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SEMI-ANNUAL

SUBSTANTIVE AND ADMINISTRATIVE REPORTS

OCTOBER 1, 1993-MARCH 31, 1994

CONTRACT NO. 520-0339-C-00-2234-00
PROJECT NO. 520-0339

LAPROMED REMODELING
USAID/GUATEMALA-CENTRAL AMERICAN PROGRAMS

PREPARED BY:

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May 25, 1994

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May 25, 1994

Directorate for Policy
Center for Development Information and Evaluation
Office of Development Information
ACQUISITIONS
Room 209, SA-18
Agency for International Development
Washington, DC 20523-1802

Re: Contract No.: 520-0339-C-00-2234-00
Project No.: 520-0339

To Whom It May Concern:

PATH is pleased to submit the third semi-annual substantive and administrative report for the LAPROMED remodeling project. In compliance with AIDAR 752.7026 (a), enclosed are two (2) copies of the report for the Directorate for Policy. Additional copies, as required, have also been provided to the Project Officer and Contracting Officer.

If you have any questions or require clarification regarding this report, please contact Kristin Bedell, Associate Administrative Officer.

Sincerely,

Suzanne Cuell
for

Gordon W. Perkin, M.D.
President

GWP:msm
Enclosures
GWPL04386

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SEMI-ANNUAL REPORT

Immunization and Oral Rehydration Therapy
Services for Child Survival Project

USAID/Guatemala-Central American Programs
Contract No. 520-0339-C-00-2234-00
(October 1993 through March 1994)

INTRODUCTION

Effective October 1, 1992, the Program for Appropriate Technology in Health (PATH) entered into a contract with USAID/G-CAP, Contract No. 520-0339-C-00-2234-00, to complete a local oral rehydration salt (ORS) production plant, LAPROMED, in Guatemala City, Guatemala.

This semi-annual report, covering the period October 1, 1993, through March 31, 1994, is submitted in compliance with AIDAR 752-7026 and is a combination of two reports required by the referenced clause. The first, a "substantive" report, covers project implementation status, progress, and plans. The second, an "administrative" report covers project expenditures by contract budget category, personnel employed under the contract, and foreign nationals being trained under the contract. The report sections are:

- SUBSTANTIVE REPORT (Pages 2-5)
- ADMINISTRATIVE REPORT (Pages 6-8)
- ATTACHMENTS

SUBSTANTIVE REPORT

Objective #1: Determine the present availability, distribution, and use of ORS packets in Guatemala.

Anecdotal information indicates no shortages of inventories. LAPROMED made two ORS deliveries to the MOH in 1994: 66,210 in March 1994, and 159,380 in April 1994. They still plan to deliver 74,410 sachets from the 1993 order. The goods have been ready since the end of March 1994; however, the MOH and the Minister of Finance have to work out the payments. The order for 1994 is still under negotiation between LAPROMED and the MOH with help from USAID/G-CAP and Clapp & Mayne.

Objective #2: Determine conditions and requirements for an effective oral rehydration therapy (ORT) program in Guatemala. Complete a study reporting projected ORS needs and anticipated supply as well as the market for locally produced ORS.

The final copy of the report "Assessment of the Guatemala Oral Rehydration Salts Market, Marketing Strategy for LAPROMED, and ORT Program Analysis" was provided to USAID/G-CAP during this reporting period (Attachment A). This report gave a comprehensive overview of the ORS market in Guatemala and related government programs and policies. PATH believes that it represents the present situation with regard to ORS and ORT programs in the country. Despite the fact that the data used as the basis for the report may become outdated without constant updating, it is felt that the projections of ORS need and demand, and the recommendations for an effective ORT program, are accurate and worthy of serious consideration.

Objective #3: Assist the University of San Carlos (USAC) in establishing systems and procedures which will enable LAPROMED to function independently of A.I.D. and other donors, similar to a private sector supplier, within one year of the initiation of production.

A follow-up to the synergogy training seminar took place in December 1993, at the final stage of remodeling and the initial stage of production start-up. Conclusions reached from this seminar were that barriers existed between production, quality control, EDC, and LAPROMED staff that must be resolved in order to ensure teamwork and improvements in quality. During each technical assistance visit, H. Zardo has taken every opportunity to train production and quality control personnel on good manufacturing practices.

PATH continued to assist LAPROMED in assessing its cost factors to evaluate its required cash flow so that mechanisms established for orders and payments will sufficiently support anticipated costs. Considerable effort was expended during this period to ensure that the MOH establishes a payment mechanism with the USAC and that the

subsequent transfer of monies from the USAC to EDC passes down to LAPROMED.

During this reporting period, it was expected that the MOH would: (a) place an order with LAPROMED for 300,000 sachets to be delivered by December 30, 1993; and (b) ensure that funds are allocated in the 1994 Government of Guatemala budget to purchase 1.5 million ORS sachets from LAPROMED for delivery in 1994. In fact, it was discovered that the purchase order for 300,000 sachets in 1993 was given to another company. LAPROMED received three purchase orders from the MOH totalling 300,000 to be delivered within the first quarter of 1994. No delivery date or firm payment commitment for the 1.5 million ORS sachets has been received from the MOH as of this writing. PATH and USAID/G-CAP staff continue to closely monitor and aggressively pursue these actions. The first two orders were delivered in March and April 1994.

Because MOH orders have been unpredictable and the need to become sustainable is very critical at this juncture, additional sources of sales of *SueroVida* to other public sector clients have been sought. PATH and USAID/G-CAP have assisted LAPROMED in obtaining meetings with UNICEF, PAHO, and ASINDES. Negotiations are proceeding to establish target prices, packaging, and conditions for product distribution. Discussions are also ongoing with regard to third-party manufacturing as an additional method for ensuring sustainability of *SueroVida* production.

<u>Objective #4</u>: Determine specifications for remaining equipment needed to complete LAPROMED machinery-equipment needs. Procure, ship, import, install, and train LAPROMED personnel in the use of equipment detailed in the contract, and coordinate delivery dates, payment terms, and insurance.

All equipment and materials required for production start-up were received, inspected, installed, and validated in late October/early November 1993. Follow-up assistance was provided by the PATH procurement staff after the ORS production start-up.

A technician from the vendor for the form-fill-seal machine traveled to Guatemala in November 1993 to install and train LAPROMED staff in the use and maintenance of the machine. Following installation and during initial production runs, the machine showed uncontrollable weight variation and "de-mixing" which required that a technician provided by the company make a second technical assistance visit in January 1994 to adjust the packaging machine and to provide follow-on training. A concurrent visit by the air conditioning systems vendor also produced positive results. The result of these visits eliminated all possible external factors affecting the ability to obtain a consistent level of *SueroVida* production.

A request for approval to purchase additional equipment such as a mill, platform scale, purified water system, and spare parts is pending.

Objective #5: Subcontract a local (Guatemala City) engineering company highly experienced in industrial construction and experienced in sterile or penicillin areas to remodel the area at the USAC to conform to recommendations made by the Head of the Department of Registry and Control of Medicines, Supervision Section of the Ministry of Health.

Arquitecto Pelayo Llarena, Sr., (referred to as APLC) completed the remodeling work at the LAPROMED facility in December 1993. APLC worked with PATH to secure labor, necessary contractors, materials, etc., for the remodel of the LAPROMED facility. Details regarding the remodel/construction work carried out are provided in Objective #6.

Objective #6: Supervise the work performed by the engineering firm and any other subcontractors employed.

APLC provided daily supervision and coordination of the remodeling and construction work carried out at the LAPROMED facility and submitted progress and financial reports to PATH each month for the period October 1993 through January 1994 (see Attachment B). Overall management and guidance for the work was provided by H. Zardo both from Seattle and in-country on a continuous basis throughout the reporting period. Lic. Luis Gálvez, LAPROMED, continued to oversee the activities of APLC and its subcontractors on a daily basis as well.

A final inspection for acceptance of the LAPROMED facility took place in December 1993. Three items required follow-up attention and follow-up was completed. The a subsequent inspection of these three items as well as inspection of equipment and supplies was completed in April 1994.

Objective #7: Provide to LAPROMED quality control lab validation, equipment installation, plant validation, troubleshooting, quality assurance audit and quality control sampling phase progression, and a marketing and distribution plan.

The LAPROMED ORS facility is completely renovated and equipped to produce up to 4 million 1-liter packets of WHO-formula ORS-citrate annually. To commemorate the completion of plant remodeling, an inauguration ceremony took place in November 1993 attended by representatives of USAC, USAID/G-CAP, APLC, the MOH, etc.

Production training of the LAPROMED team took place in November and December 1993 with a team of three PATH technical personnel. The documents listed below were provided for implementation and modification by LAPROMED as it undertakes ORS production and quality control. Final documents were made available in English and Spanish. Draft copies were provided to USAID/G-CAP for review and comment as required in the contract. Final copies will be submitted to the Mission if requested.

(1) Standard Operating Procedures Manual
(2) ORS Quality Control Manual
(3) Validation Protocol Manual
(4) Production and Quality Control Forms
(5) Operations Manual
(6) Quality Assurance Policies and Guidelines Manual
(7) Quality Assurance Audit Manual

Production of initial batches began in December 1993. Testing of two sets of batches by a reference lab was conducted December 1993 and January 1994.

Throughout the fall, it became evident that the managerial abilities of the production staff at LAPROMED needed improvement. In January 1994, EDC appointed Lic. Eddy Villagrán as *SueroVida* Administrator for internal (materials, production, and quality control management) and external (contact with clients and suppliers) matters. Continuous quality improvement has occurred. However, PATH still has concerns with regard to management and supervision, and effective marketing capability. PATH continues to monitor the situation, providing production and quality control advice on a weekly basis. In March 1994, PATH proposed that a no-cost extension for seven months be issued for technical assistance to strengthen LAPROMED's managerial skills and to work towards quantifiable results.

In order to provide thorough information on the results of LAPROMED's ORS production and delivery, as well as quality control, PATH developed a report which provides a quantitative and qualitative overview of LAPROMED's progress (see Attachment C). The first QA audit took place in April 1994.

LAPROMED provides to PATH a management plan for *SueroVida* on a quarterly basis which outlines production and distribution objectives as well as operational activities.

ADMINISTRATIVE REPORT

Expenditures

Cumulative project expenditures during the report period total $380,800.24 ($377,029.95 in expenditures plus $3,770.29 fixed fee). Attachment D is a summary expenditure report providing a breakdown of expenditures against budgets for each contract budget category. An explanation of expenditures by each contract budget category is provided below:

- Salaries

  Expenditures in this budget category for this reporting period total $50,313.00. The expenditures reflect salaries and staff leave incurred for only the professional staff included in PATH's proposal and/or specifically approved by USAID/G-CAP and administrative support staff.

- Fringe

  Expenditures in this budget category for this reporting period total $30,760.23. The expenditures reflect fringe benefits based on a percentage (29.5 percent) of the total salary and staff leave incurred during the reporting period.

- Consultants

  Expenditures in this budget category for this reporting period total $3,307.50. The expenditures reflect fees for assistance provided by Dr. Jim Griffith for management training conducted in August 1993.

- Travel and Transportation

  Expenditures in this budget category for this reporting period total $12,889.32. The expenditures reflect airfare, per diem, and miscellaneous expenses associated with travel to Guatemala to carry out project work. Attachment E provides a summary of travel during the reporting period.

- Other Direct Costs

  Expenditures in this budget category for this reporting period total $19,506.19. The expenditures reflect other direct costs to the project such as copying, telephone, fax, express mail, postage, etc. Also included in this budget category is the "facilities" allocation, based on full salary (salary, staff leave, and fringe) incurred during the reporting period.

- Equipment and Materials

  Expenditures in this budget category for this reporting period total $103,593.79. The expenditures costs incurred to date for equipment and materials, freight, insurance, etc.

- Contracted Services

  Expenditures in this budget category for this reporting period total $121.85. The expenditures reflect final payments for artwork related to the new package name, instructions, and design for LAPROMED's ORS product.

- Subcontracts

  Expenditures in this budget category for this reporting period total $112,885.60. The expenditures reflect payments as follows: APLC ($105,404.06); United Packaging, Inc. ($7,477.87); and attorney services ($3.67).

- G & A

  Expenditures in this budget category for this reporting period total $43,652.47. The expenditures reflect an indirect cost based on 33.9 percent of modified total direct costs.

- Fixed fee

  Expenditures in this budget category for this reporting period total $3,770.29. The fee is based on one percent of total project expenditures.

A contract amendment received in October 1993 provided approval for Sara Tifft to assume Fletcher Catron's duties, as well as corrected the budget line items which were inadvertently incorrect in the previous contract amendment dated July 15, 1993.

In order to ensure overall success/sustainability of the LAPROMED project, in early March 1994 PATH submitted a request for a seven-month no-cost extension to the contract. Salary information was provided in late March 1994. As of this writing, a decision is still pending.

Personnel Employed

Personnel employed during the reporting period included only the professional staff included in PATH's proposal and/or specifically approved by USAID/G-CAP and administrative support staff.

Foreign Nationals

No foreign nationals were trained under the contract during the reporting period.

KBR04369
KB:msm

Attachment A

Assessment of the Guatemala Oral Rehydration Salts Market,
Marketing Strategy for LAPROMED,
and
ORT Program Analysis

path
Program for Appropriate Technology in Health

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February 25, 1994

Jorge Chang, M.D.
Project Officer
USAID/Guatemala
Plaza Uno, 1a Calle 7-66
Zona 9
Guatemala City, GUATEMALA

Re: Contract No. 520-0339-C-00-2234-0
Project No. 520-0339

Dear Jorge:

The enclosed report represents the deliverable required for Specific Objectives 1 and 2 as outlined in PATH's contract with USAID/Guatemala.

The draft report was submitted to USAID/Guatemala in July 1993. The objective of the draft was to generate discussion and action among the parties working to implement successful production, distribution, and sale of ORS produced by LAPROMED. The draft document was reviewed and discussed extensively by LAPROMED staff, the Ministry of Health, and representatives of the Clapp & Mayne project. The draft report therefore served the purpose of promoting action, instead of being a static document. It has taken the intervening months to assemble the large amount of information collected for this project and synthesize the points of view of the various parties.

We believe that this final report reflects a comprehensive overview of the ORS market in Guatemala and related government programs and policies. We also believe that it accurately represents the present situation with regard to ORS and ORT programs in the country. As you know, conditions in the market, as well as the government's policies and programs, are constantly changing. The data used as the basis for this report were gathered at particular points in time and may readily become outdated without constant updating. Nevertheless, we believe that the overall trends in the market, the projections of ORS need and demand, and the general recommendations concerning the conditions and requirements for an effective ORT program are accurate and worthy of serious consideration.

We look forward to your comments.

Sincerely,

Humberto Zardo
Technical Director
Technology Management Department

HZ:msm
Enclosure
cc: Patricia O'Connor, Ph.D.
HZL04017

Assessment of the Guatemala Oral Rehydration Salts Market,

Marketing Strategy for LAPROMED,

and

ORT Program Analysis

Prepared by

Immunization and Oral Rehydration Therapy
Services for Child Survival Project

Project No. 520-0339
Contract No. 520-0339-C-00-2234-0

a USAID/Guatemala Funded Project
Managed by

PATH
(Program for Appropriate Technology in Health)

February 1994

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Attachments

A - Supply to Consumption Chain for Oral Rehydration Salts in Guatemala
B - Summary of Interviews with 15 NGOs Working in Health in Guatemala February 1993
C - ORS Distribution Analysis for Public Sector
D - Fax to Dra. Fuentes, Clapp & Mayne, July 28, 1993
E - Detailed Analysis of 1995-2000 Estimated ORS Needs for Guatemala
F - List of Private Sector ORS Products
G - Priority ORS Distribution Areas Based on Population and Reported Cases of Diarrheal Disease

Acknowledgements

Many people have contributed time and effort to providing the information for this report. PATH would like to acknowledge a few individuals who assisted and participated extensively in this process.

Dr. Baudilio Sajché
Director
Maternal-Child Health Program
Ministry of Health

Dr. Octavio Morán
Director
ORT Program
Ministry of Health

Dr. Eduardo Catalán
Director
Office of Disasters
Ministry of Health

Dra. Lucrecia de Fuentes
Clapp & Mayne

Dr. Juan José Urrutia
Consultant
Clapp & Mayne

Dr. Jorge Chang
USAID/Guatemala

Dra. Patricia O'Connor
USAID/Guatemala

I. Introduction

Program for Appropriate Technology in Health (PATH), entered into a contract to complete a local oral rehydration salt (ORS) production plant, LAPROMED, in Guatemala City, Guatemala. A central component of this project is to determine an appropriate marketing plan and public policy environment for LAPROMED that will contribute to the project's sustainability. LAPROMED is a project of the University of San Carlos, School of Chemical Sciences and Pharmacy. LAPROMED is expected to produce and supply a public sector brand ORS product, known by the brand name *SueroVida*, for sale principally to the Guatemalan Ministry of Health (MOH) and other government programs.

A. Scope and Methodology

The work specified in PATH's contract that encompasses the market planning and public policy components of the project are detailed in Specific Objectives 1 and 2:

Specific Objective 1: Determine the present availability, distribution, and use of ORS packets in Guatemala.

The work completed to fulfill this objective included quantitative research concerning the oral rehydration therapy (ORT) and antidiarrheal products markets in Guatemala; evaluation of documents recording MOH and other public sector ORS inventories, shipments, and field reports in the country; extensive interviews with private sector firms, nongovernmental organizations (NGOs), and government programs involved in ORS manufacturing, distribution, and sale; and qualitative research among health workers, pharmacists, and mothers of children under age five concerning perceptions of public sector ORS availability and use, motivating factors in ORS use, and its perceived effectiveness.

Specific Objective 2: Determine the conditions and requirements for an effective oral rehydration therapy program in Guatemala. Complete a study reporting projected ORS needs and anticipated supply as well as the market for locally produced ORS.

The work completed to fulfill this objective included an assessment of the results of the quantitative and qualitative research and interviews outlined above; extensive review and discussions with representatives of the MOH, USAID/Guatemala, LAPROMED, and Clapp & Mayne; preparation of a draft marketing plan for LAPROMED's review; and evaluation of the current ORT program.

The following report synthesizes into one document the results of work completed under Specific Objectives 1 and 2. PATH and LAPROMED staff view the implementation of a marketing plan for

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LAPROMED that involves sales of ORS to the Government of Guatemala to be intricately linked to the conditions and requirements for an effective ORT program. Much of the quantitative and qualitative data collected for the fulfillment of the tasks outlined under Specific Objective 1 contribute directly to the fulfillment of Specific Objective 2. The observations and recommendations that pertain to the optimal marketing strategy for LAPROMED similarly relate directly to and imply a need for certain changes in ORT program policies and activities.

PATH staff presented a written draft of this report in July 1993 to USAID/Guatemala and LAPROMED. Their comments are incorporated into this report. The conclusions and recommendations of the draft report were also presented verbally to representatives of the MOH and Clapp & Mayne. PATH chose to present this information at an early stage in order to keep the MOH well-informed and involved in the LAPROMED project and to motivate immediate actions on the part of LAPROMED and MOH involving arrangements for 1993 and 1994 ORS purchases.

PATH also solicited substantial comments from the MOH concerning the qualitative field research conducted by IDEAS in March and April 1993. The results of this research were incorporated into PATH's conclusions and recommendations concerning LAPROMED's marketing strategy and the MOH's role in improving the availability and use of ORS.

B. Limitations of this Report

This report has several limitations. First, it was not possible within the scope of this contract to measure ORS inventory levels in the field within the MOH system. Without field data, it is impossible to know the exact amount of ORS inventory available in the public sector at any point in time. In order to estimate ORS needs, demand, and consumption, this report relies on central level inventory records, records of shipments to the field, and estimated ORS consumption based on ORT program field reports.

Second, some records of central level ORS inventories were not readily available or were not comparable between programs. For example, written records of UNICEF donations of ORS to NGOs were not available; this information was obtained through interviews. Also, the dates covering receipts and disbursements of ORT program ORS inventories and cholera program ORS inventories differ.

Finally, it is important to realize that the ORT program is constantly undergoing change. A single report, such as this one, presents the program (and particularly the quantitative aspects of the program) at a single point in time. For this

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reason, the recommended directions and strategies that may be adopted are more important than specific quantitative information.

II. Conclusions

PATH's research and analysis indicate that there is an active public sector ORS program in Guatemala. ORS is available in the public sector through the MOH's ORT program and Cholera program. The ORT program targets children under the age of five; the Cholera program makes ORS widely available, with the objective of reaching adults and children afflicted with cholera. Logistics and transportation aspects of public sector distribution are handled directly by the MOH, which has three vehicles for transporting goods to the field. The MOH maintains two central warehouses for storing ORS: one for the ORT program and a second warehouse for the Cholera program.

There are a number of international and domestic NGOs that also make ORS available through their field programs. These groups receive ORS supplies directly from UNICEF and are responsible for logistics, transportation, and distribution.

Guatemala's private sector oral rehydration product market also appears to be strong and growing and appears to have benefitted most recently from the MOH's commitment to cholera education. The commercial oral rehydration product market in 1992 represented sales of almost 2 million units.[1] This market appears to have grown in dollar value of sales by 26 percent over 1991. Antidiarrheal products have a smaller market, totaling approximately 110,000 units sold in 1992. However, the per unit value of antidiarrheal products is higher than the per unit value of oral rehydration products, suggesting that this is a small, but lucrative, market for the commercial sector.

The MOH has worked hard to make the public aware of diarrheal disease and its serious health implications, particularly the threat of cholera. Information and education activities appear to have been successful in reaching a large number of people and raising awareness of cholera. The fact that a high percentage of Guatemalan women are aware of diarrheal disease, dehydration, and ORT is a tribute to the success of such campaigns. This suggests that the MOH's strongest role is in defining diarrheal disease policies and norms, and supporting such awareness and education campaigns.

There are several weaknesses in the MOH's distribution and logistics system. These must be addressed both to help LAPROMED succeed and

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[1] Commercial units are not measured strictly in liters, as is the case with the MOH and NGO units. Commercial sector presentations include half-liter and one-liter packets and liquid presentations of various sizes.

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to make the MOH's ORT program more effective. ORS programming and warehousing is currently not efficient because the ORT and Cholera programs operate somewhat separately. ORS transportation from the central to the field level is unreliable due to overreliance on the MOH's vehicles. Reports from the field concerning diarrheal disease cases, treatment, and number of packets consumed are also deficient in that they normally cover fewer than half of the public sector institutions that should report on ORS use.

Currently, the MOH has no system in place to collect field data to measure ORS inventories outside of the central level. Without these data, the MOH (and LAPROMED) cannot determine national ORS supplies or the rate at which inventories move through the system and are consumed. This lack of data also means that the need and demand for ORS in various regions of the country cannot be accurately determined, limiting the MOH's and LAPROMED's abilities to respond effectively to region differences in supply requirements.

The current estimated annual **demand** for ORS in Guatemala's public sector—combining the MOH's and the NGOs' estimated requirements—is approximately 1.5 million packets. This estimate is based on historic distribution data and ORS consumption levels as suggested by limited field report data. Guatemala's theoretical ORS **need,** based on population, diarrheal disease prevalence, and recommended treatment norms, is higher than the estimated demand. Annual ORS needs are currently estimated to be approximately 2.9 million packets per year, and would increase to almost 3.5 million packets per year by the year 2000.

III. Recommendations

The primary beneficiary of the LAPROMED project is the MOH. LAPROMED is capable of supplying the MOH its annual minimum requirement of 2 million packets of *SueroVida* for the ORT and Cholera programs. The NGO sector, through UNICEF, also stands to benefit from the availability of *SueroVida*, with LAPROMED filling annual requirements of approximately 500,000 packets.

LAPROMED's opportunity to operate successfully and on a sustained basis as a public sector producer of ORS will depend on the development of a strong partnership with the MOH initially, and eventually with UNICEF/Guatemala and the leading NGOs working in health in Guatemala. The MOH must make a commitment to obtain ORS supplies from LAPROMED using purchase and payment mechanisms that facilitate cash flow and continued production and delivery. Once LAPROMED's production, product quality, and price have been fully established, UNICEF/Guatemala should also be encouraged to procure *SueroVida* for the NGO sector.

To make this partnership work, LAPROMED and the University of San Carlos, School of Chemical Sciences and Pharmacy, must also make a

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commitment to operate LAPROMED in a business-like manner. This requires establishing a LAPROMED leadership structure that is accountable for results, understands and responds to the needs of the customers (in this case the MOH and UNICEF), and continually maintains appropriate product quality and quantity. LAPROMED must also make a commitment to reducing the overall cost, and price, of *SueroVida* for sale to the public sector to as low a level as possible while still allowing for cost-recovery.

LAPROMED and the MOH should also work together to make the storage, delivery, and distribution of *SueroVida* more efficient so that adequate supplies reach the health areas, clinics, and centers on a regular basis. Specifically, PATH and LAPROMED recommend the following actions:

- LAPROMED and the MOH should develop a distribution plan for *SueroVida* that reflects the probable requirements of each of Guatemala's 24 Health Areas. The plan should encompass ORT and Cholera program requirements. Amounts and schedules for ORS delivery should be established annually and revised quarterly. Health Areas with the largest populations and highest levels of ORS consumption should be scheduled to receive shipments most frequently, with the smaller Areas receiving less frequent shipments. An internationally experienced diarrheal disease expert, such as Dr. Juan José Urrutia, could provide valuable assistance in this planning.

- LAPROMED should provide short-term storage of specified amounts of ORS for the MOH just before these amounts are to be delivered to the Health Areas, in accordance with the production and delivery plan. The supplies would be picked up at the LAPROMED plant and delivered directly to the Health Areas scheduled to receive the supplies, rather than being taken to the MOH's central warehouses for storage. This system would eliminate one major logistical step for the MOH, prevent a backlog of supplies in the warehouses, and contribute to more consistent delivery of ORS to the 24 Health Areas.

- Working together, the MOH and LAPROMED should investigate alternatives for transportation of ORS to the field, including the possible use of private transportation services. LAPROMED should evaluate the cost of including transportation in the packet price charged to the MOH for *SueroVida*, and assess the cost and benefit of this alternative with the MOH. The result could be to save money for the MOH and assure more consistent, reliable transportation of supplies to the Health Areas. Using private transportation services will also contribute to sustainable ORS distribution.

- LAPROMED should work with the MOH to help establish a mechanism for ongoing measurement of ORS inventories (and, by implication,

rates of inventory turnover and consumption) in the field. Through the School of Chemical Sciences and Pharmacy EDC and/or EPS programs, LAPROMED and the University should offer inventory measurement services to the MOH. The University should institute a program for pharmacy students who are serving their rotations in field hospital pharmacies to conduct monthly or quarterly measurements of ORS supplies among a sample of MOH area and district warehouses, field-level clinics, and health posts. This system would have no cost to the MOH and would be an additional educational experience for the University's pharmacy science students. The data would help the MOH to plan its ORS programming and provide crucial information for LAPROMED's production planning.

- The MOH should continue and strengthen its diarrheal disease and cholera education, awareness, and training activities. In conjunction with LAPROMED, the MOH could focus a new campaign around the introduction of the public sector brand, *SueroVida*, in order to renew the public's and health providers' interest in ORT.

IV. Overview of the Market

Guatemala's ORS market has a special definition for the LAPROMED project. LAPROMED's ORS product, *SueroVida*, is designated to serve Guatemala's government and NGO markets—together called the **public sector market** —rather than the commercial private sector. This report describes and assesses the public sector ORS market in Guatemala. It also describes and assesses associated government programs and policies and discusses how they might be modified to create a more effective ORT program. Information concerning Guatemala's private sector ORS market is included insofar as it increases understanding of the public sector market and suggests ways for the public and private sectors to work together more effectively.

The total market in which *SueroVida* competes in Guatemala includes all oral rehydration products sold or distributed in the public and private sectors. Within this total market, the two primary target market segments for LAPROMED's ORS are the government and nongovernmental organizations. The government and NGO segments include:

- The Guatemalan MOH
  - Maternal-Child Health Oral Rehydration Therapy program
  - Office of Disasters Cholera program

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- NGOs

  - NGOs that purchase and distribute ORS to field programs

  - NGOs distributing donated ORS to field programs

Attachment A describes the major supplier-distributor-consumer relationships in the public sector ORS market in Guatemala.

A. The Guatemalan Public Sector ORS Market

Two major ORS suppliers import products from Europe and the United States for donation to Government of Guatemala programs. These are UNICEF and the United States Agency for International Development (A.I.D.). A.I.D. donates most of its ORS to the MOH for the ORT and Cholera programs. UNICEF donates ORS to the MOH for the ORT program and also provides ORS directly to NGOs.

The MOH's Maternal-Child Health Program is responsible for distributing ORS for the national ORT program to the country's 24 Health Areas, which are responsible for distribution to the health centers and health posts throughout the country.

Also within the MOH, the Office of Disasters' Cholera program distributes ORS to areas of highest cholera risk and need. The Office of Disasters distributes ORS to the health centers and posts in the 24 Health Areas and to other institutions including the Army, labor unions, NGOs, community groups, and the Guatemalan Social Security Institute (IGSS).

NGOs working in the health sector in Guatemala receive donated ORS directly from UNICEF or from the MOH. ORS distribution is often not a primary focus of NGO programs, but is one of many community development and health activities. UNICEF/Guatemala reportedly donated 500,000 packets of ORS to NGOs in 1992. Only a few NGOs have the resources to purchase products from local private ORS manufacturers. The NGO segment of the market is characterized by one central payor/supplier—UNICEF—with multiple "distributors"—the NGOS—that reach end-users.

The Asociación Bienestar Pro-Familiar (APROFAM), a Guatemalan NGO that works primarily in family planning, distributes ORS donated by A.I.D. through its clinic network. APROFAM clinics may sell ORS as part of a cost-recovery scheme.

There are other public sector institutions that have procured or may procure ORS through private sector or donated sources. These include the Army, the IGSS, and the Droguería Nacional (National Pharmacy). The Army has distributed A.I.D. ORS for vaccination days and other special occasions. The Army has also purchased ORS directly from local private sector manufacturers.

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Distribution figures for these institutions could not be obtained for this report.

The IGSS also distributes A.I.D.-donated ORS and private sector products purchased locally. Distribution of ORS through the IGSS is a regular part of IGSS medical provisions. The IGSS reported distribution of 550,000 packets of ORS in 1992. The IGSS claims to provide health services to 17 percent of Guatemala's population (70 percent of these being workers in Guatemala City), although other sources suggest that the true figure is closer to 14 percent.

The Droguería Nacional buys and distributes products on the approved Essential Drug List, which includes ORS. The Droguería Nacional does not buy ORS because there are large volumes of donated ORS in Guatemala and the Droguería Nacional needs to use its scarce resources to buy other products. The Droguería Nacional has a procurement and distribution mechanism in place if needed to purchase ORS.

B. MOH ORS Distribution System

Donated ORS is given directly to the MOH and is stored in one of two central warehouses. One warehouse stores ORS for the ORT program and the other holds Cholera program ORS. Each program maintains separate inventory records that track incoming and outgoing ORS supplies.

Under the ORT program, the MOH gives the ORS to the Jefaturas de Area (Health Area Directors) of the 24 Health Areas based on requests and some population- and need-based programming. ORS for cholera is also distributed to all Health Areas, with extra supplies going to areas of high cholera risk and need. ORS distribution programming for cholera is determined primarily by the Office of Disasters. The Office of Disasters' manager reports that cholera needs and requirements are coordinated with the ORT program. One of the Cholera program's goals is to maintain a reserve stock of 500,000 packets at the central level at all times for cholera outbreaks.

The MOH has three trucks available to deliver ORS throughout the country. Interviews with program managers indicate that this is not adequate to deliver required amounts of ORS to each Health Area on a regular schedule. Health Area personnel will often hand-carry ORS to the field after a visit to Guatemala City. The Health Areas are responsible for paying the costs of transporting ORS and all other health supplies from the central level to the Area levels. The Office of Disasters is responsible for the trucks and for the physical distribution of ORS to the Health Areas for both the Cholera and ORT programs. The Jefaturas de Area have limited or no resources to distribute ORS beyond the Area level to the districts, health centers, and

health posts. Distribution from the central level to Area levels and from the Areas to the clinics and posts is thus sporadic and inconsistent.

The Health Areas are required to submit monthly reports to the ORT program office in Guatemala City concerning the number of diarrhea cases treated and the number of ORS packets used by the health institutions (clinics, posts, and hospitals) and community outlets (volunteers, health promoters) in each Health Area. These reports are meant to provide data for planning future programming.

Because of the large number of institutions and community outlets, the many responsibilities of the field-level personnel, and communication difficulties, reporting from the field is inconsistent and the data are considered unreliable. This lack of information makes it difficult to measure actual diarrhea case prevalence, ORS consumption, and field-level ORS inventories. The total ORS supply in the country cannot be accurately measured. The MOH does not have the resources to conduct regular surveys of field-level establishments to determine more accurately inventory levels, consumption, and future programming needs.

C. NGO distribution system

As described, UNICEF is the major ORS donor to the international and Guatemalan NGOs working in health in Guatemala. A.I.D. has supplied ORS to APROFAM, and made an especially large donation of 300,000 ORS packets in 1991. Each NGO requests ORS supplies from UNICEF based on an evaluation of the NGO's service area and needs. UNICEF reports that up to 96 NGOs per year have received ORS from UNICEF.

Each NGO is responsible for transportation and distribution of the donated ORS to its field programs. Users may be reached through a variety of mechanisms, including NGO-operated clinics, hospitals, health posts, and community programs.

ASINDES is a Guatemalan association of international and Guatemalan NGOs. It does not include all of the NGOs working in health in Guatemala and includes many NGOs not involved in health. UNICEF and ASINDES are working together to establish a mechanism for distributing ORS to ASINDES members. Reportedly, ASINDES and UNICEF plan to have ASINDES manage the distribution of UNICEF ORS supplies to the individual NGOs, instead of handling all requests through UNICEF. UNICEF will give ASINDES warehouse space and other resources to manage the requests and the delivery of ORS to the NGOs. The NGOs will continue to be responsible for transportation and distribution of the ORS to their service areas.

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Some of the NGOs interviewed for this report indicate that they have not received sufficient ORS supplies from UNICEF. They reported that UNICEF ORS supplies arrived sporadically and were delayed by three to six weeks before being made available to the NGOs. Because there are no written records of ORS distribution by NGOs, it is difficult to verify these concerns. Attachment B provides a summary of interviews conducted with 15 NGOs for this report.

V. Guatemalan Government ORS Supply

As of **July 1993** (the most recent date when Guatemalan government ORS inventories were observed by PATH personnel), central level ORS supplies totaled approximately **800,400 packets.** This total included:

- 530,000 packets for the Cholera program under the Office of Disasters; and
- 270,400 packets for the Maternal-Child Health Division ORT program.

ORS supplies estimated to be available at the central level as of **February 1993** totaled approximately **1,303,150 packets,** divided as follows:

- Approximately 1 million packets (based on interviews; no records were available for review) designated for the Cholera program and under the control of the Office of Disasters; and
- 303,150 packets listed as the ending inventory figure of UNICEF supplies found at the Maternal-Child Health Division's ORT program warehouse.

In March 1993, new inventories were added totaling 667,500 packets. These supplies were donated by A.I.D. for the Cholera program. These supplies are under the control of the Office of Disasters.

A. Government ORS Supplies, 1991-1992

Estimated ORS supplies donated by A.I.D. and UNICEF to the MOH at the central level totaled the following approximate amounts in the preceding two years:

Table 1

Approximate MOH Central Level ORS Supplies, 1991-1992		
	1991	1992
UNICEF	1,404,000	780,000
A.I.D.	1,768,750	1,042,500
Total	3,172,750	1,822,500

The information in Table 1 comes from several sources. A.I.D.'s historic procurement of ORS for Guatemala was obtained from Mr. Anthony Boni, A.I.D./Washington Central Procurement, and Dr. Jorge Chang, USAID/Guatemala. Other A.I.D. data were obtained from Cholera program inventory records through Dr. Eduardo Catalán, Director, Office of Disasters. UNICEF supplies were estimated based on written inventory records maintained by the ORT program. An estimated 500,000 ORS packets donated annually by UNICEF directly to NGOs does not appear in Table 1.

B. Government ORS Supplies: Measuring Total Supplies, Consumption, and Turnover

The central level ORS packet supply figures indicated for 1991 through 1993 do not account for inventories present at the Health Area, district, health clinic, and health post levels of the MOH distribution system. There is very limited information from the field to indicate how much inventory is available at the Health Area, district, clinic, or post levels at any given time. For this reason, this report cannot make any accurate estimate of **total national ORS supplies, rate of consumption** or **inventory turnover** for ORS distributed through the public sector in Guatemala.

Estimates of national ORS supply levels at any point in time, consumption levels, and inventory turnover, cannot be measured unless field-level ORS inventories at the Health Areas, clinics, and posts are measured. Estimating ORS consumption and inventory turnover requires collecting inventory data on a continuous basis from the field every few months until enough information is collected to measure the rate at which the product moves through the system over time and is, presumably, consumed.

National ORS inventory was measured one time when a field survey was undertaken by UNICEF and A.I.D. in April 1991 for cholera planning. The survey estimated at the time of the survey that

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1,338,492 ORS packets were on hand at the 23 Health Areas contacted. Approximately **82 percent** of this inventory was found at the Jefatura de Area level, suggesting that distribution beyond the Health Area to the districts, clinics, posts, and community outlets was not occurring regularly. This survey was conducted only one time and gave a snapshot picture of total ORS supplies at that moment in time. Because no continuous surveys were conducted, these data could not be used to measure ORS consumption and inventory turnover.

Because Guatemala's ORS programs currently do not collect field-level information that would allow more precise measurement of national supply levels, consumption, and turnover, the only data sources available for this report that can suggest general rates of ORS consumption are records of shipment of ORS supplies from the central level to the Health Areas and the ORT program field reports of diarrhea cases and ORS packets used for the child survival program. The conclusions reached from the analysis of these information sources are outlined below.

1. ORS Distribution Data

Information collected from the ORT Program and the Office of Disasters in July 1993 indicated that the amounts of ORS shown in Table 2 were distributed from the Central to Area levels over different time periods:

Table 2

Central to Area Level Shipments by Program		
ORT Program Sept. 1992-July 1993	**Office of Disasters January-July 1993**	**Total Sept. 1992-July 1993**
494,250 packets	1,494,750 packets	1,989,000 packets

Attachment C presents a more detailed breakdown of this central level ORS distribution by Health Area and program for the period September 1992-July 1993. The 800,400 packet central level ORS supply figure as of July 1993 was derived from these numbers.

ORS consumption and inventory turnover in the government system can only be inferred from these numbers. Using these numbers to estimate consumption assumes that the average amounts distributed from the Central to Area levels are roughly equivalent to consumption when viewed over a period of several years. The extent to which distribution actually reflects consumption is distorted by constraints on distribution at the Central and Area levels (e.g., limited

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number of vehicles, limited funds for ORS distribution from the Areas to the health clinics and posts, etc.).

An analysis of late 1992 and first half of 1993 distribution information, including the information in Attachment C, was transmitted to the MOH, USAID/Guatemala, and Clapp & Mayne on July 28, 1993, as shown in Attachment D. This analysis indicated that the most common shipment size to a Health Area was 10,000 to 20,000 packets during the period evaluated. Every Health Area in the country received at least one shipment of ORS from the Cholera program between January and July 1993. Some Health Areas received as many as four ORS shipments during that seven-month period.

The data in Attachment C, plus detailed ORT program shipment records, indicate that over 1.7 million packets of ORS were shipped from the central level to the Health Areas and other destinations during the first half of 1993.[2] Based on these numbers, the average monthly shipment from the central level was 242,857 packets for the seven-month period.

However, historic information indicates that the average amounts of ORS shipped to the field from the Central level has been less in earlier periods. Warehouse records indicate that UNICEF packets distributed from the ORT program central warehouse totaled 1,329,225 and 551,625 in 1991 and 1992, respectively, for a two-year total of 1,880,850. A.I.D.-donated ORS supplies distributed from the Office of Disasters central warehouse totaled approximately 2,136,250 for 1991 and 1992.[3]

The average amount distributed annually, as measured by the historic information, was approximately 2 million packets. This would be an average monthly shipment of 166,666 packets, which is almost half of the monthly amount which appears to have shipped from the central to the field level during the first half of 1993.

[2] The Cholera program total is 1,494,750 packets for the period January-July 1993; and the ORT program records indicate that 272,750 packets were shipped primarily to Health Areas during that same time period.

[3] This information is based on verbal statements by the Director of the Office of Disasters, that current inventory on hand, as of February 1993, was 1 million packets. Prior inventories, based on A.I.D./Washington Central Procurement records, total 2,436,250 for the two-year period 1991-1992. Of this total, 300,000 packets were given directly to APROFAM rather than to the MOH in 1991, and are thus subtracted from the total in measuring the quantities distributed through the MOH system.

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Based on these central to Area level distribution figures for 1991 through July of 1993, the approximate national monthly consumption of ORS ranges from 166,666 to 242,857 packets. Probably the historic amount of approximately 167,000 packets per month is a truer reflection of normal ORS consumption than is the much higher figure derived from the 1993 distribution data. Distribution has been especially intensive in the first half of 1993 for several reasons. First, it appears that field inventories of ORS had been drawn down prior to the start of 1993, requiring that larger amounts be shipped to re-stock the field outlets. Second, with the onset of the cholera epidemic, the MOH has made a very focused effort to ensure that ORS supplies move from the central to the field levels. There has been a concerted effort to maintain high stock levels in the field.

As indicated earlier, without a continuous survey of field-level inventories to measure consumption, these central to Area level distribution figures only suggest a broad indication of field level demand. This form of analysis assumes that the Health Area Directors and other institutions receiving the ORS would refuse to accept the ORS shipments or would make no additional requests for ORS if they could not foresee using it within a reasonable time period and if they did not have the capacity to store shipments received. These data provide little indication of the rate at which these amounts of ORS are likely to be consumed.

The analysis in Attachment D concluded that additional central level ORS procurement would not be needed before the end of 1993. Qualitative field research also indicated that government health workers in most areas contacted believe that ORS inventories in the field are currently adequate.[4] This was based on the rate of distribution from the central level to the Health Areas as of July 1993, the likelihood that Health Area inventories and remaining central level inventories are still available, and the estimated total need and demand for ORS in the public sector.

2. ORS Consumption by Children under Age Five

As described above, central to Area level distribution suggests broadly that on a national level at least 167,000 ORS packets are consumed monthly. The only field-based records available for measuring or corroborating this

[4] Source: "Qualitative Market Research Study: Availability and Use of Oral Rehydration Salts in Guatemala," IDEAS, June 1993, Guatemala.

consumption level are reports from the ORT program concerning diarrheal disease case prevalence and treatment. These data are not precise and do not present a detailed picture of the variations in demand among the 24 Health Areas. They also report only on diarrheal disease cases and number of ORS packets used by children under the age of five. Based on these reports, ORS consumption by children under the age of five is estimated to be approximately 2.0 million packets per year.

This consumption estimate was established with the following data and assumptions:

a. Annual field reports for the MOH ORT program for 1991 were analyzed. These reports indicate that 1.5 million-1.6 million packets were consumed through the ORT program. An additional estimated 500,000 were distributed through NGOs in 1991. Based on interviews with Guatemalan NGOs, these 500,000 packets were assumed to have been consumed. This equals a total of 2 million to 2.1 million packets consumed in 1991 for the ORT and NGO programs.

b. ORT program information includes reports from all 24 Health Areas, covering the health posts, centers, and community-based distribution outlets in each of these Areas. These ORS usage reports should, therefore, account for any consumption of ORS by children under the age of five through the MOH system, regardless of product source or intended program. This consumption estimate is thus assumed to include ORT and Cholera program supplies. The Cholera program does not receive or keep field reports on ORS consumption.

c. In no case did 100 percent of the institutions and outlets in a Health Area report. The data in the reports were adjusted to account for underreporting based on the assumption that those institutions that did not report would have the same rate of case prevalence and ORS usage as the institutions in the same Health Area that did report.

   In addition, UNICEF representatives report that approximately 500,000 ORS packets are distributed annually to NGOs in Guatemala. PATH conducted interviews with 15 NGOs working in health in Guatemala. The results of these interviews indicate that this sample of NGOs represented a total distribution of approximately 233,600 ORS packets in 1992. UNICEF reports that it serves 96 Guatemalan NGOs with ORS. Based on the number of packets distributed by the 15 NGOs interviewed, all 500,000 packets given to NGOs by

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UNICEF are assumed to have been distributed by these NGOs and consumed at the field level.

There is currently no system established by the NGOs to report and measure ORS consumption. This report assumes that the 500,000 packets distributed by the NGOs are consumed because it would be costly and inefficient for the NGOs to continue to request and distribute these quantities of ORS if they were not consumed.

VI. ORS Need and Demand in Guatemala

In July 1993, PATH presented estimated ORS needs to the MOH based on population projections for 1995. These estimates used common assumptions concerning diarrhea case prevalence and the percentage of children under the age of five reached by the MOH system. The MOH responded by indicating that the assumed number of diarrhea cases treated with ORS and the percentage of children covered by the MOH are lower than originally indicated. For this reason, this report now relies on ORS need estimates developed by the MOH in conjunction with Dr. Juan José Urrutia, consultant to the MOH and Clapp & Mayne. Estimated ORS needs are higher than the estimated consumption of approximately 2 million packets per year because not all users will follow prescribed norms or even use ORS when indicated.

A. Current ORS Need

Currently, Guatemala's total annual ORS needs for the ORT program, the Cholera program, and the NGO sector, are estimated to be **2,965,408 packets.** The components of this need estimate, based on Dr. Urrutia's analysis, are outlined in Table 3, as follows:

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Table 3

Annual ORS Needs for Guatemala (Number of ORS packets required)			
	MOH	NGOs	Total
ORS for under age five	1,815,670	907,835	2,723,505
ORS for cholera[5]	241,903	-----	241,908
Total ORS packets/year	2,057,573	907,835	2,965,413

Source: Ministry of Public Health, Maternal-Child Health Division, Child Survival Project, PAI-TRO, Clapp & Mayne, Inc.- A.I.D.

Each component of the need estimate shown in Table 3 is explained below.

1. ORT Program Needs

Dr. Urrutia's estimates indicate that annual ORS needed for the ORT program totals **1,815,670 packets** per year. This estimate is based on the following assumptions:

Total population under five:	1,681,176[6]
Population covered by the MOH (60%):	1,008,706
Three diarrhea episodes/child/year:	3,026,117
Episodes requiring ORS (30%):	907,835
Two ORS packets/episode:	**1,815,670**

2. Cholera Program Needs

Dr. Urrutia indicates that Cholera program needs are based on a cholera attack rate of between 0.5% and 1% of the population age five and over. The projections below assume

[5] Dr. Urrutia estimates cholera needs at an attack rate of between 0.5% to 1% of the population over age five. The figure used here assumes the 0.5% attack rate, which seems realistic for Guatemala based on the epidemic's behavior in the region.

[6] Total and under five population figures are from: Dirección General de Estadística and the Centro Latinoamericano de Demografía (CELADE) Guatemala, Estimaciones y Proyeccines de Población, 1950-2025, January 1985. The figures cited by Dr. Urrutia are based on 1992 population.

an attack rate of 0.5% with each case requiring six packets of ORS:

Total population age five and over:	8,063,451
Number of cases with attack rate of 0.5%:	40,317
Six ORS packets/case:	**241,903**

3. NGO Sector Needs

Dr. Urrutia's projections assume that the NGO sector services 30% of the population under the age of five and follows the MOH treatment norms:

Population under age five:	1,681,176
NGO coverage (30%):	504,353
Three episodes of diarrhea/child:	1,513,058
Episodes needing ORS (30%):	453,917
Two ORS packets/episode:	**907,835**

B. Future ORS Needs

PATH's estimate of Guatemala's projected ORS needs for 1995-2000 are presented in Table 4. A detailed explanation of these projections is presented in Attachment E. These projections use the prevalence, coverage, and treatment assumptions that provide the basis for calculating current ORS needs, as outlined in Table 3.

Table 4

Annual Estimated ORS Needs for Guatemala (ORS Packets)
1995-2000

	1995	1996	1997	1998	1999	2000
MOH	2,196,488	2,235,957	2,280,120	2,325,755	2,366,552	2,425,972
NGOs	965,752	981,323	999,193	1,017,713	1,033,650	1,059,079
Total Packets/ Year	3,162,240	3,217,280	3,279,313	3,343,468	3,400,202	3,485,051

As these estimates indicate, annual ORS needs are expected to grow gradually for the next seven years, at annual rates of between 1.6% and 2.0%. The annual amounts needed are increased based on estimated population growth. The actual consumption of ORS in Guatemala would be further increased by significant new program activities that increase ORS use, such as education, promotion, training, and improved distribution. At the same time, future ORS

needs would be reduced by improved sanitation and education about hygiene and other means to prevent the onset of diarrheal disease. The course of the cholera epidemic in Guatemala will also influence true ORS need and consumption over the next seven years.

VII. Private Sector Oral Rehydration Product Market in Guatemala

PATH interviewed representatives of nine oral rehydration product manufacturers/importers active in Guatemala. These interviews were used to assess the private sector view of current market opportunities and the role for public sector products. The interviews also assisted PATH to formulate an appropriate strategy for LAPROMED's participation in the public sector market and informed the major private sector suppliers about LAPROMED. Attachment F lists the ORS products represented by the manufacturers/distributors interviewed. Commercial market information for oral rehydration products and antidiarrheals was also collected and assessed.

A. Private Manufacturer and Distributor Interviews

The nine ORS manufacturers/distributors interviewed stated that most of their sales are outside the capital city, principally in the coastal areas. Other rural areas, primarily provincial capitals, are also important. The manufacturers/distributors understand that rural areas have a high prevalence of diarrheal disease and thus the greatest demand for oral rehydration products.

Private pharmaceutical manufacturers and distributors of imported ORS use their own distribution network and sub-distributors to reach pharmacies throughout Guatemala. Strict regulation of pharmaceutical products make it unlikely that large quantities of ORS are sold outside of pharmacies. The companies interviewed indicated that they believe that some donated ORS leaks into commercial outlets. It is impossible to determine the percentage of leakage that may occur based on current available information.

The private companies interviewed are supportive of the LAPROMED project. They indicated that if the production and distribution are carefully planned, it will eliminate the distorted product dumping effect that results from periodic large shipments and sporadic distribution of donated ORS. Those interviewed view the dumping affect as disruptive to the market.

The manufacturers/distributors suggest that promotional material to increase demand for all rehydration products emphasize diarrheal disease education and represent several types of rehydration products in addition to ORS in packet form.

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Promotion and education should be undertaken in as many indigenous languages as possible.

Those interviewed pointed out that cholera education has done more to increase diarrheal disease awareness, and perhaps increased use of ORS, than any other ORT program efforts. They suggested that the cholera awareness campaigns continue. Several companies suggested that education efforts be directed to pharmacists and physicians concerning the Pan American Health Organization ban on antidiarrheals and limited use of antibiotics. While there was general agreement that misuse of antidiarrheals and antibiotics has decreased, there are still inappropriate prescriptions of these drugs for diarrheal disease. Manufacturers routinely mentioned that the biggest factor to influence consumption of these products was government education, not regulation (such as banning antidiarrheal products).

All those interviewed suggested that the LAPROMED project work to limit ORS leakage from MOH sources into private sector outlets. Specifically, they suggested that LAPROMED's product be clearly marked, "Public Sector Product - SALE PROHIBITED."[7] In addition to clear and legible product markings, many asked if the LAPROMED project would include a way to monitor product distribution to ensure compliance and stop potential leakage.

Many respondents expressed an interest in improved distribution to rural health centers. It seems to be a common perception that leakage to private sector outlets and product hoarding occur at central warehouses and distribution depots. One manufacturer felt the LAPROMED effort would have lasting value only if combined with a serious diarrhea eradication program.

Manufacturers mentioned pressure to collaborate with WHO formula recommendations. They suggested that the WHO formula not be the only one promoted. All the respondents felt that colored/flavored oral rehydration products have value for consumers and do not result in over-consumption of oral rehydration products.

[7] This kind of labeling was considered when PATH tested and developed the package for LAPROMED's product, *SueroVida*. Because some NGOs, such as APROFAM, have sold and will continue to sell ORS obtained from the MOH or LAPROMED, the decision was made not to include this message on the label. To address the concern of private sector suppliers, The MOH and LAPROMED may wish to label the product as follows for the next print run of the package: "Prohibida la venta en farmacias privadas" (Sale prohibited in private pharmacies).

There was uniform interest in enforcing government regulations regarding ethical and over-the-counter products. Most felt that regulations were not enforced, resulting in general misuse of rehydration products. Many companies mentioned that they were eager to adopt new rehydration product technologies. For example, manufacturers may be interested in rice-based formulas.

B. Commercial Market Analysis

Commercial sales information for oral rehydration products and antidiarrheals was also obtained from a private research service that tracks pharmaceutical product sales. This research indicated that there is a healthy, established market in Guatemala for rehydration products, with a variety of products in all forms, flavors, and packages. There is also a smaller market for antidiarrheal products. Although the antidiarrheal market is smaller than the oral rehydration product market, antidiarrheal products sell for much higher unit prices making them more profitable than oral rehydration products.

1. Oral Rehydration Products

The 1992 market for private sector oral rehydration products was estimated to be approximately US$1,690,000, with approximately 1,895,828 units sold. These figures represent 13 distinct products with differing presentations and unit sizes. These 1992 figures show a 26% increase in sales over 1991. From 1990 to 1992, the overall private sector market for oral rehydration products in Guatemala grew by 54% in value of sales and by 31% in number of units sold. Trends through the second quarter of 1993 suggest that 1993 sales will be significantly higher than 1992 sales, with sales through June 1993 already representing 59% of total 1992 sales. The greatly increased awareness of diarrheal disease and dehydration due to the cholera epidemic is probably the major reason for this increase in sales.

The oral rehydration product market in Guatemala is dominated by two major products that together represent 80% of total sales through the second quarter of 1993. These same products have been the leaders in previous years. The average retail price per unit represented by all products listed is the equivalent in U.S. dollars of US$1.06 (approximately 6.10 Quetzales at an exchange rate of 5.75 Quetzales to the 1 U.S. Dollar). The average is high because 80% of sales is accounted for by two products that have average unit prices of US$1.25 and US$1.06. Average unit prices of individual products on the list range from a low of US$0.49 per unit to a high of US$1.95 per unit.

It is important to note that the unit sales of these products are not all comparable to one another. Products

are sold in half-liter, one-liter, powdered, and liquid presentations, each of which represents one unit of sales for that particular product. The per unit prices for equivalent amounts and presentations cannot be determined from these data.

2. Antidiarrheal Products

The antidiarrheal products market in Guatemala had total sales of $285,000 in 1992 with 110,286 units sold. Sales increased 19 percent from 1990 to 1992, while the number of units sold decreased by 7 percent, suggesting an overall increase in unit prices. The 1991 sales were 19 percent below 1990 sales. Sales through June of 1993 represent 89 percent of 1992 sales, suggesting that 1993 will be a strong year for antidiarrheal product sales. Unit sales as of June 1993 represent 78 percent of 1992 units, indicating again that prices are increasing. Antidiarrheal product sales have probably benefitted from public awareness of and concern about cholera.

The information available on the commercial antidiarrheal products market represents approximately 17 distinct products. The product presentations include capsules, tablets, and liquids. Seven of these products represent 85 percent of sales. Average per unit prices for all products as of June 1993 is the equivalent of US$2.98 (approximately 17.14 Quetzales at the exchange rage of 5.75 Quetzales to 1 U.S. Dollar), which is significantly higher than the comparable average unit price for oral rehydration products. The top three selling antidiarrheal products have unit prices ranging from US$2.64 to US$10.23.

VIII. ORT Program and Policies

One of PATH's objectives under this project is to make recommendations to improve the effectiveness of Guatemala's ORT program. PATH's recommendations are based on assessments of the Government and NGO ORS procurement and distribution systems. PATH also sponsored qualitative field research to help determine the availability, distribution, and use of ORS.

The overall approach recommended by PATH is for LAPROMED to add value to the MOH ORT program by providing consistent supplies of high-quality ORS, and providing additional services to the MOH that will improve storage, distribution, and programming of ORS. The MOH's ORT program, Cholera program, and LAPROMED must work jointly and in complementary ways in order for the LAPROMED project's activities to contribute to an improved ORT program in Guatemala.

Specific recommendations from the market assessment, recommended actions for LAPROMED, and the results of the qualitative field

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research were presented to representatives of the MOH and Clapp & Mayne on July 16, 1993.[8] Observations and comments made by the MOH and Clapp & Mayne were discussed and incorporated into this final report.

A. Conclusions and Recommendations Concerning ORS Programming and Distribution

PATH's assessment concluded that the MOH plays a strong role in establishing and promulgating policies and guidelines concerning diarrheal disease treatment, ORT, and ORS use. The MOH is well-positioned to provide training to health workers and general information concerning diarrheal disease and ORS. These are the two primary areas where the MOH should continue to play a direct role and can be most effective.

Currently, the MOH controls warehousing and distribution of ORS supplies. As noted earlier, this warehousing and distribution system has weaknesses, specifically:

- Sub-optimal coordination between programs: ORT program and cholera ORS supplies are physically stored in separate areas, and their receipt and distribution are tracked separately. This makes it difficult to operate a comprehensive ORS distribution system. Also, the system is inefficient because of the multiple steps required to receive ORS supplies into the two warehouses and then dispatch them from the warehouses to the Health Areas.

- Severely limited distribution resources: As noted earlier, the MOH has three trucks for distributing all ORS supplies from the central to Area levels. A lack of funds for maintenance and fuel mean that distribution occurs when it is feasible for the MOH rather than when the Health Areas need supplies. Product shortages occur in some Health Areas, while others are oversupplied. Similarly, the Health Areas have no resources to distribute ORS to the clinics, health posts, and other community-level outlets where they are most needed. The overall result is uneven and inconsistent availability of ORS.

- Potentially inadequate warehouse system: Because of the large quantities of ORS received from donors the MOH requires large warehouse space on a continuous basis. The two

[8] Those attending the meeting were: Dr. Marco Vinicio Donis, former Director, Maternal-Child Health Division, Ministry of Health; Dr. Octavio Morán, Director, ORT Program, Ministry of Health; and Dra. Lucrecia de Fuentes and Lic. José Peña, Clapp & Mayne. The presenters were: Lic. Carlos Avila and Lic. Luis Gálvez, LAPROMED; and Carolina Godínez and Sara Tifft, PATH.

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warehouses observed by PATH for the ORT and Cholera program supplies appear to be marginally adequate for storing a stable product like ORS. However, representatives of the MOH made it clear that they have difficulty finding space, which often must be "borrowed" from a government hospital or other program. Also, funds to pay warehouse managers are often limited or unavailable.[9] These conditions suggest that the MOH's current warehouse system may not be able to sustain adequate conditions for product receipt, storage, and shipment.

- Limitations in ORS programming: As indicated, earlier, the MOH receives reports concerning diarrheal disease cases treated under the ORT program from a small percentage of the government health establishments. There is no system in place to measure ORS inventories, turnover, and consumption. Without this information, the only planning tool available to the MOH is population-based estimates of ORS need.

  Several specific steps are recommended to address these weaknesses. In general, PATH recommends that the MOH work jointly with LAPROMED to improve the availability and distribution of ORS in Guatemala. The responsibilities of the two entities would be divided as follows:

LAPROMED Responsibilities

- Fulfill production plan for *SueroVida*. Provide a consistent source of high-quality, WHO-citrate formula ORS for sale to the Government at the lowest possible price that will cover costs and ensure sustainability.

- Provide temporary warehousing of finished inventory at the LAPROMED factory site rather than shipping finished goods to the MOH warehouses. This would eliminate the need for the MOH warehouses, eliminate inefficient steps in storage and delivery of ORS, and provide LAPROMED with control over inventory management.

- Establish a system with the MOH to deliver specified quantities of ORS at scheduled times to different Health Areas. This would establish a more efficient dispatching system, respond to field supply needs, and allow LAPROMED to

[9] In fact, PATH representatives were unable to visit the cholera warehouse in February 1993 because the warehouse manager was no longer working due to a lack of funds. A temporary manager was assigned to the warehouse from time to time but could not be located at the time of the PATH visit. The ORT warehouse was being managed from the offices of the Maternal-Child Health Division by an administrative staff person.

produce ORS consistently with minimal excess inventory. Incorporate the use of private transportation to distribute *SueroVida* so that finished product can be dispatched directly from the LAPROMED site to the Health Areas.

- Through the University of San Carlos, School of Chemical Sciences and Pharmacy, assist the MOH to collect more consistent field data concerning ORS inventory levels and turnover. This information would help the MOH to improve its programming for ORS, target geographic areas needing greater or smaller quantities of product, and also give LAPROMED feedback concerning product movement that will allow for future production planning.

- Hold meetings with major NGOs and UNICEF to introduce them to the LAPROMED project and to the product *SueroVida* so that they can determine when and how to incorporate it into their programs.

MOH Responsibilities

- Provide a designated line-item in the MOH budget for the purchase of *SueroVida* from LAPROMED.

- Establish an efficient mechanism by which to pay LAPROMED for its product on a timely basis.

- Focus on improving and clarifying ORT/ORS policies; strengthen the MOH's role in ORT promotion and education.

- Provide a focal point for coordination among programs (such as ORT and Cholera) and among donors and international agencies (such as UNICEF, A.I.D., and NGOs).

- Optimize the use of ORS distribution resources.

It is PATH's and LAPROMED's position that the following activities must take place in order for LAPROMED to achieve its production and sustainability objectives and to thereby contribute to improving the ORT program in Guatemala. The MOH must work closely with LAPROMED to facilitate these activities.

1. Building on the existing agreement between the University of San Carlos and the MOH, establish with the MOH a clear and detailed supply agreement for LAPROMED to supply *SueroVida* to the MOH. This requires:

    a. A line item in the Guatemalan government's annual budget starting in 1994 for *SueroVida* purchase using Government of Guatemala funds.

b. A clear agreement with the Ministry of Finance and the MOH that these funds are earmarked for ORS and will not be diverted to other uses.

c. A supply agreement between the MOH and LAPROMED whereby LAPROMED will produce and deliver specified amounts of ORS at specified times throughout the year to the MOH. The amount and timing of supplies produced for the MOH should take into account the MOH's storage and distribution constraints.

d. As part of the supply agreement, a payment schedule whereby the MOH will pay LAPROMED promptly and fully for *SueroVida* purchased.

2. To its primary customer, the MOH, LAPROMED's marketing strategy should be to provide "value-added" by offering supply and production services that help the MOH address its ORS supply and ORT program concerns, specifically:

a. LAPROMED should provide short-term storage of specified amounts of ORS for the MOH just before these amounts are delivered to the Health Areas. These amounts should be picked up directly from LAPROMED and transported to the Health Areas, or transportation arranged via private service, instead of taking the supplies to the MOH central warehouses and then distributing to the Health Areas later. This system would eliminate one logistical step for the MOH, prevent a backlog of supplies in the warehouse, and institute more consistent delivery of ORS to the 24 Health Areas.

b. LAPROMED and the MOH should investigate the use of private transportation services to handle physical delivery of *SueroVida* to the principal Health Areas, especially those that can be reached easily by road. LAPROMED should obtain quotations from different transport services and offer *SueroVida* to the MOH at a per unit price that includes transport to the Health Areas ("CIF" price) and that excludes transport ("FOB" price). If the CIF price is low enough, using private transport services may eliminate a major cost for the MOH, improve ORS distribution, and contribute to LAPROMED's sustainability.

c. LAPROMED should work together with the MOH to determine the amount and timing of ORS deliveries to Health Areas on a priority basis, identifying priority areas as A, B, or C priority Health Areas. An illustrative example of A, B, and C Health Areas is shown in Attachment G, with priorities based on population, historic ORS use,

cholera risk, and seasonality. The plan would indicate monthly (A), bi-monthly or quarterly (B), and semi-annual (C) delivery schedules. This system will minimize the risk of Health Area ORS inventories being depleted or overstocked with ORS. Representatives of certain Health Areas and Health districts could participate in this planning process.

d. LAPROMED, through the School of Chemical Sciences and Pharmacy EDC and/or EPS programs, should offer a field inventory measurement service to the MOH. Currently, the MOH receives limited or unreliable information about amounts of ORS consumed or about ORS inventories in the Health Areas. The University of San Carlos should institute a program for pharmacy students to conduct monthly or quarterly audits of ORS and other pharmaceutical supplies among a sample of MOH Area and district warehouses, and field-level clinics and health posts. This information would be useful to the MOH's ORT program and would assist LAPROMED and the MOH to track ORS inventory turnover and consumption. When the system improves, the audits could be conducted semi-annually.

e. PATH's qualitative research for the LAPROMED project indicates a possible problem with ORS inventory backlogs in the Health Areas. Some remaining inventory may be expired product. Once the amount of inventory on hand that is still usable is determined through the field audit system, the MOH should encourage the clinics and health posts to discard outdated inventory so that future audits measure usable inventories.

3. In addition to the MOH, there are other smaller public sector markets for *SueroVida*. As a secondary target, LAPROMED should market its ORS product to the Guatemalan and international NGOs that have health programs and that distribute ORS. In order to tap the NGO market, the following activities will be required:

a. LAPROMED should begin holding regular meetings with UNICEF, which buys ORS for the NGO users. The purpose of the meetings will be to introduce the project and the product and to determine requirements for future local procurement. UNICEF representatives should be invited to visit the facility to see the controls in place to ensure product quality.

b. LAPROMED should contact ASINDES about distribution of ORS supplies to NGOs and to determine how LAPROMED might help to improve this system after its ORS production is

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in operation. Representatives of ASINDES should be introduced to the project and product and invited to visit the facility. ASINDES might suggest that UNICEF purchase ORS from LAPROMED if it appears that ASINDES' member NGOs will benefit from the availability of locally produced ORS supplies.

c. LAPROMED should organize a meeting with the major NGOs working in the health field to introduce the project and the product. These NGOs might suggest that UNICEF and ASINDES purchase ORS from LAPROMED if it seems that LAPROMED's product offers advantages to the NGOs. The meeting should be presented as a type of workshop and coordinated closely with the MOH. It should be scheduled after LAPROMED has product samples and a firm plan for supply and production with the MOH. UNICEF, A.I.D., and Instituto de Nutrición de Centro América y Panamá (INCAP) should also be involved.

4. LAPROMED, in conjunction with the MOH, should determine the feasibility of collaborating with the Droguería Nacional and the IGSS for improved ORS distribution.

B. Recommendations Concerning Availability and Use of ORS

The qualitative research conducted by IDEAS for PATH under this project also offered several useful conclusions for the ORT program.[10] The results of this research corroborated several of PATH's conclusions concerning supply and distribution of ORS in the public sector system:

- The distribution system should be improved, especially to provide ORS supplies more consistently to rural areas throughout Guatemala.

- Transport of supplies from Health Areas to health centers and posts should be better organized.

- The MOH should develop and promulgate standardized procedures for Health Areas for ORS requests, delivery, and receipt.

[10] The detailed report concerning this qualitative research, entitled "Qualitative Market Research Study: Availability and Use of Oral Rehydration Salts in Guatemala" was delivered to USAID/Guatemala and the MOH on August 5, 1993. In addition to verbal discussion of the recommendations from this research as presented on July 16, Dr. Octavio Morán, Director of the ORT Program, reviewed the final draft in detail and provided extremely helpful comments and insights to PATH and IDEAS.

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- Formalize the use of midwives and community-based health promoters to distribute and administer ORS.

- Health workers and pharmacists should be trained to encourage mothers to keep at least two ORS packets at home at all times; this would require also encouraging health workers to distribute supplies to mothers for use at home.

C. Recommendations Concerning Prescription, Preparation, and Administration of ORS

The research design included interviews with private pharmacists as well as with MOH health workers. The findings indicated specific steps that the MOH can take to improve ORS prescription and administration practices:

- The MOH and pharmacy workers should tell mothers not to add other ingredients to ORS, that ORS is a complete medicine in itself.

- The MOH should lead an effort to design consistent ORS prescription, preparation, and administration instructions for both private and public sector products.

- The MOH should work with private pharmacists to determine how to assist in training pharmacy workers to correctly diagnose diarrhea and dehydration.

- The MOH should identify a standard, one-liter water measurement and mixing container for general use by health workers, pharmacists, and mothers; this container should be used consistently in all information campaigns and demonstrations of ORS use.

D. Recommendations Concerning Information, Education, and Communication to Support Appropriate ORS Use

The field research also identified several areas for the MOH to address that would improve information, education, and communication concerning ORT and ORS use. These include:

- The MOH should develop printed materials in as many indigenous languages as possible to reinforce verbal instructions concerning the preparation and use of ORS.

- A consistent group of illustrations concerning ORS preparation and administration should be developed for use by both the private and public sectors.

- Pharmacy workers, midwives, health promoters, and community leaders should regularly distribute illustrated instructions.

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- Health workers should provide community-level presentations concerning ORS use in indigenous languages.

- The importance of continued breastfeeding during diarrhea should be emphasized and incorporated into all the informational materials and training curricula.

- Midwives and community leaders should be formally trained and authorized to distribute and administer ORS.

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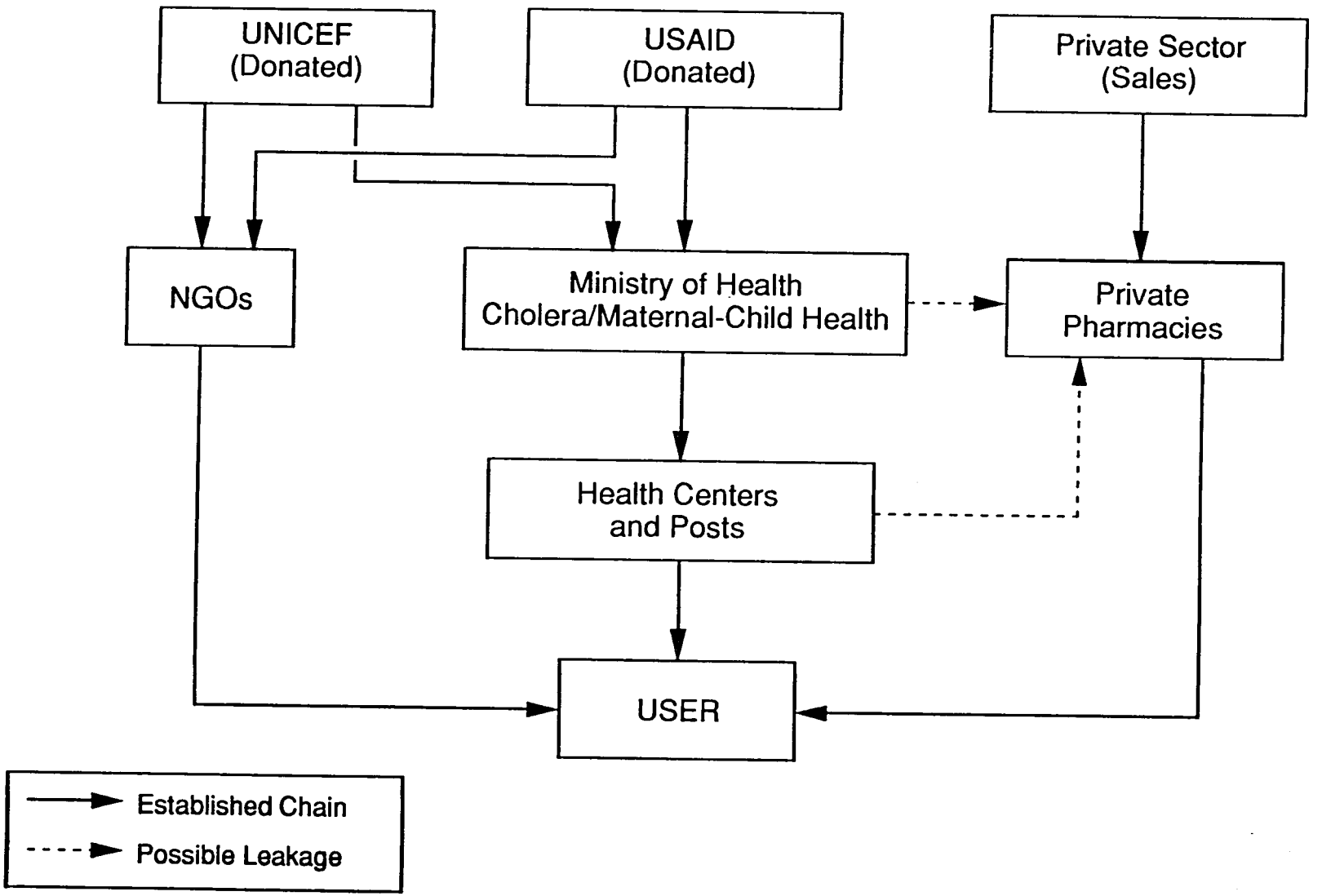
Supply to Consumption Chain for Oral Rehydration Salts in Guatemala



ORS Flow Chart (English)
(7/93)

Summary of Interviews with 15 NGOs Working in Health in Guatemala
February 1993

1. Yearly regional (and perhaps central) meetings should be conducted between the NGOs and the MOH to coordinate ORS/ORT activities. This will allow both groups to better dedicate resources where they are needed and not duplicate distribution and health service efforts.

2. The Droguería Nacional is an underutilized distribution network. Specific resources should be dedicated to allow the Droguería Nacional to carry donated or purchased ORS at a subsidized price to their outlets. In addition, resources should be provided to help meet transportation needs. The Droguería Nacional provides drugs to national pharmacies, health centers and posts as well as NGOs. Currently, they do not have funds to purchase ORS at the specific order of the Vice Minister of Health, because there is an abundance of donated ORS.

3. UNICEF and ASINDES should collaborate with Dr. Rafael Flores' investigation to design uniform forms for ORS need calculations, diarrheal disease case management, and requisitions. The NGOs that request MOH ORS should follow the same requisition procedures as those that request UNICEF ORS. Quarterly coordination meetings should verify information in Recommendation #1.

4. If UNICEF wants to continue alternative distribution experiments, the ORS distributed should clearly state that the product should not be sold for more than the subsidized price.

5. Any recommendation for the improvement of ORS/ORT program in Guatemala <u>must</u> include some detailed plans for improved ORS distribution through the MOH or NGOs. Currently, the MOH's constrained resources cannot meet the demand for rural health centers and posts for ORS delivery. Use of Pepsi (or another commercial entity) as a distribution mechanism might be an alternative.

6. ASINDES should develop a tracking system for which NGOs are delivering what quantity ORS to which areas and make sure that LAPROMED has an annual estimation of their needs, including seasonal variations. This figure should become part of LAPROMED's annual production forecasts. One of the primary comments by NGOs was that they often do not receive all the ORS they requested from UNICEF. Improved distribution by NGOs will lessen the burden on the MOH, allowing the MOH to concentrate resources in areas not as well served by NGOs.

7. It should be clarified to LAPROMED that their NGO "clientele" is made up of UNICEF (who will pay for the product), ASINDES (who will supervise distribution of the product to NGOs), and the NGOs themselves who will distribute the ORS. They need to have a system that allows them to be sensitive to their multiple client needs.

Attachment C

ORS DISTRIBUTION ANALYSIS FOR PUBLIC SECTOR

Sent to	ORT Program (Sept. 1992-July 1993)	Cholera Program (January-July 1993)	Total
Health Areas:			
Guatemala Norte		75,000	75,000
Guatemala Sur		70,000	70,000
Baja Verapaz	40,000	8,750	48,750
Alta Verapaz		46,250	46,250
El Progreso	40,000	10,000	50,000
Izabal	30,000	20,000	50,000
Zacapa	26,000	30,000	56,000
Chiquimula	30,000	30,000	60,000
Santa Rosa	28,000	20,000	48,000
Jalapa		20,000	20,000
Jutiapa	50,000*	20,000	70,000
Sacatepequez	9,000	33,750	42,750
Escuintla	50,000	60,250	110,250
Sololá		25,025	25,025
Totonicapan	26,000	13,750	39,750
Quezaltenango		43,750	43,750
Suchitepequez	30,000	120,000	150,000
Retalhuleu	26,000	50,000	76,000
San Marcos	50,000	31,250	81,250
Huehuetenango		66,250	66,250
Quiché		70,000	70,000
Petén		55,000	55,000
Amatitlan		35,000	35,000
Chimaltenango		50,000	50,000
NGO	35,238	445,000	480,238
Others**	24,012	45,725	69,737
TOTAL	494,250	1,494,750	1,989,000

* 50,000 to Jutiapa net; 70,000 were sent and the Area returned 20,000.
** "Others" includes homes, community groups, the Army, IGSS, D.G.S.S., etc.

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PATH

4 Nickerson Street, Seattle, Washington 98109 USA
Phone: 206-285-3500 Fax: 206-285-6619 Telex: 4740049 PATH UI

FACSIMILE MESSAGE

Date: 28 de julio de 1993

Fax No: 011 502 2 31 56 31

To: Dra. Lucrecia de Fuentes
Clapp and Mayne/Proyecto PAI-TRO

From: Sara Tifft

Total Pgs
(incl. cover): 5

Copies to: Dr. Eduardo Catalán (Director, Unidad de Desastres); Dr. Juan Urrutia (Asesor, Clapp y Mayne); Dr. Marco Vinicio Donis (Director, Salud Materno-Infantil); Dr. Octavio Morán (Director, Programa TRO); Lic. Luis Gálvez, Lic. Carlos Avila (LAPROMED); Dra. Patricia O'Connor, Dr. Jorge Chang (USAID/Guatemala)

Reference: Disponibilidad de SRO en Guatemala

Estimada Lucky:

La presente tiene motivo de saludarla y entregarle a Ud. y a nuestros colegas un análisis rápido de la disponibilidad actual de sales de rehidratación oral (SRO) en Guatemala. Por favor, comparta una copia de este fax con Drs. Catalán, Donis, Morán y Urrutia.

Como Ud. y los colegas indicados arriba ya saben, prometí enviar este analisis después de nuestra conversación del viernes 23 de julio con Drs. Catalán y Urrutia en cuanto a la existencia actual de SRO, y la cuestión de la posibilidad de donaciones adicionales de SRO durante los últimos meses de 1993 y/o los primeros meses de 1994. Entiendo que Uds. se van a reunir hoy por la tarde para revisar estes puntos con mas detalle. Espero que este fax llegue a tiempo y les ayude en su análisis.

Resumen general

1. Hay dos fuentes de datos sobre la existencia actual de SRO al nivel central del sector público en Guatemala:

a. Los registros de suministros de SRO del Programa TRO del Departamento Materno-Infantil.

b. Los registros de suministros de SRO de la Unidad de Desastres, Programa Contra el Cólera.

2. Los sobres de SRO del Programa TRO son principalmente donados por UNICEF; los sobres de SRO de la Unidad de Desastres son donados por AID.

3. Por el momento, lo importante es la existencia de los sobres y la cantidad que existe. Para este análisis, no importa si son de UNICEF o de AID; no importa donde están almacenados; y no importa si son supuestamente destinados a grupos especiales tales como las ONG. Como ya discutimos, Uds. conjuntamente con AID y UNICEF tienen que decidir el destino apropiado para los sobres de SRO que quedan.

4. Existencia actual de sobres de SRO, Programa TRO:

Registro de suministros al 02/07/93:	50,400
Sobres devueltos de ASINDES/ONGs al 23/06/93:	120,000
Entrega de UNICEF al 20/07/93:	100,000
Total TRO:	**270,400**

5. Existencia actual de sobres de SRO, Unidad de Desastres:

Registro de suministros al 23/07/93:	530,000
Total Desastres:	**530,000**

6. Existencia actual de sobres de SRO, Program TRO y Unidad de Desastres, nivel central: **800,400**

Distribucion de SRO

Como Uds. saben, la existencia de los 800,400 sobres de SRO al nivel central no quiere decir que son los únicos sobres de SRO disponibles en el país. Nos damos cuenta que hay cantidades de sobres de SRO ya en las Areas de Salud y sus respectivos centros y puestos de salud, tanto como con las ONG y otros grupos, aunque no sabemos los inventarios actuales de sobres que existen en aquellos niveles no centrales del sistema. Para intentar calcular las posibles cantidades ya en existencia en las

Areas de Salud y otros sitios, hice el análisis adjunto de la distribucion de sobres a los varios sitios del país.

Como se ve, el cuadro adjunto indica 26 categorias de destino para SRO: las 24 Areas de Salud; las ONG; y otros. Organicé estos datos utililzando la información disponible de los registros de ingresos y egresos de suministros de SRO por el Programa de TRO y la Unidad de Desastres. Decidí organizar la información en cuanto a la distribución de sobres del Programa TRO desde septiembre de 1992 hasta julio de 1993 para cubrir un período de casi un año; y organicé la información en cuanto a la distribución de sobres de la Unidad de Desastres desde enero de 1993 hasta julio de 1993, porque son los únicos datos disponibles por el momento.

Es obvio por este análisis indica que cada una de las Areas de Salud ha recibido cantidades de SRO durante los últimos meses. La distribución de la Unidad de Desastres ha sido muy agresiva, y ha sido muy continua y constante desde enero de 1993 hasta la fecha.

Además, los registros de suministros indican las fechas de los egresos de SRO. Por eso sabemos que algunas de las Areas de Salud recibieron hasta cuatro entregas de SRO durante los 7 meses desde enero de 1993.

Los registros indican que la cantidad de sobres entregados cada vez varia entre 8,750 y 85,000, aunque el tamaño de entrega más común es 10,000 a 20,000 sobres por entrega.

Se nota también que se entregaron casi 500,000 sobres de SRO a varias ONG. Como ya comentamos, hay que averiguar bien el último destino y uso de aquellos sobres que van a las ONG, dado que las ONG a veces cubren audiencias y comunidades muy especificas.

Conclusión general

Dado la fuerte distribución durante los 7 meses pasados y la probabilidad de que muchas de las Areas de Salud ya tienen suministros de SRO, es mi opinión que Uds. van a encontrar muchas Areas de Salud ya con cantidades suficientes de SRO, y/o suministros ya disponibles para sus centros y puestos de salud. Además, dado la existencia actual al nivel central de más de 800,000 sobres de SRO, opino que donaciones adicionales de SRO no serán necesarias durante 1993, a menos que Uds. deciden que el comportamiento de la epidemia de cólera va ser muy raro y grave. De mi punto de vista, la cuestión central es donde distribuir los sobres que quedan, para que las Areas de Salud que están con menores cantidades de sobres y con mayor necesidad, reciban lo que necesitan durante los últimos meses de 1993.

Como Uds. ya saben, tenemos mucha confianza que la producción de SRO por LAPROMO va a estar ya en marcha al principio de 1994, y que el Gobierno comprará los sobres para los programas del sector público. Sin embargo, quizas Uds. van a querer almacenar una cantidad de sobres como un "colchon de seguridad" hasta marzo de 1994, por si acaso haya cualquier condición imponderable.

Espero que este análisis les ayude. Favor de tomar en cuanta que algunas de las cifras no son exactas, porque yo tuve que revisar los datos rápidamente. Sin embargo, creo que las cifras y las conclusiónes están bien dentro de la realidad.

Sin otro particular por el momento, les saludo.

Muy atentamente,

Sara Tifft

ST:msm

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ANALISIS DE DISTRIBUCION DE SRO PARA EL SECTOR PUBLICO

Despachado a	Programa de TRO (septiembre 1992-julio 1993)	Programa de Cólera (enero-julio 1993)	Total
Areas de Salud:			
Guatemala Norte		75,000	75,000
Guatemala Sur		70,000	70,000
Baja Verapaz	40,000	8,750	48,750
Alta Verapaz		46,250	46,250
El Progreso	40,000	10,000	50,000
Izabal	30,000	20,000	50,000
Zacapa	26,000	30,000	56,000
Chiquimula	30,000	30,000	60,000
Santa Rosa	28,000	20,000	48,000
Jalapa		20,000	20,000
Jutiapa	50,000*	20,000	70,000
Sacatepequez	9,000	33,750	42,750
Escuintla	50,000	60,250	110,250
Sololá		25,025	25,025
Totonicapan	26,000	13,750	39,750
Quezaltenango		43,750	43,750
Suchitepequez	30,000	120,000	150,000
Retalhuleu	26,000	50,000	76,000
San Marcos	50,000	31,250	81,250
Huehuetenango		66,250	66,250
Quiché		70,000	70,000
Petén		55,000	55,000
Amatitlan		35,000	35,000
Chimaltenango		50,000	50,000
ONG	35,238	445,000	480,238
Otros**	24,012	45,725	69,737
TOTAL	494,250	1,494,750	1,989,000

* 50,000 a Jutiapa neto; Se despacho 70,000 y el Area devolvió 20,000.
** "Otros" incluye hogares, grupos comunitarios, el Ejército, el IGSS, Sindicato D.G.S.S., etc.

Detailed Analysis of 1995-2000 Estimated ORS Needs for Guatemala

Year: 1995		Population under age 5: 1,788,431	
Total Population: 10,621,226		Population over age 5: 8,832,795	
	MOH	NGOs	Total
ORS for under age 5	1,931,505	965,752	2,897,257
ORS for cholera	264,983	*******	264,983
Total ORS Packets/Year	2,196,488	965,752	3,162,240

Year: 1996		Population under age 5: 1,817,265	
Total Population: 10,927,632		Population over age 5: 9,110,367	
	MOH	NGOs	Total
ORS for under age 5	1,962,646	981,323	2,943,969
ORS for cholera	273,311	*******	273,311
Total ORS Packets/Year	2,235,957	981,323	3,217,280

Year: 1997		Population under age 5: 1,850,357	
Total Population: 11,241,540		Population over age 5: 9,391,183	
	MOH	NGOs	Total
ORS for under age 5	1,998,385	999,193	2,997,578
ORS for cholera	281,735	*******	281,735
Total ORS Packets/Year	2,280,120	999,193	3,279,313

Year: 1998		Population under age 5: 1,884,654	
Total Population: 11,562,293		Population over age 5: 9,677,639	
	MOH	NGOs	Total
ORS for under age 5	2,035,426	1,017,713	3,053,139
ORS for cholera	290,329	*******	290,329
Total ORS Packets/Year	2,325,755	1,017,713	3,343,468

Year: 1999		Population under age 5: 1,914,167	
Total Population: 11,889,234		Population over age 5: 9,975,067	
	MOH	NGOs	Total
ORS for under age 5	2,067,300	1,033,650	3,100,950
ORS for cholera	299,252	*******	299,252
Total ORS Packets/Year	2,366,552	1,033,650	3,400,202

Year: 2000		Population under age 5: 1,961,259	
Total Population: 12,221,706		Population over age 5: 10,260,447	
	MOH	NGOs	Total
ORS for under age 5	2,118,159	1,059,079	3,177,238
ORS for cholera	307,813	*******	307,813
Total ORS Packets/Year	2,425,972	1,059,079	3,485,051

Notes: Annual population estimates are taken from Guatemala: Estimaciones y Proyecciones de Población, 1950-2025, Dirección General de Estadística, CELADE, Tables 8 and 9. The data in the CELADE report show total population estimates for individual years. Population estimates by age group are shown in five-year intervals that include 1995 and 2000. The proportion of children under age five in the population for years 1995 and 2000 was taken and assumed to apply for the intervening years.

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List of Private Sector ORS Products
Data from November 1992 Interviews

PRODUCT	VOLUME	FLAVOR	COLOR	PRICE*	MANUFACTURER	FORMULA
Glucosoral	1,000 ml	Y	N	Q1.40	Quifarma, S.A.	3.5 g Sodium; 1.5 g Potassium; 2.9 g Trisodium Citrate; 20.0 g Anhydrous Dextrose; Flavor. Also available in 500 ml and one-liter bottled solution. See H. Faust ORT product classification for ingredients. Samples in box at DataPro. Price for two half-liter bottles (packaged together) Q11.00.
Pedialyte	400 ml	Y	Y	Q7.89	Abbott, S.A.	48 mg Sodium; 596 mg Potassium; 116 mg Calcium; 164 mg Magnesium; 1256 mg Sodium Lactate; 20 g Dextrose; de-ionized water.
Litrosal	1,000 ml	N	N	Q1.69	Adamed, S.A.	Per sachet - 20.0 g Glucose Anhydrous; 3.5 g Sodium Chloride; 2.9 g Trisodium Citrate Dihydrate; 1.5 g Potassium Chloride.
Suero Oral	250 ml	N	N	Q0.35-0.50	Ancalmo, S.A., (manufac. in El Salvador)	Per sachet - 0.48 g Glucose Anhydrous; 0.48 g Sodium Chloride; 0.18 g Potassium Chloride; 0.096 g Calcium Gluconate.
Hidradex Oral	1,000 ml	Y	Y	Q1.50	Bertel, S.A.	20 g Dextrose; 3.5 g Sodium Chloride; 1.5 g Potassium Chloride; 2.9 g Trisodium Citrate. ("WHO Formula" on label).

* Price to consumers as of November 1992

PRODUCT	VOLUME	FLAVOR	COLOR	PRICE*	MANUFACTURER	FORMULA
Hidafix	250 ml	?	?	----	Rorer, S.A., Discontinued	154.2 mg Calcium Lactate; 117.3 mg Magnesium Citrate; 545.5 mg Potassium Citrate; 877.5 mg Sodium Chloride; 3,125.0 mg Fructose; 3,125.0 mg Glucose. This product comes in a foil packet and is a concentrate pre-mix formula which is dissolved in 250 ml water and then administered. It was only on the market for a short time and recently discontinued.
Oralelectril	1,000 ml	?	Y	?	Finlay, S.A. (manufac. in Honduras)	Per 100 cc - 2.0 g Dextrose; 93.5 mg Sodium Chloride; 119 mg Potassium Chloride, 36.8 mg Calcium Chloride; 30.5 mg Magnesium Chloride; and distilled water. This is a "popular" solution for moderate cases of dehydration.
Litodex	1,000 ml	N	Y	?	Finlay, S.A. (manufac. in Honduras)	Per liter - 3.5 g Sodium Chloride; 5.56 g Sodium Lactate; 1.5 g Potassium Chloride; 20 g Dextrose. This product is intended for serious cases of dehydration.
Electoral	500 ml	N	Y	Q6.11	Bonin, S.A.	Per 100 ml - 15 mg Sodium Chloride; 150 mg Potassium Chloride; 30 mg Calcium Chloride; 40 mg Magnesium Chloride; 310 mg Sodium Lactate; 5 g Dextrose Monohydrate; and distilled water.

* Price to consumers as of November 1992

Priority ORS Distribution Areas based on Population and Reported Cases of Diarrheal Disease

Department by population+	Population under 5	% of total under 5 Pop.++	Cases treated in 1991	% of total cases treated
"A" Sites - 61,000-142,000 (Note: "A" Sites comprise approximately 60% of all children under age 5.)				
Huehuetenango*	131,111	8%	57,909	10%
Guatemala Sur	142,003	9%	15,071	3%
Guatemala Norte	108,010	7%	14,839	3%
San Marcos*	117,970	8%	54,146	9%
Quiche*	102,907	7%	37,729	6%
Alta Verapaz	102,481	7%	26,935	5%
Quetzaltenango*	95,224	6%	42,950	7%
Escuintla*	85,115	5%	36,847	6%
Suchitepequez	62,099	4%	31,972	5%
TOTAL	946,920	60%	318,398	55%
"B" Sites - 50,000-60,999				
Jutiapa*	60,430	4%	38,211	7%
Chimaltenango	58,927	4%	21,013	4%
Izabel	56,464	4%	19,030	3%
Totonicapan	54,463	3%	22,518	4%
TOTAL	230,284	15%	100,772	17%
"C" Sites - Less than 50,000				
Peten	45,336	3%	14,196	2%
Solola	43,262	3%	13,133	2%
Retalhuleu	41,307	3%	21,177	4%
Chiquimula	42,234	3%	15,379	3%
Santa Rosa	39,494	3%	31,158	5%
Amatitlan	38,270	2%	7,981	1%
Baja Verapaz	36,650	2%	10,834	2%
Jalapa	33,627	2%	20,358	3%
Sacatepequez	29,739	2%	8,385	1%
Zacapa	26,317	2%	10,557	2%
El Progreso	13,951	1%	10,029	2%
Ixcan	5,087	0%		0%
TOTAL	395,274	25%,	163,187	28%
Total Population under 5 =	1,572,478	100%	582,357	100%

+ Estimacion de Necesidades de Sobres para TRO Division Materno/Infantil, Ministerio de Salud Publica, 20 de Septiembre de 1990.
++ Informes Mensuales/Anuales de TRO (F-9) de las areas de salud/Unidad de Informatica/D.G.S.S.
* Highest population of children combined with the highest percentage of reported and treated cases of diarrheal disease.

Attachment B

Monthly Progress and Financial Reports from
Arquitectos Pelayo Llarena & Colaboradores
October 1993-January 1994

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2a avenida nº 9-76 zona 1 guatemala c a tel 20647

New address:
Avenida Las Américas 15-49,zona 14
Guatemala City, Guatemala C.A.
Phone/Fax 68 08 33.

RECEIVED NOV 8 1993

Guatemala,November 5, 1993

Ms. Jacque Holden
Administrative Officer
Technology Management Department
P A T H.
4 Nickerson Street,
Seattle, Washington 98109
U.S.A.

Dear Ms. Holden:

Attached you will find the PROGRESS REPORT for the month of OCTOBER 1993, the Planillas and the Vouchers.

Very truly yours,

Arq. Pelayo Llarena Sr.

Enclosure: indicated.

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October 1st. 1993.

In the evening Humberto Zardo called and I told him that we are doing the plans for the support of the AC Equipment.
The making of these steel supports is our critical path and it will be very difficult to finish the job by the 18th. of October. I will work tomorrow Saturday and Sunday to have the plans ready to quote on Monday and cajole the manufacturer to make it in record time.

The other more critical step is the Electric Power Co.

October 4, 1993.

I Faxed the plans for the supports of the AC Equipment to PRECASA.

I went to the construction and talked to Lic. Gálvez.
We managed to enter the Hood in the QC Lab by taking down the frame of the entrance door.

We are working in all the activities.

October 5, 1993.

I received a call from Humberto Zardo. He wanted to know how we were doing.

I went to PRECASA and got a quotation for the supports of the Air Handling Unit that we placed in the roof of the building. The cost: Q.12,750.00.
It will be stronger than our design asked for because they did not have the steel beams required.
The Manager promised to deliver the beams by next Friday. We'll anchor them on Saturday and Sunday to be able to place the equipment on Monday.

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He promised again to try it. I told him that that was not enough, that I wanted people working. I strongly sugested to pull out from some of his other jobs the people needed for this one. To tell the sob story to his other clients because we were not buying it.

October 10, 1993. Sunday.

PRECASA was erecting the steel beams for the support of the AC. I hope that they will finish by Monday.

I talked to Ing. Caballeros about the AC. this contract is getting along well. By Monday we should be placing the Air Handling Unit on top of the steel beams and by the end of the week they should be finished connecting the ducts.

October 11, 1993.

PRECASA has continued welding the steel beams in situ.

We have been working in all fronts.

October 12, 1993.

I was at the construction all day long pushing all the activities.

Ing. Caballeros sent more gypsum boards and struts. I talked again to him and he is sending two teams tomorrow. He said that he'll get them out of other jobs to be able to finish our job.

Ing. Díaz of SALNARS & DIAZ was at the job checking the electrical boxes. He will start putting the conduits to the AC equipment that is located in the roof.

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Humberto Zardo called at about 7:30 PM and I told him that I'am trying to meet the dead line. I'm talking to the workers (and taking some pictures of them at their request) and letting them know that what we are doing will be saving lives, maybe their own or of some of their relatives or friends to see if they get more concientious about their work.

October 13, 1993.

At about 6:45 PM Humberto Zardo called and I told him that the Electric Power Co. according to SALNARS & DIAZ will not connect the electricity until, maybe, the end of the month. I talked to Lic. Gálvez and suggested that now would the time to talk to the Minister of Health to help in getting the electrical connection installed.

I talked to Mr. Rafael Ordóñez of CARPINTERIA CENTROAMERICANA to start painting the doors, all are done with the exception of the main entrance one.

October 14, 1993.

Ing. Díaz of SALNARS & DIAZ told me that he had talked to officials of the Electic Power Co. to expedite the paper work for the connection of the electricity to the plant.

The covers of fiber glass for the hot water pipes are in place.

The extra team that Ing. Caballeros had for the placement of the mechanical suspension in room 309, quitted, they made a mistake in the location of the lamps, Plan A-4, 4/49, and they did not want to make the correction. New people will take over.

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October 15, 1993.

Humberto Zardo called and I gave him a report of what is going on.

The Electric Power Co. may make the connection tomorrow Saturday or next week on Monday or Tuesday.

The Memorial commemorative plaque will cost Q3,570.00 and will take a month to do it.
To me the Text is too long, 43 words. My suggestion would be: "From the people of the United States to the people of Guatemala. USAID 1993." Period.

We are working in all fronts. The electrical is almost finished, still missing the instalation of the lamps because the ceilings require to be painted before the instalation.

The doors are in place but not painted.

The vinyl floor is still without instalation but the people of LA ALFOMBRA MAGICA said that they would place it in three days.

Part of the Air Walls are in place, CONSTRUPOR is working in room 100. The Air Wall in axis "C" room 203 is finished.

October 16, 1993. Saturday.

We have kept working in all fronts.

The instalation of the AC equipment has progressed. The pipe of the hot gas Ø 5/8" is in place with its siphon at the Trane Air Unit AH-3 in the QC area. The DD Ø 1/2" Liquid from the Condenser CU-3 is also in its position.

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October 17, 1993. Sunday.

I went to the Construction to take some pictures for the Monthly Report and also to find out if the Subcontractors CARPINTERIA CENTROAMERICANA and CONSTRUPOR were working.

October 18. 1993.

Humberto Zardo called and I gave him the report of what we are doing.

I found out that the Electric Power Co. did not have the 50 KVA Transformers. I let be known our displeasure and the fact that we had paid for them on the underestanding that that they had them.

The connection to the Trane N°14 Air Unit to the Trane Raucc 25 Air cooled Condensing Unit is almost finished. I made shure that the two Ø2 1/8" suction had their siphons.

All the Subcontractors are working trying to meet the dead line.

October 19, 1993.

The suction line from the Air Unit N°14 to the Cordensing Unit has been insulated with armaflex.

Hallelujah, the Electric Power Co. showed up and installed the three 50 KVA transformers required. (My impression is that they got them from some other electrical bank.) I called Humberto Zardo and gave him the good news.

I gave Dr. Chang a call to ask if AID would consider changing the text of the Memorial Commemorative Plaque. He said to send it in writing. I drew an elevation with the text the way I thought it would be appropriate and a section of the plaque and Faxed to him. He'll let me know.

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Tomorrow is a Guatemalan holyday but the Subs will be working an so do I.

I went to the ALFOMBRA MAGICA, S.A. and talked to a Mr. Héctor Aguilar who promised to start placing the vinyl floor next Monday October 25.

October 20, 1993. Gu. Holyday.

I went to the construction and the Subs for the Carpentry, the Wall Partitions and AC were working. The Plumber was making the chimneys for the ovens.

Later, at the office, Humberto Zardo called, previously Marisela had sent a Fax with instructions to make some parts for the Norwood machine, a support for the S. Howes and a platform for the Ross Mixer.
Humberto Zardo explained how each of the parts should be done.
He said that he"ll be here on the 26 of October.

October 21, 1993.

I called PRECASA to order the items that Humberto Zardo sent via Fax but the owner with whom I always place the orders was out of the country but he"ll be back next Monday.

I called la ALFOMBRA MAGICA, S.A. to make sure that they would send the vinyl floor to the construction and start putting it in place by next Monday.
Mr. Héctor Aguilar confirmed that they will be there on Monday 25.

October 22, 1993.

We finished placing the chimneys on the ovens.

The suspended ceiling in rooms 306, 307 and 309 are almost finished. Since we got the chimneys for the ovens coming from room 203 through the walls to room 101 and then through the concrete slab roof, we have only placed the mechanical suspension in room 101 and not the ceiling.

6.—

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The suspended ceiling in room 100 will be higher where the Fillers are located.

We have tested the pipes for cold water, hot water, distilled water and compressed air. We still have to test the propane gas pipes.

The painting is being done in practically every area that requires it, from the QC Lab to the manufacturing in the first floor.
The doors are also being painted, in the first floor with Epoxy paint, white.
In the second floor with oil paint of different colors. All walls are white.

I took some pictures for the Monthly Report.

October 24, 1993. Sunday.

I went to the construction. Some of the people of CONSTRUPOR were working.

We had cleaned the floor of the QC Lab but with so many Subs working, it got dirtied again.

All the air walls are finished.

October 25, 1993.

La Alfombra Mágica, S.A. sent their floor installers, they started in room 404 and it is almost finished.

We switched the position of the Filler Machines because we have more head room for the taller one in the new location.

October 26, 1993.

I received a Fax from AID approving the text of the new Commemorative Plaque with a minor modification.

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Humberto Zardo was at the construction and together we took a tour of the job.

Today a Blender arrived at the site. We have to make a part that is missing but that Humberto Zardo had already made provisions for.

October 27, 1993.

The vinyl floors are being laid.

The Main Entrance door is being assembled.

The Doors are being painted.

The electricians are hanging the Lamps.
The Plumber is installing the Electric Heater.

October 28, 1993.

I met Humberto Zardo at the construction. We went to see Mr. Albino Buratti of PRECASA to find out if they had started to manufacture the three items that we had ordered. They had not but they promised to start right away.

We also went to CONSTRUPOR but Ing. Caballeros was not in. We left a note saying that that we wanted to meet with him tomorrow at the job.

After that we went to ALUMINIOS ALDANA to tell them that they can put the two windows in area 402 and also to pick up two doors of a metal cabinet whose doors came in banged and one came with a broken glass.

October 29, 199.

We had a meeting at the construction with Humberto Zardo, Ing. Caballeros of CONSTRUPOR and Edwing Rodas of the AC in order to coordinate their work.

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The electricians have continued hanging the lamps.

The plumber was putting the fiber glass around the copper tubing for the recirculating system of the hot water.

CONSTRUPOR started putting the coving between the ceiling and the walls in room 401, axis 3, in order for us to start installing the cabinets in front of that particular wall.

The vinyl floor is almost finished. LA ALFOMBRA MAGICA will start placing the baseboard in all the walls that we contracted them for.

CONSTRUPOR is painting the walls in room 100, Axis 1. They are also placing the ceilings in rooms 100, 202 and 203.

October 30, 1993. Saturday.

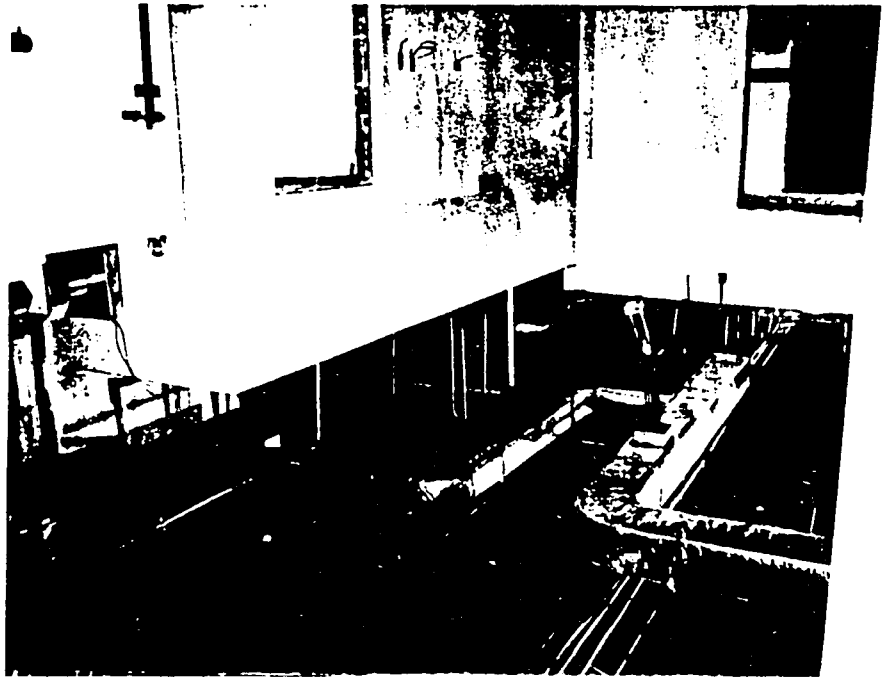
Humberto Zardo and I went to the construction to find out how the people of LAPROMED were getting along unpacking the different items that came for the QC Lab.

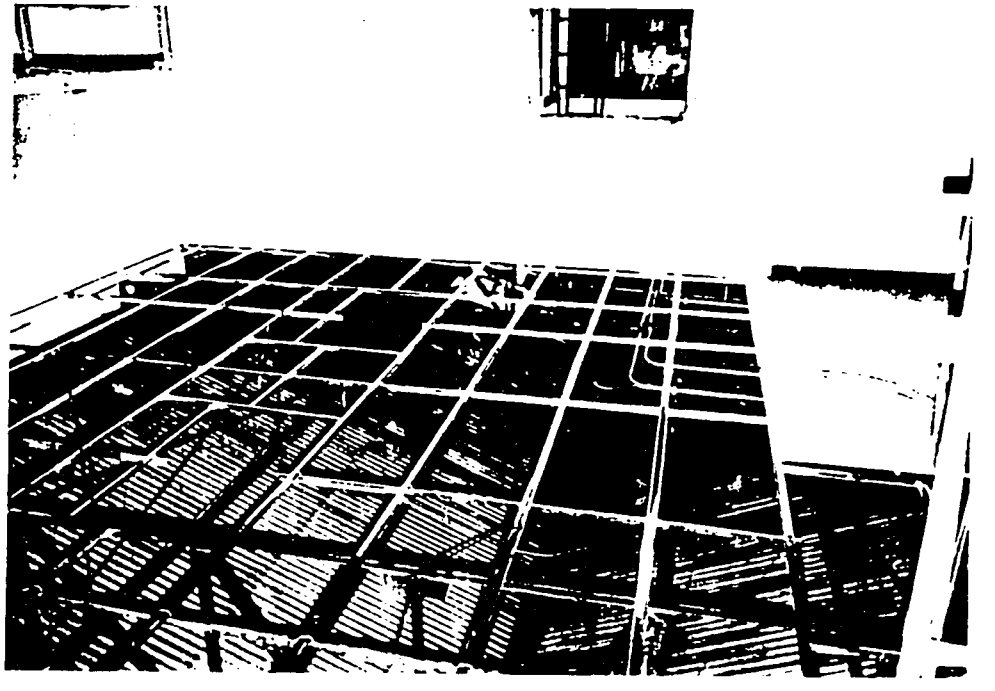
NOTE: Lic. Gálvez gave me yesterday the official assignment of the "Número Patronal" from IGSS. It was delivered to LAPROMED the 16th. of September even though the address on the envelope was the one of our office. He said he was sorry but that he had it misplaced.

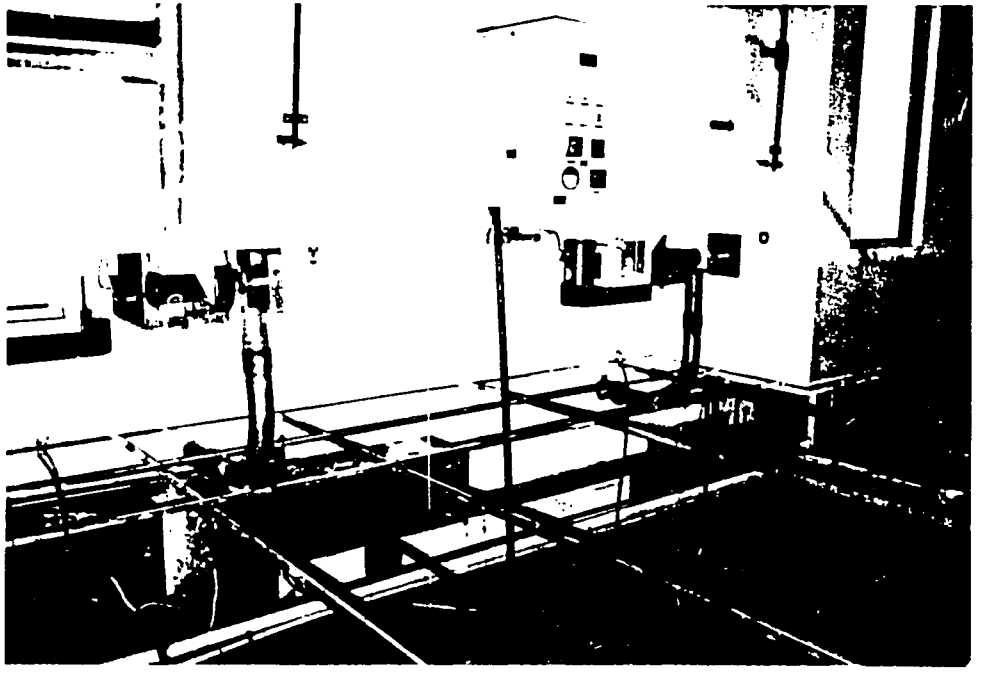
CONSTRUCTION TIME & COST ESTIMATE OF O.R.S. AT LAPROMED.
TIEMPO DE CONSTRUCCIÓN Y COSTOS. REMODELACIÓN LAPROMED.

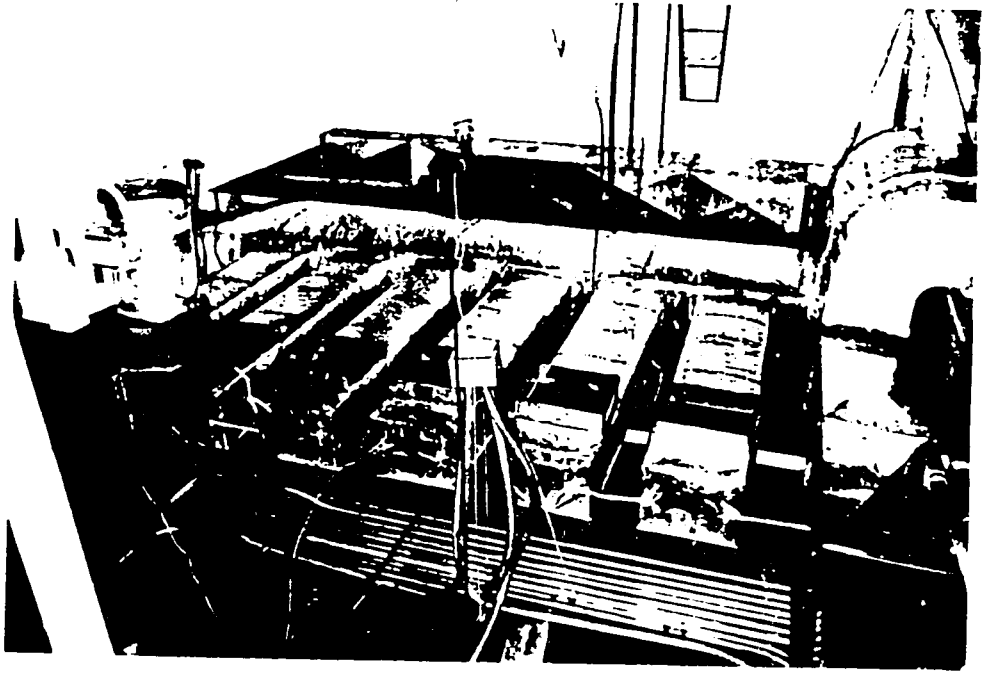
DESCRIPCIÓN	TIEMPO MESES.	1	2	3	4	5	6	7	8	9	10	11	TIEMPO	COSTOS
DEMOLICIÓN	QUITAR PAREDES PISOS TECHOS EXISTENTES QUE SE INDIQUEN EN LOS PLANOS Y ESPECIFICACIONES. NOTA IMPORTANTE: La Universidad de San Carlos [illegible]												0	23,000.00
MAMPOSTERÍA	CIMIENTOS COLUMNAS, PAREDES DE BLOCKS, HIERRO, PISO DE CONCRETO												0	30,2[illegible]
PLOMERIA	AGUA FRIA												0	[illegible]
	DESAGUES												0	[illegible]
	AGUA CALIENTE Y GAS PROPANO												0	4,[illegible]
	AIRE COMPRIMIDO												0	[illegible]
	EQUIPO HIDRONEUMATICO Y CALENTADOR												0	[illegible]
	AGUA DESTILADA												0	[illegible]
	ARTEFACTOS SANITARIOS												0	[illegible]
	INSTALACION												0	[illegible]
TECHO de ACERO PRIMER PISO	ARMADURAS DE ACERO Y TECHO DE LAMINA GALVANIZADA, 212.00 m², CHIMENEAS.												0	[illegible]
PISOS	PISOS DE TERRAZZO PRIMER PISO												0	[illegible]
	LIMPIEZA DEL PISO DEL SEGUNDO PISO												0	[illegible]
PAREDES	PAREDES DE TABLAYESO, PRIMER PISO												0	[illegible]
	PAREDES DE TABLAYESO, SEGUNDO PISO													
ELECTRICIDAD	ALAMBRADO Y CONEXION DE MAQUINARIA Y EQUIPO												0	[illegible]
DUCTOS, A.A. (Equipo por otros)	HECHURA Y CONEXION A MANEJADORAS INSTALACION DEL EQUIPO Y SUMINISTRO DE DIFUSORES Y REJILLAS — PRIMER PISO, SEGUNDO PISO												0	[illegible]
TECHO de ACERO, TERCER PISO	ESTRUCTURA DE ACERO Y TECHO DE LAMINA GALVANIZADA, 200 m²												0	[illegible]
VENTANAS	VENTANAS FIJAS DE ALUMINIO QUE SE INSTALARAN EN EL DERREDOR DEL PRIMER PISO												0	[illegible]
AZULEJOS	SE COLOCARAN EN LOS BAÑOS Y EN LOS AMBIENTES 300 Y 301.												0	[illegible]
PUERTAS	PUERTA ESPECIAL DE CAOBA, BARNIZADA, SOBRE 3ª CALLE												0	[illegible]
	17 PUERTAS SEGÚN PLANOS												0	[illegible]
	PUERTA ENROLLABLE TIPO PERSIANA DE METAL												0	[illegible]
CIELO SUSPENDIDO	585.00 m² Aprox. — PRIMER PISO, SEGUNDO PISO												0	[illegible]
PINTURA	PINTAR 450.00 m² DOS MANOS (1,900.00 m²)												0	[illegible]
MANO DE OBRA	SE PAGARAN TODAS LAS PRESTACIONES LABORALES												0	[illegible]
IMPREVISTOS	10%												0	[illegible]
RECEPCION	RECIBIR POR PARTE LAS INSTALACIONES TERMINADAS Y FUNCIONANDO													
														0.1.775,35 ± 01

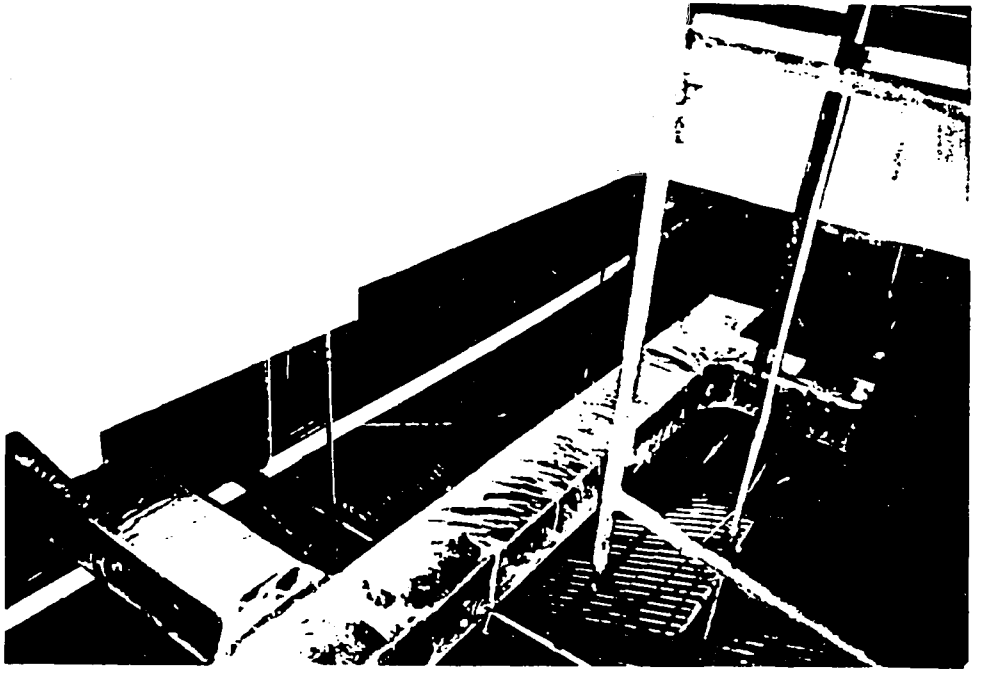
NOTA: EL EQUIPO DE AIRE ACONDICIONADO NO HA SIDO CONTEMPLADO EN ESTE CUADRO DE COSTOS

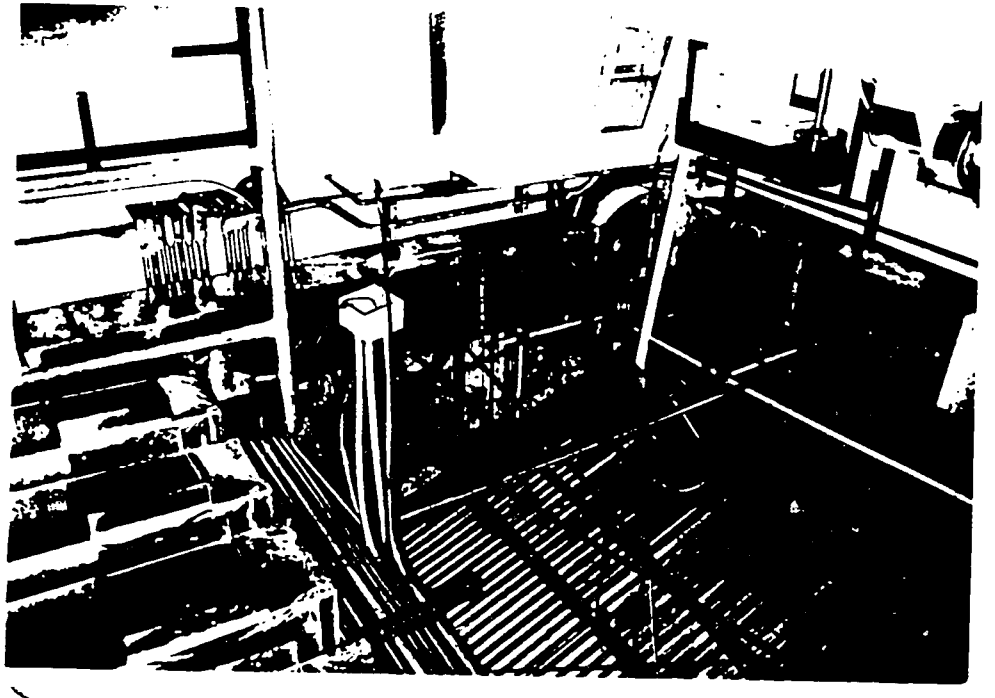


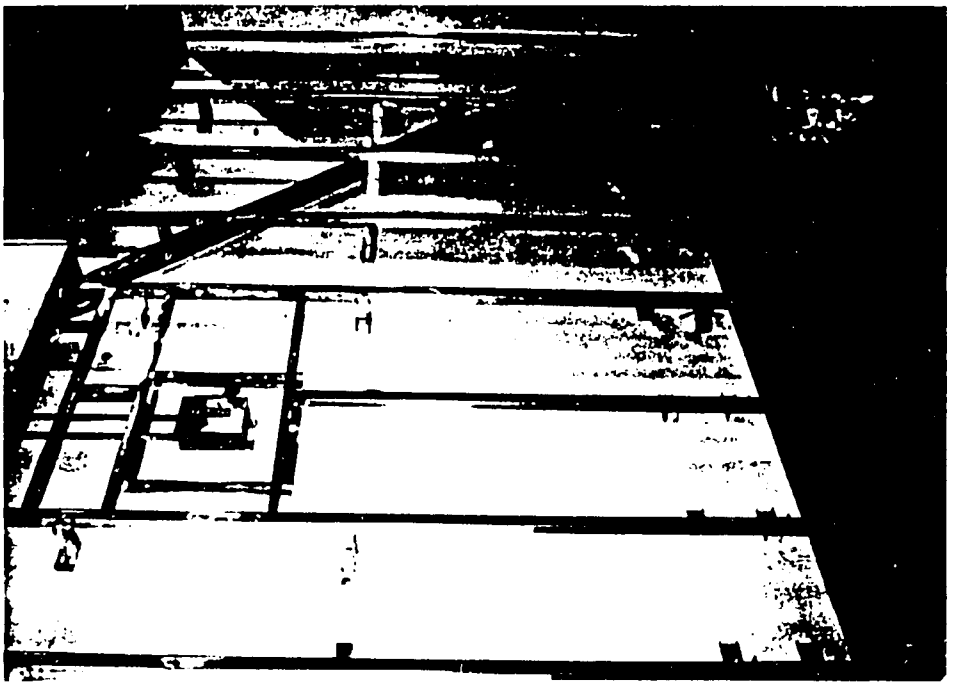


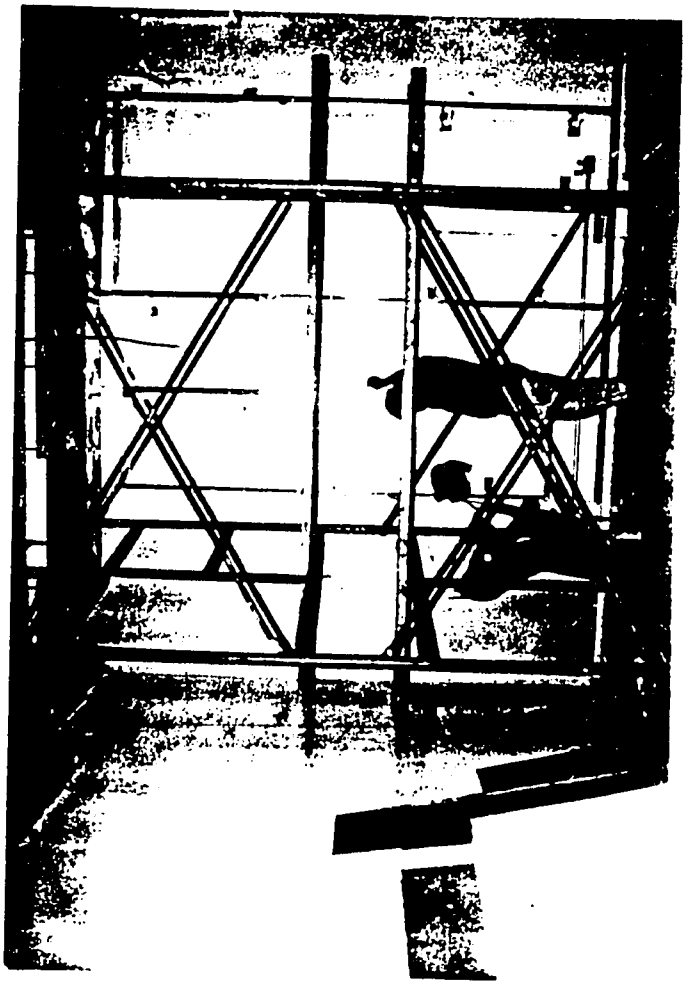


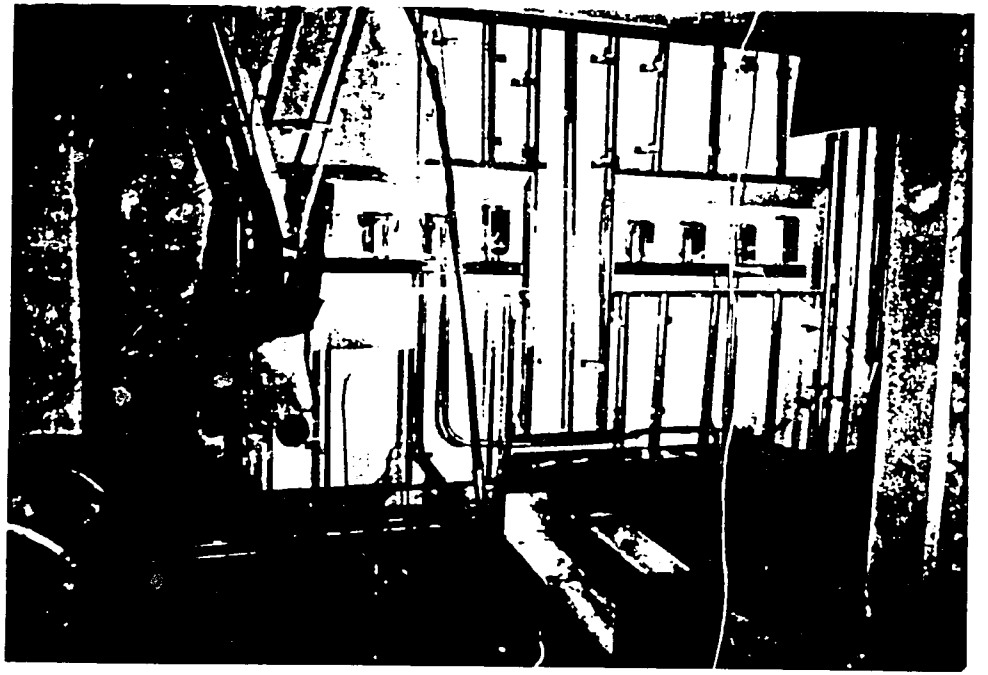


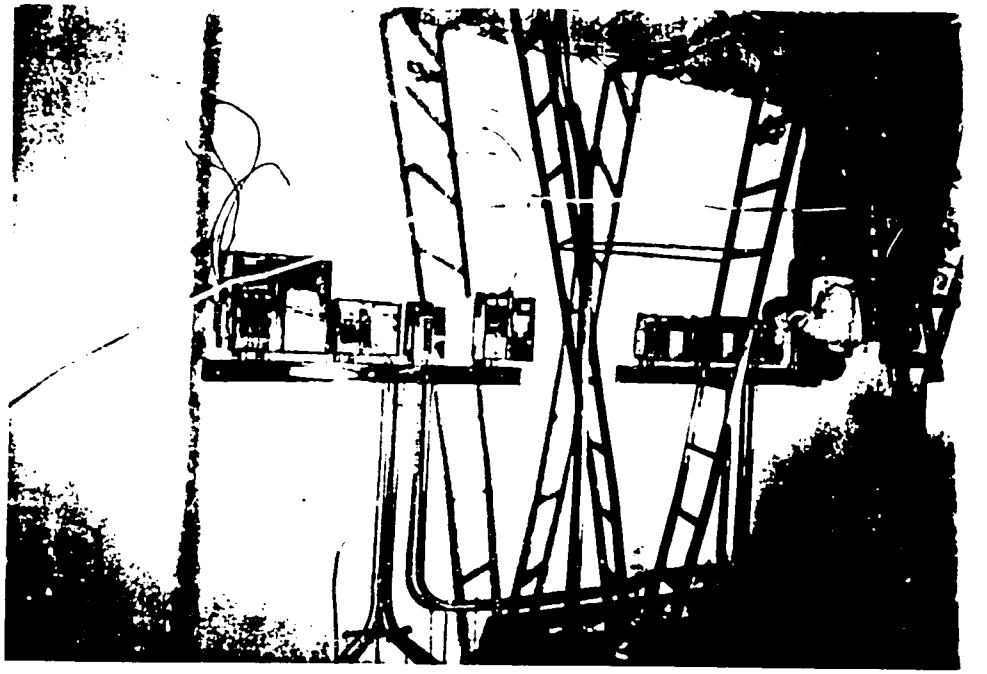


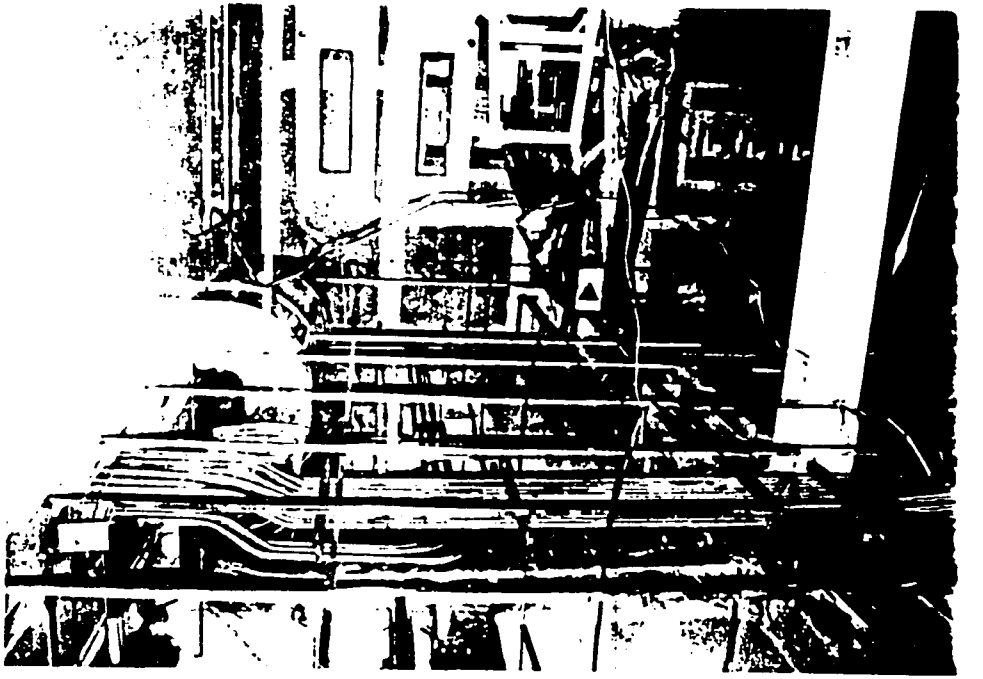












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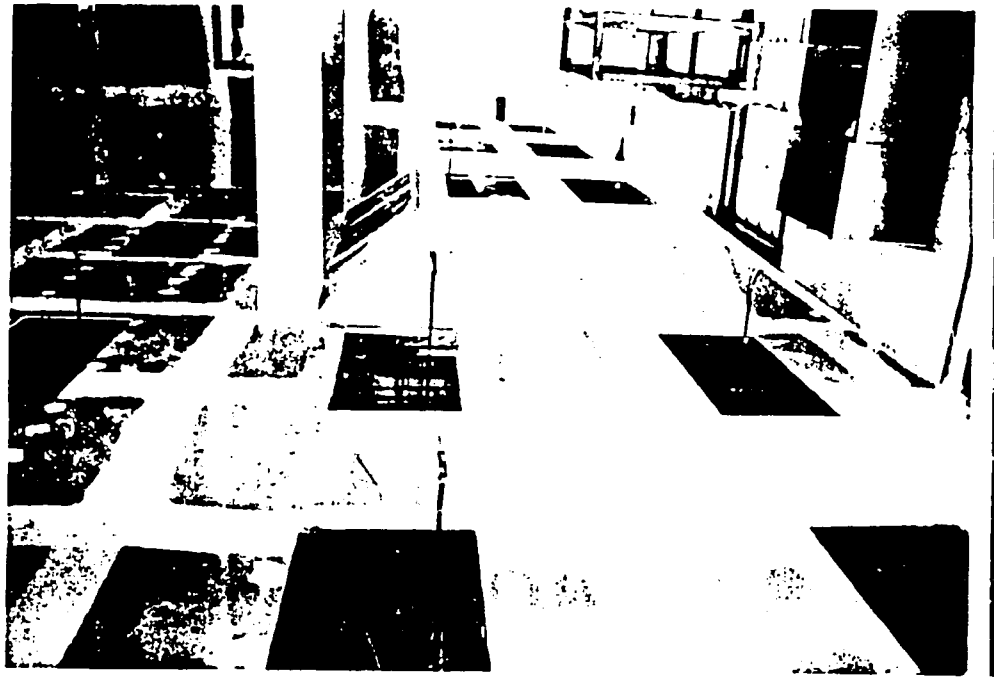

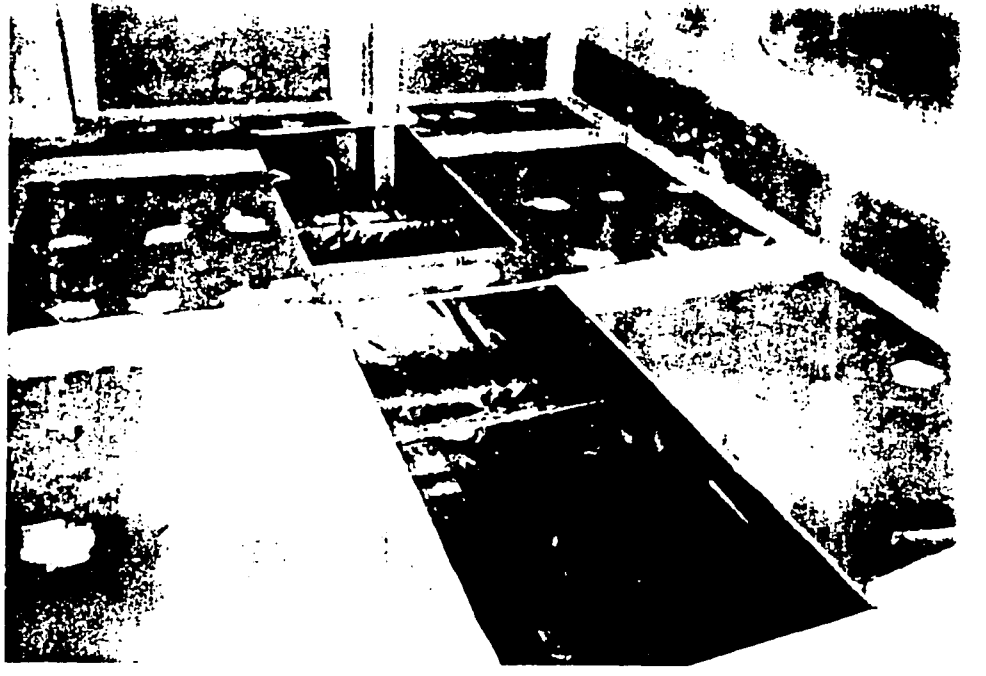

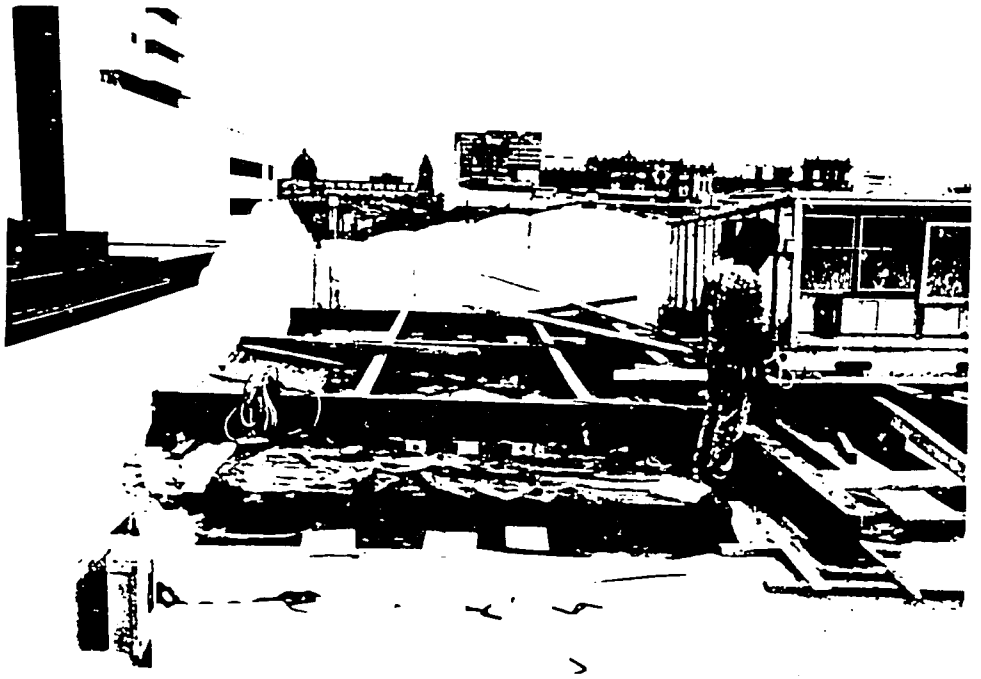

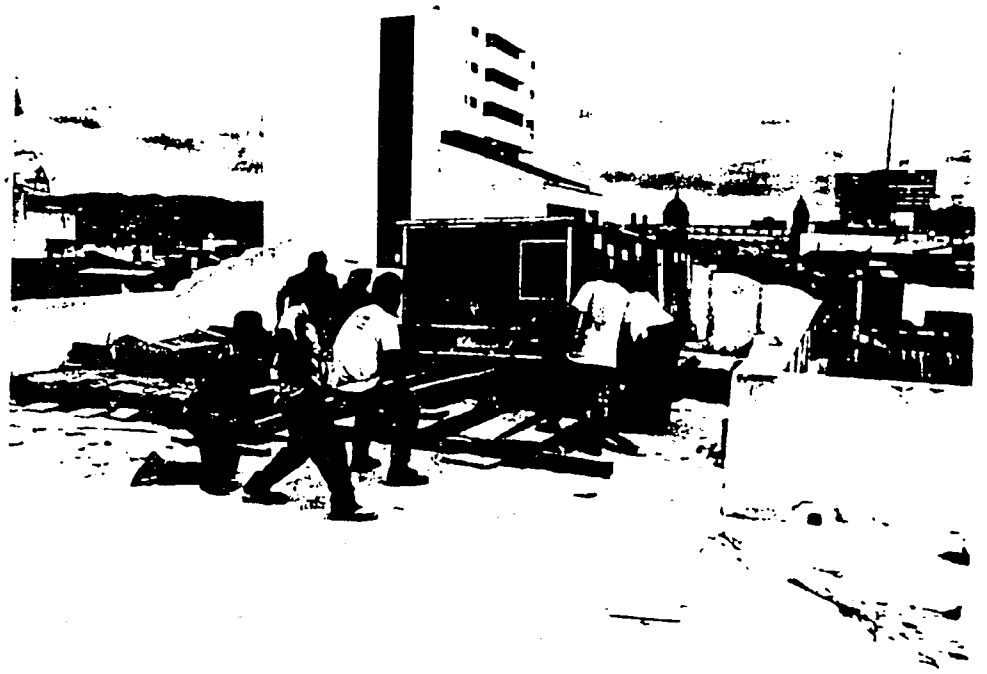

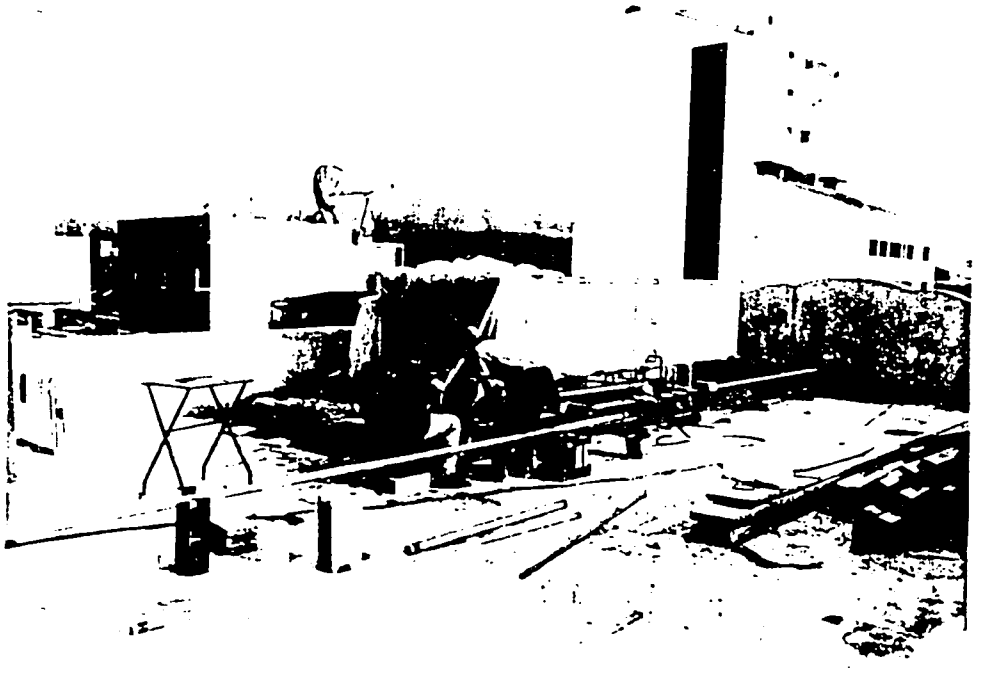

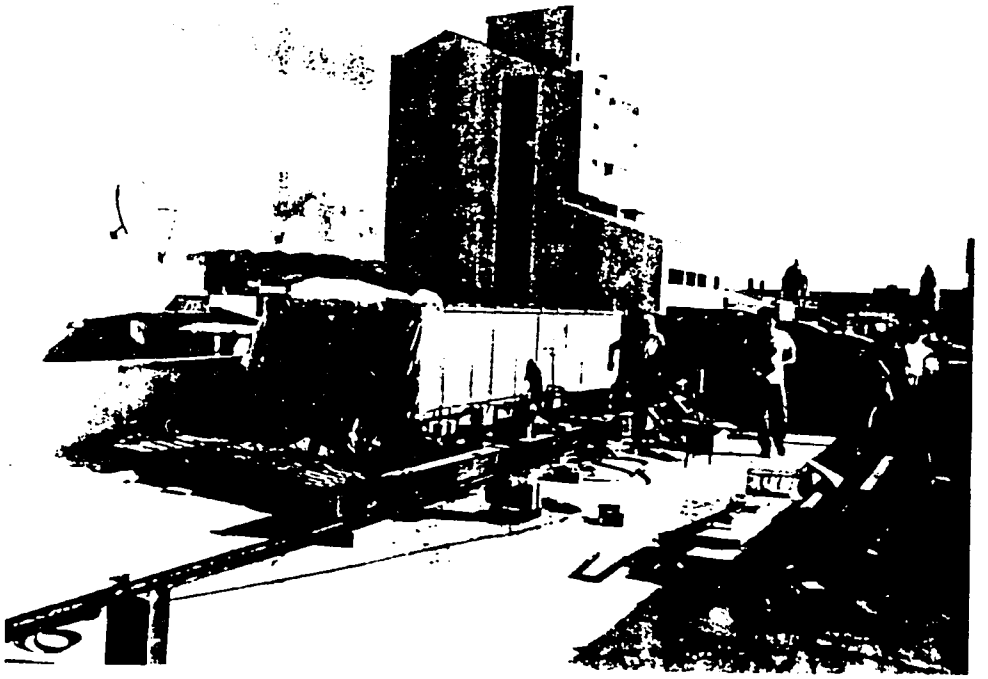

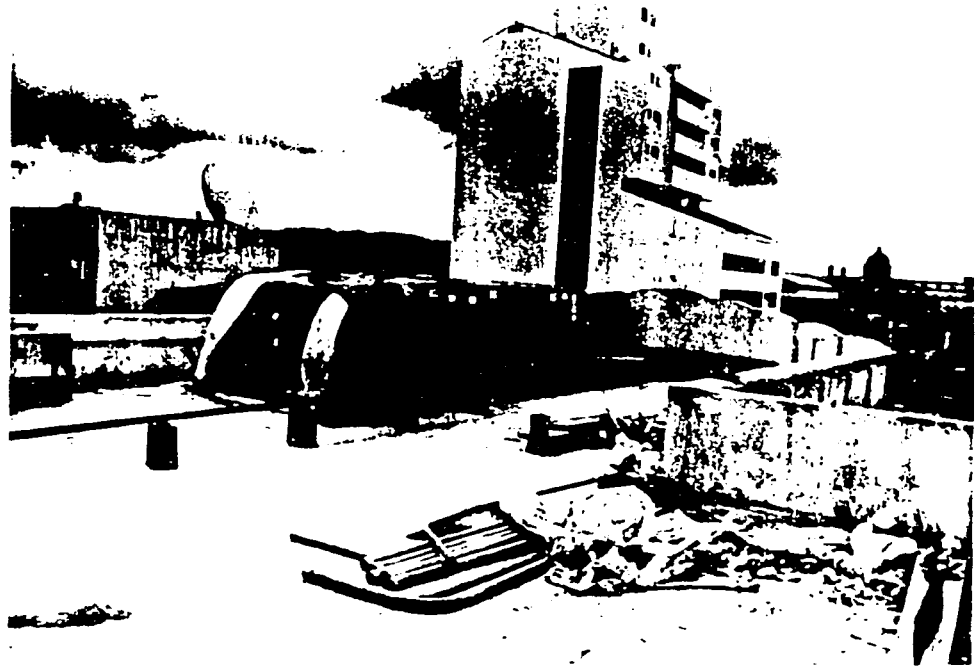

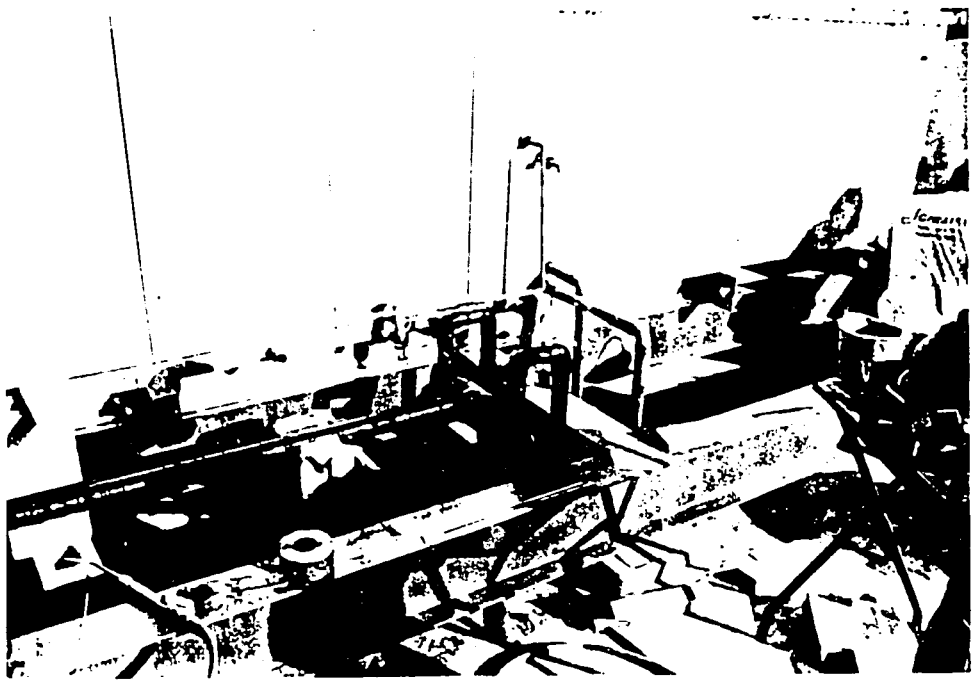

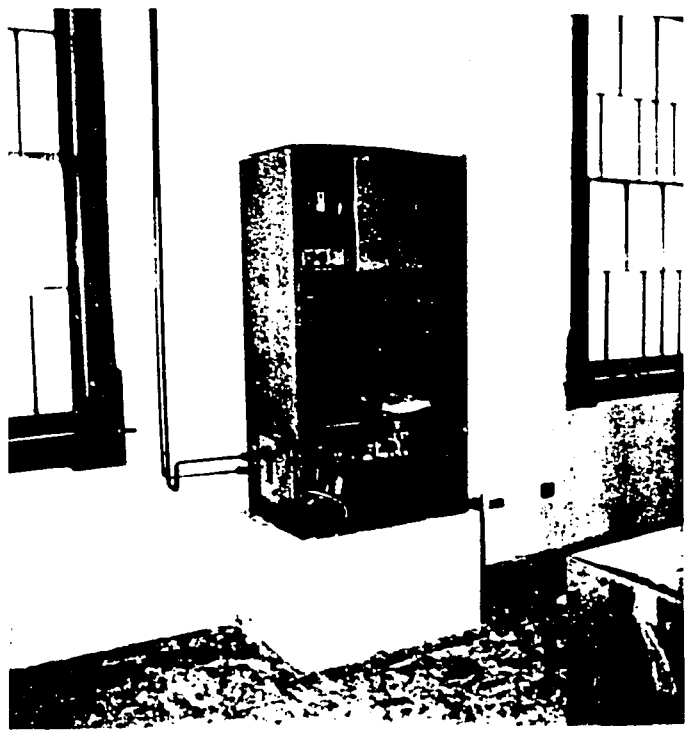

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SEÑOR es de PATH/AID

PLANILLA No. -10-

Obra No. Planilla No. -10- Correspondiente a la Semana

del 1° de octubre al 31 de octubre de 1993

	#21 y #22 Salarios Liquidos	Q 8,677.34	
MANO DE OBRA	#21 y #22 Bonificaciones	Q 1,000.80	Q 9,678.14

MATERIALES:

Recibo No.0135 de CONSTRUPOR, S. A., instalación de A. Ac.	Q.32,388.50
Recibo No.0134 de CONSTRUPOR, S. A., cielos de tabla-yeso	Q.31,750.00
Recibo No.0133 de CONSTRUPOR, S. A., tabiques de tabla-yeso	Q.28,450.05
Recibo No.5857 de P R E C A S A, cancelación Fact. #3940	Q.14,650.00
Fact. No.85749 de la EMPRESA ELECTRICA DE GUATEMALA	Q.24,557.00
Fact. No.13384 de la EMPRESA ELECTRICA DE GUATEMALA para Aire ac.	Q. 321.00
Fact. No.38296 de INSTALACIONES MODERNAS, S. A., artefactos sanitarios	Q. 5,686.59
Fact. No.00141 de CONSTTRUCCIONES GUATEMETAL, cancelación cortina	Q. 1,789.00
Fact. No.00043 de LUIS VERDUGO REPETTO, S. A., grúa y montacarga	Q. 5,000.00
Fact. No.24199 de P R O T E I S A, tubería de acero inox.	Q. 2,250.00
Fact. No.171 de TALLERES ORTIZ, dados para tarraja	Q. 3,967.50
Fact. No.170 de TALLERES ORTIZ, materiales de cobre	Q. 370.48
Fact. No.169 de TALLERES ORTIZ, materiales de cobre	Q. 295.58
Fact. No.173 de TALLERES ORTIZ, materiales H.G.	Q. 489.61
Fact. No.101509 de EL VOLCAN, S. A., epoxi y otros	Q. 691.56
Fact. No.103347 de EL VOLCAN, S. A., epoxi y otros	Q. 145.88
Fact. No.14097 de S E R C O, sikaflex	Q. 417.30
Fact. No.17093 de DISTRIBUIDORA COLORAMA, S. A., rollos	Q. 156.54
Fact. No.05660 de FERRETERIA TIKAL II, cemento, hierro y wipe	Q. 82.66
Fact. No.097059 de D H L	Q. 220.96
Fact. No.108223 de ALMACEN LAS PALMERAS, brocas	Q. 32.56
Fact. No.58269 de INTACO LIMITADA, pistola de calefatear	Q. 32.10
Recibo de ROBERTO SIAN, Prestaciones Finales	Q. 285.75
Recibo No.00761 del I. G. S. S., septiembre	Q. 1,151.94
Sub-total:	Q.164,860.70

NOTA:

En Planilla anterior (No.9) indicábamos que disponíamos para pagos de planilla de la cantidad de:.....Q.198,445.40

Con fecha 8 de octubre de 1993 recibimos el depósito del Banco por la cantidad de:.....Q.582,000.00

S U M A N: Q.780,445.40

Menos el importe de la presente Planilla (No.10):.....Q.164,860.70

DISPONIBLE PARA PAGO DE PROXIMAS PLANILLAS.....Q.615,584.70

OTROS GASTOS

TOTAL PAGADO EN LA SEMANA Q 164,860.70

=====CIENTO SESENTA Y CUATRO MIL OCHOCIENTOS SESENTA QUETZALES CON 70/100.=======

Arq. Pelayo Llarena

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New address:
Avenida Las Américas 15-49,zona 14
Guatemala City, Guatemala C.A.
Phone/Fax 68 08 33.

Guatemala, 17 de Diciembre de 1993.
December 17, 1993.

Ms. Jacque Holden
Administrative Officer
Tecnology Management Department
P A T H.
4 Nickerson Street,
Seattle, Washington 98109
U.S.A.

Dear Ms. Holden:

Attached you will find the PROGRESS REPORT for the month of NOVEMBER 1993, the Planillas and the Vouchers.

This REPORT will be the last one concerning the Construction. I will keep on sending you the payments of the works whose Vouchers I stil have not received.

It has been a pleasure to have worked with PATH and I hope that the final product meets with your approval.

Very truly yours,

Arq. Pelayo Llarena Sr.

Enclosure: Indicated.

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November 1, 1993.

Today is a Guatemalan Holyday but we are working in all fronts.

Humberto Zardo, Jasbir Dhanjal and James Calbreath are installing the cabinets.

November 2, 1993.

I went to the construction and I met with Humberto Zardo, Jasbir Dhanjal, Lic. Gálvez and James Calbreath. We talked about the hydraulic instalations and gas for the acids hood.

We are installing now the shower and the eyes washer.

I also went to PRECASA and got the missing part for the Norwood machine. It was made out of stainless steel.

November 3, 1993.

I took a piece of equipment to PRECASA to make an adapter with a flange to a PVC part of the chimney of the acids hood.

I went to check the Commemorative Plaque to see if the proportions were right. It will be ready in three weeks. We got the information from AID not too long ago.

Humberto Zardo et all are putting together the furniture in the QC Lab.

I called Jacque Holden to tell her that I had not received the #9 Fee. She said that PATH made the transaction through a Seattle local Bank instead of a New York one. She will Fax me the Quetzales amount.

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I went to LA ALFOMBRA MAGICA to inquire why they had not started to place the baseboard in the QC Lab. The Manager told me that they still had to get them out of costums. We ordered the floor and baseboard on March 24, 1993, more than seven months ago.

The Air Conditioning equipment is being tested, minor problems have arisen but are being corrected on the spot.

November 5, 1993.

I went to PRECASA to see if they were manufacturing the items that Humberto Zardo asked me to order. (October 20, 1993) They told me that tomorrow Saturday the support for the S. Howes and the platform for the Ross Mixer would be sent to the construction.

The steel cover for the Ross Mixer came with the hinges broken. We will have to put new hinges.

We are working in all fronts. We will finish on time with three days to spare.

November 6, 1993.

I called LA ALFOMBRA MAGICA to find out why they had not started putting the baseboard in place. They gave a different story this time: They had sold it.
I told them that the dedication was going to be November 15, 1993. They promised to get it done by then. I doubt it, but I will push for it.

PRECASA sent the S. Howes with its support and the Platform for the Ross Mixer.

I called a welder to put four new hinges instead of the three broken ones in the Ross Mixer.

The flange and the adapter for the suction motor that goes in the chimney are stil being manufactured.

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The Air Conditioning is being put to use throughout the whole area to test it.

November 8, 1993.

The flange and adapter for the suction motor that goes in the chimney of the Acids Hood arrived at the job.

We have to make a support for the motor of one of the Fillers. I called a machinist and explained how we wanted to make such a support without interfering with the rest of the operations.

November 9, 1993.

We are cleaning up the premises.

Dr. Chang of AID was at the construction and asked if we were going to finish the job on time. I told him that we were, and to top it all that we were going to finish it with three days to spare. Ten months from January 18, 1993.

The Commemorative Plaque will not be finish by the 15th. of November because we got the information too late for the amount of time that requires to manufacture it.

November 10, 1993

I was at the construction and Dr. Chang of AID approached me to find out if the Commemorative Plaque was going to be ready by November 15th. I told him that we got the information with not enough time for the manufacturer to make it, but that I would ask him to give me the Mold to be used for the dedication.

Today we installed the support for the motor of one of the fillers, the Norwood Machine.

The plumber is connecting the compressed air pipes to the Mixer. (Ross Mixer)

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November 11, 1993.

Humberto Zardo is checking all the equipment.

The Manufacturer of the Commemorative Plaque wil deliver the mold on Saturday.

The Plant, with minor details, is finished ard opperating. It was done withing the time and budget.

November 12, 1993.

We have been buying things that were missing in the Machines, for example: the connections of the compressed air to the Mixer, the manometers for the propane gas, etc., etc.

We went, Humberto Zardo, Jasbir Dhanjal and I to buy a Pump to recirculate the distilled water.

The people from La ALFOMBRA MAGICA delivered the baseboard but they did not installed it. Tomorrow Saturday I will call them again to start putting it in place.

November 13, 1993.

The workers of LA ALFOMBRA MAGICA started putting the baseboard in place but they did not finished. Being Saturday, it is very difficult to have anybody doing anything.

We have continued cleaning the premises.

I went to TALLERES MASELLI to get the MOLD that will serve for the dedication as the Commemorative Plaque. It looks like the real thing.

Humberto Zardo has kept on checking the machines.

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November 14, 1993. Sunday.

I went to the job to take some pictures for the Monthly Report.

Lic. Gálvez while cleaning the Norwood Machine, two of his fingers got cut in the machine; He had to be taken to the hospital.

We have continued making the final touches like retouching the edges between the wall tiles and the walls, cleaning drops of paint in the floor, etc.,etc.

November 15, 1993.

I called LA ALFOMBRA MAGICA and told them to finish placing the baseboard.

Today was the Inauguration of the Plant.
The people from AID were present and they were given thanks for their involvement and financing. To PATH many thanks through Humberto Zardo who have conquered their respect and admiration for his work and knowledge.

Tomorrow we will have the people from TECNICA HIDRAULICA to check the Hydroneumatic system because the pump is licking, not very much but it should not lick at all.

November 16, 1993.

I went to LAPROMED and talked to Humberto Zardo who was imparting his last instructions to Lic. Gálvez.

I gave Humberto Zardo my Voucher for Fee #9. I got the notice of PATH's deposit yesterday from Banco UNO, S.A. Thank you.

I took the mold of the Commemorative plaque back to the manufacturer so they will be able to poor it in bronce.

This week and the next one will be used to fix every thing, that it is not up to

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standards. The Subcontractors were called to start setting right,things that were left improperly laid as per specifications.

November 19, 1993.

I went to LAPROMED and found that Ing. Caballeros of CONSTRUPOR had taken some of his people to give the final touches to his work.

The Plumber was doing some connections in the basement where originally the distilled water was located.

I called CARPINTERIA CENTROAMERICANA and told them to fix some of the glass support of the doors, they had left the nails showing.

I also called LA ALFOMBRA MAGICA, S.A. to finish putting the baseboard because by contract they still had to put ten more meters. The extra tiles that they did not put in place, I'm trading them for more baseboard.

We are sealing all the lams with Butil around the edges.

November 23, 1993.

Humberto Zardo called and I gave him the latest of what we are doing.

He wants to give LAPROMED the Plans "AS BUILT". I told him that the changes were in the electrical and that we have already doing them. The other Plan that will have to be corrected is A-2 where we will eliminate the wall where we made the corridor. We also will eliminate the entrance door to room 308 where it says "Personal " = Personnel.

I have left the Foreman at LAPROMED sealing the lamps with butil and reparing minor things.

Humberto Zardo wants to put a second Bugs' Lamp in room 307 on a pedestal. I'll send a machinist to build one.

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November 24, 1993.

I went to LAPROMED to check if the Foreman was doing the repair work and fixing some of the things that others had done to the job.

La Alfombra Mágica installed the extra Baseboard in rooms 101, 306, and 309 but missed the exterior of room 402.

November 26, 1993.

I went to LAPROMED and talked to Lic. Luis Gálvez. Everything that they asked for was done.
We still have to do: the recirculation of the distilled water and the covers of three chimneys.

There is enough Baseboard for the exterior of room 402 but La Alfombra Mágica, S.A. has not sent anybody to put it in place. I made a deal with them, I'll give them back four boxes of vinyl floor left over, and they will put seventy linear meters of extra baseboard. All together it comes up almost even, they will have to give us back Q.8.49, about $1.50.

CONSTRUCTION TIME & COST ESTIMATE OF O.R.S. AT LAPROMED.
TIEMPO DE CONSTRUCCIÓN Y COSTOS. REMODELACIÓN LAPROMED.

DESCRIPCION	TIEMPO MESES	1	2	3	4	5	6	7	8	9	10	11	TIEMPO	COSTOS
DEMOLICIÓN	QUITAR PAREDES PISOS TECHOS EXISTENTES QUE SE INDIQUEN EN LOS PLANOS Y ESPECIFICACIONES NOTA IMPORTANTE: La Universidad de San Carlos, Administrativa, propietaria propietaria que quiere conservar nombre a una persona responsable quien dirija la demolición												0	23,000.00
MAMPOSTERIA	CIMIENTOS, COLUMNAS, PAREDES DE BLOCKS, HIERRO, PISOS DE CONCRETO												0	30,[illegible]
PLOMERIA	AGUA FRIA												0	[illegible]
	DESAGUES												0	[illegible]
	AGUA CALIENTE Y GAS INDUSTRIAL												0	[illegible]
	AIRE COMPRIMIDO												0	[illegible]
	EQUIPO HIDRONEUMATICO Y ALTENTADOR												0	[illegible]
	AGUA ESTILADA												0	[illegible]
	ARTEFACTOS SANITARIOS												0	[illegible]
	INSTALACIÓN												0	[illegible]
TECHO MADERA PRIMER PISO	ARMADURAS DE ACERO Y TECHO DE LAMINA GALVANIZADA 1220m² APROX.												0	[illegible]
PISOS	PISOS DE TERRAZZO PRIMER PISO												0	[illegible]
	LIMPIEZA DEL PISO DEL SEGUNDO PISO												0	[illegible]
PAREDES	PAREDES DE TABLAYESO, PRIMER PISO												0	[illegible]
	PAREDES DE TABLAYESO, SEGUNDO PISO													
[illegible]	ALAMBRE DE CONEXIÓN DE MAQUINARIA Y EQUIPO												0	[illegible]
DUCTOS A.A. (Equipo por aparte)	ALUMINIO Y CONEXIÓN A MANEJADORAS PRIMER PISO												0	[illegible]
	INSTALACIÓN DEL EQUIPO ADMINISTRATIVO SEGUNDO PISO													
	TRANSMITE Y REJILLAS													
TECHO MADERA TERCER PISO	ESTRUCTURA DE ACERO Y TECHO DE LAMINA GALVANIZADA 1220m²						NO						0	[illegible]
VENTANAS	VENTANAS FIJAS DE ALUMINIO QUE SE INSTALARAN EN EL CORREDOR DEL PRIMER PISO												0	[illegible]
AZULEJOS	SE COLOCARAN EN LOS BAÑOS Y EN LOS AMBIENTES 103 Y 101												0	[illegible]
PUERTAS	PUERTA ESPECIAL DE MADERA BARNIZADA SOBRE CALLE												0	[illegible]
	17 PUERTAS SEGÚN PLANOS												0	[illegible]
	PUERTA ENROLLABLE TIPO PERSIANA DE METAL												0	[illegible]
[illegible] SUPERIORES	[illegible] PRIMER PISO												0	[illegible]
	[illegible] SEGUNDO PISO													
PINTURA	PINTAR [illegible] PARA MANOS [illegible]												0	[illegible]
MANO DE OBRA	[illegible] PRESTACIONES LABORALES												0	[illegible]
IMPREVISTOS	5%												0	[illegible]
RECEPCIÓN	RECIBIR LAS PARTIDAS INSTALACIONES TERMINADAS Y FUNCIONANDO													
														Q 1,775,[illegible]401

NOTA: [illegible] AIRE ACONDICIONADO NO HA SIDO INTERPRETADO EN ESTE CUADRO DE COSTOS.

LAPROMED		
arqs. pelayo Linera & colaboradores.		Diseño Arq. P.L.L. / Dibujo Arq. P.L.L.M.
Propietario	TIEMPOS Y COSTOS	Fecha Junio 26-[illegible]
Escala: NO		TC-1 1/1
Arq. Pelayo Linera	3ª Calle y 7ª Avenida Zona 1	

NOV. 1993

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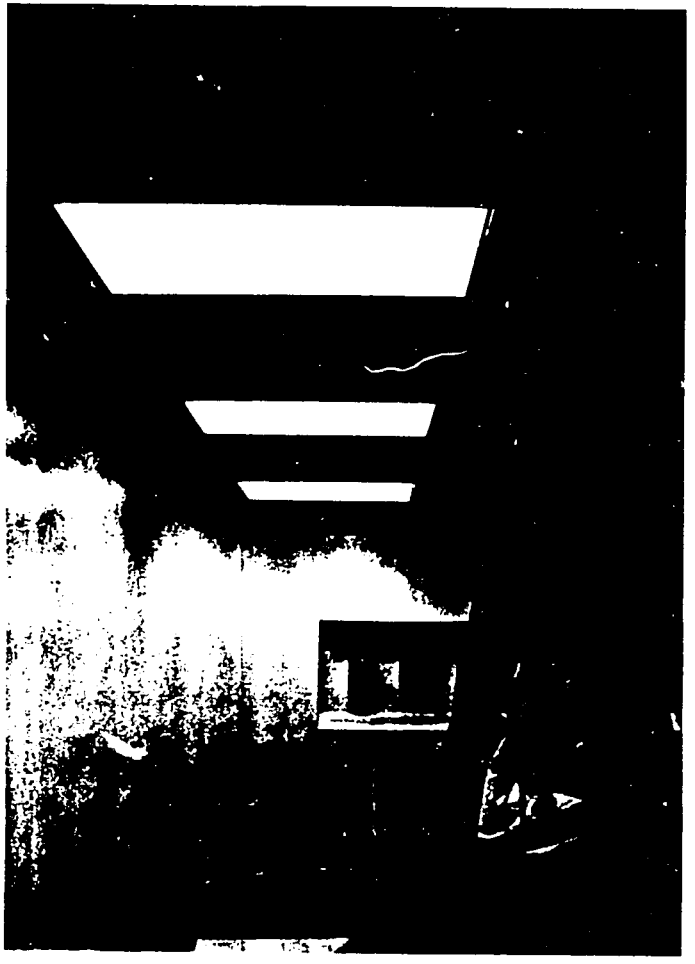

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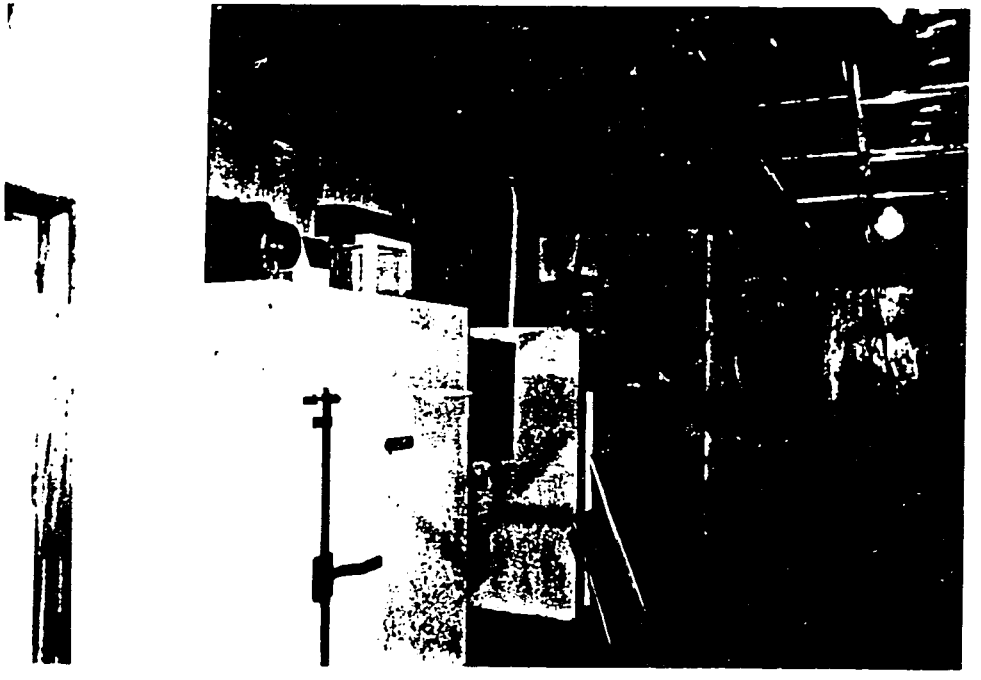

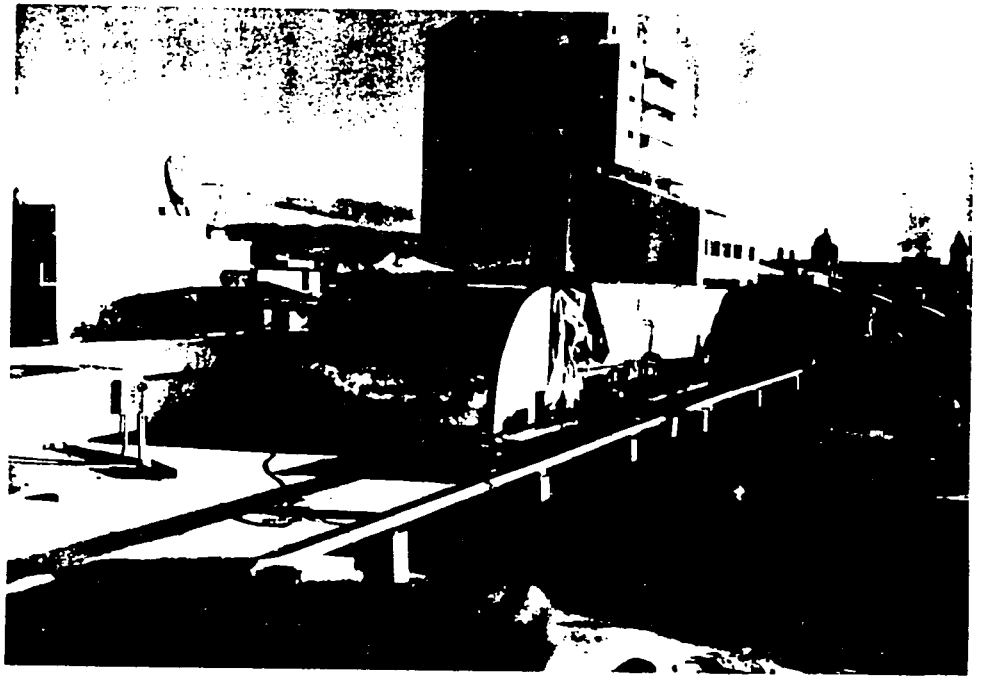

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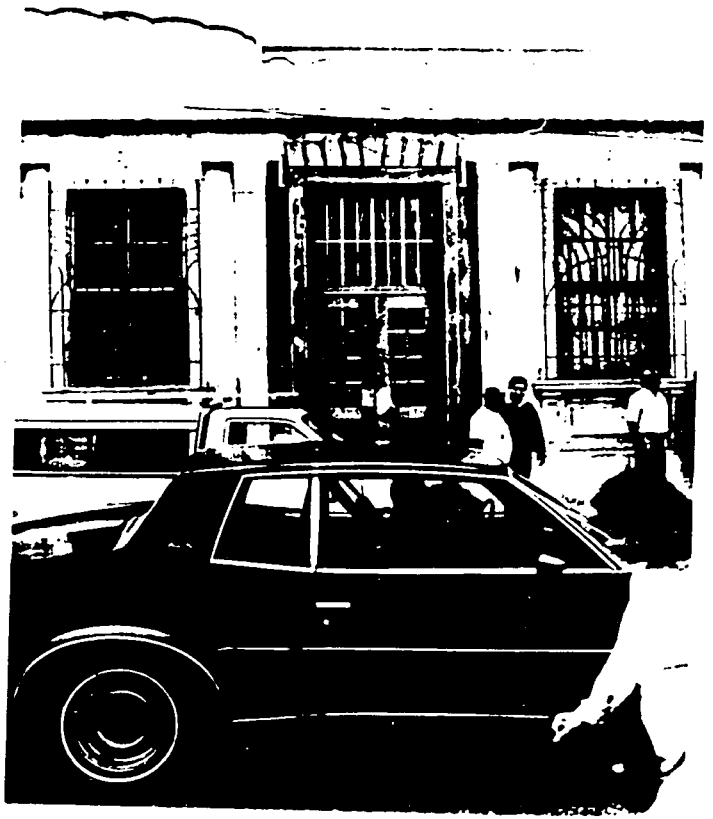

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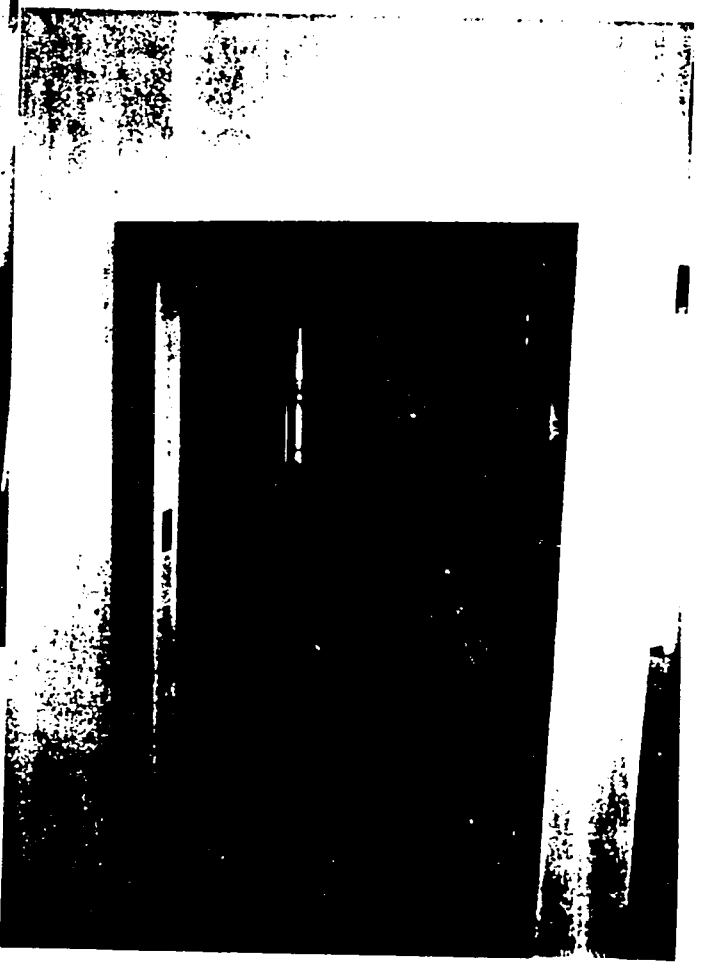

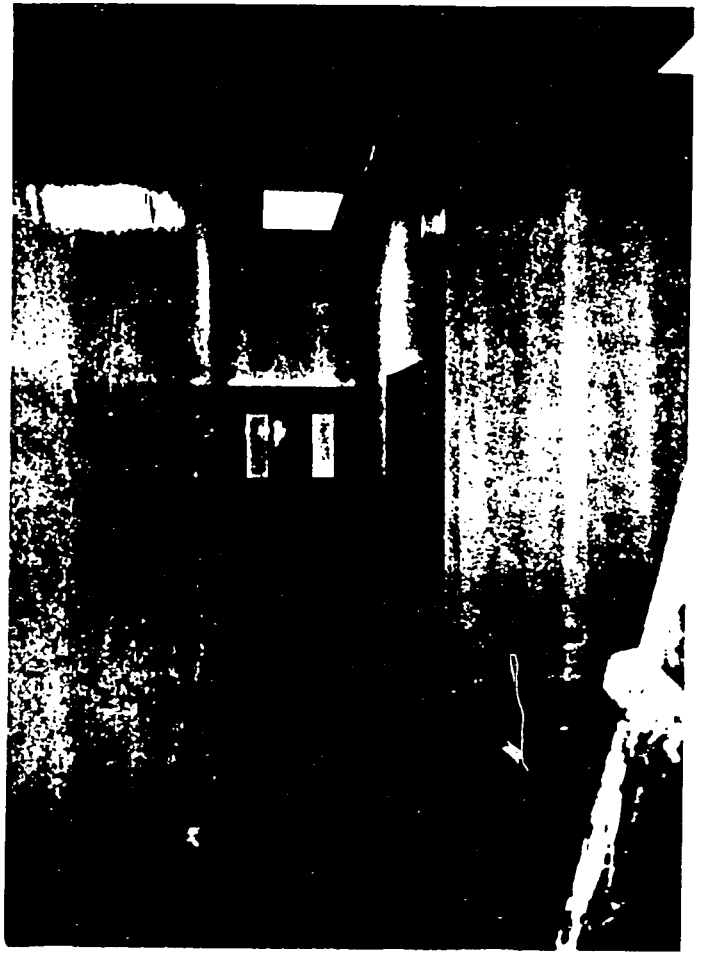

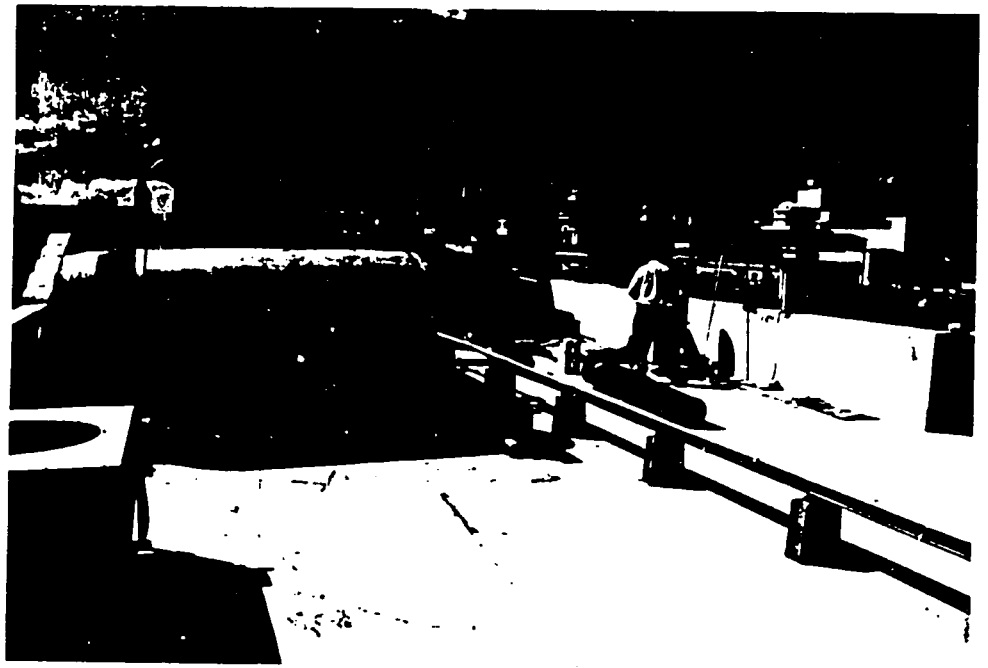

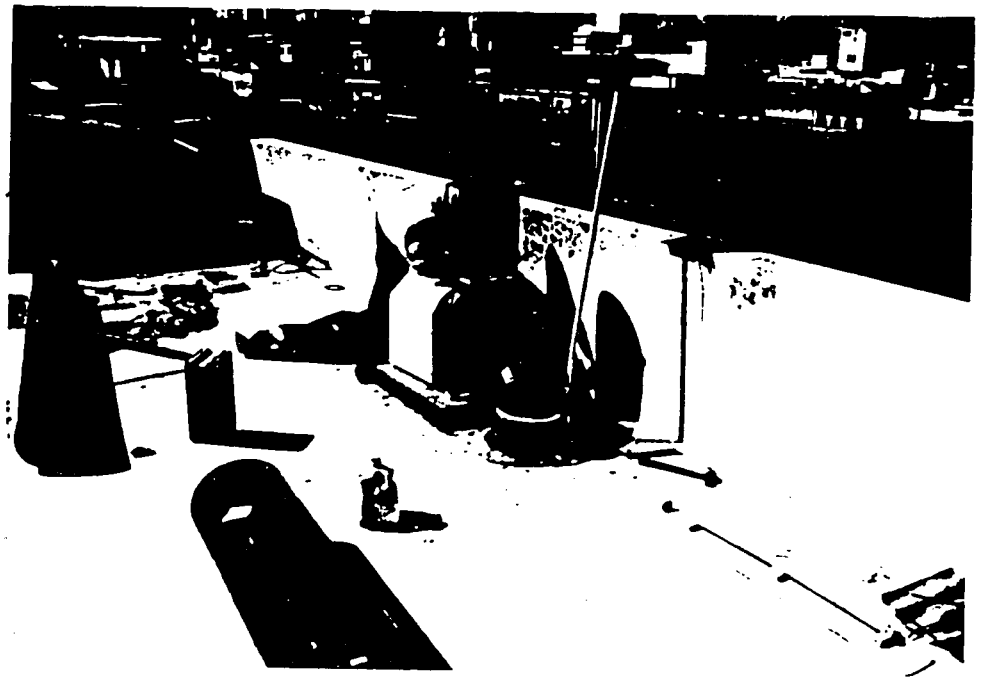

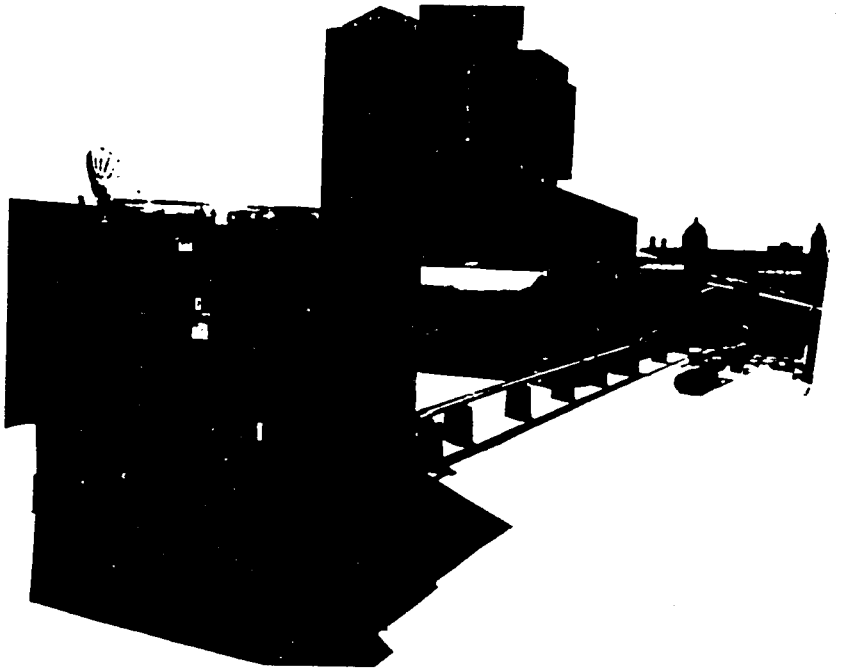

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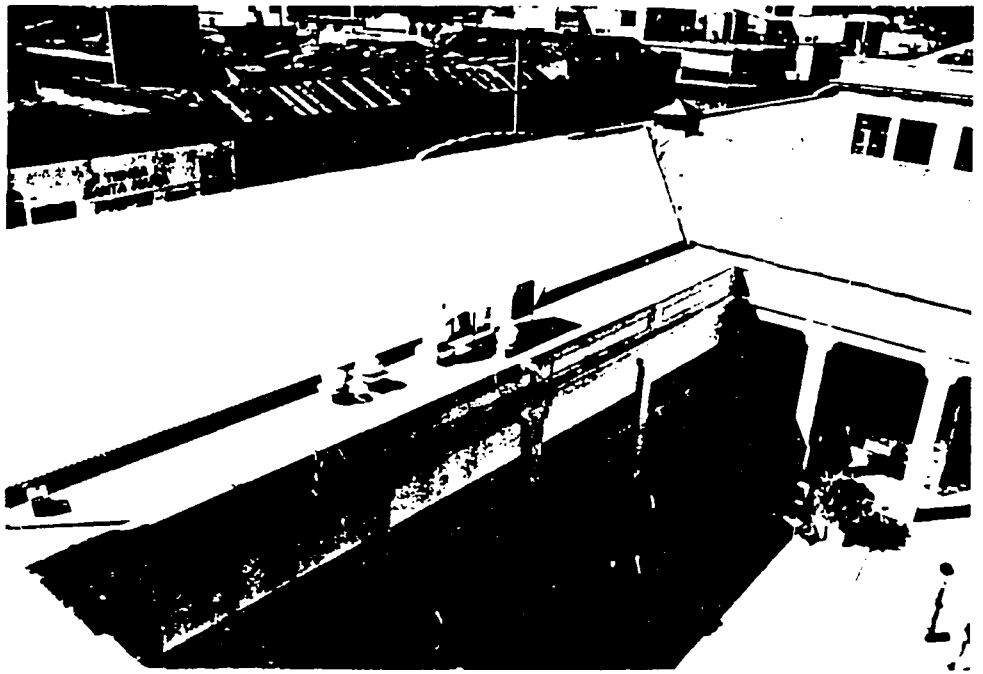
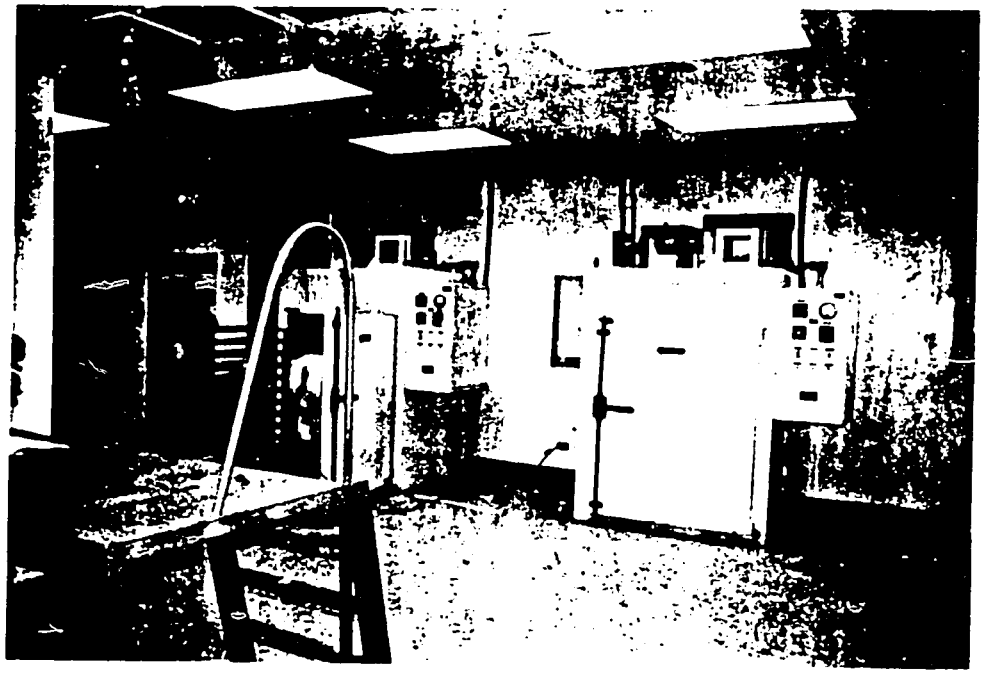
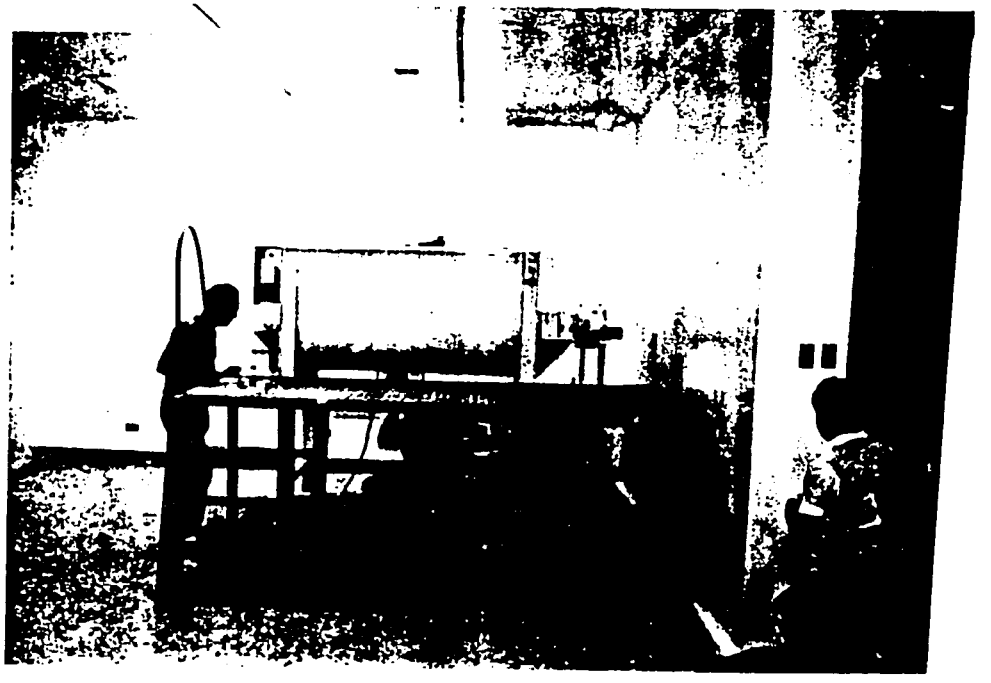
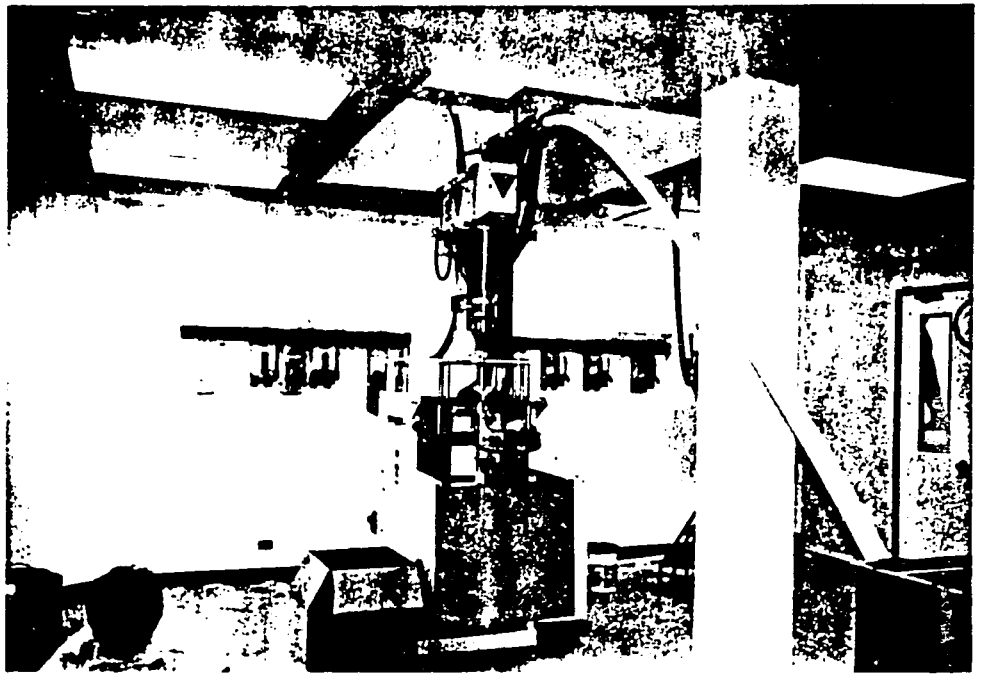
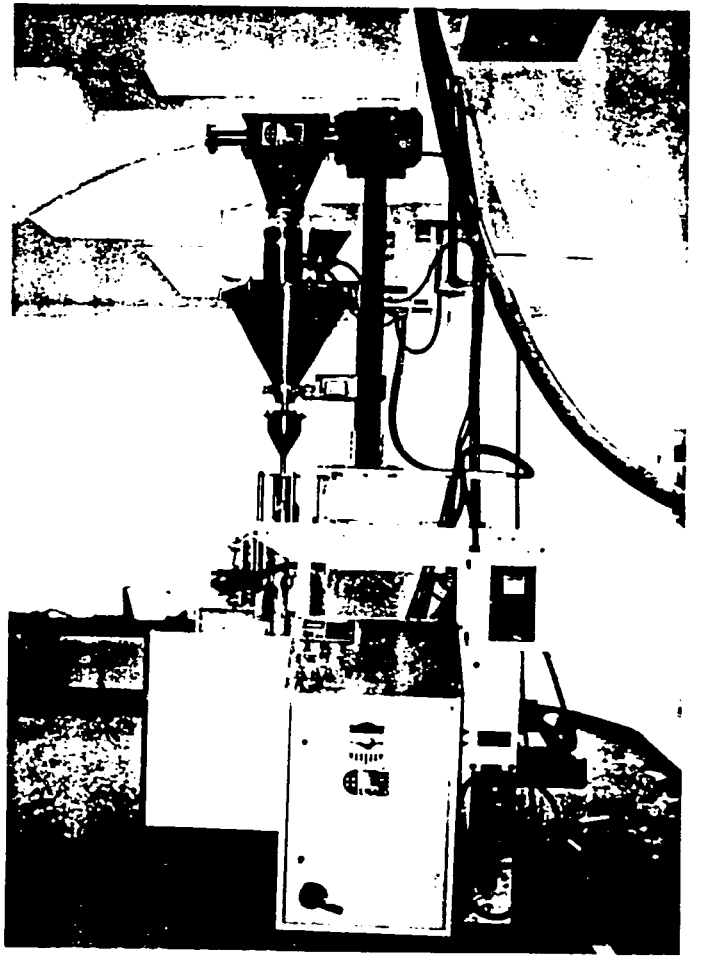






- NOV. 1993





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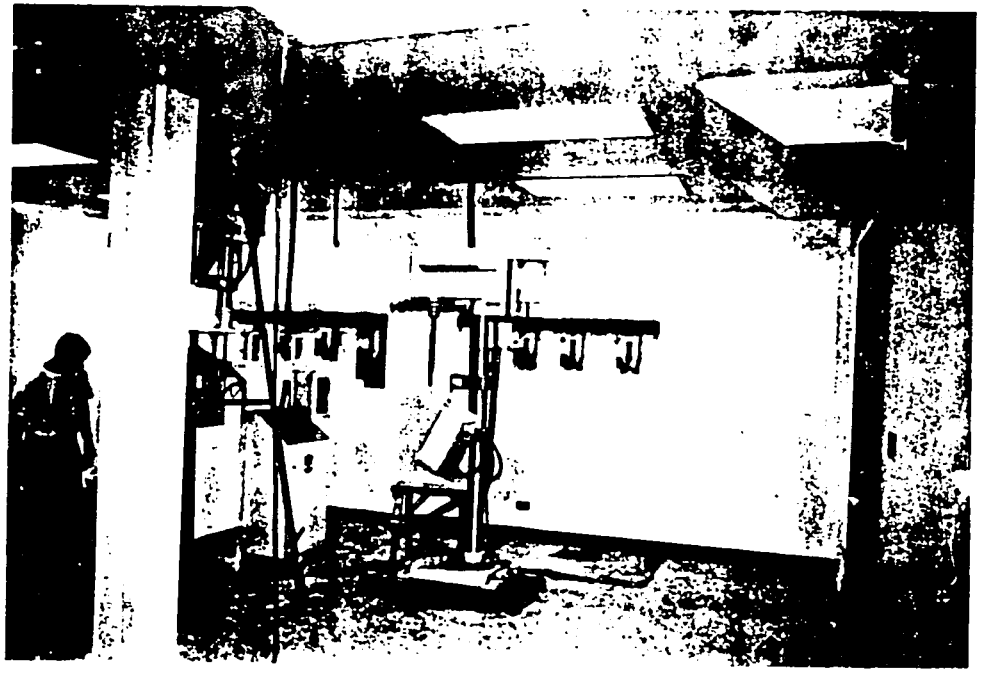

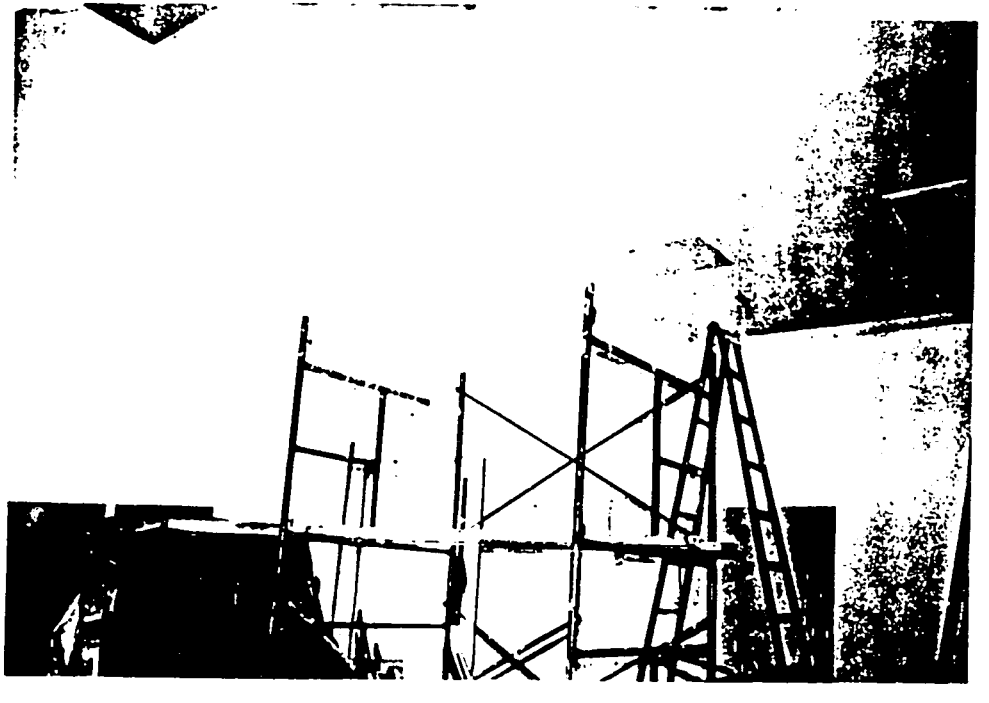

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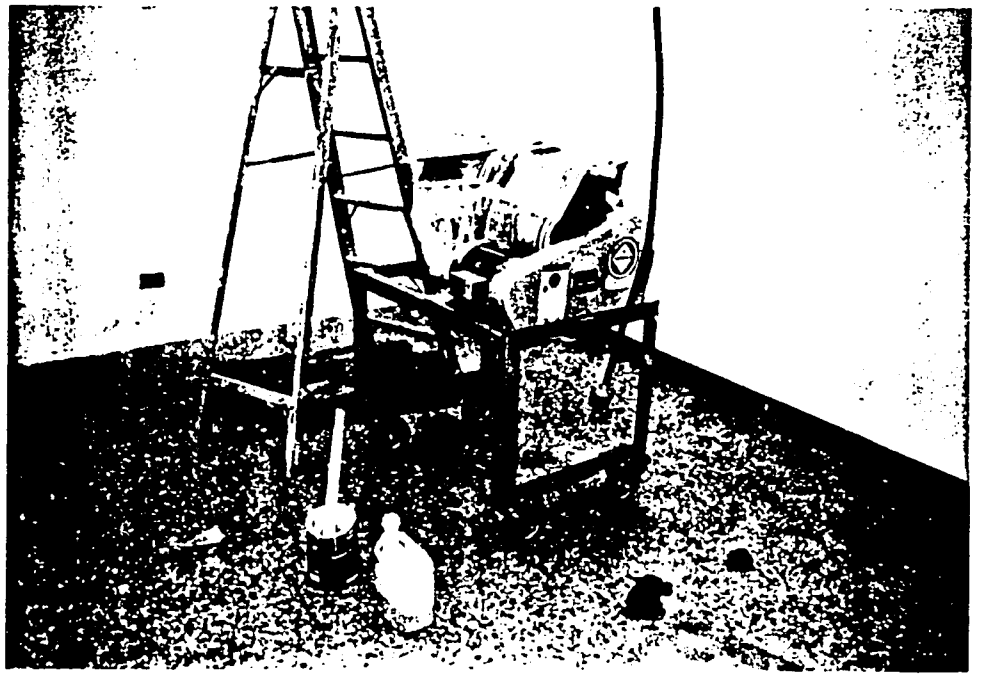

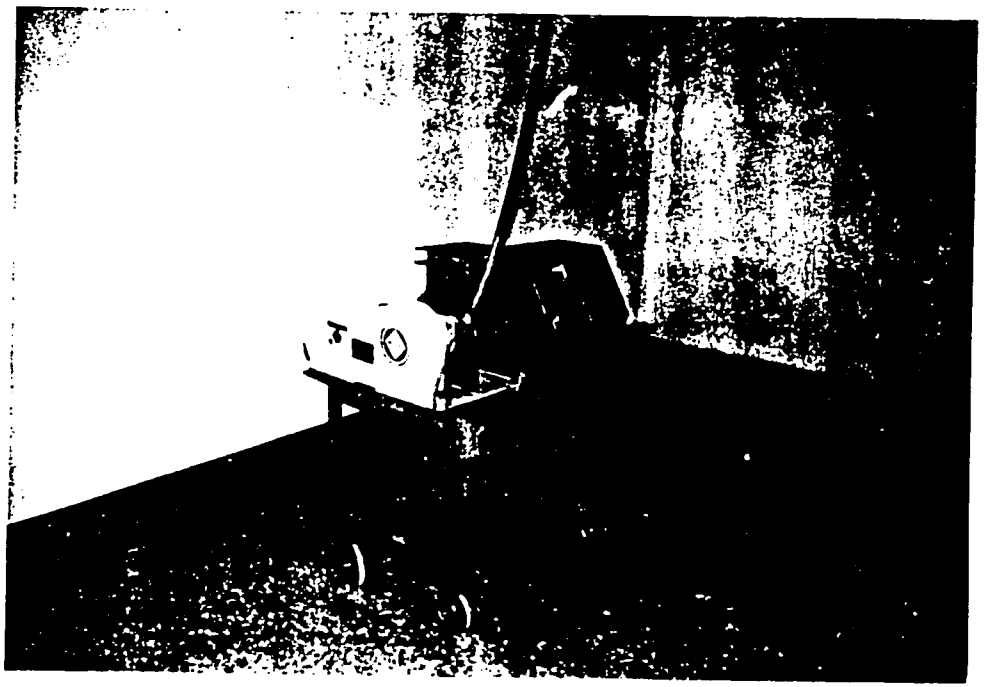

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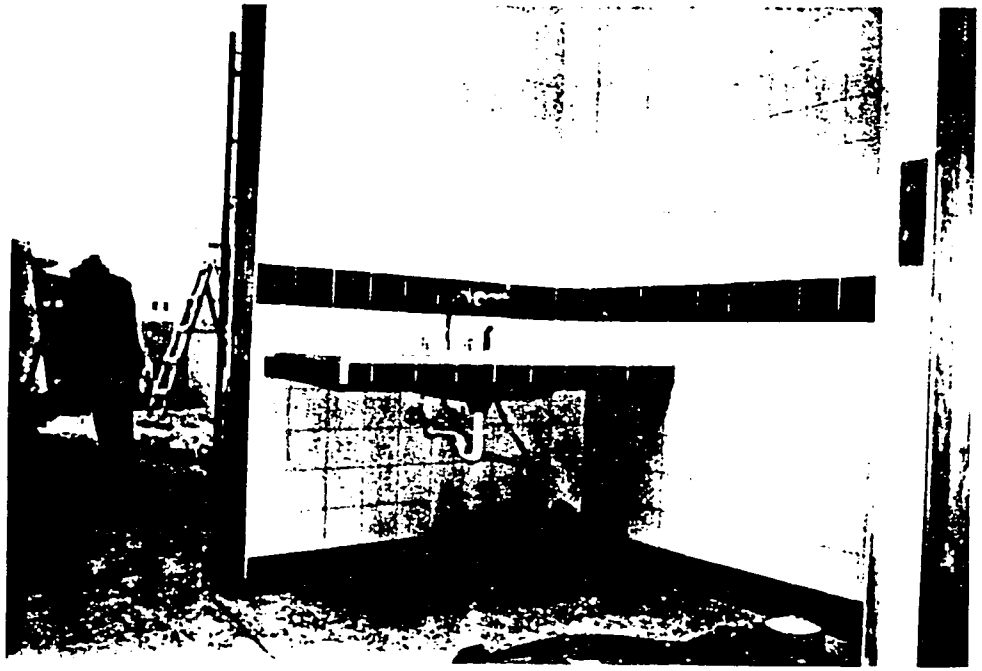

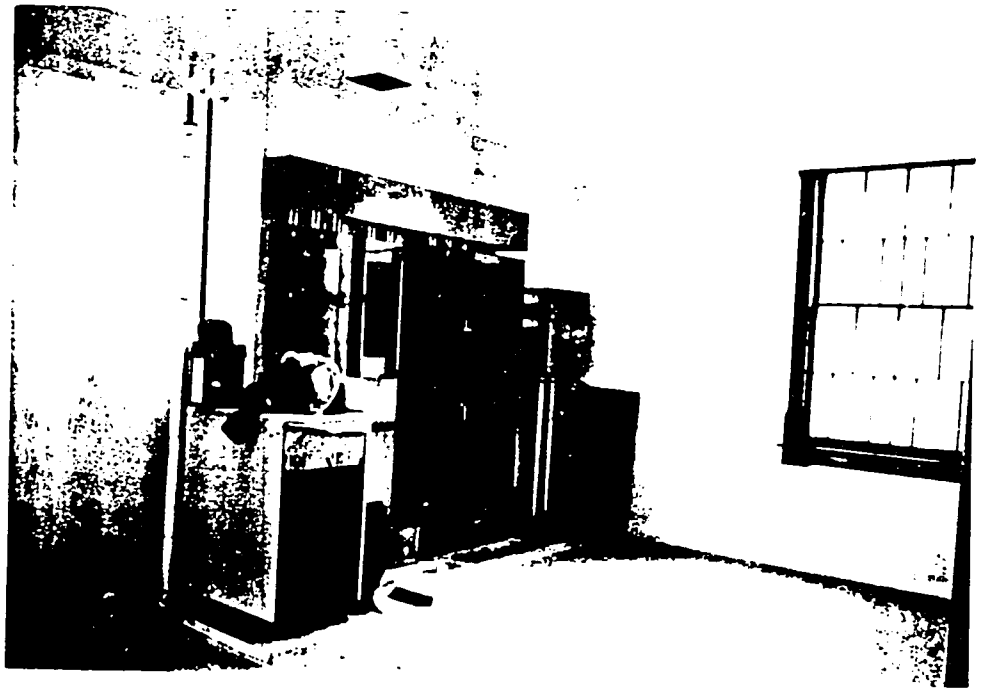

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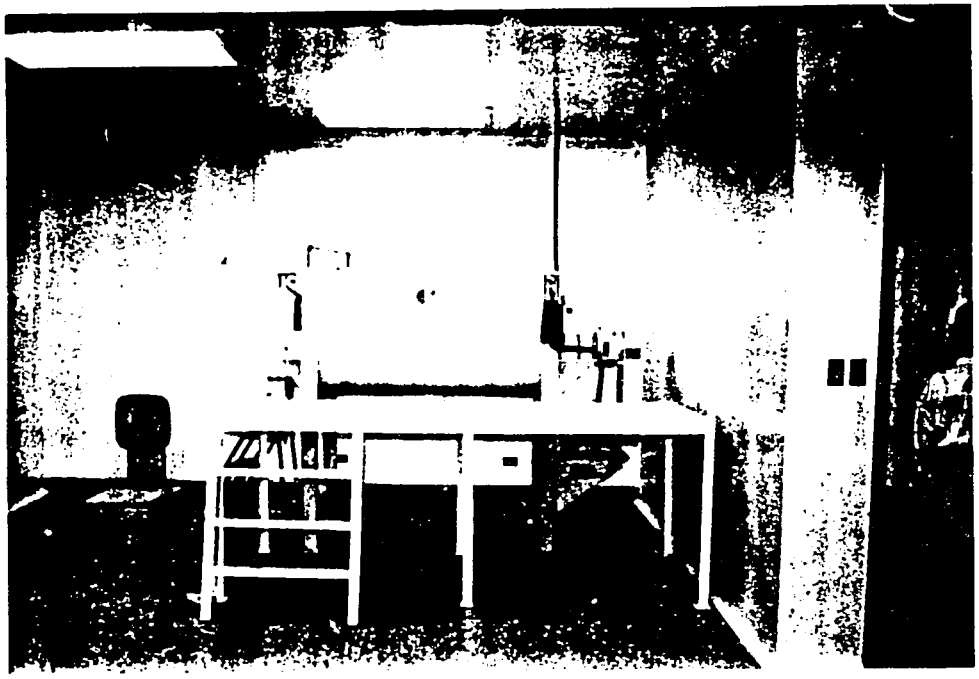

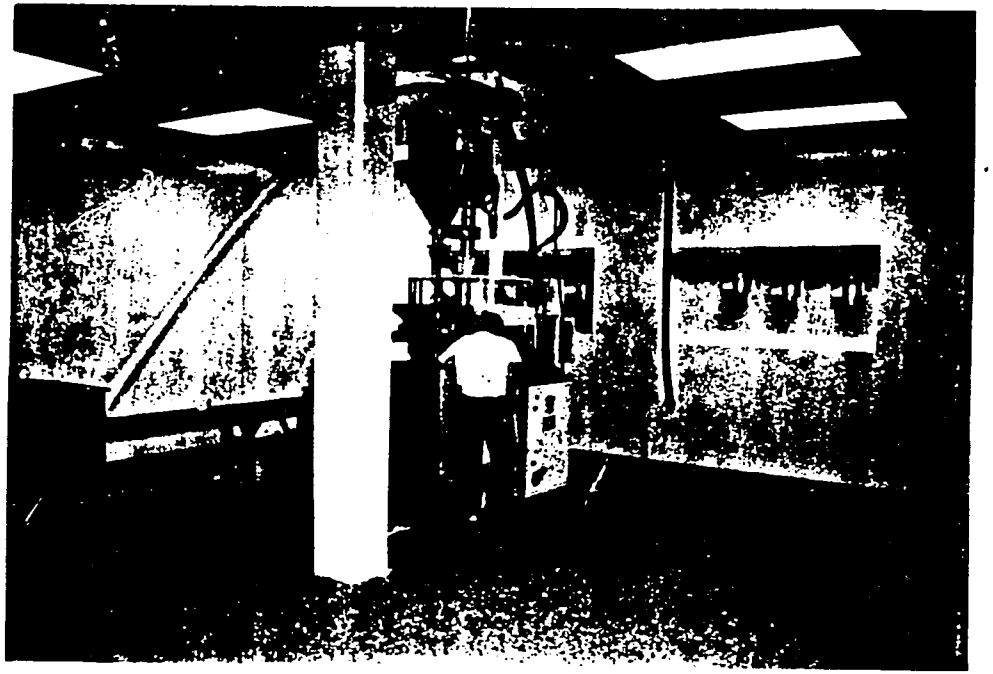

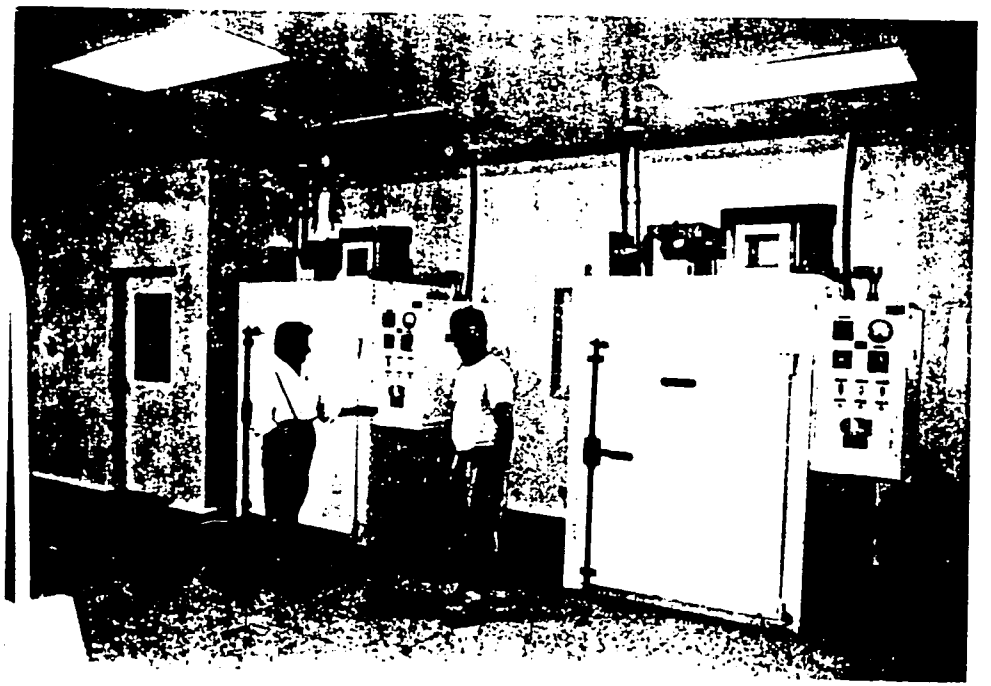

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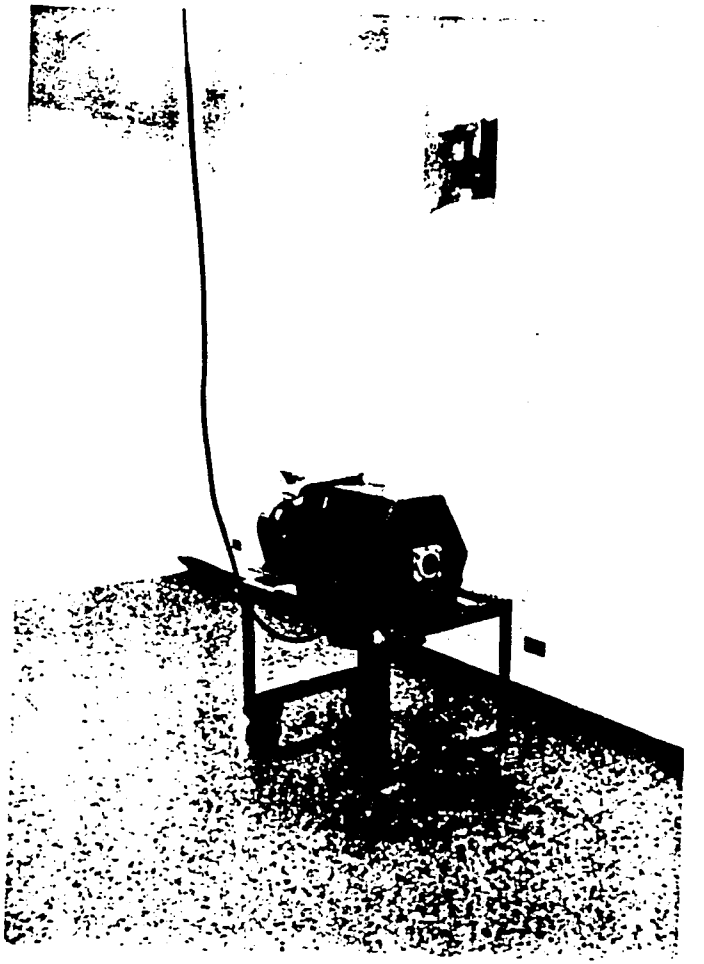

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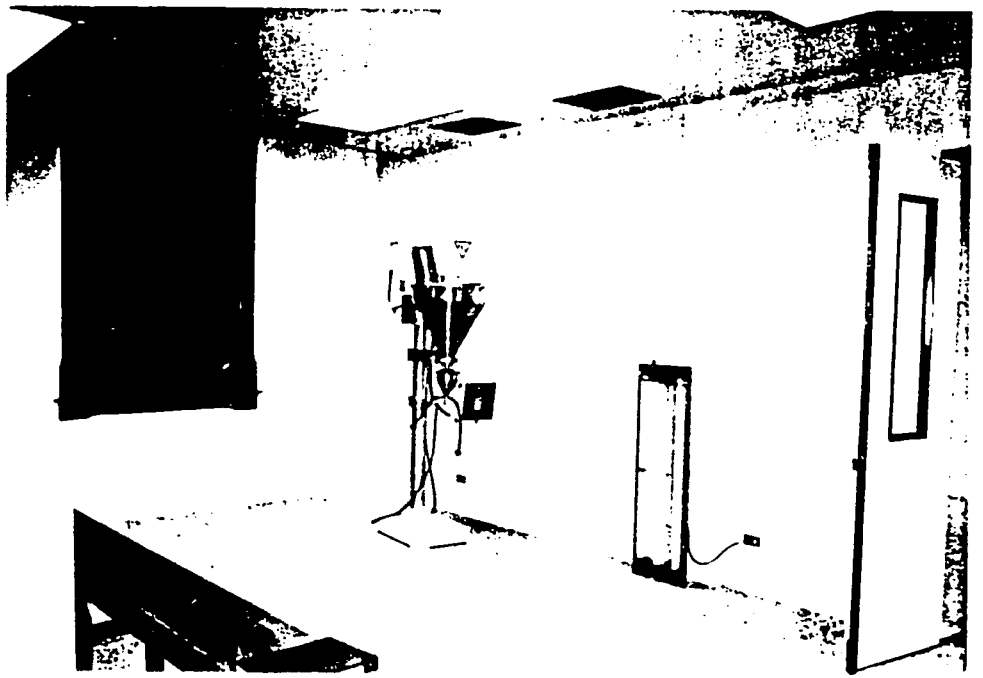

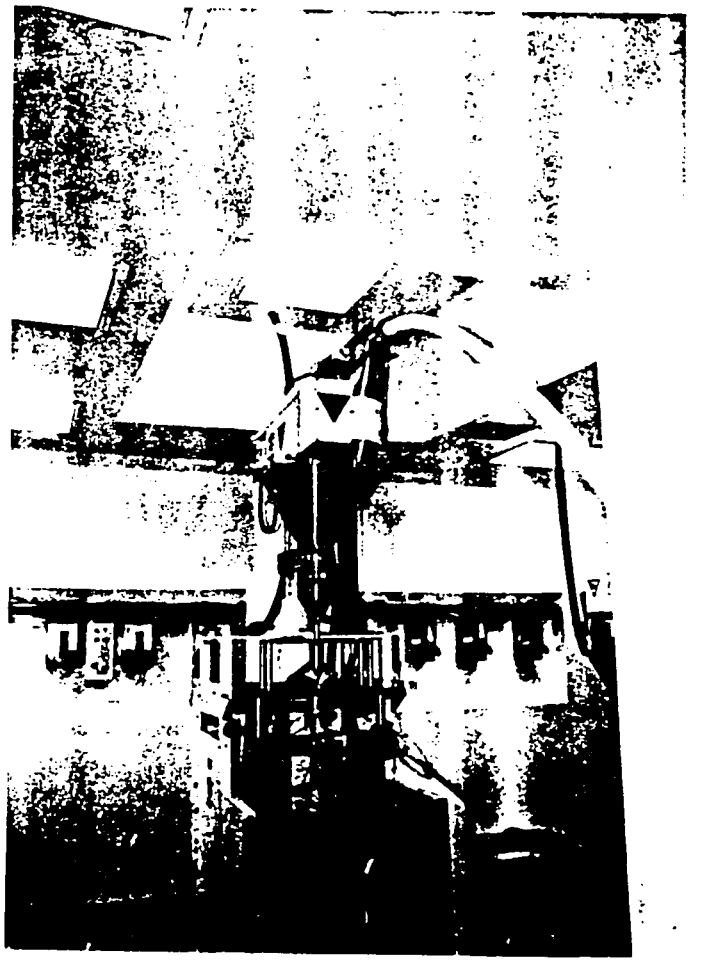

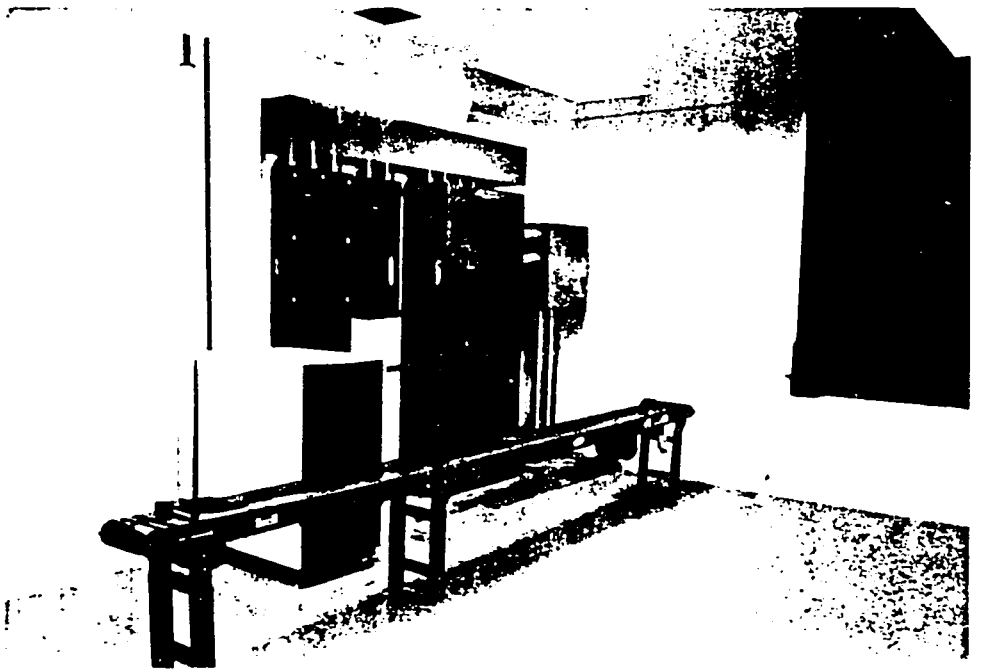

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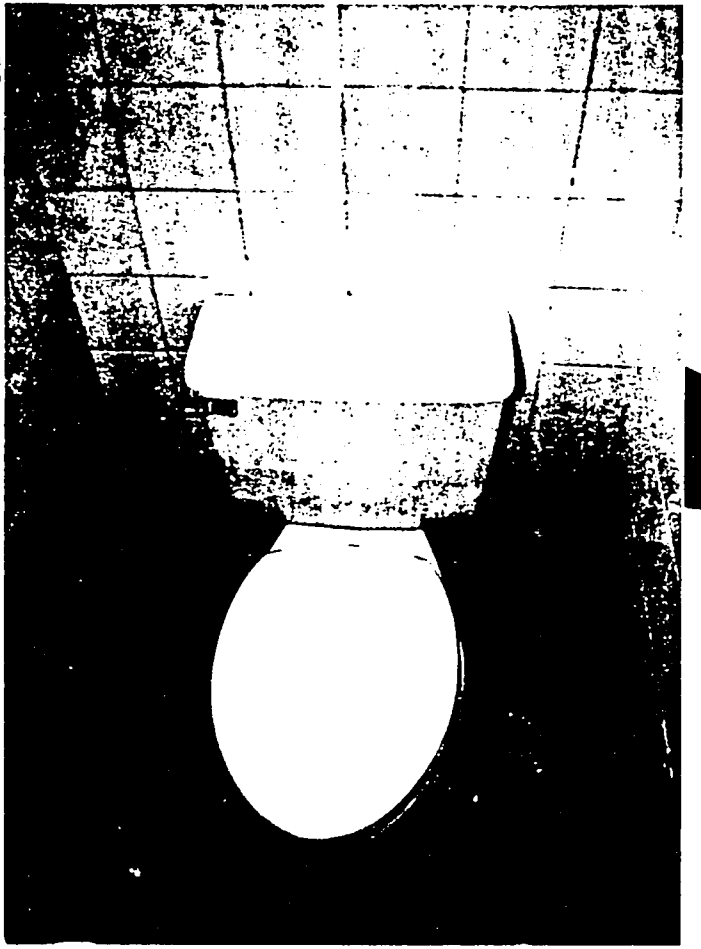

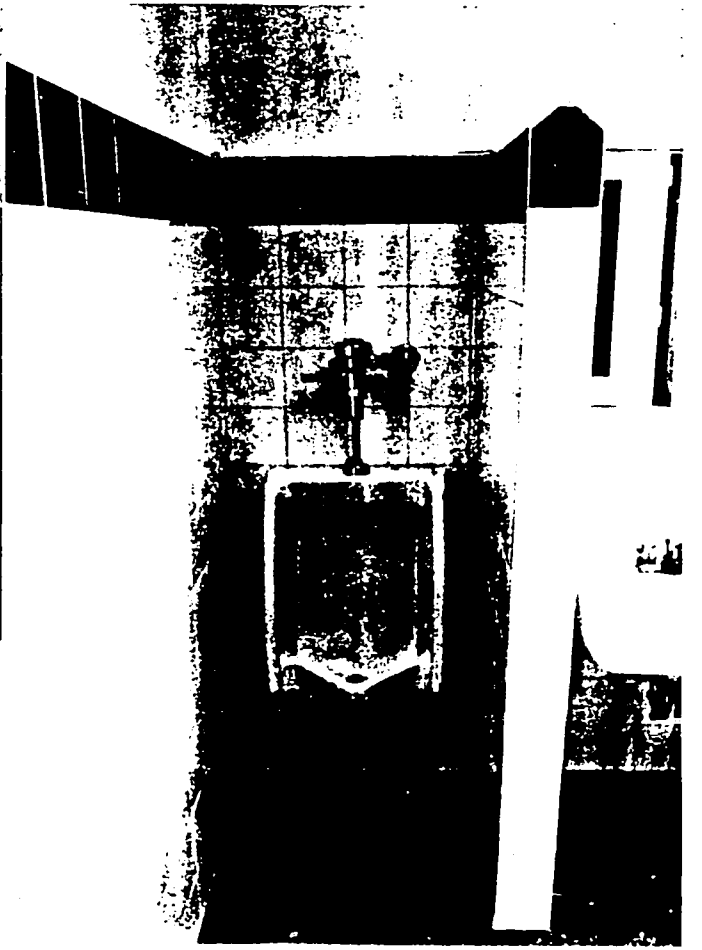

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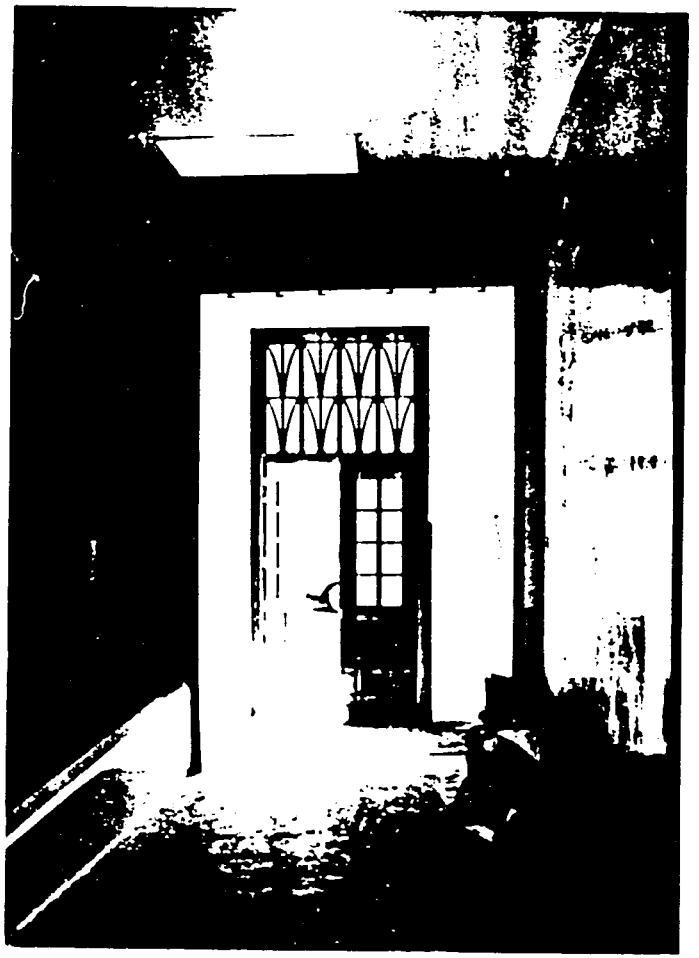

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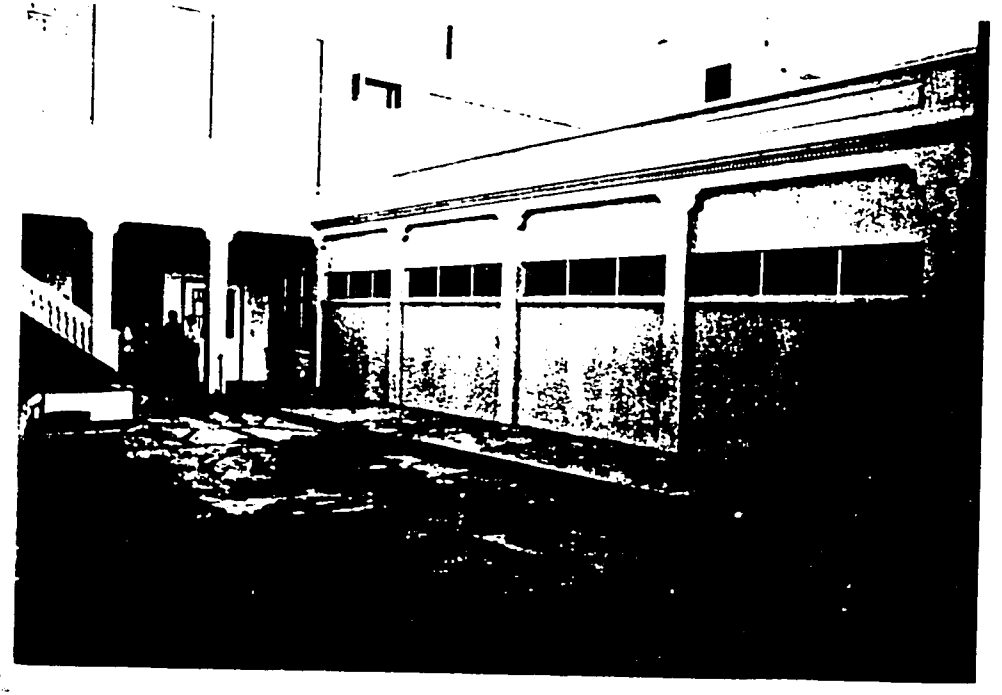

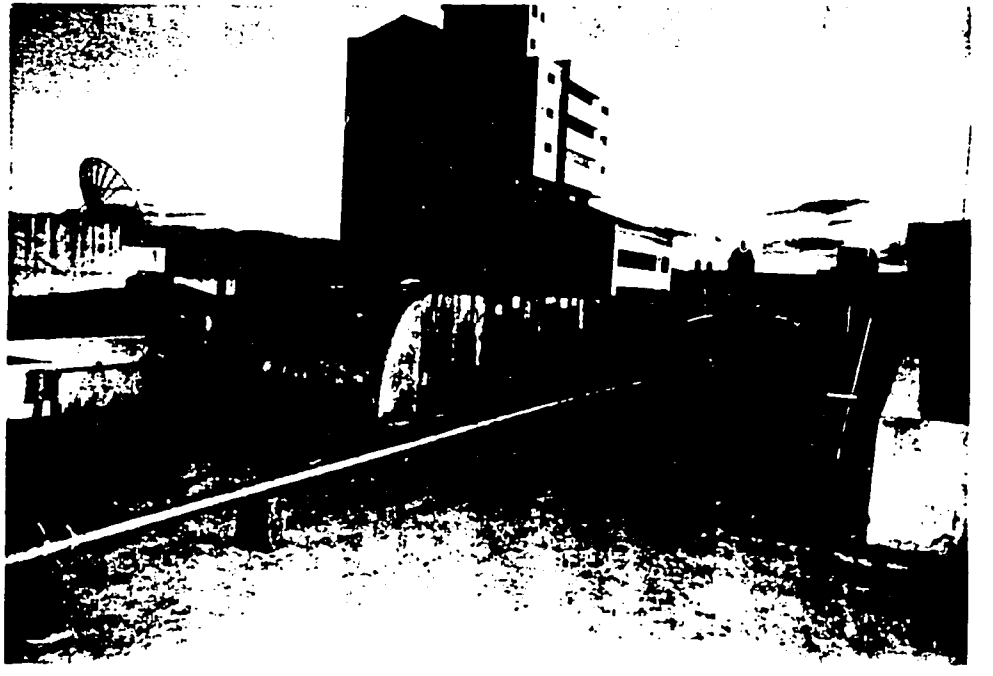

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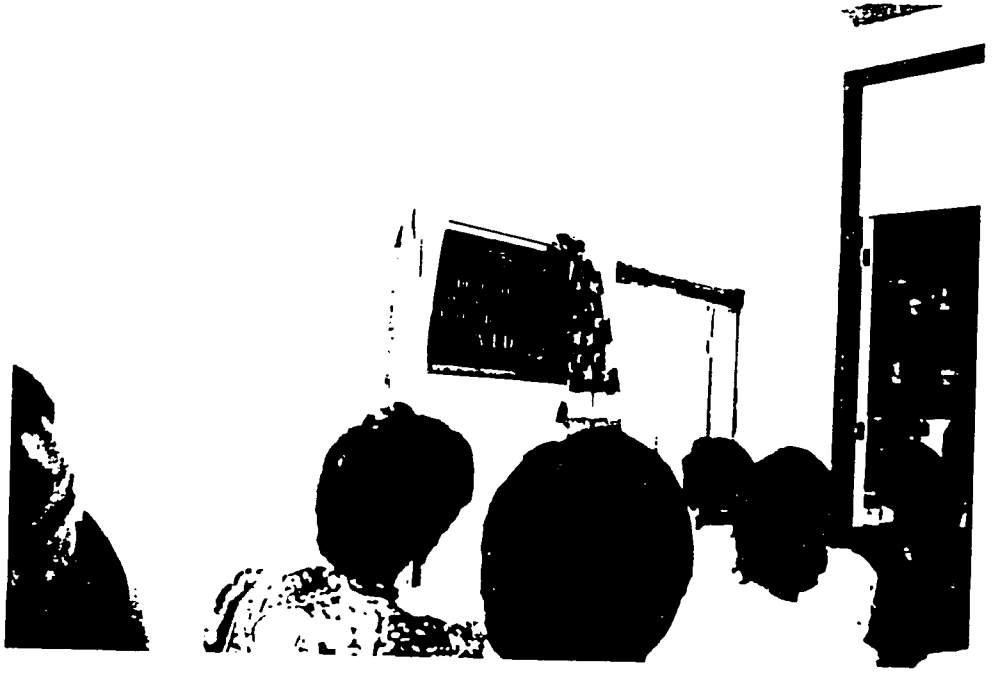

FELICITACIONES
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FELICITACIONES
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SALNARSYDRZSA

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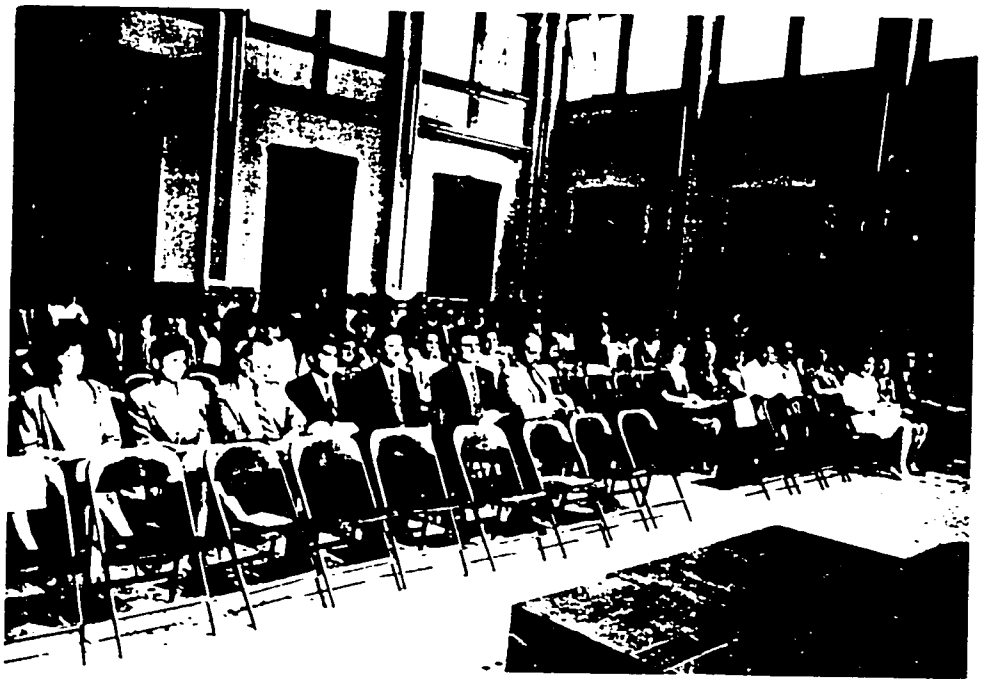

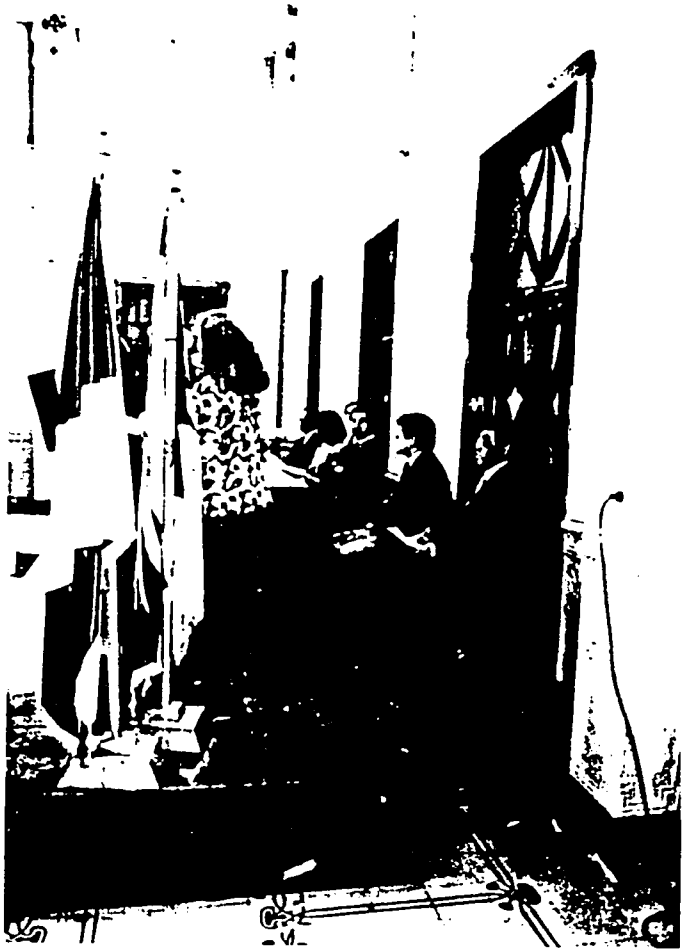

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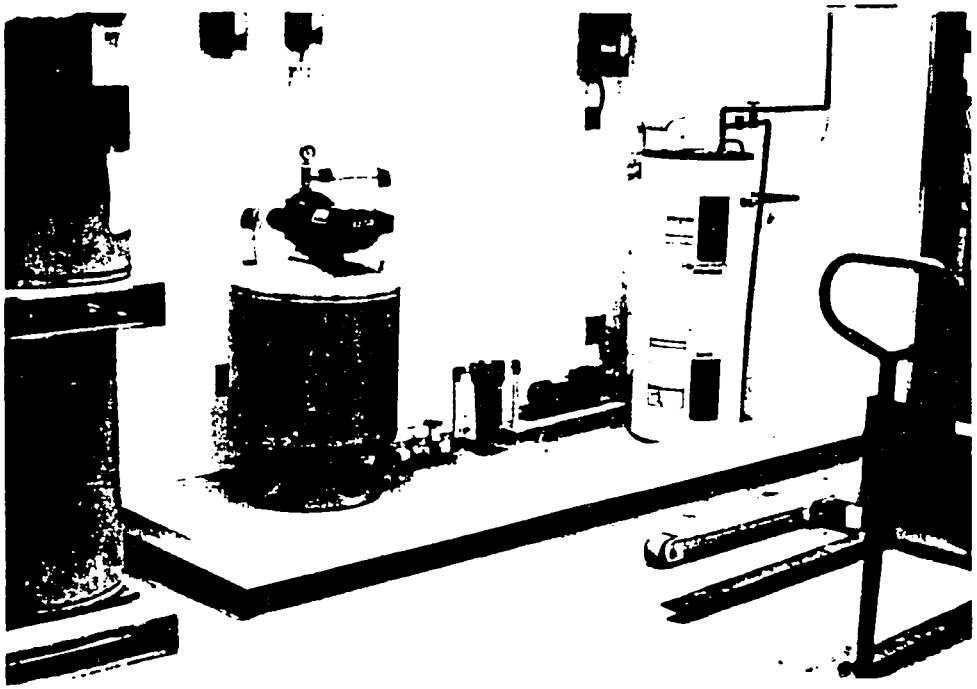

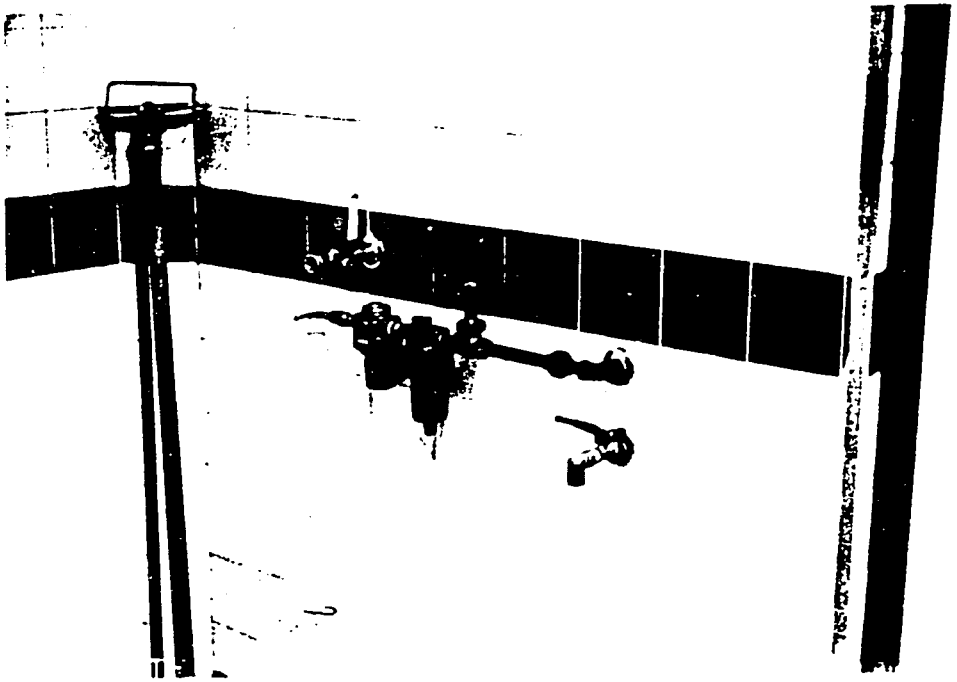

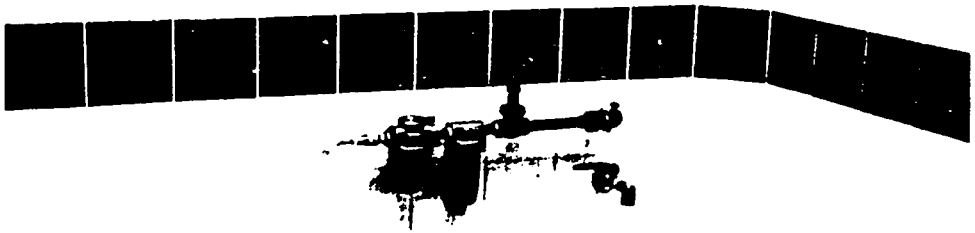

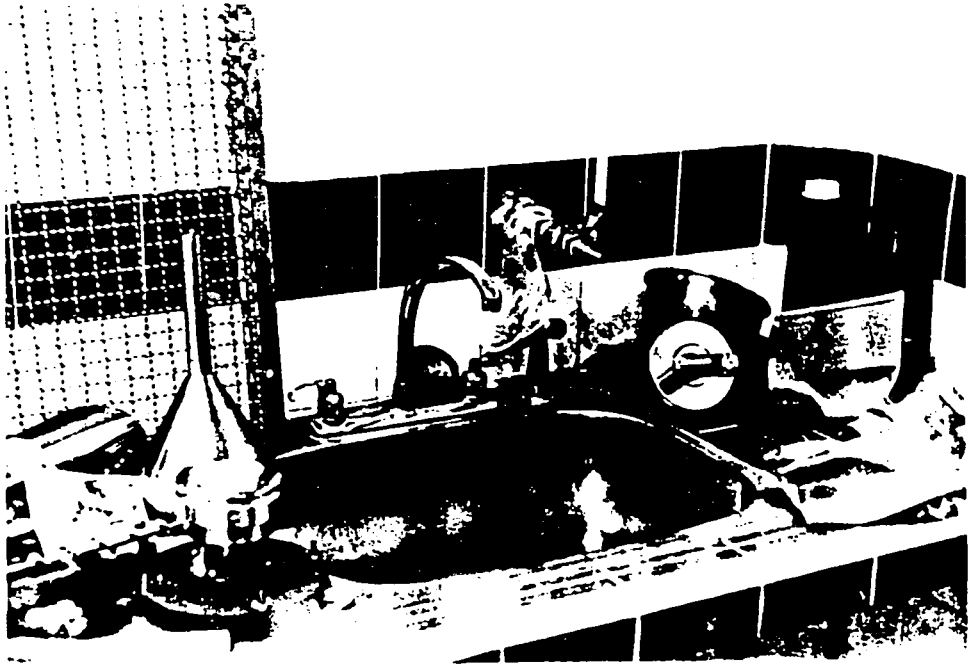

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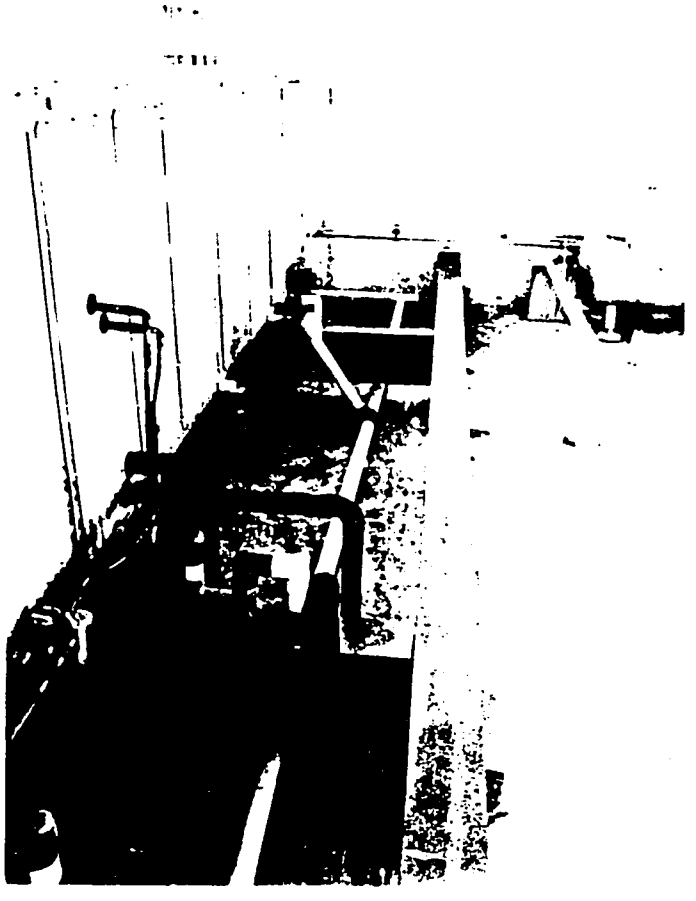

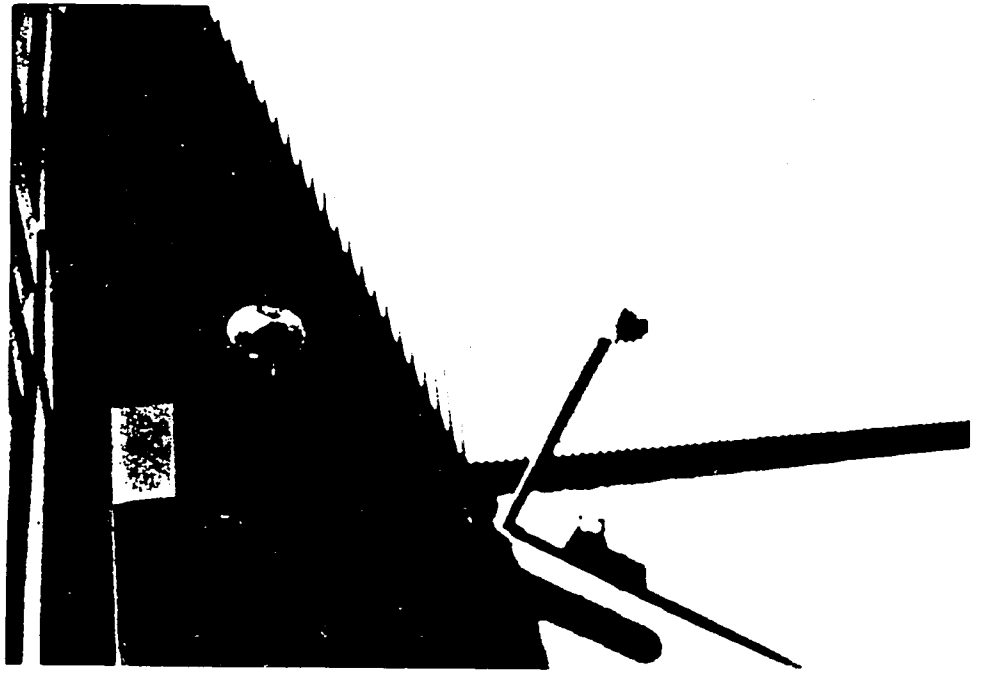

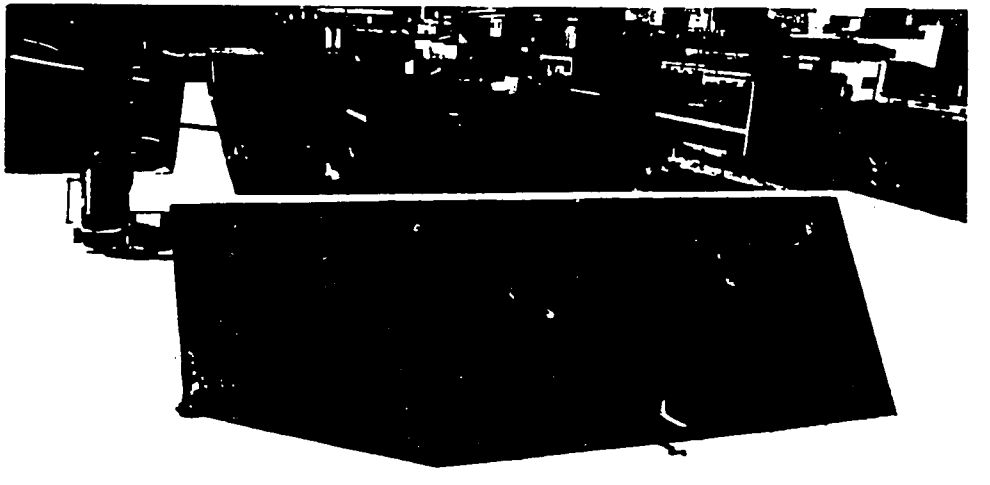

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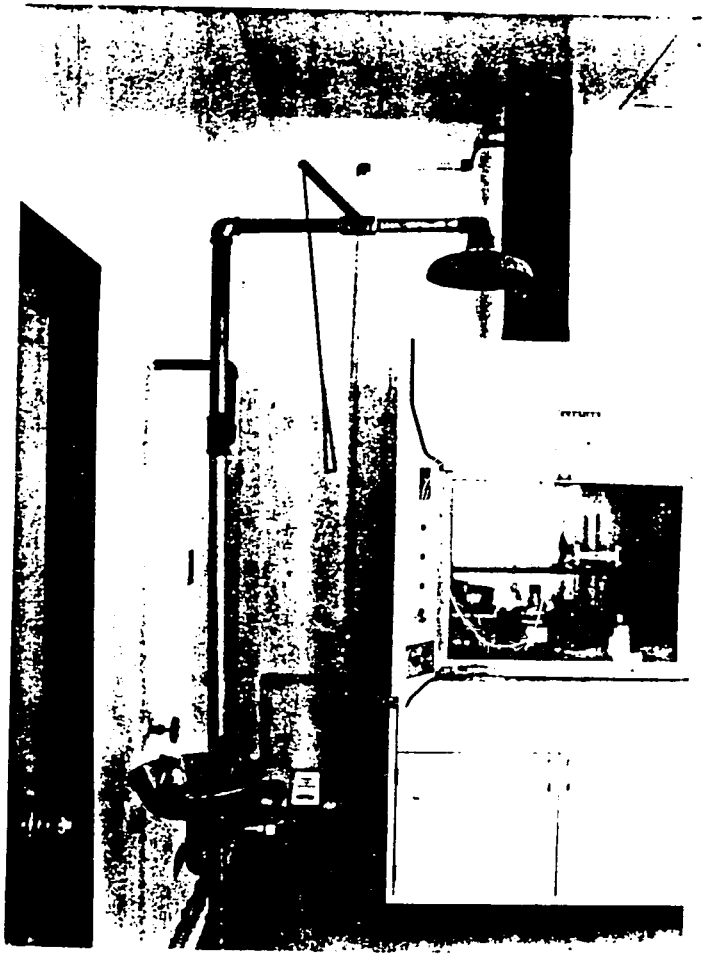

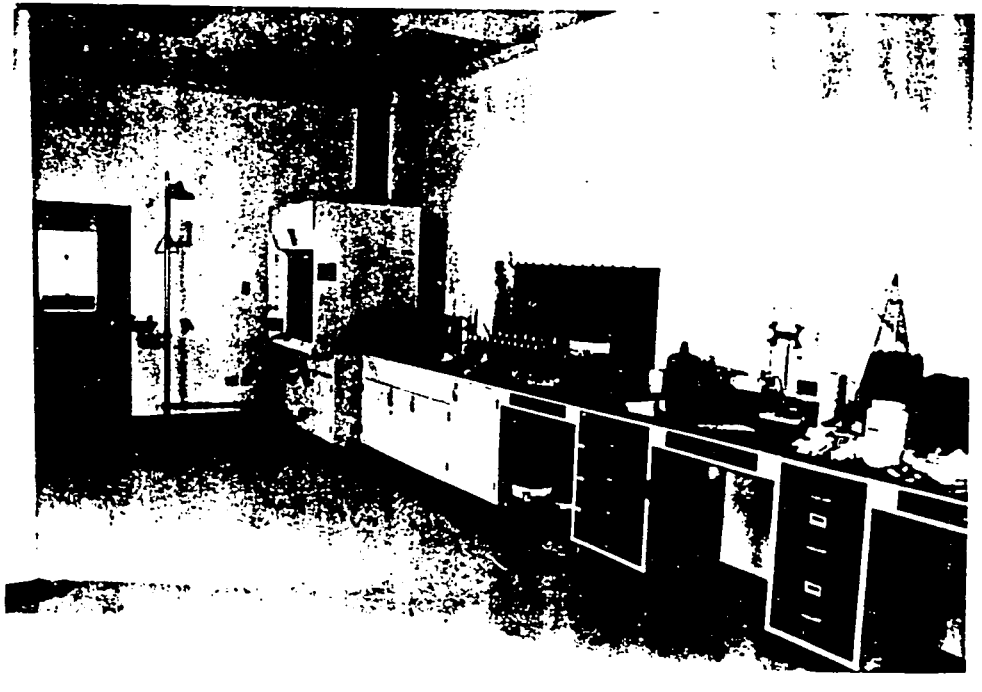

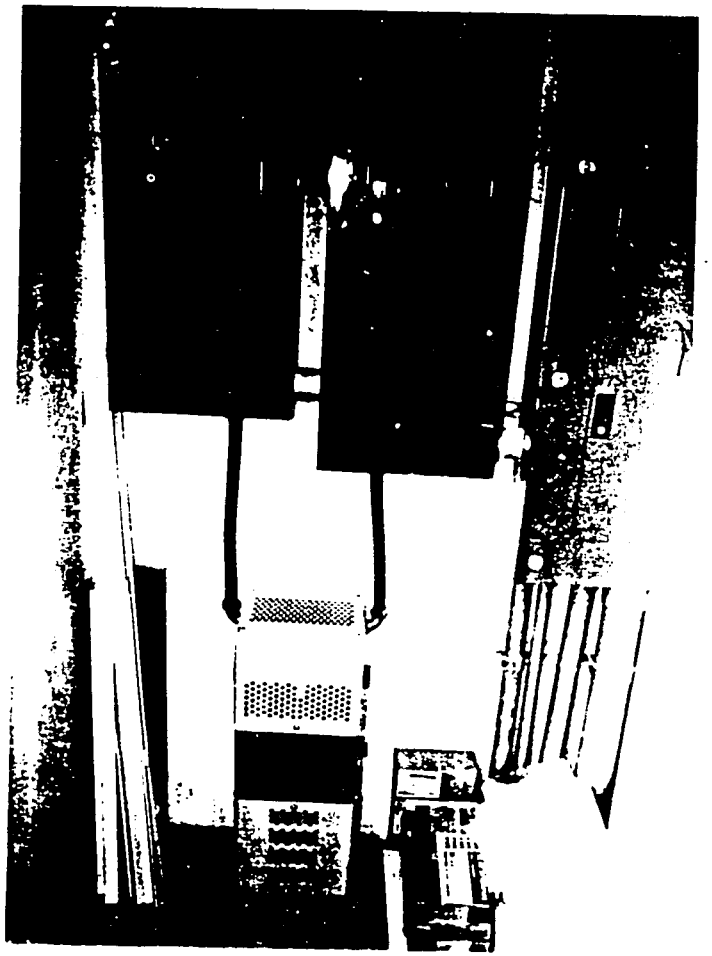

- DIC. 1993

USAID
DEL PUEBLO DE
LOS ESTADOS UNIDOS
AL PUEBLO DE GUATEMALA
A.I.D.

arquitectos pelayo llarena
& colaboradores
arquitectos e ingenieros
2a avenida nº 9-76 zona 1 guatemala c a tel 20647

ENOR es de PATH/AID

PLANILLA No. 11

brá No. Planilla No. -11- Correspondiente a la Semana

el 1° de noviembre al 30 de noviembre de 19 93

Salarios Líquidos Q ----------

ANO DE OBRA Bonificaciones Q ---------- Q ----------

ATERIALES: V I E N E N:	Q.189,522.45
Fact. No.2120 de DISTRIBUIDORA LAS 3 R's Y CIA. LTDA. flete	Q. 108.61
Fact. No.00086 de TRANS-YADIRA, sacado de rípio	Q. 256.80
Fact. No.13457 de ASERRADERO ALEMAN, aserrín	Q. 107.00
Fact. No.00092 de TALLER DE HERRERIA UNIDO, poste de metal	Q. 600.00
Fact. No.18168 de DISTRIBUIDORA COLORAMA	Q. 152.58
Fact. No.18230 de DISTRIBUIDORA COLORAMA, rollos	Q. 58.90
Fact. No.19572 de DISTRIBUIDORA COLORAMA, revelados	Q. 275.16
Fact. No.98667 de D H L	Q. 219.46
Recibo de G U A T E L	Q. 56.52
Recibo V/fletes, cemento y hierro	Q. 113.00
Recibo V/arena y cemento	Q. 95.00
Fact. de TORNILLOS BASCONIA, tuercas	Q. 3.85
Recibo No.15706 del I. G. S. S., octubre	Q. 1,499.23
Recibo No.00768 del I. G. S. S., noviembre	Q. 1,698.77
Recibo de ANTONIO DE J. AQUINO, Prestaciones Finales	Q. 5,803.84
Recibo de CARLOS ARMANDO OROZCO, Prestaciones Finales	Q. 3,873.43
Recibo de PEDRO SOTO SANTOS, Prestaciones Finales	Q. 3,254.85
Recibo de JOSE MARIA CANTE, Prestaciones Finales	Q. 912.15
Recibo de ALFREDO CHUB, Prestaciones Finales	Q. 1,071.30
Recibo de CESAR AUGUSTO DE PAZ, Prestaciones Finales	Q. 131.35
Recibo de BOANERGES VELASQUEZ, Prestaciones Finales	Q. 2,732.45
Sub-total:	Q.212,546.70

NOTA:

En Planilla anterior (No.10) indicábamos que disponíamos para pagos de planilla de la cantidad de:.....Q.615,584.70

Menos el importe de la presente Planilla (No.11):.....Q.212,546.70

DISPONIBLE PARA PAGOS PENDIENTES:.....Q.403,038.00

TROS GASTOS

TOTAL PAGADO EN LA SEMANA Q 212,546.70

======DOSCIENTOS DOCE MIL QUINIENTOS CUARENTA Y SEIS QUETZALES CON 70/100.======

Arq. Pelayo Llarena

arquitectos peláez llarena
& colaboradores
arquitectos e ingenieros
2a avenida nº 9-76 zona 1 guatemala c a tel 2051

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NORes de PATH/AID

PLANILLA No. 11

rá No. Planilla No. -11- Correspondiente a la Semana

1° de noviembre al 30 de noviembre de 1993

	#23, #24 y #25	Salarios Liquidos	Q 10,571.95	
NO DE OBRA	#23, #24 y #25	Bonificaciones	Q 1,260.80	Q 11,832.75

MATERIALES:

ecibo No.0163 de CONSTRUPOR, S. A., cancelación tabiques	Q.28,450.06
ecibo No.0164 de CONSTRUPOR, S. A., cancelación Aire Ac.	Q.31,750.00
ecibo No.0165 de CONSTRUPOR, S. A., cancelación cielos	Q.32,388.50
ecibo No.00788 de SALNARS & DIAZ, anticipo Inst. Electr.	Q.40,255.20
ecibo No.07664 de ALUMINIOS ALDANA, cancelación ventanas	Q. 4,590.26
act. No.172 de TALLERES ORTIZ, a/c de trabajos	Q. 3,000.00
act. No.174 de TALLERES ORTIZ, materiales de plomería	Q. 216.45
act. No.175 de TALLERES ORTIZ, materiales de 4"	Q. 3,783.43
act. No.176 de TALLERES ORTIZ, trabajos de plomería	Q. 500.00
act. No.177 de TALLERES ORTIZ, materiales de plomería	Q. 948.64
act. No.178 de TALLERES ORTIZ, a/c de trabajos	Q. 3,000.00
act. No.181 de TALLERES ORTIZ, materiales	Q. 3,705.62
act. No.182 de TALLERES ORTIZ, trabajos de plomería	Q. 2,950.00
act. No.39426 de INSTALACIONES MODERNAS, S. A., secador de manos	Q. 3,515.11
act. No.00088 de TECNICA HIDRAULICA, S. A., bomba y accesorios	Q. 3,508.10
act. No.00089 de TECNICA HIDRAULICA, S. A., bomba y accesorios	Q. 3,005.40
act. No.02272 de EL VOLCAN, S. A., pinturas	Q. 782.72
act. No.02060 de EL VOLCAN, S. A., pinturas	Q. 554.00
act. No.03708 de EL VOLCAN, S. A., pinturas	Q. 948.73
act. No.04280 de EL VOLCAN, S. A., pinturas	Q. 1,352.81
act. No.04658 de EL VOLCAN, S. A., pinturas	Q. 702.94
act. No.04716 de EL VOLCAN, S. A., pinturas	Q. 961.04
act. No.05031 de EL VOLCAN, S. A., pinturas	Q. 110.80
act. No.05537 de EL VOLCAN, S. A., pinturas y otros	Q. 154.38
act. No.05540 de EL VOLCAN, S. A., pinturas	Q. 55.40
act. No.08446 de EL VOLCAN, S. A., pinturas	Q. 415.08
act. No.07074 de EL VOLCAN, S. A., pinturas	Q. 527.40
act. No.09070 de EL VOLCAN, S. A., pinturas	Q. 370.97
act. No.08808 de EL VOLCAN, S. A., pinturas	Q. 33.49
act. No.15829 de S E R C O, sikaflex	Q. 417.30
act. No.15635 de S E R C O, sikaflex	Q. 348.82
ecibo No.3810 de TALLERES MASELLI, placa de bronce	Q. 1,785.00
act. No.24851 de P R O T E I S A, cañuela de fibra de vidrio	Q. 540.00
act. No.24678 de P R O T E I S A, cañuela de fibra de vidrio	Q. 1,026.00
act. No.118122 de FABRIGAS, regulador propano	Q. 519.04
act. No.76118 de VIDRIERIA LA NACIONAL, espejos	Q. 394.83
act. No.58476 de INTACO LIMITADA, alquiler de barreno	Q. 122.18

ROS GASTOS Sub-total:	Q.189,522.45

PASA A LA SIGUIENTE CARATULA.

TOTAL PAGADO EN LA SEMANA Q

130

arquitectos pelayo llarena
& colaboradores
arquitectos e ingenieros

New address:
Avenida Las Américas 15-49,zona 14
Guatemala City, Guatemala C.A.
Phone/Fax: 68 08 33.

Guatemala, February 14, 1994.

Ms. Jacque Holden
Administrative Officer
Technology Management Department
P A T H.
4 Nickerson Street,
Seattle, Washington 98109.
U.S.A.

Dear Ms. Holden:

Attached you will find the final Vouchers for the LAPROMED Project.

The final Statement from the Lloyds Bank will be sent to you as soon as I receive it.

Very truly yours.

Arq. Pelayo Llarena Sr.

Enclosure: Indicated.

arquitectos pelayo llarena
& colaboradores
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2a avenida nº 9-76 zona 1. guatemala c a tel 20647

December 3, 1993.

At about 6:30 PM Humberto Zardo called and I gave him a detailed account of what we have done and the things that has happened.
He said that he will be in Guatemala on December 6, 1993 and will remain until the 13th.

December 7, 1993.

I went to LAPROMED and met Humberto Zardo.

I had taken the people of La Alfombra Mágica to finish about 3.00 linear meters of Base board. I talked to the Manager and told him that it was bad business to have 50% of his payment tied up because he did not finish ten feet of Baseboard.

I sent the Plumber to do some extra things that Humberto Zardo wanted done, like extending the drains from the air conditioning unit to the vertical ones of the building, etc.

I had sent a machinist to do the pedestal for the lamp that eliminates bugs, but nobody at LAPROMED opens the doors.

December 9, 1993.

Humberto Zardo called and wanted to have a new glass to replace a broken one in the office of Lic. Gálvez.

I went to LAPROMED and talked with Humberto Zardo about: The Epoxy paint in rooms 100 and 203 has not gotten dry. Later on I called CONSTRUPOR and asked Ing. Otto Caballeros to find out what happened and also to fix the intersection of the suspended ceiling and the wall tile in room 301.
Salnars & díaz have to put two cover plates in room 309.

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December 10, 1993.

The glass was replaced where they broke it.

Ing. Caballeros went in the afternoon to find out why the paint does not get dry.

Humberto Zardo signed a letter to IGSS telling them that the Construction was finished and to cancel the "Número Patronal" and to send the "Final Liquidation". This last item has taken us months and some times years to get it.

December 13, 1993.

I went to LAPROMED to see Humberto Zardo. He gave me a design to make a duct for manual loading of a "tamiz".

We took a tour of the job and he pointed out some of the things he wanted done, like the cover of the compressor, to put a chain around the gas tank or something to hold it in place.

The manufacturer of the Commemorative Plaque sent the final bronce version to LAPROMED.

The Plumber finished connecting the distilled water main pipes to the apparatus and all the other extra things that the people of LAPROMED wanted done.

I have been trying to get all the vouchers that are still with the suppliers in order to complete the job.

CONSTRUPOR,S.A. had his painters giving a fourth coat to the walls that did not get dried. According to Ing. Caballeros, it should do the trick.

December 15, 1993.

I went to LAPROMED to find out if the Bronce Plaque had arrived. It did.

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The Plumber was there and he had finished most of the extra work that he was asked to do.

December 16, 1993.

I took a couple of workers to put the Commemorative Plaque in place.

I went about taking the last pictures of the instalations.

I also talked to Lic. Gálvez and gave him the last minute instructions on how the Plant operates.

December 22, 1993.

The Plumber finished with the details that were asked for, like the covers for the chimneys of the Ovens and the one for the Acids Hood.

December 23, 1993.

I got the As Built plans of the Electrical Instalations from SALNARS & DIAZ. I'll send them over to PATH as soon as I check them.

I also got the Receipt from the Electric Power Co. for Q.5,000.00 for the "Deposit" that they wrongly made to the University of San Carlos. The receipt that I could not get was for Q.107.00 for the "Connection".
PATH got from me in the Monthly Report all the information (See October 6 Report) and also the photocopy of the "Exención de IVA" and the canceled check for the amount of Q.24,557.00 that covers the complete payment. (See Report, September 30).

December 25, 1993.

MERRY XMAS.

arquitectos pelaya llarena
& colaboradores
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2a avenida n° 9 76 zona 1 ... c a tel 20647

December 27, 1993.

I called AID to get six condonations of IVA. Miriam de la Cerda said to come until tomorrow.

December 31, 1993.

I received a Fax from Jacque Holden saying that PATH:"have secured approval for you to withdraw the Quetzales equivalent of US $3,000.00 for your final fixed fee payment from the remaining construction cost funds. This payment should be processed using the official foreing exchange rate on the date of withdrawal. Please let me know as soon as possible when you have completed this transaction."

Thank you very much.

January 4, 1994.

With respect to my last fixed fee payment, and following the directives of Path, I checked the publications of the Bank of Guatemala for January 4, 1994 and took the medium.

I sent a Fax to Jacque Holden with this information. It came up to Q.5.819/$, $3,000.00 times Q.5.819= Q.17,457.00.

January 7, 1994.

Humberto Zardo called from Seattle and told me that he was coming to Guatemala January 19th.
He asked how I was doing in collecting the vouchers, I told him that I still have to get three more ones.

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January 10, 1994.

Humberto Zardo called and told me that on the 12th. he was bringing an expert for the Air Conditioning to make it work properly.

January 11, 1994.

I got a Fax from PATH in Spanish addressed to Lic. Víctor Rodríguez that said that an expert from Stellmack, the one responsable for the construction of the Air Conditioning system, would be in Guatemala the 12 and 13th. of January to check the system. This Fax was dated January 10th. 1994.

I called Ing. Otto Caballeros to be at LAPROMED along with Edwing Rodas at 8:30 in the morning and that I would be there a little later.

January 12, 1994.

I went to LAPROMED and met with Humberto Zardo, Ing. Otto Caballeros and Edwing Rodas. The expert Dan Weber, was already working.

January 14, 1994.

At 3:15 PM. I gave Humberto Zardo the IGSS document Called Revisión N°0048/94 certified by inspector Manuel Francisco Orellana Aldana that cancels the Número Patronal 63,282 in the name of PROGRAM FOR APPROPIATE TECHNOLOGY IN HEALTH. The Revision was solicited on the 10th. of December 1993, it was signed by IGSS the 4th. of January 1994 and sent to us for Humberto Zardo's signature the 13th. of January.

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January 17, 1994.

I was with Humberto Zardo at LAPPOMED and he told me that he needed to talk to Edwing Rodas. I called Ing. Otto Caballeros and they came over.

January 19, 1994.

I went to LAPROMED and gave Humberto Zardo my last Voucher N°10/10 and a copy of Revision N°0048/94 that he had signed for IGSS.

Edwing Rodas and his assistant was there helping with the Air Conditioning.

Humberto Zardo told me that he'll be back at the end of March or the begining of April.

January 26, 1994.

At about 5:30 PM. I received a call from Marisela Martínez from PATH. Jacque Holden wants an statement from the Bank and the expenditures.

I sent her a Fax with both requirements with the proviso that the expenditures were preliminary and that the Bank statement were the last ones that I had received.

February 1, 1994.

At 8:15 AM, I got a call from Marisela Martínez saying that at PATH they had received my Fax.
I talked to Jacque Holden and she wants an up to date statement from the Lloyd's Bank. I told her that as soon as I receive it, I would Fax it to her.

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SEÑORes de PATH/AID

PLANILLA No. 12

Obra No. Planilla No. -12-

Correspondiente a la Semana

del 1° de diciembre/93 al 31 de enero de 1994

	Salarios Liquidos Q ----------	
MANO DE OBRA	Bonificaciones Q ----------	Q ---------

MATERIALES:

Recibo No.000807 de SALNARS & DIAZ, cancelación electricidad	Q.116,262.22
Recibo No.00540 de CARPINTERIA CENTROAMERICANA, Cancelación carpintería	Q. 98,323.75
Recibo No.2910 de LA ALFOMBRA MAGICA, cancelación piso y zócalo	Q. 9,725.85
Fact. No.004022 de P R E C A S A, mesa de metal y otros	Q. 5,000.00
Fact. No.5856 de CARPINTERIA CENTROAMERICANA, trabajos extras	Q. 2,408.00
Fact. No.25265 de P R O T E I S A, accesorios acero inox.	Q. 2,025.60
Fact. No.188 de TALLERES ORTIZ, trabajos extras	Q. 2,300.00
Fact. No.26844 de TALLERES MASELLI, cancelación placa	Q. 1,785.00
Fact. No.191 de TALLERES ORTIZ, materiales de plomería	Q. 465.13
Fact. No.192 de TALLERES ORTIZ, materiales de plomería	Q. 374.71
Fact. No.193 de TALLERES ORTIZ, materiales de plomería	Q. 383.56
Fact. No.194 de TALLERES ORTIZ, materiales de plomería	Q. 463.29
Fact. No.12270 de ALUMINIOS ALDANA, ventanales	Q. 307.19
Fact. No.22493 de DISTRIBUIDORA COLORAMA, revelados	Q. 321.19
Fact. No.24571 de AGENCIAS CIRC, copias heliográficas	Q. 102.72
Fact. No.27091 de AGENCIAS CIRC, copias heliográficas	Q. 92.45
Fact. No.26929 de AGENCIAS CIRC, copias heliográficas	Q. 25.68
Fact. No.101729 de D H L	Q. 219.08
Recibo de CASIMIRO BOCHE, colocación placa	Q. 25.00
Recibo de G U A T E L, septiembre	Q. 56.52
Recibo de G U A T E L, octubre	Q. 56.84
Recibo No.36734 del I. G. S. S., noviembre-final	Q. 130.41
Fact. No.0072 del ARQUITECTO PELAYO LLARENA Sr. 10/10	Q 17,457.00
---------- Sub-total:	Q.258,311.19

NOTA:

En Planilla anterior (No.11) indicábamos que disponíamos para pagos de planilla, pendientes, la cantidad de:.....Q.403,038.00

Menos el importe de la presente Planilla (No.12):.....Q.258,311.19

DISPONIBLE PARA PAGOS PENDIENTES: Q.144,726.81

OTROS GASTOS

TOTAL PAGADO EN LA SEMANA Q 258,311.19

=====DOSCIENTOS CINCUENTA Y OCHO MIL TRESCIENTOS ONCE QUETZALES 19/100.=======

Attachment C

Production Quantitative and Qualitative Report

path
Program for Appropriate Technology in Health

4 Nickerson Street
Seattle, WA 98109
Tel: (206) 285-3500
Fax: (206) 285-6619
Telex: 4740049PATH UI

March 14, 1994

Jorge Chang, M.D.
Project Officer
USAID/Guatemala
Plaza Uno, 1a Calle 7-66
Zona 9
Guatemala City 01009
GUATEMALA

Re: USAID/GUATEMALA CONTRACT NO. 520-0339-C-00-2234-00

Dear Dr. Chang:

Enclosed is the Quantitative and Qualitative Report for the period November 1993-February 1994 for production of *SueroVida*.

To share with USAID/Guatemala the results of LAPROMED's ORS production and delivery, as well as quality control, PATH has developed a report which provides a quantitative and qualitative overview of LAPROMED's progress. This report will be provided on a quarterly basis.

My overall observation is that LAPROMED's production and quality control output and quality indicators are similar to other ORS plants that received assistance from PATH under Project SUPPORT. I have observed the continuous work toward quality improvement, and we do not expect "surprises" ahead.

Sincerely,

Humberto Zardo
Technical Director
Technology Management Department

HZ:msm
Enclosure
cc: Dr. Gary Cook, USAID/Guatemala
Dr. Patricia O'Connor, USAID/Guatemala
Lic. Victor Rodríguez, LAPROMED
Lic. Eddy Villagrán, LAPROMED
HZL04098

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SueroVida

Produced by
USAC/EDC/LAPROMED
Guatemala, C.A.

Quantitative and Qualitative Report

For the Period: November 1993-February 1994

Prepared by the

Immunization and Oral Rehydration Therapy
Services for Child Survival Project

Project No. 520-0339

Contract No. 520-0339-C-00-2234-00

a USAID/Guatemala Funded Project
Managed by

PATH
(Program for Appropriate Technology in Health)

March 1994

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- Given the uncertainty of future orders from the MSPAS, it would be logical at this time for LAPROMED to plan future production targeted for other potential customers. However, the only packaging material in inventory has the MSPAS logo and LAPROMED has no capital available to purchase material without the MSPAS logo.

- LAPROMED has been running the facility without income since November 1993, using up USAC's limited funds.

  Following is the current status for delivery and payment:

DATE	FORECAST	DELIVERY	VARIATION	PAYMENT Q.
February 15	66,210	0	<66,210>	<47,009.10>
February 28	74,410	0	<140,620>	<99,840.20>
March 21	159,380			

Contrary to the delivery schedule, LAPROMED did not deliver 140,620 sachets to MSPAS because they have as yet not received payment. Sachets are ready for immediate delivery upon payment; therefore, LAPROMED has not collected nearly Q. 100,000.

Qualitative

Analysis by a Reference Laboratory

The quality control (QC) laboratory of a Guatemalan ORS producer (established under the USAID-sponsored Project SUPPORT), Adamed, S.A., has been used as the reference laboratory by PATH to test the physical characteristics and chemical composition of sachets made by LAPROMED. The Adamed laboratory has also been used by PATH as a reference laboratory for international contacts with A.I.D., Population Services International, and UNICEF. Thus far, Adamed has carried out QC analysis on seven lots produced by LAPROMED, with the following results:

LOT No.	LAPROMED	ADAMED
001113	Reject	On hold for re-work
002113	Not Tested	On hold for re-work
003123	Accept	Accept
004014	Accept	Accept
005014	Accept	Accept
006014	Accept	Accept
007014	Accept	Accept

At the time of this report, Lot 002113 was not tested by LAPROMED for finished product. The lot was considered rejected since the results from the reference lab indicated abnormal distribution for sodium, potassium, and chloride results. Lots 001113 and 002113 can be re-worked upon LAPROMED's completion of a quality deviation investigation. Based on their findings, LAPROMED will submit to PATH a re-working protocol, which PATH

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Lot 015024 shows a trend toward increasing the distribution spread. LAPROMED is investigating which of the possible causes listed below may have impacted the results of this lot. Causes can vary, but may include such possible problems as:

- Not following procedures
- Less accurate adjustment of FFS
- High relative humidity
- High bulk moisture content
- Different particle size distribution
- Dirty auger, funnel, and shooting tube
- New person attending the FFS
- Improper setting of auger
- Improper setting of FFS, e.g., agitation off
- Excessive confidence (relaxed attitude/attention to work)

In some lots it is noticeable that the average weight fell below the 28 g line. It is the USP requirement that average weight equals or exceeds 27.8 g. LAPROMED was instructed on this and is taking action.

Chemical Composition (Content Uniformity)

Adherence to chemical composition is part of the WHO/CDD/SER/85.8 requirements for ORS and the USP XXII monograph (content uniformity). The difference between these two guides is that the USP accepts variations up to 10% of the label value, while the WHO accepts 7% for all, with the exception of a higher limit of 5% for sodium. PATH's objective for LAPROMED is that it comply with WHO requirements, and use the USP as an administrative tool in combination with the statistical indicator **relative standard deviation** (RSD).

Sodium and Potassium

These two critical components are assayed by flame photometry, although it is possible for sodium to also be assayed via ion selective electrode (ISE). Thus far, LAPROMED has used only flame photometry for product release purposes.

Attachment II shows, for each of the tested components (sodium, potassium, chloride, citrate, and glucose) the minimum, maximum, average, and RSD from Lots 001113 to 010014. All lots, except Lots 001113 and 002113, passed the requirements mentioned above.

Attachment II.1 shows the plotting for sodium results. Attachment II.2 shows the plotting for RSD. Results reflect a trend towards reducing RSD, which indicates the impact of continuous quality improvement. Only Lot 003123 shows RSD above 4%; Lot 009014 shows RSD of 2%, which is very good (USP accepts RSD up to 6%).

Attachment II.3 shows the plotting for potassium results and Attachment II.4 its RSD. Potassium results are similar to sodium. Lot 008014 shows RSD of 3.75, which is not in line with results from lots made

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particularly when new EPS students start (every six months).

The **production output** has, so far, satisfied the expectations. The challenge is to work towards maximum utilization of equipment (larger lot size), reduce re-works and spoilage (particularly aluminum laminate), and attain a higher yield.

For **QC** the challenge is to keep pace with Production so as to avoid gaps of uncontrolled lots and the possibility of repeating mistakes for lack of immediate feedback.

For **management** the recipe is continuous quality management. More attention must be paid to process control at all times—with focus on always searching for ways to excel. The second, and maybe the most critical for sustainability, is to make the public sector MSPAS work towards timely goals and objectives with prompt payment and orders.

HZR04093
HZ:msm

lap94ja1 HZardo 11Jan94
Review: 9 mar 94

NOTE: This file was developed by H. Zardo for PATH-USAID/Guatemala Contract USAID 520-0339-C-00-2234-00 10/9/92. No changes or use outside LAPROMED is authorized without prior written approval from H. Zardo.

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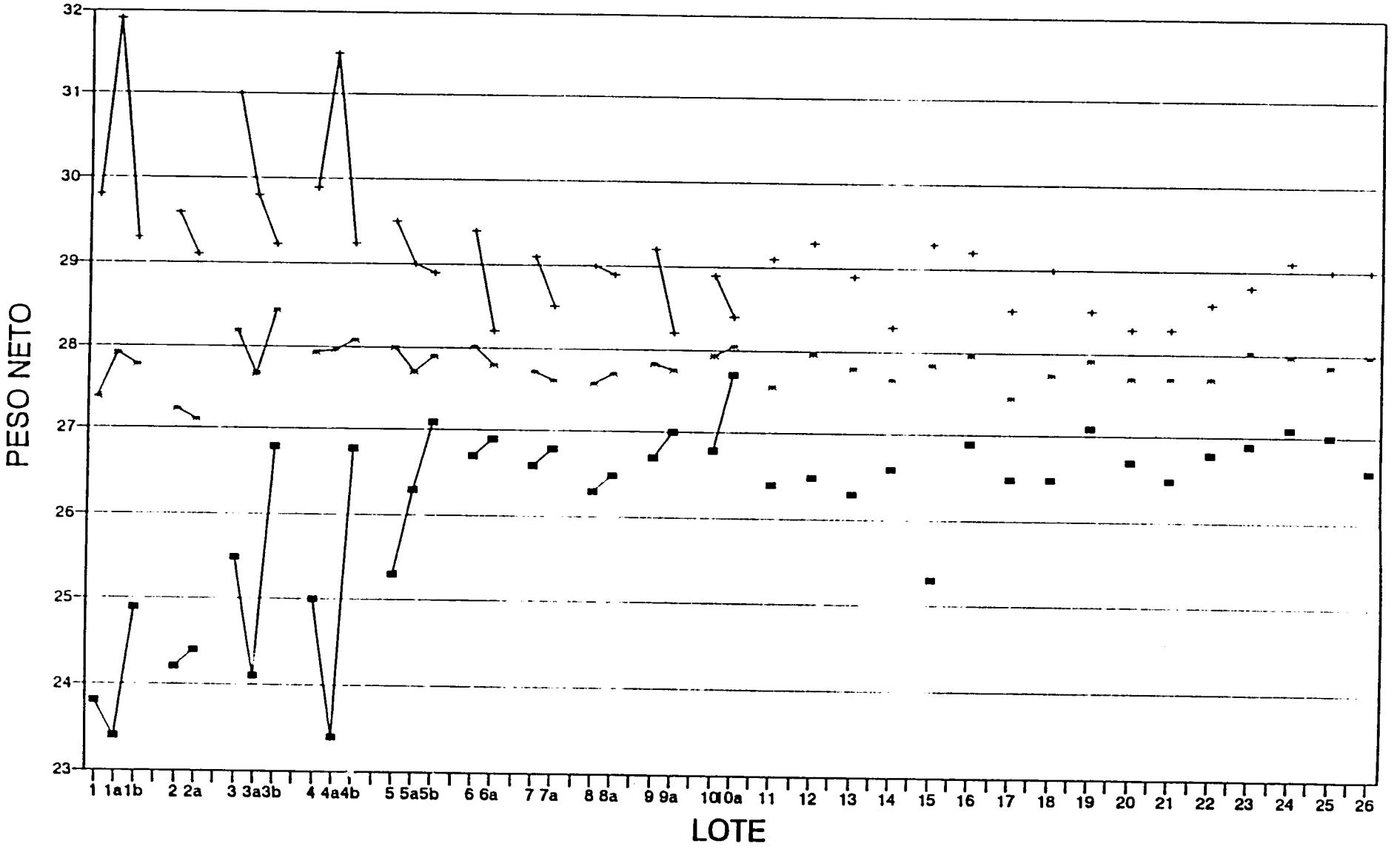
ESTUDIO DE VARIACION DE PESO

SueroVida - LAPROMED



HZV04084
3/9/94

Average Minimum Maximum

ESTUDIO DE VARIACION DE PESOS (weight variation analysis)

GOAL: 27.9 gramos

LOTE		AVG	MIN	MAX	s	RSD	AVG/GOA	MIN/GOAL	MAX/GOAL	n	MAX-MIN
00113-24	1	27.38	23.80	29.80	1.52	5.55	0.9814	0.8530	1.0681	120	6.00
00113-29	1a	27.90	23.40	31.90	1.72	6.16	1.0000	0.8387	1.1434	140	8.50
00113-LAP	1b	27.76	24.90	29.30	1.00	3.60	0.9950	0.8925	1.0502	30	4.40
002113-3	2	27.24	24.20	29.60	3.26	11.97	0.9763	0.8674	1.0609	80	5.40
002113-6	2a	27.12	24.40	29.10	1.12	4.13	0.9720	0.8746	1.0430	150	4.70
003123-11	3	28.18	25.50	31.00	1.19	4.21	1.0100	0.9140	1.1111	155	5.50
003123-21	3a	27.65	24.10	29.80	1.25	4.52	0.9910	0.8638	1.0681	155	5.70
003123-LAP	3b	28.44	26.79	29.22	0.81	2.85	1.0194	0.9602	1.0473	20	2.43
004014-10	4	27.93	25.00	29.90	1.25	4.48	1.0011	0.8961	1.0717	110	4.90
004014-11	4a	27.95	23.40	31.50	1.69	6.04	1.0018	0.8387	1.1290	140	8.10
004014-LAP	4b	28.08	26.78	29.25	0.89	3.16	1.0065	0.9599	1.0484	20	2.47
005014-18/20	5	28.00	25.30	29.50	0.81	2.90	1.0036	0.9068	1.0573	155	4.20
005014-16/16	5a	27.69	26.30	29.00	0.56	2.01	0.9925	0.9427	1.0394	110	2.70
005014-LAP	5b	27.89	27.10	28.90	0.59	2.12	0.9996	0.9713	1.0358	20	1.80
006014-16/16	6	28.01	26.70	29.40	0.66	2.36	1.0039	0.9570	1.0538	225	2.70
006014-LAP	6a	27.78	26.90	28.20	0.35	1.25	0.9957	0.9642	1.0108	20	1.30
007014-16/16	7	27.71	26.60	29.10	0.47	1.71	0.9932	0.9534	1.0430	280	2.50
007014-LAP	7a	27.61	26.80	28.50	0.43	1.55	0.9896	0.9606	1.0215	20	1.70
008014	8	27.57	26.30	29.00	0.47	1.69	0.9882	0.9427	1.0394	295	2.70
008014-LAP	8a	27.70	26.50	28.90	0.44	1.61	0.9928	0.9498	1.0358	20	2.40
009014	9	27.82	26.70	29.20	0.53	1.90	0.9971	0.9570	1.0466	245	2.50
009014-LAP	9a	27.74	27.00	28.20	0.35	1.26	0.9943	0.9677	1.0108	20	1.20
010014	10	27.93	26.80	28.90	0.48	1.70	1.0011	0.9606	1.0358	310	2.10
010014-LAP	10a	28.05	27.70	28.40	0.19	0.68	1.0054	0.9928	1.0179	20	0.70
011014	11	27.56	26.40	29.10	0.48	1.67	0.9878	0.9462	1.0430	285	2.70
012014	12	27.96	26.50	29.30	0.53	1.90	1.0022	0.9498	1.0502	240	2.80
013024	13	27.78	26.30	28.90	0.45	1.61	0.9957	0.9427	1.0358	265	2.60
014024	14	27.66	26.60	28.30	0.43	1.54	0.9914	0.9534	1.0143	280	1.70
015024	15	27.83	25.30	29.30	0.44	1.58	0.9975	0.9068	1.0502	205	4.00
016024	16	27.96	26.90	29.20	0.43	1.54	1.0022	0.9642	1.0466	250	2.30
017024	17	27.44	26.50	28.50	0.43	1.57	0.9835	0.9498	1.0215	245	2.00
018024	18	27.73	26.50	29.00	0.49	1.77	0.9939	0.9498	1.0394	215	2.50
019024	19	27.90	27.10	28.50	0.39	1.40	1.0000	0.9713	1.0215	185	1.40
020024	20	27.70	26.70	28.30	0.39	1.41	0.9928	0.9570	1.0143	180	1.60
021024	21	27.69	26.50	28.30	0.39	1.41	0.9925	0.9498	1.0143	200	1.80
022024	22	27.69	26.60	28.60	0.47	1.70	0.9925	0.9606	1.0251	215	1.80
023024	23	28.03	26.90	28.80	0.47	1.68	1.0047	0.9642	1.0323	205	1.90
024024	24	27.97	27.10	29.10	0.39	1.39	1.0025	0.9713	1.0430	145	2.00
025024	25	27.85	27.00	29.00	0.42	1.51	0.9982	0.9677	1.0394	155	2.00
026024	26	27.97	26.60	29.00	0.38	1.36	1.0025	0.9534	1.0394	190	2.40

HZV04084 WO1
3/9/94

Explanation of lot numbers

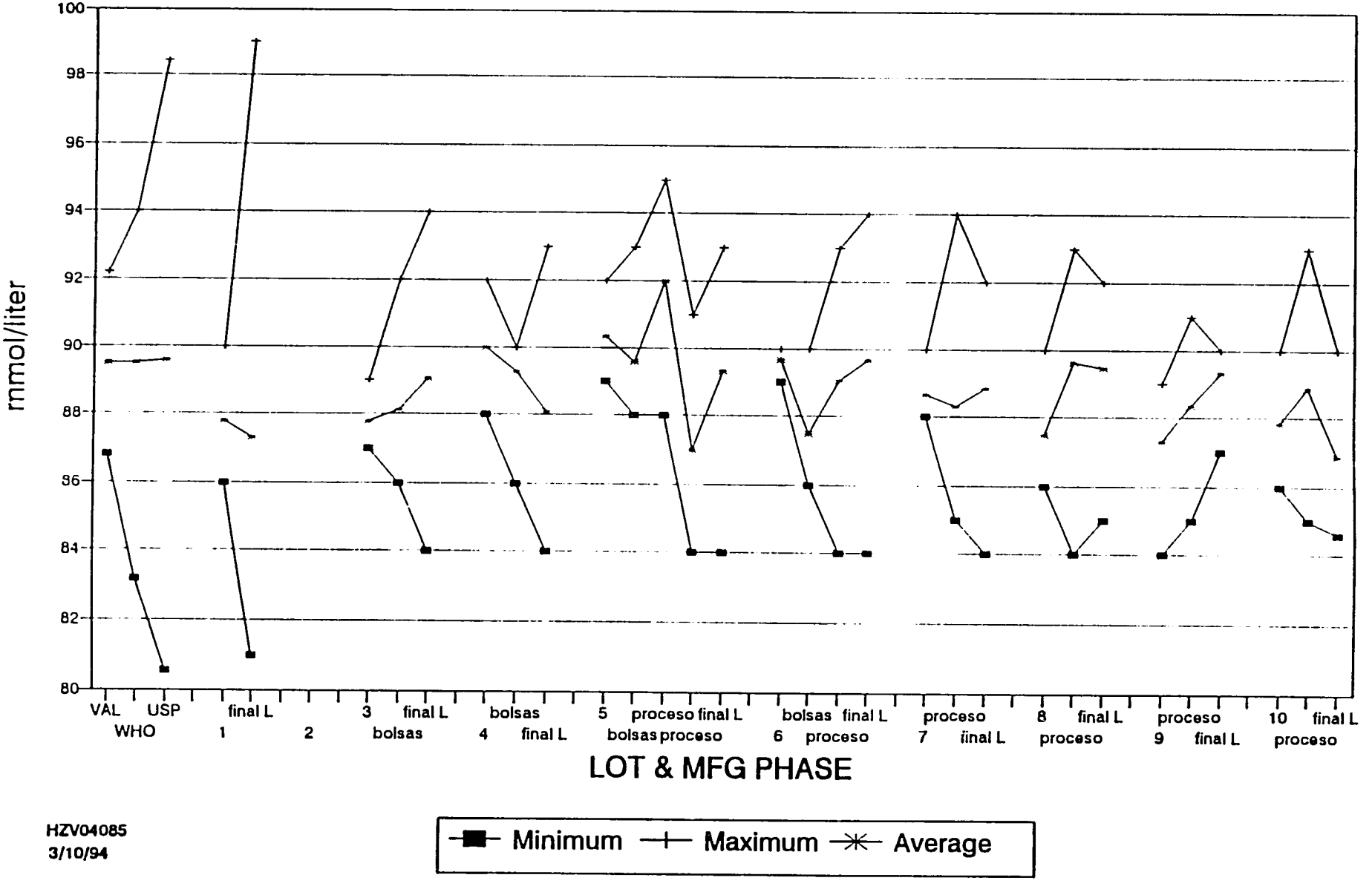
Lot No.	Type of data
1	Production data from 24 January.
1a	Production data from 29 January.
1b	QC data from LAPROMED.
2	Production data from 3 January.
2a	Production data from 6 January.
3	Production data from 11 February.
3a	Production data from 21 February.
3b	QC data from LAPROMED.
4	Production data from 10 January.
4a	Production data from 11 January.
4b	QC data from LAPROMED.
5	Production data using 18/20 auger-funnel combination.
5a	Production data using 16/16 auger-funnel combination.
5b	QC data from LAPROMED.
6	Production data using 16/16 auger-funnel combination.
6a	QC data from LAPROMED.
7	Production data using 16/16 auger-funnel combination.
7a	QC data from LAPROMED.
8	Production data.
8a	QC data from LAPROMED.
9	Production data.
9a	QC data from LAPROMED.
10	Production data.
10a	QC data from LAPROMED.
11	Production data.
12	Production data.
13	Production data.
14	Production data.
15	Production data.
16	Production data.
17	Production data.
18	Production data.
19	Production data.
20	Production data.
21	Production data.
22	Production data.
23	Production data.
24	Production data.
25	Production data.
26	Production data.

HZV04084.WQ1
3/9/94

LOT Rec 001		SODIUM MIN	SODIUM MAX	SODIUM AVG	SODIUM RSD	POTASSIUM MIN	POTASSIUM MAX	POTASSIUM AVG	POTASSIUM RSD	CHLORIDES MIN	CHLORIDES MAX	CHLORIDES AVG	CHLORIDES RSD	CITRATE MIN	CITRATE MAX	CITRATE AVG	CITRATE RSD	GLUCOSE MIN	GLUCOSE MAX	GLUCOSE AVG	GLUCOSE RSD
VAL	VAL	86.8 *	92.2 *	89.5 *	3 *	19.5 *	20.7 *	20.1 *	3 *	77.6 *	82.4 *	80 *	3 *	9.6 *	10.2 *	9.9 *	3 *	107.7 *	114.3 *	111 *	3 *
WHO	WHO	83.2 #	94 #	89.5 #	6 #	18.7 #	21.5 #	20.1 #	6 #	74.4 #	85.6 #	80 #	6 #	9.2 #	10.6 #	9.9 #	6 #	103.2 #	118.8 #	111 #	6 #
USP	USP	60.6 ?	98.5 ?	89.6 ?	6 ?	18.09 ?	22.1 ?	20.1 ?	6 ?	72 ?	88 ?	80 ?	6 ?	8.91 ?	10.9 ?	9.91 ?	6 ?	99.9 ?	122.1 ?	111 ?	6 ?
001113	1	86 *	90 0	87.8 0	1.64 0	19.6 0	20.1 0	19.9 0	0.27 0	77.5 *	85.5 *	81.5 ?	2.92 0	?	0	0	0	106.9 *	108.1 0	108 0	0.53 0
final L	final L	81 #	99 ?	87.3 0	5.46 *	18 ?	20.5 0	19.5 0	3.57 *	71.2 ?	93.9 ?	85.2 ?	6.87 ?	8.8 ?	11 ?	9.57 0	5.85 *	104.8 *	113.1 0	111 0	2.17 0
002113	2	?	0	0	0	?	0	0	0	?	0	0	0	?	0	0	0	?	0	0	0
003123	3	87 0	89 0	87.8 0	0.95 0	19.1 *	19.6 0	19.5 0	1.15 0	80.5 0	82.5 *	81.5 ?	0.87 0	9.9 0	10.2 0	10.1 ?	1.51 0	107.4 *	109.8 0	109 0	0.79 0
bolsas	bolsas	86 *	92 0	88.1 0	2.4 0	19.7 0	20.5 0	20 0	1.38 0	83.9 0	92.3 ?	82.5 ?	3.78 *	9.4 *	9.8 0	9.56 0	1.69 0	106.8 *	115.2 *	112 ?	2.82 0
final L	final L	84 *	94 *	89.1 0	3.17 *	19.2 *	20.5 0	19.7 0	1.7 0	78.1 *	84.4 *	81.3 ?	3.67 *	9.4 *	10.5 *	10.2 ?	3.35 *	106.8 *	113.1 0	110 0	1.66 0
004014	4	88 0	92 0	90 ?	1.77 0	20.1 0	20.1 0	20.1 0	0 0	78 0	84.1 *	81.8 ?	2.89 0	9.9 0	10.2 0	9.98 ?	1.33 0	108.9 0	113.1 0	111 0	1.43 0
bolsas	bolsas	88 *	90 0	89.3 0	1.66 0	19.7 0	20.3 0	20.1 0	1 0	78 0	84.1 *	81.8 ?	2.76 0	9.7 0	10.2 0	10 ?	2 0	106.8 *	111 0	109 0	1.73 0
final L	final L	84 *	93 *	88.1 0	3.1 *	19.3 *	20.9 *	20.1 ?	2.03 0	75.2 *	85.4 *	82.1 ?	3.8 *	9.6 0	10.5 *	10.1 ?	3.03 *	106.8 *	113.1 0	110 0	1.75 0
005014	5	89 0	92 0	90.3 ?	1.51 0	20.1 0	20.1 0	20.1 0	0 0	82.3 0	86.4 #	84.5 ?	2.1 0	9.4 *	10.3 *	9.98 ?	3.55 *	106.8 *	111 0	110 0	1.55 0
bolsas	bolsas	88 0	93 *	89.6 #	1.92 0	20.1 0	20.1 0	20.1 0	0 0	82.3 0	85.4 *	84.2 ?	1.65 0	9.4 *	9.9 0	9.67 0	2.04 0	106.8 *	108.9 0	108 0	0.95 0
proceso	proceso	88 0	95 #	92 ?	3.07 *	20.1 0	20.9 *	20.6 ?	1.34 0	?	0	0	0	?	0	0	0	?	0	0	0
proceso	proceso	84 *	91 0	87 0	2.44 0	19.7 0	20.1 0	19.9 0	1.02 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	84 *	93 *	89.3 0	3.04 *	19.2 *	21 *	20.2 ?	2.28 0	75.1 *	85.4 *	80.6 ?	3.43 *	9.4 *	10.5 *	9.73 0	3.3 *	108.9 0	113.1 0	110 0	1.39 0
006014	6	89 0	90 0	89.7 ?	0.58 0	20.1 0	20.6 0	20.4 ?	1.35 0	82.3 0	85.4 *	83.4 ?	1.36 0	9.7 0	10.3 *	10.1 ?	2.5 0	111 0	113.1 0	112 ?	0.87 0
bolsas	bolsas	86 *	90 0	87.5 0	2.01 0	19.7 0	20.5 0	20 0	1.5 0	?	0	0	0	?	0	0	0	?	0	0	0
proceso	proceso	84 *	93 *	89.1 0	3.17 *	19.2 *	20.5 0	19.9 0	1.42 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	84 *	94 *	89.7 ?	2.86 0	19.7 0	21.4 *	20.2 ?	2 0	75.1 *	85.4 *	82.3 ?	3.89 *	9.3 *	10.2 0	9.63 0	2.52 0	106.8 *	111 0	109 0	1.38 0
007014	7	88 0	90 0	88.7 0	0.92 0	19.6 0	20.1 0	20 0	1.02 0	82.3 0	84.4 *	83.7 ?	1.03 0	?	0	0	0	106.8 *	111 0	109 0	1.22 0
proceso	proceso	85 *	94 *	88.3 0	2.82 0	19.2 *	20.1 0	19.7 0	1.82 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	84 *	92 0	88.9 0	2.54 0	18.9 *	20.9 *	20.1 ?	1.88 0	76.1 *	83.3 *	80.3 ?	3.02 *	9.4 *	10.3 *	10 ?	3.78 *	105.1 *	111 0	108 0	1.38 0
008014	8	86 *	90 0	87.5 0	1.2 0	19.3 *	20.1 0	19.8 0	1.65 0	?	0	0	0	?	0	0	0	108.9 0	111 0	110 0	0.98 0
proceso	proceso	84 *	93 *	89.6 ?	3.09 *	18.9 *	21.3 *	20.3 ?	2.81 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	85 *	92 0	89.5 0	2.03 0	18.9 *	21.3 *	20 0	3.75 *	77.5 *	85.6 *	82.7 ?	3.15 *	9.3 *	10.6 *	9.85 0	4.99 *	108.9 0	115.2 *	111 ?	1.98 0
009014	9	84 *	89 0	87.3 0	2 0	19.7 0	21 *	20.3 ?	2.2 0	?	0	0	0	?	0	0	0	?	0	0	0
proceso	proceso	85 *	91 0	88.4 0	1.85 0	19.3 *	20.5 0	19.9 0	2.01 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	87 0	90 0	89.3 0	0.82 0	19.3 *	20.9 *	20.2 ?	2.87 0	78.5 0	83.6 *	81.8 ?	1.7 0	9.6 0	10.2 0	9.86 0	2.43 0	106.8 *	111 0	109 0	1.1 0
010014	10	86 *	90 0	87.8 0	1.68 0	20.5 0	21 *	20.6 ?	0.99 0	?	0	0	0	?	0	0	0	?	0	0	0
proceso	proceso	85 *	93 *	88.9 0	2.65 0	19.3 *	21.3 *	20.2 ?	2.68 0	?	0	0	0	?	0	0	0	?	0	0	0
final L	final L	84.6 *	90 0	86.9 0	2.17 0	19.3 *	20.5 0	20.1 0	1.83 0	81.5 0	85.5 *	83.4 ?	1.69 0	9.4 *	10.6 *	9.83 0	4.07 *	108.9 0	111 0	110 0	0.98 0

HZV04085.WQ1
3/10/94

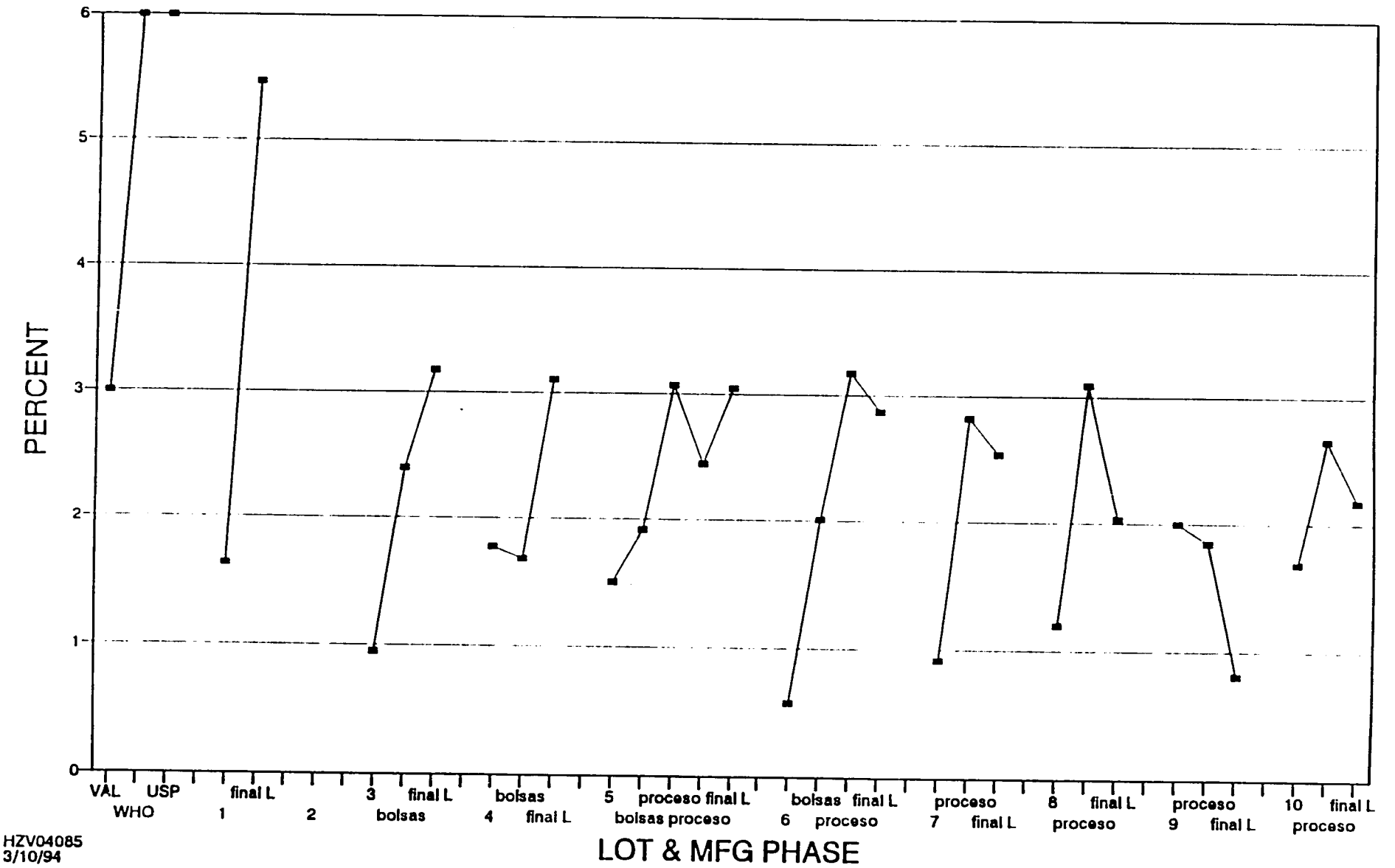
SueroVida - LAPROMED
SODIUM RESULTS



HZV04085
3/10/94

SueroVida - LAPROMED

SODIUM - RELATIVE STANDARD DEVIATION



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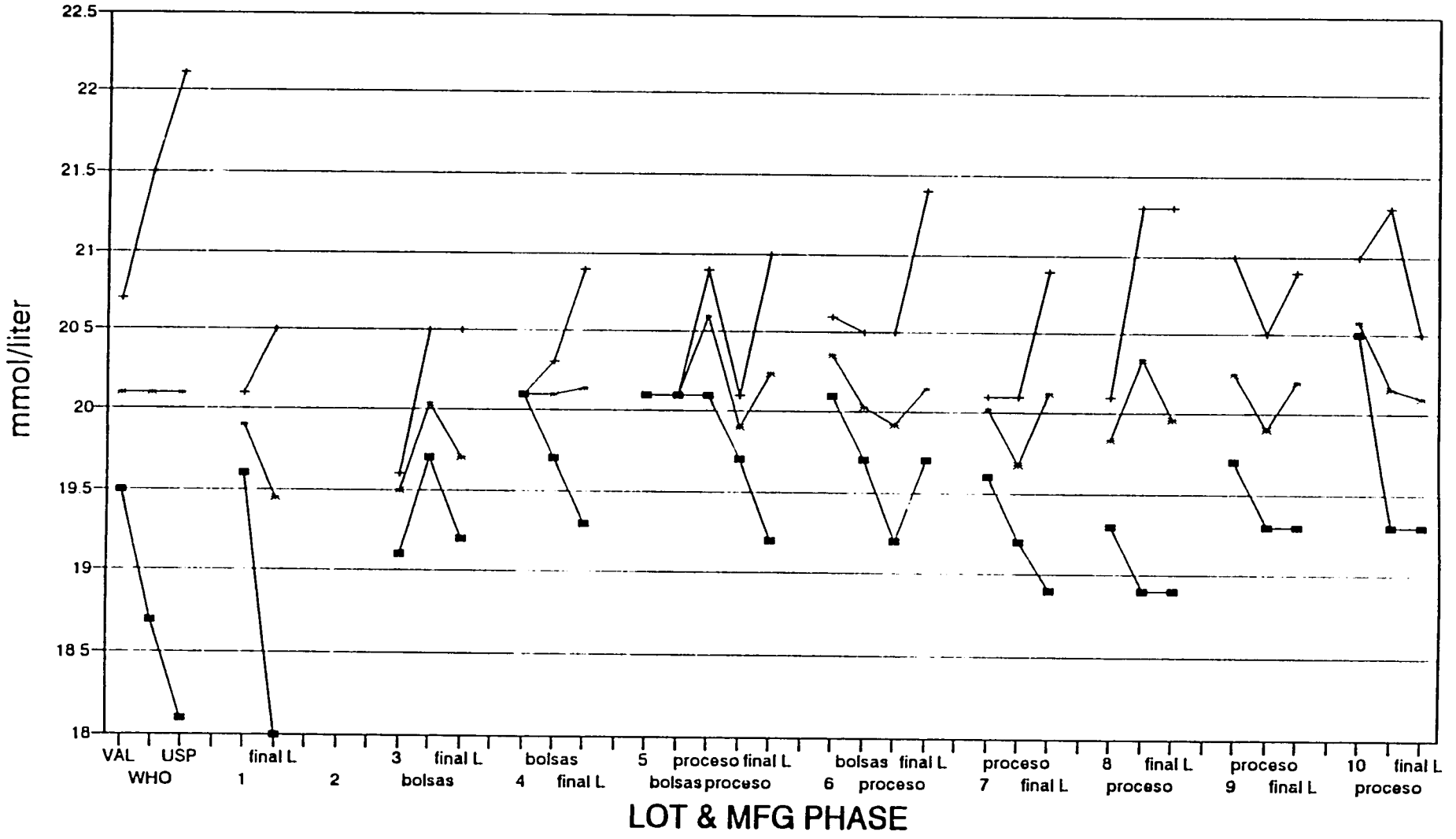
3/10/94

SueroVida - LAPROMED
POTASSIUM RESULTS



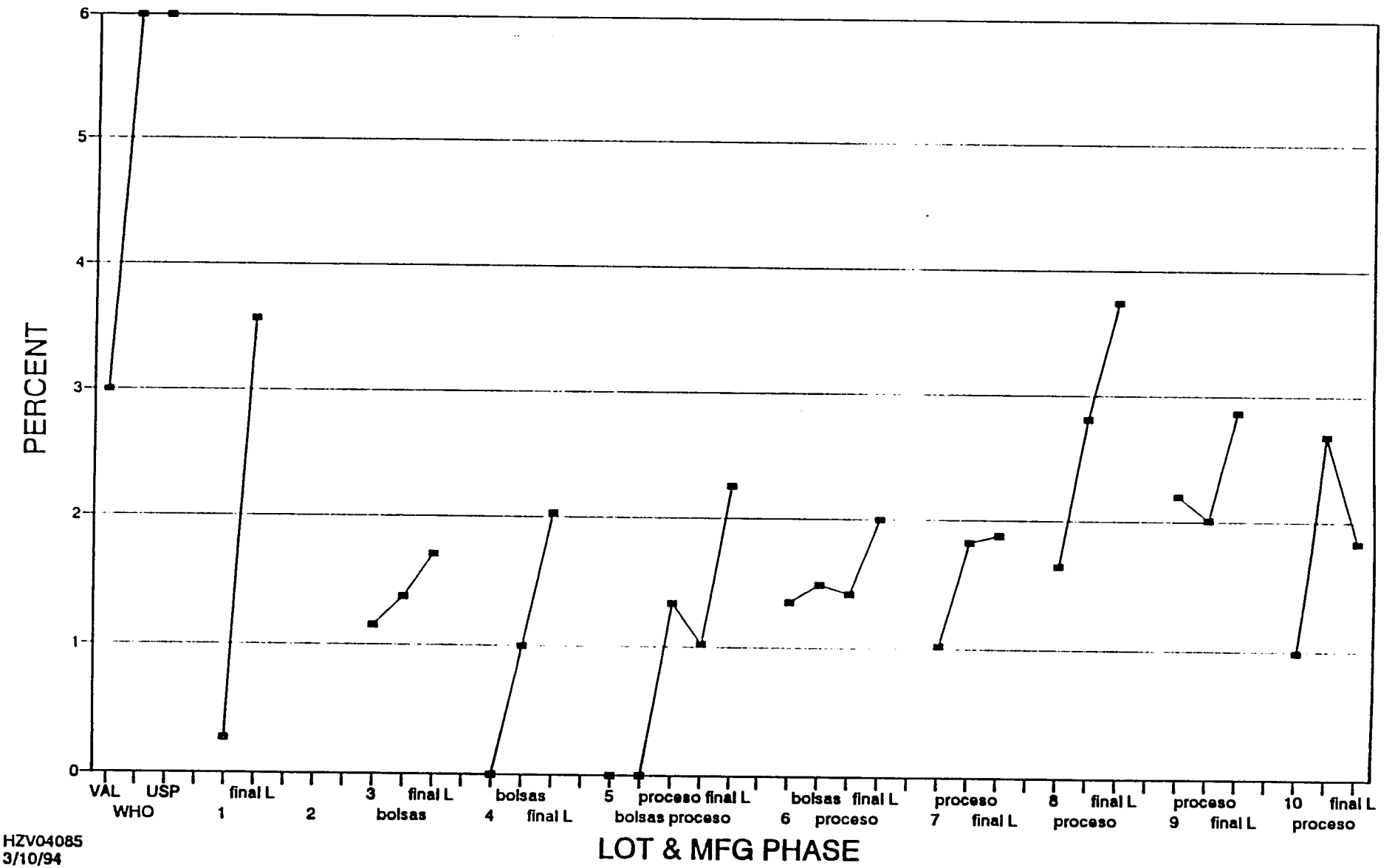
HZV04085
3/10/94

Minimum Maximum Average

151

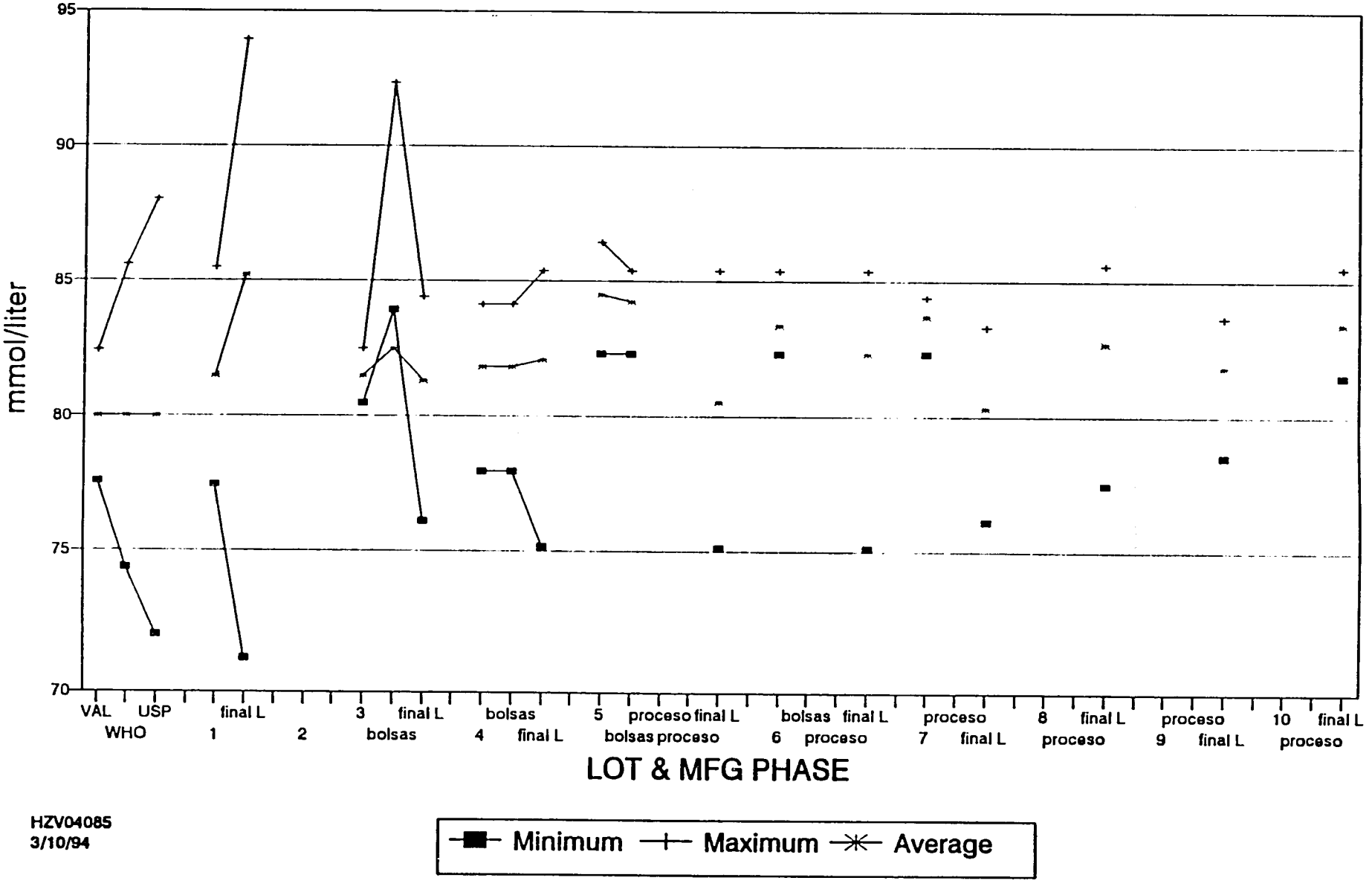
SueroVida - LAPROMED

POTASSIUM - RELATIVE STANDARD DEVIATION



HZV04085
3/10/94

SueroVida - LAPROMED
CHLORIDE RESULTS



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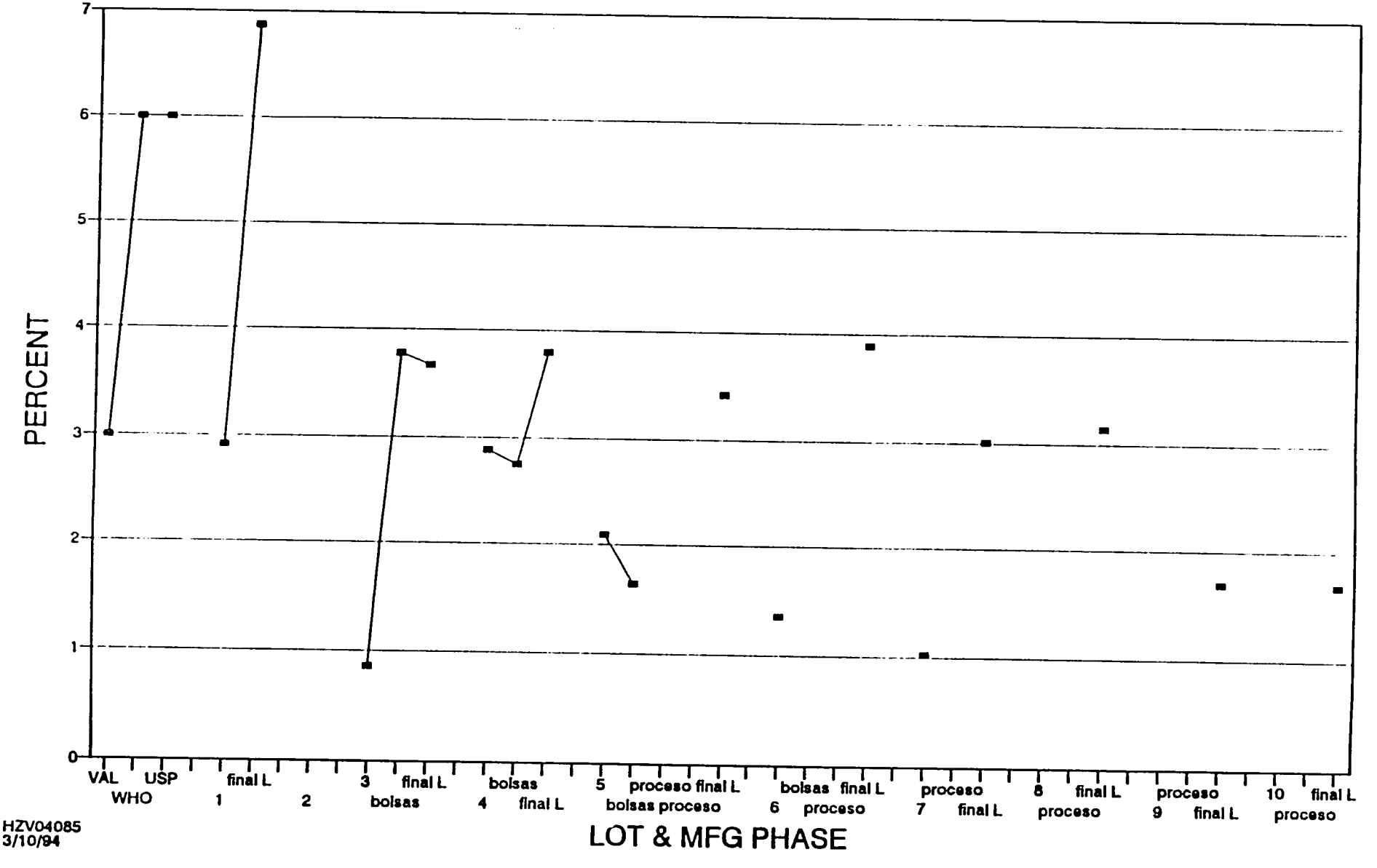
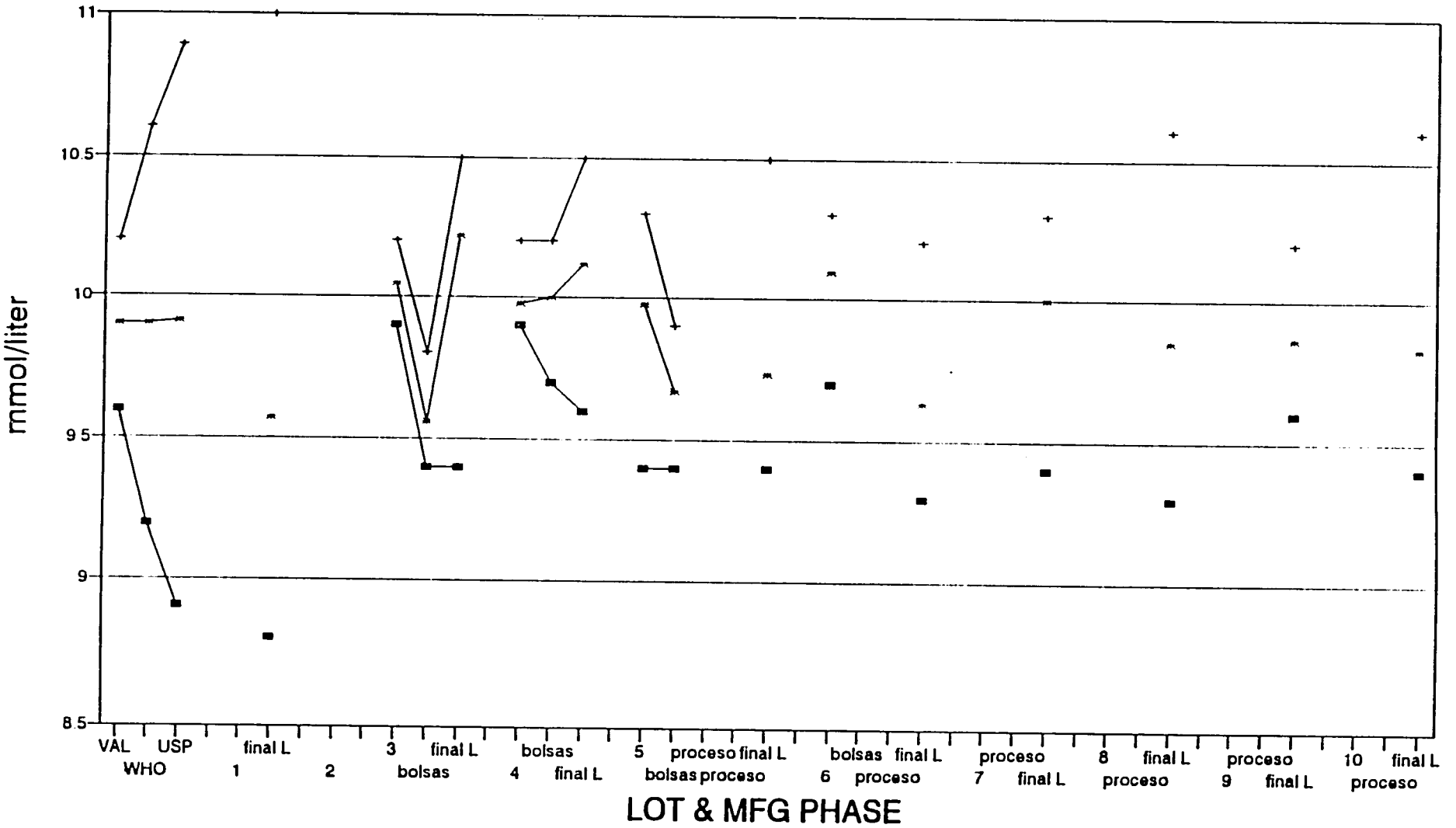
3/10/94

SueroVida - LAPROMED
CHLORIDES - RELATIVE STANDARD DEVIATION



HZV04085
3/10/94

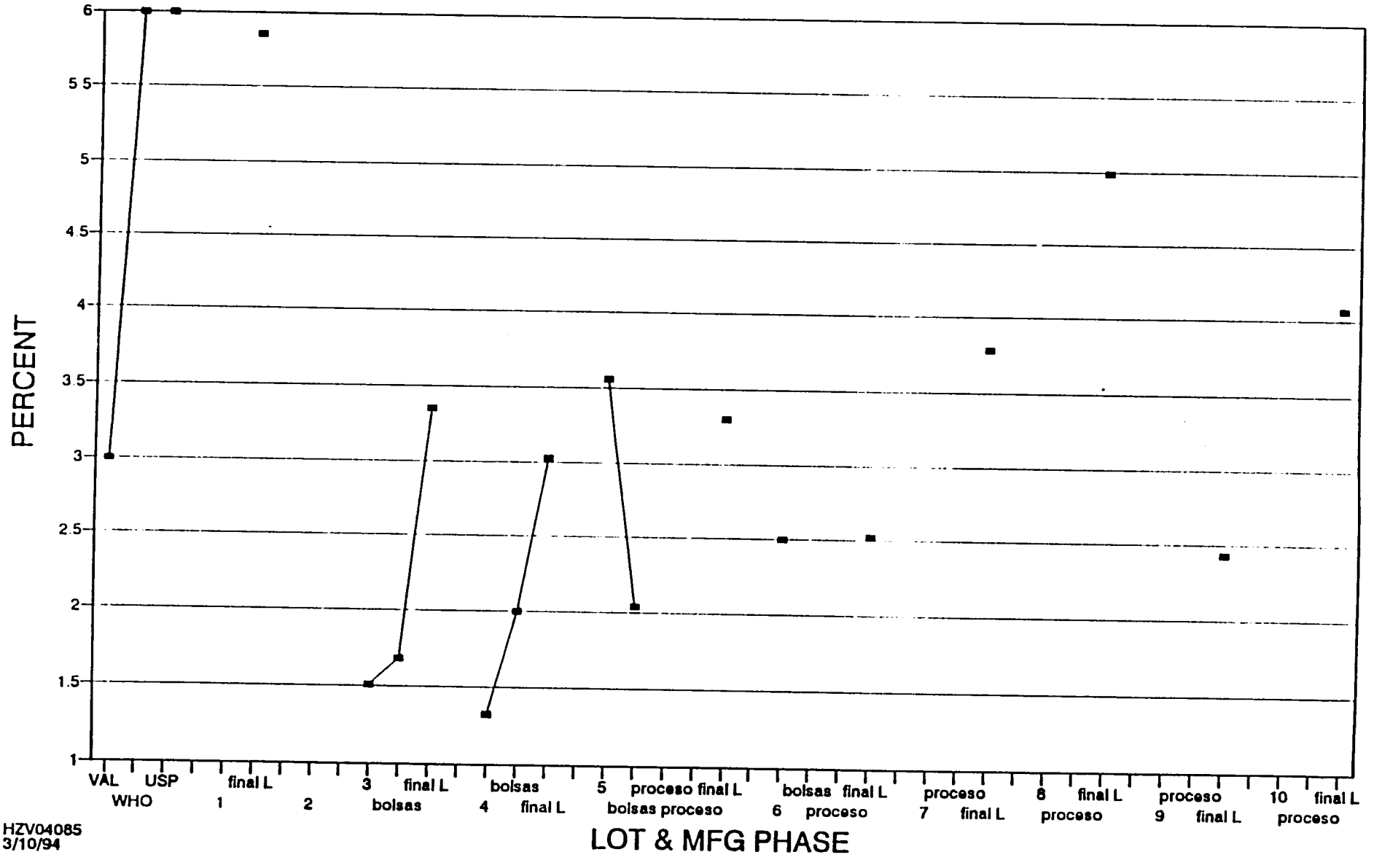
SueroVida - LAPROMED
CITRATE RESULTS



HZV04085
3/10/94

Minimum Maximum Average

SueroVida - LAPROMED
CITRATE - RELATIVE STANDARD DEVIATION



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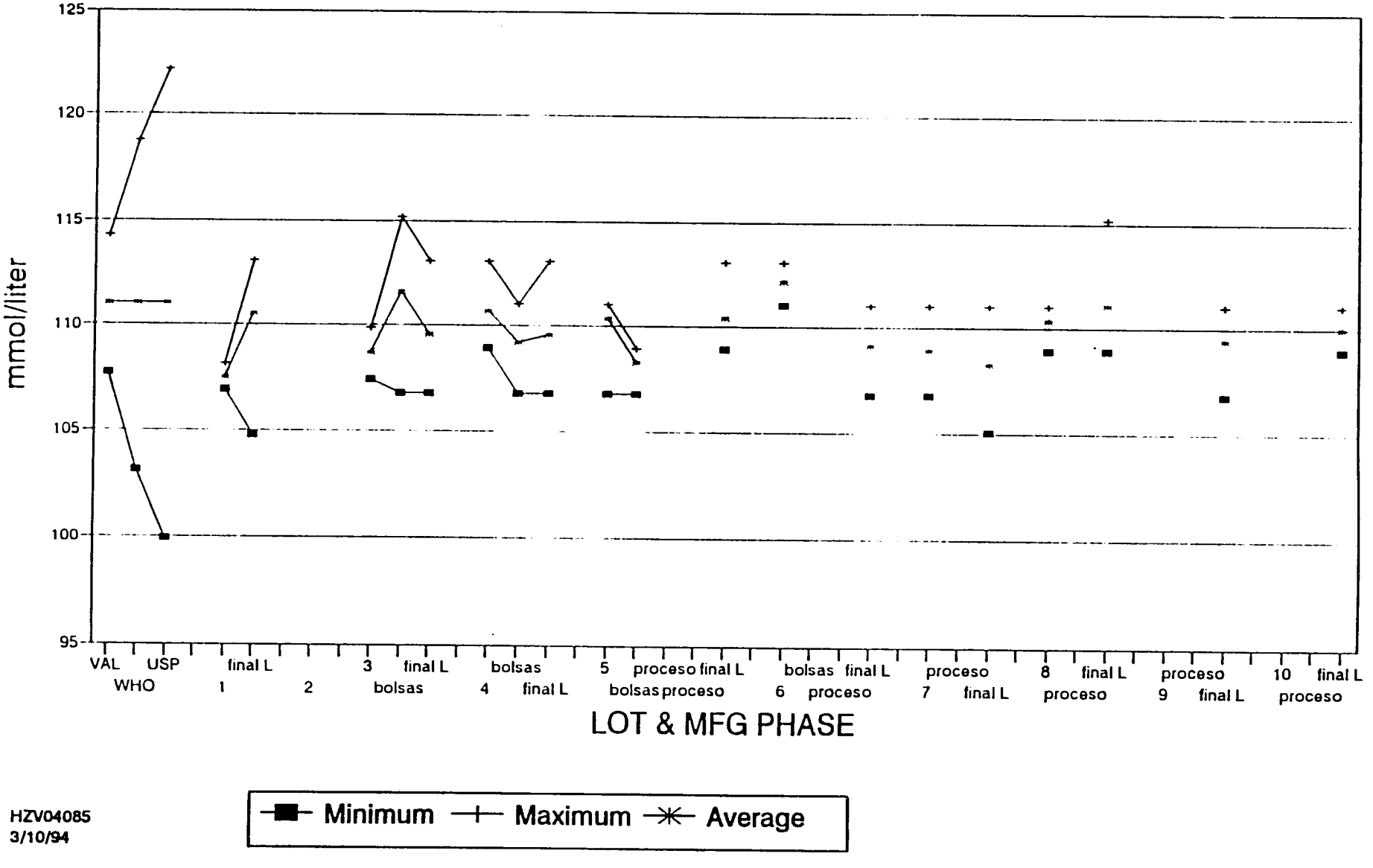
3/10/94

SueroVida - LAPROMED
GLUCOSE RESULTS



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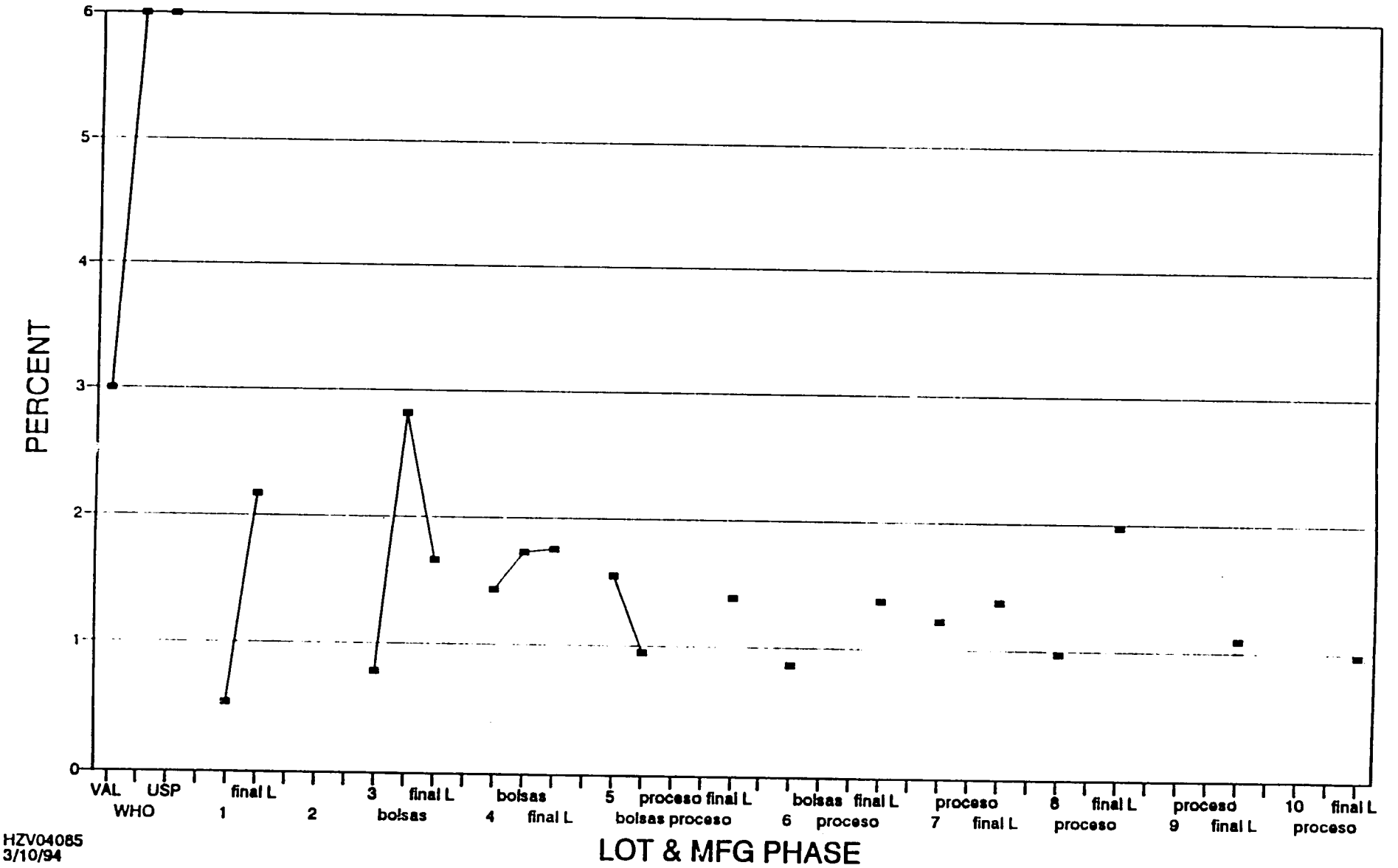
3/10/94

SueroVida - LAPROMED

GLUCOSE - RELATIVE STANDARD DEVIATION



HZV04085
3/10/94

Attachment D

Expenditure Report

USAID/G-CAP Contract No. 520-0339-C-00-2234-00
Contract Budget Category Expenditure Report
October 1993 through March 1994

Budget Line Item	Budget	Total Expenditures 10/1/93 - 3/31/94	Total Cumulative Expenditures
Salaries	$202,537.00	$50,313.00	$187,376.82
Fringe Benefits	98,948.00	30,760.23	98,948.42
Consultants	22,653.00	3,307.50	5,547.50
Travel/Transportation	80,828.00	12,889.32	55,066.60
Other Direct Costs	82,259.00	19,506.19	75,582.09
Equipment/Materials	316,505.00	103,593.79	211,854.93
Contracted Services	1,000.00	121.85	1,171.19
Subcontracts	472,573.00	112,885.60	385,580.73
G&A	209,747.00	43,652.47	188,582.12
Total	$1,487,050.00	$377,029.95	$1,209,710.40
Fixed Fee	14,472.00	3,770.29	12,097.10
GRAND TOTAL	$1,501,522.00	$380,800.24	$1,221,807.50

Expend.rpt
5/23/94

Attachment E

Travel Summary

TRAVEL SUMMARY
(October 1, 1993 - March 31, 1994)

October 1993

See below November 1993.

November 1993

H. Zardo	(10/24-11/16/93)	Construction Oversight Production Technical Assistance

December 1993

H. Zardo	(12/6-13/93)	Construction Oversight Production Technical Assistance

January 1994

H. Zardo	(1/10-20/94)	Production Technical Assistance

February 1994

No in-country trips

March 1994

No in-country trips