installed and Macal is now selling high quality products. A few quality control measures need to be implemented. An old and dilapidated former filler, installed as part of the GOB loan, was probably the single greatest contributing factor to Macal's operating and quality control problems. This has now been replaced.
- b) Macal is producing fresh and flavored milks and orange juice; it has just started producing low-fat milk and cream in small quantities.
- c) The building would be inadequate for any expanded diversifying activities. Current office and storage areas are unacceptable.
- d) The Plant Manager has some working knowledge of the plant and equipment, but further training in dairy technology is essential.
- e) There is no need for an assistant plant manager nor for a full-time handyman under current production levels. Existing personnel can fill in as necessary.

- f) Daily production and inventories of all products are not being adequately recorded; as a result, it is not possible to keep proper controls nor to ascertain stocks and inventories, nor to accurately determine production costs.

Recommendations

- (a) to improve quality control, MACAL needs to do the following:
- i) Test raw milk daily for acidity
 - ii) Cool raw milk to 40 F as soon as it is received
 - iii) Check fat content on raw milk and pasteurized milk
 - iv) Test for standard plate count and coliforms in pasteurized milk
 - v) Sanitize with 200 ppm of chlorine solution
 - vi) Pasteurize orange juice
 - vii) Prohibit entrance to the plant to unauthorized personnel
 - viii) Uniforms and headgear to be worn at all times while working inside the plant.
- (b) Macal needs to make more milk by-products such as cheese, yoghurt, sour cream, ice cream, low-fat milk as well as increase the variety of flavoured milks. Macal already has the necessary equipment to produce the majority of these items.
- (c) Certain pieces of plant equipment need to be reallocated outside the existing structure not only to facilitate the production of more by-products but also as a safety feature. The floor and walls of the present structure need to be modified and ventilation has to be improved upon. The request by Macal to USAID for funding for office expansion and storage should be approved.
- (d) The Plant Manager as well as the General Manager need to be fully knowledgeable about the plant operations. Training funds for this have been sought from USAID and should be approved. Training can be either on-the-job or alternatively they should be sent to the Panamerican School of Agriculture in neighbouring Honduras which has already indicated its willingness to provide the training.
- (e) At the present level of production, the post of Handyman and that of the Assistant Plant Manager should be made redundant.

- (f) Macal should keep daily production records and daily inventories of the products in the cool storage area. (Appendix 10).

iii) MARKETS AND MARKETING

Observations and Conclusions

- a) Macal suffered severe marketing problems due to poor quality milk being distributed, commencing around the latter part of 1989. Although the milk quality has since improved dramatically with the acquisition of a new former filler, no major efforts have been made to regain or to replace these lost markets. Indeed, there seems to be a feeling that Macal can only market what it now produces. Western Dairies, to the contrary, has been constantly expanding its market. (Appendices 6, 6A & 13).
- b) Although extensive marketing research was done as part of the USAID assistance program, no evidence was found to indicate that there was any appreciable follow-up action to take advantage of the information obtained.
- c) Although some promotional material is available within Macal, enough of this material and other promotional efforts - including radio and TV - are not reaching the public.
- d) Neither the office nor the drivers/deliverymen are keeping adequate records of routes, customers or returns; as a result, the distribution system is not as efficient as it can be and Macal appears to be "peddling" rather than marketing.
- e) Drivers/deliverymen are being paid on a fixed salary scale; there is thus no incentive for them to promote and sell Macal products more actively.
- f) Delivery trucks are in a state of disrepair and need to be replaced; trucks do not have independent cooling units that work with the engine of the truck. Risks of spoilage in cases of delays or of truck breakdown are thus higher.
- g) Many of the small retailers do not have adequate storage facilities for dairy products, resulting in higher levels of spoilage and/or returns.

Recommendations

- (a) Marketing has to be assigned priority and a dynamic and enterprising individual should be recruited to the post of marketing manager and assigned all marketing responsibilities. All previous marketing surveys undertaken should be actively addressed and pursued by the Marketing Manager to determine the applicability of data collected and presented. (Please note proposed organizational charts attached as Appendices 9A & 9B).
- (b) Macal needs to intensify its advertising and promotional efforts to ensure that all potential users of dairy products in Belize become knowledgeable about the quality and availability of Macal's products.
- (c) A system for recording routes, customers and returns needs to be designed and implemented.
- (d) An incentive payment system based on gross sales less returns needs to be designed and implemented to encourage Macal's marketing unit to more actively promote Macal's products.
- (e) Delivery trucks need to be replaced and should have independent cooling units. We support Macal's request for external grant funding of these trucks to USAID or an alternative source".
- (f) Macal should ensure that small retailers have adequate storage facilities to distribute their products and that quantities of products delivered are in accordance with retailers' ability to sell them.

iv) MANAGEMENT AND FINANCE

Observations and Conclusions

- a) The involvement of the Board of Directors and, in some cases, of other members of Macal in the day-to-day operations of the business have hindered the General Manager from effectively executing his duties. This may be because there is no clear distinction between the duties of the General Manager and those of the Board of Directors.
- b) Staff morale is low and there is a deep feeling of job insecurity, affecting staff attitudes towards Macal and towards each other. Job descriptions do not adequately reflect the duties and responsibilities of all the employees.

- c) Although Macal recognizes marketing as a major constraint to the viability of the business, there is no aggressive and systematic marketing strategy in place.
- d) Monthly reports to the Board of Directors are prepared regularly and on time; however, these do not include financial performance reports, production costs and forecasting, nor cash flow projections. In the absence of this information, the Board is unable to make major medium to long-term policy decisions.
- e) Macal maintains a manual system of accounts and adequate books are kept to record daily transactions. Although there are no written guidelines and procedures for handling cash receipts and payments, the accounting records were found to be current and data properly recorded.
- f) Internal control measures for handling sales receipts, petty cash, payment vouchers and inventory control need to be improved upon. Sales receipts are uninsured and not normally deposited the same day of collection.
- g) No cost accounting system exists to determine production costs of the various products.
- h) Audits have been conducted on the accounts of Macal since commencement of operations in 1986 to 1989.
- i) Audit findings have been accepted and attempts made to comply with audit recommendations.
- j) Production of high quality orange juice has enabled Macal to remain operational. As milk production increases, Macal will become increasingly profitable and there will be competing demands on current processing capabilities.
- k) Under conservative projections (using a sales mix of 60% milk and 40% juice in 1991 to a ratio of 75:25 respectively, in 1999), Macal will be financially viable, will be able to replace all equipment and meet all expenses, including debt servicing, from internally generated funds. External grant funds will be required only for the 1990/1991 period for the purchase of 2 refrigerated trucks for deliveries, building expansion, compressor and for the provision of loan funds to the producers for improved milking parlor and pasture improvement. Macal has requested USAID grant funds for its capital investment.

Recommendations

- (a) The Board of Directors must give the General Manager the authority and responsibilities that go along with the job title. A clearer definition of the role of the Board versus the role of the General Manager needs to be made. (Please see proposed Job Descriptions in Appendices 7 & 8).
- (b) In an effort to improve Staff motivation and confidence, a Staff benefits package needs to be instituted. Job descriptions need to be redefined.
- (c) Marketing and selling its products are the lifeline of Macal; yet no major marketing system nor strategy is in place. A full-time Marketing Manager, must be employed. The current General Manager will thus be able to spend more time in the field in an effort to promote increased milk production and quality control. This new position will be necessary for a year or so to secure firm markets for Macal after which the Board of Directors can decide on its Management team.
- (d) Management must continue providing the Board with its monthly reports, but these must be augmented with financial performance reports, production costs, cash flow projections, market research and penetration information.
- (e) Macal needs to prepare a standardized accounting procedures manual so that in times of staff transition uniformity in transactions recording can be maintained.
- (f) Sales receipts should be deposited the same day. Petty cash expenditures need to be regulated. Payment vouchers are to be prepared for all cheque payments. Inventory records are to be maintained for all items purchased and produced by Macal, and a cash-in-transit insurance policy should be taken out to cover any possible loss of monies between time of collection and deposit.
- (g) A cost accounting system needs to be developed which will enable Macal to properly analyze and allocate expenditures in such a way that it will be possible to ascertain the cost of producing the various items it is engaged in.

- (h) Macal's revenue from orange juice today is approximately equal to that of milk and is highly profitable. Orange juice production was started as a way of filling in the gap created when Macal lost the British army contract and was not intended to be a major source of revenue. On the other hand, it is very necessary today to keep Macal operational. However, considerable funding has been pumped from public sources into Macal in an effort to promote the dairy industry and, as lucrative as the orange juice packaging may be, Macal must gradually increase its share of revenue from milk and reduce that of orange juice. The Team feels that orange juice should not generate more than 25% of Macal's revenue in a dynamic business environment.
- (i) There is no doubt that Macal can be an extremely profitable business; (Appendix 11 & 12), however, it needs a quick injection of funds to replace delivery trucks, to expand the building for diversification and storage purposes and for the provision of loan funds to the producers. Macal cannot absorb these expenses at today's volumes. We support their request for grant funding for these and smaller items to USAID but strongly agree that alternative means of financing may be attempted for this critical short-term need if not forthcoming from USAID. Within two years, assuming a more aggressive marketing and management strategy, Macal will be self-sustaining and will be able to access its own funding.

v) SOCIAL

 Observations and Conclusions

- a) The GOB considers dairy production a high national priority to reduce the foreign exchange deficit, to create employment and to improve the socio-economic condition of Belizeans; however, few public resources have been allocated to this industry. The Food and Agriculture Policy of the Government of Belize, issued in 1986, outlines a series of policy actions, some of which have been realized. In spite of its setbacks, Macal is still seen as the vehicle through which the dairy industry will develop.
- b) The GOB considers the cooperative movement a major player in the development process. The Department of Cooperatives has stated that its new policy will place more emphasis on economic factors, which will influence social issues. This should impact positively on the financial performance of the whole cooperative movement.

- c) Macal is a registered agricultural cooperative society and thus the laws governing it are not necessarily milk production-oriented. Thus, of the 52 registered members, only 23 have at some time or the other delivered milk and today only 10 are producers. As it is, Central Farm (a non-member) is responsible for 35% of the milk that Macal processes today.
- d) There is a great deal of tension over the fact that of the seven members of the Board of Directors four are non-producers and that the biggest and most consistent producers are not represented on the Board. The Cooperative Department notes that the people elect their leaders democratically and that, therefore, have the power of the ballot to change them. There have been charges of a "closed management" system, but this is more a reflection of the personalities involved than of management attempting to withhold information or to manage as an oligarchy. The Board of Directors complies under the law with its obligations to the members. The general membership, however, has lost confidence in Macal mainly due to its unilateral and sudden decision to reduce or cut back on the volume of milk received. The general membership and the public at large also perceive Macal as financially insecure and managerially deficient.
- e) There is a general feeling that Government, through the Cooperative Department, exercises or has undue authority over the affairs of Macal. References are made to the sweeping powers of the Registrar of Cooperatives, especially as these relate to calling of meetings, seeking permission to incur liabilities and other major management decision processes. The Cooperative Department has informed the Team that the Cooperative laws are about to be revised and members will be able to participate in the process.
- f) Macal is not a member of the Belize Livestock Producers Association (BLPA), although many of its members are. The BLPA considers dairy farmers as livestock producers and are prepared to assist, upon request, in any way possible.

- g) The Belize Livestock Development Project (BLDP) is doing extensive and valuable work in the areas of artificial insemination, pasture improvement and establishment (including protein banks) and is also assisting in extension work, training and technical workshops, in coordination with the Ministry of Agriculture. A Dairy Extension Officer had been recruited from the Peace Corps through the Ministry of Agriculture but Macal did not fully utilize his valuable services. A Belizean has been professionally trained in Dairy Extension but has not been assigned to Macal.

Recommendations

- (a) The GOB places a high priority on the dairy industry and, together with USAID (under the Belize Livestock Development Project), has greatly assisted Macal; however, very little Belize public funds or, indeed in the overall funding picture, of other funds, have been allocated to the dairy industry. Parallel to Macal's expanded marketing effort must be a dynamic milk production effort. The GOB should be encouraged to assign a competent Dairy Extension Officer directly to Macal to provide extension services. The Team understands that such a person has been trained under the USAID program and is in Belize.
- (b) The Cooperative Department's newly stated policy of emphasizing economic considerations in the cooperative movement should be applauded and encouraged. Cooperatives countrywide should benefit.
- (c) Macal must review its bye-laws so that the majority of Board members are actual milk producers and thus have a say over their own business. The issue that Macal being a registered agricultural cooperative negatively impacts on its milk production efforts is not real; there is enough flexibility under existing laws and Macal's internal organizational framework to allow for review and revision of the bye-laws. Macal can become a highly profitable business without resorting to a change in corporate structure, such as converting to a corporation or a private company; that option is not desirable even from a business point of view.
- (d) The GOB is about to revise the laws governing the Cooperative movement. Macal is encouraged to lobby to make the changes it sees as necessary.

- (e) Macal is encouraged to coordinate and cooperate closer with the BLPA for greater benefits to its members.
- (f) Macal is currently employing 7 people directly and impacts on another 40 family members. Its sales volume of over Bz. \$600,000 projected for 1990 is of considerable economic impact to San Ignacio and projected sales volumes of over Bz. \$2 million within the next 10 years will make it a major industry for the country. The GOB should be encouraged to provide more assistance at this time, such as assigning an Extension Officer full-time to Macal, providing reliable artificial insemination services, accessing credit and other funding for Macal and, generally, providing encouragement to the industry.
- (g) It is scarcely four years since Macal became operational. This is a very short time in the evolution of a cooperative society, particularly one saddled with the number and magnitude of problems Macal has had to wrestle with. Comparable cooperative societies in the fishing industry begin to mature only after about 10 - 15 years. The Team suggests that Macal is just entering its second phase in the evolutionary process and has benefitted immensely from its experiences. It needs further support and understanding, not continued criticism and scepticism.

IV. PROJECT BACKGROUND

4.01 Macal was established as a Cooperative Society in 1974. Not much information is available about its operations then but speculation abounds about some Canadian government grant, misappropriation of funds and the eventual demise of Macal. The cooperative became dormant or inactive.

4.02 Macal was reactivated in 1984 upon the birth of Belize Livestock Development Project, Phase I, (BLDP), which included the development of the dairy industry as one of its components and identified Macal as the vehicle through which the dairy component would be implemented. Under these circumstances, it is not hard to understand why many members of Macal still do not identify themselves with ownership of the business.

4.03 The goal of the project was "to develop an indigenous dairy industry in Belize and thus generate foreign exchange savings, increase employment and increase farmer income". The purpose was described as "to assist the Macal Agricultural Cooperative to become a profitable dairy business". Funds from various USAID sources were to be allocated to "accelerate the cooperative's development, permitting it to expand its operations through the building of a sustainable profit base".

4.04 The project was divided into 2 phases. In Phase I

- a) Macal would enter into a loan agreement, with funds provided by the project, with the GOB for the purchase of a dairy processing plant and equipment, over 25 years at concessionary rates. The plant and building were completed in June 1986, at a cost of Bz. \$410,000 and fresh milk processing began in July 1986.
- b) A full-time dairy cooperative Advisor for three years would be provided to Macal. This Advisor would work closely with the General Manager advising on efficient management of Macal's business operations and assisting with the development of its member education program. He/she would also work closely with the Management Committee advising them on the role of the committee in establishing policy and in identifying in-country training opportunities for committee members. Finally, the Advisor would work closely with the extension personnel ensuring their efforts complement the member education programs developed.

- c) Two months of short-term technical training would be provided for the General Manager or the plant technician for on-the-job training.
- d) Macal would gain access to USAID - generated local currency for hiring needed staff, specifically a full-time General Manager who would be counterpart to the expatriate Advisor. These funds, totalling U.S. \$112,000 over 2 years, would be in the form of loans.
- e) The GOB would provide a full-time dairy extension agent and the Peace Corps would provide a trained and experienced animal husbandry expert.
- f) When Macal reaches a production level of 200 gallons of milk per day, a decision would be made whether to proceed with Phase II.

4.05 In Phase II

- a) It was intended to expand Macal's operation and level of profitability through the monetization of cheese imported under PL 480 Title II Section 416. Specifically 150 metric tons of cheese per year for two years would be accessed through the Commodity Credit Corporation (CCC) and transported to the Belize City port upon which Macal would assume ownership and responsibility. The cheese would be monetized and the proceeds used to meet operational expenses, develop new operations, including a centralized bulk milk collection system, installation of an appropriate cheese-making facility system and expansion into the agricultural supply business to meet the needs of the members of Macal.

4.06 A further two-months of on-the-job training was also included, as well as the hiring of additional Staff to manage the expanded program, the construction of additional office and working space and to purchase the necessary equipment and supplies for an expanded program.

4.07 At the end of the project life, it was expected that Macal

- a) Would "have received 36 person-months of technical assistance from its resident Advisor;
- b) Seven (7) months of short-term technical assistance;

- c) Would "have generated sufficient local currency through the PL 480 Title II Section 416 commodity import program to assume full financial responsibility for all its operating costs through the development and expansion of its business operations to include a milk collection system, a simple cheese-making facility and an agricultural supply business". The dairy plant would "be operating at maximum capacity of 400 gallons/day. By the end of the project Macal should be a self-sustaining, farmer owned and operated business".

V. TECHNICAL ASSESSMENT
-----**5.01 Production**

- a) To make milk production a full-time and viable undertaking, Macal will have to increase its markets and diversify its products so as to ensure that there will always be a constant and high demand for raw milk. This should serve as an incentive for farmers to invest in the necessary inputs required to produce milk economically. The increase in markets should be accompanied by a corresponding sound educational programme in all aspects of milk production, including pasture management and animal husbandry.
- b) Macal needs to more properly utilize and coordinate the services of the available specialists and technicians from the Ministry of Agriculture and other agencies so as to ensure that their members get the necessary training in all aspects of milk production and thus to be able to exercise better management techniques. The Government of Belize in conjunction with BLDP, Phase II has implemented an artificial insemination programme which is designed to lead to an eventual upgrading of present cattle herds. Extensive pasture surveys have already been done and presently the establishment and improvement of different recommended grass and legume species adopted to Belize conditions are now in process. Workshops and farmer training programmes are being offered and Macal's membership need to take advantage of these.

- c) Cost of feed constitutes 50% of the total cost of producing milk. Surveys performed by BLDP, Phase II have shown that in Belize about 80% of the existing pastures utilized for dairy production are unimproved and are of average or low quality. This has resulted in the use of supplemental feeding. Pasture improvement and the availability of a lequme bank will reduce the volume of supplemental feeding and thus production costs. Macal should therefore give high priority to pasture development and improvement amongst its members since this will not only result in reduced production costs but also in increased yields.
- d) Supplemental feeding has been done haphazardly and not in relation to milk production. This is largely a result of the absence of adequate records in most cases on the part of farmers. Cattle should be fed according to production and genetic potential. (Appendices 2, 3 & 4). Only individual records and close observations can be indicators of how much supplemental feeding should be used per animal. Excess feeding does not always result in economic milk production and in most cases does not result in increased yields.
- e) The quality of milk produced begins at the farm. Once again education of farmers in milking procedures and sanitation are of paramount importance. Macal needs to ensure that all producing members have the following features in place and adhere to the following principles:-
1. Milking parlours (simple structure with concrete flooring, roof and feeding trough);
 2. Tick-free cattle;
 3. Proper sanitation prior to and during milking (udders should be treated with a chlorine solution 50ppm. before milking. Udder should subsequently be dried with a clean napkin before milking commences. After milking the teats should be treated with a tincture of iodine solution (.5%);
 4. Milking should be done within 3 - 5 minutes to avoid milk retention;
 5. Individual mastitis tests should be done for all animals at least once per week;

6. Any incidence of mastitis should be reported to Macal immediately so as to ensure prompt correction of the problem. Milk from mastitis infected animals should not be delivered to the plant;
 7. Jugs should be adequately cleaned and sanitized;
 8. Milk should be strained and delivered immediately to the plant.
- f) Macal should ensure that producing members utilize records provided them so as to be able to compare and determine feed to milk yield ratios, production costs as well as in determining culling of animals based on reproductive performance, lactation period and production.
 - g) To increase the number of farmers producing milk for Macal, to increase the volume of milk available for processing each day and to reestablish farmers confidence in the organization, a milk collection system has to be implemented.
 - h) Milk collection zones may be established and farmers may be required to deposit their milk at a designated central point in each zone. Macal in turn would be responsible for transporting milk to the processing plant. An economic fee is to be charged for farmers utilizing this service.
 - i) Preferably, areas designated as collection points should all have cooling facilities.

5.02 With the absence of adequate production records it was very difficult to accurately estimate cost of producing milk. However, after a careful evaluation of the different production systems normally used and using average production costs at different production levels, it was estimated that cost of milk production (Appendices 2, 3 & 4), varied from 17 cents for farmers producing an average of 30 lbs./milk to 27.5 cents for those producing only 8 lbs./cow/day. It was also observed that lactation periods for the better producing farms were more acceptable (280-305 days) as compared to the lower producers who only achieved an average of 200 days.

5.03 PROCESSING

 a, Equipment

The following pieces of equipment which are owned by Macal and utilized in the processing of milk, milk by-products and orange juice are listed below.

1. Dumping tank; in good condition;
2. Bulk milk cooler; system is in good condition;
3. Pasteurizing tank of 400 gallons capacity; in good condition, except for the recording thermometer which is out of order. This thermometer is very important to keep record of the products that are being pasteurized. It should be repaired as soon as possible;
4. Homogenizer; this machine is very old but functions properly with the exception of one plunger. This, however, is not a serious problem, but should be repaired as soon as possible. The machine should also be drained daily;
5. Plate cooler is fine;
6. Surge tank is fine;
7. Packaging machine or filler is new. However, on the day of inspection 10% of containers were damaged. It needs adjustment, since normal accepted standards should be below 1%;
8. Cold room cools down to 40 F, which is adequate;
9. Ice bank is adequate but it needs a water treatment to prevent rust;
10. Boiler is adequate but it needs water treatment to keep the water at pH 10.5;
11. Air compressor is adequate;
12. Centrifuge for conducting fat test needs to be repaired;
13. Skim milk separator is fine and should be anchored to the ground;

14. Pipe washer tank; the motor is not working;
15. Can rinser is fine but should be placed outside the processing room;
16. Stainless steel pipes appear to be in good condition.

b) Quality Control

1. Raw milk is not being tested for acidity. The acidity test should be done everyday to all milk before it is accepted.
2. The raw milk is held in the pasteurizing tank at 78 F for two hours. During this time the bacterial growth is high and the quality of the milk deteriorates thus affecting the quality of the end product(s) and the shelf life of the milk and/or by-products.

The best way of handling the raw milk is by cooling them immediately to 40 F and keeping them at this temperature until pasteurization takes place.
3. The orange juice is not being pasteurized. This should be done for health reasons, to improve the shelf life of the product and cut down the percentage of returns.
4. Milk and orange juice should not be stored at the sides or under the blower of the cold room. They should be placed in front of the blower to keep them very cold.
5. Pasteurized milk has 4.00% of fat and should be lowered to 3.25% at most.
6. The low fat milk is actually skim milk and low fat milk should have from 0.60 to 2.00% of fat.
7. The chocolate milk has more than 4.00% of fat and it can be lowered down to 1.50%.
8. Fat test and acidity test should be done everyday for each product.
9. Standard plate count and coliform tests should be done at least once a week for the milks and orange juice.
10. Macal should not allow unauthorized persons to enter the milk processing area nor the cold storage room of their plant as this could result in plant contamination.

c) By Products

1. One of the most serious problems facing Macal is that they only produce fluid milk and if something should go wrong with the former/filler they have no alternative usage for the milk they receive. Macal cannot afford to cancel or reduce its requirements from farmers as this will eventually result in their losing their suppliers. Macal has to consider the possibility of going into cheese, yoghurt, butter, cream, etc. production. Cheese should be their first option since Macal has all the required equipment. Production of cream should be increased. Cream removed in reducing fat levels of pasteurized milk, flavoured milk and low fat milk to acceptable levels can be sold as cream or alternatively be converted into butter or other types of cream. Cream and low fat milk are now being produced and the demand is high.

d) Plant Building

1. The size of the processing room is small and cannot accommodate any more equipment unless some changes are made. The boiler should be removed so as to provide adequate space for the manufacturing of cheese or any other product as well as to improve plant safety features.
2. The floor of the processing room is a concrete slab which shows a lot of mold growth. This is inadequate for a dairy plant, and should be replaced by an acid resistant floor made of quarry tile or epoxy mix.
3. The walls should be covered with white tiles up to 7 feet high.
4. There are not enough windows and ventilation is poor. Macal installed an air extractor.
5. Macal needs to have additional space for storage of plant materials as well as for providing for an office.

e) Personnel and Training

1. Two persons are working in production, a plant manager and a helper. In addition, there is also an assistant plant manager who doubles as a driver/deliverman. At the present production levels (See Table 1 below) there is no need for an assistant manager nor for a full time handvman. Other personnel should be utilized during those periods when additional help is required in the plant.

2. The plant manager has some knowledge of milk processing and knows how to operate most of the equipment in the plant. However, he still needs some training in dairy plant processing techniques. Training should also be extended to the general manager whenever the need occurs.

TABLE 1

Plant Production Capacity Levels
and Required Processing Time

	130 Gals.	400 Gals.	800 Gals.	1,200 Gals.
* P.T. + Pasteurizing Tank				
Storage (P.T.), Hours	2:00	2:00	2:00	-
Pasteurization (P.T.) Hours	1:20	1:30	3:00	4:30
Homoqenization & Cooling Hours	0:25	1:15	2:30	3:45
Filling	0:45	2:15	4:30	6:45

3. As can be seen in Table 1, to pasteurize, homoqenize and cool 130 gallons of milk, it takes only 1:45 hours, for 400 gallons 2:45 hours, for 800 gallons 5:30 hours and for 1,200 gallons 8:15 hours plus from one to two hours for cleaning. With the above information we can conclude that Macal can process 800 gallons of milk in 8 hours of work. We have also considered the capacity of the boiler, ice bank and cold room for storage of the finished product.

4. At production levels ranging between 130 gallons to 400 gallons per day (processing time 2:30 hours to 5:00 hours) plant processing operations can generally be handled by Plant Manager. After 400 gallons per day management needs to determine whether additional help required will be part-time or full-time.

f) Technical Assistance

5.04 It can be reasonably argued that Phase I objectives, although not on target, were generally met:

- a) The building was erected, dairy processing plant and equipment were purchased and a loan agreement was signed. The plant is operational now for four years and loan repayments are up-to-date;
- b) A full-time cooperative Advisor was employed and has recently left;
- c) Technical training was provided to the Chairman, to the General Manager and to the assistant plant manager;
- d) A full-time General Manager is in place;
- e) Although the GOB did not provide a dairy extension agent on a full-time basis, it did have available the necessary expertise and frequently provided assistance through Peace Corps Volunteers. Peace Corps did provide a trained and experienced dairy farmer to assist Macal;
- f) Macal reached and exceeded (although did not maintain) the 200 gallons of milk per day limit required to enter into Phase II.

5.05 There were some difficulties, however, and not all expectations were met.

- a) The building was constructed at a cost considered by many to be exorbitant, a cost Macal must pay. The equipment purchased was considered overpriced and obsolete. Indeed, the old former filler is perhaps the greatest cause of Macal's woes - constant break-downs, costly repairs, poor quality products, loss of markets and of farmer's confidence;

- b) Macal reports that the Advisor really tried to be of assistance in the efficient management of Macal's business operations; unfortunately, due mainly to poor equipment, the business deteriorated instead. Also, there were attempts at membership education but this was difficult under the trying times Macal was experiencing. Not much evidence was seen of work with the Management Committee (Board of Directors) nor with the extension personnel, particularly the Peace Corps Volunteer assigned to assist Macal;
- c) No USAID-generated local currency was accessed by Macal and the General Manager is being paid from internally generated funds. A special consultant hired to advise on whether Macal should have access to USAID-generated local currency recommended that it should. The funds have still not been accessed, the GOB stating that Macal has not submitted an acceptable proposal;
- d) No training was provided on dairy plant processing to the Plant Manager; however, training is envisaged in the future;
- e) The GOB "made available" a full-time dairy extension agent. Macal did not consider this person available nor provided to them. The term "available" is extremely elusive and fluid;
- f) Peace Corps did provide an excellent, practical and experienced dairy expert but his services were not adequately utilized by Macal whose members hardly know he existed, although he was in Belize for two years. He reports philosophical disagreements between the Advisor and him and thus worked out of the Department of Agriculture's office;
- g) Although Macal reached a production level of over 200 gallons per day, Phase II was never implemented.

5.06 It is the opinion of the Team, based on its experiences working with cooperative societies countrywide that, even under extremely favorable external and internal circumstances, four years is a very short period in the evolution of a society. The Team feels that Macal's experiences over the past four years constitute Phase I, a period of adjustment, dealing with all kinds of external (expatriate) forces, venting frustrations on dilapidated machinery, getting used to a business environment while, at the same time, trying to retain a membership base composed of different cultures, styles and personalities. This is no easy task.

5.07 The Team feels that Macal is now entering its own Phase II - the feeling of ownership is there, the Board of Directors is becoming more aware, assertive and business-oriented. This phase will probably extend for the rest of this decade. This is the experience of the more established fishing cooperative of Belize; Macal best approximates the type of business carried on by these societies.

5.08 Macal can meet all its operating expenses from internally-generated revenues, even including repayment of the loan for the purchase of the building, plant and equipment. Macal will need financial assistance in the form of grants (over the next year or two) for the purchase of some capital equipment and for on-lending, after which it will be able to access its own funding needs.

5.09 The recommendations for the release of grant funds for capital equipment purchase and for on-lending as well as the recommendations for the release of USAID-generated funds for operational expenses at concessionary rates are contingent upon Macal designing and implementing parallel production and marketing programs and strategies and strengthening its management.

VI. MANAGEMENT AND FINANCIAL ASSESSMENT

A. MANAGEMENT

6.01 a) The involvement of the Board of Directors in particular and in other cases, members of the Society in the day to day operation of the business have hindered the General Manager from effectively executing his duties. This may be because there is no clear distinction between the duties and responsibilities of the Board of Directors and the General Manager. For Macal to operate successfully there must be a clear delineation of functions between the Board and the Manager. (See Appendices 7 & 8).

b) Management, while focusing on an organization in its totality should employ two complementing strategies, one dealing with its external posture (corporate strategy) and the other dealing with its internal structure (corporate organization). Strategic responses are dependent on the organizational ability to implement them. As strategists the Board should define the corporate purpose of Macal. As organizational builder the General Manager should provide leadership by managing his people as a cohesive unit to accomplish the corporate strategic mission.

c) The Board, through its strategic planning, should provide both direction and cohesion to Macal. The General Manager, as organizational builder, need not only to be able to identify his organizational frame work but also to evaluate its adequacy to determine whether it is supportive of the Board's strategy and whether it is able to discharge its key operating requirements.

6.02 Staff morale is low and there is a deep feeling of job insecurity affecting staff attitudes towards Macal and towards each other. A redesigning of Macal's organizational structure needs to be undertaken so as to provide meaningful motivation and commitment both of a monetary and non-monetary nature. Organizational restructuring should be done not only around tasks but also around people and their relationships. (Appendices 8, 8A, 8B, 8C, 8D, 9, 9A & 9B). Operational as well as political requirements needs to be taken into account, both issues being carefully calibrated.

6.03 Macal's management needs to develop a long-term business development plan which it will monitor on a regular basis, with adverse deviations being noted and promptly addressed. Constant review of the plan is important so as to facilitate not only corrections but to also implement improvements. Management had developed a two year plan of action covering fiscal years 1989 and 1990. An analysis of the plan has been done comparing planned results with actual achievements to date while at the same time assessing both plan and achievements with the purposes, goals and objectives of USAID, the funding agency who provided financial support to Macal. (See Appendix 18). Macal's plan of work is in accordance to the goals objectives and purposes for which USAID funds were given. Attempts have been made to implement the stipulated guidelines of USAID funding although success has been limited in most areas.

6.04 Management needs to be broadened to include the post of a Marketing Manager. This is integral to Macal's success in marketing its products.

B. FINANCIAL

6.05 On site visits were made to Macal's office to review and verify pertinent records. In addition, meetings were held with members and clients.

Observations

6.06 Accounting and Internal Control

- a. Macal Agricultural Cooperative Society Ltd. maintains a manual system of accounting. The system is a conventional one employing full double entry and is based on the accrual concept.
- b. The books of accounts being maintained are the Cash Receipt/Credit Sales Combination Journal, Cheque Control Register, General Ledger, General Journal, Accounts Receivable Ledger, Advances Ledger, Petty Cash Register, Producers Record Book (Accounts Payable Milk Purchases) Members Revolving Fund Ledger and Bank Reconciliation Ledger.

- c. Transactions are posted using the cash basis method and journal entries are prepared to record accruals at year's end.
- d. No written accounting guidelines on procedures for handling cash receipts and cash payments exists. However, all books of accounts when examined were found to be current.

6.07 The following accounting functions were reviewed to determine their concurrence to generally accepted accounting principles and the level of internal control which exists.

Receipts/Collections

- a) Receipts are issued for all cash and cheque except those cheques received from major purchaser's including James Brodie's and Romac's.
- b) Postings to the Cash Receipt/Credit Sales Combination Journal are done from summaries prepared by the Secretary/Book-keeper on the load sheets of Salesmen. All collections are being checked on a daily basis against data contained on load sheets which includes quantities of products issued, amount sold cash and credit, amount returned and expenses incurred by drivers. Proceeds from sales are being deposited on the day following except for sales done on Friday or on Saturday which are retained by the General Manager.
- c) Deposit slips which are being prepared by the Secretary/Book-keeper were being verified by the Manager.

Recommendations

- a) All monies collected by Macal should be accompanied by the issuing of a receipt and Receipts/Credit Sales Invoices should serve as the source documents for recording entries in the Combination Journal.
- b) A Sales Book should be maintained at the plant, and daily totals entered to the Combination Journal.
- c) The stock of unused receipt books and credit sales invoices should be properly secured.

- d) Sales collections should be deposited on the same day utilizing night deposit facilities and a cash-in-transit insurance policy should be taken out to cover any possible loss of monies between time of collection and deposit.

Disbursements

a) Cheques are prepared by the Secretary/Book-keeper and are signed by the General Manager and two directors. Unused cheques were being properly secured at the day's end. Only one cheque book is in use and cheques are prepared on Friday for distribution the following week.

b) No vouchers are prepared in conjunction with cheques issued. In respect of milk purchased, cheques were prepared, based on data extracted from the Producers Record Book which is not sighted by the cheque signatories or in the case of administrative and operating expenses from data contained on invoices, payroll, etc.

Recommendations

- a) Cheque should be prepared only after proper voucher authorization, with Vouchers being be coded and numbered serially.
- b) Vouchers should be authorized by the officer responsible, in this case, the General Manager and should be signed by the recipient or his/her authorized agent.
- c) Salesmen to be given an expense advance prior to leaving plant, unauthorized disbursements from collections should cease.

Petty Cash.

a) All expenditures made from the Petty Cash Imprest were being substantiated by a petty cash voucher and other supporting documentation. All payments made were properly authorized by the General Manager. Reimbursements were made on the basis of vouchers paid from the Petty Cash Imprest and recorded in the Cheque Control Register.

b) Petty Cash expenditures were also being made from Cash-on-Hand by the Secretary/Book-Keeper and from Sales collections by salesmen and are unlimited.

Recommendations

a) A limit for Petty Cash payments is to be established and Petty Cash payments should only be made from funds allocated for that purpose.

Inventory

a) Inventory stock taking of usable stores and fixed assets is done on a quarterly basis. No inventory stock sheets are maintained for goods produced, goods sold, goods returned.

b) A daily production record is kept to show quantity of goods produced on a daily basis.

Recommendation

a) Perpetual stock records to be maintained for different products Macal is producing.

Reconciliation

a) Reconciliation is done daily between total cash received and total credited to debtors accounts.

b) Reconciliation of current and savings accounts is done monthly and is usually completed within fourteen (14) days of the following month. Listings of cheques outstanding within the month are enumerated on the back of the bank statements.

c) A further listing of all cheques issued as well as cash collected as revealed on load sheets for the period under consideration is kept in a Register and together with cheques outstanding constitute bank reconciliation.

d) This information is prepared by the Secretary/Book-keeper and is checked and verified by the Cooperative Officer. Adjustments that appear in the reconciliation are not journalized but corrected through the Cash Receipt/Credit Sales Combination Journal and the Cheque Control.

Recommendation

- a) Level of work duplication to be reduced through utilization of total receipts and payments for the period under consideration instead of itemized listings.
- b) Correctional entries to be made utilizing General Journal.

Postings - Subsidiaries and General Ledger

- a) All accounting records and ledgers were found to be current. Load sheets data and cheques were properly recorded in both subsidiary and general ledger accounts where applicable.
- b) Monthly listings of balances are being done to ensure that subsidiary ledgers and control accounts are in agreement. Posting verifications were being done by the cooperative officer.

Recommendations

- a) Interest payable on loan with the Government of Belize is to be disclosed separately in the accounts.
- b) Returns and plant losses to be included as operating expenses.

Journal Vouchers

- a) Journal adjustments to accounts are made by the cooperative officer at the end of the year after consultation with the General Manager. Journals were numbered, dated and filed sequentially.

Recommendations

- a) The Secretary/Book-keeper is to become knowledgeable about the purposes and procedures of making journal entries corrections to accounts and corrections should be done as and when the need arise.

6.08 a. Annual financial audits have been conducted on the books of the Cooperative since the commencement of production in 1986 and are available for each year up to 1989.

b. Annual findings to a large extent have been accepted by the Cooperative and efforts have been made to comply with audit recommendations. These include:

- the hiring of a manager
- training of secretary in book-keeping by area cooperative officer
- pasteurization of milk on daily basis
- educating management and members

6.09 a. The Cooperative still must implement a cost accounting system, as recommended in the 1988 annual audit. Employees interviewed are fully aware of the necessity of having in possession data as to the cost of production of items originating from the plant as well as contribution margins, etc. Such information is integral for the reduction of costs to manageable levels, determining product mix, revamping marketing strategies and overall in improving the economic performance and profitability of Macal. Assistance in system design and development should be sought.

b. The cost accounting system will enable Macal to properly analyze and allocate expenditures in such a way as to ascertain the cost of producing the various items the Society is engaged in.

6.10 Management Information System (MIS)

a) MIS is comprised of the following:

Budget	annually
Financial Statements & Annual Report	"
Interim Financial Statements	quarterly
Trial Balance	monthly
Plant Production Report	"
Members Production Report	"
Sales Report	"
Cash Flow Position	"
Expenditures Report	"
Milk Quality Report	"
Report on Receivables	"

Recommendations

- a) Reports should be more analytical e.g. quotations for plant production should be assigned a dollar value. Returns should be quoted in terms of income foregone and not only as a percentage of monthly production.
- b) Monthly Budgetary Returns and Cash Forecasting should be presented to Management Committee.

6.11 a. Purchasing and Contracting Policies of Macal were reviewed to determine compliance with AID policies. All major equipment purchased were done after three bids were submitted to assess competitiveness of item to be purchased.

b. Exceptions found were for spares for former filler, former filler assessorv for the printing of codes on cartoons. These items were purchased by Macal at a cost of less than \$1,000 and upon presentation of receipt reimbursement was effected. This indicates AID's satisfaction with the purchases made.

6.12 Employees Competence and Level of Compensation

a) Macal has a Staff complement of 7 persons including 1 general manager, 1 secretary/book-keeper, 1 plant manager, 2 drivers and 1 watchman.

b) In terms of job competence and performance, staff are capable of discharging assigned functions, although there is a need for training in some areas.

c) For example, the plant manager, while fully knowledgeable about the plant operations, needs to know the reason why certain processes are undertaken and will definitely have to undergo some training in order to be able to produce milk by-products.

d) The general manager needs to attend more management courses sponsored by BIM so that his approaches to problem solutions can be more scientific.

e) Levels of compensation, though not fully commensurate with efforts being expended, are understandable in view of Macal's present economic performance.

f) Improve performance which will result from increase inputs from employees should be accompanied by an increase in compensation. Calculated in our projections of Income and Expenses for period 1991 to 1999 are salary adjustments. The rate utilized was 5%, however, it must be noted that it is not a part of the team's function to determine the level of salary increases to be made. The 5% was utilized solely to determine the effect of such a policy on our profitability projections.

g) Macal's management will have to determine the level of adjustment to be made. In our projections we also included commissions payable to the Marketing Manager and deliverymen. However, Macal need to put together a staff benefit package that will be applicable to all employees as well as determine whether the package will consist solely of Macal's inputs or whether there will be an element of employees contribution.

6.13 Membership

- a) Macal presently has 52 members of which only 10 have been producing milk (19%).
- b) Members have, in the past, been sent abroad to the United States to observe and learn U.S. dairy farmers methodology of dairy farming.

- c) Members have, in the past, been requested by Macal to reduce their quantities of milk being offered for processing. This was a direct result of the obsolescence of the previous former filler which contributed to a lower product quality.
- d) Loss of Macal's markets have resulted in a reduction in the number of active members (23 in 1989 or 44% of membership) some of who are now offering their production to Western Dairies, a competitor.
- e) Members are widely dispersed throughout the Cavo District, some living in isolated areas. The termination of Macal's milk pick-up system has served as a further constraint on the amount of milk the Cooperative processes.

C. ECONOMIC VIABILITY

6.14 a. Financial operating results for Macal for period 1987 to 1989 were reviewed and costs of producing milk and orange juice were established.

b. For 1987 Macal was able to achieve breakeven point on its milk production, but not so on orange juice. Results for 1988 and 1989 were the reverse. Increases in production and sales income did not keep in line with the increases in production and fixed overhead expenses. For 1988 and 1989 income increased by 7% and 1% respectively while fixed overhead expenses increased by 13% for 1988 and was reduced by 18% in 1989. However because of problems with the former/filler and the level of returns which resulted in reduced income milk operating results for 1989 was once again unprofitable.

c. The loss sustained in 1988 was substantially reduced by the profitable returns on orange juice production though not fully recovered. However, 1989 juice returns covered loss on milk production and portrayed Macal as a profitable business. Presented in Appendices 11, 12 & 15 are Projected Income Statement/Cash Flow and Estimated Break Even Point for operating period 1990 to 1999.

d. We consider our estimates as to the level of increases in production and ultimately sales income to be very conservative. We assumed proper cost control through the implementation of a cost accounting system. We assumed that adequate marketing strategies will be put in place in line with our recommendations to increase sales, produce appeal and acceptance and a reduction in the level of returns. We also assumed that Macal will commence with the manufacturing of some by products as recommended. We utilized the costing results for 1989 as standard costs for our determination of the level of expenses associated with various levels of production. (See Appendix 14).

e. Analysis of our results are as follows:-
For 1990 we predict Macal sustaining a loss on operations but still achieving a positive cash flow.

f. Failure to replace and/or regain lost markets is the main reason for this. As a result for Macal to achieve their expansion plans an injection of capital from outside is imperative.

g. Continuous increases in the level of members production as well as in marketing shows Macal coming into a profit situation in 1991 which is sustained throughout our projections.

h. By 1993 Macal should have enough cash reserves to be able to replace assets that have depreciated to zero balance.

i. Second payment and patronage refunds can be effected from 1992 without having to utilize overdraft facilities or redirecting cash resources that could be better utilized. As such Macal should seek to retire its overdraft by applying cash savings and other types of income during 1990.

j. Repayment of the Revolving Loan Fund from members commences in 1991. Macal should experience no difficulty in doing so.

VII. MARKETING ASSESSMENT

7.01 a) Macal suffered severe marketing problems due to poor quality milk being distributed commencing during the latter part of 1989. This problem was compounded by the previous former/filler which has now been replaced. Still there has been no significant expansion in markets.

7.02 Macal needs to develop a strategic marketing plan that will do the following:

1. Study consumer needs and desires;
2. Develop product concepts aimed at satisfying unfulfilled needs;
3. Test the validity of these product concepts;
4. Design product features;
5. Develop packaging;
6. Price the product to recover a reasonable return on investment;
7. Arrange for national distribution;
8. Create effective marketing communications to let the public know about the product's availability;
9. Audit sales;
10. Monitor consumer satisfaction and;
11. Revise marketing plans in the light of results.

7.03 Macal should also utilize past marketing studies done in determining the development of its marketing programme.

7.04 a) Macal needs to drastically improve on its advertising and promotional efforts. Advertisement in the past have been practically non-existent and on those occasions when attempted, were not properly supervised nor were results analyzed.

b) Promotion is a major variable in any marketing mix, and must be varied at a cost so as to manipulate Macal's sales volume.

c) Advertisement and promotion which can also be defined as the flow of persuasive communication between Macal and its selected audiences should be varied along several dimensions.

d) The first should be in its magnitude. The team is recommending that Macal's cost of advertising be not less than one percent of gross sales. It is expensive to generate persuasive communications about the products Macal has to offer and while additional outlays will continue to produce additional responses, they should be carefully monitored to ensure that a situation of diminishing marginal returns do not occur.

7.05 Secondly, Macal needs to utilize the following channel of communications to reach its various audiences.

- a. Personal selling - meaning having their Marketing Manager call on customers and prospective customers in order to induce purchases.
- b. Advertising - preparing visual and oral messages which are to be disseminated through the paid media for the purpose of making people aware of and favorably inclined towards its products.
- c. Sales promotion - creating, applying and disseminating materials and techniques that will supplement advertising and personal selling. These will include trade shows, sales contests, premiums, samples, incentives and other dealer and distribution aids. Its purpose will be to increase the desire of the deliverymen and distributors to sell Macal's products and to make consumers more eager to buy. Although personal selling and advertising goes a long way in achieving these results, sales promotion provides an extra stimulus.

7.06 Thirdly, Macal needs to ensure that the message content of all its advertising and promotional efforts are clear. They should emphasize the superiority of Macal's products over its competitors and ultimately must stimulate a purchase response.

7.07 a) Neither the office nor the drivers/deliverymen are keeping adequate records of routes, customers or returns. As a result Macal's distribution system is not as efficient as it can be.

b) Macal's physical - distribution objective should be to get the right goods in the right quantities, to the right places at the right time for the least cost. In other words the system must be efficient.

c) Returns of products are high and unacceptable and should be reduced to manageable levels. Sampling of returns for period July 1989 to July 1990 reveals an average of 16%. Returns in the past while attributed to poor milk quality has now taken on a new dimension - that of overstocking retailers. As a result Macal still is not getting rid of all its products profitably.

d) Adequate delivery trucks are needed. Vehicles presently being utilized do not have independent cooling units and the risks of spoilage are high in the event of delays or breakdowns.

e) Macal needs to be more selective in determining who distribute their products. They need to ensure that retailers have adequate storage and cooling facilities. This will serve to reduce the spoilage factor of Macal's products and ultimately the level of its returns.

VIII. IMPACT ASSESSMENT

8.01 The development of the dairy industry is considered a high priority by the GOB in order to:

- a) Reduce the dairy products import bill, estimated at over U.S. \$7 million per annum;
- b) Improve the nutritional and health standards of Belizeans through the consumption of fresh milk;
- c) Creating employment;
- d) Improving the socio-economic condition of the dairy farmers of Belize.

8.02 Macal has been selected by the Government of Belize as the vehicle through which its dairy policy actions (Appendix 16) would be implemented and dairy development be manifested.

8.03 The dairy industry in Belize has been growing mainly on the development of the fresh milk market as, under Belizean scales of operation and high investment costs, it is not possible to effectively compete with the highly industrialized countries in the canned, powdered or sterilized milk business. However, Macal has been very instrumental in reducing the imports of fresh milk as can be seen from the table below.

Table 1 IMPORTS OF FRESH PASTEURIZED MILK

(BZ. \$)									
1985		1986		1987		1988		1989	
('000)	\$	('000)	\$	('000)	\$	('000)	\$	('000)	\$
574	567	342	334	378	375	199	155	-	-
Cost per pound:									
	0.99		0.98		0.99		0.78		

8.04 Milk production in Belize and by Macal is summarized below:

Table 2: Milk Production in Belize (1985 - 1989)

'000 pounds						
	1985	1986	1987	1988	1989	1990*
Total	1,244	2,295	2,164	1,581	2,372	2574
Macal	-	1	433	471	539	446

* Projections

8.05 The bulk of the production is by Western Dairies but Macal, as can be seen, was steadily climbing until it suffered serious problems towards the latter part of 1989 which will carry through into 1990. The situation, however, has since corrected itself and production is on the rise again.

8.06 As can be seen in Table 1, the imported cost of wholesale fresh, pasteurized milk was near to Bz. \$1.00 per pound until 1989 when it fell to Bz. \$0.78 per pound. It is not coincidental that that is exactly the price at which Macal and Western Dairies sell the local equivalent. It can thus be reasonably argued that Western Dairies and Macal have both contributed to the reduction of the price of fresh milk in Belize. The country has thus benefited from import substitution. Since Macal's emphasis has been on fresh milk production and produces only traces of other dairy products, it is not possible to offer an opinion on other dairy products.

8.07 It has definitely been determined that Macal has contributed to the ban on the importation of fresh milk. The rapid growth of the Western Dairies plant and markets can be directly attributable to Macal's earlier marketing and promotional efforts. There is no doubt that the public consciousness and awareness were awakened to the benefits of consuming milk and to promoting a local industry, thanks to Macal.

8.08 As a result of Macal, eleven (11) farmers/producers today are, to some degree or the other, gaining a livelihood from milk. If we were to include Central Farm, about Bz. \$150,000 per annum was paid to these producers for their milk in 1989. In 1988 and 1989 some 23 members were producing milk and getting income from sales. It is anticipated that within the next five years, income from milk sales at Macal will exceed Bz. \$1.5 million benefitting some 25 producers, 15 producer employees and 8 plant employees directly. No other cooperative has modeled itself after Macal at this time.

8.09 Apart from Macal, it is estimated that Western Dairies and their producers have invested over Bz. \$500,000 in new buildings, plant, equipment, milking parlors, cattle upgrading and pasture improvement over the last five (5) years.

8.10 BLDP, Phase I, which included the construction and the operation of the plant and other activities referred to as phase I of the Macal project has been completed and commented upon earlier. BLDP, Phase 2, is working on pasture establishment, including protein banks, assistance in artificial insemination and general extension work, conducting workshops, seminars, etc. on proper animal husbandry practices. There has been a good level of farmer participation and implementation.

8.11 There has not been any appreciable level of coordination/cooperation between Macal and the Belize Livestock Producers Association (BLPA). This is probably due to the fact that Macal was totally occupied with its own internal problems to be able to think about coordination and cooperation with outside or sister organizations. In addition, the BLPA gives the impression of concentrating its efforts on beef and considering dairying only peripherally.

8.12 The major limiting factors to Macal's success or sustained profitability are: Management, Marketing, Extension, Quality Control and Access to Funding. These have all been addressed in great detail in this report.

8.13 Within two years Macal will be able to operate without outside grants and will be able to access commercial loans on its own. Even though cash flow projections indicate that Macal will be able to meet its loan obligations in a shorter time, this would not be an advisable course of action, as the loan is very concessionary.

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APPENDIX I

ACKNOWLEDGEMENTS

WE WISH TO ACKNOWLEDGE THE CONTRIBUTIONS MADE BY THE FOLLOWING PERSONS TOWARDS THE COMPILATION OF THIS REPORT:

1. FARMERS/MEMBERS/PRODUCERS

a) Robert Hurley	Member	Cavo
b) John Cho	Member Director	Cavo
c) Leonardo Obando	Member Director	Cavo
d) Manfred Lohr	Member	Cavo
e) Emilio Castillo	Member Director	Cavo
f) Central Farm	Producer	Cavo
g) Vera Collins	Producer	Cavo
h) William Mira	Producer	Cavo
i) Joe Friesen	Producer	Spanish Lookout
j) Wayne Drabill	Member/Producer	Cavo
k) Alfonso Aracon	Chairman Producer	Cavo
l) Eduardo Juan	Ex-Minister, Trade & Industry	Cavo
m) Rafael Ledesma Ph.d.	Chief of Party, BLDP	Belmopan
n) Luis Terqas Ph.d.	Chief of Party, BLDP	Belmopan
o) Nazim Juan	Member	Cavo
p) Trinidad Juan	Member	Cavo

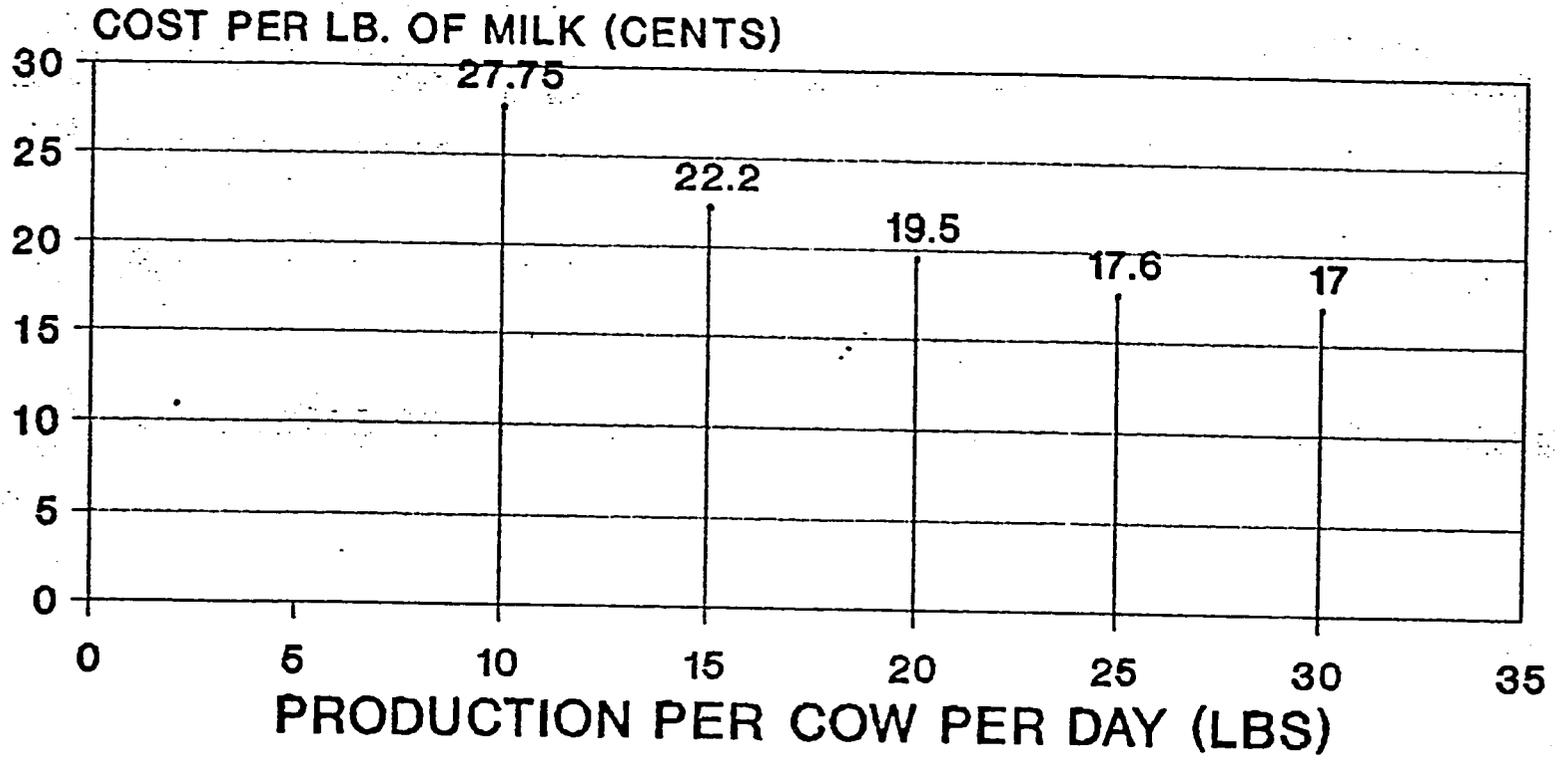
GOVERNMENT OFFICIALS:

a)	Hon. Michael Espat	Minister of Agriculture and Fisheries	Belmopan
b)	Hon. V. Castillo	Minister of Cooperatives	Belmopan
c)	Hon. S. Fernandez	Representative, Cayo North	Cayo
d)	Mr. L. Belisle	Aq. Permanent Secretary, M/Home Affairs and Defence	Belmopan
e)	Mr. E. Castro	Aq. Permanent Secretary, Ministry of Cooperatives	"
f)	Mr. K. Wright	Registrar of Cooperatives	"
g)	Mr. L. Enriquez	Assistant Secretary, Health	"
h)	Mr. E. Dakers	Rural Development Officer M/Social Services	"
i)	Mr. L. Gonzalez	Chief Agricultural Officer M/Agriculture	"
j)	Dr. B. Silva	Principal Veterinary Officer M/Agriculture	"
k)	Dr. V. Gonqora	Veterinarian, M/Agriculture	"
l)	Mr. S. Shol	A.I. Technician M/Agriculture	"
m)	Mr. E. Valencia	Officer-in-Charge	Central Farm
n)	Mr. A. Tzul	District Agricultural Officer	"
o)	Mr. O. Habet	Dairy Extension Officer, M/Agriculture	"
p)	Mr. C. Sosa	Aq. Permanent Secretary M/Trade and Commerce	Belmopan

3.

3. Retailers/Consumers		50
San Ignacio/Benque Viejo del Carmen		30
Belmopan		35
Orange Walk		35
Stann Creek		50
Belize City		200
4. Others		
a) Mr. G. Ellis	Businessman - Former General Manager of Macal Cooperative.	
b) Mr. D. Belisle	Assistant Manager, Development Finance Corporation.	
c) Captain Jackie Miad	British Army.	
d) Western Dairies	Competitor, Spanish Lookout.	
e) Ms. L. Awe	Consumer.	
f) Mr. & Mrs. J. August	Consumers.	
g) Staff	Macal Milk Cooperative.	
h) Mr. J. Carr	Chairman, Belize Livestock Producers Association.	
i) Mr. D. Jude	Peace Corps volunteer, attached to the Ministry of Agriculture.	

PRODUCTION PER COW PER DAY VS COST PER LB. OF MILK

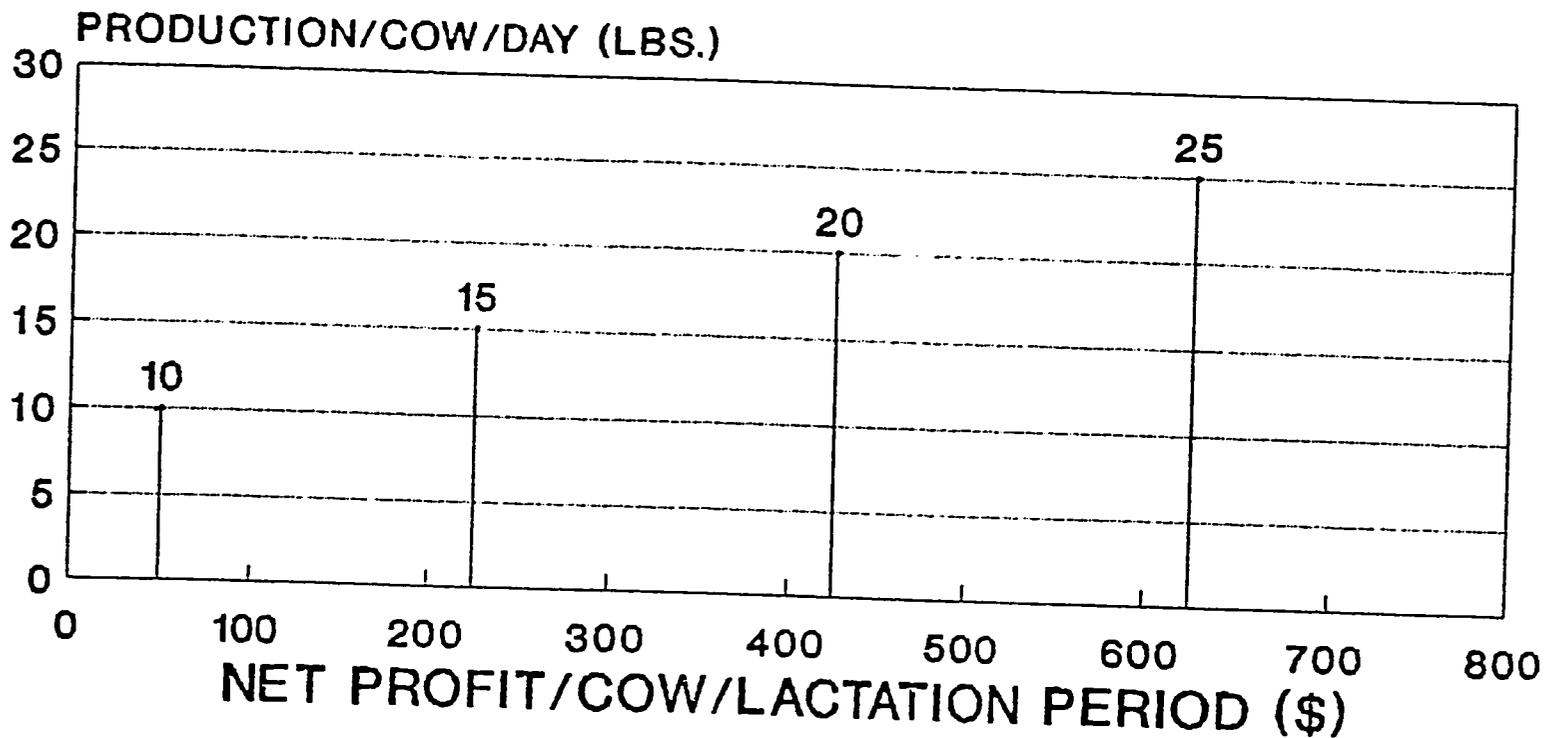


— MACAL DAIRY

MACAL DAIRY - PRODUCTION VS COST CHART

52

PRODUCTION PER COW PER DAY VS NET PROFIT PER COW



— MACAL DAIRY

MACAL DAIRY - PROD/COW/DAY (LBS.) VS NET PROFIT/COW/LACTATION PERIOD (\$)

53

APPENDIX #4

PRODUCTION COSTS AT DIFFERENT PRODUCTION LEVELS FOR A 10 COW UNIT
=====

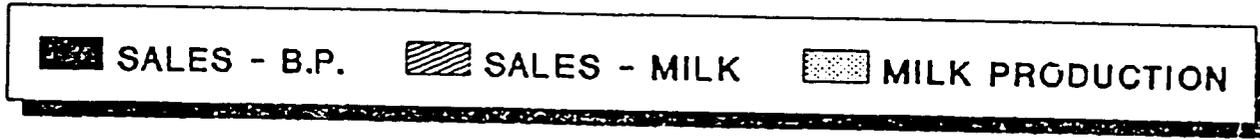
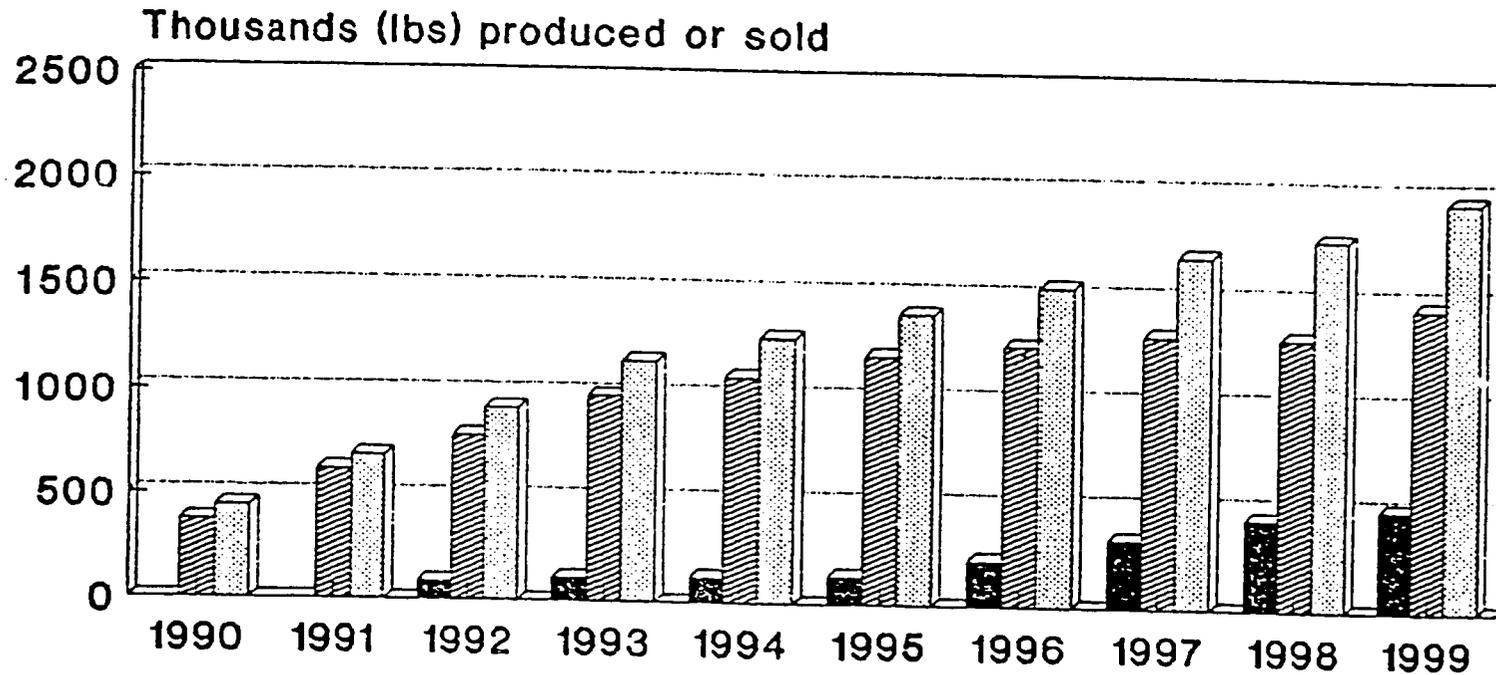
ASSUMPTIONS:

- A) FEED - 1 LB. FEED/4 LBS. MILK @ .25/LB.
- B) TRANSPORTATION - \$.05/LB. MILK
- C) LABOUR - \$20.00/DAY (UTILIZE 1/2 MAN DAY)
- D) VETERINARY DRUGS ETC. - \$20.00/COW/ANNUM
- E) PASTURE - \$100.00/ACRE/ANNUM
- F) BREEDING COST - \$22.00/COW/ANNUM

SUPPORTING DATA FOR PRODUCTION VS NET PROFHART &
PRODUCTION VS MILK COST CHART
=====

- * NORMAL LACTATION PERIOD IS 305 DAYS; HOWEVER .FOR BELIZE CONDITIONS THE AVERAGE LACTATION PERIOD ONLY RUNS 200 DAYS.
- * PRODUCTION COSTS BASED ON MACAL MEMBERS' ACTUAL RECORDS.

MILK PRODUCTION & SALES FOR MACAL CO-OP. 1990 - 1999

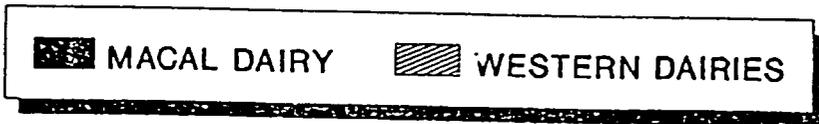
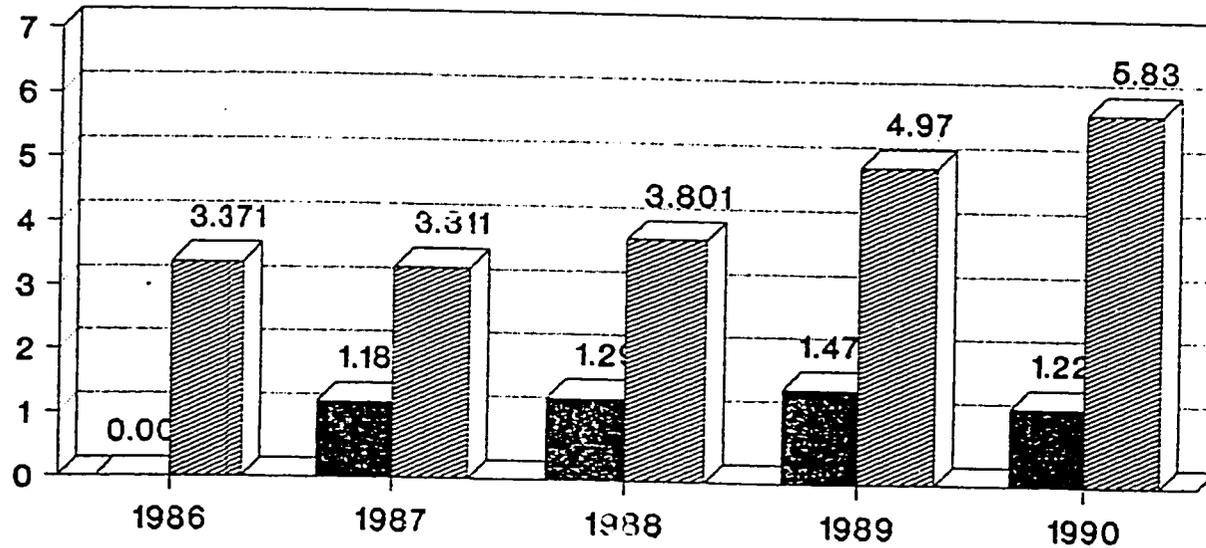


Projected Milk Production and Sales
of By Products (B.P.) and Milk

5

MILK PRODUCT'N COMPARISON MACAL DAIRY VS WESTERN DAIRIES

Milk Production (Lbs.) (Thousands)



DAILY MILK VOLUME

12

MILK PRODUCTION COMPARISON BETWEEN
 =====
 MACAL DAIRY AND WESTERN DAIRIES
 =====

APPENDIX #6A

YEAR =====	ANNUAL VOLUME MACAL DAIRY (LBS.) =====	DAILY VOLUME MACAL DAIRY (LBS.) =====	ANNUAL VOLUME WESTERN DAIRIES (LBS.) =====	DAILY VOLUME WESTERN DAIRIES (LBS.) =====
1986	1,059	2.84	1,229,980	3,371.20
1987	433,642	1,186.80	1,208,411	3,311.00
1988	471,921	1,290.00	1,386,891	3,801.00
1989	539,401	1,479.20	1,812,877	4,970.00
1990	445,736	1,221.20	2,128,242	5,830.00

* WESTERN DAIRY CONVERTED 236,568.80 LBS OF MILK TO CHEESE FROM JAN 1ST TO JULY 31ST '90.

* 1990 FIGURES ARE BASED ON ACTUAL PRODUCTION FROM JAN TO JULY '90.

MILK PRODUCTION & SALES
 =====
 FOR MACAL CO-OP. 1990 - 1999
 =====

APPENDIX #5A

YEAR	NO. OF COWS PRODUC'G MILK	AVS. DAILY MILK PROD'N. (LBS.)	MILK PRCD. * (LBS.)	% MILK RETURNED	TOTAL MILK SOLD (LBS.)	% MILK USED - BY PRODS.	SALES OF BY PRODS. (LBS.)	SALES OF MILK (LBS.)
1990	108	20.63	445,738	16	374,420			374,420
1991	230	15	690,000	10	621,000			621,000
1992	230	20	920,000	5	874,000	10	87,400	786,600
1993	230	25	1,150,000	5	1,092,500	10	109,250	983,250
1994	253	25	1,265,000	5	1,201,750	10	120,175	1,081,575
1995	278	25	1,390,000	5	1,320,500	10	132,050	1,188,450
1996	305	25	1,525,000	4	1,464,000	15	219,600	1,244,400
1997	335	25	1,675,000	3	1,624,750	20	324,950	1,300,000
1998	352	25	1,760,000	2	1,724,800	25	431,200	1,293,600
1999	389	25	1,945,000	1	1,925,550	25	481,388	1,444,162

* PRODUCTION FOR 1990 ARE PROJECTED TO BE 690,000, BUT HAS BEEN REDUCED BECAUSE ONLY 10 OF 53 CO-OP. MEMBERS PRODUCED MILK IN 1990.

* SEVEN OUT OF TEN PRODUCERS DELIVERING MILK DURING 1990 HAVE THE HIGHEST AVERAGE MILK PRODUCTION, THUS BRINGING THE AVERAGE PRODUCTION FOR 1990 TO 20.63 LBS. PER COW PER DAY.

52

APPENDIX 7

RESPONSIBILITIES AND FUNCTIONS OF THE
MANAGING COMMITTEE

1. General Meetings

- a) The Chairman will be responsible for convening within fourteen days of having received notice, any special general meeting that has been requested by not less than one fifth of the membership.
- b) At general meetings, the Chairman shall preside or, in his absence any person can be elected by a majority of the members present.
- c) The Chairman upon the request of the general meeting may call for an adjournment, however, no other business shall be transacted at any meeting adjourned except what was left unfinished.
- d) It is the responsibility of the Chairman to declare whether any resolution which has been put to vote has been carried or lost, whether the decision was made by a show of hands or unanimously, or by a particular majority and must ensure that all declarations are entered in the minutes of the meeting;
- e) The Committee shall present to the members present at General Meetings reports on the operating results of the Society, its past operations and future plans and to make recommendations as to the distribution of any surplus;
- f) To carry out the decisions and instructions made by the members in general meetings;
- g) To determine the manner in which meetings should be conducted, provided that meeting procedures are not inconsistent with the provisions of the Ordinance, Rules and By-laws;
- h) To ensure that Estimates of Income and Expenditures are tabled to members in General Meeting at the beginning of each fiscal year.
- i) To negotiate loans subject to any restrictions imposed by the General Meeting or the Registrar.

2.

2. Other Duties

- a) The Committee is to represent the Society in all dealings with third parties;
- b) To negotiate the terms of all contracts that the Society enters into;
- c) To ensure that proper books of accounts are maintained and to be generally responsible for the funds of the Society;
- d) To negotiate the purchase, lease and sale of all assets movable and immovable of the Society;
- e) To elect signatories to the accounts of the Society;
- f) To review applications received for membership to the Society and to approve or disapprove base on the prevailing circumstances;
- g) To ensure that all property and assets of the Society are adequately insured;
- h) To authorize or delegate the authority to do so, all expenditures made by the Society or by personnel who handle funds;
- i) To establish ad-hoc committees to deal with the affairs of the Society;
- j) To ensure that monthly reports are prepared comparing actual with predicted performance;
- k) to appoint, dismiss, suspend or otherwise discipline or delegate any or all such mentioned authority, the employees of the Society;
- l) To ensure that proper marketing of the Society's products are undertaken;
- m) To appoint any agents necessary for the marketing or processing of members' products;
- n) To decide the terms, including period of and rates of interest (if any) at which loans are to be given to members and to arrange for the recovery of loans and interest (if any);
- o) To carry out the business of the Society, exercising the prudence and deligence of men of business and to be responsible for any loss sustained through actions that are contrary to the Ordinance, Rules and By-laws and to only employ such staff that are absolutely necessary for the due performance of the goals and objectives of the Society in an economical manner.

APPENDIX 8

PROPOSED JOB DESCRIPTION

GENERAL MANAGER

The General Manager will be responsible to the Board of Directors.

Functions

1. To be responsible for the procurement of milk and the processing of milk and milk by-products as indicated by the Marketing Manager.
2. To be also responsible for the procurement of orange juice production materials and any other materials deemed necessary for the enhancement and successful discharge of MACAL's processing and marketing requirements.
3. To successfully carry out the goals, objectives and general policies as established by the Board of Directors.
4. To be responsible for the day to day supervision of all personnel with the exception of the Marketing Manager and Deliverymen.
5. To be responsible for all administrative matters relating to the day to day operations of MACAL.
6. Review and authorize all payment vouchers.
7. Review and sign all cheques.
8. Preparation of Management Reports for submission to the Board of Directors including the following:
 - a) Plant Production Reports;
 - b) Members Production Reports;
 - c) Sales (Cash and Credit) and Returns Report;
 - d) Monthly Budget Performance Reports;
 - e) Monthly Cash Flow Projections and Analysis of prior month's returns;
 - f) Milk Quality Report;
 - g) Annual Budget;
 - h) Annual Cash Flow;
 - i) Year-End Financial Statements.
9. Review trial balances.
10. Check and authorize all journal vouchers.
11. Verify daily bank deposits.

2.

12. Review and verify petty cash imprest balances prior to replenishment.
13. Coordination of all educational programs for MACAL's membership in conjunction with the Extension Officer and the Ministry of Agriculture.
14. To be fully knowledgeable about and cognizant with all functions relating to Plant Operations.
15. Perform other functions that may from time to time be assigned by the Board of Directors.

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APPENDIX 8A

PROPOSED JOB DESCRIPTION MARKETING MANAGER

The Marketing Manager will be directly responsible to the Board of Directors or the General Manager as decided. (See Appendix 8).

Functions

1. To be fully responsible for promoting sales of MACAL's products and enhancing the Society's economic viability through:
 - a) the proper exploitation of existing markets and the development of new ones;
 - b) identification of market demands for MACAL present products and others that could be produced economically;
 - c) assessment of country's demand for Dairy Products in general.
2. To be fully responsible for MACAL's advertisement and promotional campaigns.
3. To develop routes for delivery of MACAL's products.
4. Prepare and keep under constant review a list of all customers indicating product(s) preference(s), quantities, returns, etc.
5. Perform analysis of load sheets for sales and returns.
6. Instruct the Plant Manager through the General Manager as to product mix and volume to be processed.
7. Supply the General Manager with monthly product sales projections.
8. To assist the General Manager with the compilation of sales data, etc., for submission to the Board of Directors.
9. To perform any other functions that may be assigned from time to time.

APPENDIX 8B

PROPOSED JOB DESCRIPTION PLANT MANAGER

The Plant Manager will be directly responsible to the General Manager.

Functions

1. To supervise and direct the operations of the processing plant as follows:
 - a) Inspect and receive good quality products that are being delivered by members or other suppliers.
 - b) Perform sediment tests, acidity tests, California mastitis tests and methylene blue tests.
 - c) Process all milk, milk by-products, orange juice or any other item that has been requested by the Marketing Manager through the General Manager.
 - d) Be ultimately responsible for the quality of all products processed and stored in the plant.
 - e) Ensure that stocks of raw materials are replenished within the required time.
 - f) Maintain a high level of sanitation at the plant.
 - g) Maintain plant and other related equipment in good working condition.
2. Be responsible for the following:
 - a) Keep inventory records of all raw materials and stocks of finished goods.
 - b) Maintain Finished Goods Ledger.
 - c) Maintain Job (Contract) Ledger.
 - d) Maintain Cost Ledger.
 - e) Determine Standard and Marginal Costing.
 - f) Prepare Daily Plant Production Returns.
3. Supervise and record the loading of all products leaving and all goods returned.
4. To assist the General Manager with the compilation of plant data for submission to the Board of Directors.

APPENDIX 8C

PROPOSED JOB DESCRIPTION BOOK-KEEPER/SECRETARY

The Book-keeper/Secretary will be directly responsible to the General Manager.

Functions

1. Keep record of daily delivery of milk. Calculate on a weekly basis - each member's delivery. (Producers Record Book).
2. Maintain Shares and Members Revolving Fund Loan Register.
3. Calculate daily, deliverymen loadsheet, cash collections and credit transactions and record these in the relevant Registers. (Cash Receipt Bank - Day Sales Book).
4. Be responsible for immediate plant sales and accountability of receipts.
5. Prepare bank deposit(s) of the daily total cash receipts and pass to the General Manager for verification.
6. Maintain Day Sales Book.
7. Record Cash Receipt Book and Cheque Control Book summaries to subsidiaries and General Ledgers on a monthly basis.
8. Prepare cheques after vouchers have been authorized by General Manager and post to Cheque Control.
9. Maintain Petty Cash Imprest and Register.
10. Prepare monthly bank reconciliations and pass to General Manager for vetting.
11. Initiate journal vouchers and pass to General Manager for approval.
12. Prepare monthly trial balances.
13. Prepare interim income statements and balance sheets.
14. Be responsible for typing and filing of all correspondence, minutes and reports.
15. Be responsible for the remittance of all Statutory deductions on a regular basis.
16. Perform other functions that may be assigned by the General Manager from time to time.

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APPENDIX 8D

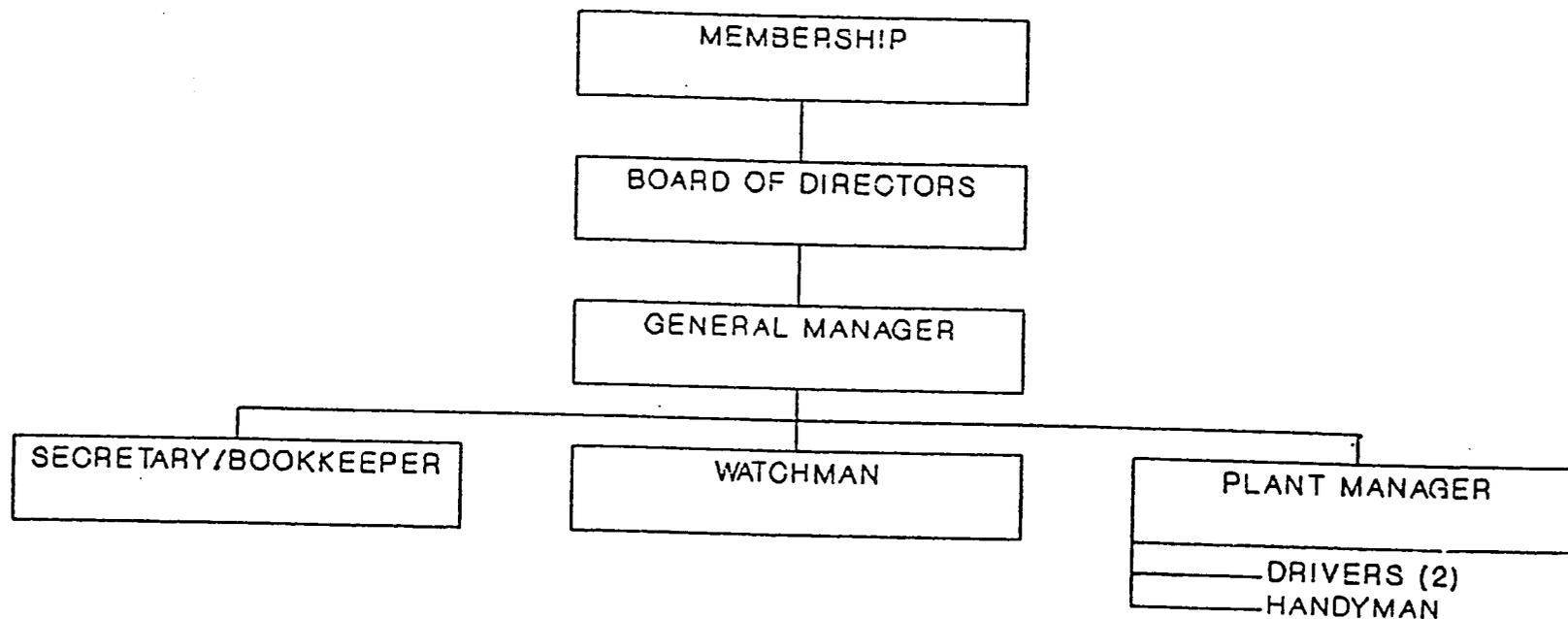
PROPOSED JOB DESCRIPTION
DRIVERS, DELIVERYMEN

Drivers/Deliverymen will be directly responsible to the Marketing Manager.

Functions

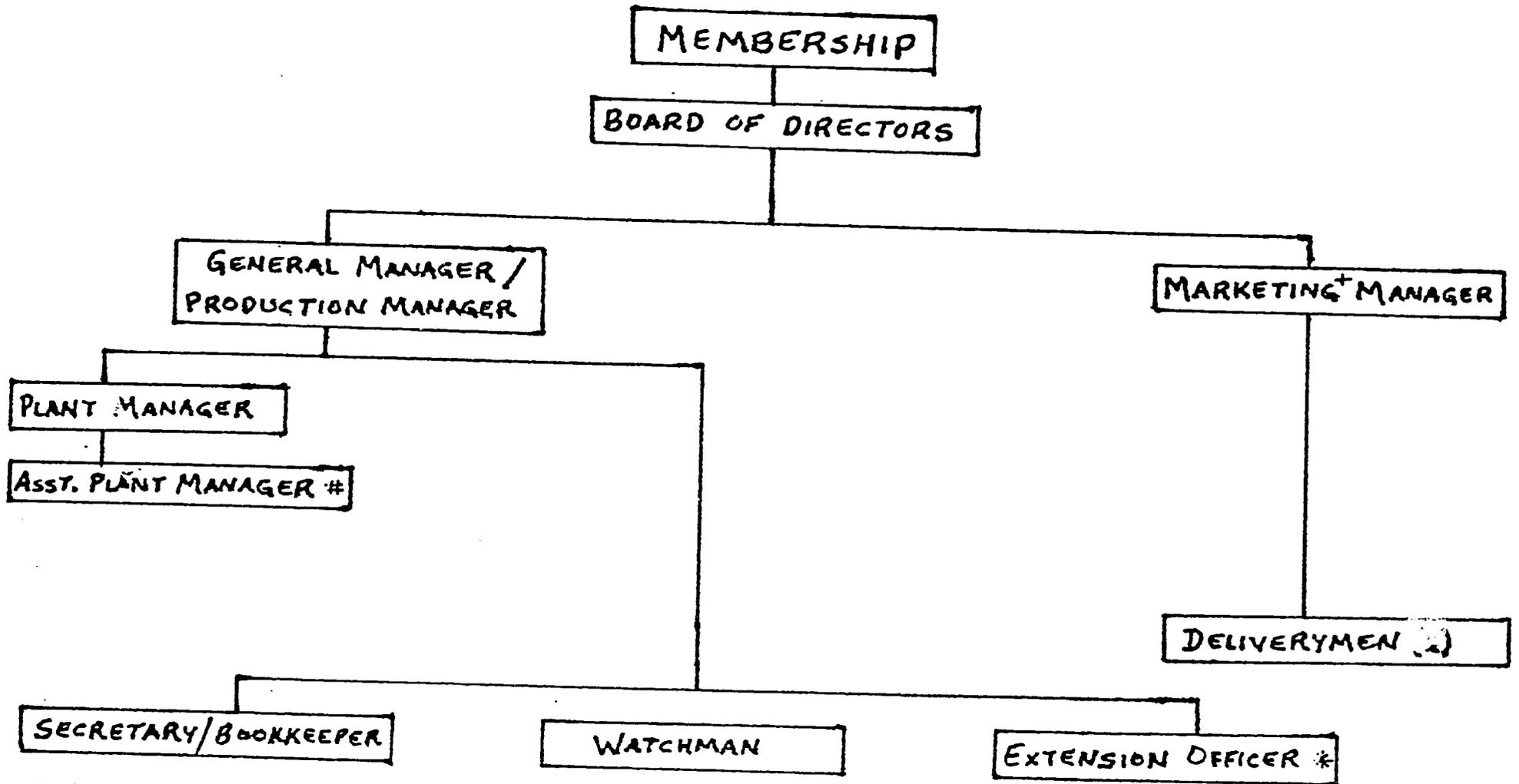
1. Ensure that delivery trucks are serviced and maintained on a regular basis.
2. Ensure that items loaded on delivery trucks are in accordance to Marketing Manager's directions.
3. Maintain loadsheets and ensure that all relevant data are entered.
4. Keep proper records of customers, sales and returns.
5. Ensure that customers are serviced on a regular basis and routes as designated by the marketing Manager are adhered to.
6. Ensure that situations in clients' coolers are conducive to shelf life and product appeal of MACAL's products.
7. Assist with Society's promotional efforts.
8. Perform any other function(s) that may be assigned from time to time by the Marketing Manager.

MACAL AGRIC. CO-OP SOCIETY LTD. ORGANIZATIONAL STRUCTURE (EXISTING)



MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.

PROPOSED ORGANIZATIONAL STRUCTURE "A"



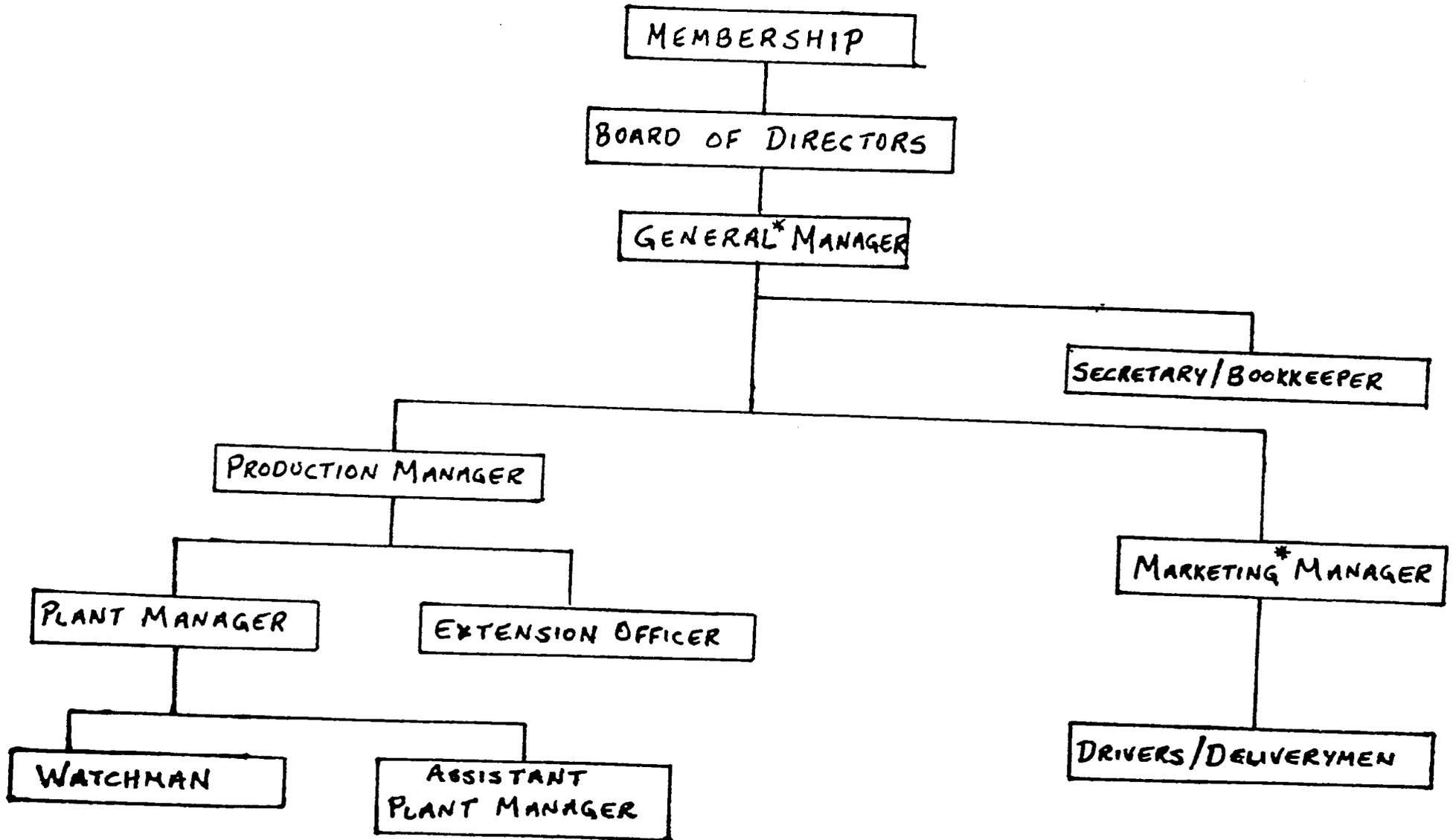
* Extension Officer will be provided by the Ministry of Agriculture, and supported by:

1. Peace Corp Personnel
2. USAID Personnel
3. Dairy Extension officer
4. Cayo Ext. Off.

+ Position of a temporary nature to be amalgamated with the Post of General Manager when appropriate.

Required when production increases.

MACAL AGRICULTURAL CO-OP. SOCIETY LTD. ^{APPENDIX # 9B}
PROPOSED ORGANIZATIONAL STRUCT. "B"



APPENDIX 10

DAILY PLANT REPORT

The attached report is to be prepared by the plant manager.

Firstly, it informs management as to total time spent processing as well as work stoppages. Production time is to be based on an 8 hour work shift.

Secondly, it indicates inputs available during a production period for processing.

Thirdly, it shows the various types of products that have been manufactured during a particular production period.

Fourthly, it indicates the distribution of the products processed and stored in the cooling room. Distribution can be from more than one production period.

Fifthly, it categorizes the returns to plant for products distributed from successive production periods.

Sixthly, it informs management as to the quantities of Direct Costs (excluding milk and orange juice, sugar, water and syrups) that were utilized during the production period.

APPENDIX 10

MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.
DAILY PLANT REPORT

PROCESSING DAY NO:

DATE:	DAY:	
THIS YEAR	LAST YEAR	
Today	To Date	Final Figures

1 TIME ACCOUNT (Hours)

- 1 Time Lost - Week Ends
- 2 Time Lost - Mechanical
- 3 Time Lost - Electricity
- 4 Time Lost - Holiday
- 5 Time Lost - Other
- 6 Time Lost - Total Causes
- 7 Time Processing

11 A QUANTITIES (9lbs.)

- 8 Milk Received - Members
- 9 Milk Received - Non-members
- 10 Milk in Pasteurizing Tank 7:00 a.m.
- 11 Milk Available for Processing

11 B QUANTITIES (gals.)

- 12 White Pasteurized Milk to Cooling Room
- 13 Flavoured Pasteurized Milk to Cooling Room
- 14 Low-fat Pasteurized Milk to Cooling Room
- 15 Milk By-Products to Cooling Room
 - Yoghurt
 - Sour Cream
 - Ice Cream
 - Cheese
 - Butter
 - Other
- 16 Syrup used
- 17 Sugar Used
- 18 Water Used
- 19 Orange Juice Concentrate Used
- 20 Pasteurized Orange Juice to Cooling Room

PROCESSING DAY NO:

DATE: DAY:
 THIS YEAR LAST YEAR
 Today To Date Final Figures

- 21 White Pasteurized Milk Sold at Plant
- 22 White Pasteurized Milk to Deliverymen
- 23 Flavoured Pasteurized Milk Sold at Plant
- 24 Flavoured Pasteurized Milk to Deliverymen
- 25 Low-fat Pasteurized Milk Sold at Plant
- 26 Low-fat Pasteurized Milk to Deliverymen
- 27 Milk By-Products Sold at Plant

- Yoghurt
- Sour Cream
- Ice Cream
- Cheese
- Butter
- Other

- 28 Milk By-Products to Deliverymen

- Yoghurt
- Sour Cream
- Ice Cream
- Cheese
- Butter
- Other

- 29 Pasteurized Orange Juice Sold at Plant

- 30 Pasteurized Orange Juice to Deliverymen

-
- 31 White Pasteurized Milk Returned
 - 32 Flavoured Pasteurized Milk Returned
 - 33 Low-fat Pasteurized Milk Returned
 - 34 Milk By-Products Returned

- Yoghurt
- Sour Cream
- Ice Cream
- Cheese
- Butter
- Other

3.

111 OPERATIONAL

- 35 Plant Fuel Consumed
 - 36 Plant Electricity Consumed
 - 37 Plant Labour Hours Utilized
 - 38 Milk, Milk By-Products, Orange Juice,
Packaging Materials Used
 - 1/2 Pints
 - Pints
 - Quarts
 - Other
-

Signed: -----

13

MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.

APPENDIX #11

PROJECTED INCOME STATEMENT 1990-1999

ITEMS	NOTES	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
INCOME											

SALES - MILK	1	312690	486069	639666	801104	881210	968284	1056285	1151898	1199548	1327068
- DAIRY BY-PRODUCTS	2	1500	1500	34082	42586	46571	51172	84722	124973	264001	291752
- ORANGE JUICE	3	326748	382432	438000	468234	541952	541952	541952	541952	541952	541952
OTHER INCOME	4	(12080)		2800	14000	7000	14000	21000	7000	21000	21000
TOTAL INCOME		628858	870001	1114548	1345924	1476733	1575408	1703959	1824923	2026501	2181772

EXPENSES											

MILK PURCHASES	5	133721	207000	276000	345000	379500	417000	457500	502500	528000	583500
ORANGE JUICE CONCENTRATE	6	118513	138259	158009	177759	197511	197511	197511	197511	197511	197511
SUGAR	7	3172	3701	4229	4758	5287	5287	5287	5287	5287	5287
CHOCOLATE SYRUP	8	9420	14582	17499	21874	24061	26438	29006	33983	35335	39050
CONTAINERS - MILK	9	39784	23302	46676	74157	130615	151884	119305	133429	142854	249482
- BY-PRODUCTS		130	130	2045	3691	4036	4435	7343	10753	22660	25265
- ORANGE JUICE		38929	45867	51906	58394	64882	64882	64882	64882	64882	64882
CUSTOMS/BROKERAGE FEES		14983	14238	19734	26252	37325	41345	36242	39490	41322	60080
SALARIES	10	19800	32790	21830	22922	24068	25271	26535	27862	29255	30718
WAGES - PLANT		16120	16926	17772	18661	19594	20574	21603	22683	23817	25000
- SALESMEN	10(A)	12480	14196	14906	15651	24260	25473	26747	28084	29488	30962
COMMISSION ON SALES	11		8749	12154	15221	16743	19421	21578	24828	28791	32111
SOCIAL SEC. EXPENSES		3007	3413	3007	3007	3413	3413	3413	3413	3413	3413
PLANT FUEL		7132	9696	12103	14616	16137	17154	18253	19474	20166	21671
PLANT MAINTENANCE		4864	5000	6000	7000	8000	9000	10000	11000	12000	1000
MISC. PLANT EXPENSES		4263	5000	6000	7000	8000	9000	10000	11000	12000	1000
UTILITIES		23667	31959	39707	47815	52000	55998	59452	63289	65463	70196
STORAGE		500	1000	1500	2000	2500	3000	3500	4000	4000	4500
CLEANING SUPPLIES		500	1000	1500	2000	3000	3000	3000	3500	3500	4000
TRUCK FUEL	12	29404	57089	67980	82780	91306	97876	104971	112855	117322	127046
TRUCK MAINTENANCE		22000	5000	5000	10000	5000	5000	10000	5000	5000	10000
VEHICLE LICENSE		750	1000	1000	1000	1000	1000	1000	1000	1000	1000
MEAL ALLOWANCES		5658	7589	9396	11285	12465	13191	13976	14998	15343	16418
STATIONERIES		2500	3000	4000	5000	6000	6500	7000	7500	8000	8500
TELEPHONE		2700	3000	4000	4500	5000	5500	6000	6000	6000	6000
ADVERTISEMENT & PROMOTION		1000	8732	11117	13319	14697	15614	16635	18179	20055	21608
TRADE LICENSE		300	300	300	300	300	300	300	300	300	300
OVERTIME		4000	4400	6000	8000	10000	11000	12000	13000	14000	15000
INSURANCE	13	3890	7191	7191	7191	7191	9141	9141	9141	9141	9141
DEPRECIATION		63380	85186	85130	85930	170485	170485	168000	161752	161752	168752
BAD DEBT PROVISION		1258	1612	2073	2663	2939	3015	3327	3636	4011	4322
INTEREST EXPENSE G.O.B.		6895	6895	6895	6895	6895	6895	6895	6895	6895	6895
RETURNS - MILK		50030	48607	31983	40055	44061	48414	42251	34557	23991	13271
- ORANGE JUICE		22872	15297	8760	9765	5420	5420	5420	5420	5420	5420
TOTAL EXPENSES		667625	831708	963146	1141240	1404671	1499437	1528073	1607201	1668194	1873329

NET PROFIT (LOSS)		(38767)	38293	151146	204684	72062	75971	175886	217722	358307	308443

4. Loss estimated on disposal of present vehicles.
5. Milk purchased at \$0.30 per pound - conversion is 8.6 lbs. to One (1) gallon.
6. Orange Juice Concentrate costs:
 15 gallons concentrate + 105 gals. water + 25 lbs. sugar =
 126 gallons juice
 $43800 : 126 = 347.62 \text{ mixes} \times 15 : 55 = 94.81 \text{ drums}$
 $\phantom{43800 : 126 = 347.62 \text{ mixes} \times 15 : 55 = 94.81 \text{ drums}} \times 1250.$
 $\phantom{43800 : 126 = 347.62 \text{ mixes} \times 15 : 55 = 94.81 \text{ drums}} 118,513$
7. Sugar Costs
 $43,800 : 126 = 347.62 \text{ mixes} \times 25 : 100 = 86.91 + \$36.50 =$
 $\phantom{43,800 : 126 = 347.62 \text{ mixes} \times 25 : 100 = 86.91 + \$36.50 =} 3,172$
8. Chocolate syrup - 10% milk flavoured Mix = 1 gal. syrup to 8 gals milk
9. Milk containers:
 assumes 50% sales in pint (cost 11) = 23033
 50% " " quarts (cost 16) = 16752
 1% waste factor built in
12. Milk collection costs included at the rate of .02 per lb.
13. Increase in premiums because of cash -in-transmit average.

1991

1. Milk Income based on sales at 80233 gallons.
Cayo 29% 23268 gallons =134,024
Other 71% 56965 " 352,045
486,069

3. ORANGE JUICE

- Sales 51100 gallons

Distribution - Cayo 29% 14819 gals. 106,696
Other 71% 36281 " 275,736
382,432

5. Milk containers cost

- assumes satisfaction of British Forces market of 54767 gals.
which does not require retail packaging (savings = \$42040.)

- hence 10,000 gallons quarts \$6,464.
10,000 gallons pints \$8,888.
5466 gals 1/2 pint (for schools) \$7,950.
\$23,302.

10. Includes in salary cost is an amount of \$12,000. payable to the Marketing Manager.

11. Commission on sales payable on gross sales less returns at the rate of 2% per annum and relates only to milk sales.

1992

1. Milk sales income based on 96279 gallons white and chocolate plus 8558 gallons low fat

Distribution:

Cayo sales 25% of regular product 24070 gallons \$ 138,643
Other sales 75% " " " 72209 " \$ 446,252
Plus 8558 " \$ 54,771
\$ 639,666

2. Dairy By-products (cream) income

2140 gallons to creamy

2140 : 1.62 = 1321 + 8.6 = 11360.60 lbs. + \$3.00 = 34,082

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MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.

APPENDIX B15

BREAK-EVEN POINTS 1990 - 1999

BREAK-EVEN

POINT FOR:

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
1. MILK	----	----	----	----	----	----	----	----	----	----
GALS. PER ANNUM	54252	76857	91428	112069	137938	152152	156789	166982	162233	184908
GALS. PER DAY	149	210	250	307	377	418	430	457	444	506
SALES (DOLLARS)	327136	465756	558625	684714	842603	929651	962666	1028609	1000916	1142731
2. MILK BY-PRODUCTS										
GALS. PER ANNUM			1155	1318	1633	1744	2961	4361	8406	10165
GALS. PER DAY			3	4	45	5	8	12	23	28
SALES (DOLLARS)			28894	34237	42140	44963	76404	112504	216865	262266
3. ORANGE JUICE										
GALS. PER ANNUM	45642	48924	50084	56832	70044	76728	65901	62815	60703	63118
GALS. PER DAY	125	134	137	156	192	194	181	172	166	172
SALES (DOLLARS)	340489	365952	375627	422259	519728	524803	488983	466088	450413	468332

ACTUAL PRODUCTION

1. MILK (GALS.)	51830	80233	104837	131047	144151	158395	172006	186977	194418	214855
SALES INCOME	312690	486069	639666	801104	881210	968284	1056285	1151898	1199548	1327068
2. MILK BY-PRODS. (GALS.)	94	94	1321	1640	1805	1983	3283	4809	10232	11308
SALES INCOME	1560	1500	34082	42566	46571	51172	84722	124073	264001	291752
3. ORANGE JUICE (GALS.)	43800	51100	58400	65700	73000	73000	73000	73000	73000	73000
SALES INCOME	326746	382432	438000	488234	541952	541952	541952	541952	541952	541952

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3. Orange Juice Income - based on 50400 gallons with similar distribution as milk products.

Cayo sales	14600 gallons	\$105,120.
Other sales	43800 gallons	<u>\$332,880.</u>
		<u>\$438,000.</u>

4. Other income refers to interest earned on term deposit

9. Containers Cost:

10,000 gallons	1/2 pints	\$14,544.
20,000 gallons	pints	\$17,776.
22,209 gallons	quarts	<u>\$14,356.</u>
		<u>\$46,676.</u>

10. Marketing Manager 's salary not included. Employment for one (1) year only.

1993

1. Milk Sales Income: based on 120,349 gals. white and chocolate
10,698 gals. low fat

Cayo sales	22%	26477 gals.	\$ 152,508.
Other	78%	93872 "	\$ 580,129.
		10698 " low fat	<u>68,467.</u>
			<u>\$_801,104.</u>

2. Cream Sales - 1640 gallons

3. Orange Juice sales = 65,700 gallons - same distribution as milk.

Income	Cayo Sales	14454 gallons	\$98287.
	Other Sales	51246 gallons	<u>\$389947.</u>
			<u>\$488234</u>

4. Other Income - interest on Term Deposit of \$200,000.

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9. Containers cost - Milk

Pints - 23256 gals. - 1/2 pint	\$33,823.
25000 gals. - pints	\$22,220.
28023 gals. - quarts	\$18,114.
	\$74,157.

1994

1. Milk sales Income based on 132384 gallons of white and flavoured
11767 " of low fat

Sales distribution

Cayo 22%	\$167,754.
Other 78%	\$638,147.
Low fat	\$ 75,309.
	\$881,210.

2. By product 1805 gallons

3. Orange Juice - 73,000 gallons

9. Containers 1/2 pints for 29070 gallons \$42,279.
pints " 57541 gallons \$51,142.
quarts " 57540 gallons \$37,194.
\$130,615.

10 (a) Additional driver/delivery persons to be employed.

1995

1. Milk income based on sales of 145465 gallons of white and
flavoured and 12930 gallons of low fat.

Sales distribution:

Cayo 22%	32002 gallons	
Other 78%	113463 gallons	
Low fat	12930 gallons	\$968,284.

2. By Products 1983 gallons

3. Orange Juice - same as 1994.

9. Milk containers - 34883 gallons in 1/2 pints
61756 " " pints
61756 " " quarts

1996

1. Milk income: based on 150.727 gallons white and flavoured,
21279 gallons of low fat

Cayo	18%	27131	gallons
Other	82%	123596	gallons

2. By products 3283 gallons

9. Milk container cost

40698	gallons	in	1/2	pints
39157	"	"	"	pints
39157	"	"	"	quarts

1997

1. Milk income based on sales of 186977 gallons milk

2. By Products 4809 gallons

1998

1. Milk sales 194418 gallons

2. By Products 11308 gallons

1999

1. Milk Sales 214,855 gallons

2. By Products 11,308 gallons

MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.

APPENDIX #12

PROJECTED CASH FLOW 1990 - 1999

SOURCE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
NET PROFIT (LOSS)	(38767)	38293	151146	204684	72062	75971	175886	217722	358307	308443
ADD DEPRECIATION	63380	85186	85130	685930	170485	170485	168000	161752	161752	168752
FUNDS PROVIDED FROM OPERATIONS	24613	123479	236276	290814	242547	246456	343886	379474	520059	477195
USAID FUNDS	90000	254000								
MILKING PARLOUR										
LOAN COLLECTIONS			10000	13000	15400	16320	17056	17645	18116	18493
SALE OF SHARES	5000	5000	5000	5000	5000	5000	2208			
REVOLVING LOAN FUND	11144	17250	23000	28750	31625	34750	38125	41875	44000	48625
TOTAL CASH AVAILABLE	130757	399729	274276	337364	294572	302526	401275	438999	582175	544313
APPLICATION										
MILKING PARLOURS		50000	25000	25000	20000	20000	20000	20000	20000	20000
G.O.B. LOAN PRINCIPAL	13598	13598	13598	13598	13598	13598	13598	13598	13598	13598
BANK OVERDRAFT RETIREMENT	6780									
REVOLVING LOAN REPAYMENT		1939	8659	7786	9039	11144	17250	23000	28750	31625
BUILDING & OFFICE EQUIPT.		42000		3000		3000				3000
MILK CONTAINERS		5000		5000		5000		5000		5000
COMPRESSORS		4000	4000							
SPARES		5000	5000	5000	5000	5000	4000			4000
TRUCKS		130000		334000			5000			5000
REFRIGERATED BOXES		1000		59850			334000			334000
PLANT EQUIPMENT	90000						59850			59850
SECOND PAYMENT		20700	46000	57500	126500	139000	152500	167500	284000	174300
TOTAL	110378	277237	102257	510734	174137	196742	606198	229098	522348	670573
NET INCREASE (DECREASE) IN CASH POSITION	20379	122492	172019	(173370)	120435	105784	(204923)	209901	59827	(126260)
CUMULATIVE CASH POSITION	20379	142871	314890	141520	261955	367739	162816	372717	432544	306284
2ND PAYMENT MADE AT RATE PER LB. INDICATED		.03	.05	.05	.10	.10	.10	.10	.10	.10

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PROJECTED MARKET DEMAND FOR MILK

APPENDIX #13

AND DAIRY BY-PRODUCTS 1990 - 1999

(THOUSANDS OF LBS.)

PERIOD	GOV'T OF BELIZE	SCHOOLS	DAYES	BRITISH ARMED FORCES BELIZE	CAYO DISTRICT	BELIZE DISTRICT	ORANGE WALK DISTRICT	STAHN CREEK DISTRICT	COROZAL DISTRICT	MAJOR HOTELS	WESTERN DAIRIES MARKET	TOTAL MARKET DEMAND	MACAL'S PRODUCT'N (EST.)
1990			20		154	131	75	55		10	2125	2570	446
1991	100	100	30	471	200	150	75	60	50	45	1654	2935	690
1992	100	150	60	471	225	200	100	75	75	90	1654	3200	920
1993	100	200	100	471	250	250	125	100	100	125	1654	3475	1150
1994	100	250	150		275	300	150	100	125	150	2125	3725	1265
1995	100	300	200		275	350	175	125	150	175	2125	3975	1390
1996	100	350	250	471	275	375	200	125	175	200	1654	4175	1525
1997	100	400	300	471	275	425	200	125	200	225	1654	4375	1675
1998	100	450	300	471	300	450	200	150	200	250	1654	4525	1760
1999	100	500	300		300	450	200	150	200	275	2125	4600	1945
TOTALS	900	2700	1710	2606	2529	3081	1500	1065	1273	1545	18424	37555	12936

ASSUMPTIONS

1. Government of Belize

- includes the following:

- (1) Ministry of Home Affairs and Defence
 - Police Training School
 - Belize Defence Force
 - Prisons
 - Boys Home
 - Hospitals
 - Rockvlew

Markets size is approximately 2000 persons - However, projections have been based on 500 individuals (25% of total market size consuming 1/2 pint milk for 365 days per year.

2. Schools

An estimated 48,000 students are presently enrolled in our primary schools, high schools and tertiary level institutions.

Market size has been estimated as follows:

1991	2.% of student population	4 & 1/2 pints	X 200	school days		
1992	3.% of student population	4 & 1/2 pints	X 200	"	"	"
1993	4.% of student population	4 & 1/2 "	X 200	"	"	"
1994	5.% of student population	4 & 1/2 "	X 200	"	"	"
1995	6.% of student population	4 & 1/2 "	X 200	"	"	"
1996	7.% of student population	4 & 1/2 "	X 200	"	"	"
1997	8.% of student population	4 & 1/2 "	X 200	"	"	"
1998	9.% of student population	4 & 1/2 "	X 200	"	"	"
1999	10.% of student population	4 & 1/2 "	X 200	"	"	"

No increase in student population size is projected.

84.

3. British Army Forces

Because of poor milk quality which was largely the result of the previous former/filler Macal lost in 1989 its contract with the British Forces which average One Hundred Fifty (150) gallons per day. The former/filler has now been replaced and shelf life of products have increased. Macal anticipates realizing this market once more.

4. CAYES

Milk distribution to the Cayes is restricted to San Pedro only and averages 44 gallons per week. This market with its vastly increasing tourist trade and the resultant increase in service personnel can be exploited much further. In addition Macal is envisaging distribution to the Caye Caulker and Caye Chapel which are two other tourist oriented centers.

5. CAYO DISTRICT

Two-thirds of Macal sales in the Cayo District is made in Belmopan which is the urban area with the lowest population concentration. Macal will intensify its marketing efforts in San Ignacio, Santa Elena and Benque Viejo, to boost sales in the Cayo District.

6. BELIZE DISTRICT

Macal presently has about Fifty (50) clients in Belize City that they service twice per week. Projection for market growth includes more trips to Belize City as well as a broadening of the client base. Belize District with approximately 1/3 of the country's population should definitely absorb more dairy products than the Cayo District. Historical data for 1990 indicates that this is not so.

7. ORANGE WALK

The Orange Walk District is a relatively new one for Macal. Entry to the market was made in January of 1990. With a population approximately similar to that of the Cayo District market growth projections are very conservative.

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8. COROZAL DISTRICT

Corozal lies only Twenty Eight (28) miles to the north of Orange Walk Town and is readily reached by a good surfaced road. (Driving time is approximately Forty (40) minutes). Additionally some of the biggest villages in Belize with population in excess of 2000 aligns this road. Rural electrification efforts have already affected most of these villages and Macal should experience no difficulties in achieving these annual sales levels.

9. Major Hotels

At present only one of the several major hotels in Belize City distributes Macal products. Ramada with its near to Two Hundred (200) rooms, Radisson Fort George Hotel, Villa's Hotel to name a few will all be targets of Macal's marketing strategy.

APPENDIX 14

Milk Production Cost (Per lb. basis) 1989

Variations in production cost per lb.

Result of variations in packaging cost. It's cheaper for Macal to produce milk packaged in quarts than in pints. Price differential for white milk varies from .73 to .93. For chocolate milk it varies from .94 to 1.14

Macal needs to carefully determine market needs for 1/2 pints, pints and quarts and production should be suited to these demands

MACAL AGRICULTURAL COOPERATIVE SOCIETY LTD.

Milk Production Costs (Per lb. basis) 1989	Unit Cost	Total
Processing Costs		
Wages and Social Security	.027	
Plant Fuel	.001	
Plant Maintenance	-	
Utilities	.027	
Storage	.001	
Miscellaneous Expenses	.005	
Depreciation - Plant and Equipment	.048	
Interest Expense - G.O.B.	.008	.117
Selling and Distribution Costs		
Wages and Social Security	.022	
Vehicle License	.001	
Fuel and Maintenance	.033	
Depreciation - Vehicles	.032	
Insurance - Vehicles	.004	
Meal Allowances	.006	
Bad Debts	.002	.100
Administrative Costs		
Salaries and Social Security	.027	
Stationeries	.003	
Telephone	.003	
Bank Charges	.003	
Advertisement	.001	
Trade License	-	
Depreciation - Office Equipment	.002	
Transportation	.001	.037

2.

Purchases and Purchase Costs

Milk	.300	
Duty/Brokerage on Milk Containers	.018	.318

Total		.572

Cost of Producing 1 lb. White Milk to be packaged in:-

a) 1/2 pint containers packaging	.572	
+ cost of containers (4 at .09)	.360	.932

b) 1 pint containers packaging	.572	
+ cost of containers (2 at .11)	.220	.792

c) 1 qt. containers packaging	.572	
+ cost of containers (1 at .16)	.160	.732

Cost of Producing 1 lb. Chocolate Milk to be packaged as follows:

a) 1/2 pint containers packaging	.572	
+ cost of containers (4 at .09)	.360	
+ cost of syrup	.211	1.143

b) 1 pint containers packaging	.572	
+ cost of containers (2 at .11)	.220	
+ cost of syrup	.211	1.003

c) 1 qt. containers packaging	.572	
+ cost of containers (1 at .16)	.160	
+ cost of syrup	.211	.943

APPENDIX 16

GOVERNMENT OF BELIZE POLICY ACTION STATEMENT
ON THE DAIRY INDUSTRY - 1986

1. The GOB will continue to stress improved and adapted breeding stock as the basis for improving yields and reducing production costs. Artificial insemination will be made available to producers in the two major areas and will be used at Central Farm. Genetically improved animals will be disbursed from Central Farm and Yo Creek stock to improve national milk yields. Imported dairy stock will be permitted where health safeguards are met.
2. Extension Officers will be designated in Cayo and Orange Walk Districts with specific training and responsibilities in dairy science. Efforts will be strengthened to encourage sound management practices on dairy farms.
3. Increased emphasis will be made to improve quality and quantity of pasture and supplementary feeding programs to increase milk yields.
4. Credit will be made available to permit herd and management improvement. Credit availability for genetically improved cattle, improved pastures and facilities for higher quality milk will receive highest priority.
5. As a perishable product consumer safeguards will be a major policy goal. In cooperation with the Ministry of Health, standards for milk will be promulgated and enforced for the benefit of producer and consumer alike.
6. In cooperation with the Ministry of Commerce and Industry, continued oversight of imported dairy products will ensure fair competition for the domestic industry. Where evidence exists of delivered milk products that are priced below prevailing markets either in the originating country or comparable exporter, an immediate surcharge will be applied equal to the price discrepancy.

APPENDIX 17

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APPENDIX 18

COMPARISONS OF PLANNED VERSUS ACTUAL RESULTS OF THE INTERVENTIONS ASSESSED AGAINST THE PURPOSE, GOALS AND OBJECTIVES OF THE PROJECT AS STATED IN THE COOPERATIVE AGREEMENT/PROJECT PAPER

<u>PLAN OF WORK</u>	<u>ACTUAL RESULTS</u>	<u>PURPOSE, GOALS AND OBJECTIVES OF AGREEMENT</u>
<u>General Objectives</u>	<u>General Objectives</u>	<u>General Objectives</u>
1. Increase supply of milk 2. Members education 3. Marketing 4. Producing quality milk	1) tentative increase achieved 2) partially implemented 3) not successful 4) accomplished	To develop an indigenous dairy industry in Belize, generate foreign exchange savings, increase employment, increase farmer income; to assist Macal to become profitable by: 1) increasing supply of milk (through increase in number of members producing and increasing production level per member. 2) improved management of operations and members education programme. 3) Expand local market opportunities for fresh pasteurized milk.
<u>Details</u>	<u>Details</u>	<u>Details</u>
1. Increase supply of milk a) by 87% to 300 gals/day by Dec. 1990 (also increase in the number of members delivering milk, adoption of recommended feeding and management practices).	1. Increase milk supply was achieved. Production reached 301 gals/day in 1989. Also increase in members producing milk was realized (23 in 1989). However, both production of milk and number of members producing declined because of loss of markets caused by poor quality control which was a result of the previous former filler.	1. Increase supply of milk targeted at 250 gals/day from 60 producing members.

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2.

- b) Members education - re
 - i) Pasture improvement using the following species: Dwarf Elephant Grass, Improved African Star, Coast Bermuda Grass: Supplemental feeding using Sorghum Sudan Grass.
 - b) Meetings have been held between Belize Livestock Development Project and Macal members. Approximately 50% of members producing in 1989 (i.e. 12 members) have implemented pasture improvement. Supplemental feeding practices have been implemented amongst some members.
- c) Coordination with pasture Specialist - c) field trips and workshops to improve pastures and pasture management practices.
 - i) Articles on Pasture Improvement to be a regular feature in Macal's Newsletter
 - ii) Publication called Supplementary Feeding of Dairy Cattle During the Dry Season to be circulated.
 - c) The BLDP have held workshops and members have been invited. Four workshops have been held up to September, 1990. Pasture improvement articles have been included in the Macal Newsletter, a quarterly publication. Peace Corp Officer, Dale Jude has prepared and circulated data on Supplementary Feeding.
- d) Development of basic herd health programme:
 - i) Workshops re - vaccination and testing, breeding difficulties, internal and external parasite control. Prevention and treatment of common ailments.
 - d) Being done in collaboration with
 - i) the veterinary Lab in Central Farm and have been implemented with all members of Macal.
 - ii) Has been accomplished with the assistance of AID who contributed records. However, records not being maintained by producers.
 - ii) G.M. and Advisor to develop a dairy record-keeping programme.

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3.

e) Milk Collection

i) Small used vehicle to assist those who have problems in delivering milk.

ii) Neighbourhood type collection system - members with vehicles transporting for those who do not.

e) Implemented but terminated after

i) loss of British Forces contract.

ii) membership cooperation was lacking and programme could not be implemented.

e) Implement a centralized bulk milk collection system.

f) Increase in membership to 35 producing members by December, 1990.

f) Membership expected to remain at 10 by Dec. 1990. Could reach as high as 20 if Macal reinstates milk collection system.

f) Increase membership to 60 by Dec. 1990.

2. Education

- Two-fold:

a) Board of Directors and members.

b) Staff.

a) BOD and members education to be conducted at elementary level and to be continuous using participatory techniques
2 workshops for members in 1989 and 1990
2 workshops for BOD in 1989 and 1990

b) Staff training - General Manager to BIM re fundamentals of management, marketing and business planning.
Plant employees - AID to provide assistance in locating a specialist to provide on-the-job training.

2. Education

a) 1 workshop held in 1989 with members and 1 held with Board of Directors in 1989. Both were hosted by the Department of Cooperatives. Impact of workshops very limited
"Cooperative" spirit still does not exist amongst members. Highlighted by members with vehicles refusal to transport milk for those who do not. Note also the estrangement that exists between Belizean and non-Belizean members.

BOB still not discharging its functions properly. Meddling in day to day affairs of the administration still continues.
b) G.M. and Secretary/Book-keeper did attend seminars at BIM. GM to Land-O-Lakes. AID assistance in locating specialist did not materialize.

2. Education

a) Expatriate advisor to work closely with G.M. in advising on efficient management and in assisting with the development of members education programmes.

b) Short term technical training (on-the-job).

4.

3. Marketing

- Increase profits by minimizing costs and maximizing efficiency.

Strategies - Sales

- i) education of salesmen and clients in handling and storing products.
 - ii) evaluation of sales routes to decrease transportation costs and distribution time.
 - iii) Uniforms for employees.
 - iv) Increase volume of sales with Orange Juice by implementing an incentive programme for deliverymen.
- Labour
- i) evaluation of labour requirements needs.
 - ii) establish work schedules and policies.

- Plant Operations

- i) Overhaul or replace former/filler

4. Milk Quality

- educate members and staff - re milk
- i) Macal messenger (quarterly newsletter) to discuss production of quality milk
- ii) Regular farm visits to discuss milk quality

3. Marketing

- i) Some clients approached re appropriate temperature for storing and milk.
- ii) Some work done by Peace Corp personnel in route determination and marketing survey.
- iii) Partial uniforms (shirts only) implemented. Employees not too receptive to uniforms.
- iv) Incentives, general, i.e. for both milk and orange juice.

Marketing programme not a success, and too limited. Programme still yields high returns. Now strategies and approaches needs to be developed.

4. Milk Quality

- implemented
- i) implemented
- ii) G.M. and Advisor did visits at 4 month intervals or as and when required

3. Marketing

- Phase II - local currency to be used to hire local expertise to undertake marketing and feasibility studies - unspent building funds to be used to train staff members in marketing.

APPENDIX 19

SCOPE OF WORK

PART I - THE SCHEDULE

SECTION A - Solicitation/Contract Form

This is a fixed price contract.

SECTION B - Supplies, Services and Price/Cost

Article I - Fixed Price

The Contractor shall be paid a fixed price of Bz\$25,646.00 for performing the scope of work specified in Section C below.

Article II - Method of Payment

USAID will pay the Contractor fifty percent (50%) of the agreed contract price after receipt and acceptance of the written draft report. Upon receipt and acceptance of the final report by the USAID/Belize Agricultural Development Office, the Contractor shall be paid the remaining fifty percent (50%).

Article III - Logistic Support

The Contractor shall provide all logistic support required for the performance of this task.

SECTION C - Description/Specifications/Work Statement

Purpose

The purpose of this evaluation is to determine to what extent, over the last three years, the project has managed to develop and strengthen its membership, expand its dairying and other businesses and become a viable economic enterprise. Further, this evaluation will determine the impact, if any, of the project on the production of dairy products in particular and agricultural production in general in Belize. Towards these determinations, comparisons of the planned versus actual results of the interventions will be assessed against the purpose, goals and objectives of the project as stated in the Cooperative Agreement/Project Paper.

The evaluation will make recommendations that would enable more efficient use of the available resources, and propose workable solutions to any major or persistent problems affecting the implementation process.

The results of the evaluation is intended to enable USAID to evaluate the overall project effectiveness. The evaluation would also provide the management of the Cooperative with a tool to enhance their decision-making capability in the areas of business planning and efficient use of resources. It would also provide feedback on the performance of the Cooperative management and the technical advisors during the the project duration. Finally, the evaluation will generate adequate and reliable information and data for identification of potential sources of future financing if determined to be necessary.

Statement Work

Key Issues and Questions for Evaluation:

1. Determine how effective the project has been in achieving its goals. Were the goals realistic? If yes, determine the reason(s) for any non-fulfillment. How does the project fit with GOB policies and priorities for development? Does the GOB dedicate or possesses the resources necessary to complement the priority it attaches to the project?

2. Estimate the short- to medium-term effects of the project on the dairy industry in Belize and make a determination of the probability/possibility for sustained growth impact. This should focus on the growth potential of the fresh pasteurized milk market in the country, as well as, the market potential for other dairy products such as cheese, yogurt, ice-creams, etc. Does MACAL possess the potential to benefit from these markets? If yes, suggest a plan of action.

3. Identify the major constraints/threats to the project realizing its goals. What were the factors contributing to the success of particular areas or components of the project? What are the strengths which the project now possess that can be utilized for further success and what are the weak points and how can they be strengthened?

4. Can the project be brought to a successful termination in its present form? Provide suggestions that will enable the most efficient use of the remaining funds and resources under the present conditions. What lessons can be learned by USAID, MACAL and the GOB which could enhance implementation of similar projects in future?

5. Develop an information and data base which can be utilized as the focus around which decisions can be made with regards to possible extension of the PACD.

Project Components to be Evaluated:

The evaluation, for functional purpose and ease of reporting, will be divided into the following components or categories: technical, administrative/financial and impact assessments.

Technical Assessment:

This assessment will be led by the Livestock and dairy processing specialists. Among the tasks to be performed are:

1. Evaluate the present plant with regards to functioning and suitability of equipment; quality and availability of personnel for operation; quality control practices at the plant; past, present and future through-put and the possibility of multiple shift plant operation. What are the constraints to market expansion and how can these constraints be overcome?
2. Assess suppliers of milk to the plant as to quantity and quality supplied, disposal of production above that supplied to MACAL and comparison of prices obtained for fresh milk from different purchasers. Constraints to the expansion of production should be identified where they exist and recommendations provided on how to overcome such constraints.
3. Evaluate other dairy and non-dairy products that MACAL currently produces in terms of quantity, suitability, revenue generations, etc. Make technical recommendations as to MACAL's capability and to the potential market for diversifying product base to dairy and other non-dairy products.
4. Review all technical assistance provided to the project to determine if the scopes of work were satisfied. Did the cooperative receive any identifiable benefits from the technical assistance supplied?

Administrative and Financial Assessment:

This part of the evaluation will be led by the economist/accounts specialist. Among the tasks to be performed are:

1. Review the accounting and internal control systems at the Cooperative to determine if project and other funds were used as provided for in the Cooperative Grant Agreement and generally accepted accounting principles. Are annual financial audits carried out? What were the findings and have they ever been accepted by the Cooperative?

2. Assess the purchasing and contracting policies and procedures to see if they complied with A.I.D. requirements and provided for reasonable competition.

3. Determine if the current management and staff possess or have demonstrated the technical and administrative competence necessary for successful management and protection of the plant and other assets of the Cooperative. Is the level of compensation commensurate with the effort required?

4. Determine the extent of the current membership as well as the fraction of the membership who participate in the productive activities of the Cooperative. What are the opportunities provided for the membership to grow technically and participate in the affairs of the Cooperative as owners of the business? What are the effects of the closed management systems as well as the existing Cooperative laws on membership and active participation in the Cooperative?

Impact Assessment:

This part of the evaluation will be under the supervision of the team leader. The tasks to be undertaken will include but not be limited to the following:

1. Determine if dairy production is considered an integral part of the GOB's current economic development strategy? What role is MACAL expected to play?

2. Determine if any real reduction has taken place in the importation of milk and other dairy products over the last five years. Has the country benefitted from import substitution? Is the price of locally produced dairy products competitive with imported products? If not, why not?

3. Assess whether or not there has been any meaningful and measurable changes in the production and consumption of pasteurized fresh cows milk and other locally produced dairy products as a result of the activities of MACAL. Has there been significant economic benefits accruing to farmers now or in the future? To what extent has any measurable new or planned investment taken place in the dairy industry during the last five years?

4. Determine the level of coordination/integration between the project and the Belize Livestock Producers Association, the Belize Livestock Development Project and other dairy production enterprises. Compare MACAL's impact with that of its main competitor, Western Dairies.

5. Assess what effect has the presence of MACAL in the Cayo District have on economic activity, social/nutritional attitudes and small enterprise development within that district. Has any cooperative modeled themselves after MACAL's mode of operations?

6. What are the major limiting factors to the success or sustained profitability of the Cooperative? Can the Cooperative operate as a self-sustaining economic venture without outside grants? Is it in a position to access commercial loans on its own? Will it be able to pay for the cost of plant in a shorter time period than planned?

7. Should USAID or other grant providing agencies continue to grant contributions to the Cooperative? If so, to what extent and for what time period should assistance be provided?

SECTION D - Packaging and Marking - N/A

SECTION E - Inspection and Acceptance

Article I - Inspection

USAID, through the authorized representative, (the project manager), has the right at reasonable times, to inspect, or otherwise evaluate the work performed or being performed hereunder.

Article II - Technical Direction

The Contractor shall work closely with USAID personnel and shall follow general guidance of the Agricultural Development Office. Notwithstanding any instructions that may be given to the Contractor by USAID technical personnel, such instructions or guidance may not change the terms of this contract. If the Contractor has reason to believe that any instruction or guidance that is given by USAID personnel has the effect of changing the terms of this contract, the Contractor agrees to consult with the Contracting Officer prior to following such instructions or guidance.

SECTION F - Deliveries or Performance

Article I - Effective Date

The performance period for this evaluation will commence on/about September 3, 1990 and will terminate on/about September 16, 1990.

Article II - Reports

An oral report is to be presented at a debriefing session on September 16, 1990, at the MACAL Dairy Plant Compound. A draft report will be prepared and presented to USAID and MACAL on September 16, 1990. A final report will be presented by the Contractor no later than October 19, 1990. Ten copies of the final report, in English, will be submitted to the USAID Representative. A copy of the document will also be submitted on 5.25 inches diskettes using a word processing program compatible with IBM PC formats.

The report will use the following format:

-an executive summary, to include the following:

purpose of activity evaluated, purpose of evaluation; methodology used, findings and conclusions; and recommendations.

- the body of the report, to include the following:

discussion of key issues and questions posed by the evaluation team and its study methods; evidence/findings regarding the evaluation issues and questions, conclusions drawn from the findings, recommendations based on the study findings, and an action plan.

- the appendices, to include the following:

evaluation scope of work, individuals and agencies consulted, and any other information or data deemed necessary or relevant to the technical topics or study methodology.

Article III - Evaluation Methods and Procedures

The evaluation will be undertaken on behalf of MACAL Agricultural Cooperative Society and USAID, and will involve a total of twelve working days.

The evaluation team will be based in Belmopan and will make all the necessary trips required to meet with relevant personnel and carry out inspections and observations.

Among those to be interviewed are members of the Cooperative, the Board of Directors and the General Manager, Ministry of Agriculture and Fisheries field staff and management, project contractors, the GOB Cooperative Department, dairy farmers and processors, Ministry of

Commerce/Trade, Ministry of Finance, Ministry of Economic Development and USAID officials. A list of recommended contacts should be prepared prior to commencement of the evaluation. Contact may also be made with personnel and agencies not on the prepared list.

Data will be collected from field observations, review of relevant files, quarterly and other reports, financial records prepared by the Cooperative, as well as any other sources deemed necessary to successfully conclude the assignment.

Article IV - Composition of the Evaluation Team

The evaluation team will be comprised of four specialists recruited by the Contractor. These will include one management/administrative specialist, who will also be the team leader; one livestock specialist; one dairy plant processing specialist; and one economist/accounts specialist. All four should have experience working with agriculture cooperatives and or dairy/livestock development, data collection and analysis, and preparation of reports. Additionally, the team leader should have experience in the implementation and monitoring policies and procedures would be an asset.

Article V - Level of Effort Required

The team leader, representing the Contractor, will be responsible for the preparation of the final plan of action for the evaluation. This plan will be approved by MACAL and USAID/Belize. Additionally, he/she will be responsible for the coordination of work plans of the individual team members and for preparation of the final and draft reports of findings and recommendations. This effort will require sixteen person-days.

The livestock specialist will assess the present status of the dairy industry, carry out interviews and express his/her opinion and recommendations clearly in a precise manner. This effort will require eight person-days.

The dairy processing specialist will review the operations of the plant and make recommendations as to its efficiency, relevance and future use taking into consideration multiple product production

The economist/account specialist will review the accounting controls, review the economic viability of the cooperative efforts, conduct interviews and express opinions and make clear and concise recommendations where necessary. This effort will require seven person-days.

SECTION G - Contract Administration Data

A. Project No.	505-0036
B. PIO/T No.	505-0036-3-60146
C. Appropriation No.	72-11M1021
D. Budget Plan Code	LDAA-86-25505-AG13
E. Allotment No.	E010346, E1. 1
F. Amount Committed	Bz\$25,646.00
G. Contract Effective Thru	September 16, 1990
H. Duns No	N/A
I. Contract IRS I.D. No.	N/A
J. Project Office	Agriculture Development Office
K. Paying Office	Controller USAID/Belize

SECTION H - Special Contract Requirements

In accordance with AID Clause 752.7027 of this contract entitled Personnel, whereunder the contractor may not send individuals outside the United States to perform work under this contract without the written approval of the Contracting Officer. The Contracting Officer does hereby, provide said approval for all individuals proposed by the Contractor; provided that concurrence with the assignment of such individuals outside the United States is obtained by the Contractor, in writing from the Project Officer prior to assignment abroad. After approval of the proposed international travel, the Contractor shall provide the USAID Project Officer with arrival date, time and flight number.

Workmen's Compensation Insurance

Belizean employees required to serve under this contract must be covered by Workmen's Compensation Insurance as required and in accordance with local laws or customs. USAID will not be responsible for any accidents and/or injuries suffered by the Contractor or any personnel working under this contract.