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INGENIO VICTORIA DE JULIO

Diagnostic, Valuation and Privatization Strategy Report

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Washington DC 20006

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4 de diciembre, 1992
Sr. Dayton Caldera
Presidente de CORNAP
Managua, Nicaragua

Estimado Sr. Caldera:

Tenemos el placer de presentarle los informes finales para los Estudios de Diagnóstico, Valoraciones, y Estrategias de Privatización para el Ingenio Julio Buitrago y el Ingenio Victoria de Julio. Estos informes han sido preparados para uso exclusivo de la administración de CORNAP para asistir en la evaluación de alternativas en las estrategias de privatización, y para proveer una base sobre la cual se puedan evaluar las ofertas hechas por inversionistas potenciales. Por lo tanto, rogamos no divulgar dichos informes a terceras personas, incluyendo posibles y futuros inversionistas.

El análisis presentado en estos informes está basado en informaciones operacionales y de contabilidad, explicaciones, e informes sometidos a nosotros y a nuestros consultores técnicos por la administración de los dos ingenios azucareros y de CONAZUCAR. Estos informes incluyen informaciones, estimados, y proyecciones que reflejan las opiniones de la administración relativa al futuro desempeño de las compañías. Dichas informaciones, estimados, y proyecciones reflejan suposiciones referentes a futuros resultados. Existe la posibilidad de que estas suposiciones sean incorrectas y, por lo tanto, no podemos garantizar que los resultados proyectados sean logrados. No garantizamos que la información, los estimados, y las proyecciones suministradas sean correctas.

Además hemos incorporado comentarios recibidos después de nuestra presentación a CORNAP en agosto de este año. Reiteramos el placer y la satisfacción profesional trabajar con usted y el personal de CORNAP.

Muy atentamente,

Price Waterhouse

Price Waterhouse

COMPLEJO AGROINDUSTRIAL AZUCARERO DE REFORMA AGRARIA VICTORIA DE JULIO

Diagnostic, Valuation and Privatization Strategy Report

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CONVERSION TABLE

Financial

U.S. $1.00	=	5.0 Cordovas

Area

1 Manzana	=	100 Varas^2	=	100 Meters^2
1 Hectare	=	1.4 Manzanas		
1 Hectare	=	2.47 Acres		

Weight

1 Metric Ton	=	1.087 Spanish Tons
1 Spanish Ton	=	920 Kilograms
1 Quintal	=	100 Kilograms
1 Quintal	=	220 Spanish Pounds

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EXECUTIVE SUMMARY

The Victoria de Julio sugar company is one of 351 state-owned enterprises assigned to the Nicaraguan privatization corporation, CORNAP, for privatization. This report, prepared by the Price Waterhouse International Privatization group (PW/IPG), includes a diagnosis of Victoria de Julio's operations, an estimate of the value of the company, and a recommended strategy for privatization.

A. Diagnosis of Victoria de Julio Operations

1. Company and Industry Description

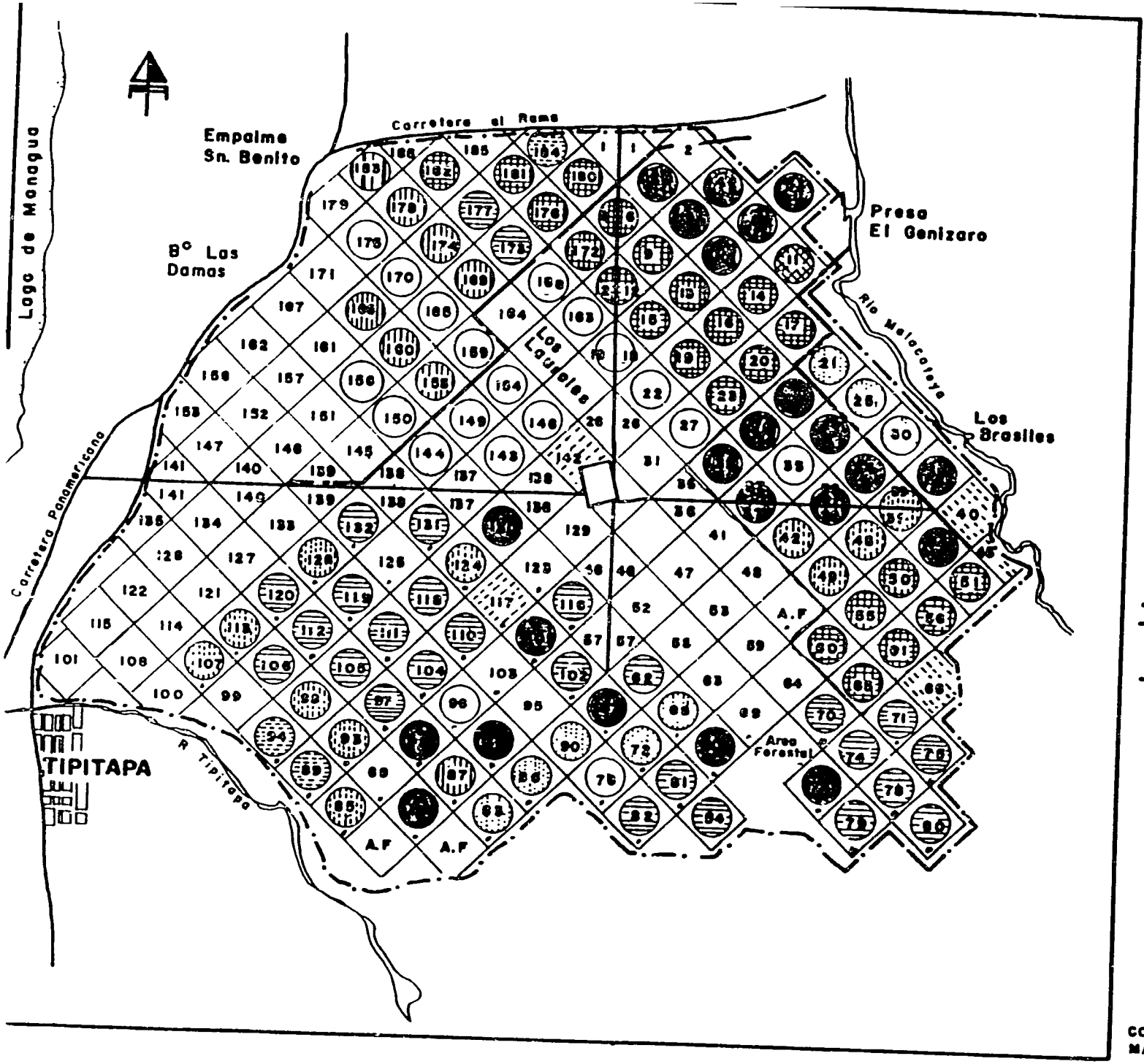
Construction of Ingenio Victoria de Julio (IVJ) began in 1982 under the Sandinista government and the mill began operations in 1985. The property which is now part of IVJ was confiscated under the agrarian reform from the Somoza family and a number of other private land owners in the area.

The Victoria de Julio sugar operation is located at Km. 37 1/2 of the Tipitapa-Malacatoya highway, approximately 1/2 hour from Managua (see map). The primary activities of the company are sugar cane cultivation, sugar processing, and energy generation for internal consumption.

IVJ was originally planned to have 20,000 manzanas under cultivation, however, at the present time the project has approximately 13,000 manzanas under cultivation (including land cultivated by colonos). Completion of the IVJ project is critical to achieving full utilization of the factory and improved financial performance. The land development required to complete the project is presented on the following page.

Victoria de Julio is one of seven sugar mills operating in Nicaragua. Its annual sugar production represents approximately 18% of domestic production. The state sugar company, CONAZUCAR, sells and distributes all national output, oversees the budgets of the mills, and provides financing for the mills.

Approximately 50% of 1991/92 production was sold to the domestic market at a government set price of $17.27/quintal. Approximately 10% of output was sold under the United States quota program at a price of $18.00/quintal. The remaining 40% of output was sold on the world sugar market at a price of $8.00/quintal. The average price of sugar in 1991/92 was $13.78 per quintal.



LEYENDA.

	No de Torres
BAUER	12
LINDSAY	11
CARBOMATIC	10
IRRIFRANCE	12
BAUER	9
LINDSAY	9
IRRIFRANCE	9
VALMONT	12
VALMONT	9
CARBOMATIC	12

35 No DE LOTES

CANAL CP-I

CANAL SECUNDARIO (El Genizaro)

LIMITE DE PROPIEDAD DEL COMPLEJO

RIEGO POR GRAVEDAD

RIEGO CONVENCIONAL

COMPLEJO AZUCARERO VICTORIA DE JULIO
MANAGUA — NIC. — C.A

2. Current Financial Condition

The seven sugar mills, including Victoria de Julio, have operated largely as cost centers under CONAZUCAR. Financial information is not reported on a timely basis and is unreliable. Consequently, the usefulness of financial information reported on Victoria de Julio is limited. However, PW/IPG has developed an estimated statement of profit and loss for 1991/92 based on results for the first nine periods of the fiscal year. The estimated net loss for the year is estimated at C 45.7 million ($9.1 million) on sales of C 58.5 million ($11.7 million).

A fundamental problem at IVJ is that only 13,000 of the planned 20,000 manzanas is under cultivation, limiting the factory to operate well below full capacity even with a favorable agricultural yield. The low 1991/92 agricultural yield exacerbated this problem by dropping mill utilization to only 40%. Low capacity utilization results in high factory overhead costs as a percent of sales.

As mentioned above, low agricultural yields have contributed substantially to the losses at IVJ. The 1991/92 agricultural yield was 32 tons/quintal compared to the 39 tons/quintal average for the prior three years. The industry expert believes that the mill should be producing in the area of 50-55 tons/quintal. The low agricultural yields are largely attributable to continuing drought conditions and the irregular water application that has resulted from problems in the central pivot irrigation system.

Additional factors contributing to IVJ's financial losses include excess personnel, high labor costs, and continued low world sugar prices.

3. Potential for Improved Profit Performance

An evaluation of agricultural and industrial practices at Victoria de Julio and discussions with management indicate that substantial opportunities exist for cost reductions and improved operating efficiency, including:

- Continued rationalization of personnel levels
- More effective management of the central pivot irrigation system
- Expansion of cultivated land (thereby increasing factory utilization)
- Increased purchases of lower cost outgrower (colono) cane
- Better field preparation and management
- Wiring of central pivots to factory power sources, leading to less dependence on the national grid
- Improved cane varieties

In addition, Victoria de Julio has the potential to expand power generation and sell excess power to the national grid. The potential revenues from expanded power

Ingenio Victoria De Julio (IVJ)
Land Distribution

	Sugar Cane			Forestry			Grand Total		
	Developed	Undeveloped	Total	Developed	Undeveloped	Total	Developed	Undeveloped	Total
IVJ	8,984	3,000	**11,984**	3,200	600	**3,800**	12,184	3,600	**15,784**
Growers	4,403	1,200	**5,603**	967	240	**1,207**	5,370	1,440	**6,810**
	13,387	4,200	**17,587**	4,167	840	**5,007**	17,554	5,040	**22,594**
Required	--	2,413	**2,413**	--	4,993	**4,993**	--	7,406	**7,406**
Plan	13,387	6,613	**20,000**	4,167	5,833	**10,000**	17,554	12,446	**30,000**

generation are dependant on the purchase price negotiated between IVJ and INE, the national electric company.

The cash flow projections developed by PW/IPG indicate that Victoria de Julio has the potential to become profitable and generate positive cash flows if reasonable operating efficiencies are achieved. The expansion of cultivated land to 20,000 manzanas and expanded electricity generation would also increase the value of the mill, according to the PW/IPG analysis. However, the profit and cash flow potential of the mill is highly sensitive to the average price of sugar which can not be accurately projected.

B. Estimated Value of Victoria de Julio

The assets that are included in the financial valuation are the productive assets of the enterprise only. These assets include the sugar mill, 8,984 manzanas of developed land, 3,000 manzanas of undeveloped land, 3,800 manzanas of forested land, 5,026 manzanas of other land, the electric generation facilities, and all equipment and inventories associated with these assets.

Two methods were used to estimate the value of Ingenio Victoria de Julio ("IVJ"): the Discounted Cash Flow ("DCF") method and the liquidation value of IVJ assets.

1. Discounted Cash Flow Valuation

The *DCF method* is considered the best method for estimating the value of IVJ as an ongoing enterprise. The DCF analysis was performed by projecting expected future cash flows and converting the cash flows into their present values using a discount rate that reflects the riskiness of the cash flows. The analysis assumes that IVJ will not have to repay any of the debt currently on its balance sheet after privatization.

IVJ is currently operating at a loss and if it continues to be operated as it is now, the mill's value as an ongoing concern is zero. In order to become profitable, IVJ must implement operating improvements and increase the volume of cane that is processed in the mill. Under these conditions, the DCF analysis indicates that the mill could have a positive value of 43 to 104 million cordobas ($9 to $21 million).

In order to achieve the higher end of the DCF range, substantial capital investments would be required to improve operations, expand cultivated land, and expand energy generation.

2. Liquidation Value

The *liquidation value* of IVJ is the price that could be achieved through an orderly sale of all the assets available to be privatized. The liquidation value is generally considered the minimum acceptable value of an enterprise. However, an enterprise may be sold as a going concern for less than the liquidation value due to employment objectives, anticipated future tax revenues, and other considerations.

The liquidation value of IVJ's assets is estimated at approximately C 172 million (US $34 million), based on asset lists provided by IVJ management, the experience of industry experts, and local asset valuation specialists. This estimate should not be considered a definitive value, but rather a reasonable approximation of liquidation value. In addition, this estimate does not reflect the time and transactions costs that would be required to carry out an orderly liquidation of the mills' equipment, nor the likelihood that some equipment could not be sold given currently low world sugar prices and the low level of new investment in the industry.

3. Conclusions

A primary Government objective of privatization is for IVJ to continue as a going concern. Thus, a reasonable range for the value of IVJ is the going concern value of C 43 to 104 million ($9 to $21 million). These estimated values are based on numerous assumptions and are particularly sensitive to variations in the discount rate, average sugar price, and sale price of electricity.

C. Recommended Privatization Strategy

1. Government Objectives

The principal objectives of CORNAP in privatizing IVJ are as follows:

- Reduce or eliminate government financial losses resulting from the negative cash flow of the mill and future government investment.
- Transfer ownership of the mill as quickly as possible.
- Improve management and operations of the mill.
- Maintain employment at the mill.
- Maximize the cash generated from the sale of IVJ.

2. Privatization Options

PW/IPG has identified four potential options that may be appropriate for the privatization of Victoria de Julio:

- OPTION 1: SALE OF ENTERPRISE ASSETS

  CORNAP would sell the assets of IVJ as a going concern to an investor group with experience in the industry. The liabilities of IVJ would remain with the Government. The responsibility for severance benefits would also remain with the government, but would partially offset employees' payment for their option to buy 25% of the State's holding in IVJ. The investors would form a new company, which would be set up at the time of the sale, with IVJ's assets and continue to operate the mill.

- OPTION 2: INFUSION OF NEW PRIVATE CAPITAL (JOINT VENTURE)

  A new company would be formed with the assets of IVJ and new capital invested by a private investor group. The new company would be jointly owned by the private investor group and the Government with the private group holding majority control. As in Option 1, the sale of specific assets would be negotiated with employees and all liabilities would remain with the government.

- OPTION 3: MANAGEMENT/EMPLOYEE BUYOUT

  CORNAP would sell the assets of IVJ as a going concern to IVJ management and/or employees. The purchase would likely have to be financed with Government support.

- OPTION 4: MANAGEMENT CONTRACT OR LEASE

  CORNAP would lease or contract out management of IVJ to a private firm with expertise in sugar mill operations. Ownership of IVJ would remain with CORNAP and the mill would continue as a going concern. Ownership of the mill could be transferred to the private sector several years later after operations, management, and financial performance had been improved.

3. Recommended Strategy

Given the uncertainty concerning the attractiveness of IVJ to private parties, we recommend that CORNAP pursue a flexible strategy which maximizes the chances of achieving a successful privatization. Based on the Government objectives outlined above we recommend the following approach:

1. Solicit the participation of private investors in IVJ through a sale of assets or joint venture (Options 1 or 2). The advantages of this approach are as follows:

   - Ownership of IVJ is transferred to a private owner which eliminates the responsibility of the Government for financial losses and further capital investments.

   - Private, experienced owners have a strong incentive and the capability to improve management and operations.

   - IVJ continues to be operated as a going concern and employment is maintained, although probably at a lower level.

   - Cash is generated for the Government in the short-term. (Under Option 1 only).

   The disadvantages of this approach are as follows:

   - The Government may receive a lower price if the mill is expected to continue as a going concern rather than be liquidated. As noted above, the ongoing concern value of IVJ is estimated at $9 to $21 million while the cash liquidation value is estimated at $34 million.

   - Private investor interest in IVJ may not be strong given IVJ's current financial position. Attracting private investors may be difficult and time consuming compared to contracting out management.

2. If private investment proves infeasible, solicit a private manager for a management contract or lease (Option 4). Management compensation should be closely tied to profitability. The advantages of Option 4 are as follows:

   - Private, experienced management is introduced immediately.

   - Private managers, with proper incentives, have a strong motivation to improve management and operations.

   - IVJ continues to be operated as a going concern and employment is maintained, although probably at a lower level.

   - IVJ could be privatized at a later date after operations, management, and financial performance had been improved.

The disadvantages of Option 4 are as follows:

- Ownership of IVJ remains with CORNAP and the Government continues to be responsible for financial losses and further capital investments.

- The private management fee may be substantial, further increasing costs to the Government.

- Cash proceeds from privatization are delayed.

3. If the financial potential of the mill is such that no private manager is interested in an incentive-based contract, "corporatize" the mill and minimize financial losses to the Government.

   - "Corporatization" would involve establishing the mill as an independent financial entity, rather than a cost center under CONAZUCAR as it is presently. As an independent corporation, management would have more control and more accountability for profitability. In addition, the system of financial reporting and control could be improved so that management would have more accurate information on which to base decisions and private investors would have a more reliable basis for considering an acquisition in the future.

   - Minimizing financial losses would involve reducing costs, improving productivity and efficiency, and limiting capital investments. This may require replacing current management.

A management/employee buyout, Option 3, is not recommended due to the following disadvantages:

- Ownership by current management and employees would bring no added industry experience to the management and operations of the mill.

- The Government may have to support the financing of the buyout which could result in a reduction or elimination of net cash proceeds from privatization.

4. Privatization Action Plan

The steps that CORNAP should follow to implement this privatization strategy are as follows:

- PW/IPG continues to identify potential investors.

- CORNAP/CONAZUCAR requests the renegotiation of the price paid for energy sold to INE prior to preparation of bidding documents.

- CORNAP/CONAZUCAR should resolve the following issues with the IVJ union:

  - The basis for calculating the employees 25% of IVJ (book value, asset value, net present value, or other)

  - The timing of the sale of land to the employees in relation to the privatization of the remaining assets

  - The number and specific manzanas to be sold to the employees

  - The terms of payment for the employees' 25% purchase (termination payment, government financing, etc.)

  - Impact of the sale of land to employees on the mill's personnel requirements

  - The management of the employees cane fields, terms of sale to the mill, and distribution of proceeds to the employees

  If the sale to the employees precedes the sale of the remaining assets, this information should be available for inclusion in the bidding documents.

- If an asset sale, CORNAP identifies the specific assets to be included in the bidding documents (including cash, accounts receivables, inventory, etc.)

- CORNAP/CONAZUCAR organizes preliminary meetings of provisional Board of Directors of sugar industry mill owners to determine issues regarding the future functioning of the industry such as the distribution of U.S. quota. This information may be required for the bidding documents.

- CORNAP/CONAZUCAR determines the disposition of the Las Canoas dam. This information should be available for the bidding documents.

- PW/IPG prepares prospectus and bidding documents and does mailing to interested parties.

- CORNAP forms evaluation committee and reviews bids. PW/IPG assistance is provided on request to analyze bids.

- CORNAP initiates negotiations with the most attractive bidder(s).

Readers of the report should consider that statements, estimates, and projections provided by IVJ reflect assumptions concerning future results that may or may not prove to be correct. Certain results will depend on decisions resulting from future negotiations with sugar industry workers, INE, and potential investors that are not known at this time.

I. INTRODUCTION AND BACKGROUND INFORMATION

During the 1960s and most of the 70s the Nicaraguan economy experienced relatively stable economic growth, driven by cotton, coffee, beef and sugar exports. However, by the end of the 1970s, political and social tensions led to civil war.

The government that came to power in 1979 sought to change the state's role in the economy. As a result, the size and influence of the government grew rapidly during the 1980s. Privately-owned businesses were confiscated or expropriated and government regulation increased dramatically. As a result of these policies, increased military and social spending by the government, civil strife, and the U.S. trade embargo, the Nicaraguan economy suffered through a period of severe economic decline.

By April 1990 when the current government took office, the Nicaraguan economy was in a period of hyperinflation, high debt and depleted international reserves. Since that time the Nicaraguan government has initiated a number of economic reforms to stabilize the economy and increase its market orientation. Among these reforms have been efforts to reduce public expenditures both through fiscal constraint and reduction of the role of the government in the economy through privatization of public enterprises.

Privatization is a high priority of the government. To direct the privatization program, Corporaciones Nacionales del Sector Publico (CORNAP), an autonomous government agency reporting to the Office of the President, was created in May 1990. The 351 public enterprises assigned to CORNAP in 1990 were organized under approximately 24 "corporations."

In addition to CORNAP's own team of privatization managers, CORNAP is being assisted by investment bankers, an IDB-funded technical assistance program with INCAE, and a USAID/Nicaragua-funded technical assistance program executed by the PW International Privatization Group (PW/IPG). This report, prepared by PW/IPG for CORNAP, includes a diagnostic, valuation and strategy for the divestiture of the Victoria de Julio sugar company.

Victoria de Julio (IVJ) is a public enterprise expropriated from the Somoza family and other landowners. Until recently it was controlled by CONAZUCAR, one of the public corporations belonging to CORNAP. IVJ is currently administered by an administrative board set up as part of an agreement between the Nicaraguan government and the sugar industry labor unions.

The field work supporting this report was carried out during visits to CORNAP, CONAZUCAR and IVJ during April, May and June 1992. Technical evaluations of

IVJ agriculture and factory operations were performed by industry experts contracted by PW/IPG. Assessment of legal issues relating to the potential privatization of the sugar company (still in progress) is being performed by the CONAZUCAR Legal Advisor. The operating and financial projections included in this report are based on presentations made by IVJ and CONAZUCAR management. Asset valuations were prepared by the industry experts contracted by PW/IPG and by local Nicaraguan valuation consultants.

Readers of the report should consider that statements, estimates, and projections provided by IVJ reflect assumptions concerning future results that may or may not prove to be correct. Certain results will depend on decisions resulting from future negotiations with sugar industry workers and potential investors that are not known at this time.

The contents of this report are the result of our inspections of the sugar company, the review of IVJ documents and industry statistics, numerous and extensive interviews with IVJ management, agriculture, factory and administrative personnel; CONAZUCAR management, financial, technical, and marketing personnel, CORNAP management and others. PW/IPG would like to thank all those that assisted us during this project.

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II. WORLD SUGAR MARKET

This section of the report provides background information on world sugar production, consumption, international trade and prices.

A. World Production

According to statistics published by the U.S. Department of Agriculture (USDA), world sugar production is approximately 113 million metric tons (MT) per year. The production statistics of the largest producers in the world, and the Latin American and Caribbean region (LAC), are illustrated in the following table:

World Sugar Production - 1991/92

	(MM MT)	%
EEC	15.5	14
India	13.6	12
U.S.S.R.	8.7	8
Brazil	8.5	8
Cuba	7.3	7
China	7.0	6
United States	6.6	6
Rest of World	45.4	40
World Total	112.6	100
LAC Region:		
South America	14.0	12
Caribbean (incl. Cuba)	8.6	8
Mexico	3.5	3
Central America	2.3	2
LAC Region	28.4	24

Source: *USDA - Sugar and Sweetener - Situation and Outlook Report (December, 1991)*

USDA statistics for the last three years estimate that the general production of sugar, at the world level, has increased 4.3 metric tons (MT), or 4.0%, in the two years since 1989/90 to 1991/92. The largest increases in production occurred in India (1.5 MT), China (1.4 MT), Brazil (0.7 MT) and the United States (0.7 MT). There were declines in production in the former U.S.S.R. (0.8 MT), Cuba (0.7 MT) and the European Community (0.5 MT).

Production in the LAC region was dominated by Brazil and Cuba, which have 30% and 26%, respectively, of the total region. Other important producers are

Colombia (6%), Guatemala (4%), Peru(2%), and Venezuela (2%). Nicaragua's (1.7%) production is similar to Costa Rica and El Salvador but larger than Belize, Honduras and Panama.

It is estimated that production growth in the LAC region has increased 1.3 MT, or 4.9%, from 1989/90 to 1991/92. The largest increases were in Brazil (0.7 MT), Mexico (0.4 MT), Argentina (0.4 MT), and Guatemala (0.2 MT). The increase in these countries was partially compensated by a reduction in production in Cuba, estimated at 0.7 MT.

B. World Demand

World sugar consumption (approximately 112 MT) is estimated by the USDA to be lower than that of production. The following table illustrates the USDA consumption statistics for the largest consumer countries in the world and the LAC region:

World Sugar Consumption- 1991/92

	(MM MT)	%
U.S.S.R.	13.3	12
EEC	12.8	11
India	12.5	11
United States	8.1	7
China	7.6	7
Brazil	7.1	6
Mexico	4.4	4
Japan	2.8	3
Rest of World	43.2	39
World Total	111.8	100
LAC Region:		
South America	12.1	11
Mexico	4.4	4
Caribbean (incl. Cuba)	1.6	1
Central America	1.1	1
LAC Region	19.2	17

Source: *USDA - Sugar and Sweetener - Situation and Outlook Report, December, 1991.*

USDA statistics indicate that world sugar consumption has increased approximately 4.1 MT, or 3.8%, in the last two years. This growth is attributable to population growth as well as a decrease in prices resulting from increased supply. India had the largest increase in consumption (1.4 MT). The United States

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(0.4 MT), China (0.4 MT), Brazil (0.3 MT) and Mexico (0.3 MT) also showed significant increases. The decline in consumption in the former U.S.S.R. (0.4 MT) has partially offset these increases, while consumption remained low in the extensive market of the European Community.

World consumption per capita is estimated at 20.6 kilograms. Among the principal country and regional consumers (according to the levels of per capita consumption), Mexico (49 kg), the European Community (47 kg), Brazil (45 kg), and the United States (32 kg) are the largest. The Asian region has a per capita consumption of 11 kg. Due to the low consumption and tendency towards strong economic growth, the Asian region represents a promising potential for future consumption growth. It is estimated that the largest countries in the region, China and India, consume only 7 kg and 14 kg per capita, respectively.

The per capita consumption in the LAC region is 42 kg. Per capita consumption in Central America is 38 kg. In Nicaragua, consumption is approximately 32 kg (70 lbs) per capita.

USDA estimates that in the LAC region general consumption has grown by approximately 1.0 MM MT from 1989/90 to 1991/92, or 5.7%. This increase in consumption has been greatest in Mexico (320,000 MT), Brazil (250,000 MT), Argentina (180,000 MT), and Colombia (140,000 MT).

C. Supply and Demand Equilibrium

USDA statistics show that world production has exceeded world consumption during each of the last 3 years. Excess production has been 0.5 MM MT in 1989/90, 3.5 MM MT in 1990/91, and 0.8 MM MT in 1991/92. Accumulated excess of sugar production has increased worldwide reserves which are now estimated to be around 19.9 MM MT, or 18% of annual worldwide consumption. These increasing reserves have caused a downward pressure on world sugar prices.

The producing countries with the greatest deficit are the former U.S.S.R., the United States and China with deficits estimated in 1991/92 at 4.6 MM MT, 1.4 MM MT, and 0.6 MM MT, respectively. The deficit in the former U.S.S.R. has grown as a result of its recent economic difficulties. China, however, has rapidly decreased its deficit.

Cuba is by far the greatest excess producer of sugar, with an excess estimated for 1991/92 at 6.4 MM MT. However, the excess production in this country has fallen substantially from the level of 7.2 MM MT as a result of its recent economic difficulties. Other countries/regions with significant excess production include

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Thailand (3.0 MM MT), the EEC (2.7 MM MT), Australia (2.2 MM MT), Brazil (1.4 MM MT), and India (1.1 MM MT).

Even excluding Cuba, the LAC region has a significant net excess production of sugar. It is estimated that surplus production in 1991/92 is 1.9 MM MT (excluding Cuba), which is equivalent to approximately 2% of worldwide sugar consumption, outside the region. In addition to Brazil, other countries with surpluses include Guatemala (670,000 MT), the Dominican Republic (410,000 MT), Argentina (350,000 MT) and Colombia (320,000 MT). Nicaragua exports approximately 50% of its production or approximately 108,000 MT).

The country in the region with the greatest deficit in production is Mexico, with a deficit estimated last year at 910,000 MT. Other countries with important deficits are Venezuela (200,000 MT), Chile (120,000 MT), and Perú (100,000 MT). Deficit countries in the region presently create an important demand for sugar totalling approximately 1.4 MM MT.

D. World Trade

Worldwide trade volume for sugar has declined since the beginning of the 1980s. This trend has occurred as a result of a change to corn sugar sweetener in the United States and Japan; a greater self-sufficiency in India and China; and the reduction in foreign exchange in many countries, particularly those of the former U.S.S.R and Eastern Europe. USDA estimates that the volume of world exports for 1991/92 are at about 27.4 MM MT, or equal to 24% of the total of world production, the lowest level since the end of the 1970s.

Most sugar production at the world level is consumed in the producing countries under price structures established by the governments of each country. Local prices generally do not respond to world prices which are mostly based on marginal production costs of the surplus countries. Taking into account that the international prices do not generally reflect the total cost of production, many producing countries protect the local sugar industry against these low world prices by limiting imports.

Most of the main producing countries participate in preferred markets established by net importing countries, among which the most important are the EEC and the United States. Both markets reserve import quotas for select countries and pay above the world prices. Presently the EEC pays the equivalent of approximately 29 US cents/lb, and the quota prices of the United States are at about 23 US cents/lb. In comparison, the refined sugar price at the Coffee, Sugar and Cocoa Commodity Exchange in New York is presently around 9-10 cents/lb., while the FOB sale in the caribbean ports is 12-13 US cents/lb.

Several other special sales agreements exist between exporting and importing countries. Cuba, the largest exporter, has sold most of its excess production over the last few decades to the former U.S.S.R. and Eastern Europe under special sales agreements. Japan has special sales/purchase agreements with Australia and the Philippines, and Canada has a special agreement with Barbados. Thus, much of international trade is conducted under terms which have nothing to do with the free market.

In 1991/92, Cuban exports represented 24% of total world exports. The former U.S.S.R. is the most significant importer, having imported 4.6 MM MT, or 17% of the world's imports last year. The following table shows the principal countries/ communities with the largest exports/imports.

World Sugar Trade - 1991/92

	(MM MT)	%
Sugar Exporters:		
Cuba	6.5	24
EEC	5.6	20
Thailand	3.0	11
Australia	2.2	8
Brazil	1.3	5
India	1.1	4
Rest of World	7.7	28
Total Exports	27.4	100
Sugar Importers:		
U.S.S.R.	4.6	17
EEC	2.8	10
Japan	1.9	7
United States	1.8	7
China	1.2	4
Rest of World	14.7	54
Total Imports	27.0	100

Source: *USDA - Sugar and Sweetener - Situation and Outlook Report (December, 1991).*
Note: Includes sales within the European Community.

One can expect that the decreasing tendency in world sugar trade will continue in the short term since it is expected that there will be fewer imports from the former U.S.S.R., the United States and Mexico. Latin American imports, outside of Mexico, will be lower (approx. 0.5 MM MT). It is also expected that imports from Asia will rise given the trend towards increased consumption in Japan, Indonesia, South Korea, and Malaysia.

E. World Prices

From 1985 until the trimester of 1990, world prices for refined sugar (Caribbean FOB), increased from US 6.8 cents/lb. to US 19.7 cents/lb. Nevertheless, since that time, the prices have fallen 35% to a level of US 12.5 cents/lb. at the end of 1992. The world prices for unrefined sugar are illustrated in the following table. Note that these prices do not reflect the costs of transportation to port, storage, and other costs incurred in Nicaragua. The net price received in Nicaragua is therefore somewhat lower than the prices listed below.

World Sugar Prices: 1985-1991

Year/Trimester	US Cents/lb. (1)
1985	6.80
1986	8.47
1987	8.75
1988	12.01
1989	17.15
1990	17.32
I	19.53
II	19.67
III	16.12
IV	13.95
1991	13.40
I	13.55
II	13.25
III	14.07
IV (2)	12.71

Notes: *(1) Contract No. 11. for refined white sugar, prices F.O.B. stored in Caribbean ports.*
(2) Estimated.

Source: *USDA - Sugar and Sweetener - Situation and Outlook Report (December, 1991)*

The FOB Caribbean prices have continued to decline during 1992, until arriving at a level of US 11.8 cents/lb. in the month of March. It appears that high production combined with excess stocks and a decline in import demand have contributed to the recent downward pressure on world prices. Conditions in the world market, however, create uncertainty as to the future direction of world sugar prices in a market that has been erratic in the past.

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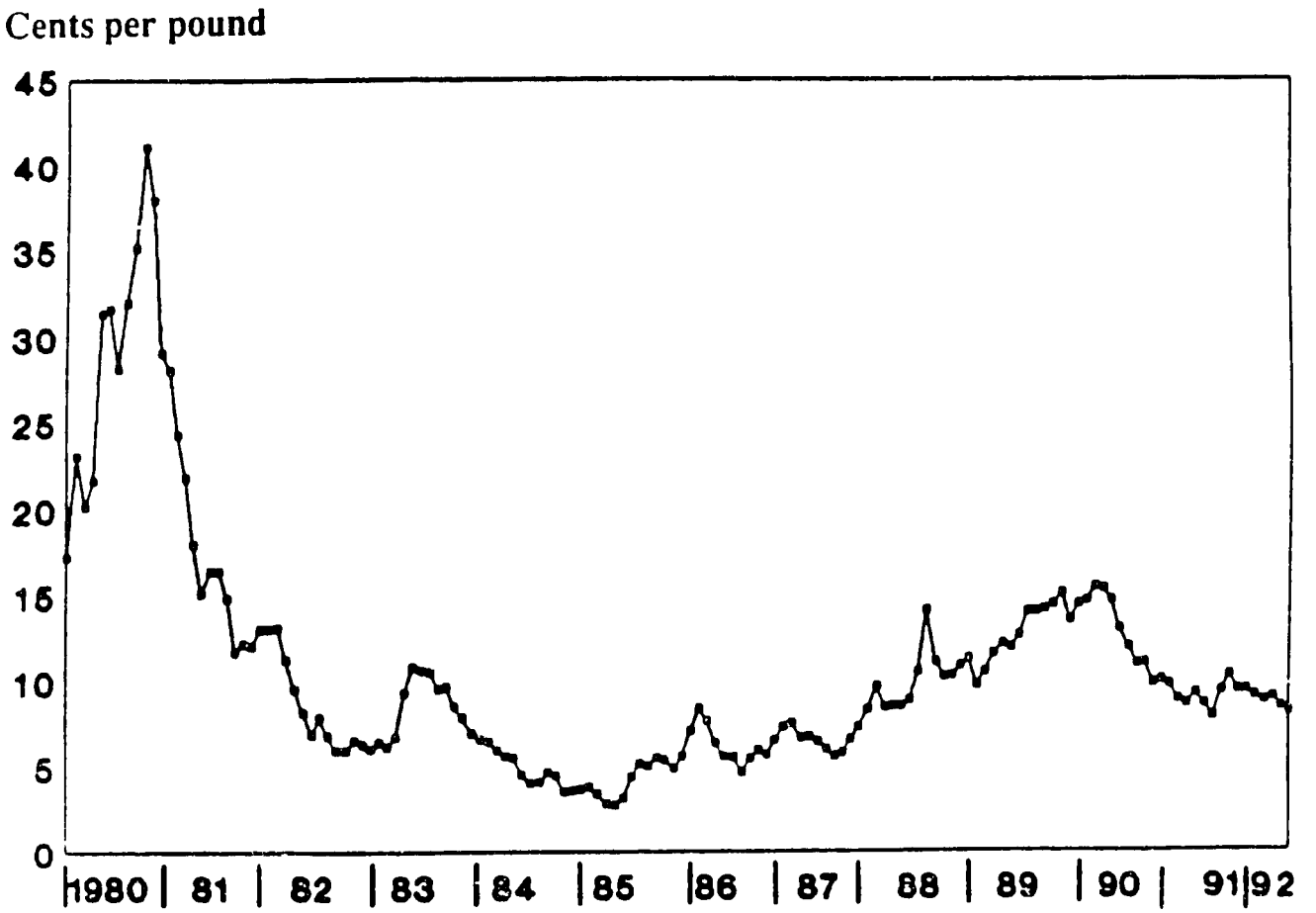
WORLD RAW SUGAR PRICES



1/ Contract No. 11, f.o.b. stowed Caribbean ports.
Source: Coffee, Sugar, & Cocoa Exchange, Inc.

- The decreasing U.S. quota allocation will result in an increase in sugar sold in the world market

- Potential increases in production may increase the percentage of sugar sold in the world market.

If all other variables were held constant, the above events would probably increase the risk to producers operating in the Nicaragua sugar industry. Recovery of domestic consumption, negotiation of an increase in the domestic price, and higher and less volatile prices in the world market are factors that would decrease risk in the Nicaragua sugar industry.

G. Consumer Price

The price of sugar at the point of sale to ***distribution agencies*** (middlemen) is also regulated by the Ministry of Economy and Development (see Appendix E). The prices shown in Appendix E are established for 100 lb bags traditionally used by Nicaraguan producers. The distribution agencies, supermarkets, and others in the distribution chain customarily repackage sugar in smaller containers and are free to mark up prices. The price of sugar to the final consumer is not regulated in Nicaragua.

Certain producers (San Antonio and Julio Buitrago) plan on packaging sugar in 5 lb bags to reduce middlemen markups and to increase consumer identification and preference for their product. Currently, no separate price has been established by the Ministry of Economy and Development for sugar packaged in 5 lb bags. Producers are expected to request the establishment of such a price classification to recover the additional packaging and handling costs of the 5 lb bag.

H. Distribution

Currently, all domestic and export distribution and sales are managed by CANSA, a public sector sugar distributor controlled by CONAZUCAR.

Sugar companies place their production in 100 lb bags at CANSA on consignment. CANSA distributes sugar in the domestic market through its 8 agencies within Managua, 16 agencies in the rest of the country, supermarkets, bottlers, and others.

Exports are sold through brokers. Approximately 60% of exports are currently sold through the futures market to provide working capital. Exports leave the country via the Port of Corinto, located on the Pacific coast. Export sugar is bagged in 150 lb. polypropylene bags, stored at the mill, trucked to the port, stored there, hoisted

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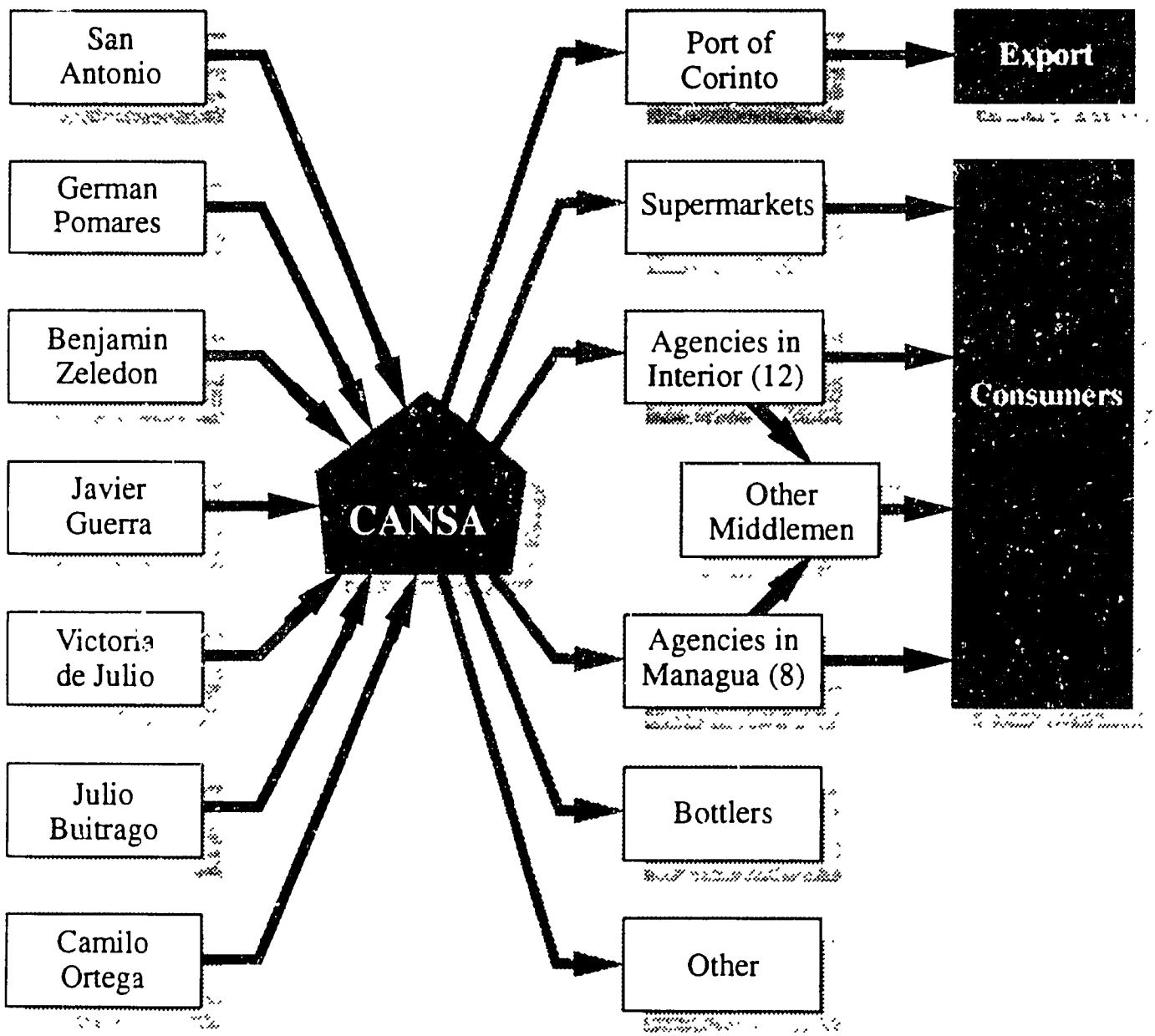
Nicaragua Sugar Distribution Channels



aboard ship on pallets, and then emptied into the hold. There is no bulk sugar terminal at the port.

I. Cane Growers ("Colonos")

The quantity of cane purchased from independent cane growers ("colonos") varies widely from approximately 90% at German Pomares and 50% at San Antonio to nearly 0% at Julio Buitrago.

The traditional contract in Nicaragua between producers and the independent cane growers provides independent growers one quintal (100 lbs) of sugar per short ton of cane, less the cost of services provides by the sugar company to the independent growers. The price paid to growers is the weighted average price producers receive for a quintal of sugar (see above). In 1991/92, producers paid independent growers $13.78 per ton of cane, less services rendered to growers.

Union contracts have increased overall labor costs to sugar companies. There is also currently excessive field workers in many of the sugar companies. Consequently, at today's low price to growers, it is often more economical to *purchase* rather than *grow* cane.

J. Sugar Industry Organization

Until June 1992, the Nicaragua sugar industry was 100% owned and managed by the government. The seven sugar mills were controlled and managed by **CONAZUCAR**, a public sector holding company in the sugar industry which belongs to **CORNAP**. CONAZUCAR has played an important role in the review and approval of the seven mills' operating and capital expenditure budgets and therefore in the allocation of financial resources to the mills. Import and testing of cane varieties and technical assistance to the mills has been coordinated through CONAZUCAR. CORNAP has not been involved in the operations of the mills.

Each sugar mill has operated as a cost center, producing sugar with little or no profit orientation. **CANSA** manages the sale and distribution of the final product. Sales reporting to the mills has been untimely, making sales, cost of sales, and the "bottom line" information officially reported by the mills unreliable.

The **Ministry of Economy and Development** regulates sugar prices in the domestic market. It also establishes import restrictions which allow domestic producers to operate free of competition from other countries, similar to the situation in the sugar industry throughout the world.

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Independent growers have formed associations by sugar company. The primary grower associations are:

GROWERS ASSOCIATION	SUGAR MILL
• Asociación de Cañeros del Occidente	San Antonio, German Pomares
• ANDAIME	Javier Guerra
• RIVAS	Benjamin Zeledon

Sugar industry unions are organized under the umbrella organization of the **Federacion de Trabajadores de Azucar**. The principal sugar industry unions include:

UNION	POLITICAL AFFILIATION
• FNT	Sandinista
• CST	Independent
• Other independents	Independent

Relatively recent changes in the law allow unions to be formed with a minimum of 25 members. However, existing unions may act as deterrants to the creation of new unions.

Labor contracts tend to be similar across the industry, but are negotiated on a company by company basis.

Labor-management relations have been generally harmonious in recent years with the possible exception at German Pomares. Worker strikes have occurred on a limited basis.

The **Azucareros del Istmo Centroamericano (AICA)** is a regional body with representatives of each of the Central American sugar producing countries. Its headquarters are in Guatemala. It meets quarterly to discuss issues of common interest to its members and to arbitrate disputes that arise among the sugar producing countries of the region.

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K. Restructuring of the Nicaraguan Sugar Industry

Privatization and other restructuring measures in the sugar industry have, or are expected to result in, the following changes:

- The workers of Julio Buitrago and Victoria de Julio will be provided a six month option to invest in up to 25% of the government's current participation in those sugar companies. The 25% participation in Victoria de Julio is to be in the form of agricultural lands. The remaining assets of the two mills are to be privatized.

- The workers of San Antonio, German Pomares, Benjamin Zeledon and Javier Guerra will have the option of investing their 25% in up to 50% of Benjamin Zeledon and 70% of Javier Guerra, via a mutual fund to be established in the name of the workers of these sugar mills. The remaining 50% of Benjamin Zeledon and 30% of Javier Guerra will be privatized.

- San Antonio has been returned to its previous owners.

- German Pomares is in the process of being returned to its previous owners.

- CORNAP will study the divestiture of Camilo Ortega.

- Management of the Victoria de Julio, Julio Buitrago, Benjamin Zeledon, and Javier Guerra sugar companies was transferred in May 1992 from CONAZUCAR to four-person administrative boards established at the four mills.

Persons familiar will the Nicaraguan sugar industry expect the restructured industry to operate in a cartel-like manner. A board of directors would be established at CANSA. The board is expected to be made up of the owners of the sugar mills and representatives of the pertinent regulatory bodies. The primary responsibilities of the board would be to allocate export quotas, discuss pricing issues, self-police the industry, arbitrate disputes, represent the industry, and conduct other similar tasks.

L. Competition

The following is a brief overview of the strengths and weaknesses of the seven sugar companies operating in the Nicaraguan sugar industry, obtained from interviews with persons familiar with the sugar mills. Historical operating statistics for the seven sugar mills are included in Appendix F.

1. San Antonio

San Antonio is the largest mill in the country, accounting for approximately 42% of production. It is owned by one of the strongest economic groups of the country and has a reputation for strong management. It has the only sugar refinery in the country and is currently doubling refinery capacity. The ownership group also controls ***Flor de Caña*** the largest distributor of rum in Nicaragua. However, the company was not able to reduce personnel in recent years to the extent accomplished by other sugar mills.

2. Victoria de Julio

IVJ is the second largest mill in Nicaragua in the sugar industry, where economies of scale can be important. It is the most modern and technologically advanced mill in the country, built in 1985. Industrial yield is high at 2.2 QQ/T. The factory is located in the center of the cane fields resulting in low cane transportation costs. Energy co-generation could be an important source of profits if the project is completed. Despite its many advantages, the potential at IVJ has yet to be realized. Effective management of its central pivot irrigation system appears to be the most important problem. Electric blackouts and problematic dark soils are contributing factors. Only 60% of the planned cane fields have been cultivated resulting in low utilization of the 7,700 TNS/day factory.

3. Julio Buitrago

IJB has relatively good agricultural and industrial yields. Soils, sugar quality and labor relations are good. It has limited capacity to increase cane production and suffers from a lack of water during years of light rainfall. However, it has the only distillery among the seven sugar mills and recently obtained a permit to produce potable alcohol which has attractive profit margins.

4. Benjamin Zeledon

IBZ has low production costs and excellent potential. It has an adequate supply of water and potential to expand cultivated areas and sugar production. Management and the ability of future investors to work with labor which may hold up to 50% of the company may be the determining factor in the results of this mill.

5. Javier Guerra

IJG is similar to Benjamin Zeledon in that it has good potential. It may be limited by how effectively the company is managed with 70% labor ownership.

6. German Pomares

IGP purchases 90% of its cane from colonos which gives it a competitive cost advantage in agricultural operations. However, poor cane varieties and lack of irrigation have resulted in low industrial yields. Management is considered ineffective and labor relations are poor.

7. Camilo Ortega

ICO is milling only 500 tons per day with an extremely low industrial yield. ICO may not be a viable operation.

III. NICARAGUAN SUGAR INDUSTRY

This section provides general background information on sugar production, costs, distribution, consumption, prices, competition, labor and other matters relevant to the viability and valuation of sugar mills in Nicaragua.

A. Production

The Nicaraguan sugar industry consists of seven sugar companies. Total sugar production for the seven mills in 1991/92 was 4,278,542 quintales distributed as follows:

	Quintales	%
San Antonio	1,788,404	41.8
Benjamin Zeledon	513,397	12.0
German Pomares	412,602	9.6
Victoria de Julio	767,927	18.0
Javier Guerra	321,435	7.5
Julio Buitrago	440,045	10.3
Camilo Ortega	34,732	0.8
	4,278,542	100.0

Production has ranged during the period 1970/71 to 1991/92 from a high of 5.3 MM Quintales (QQS) in 1975/76 to a low of 3.1 MM QQS in 1987/88. The average production over this 22 year period was 4.3 MM QQS. The average production over the last ten years was 4.4 MM QQS. Production over this 22 year period has fluctuated year to year, but has had only three years under 3.5 MM QQS and two years over 5.0 MM QQS (see Appendix A "Comportamiento Historico Produccion Azucar").

There is significant room for production to increase in Nicaragua over the 1991/92 results. Production reached 5.2 MM QQS in 1983/84 before the Victoria de Julio (IVJ) sugar company began operations in 1985. IVJ has a projected capacity of approximately 2.2 MM QQS when its lands are completely cultivated and agricultural productivity rises. With a break in the three year long drought conditions in Nicaragua and the injection of fresh capital, technology and management a probable result of the privatization process, production is likely to increase. If the world sugar price does not rise, this production increase would likely cause downward pressure on the average sugar price in the Nicaraguan market. Even though the Camilo Ortega sugar company may not survive, the loss of this production would not be significant.

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B. Production Costs

Production costs for the seven sugar companies were estimated by CONAZUCAR for 1991/92 based on a projected sugar production of 5.5 MM QQS as shown below and in Appendix B:

	US$/QQ
San Antonio	14.38
Benjamin Zeledon	14.73
German Pomares	15.64
Victoria de Julio	15.90
Javier Guerra	16.03
Julio Buitrago	16.96
Camilo Ortega	23.47
Industry average	15.29

Given the lower than expected production, actual costs were probably higher than those presented above. Inconsistencies in the accounting policies and practices among sugar companies may also diminish the comparability of the above numbers. However, excluding Camilo Ortega, there is an 18% cost difference among the highest and lowest cost producers. The cost advantage of the lower cost producers is explained in part by their high volumes of purchased cane.

It is significant to note that the relatively high cost of existing union contracts makes it generally more economical to **buy** rather than **grow** cane at current prices.

C. Consumption

Domestic sugar consumption grew steadily in Nicaragua from 1970/71 (1.5 MM QQS) through 1987/88 (3.3 MM QQS) at an approximate annual rate of 4-5%, or roughly 100,000 QQS per year. However, consumption fell precipitously in 1987/88 to 1.7 MM QQS, because of the critical economic condition of the country (see Appendix A). Consumption climbed in each of the two following years, but had only reached 2.3 MM QQS by 1990/91. Average consumption was 2.4 MM QQS over the 21 year period.

Per capita consumption in Nicaragua in 1990/91 was approximately 32 kg or 70 lbs. This level of consumption is roughly similar to that of Panamá and the other Central American countries, with the exception of Costa Rica (57 kg) and Guatemala (40 kg) (see Appendix C). Thus, sugar consumption appears to bear a relationship with prevailing economic conditions and disposable incomes. If this is

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true, sugar consumption should be expected to rise as the Nicaraguan economy continues to recover.

D. Supply and Demand

Average production (4.3 MM QQS) has exceeded average consumption (2.4 MM QQS) over the past two decades. Thus, Nicaragua has consistently been a sugar exporting country. Exports have averaged approximately 44% of production over this period. This situation has been accentuated in recent years with the fall off of domestic consumption. During the period 1988/89 through 1990/91 exports averaged 54% of production (see Appendix A and the graph on the following page).

E. U.S. Preferential Quota

U.S. consumption exceeds domestic production. The U.S. is therefore a sugar importing country. Imports to the U.S. are managed by means of a preferential quota system whereby exporting countries are assigned a quota of the U.S. import requirements. The U.S. quota is important because the import price to the U.S. has been significantly higher than world sugar prices over the last ten years. In 1990/91, the U.S. quota and world sugar prices were US $19.28 and US $11.88, respectively (see Appendix D).

The U.S. production/consumption deficit has narrowed in recent years. Consequently, Nicaraguan quota exports to the U.S. have decreased as shown below:

YEAR	QUOTA (QQS)	% EXPORTS	% PRODUCTION
89/90	1,063,720	42	24
90/91	909,883	35	19
91/92	429,000	20	10

The decrease in the U.S. quota will tend to place downward pressure on the average sugar price paid to sugar companies to the extent that the international price (Contract No. 11) remains below the U.S. quota price.

F. Producer Sugar Prices

The price of sugar paid to the sugar company has three components as follows:

- Domestic price
- Contract No. 11 (International)

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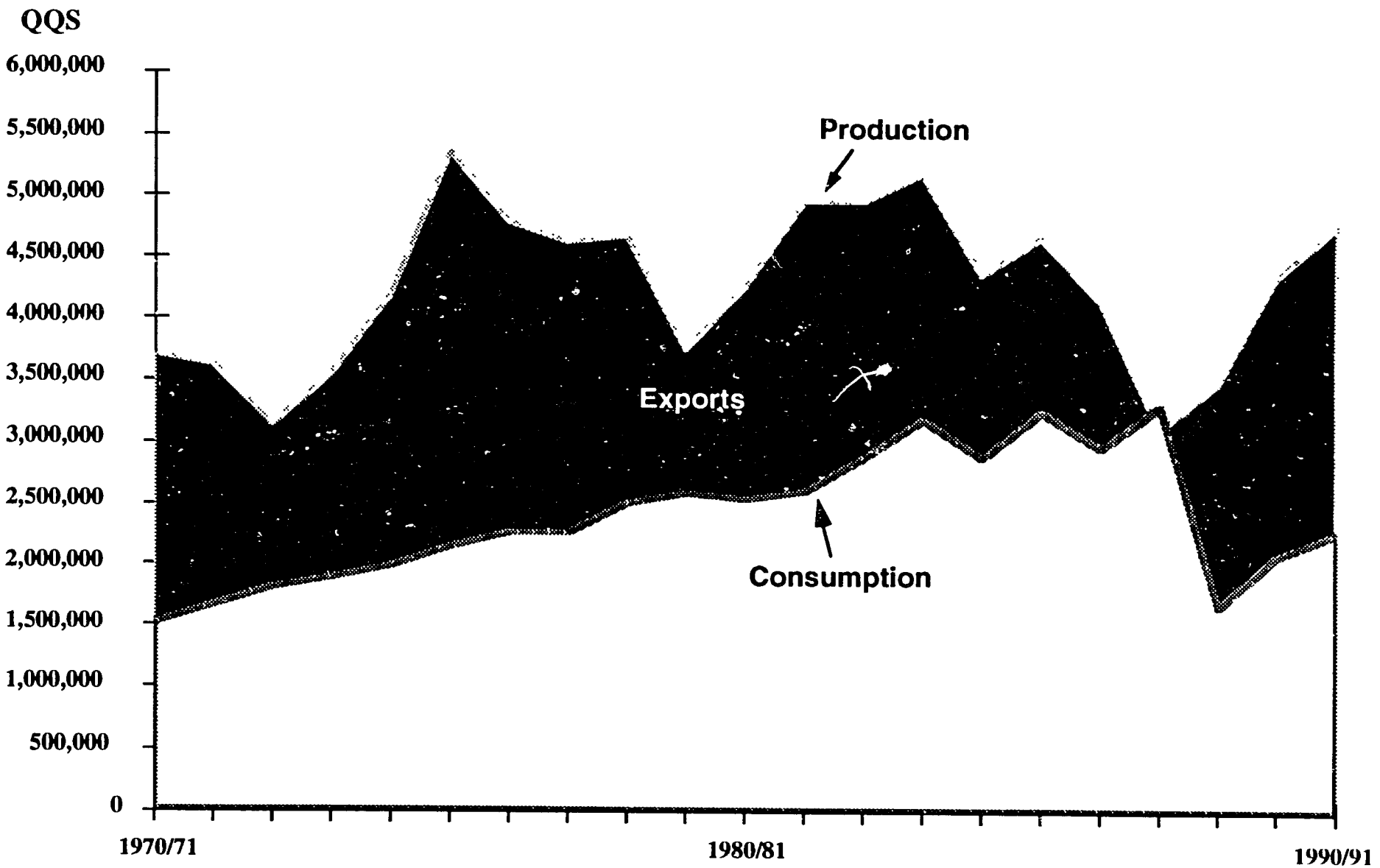
Nicaraguan Sugar Market
Production, Consumption, and Exports



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- Contract No. 14 (U.S. Quota)

The ***domestic price*** of sugar paid to sugar companies is established by the Ministry of Economy and Development. The price to the producer depends on the purity of the sugar as shown below:

Refined	C 102.42	$ 20.48
White sulfitate	C 86.34	$ 17.27
Crude	C 78.75	$ 15.75

Of the total world production of sugar less than 30% is traded internationally. Only 10-15% is traded on the world free market. The world sugar market is therefore a residual market and extreme price swings are not uncommon. Purchases of the ***New York No. 11 (World) sugar contract*** are therefore timed to lock in prices at their estimated peak. Since 1979/80, average New York No. 11 export prices have ranged from a high of $24.75 in 1980/81 to a low of $7.10 in 1984/85 (see Appendix D). The average C-11 price for 1991/92 was $8.00. The average C-11 price since 1979/80 in this volatile market was approximately $13.50.

The ***U.S. preferential quota price*** received by producers for Nicaragua's allocation of the U.S. quota during 1991/92 was $18.00. This price is part of the U.S. agricultural support system for U.S. farmers established by the USDA. The U.S. quota price has varied between $17.18 and $19.28 over the last three years.

Under the existing pricing scheme, the price paid to Nicaraguan sugar producers is the weighted average of the three price components described above. The calculation of the 1991/92 price to producers is shown below:

	PRODUCTION (QQ)	PRICE (US$)	REVENUE
Domestic	2,204,959	$17.27	$38,079,647
World	1,644,583	8.00	13,156,661
U.S. Quota	429,000	18.00	7,722,000
	4,278,542		$58,961,154

Producer Price $58,961,154 / 4,278,542 QQ = $13.78 QQ

As production sold in the world market presently makes up over 40% of total production, the average price to producers is extremely sensitive to fluctuations in the world price. This sensitivity may increase in the future for the following two reasons:

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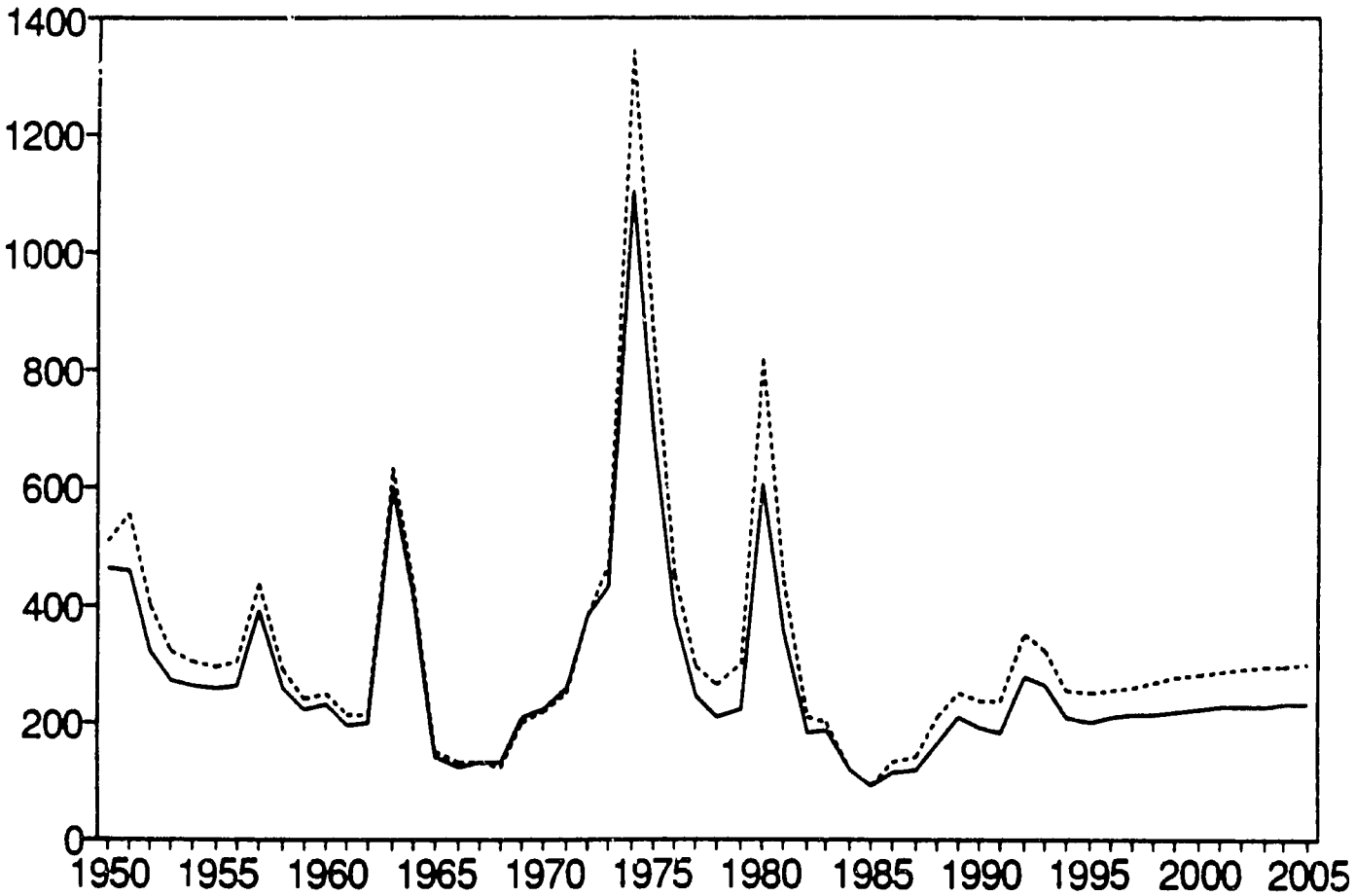
Sugar Prices
($/ton, 1985 constant)



—— Deflated by Manufacturing Unit Value (MUV) Index
- - - - Deflated by US GNP deflator

Source: World Bank, International Economics Department.

IV. AGRICULTURAL OPERATIONS

A. Background

The Victoria de Julio sugar factory is part of an integrated development project aimed at utilizing water from the Malacatoya River to irrigate about 20,000 manzanas of land, growing cane as well as eucalyptus trees, to produce sugar for export and generate power for the national grid. Initial studies were realized during the presidency of General Somoza, who then owned most of the land included in the project.

This land, which belonged to the Somoza family, was taken over by the revolutionary government in the early days of its regime in 1979. The farm had been used to raise livestock, grain sorghum and some cotton. No irrigation infrastructure existed at that time.

The area was selected for development and with the aid of the Cuban Government a local consulting firm Tecnoplan S.A. carried out a feasibility study of the "Proyecto Agro-Industrial Azucarero Tipitapa-Malacatoya" (TIMAL).

Under the Sandinista government, the original TIMAL project was revised and its implementation undertaken with technical and material aid from the Cuban government. The 7,000 tons per day sugar factory was designed by the Technology Department of the Sugar Ministry in Havannah, based on the standard design for new Cuban factories. Reportedly, four or five of these factories went on stream in Cuba during the past 20 years. A figure of $70 million, at 1985 value, is occasionally quoted as the amount invested by the Cubans in Victoria de Julio.

The Victoria de Julio Sugar Company is located 36 kilometers northeast of the city of Managua, the Capital of Nicaragua, on the northern Panamerican Highway leading to Honduras. The mill is located just north of the town of Tipitapa and takes forty five minutes by car from the center of Managua to reach the Sugar Mill. At kilometer 26 of the Panamerican highway there is a paved road heading east running 10 kilometers to the mill offices.

The first crops were grown and the mill started operations during the 1984/85 crop and has gradually increased its throughput to about one half of its projected volume of 840,000 tons per year. The output for this project has only reached 480,469 tons of cane, which was produced in the 1990/91 crop. This project was conceived with a high degree of mechanization including irrigation by center pivot machines, mechanized planting and harvesting of cane. The main reason for this shortfall has been the insufficient supply of cane. The total cane deficit can be attributed to delays in the development of irrigation land and to lower-than-

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expected agricultural yields. Equipment breakdowns in the fully mechanized harvest and transport operations have caused insufficient daily deliveries, which, prevent grinding the reduced amount of cane in a shorter period of time.

An integral part of the project was the construction of the Canoas Dam over the Malacatoya River. The dam is an earth fill structure 860 meters long and about 45 meters above the valley floor and has a holding capacity of about 120 million cubic meters of water.

An agreement was signed on March 26, 1992 between the President of CORNAP, the government organization in charge of the privatization of all government owned enterprises, and the sugar unions of Nicaragua. Under this agreement the government of Nicaragua guarantees the workers of Ingenio Victoria de Julio an option to buy up to 25% of the company. This option will be exercised in land, and the option allows for this land to be transferred to the workers with all improvements and irrigation infrastructure. It is the intention of the government to sell the sugar factory and the remainder of the land not acquired by the workers to private investors.

B. Agriculture/Cane Production

The total area of land that was considered to be suitable for sugar cane production in the original feasibility study was indicated to be 21,190 manzanas.

The climate of the area is suitable for sugar cane production provided that the crop can be irrigated, as natural rainfall is not sufficient to guarantee economic crops, monthly rainfall distribution indicates a six month dry period, and annual variation in rainfall is also considerable.

Cane production at Ingenio Victoria de Julio has been steadily growing with the total number of manzanas harvested. The average yield has fluctuated from a high in 1987/88 of 47.08 tons of cane per manzana to the low in 1991/92 of 31.60 tons per manzana.

1. The Company-Owned Farm

The Victoria de Julio project is made up of 186 lots, each lot being on average equal to one square kilometer or 100 hectares. The design of the field lay out is a perfect checker-board design with cane roads running parallel to each other 1,000 meters apart in a general northwest to southeast direction on one side and the crossing roads running from northeast to southwest in the other direction.

Of the total 186 lots, as a result of the governments decision to hand back land to owners who had their lands expropriated, a total of 49 lots will be or have already been returned to their previous owners.

2. Soils

The soils of the Victoria de Julio cane supply area can be generally grouped into two orders: mollisols and vertisols.

Mollisols, or locally known as "Suelos Rojisos", have been classified into four series: Chilamatillo (ch), Finlandia (Fn) El Triunfo (Tr) and Los Laureles (Lr). These soils are of volcanic origin and occupy the higher elevations and present a gentle undulation to near flat level soils. Their depth runs to 80 - 150 centimeters overlying a semipermeable horizon. These soils have good physical and chemical properties although it is reported that available phosphorous is moderate to low.

Vertisols are known locally as "Suelos negros" and are made of over 10 different soil series, the major ones being: San Nicolas (Sn), San Isidro (Si), Malacatoya (My), and El Coyol (Ec). These soils were formed by alluvial deposits or by erosion from areas of higher ground and occupy the lower areas of the project. Generally they lie over a cemented volcanic material with depths to this horizon ranging from 80 to 150 centimeters. These soils do not show signs of erosion. They are generally heavy soils with high clay content. It is reported that up to 70% of the clay constituent is of the montmorillonitic type. These clays expand when wet and contract and crack when dry. When wet they become almost impermeable and very difficult to work with.

Judging from cane yields-to-date since the projects first crop, it would appear as if the soils of the area have limitations as far as production is concerned and much work will have to be done to learn how to extract maximum production from these soils. Special emphasis will have to be placed on learning how to irrigate the "suelos negros" as these soils are giving the current field management severe problems of soil "husbandry".

3. The Climate

Rainfall data has been registered at the Victoria de Julio Sugar Company since 1987. Recorded precipitation and evaporation from a USDA Class "A" Pan at the Victoria de Julio station since April 1987 through February 1992 were analyzed and the monthly average totals for this period are presented below including the water deficit on a monthly basis:

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Month	Evaporation mm	Precipitation mm	Surplus/(Deficit) mm
January	266.6	0.46	(266.1)
February	284.6	0.80	(283.8)
March	355.0	0.30	(354.7)
April	336.0	8.30	(327.7)
May	269.7	61.10	(208.6)
June	205.8	157.50	(48.3)
July	200.3	154.00	(46.3)
August	193.4	157.00	(36.4)
September	166.2	224.10	57.9
October	171.1	231.00	59.3
November	178.8	41.70	(137.1)
December	223.8	10.20	(213.6)
Total	2,851.3	1,046.46	

As can be seen from the figures above the period between November and May show a severe water imbalance and the production of sugar cane must rely on irrigation to meet its water requirements.

4. Historic Cane Yields

Cane yields since the start up of operation in the 1984/85 crop year have fluctuated from a high of 47.08 tons/manzana in the 1987/88 crop to an estimated low of 31.60 tons/manzana in the present crop of 1991/92. We present below a table showing cane yields and, for the years where information is available, the rainfall recorded at the Victoria de Julio weather station.

Crop Year	Area Harvested	Tons Cane Harvested	Tons/ Manzana	Rainfall mm	Tons Cane/ mm
1984/85	1,339.43	52,688	39.35	n.a.	
1985/86	3,964.64	136,705	34.48	n.a.	
1986/87	4,725.76	174,134	36.85	n.a.	
1987/88	5,573.50	262,411	47.08	815.8	0.0577
1988/89	6,452.00	277,029	42.94	1,777.1	0.0242
1989/90	9,674.12	320,856	33.17	1,014.2	0.0327
1990/91	11,491.28	480,469	41.81	843.3	0.0496
1991/92E.	11,800.00	372,880	31.60	774.4	0.0408
Totals	55,020.73	2,077,172	37.75	5,224.8	
Total 1987/92E	44,990.90	1,713,645	38.09	1,044.96	0.0364

The Victoria de Julio sugar project relies heavily on irrigation for its sugar cane production. The project is served by the Canoas Dam which is capable of storing up to 120 million cubic meters of water. With proper irrigation one would not expect to find such variation in cane yields as indicated above. From the review of the cane yields and annual precipitation figures recorded one would have to arrive at the conclusion that total annual precipitation does play an important role in determining sugar cane yields at Victoria de Julio, despite the sophisticated irrigation system installed in the project. The irrigation system, either as designed, or as it is presently being operated, does not meet the crop demand for water.

Visual observations by the consultants in fields being harvested in early May 1992 indicated that the cane had been subjected to a severe water deficit during the last three months. Cane observed showed the bottom 10 to 12 internodes to have a satisfactory growth averaging about 12 centimeters per internode; however, the top 10 to 12 internodes were extremely short with an average length of about 3 to 4 centimeters, a clear indication that the cane had been starved for water over the past three months.

5. Irrigation Water Availability

The Victoria de Julio sugar project relies on two sources of water to meet its irrigation demand: the Canoas Dam and deep wells.

The primary source of water is the Canoas Dam, located in the valley of the Malacatoya River. This Dam is fed by a water shed with a catchment area of 842 square kilometers and is designed to store about 120 million of cubic meters of water. The Dam is an earth fill dam with the dam wall being 860 meters long and the top of the wall is 45 meters above the original valley floor.

At the Canoas Dam there are two outlets. The lower outlet delivers water to the Malacatoya river bed and this water is diverted to the project site by a concrete dam built approximately 50 years ago and feeds by gravity the Genizaro Canal that has a capacity to transport 2,400 liters per second in the first 3,000 meters the capacity then being reduced to 1,900 liters per second.

As of this moment the Genizaro Canal supplies water to 24 center pivot machines with a combined total water demand of 24,400 gallons per minute (1539.2 lps) and an area of approximately 2,496 manzanas giving us a water to area relationship of 9.77 gallons per minute per manzana which is considered adequate to permit applying water at the rate of 6.319 mm per day.

The higher outlet delivers water to a concrete lined canal 7.5 kilometers in length with a maximum capacity of 6,200 liters per second and a normal flow capacity of 5,420 liters per second that supplies water to eleven pumping stations located

along the Main Canal. The total combined pumping capacity installed on the main canal is currently 55,000 GPM.

The second source of water is by deep wells. To date, 54 wells have been drilled to an average depth of 300 feet. These wells are provided with electrically driven pumps and on average deliver 1,100 gallons per minute. The total combined pumping capacity of the deep wells is therefore 56,100 GPM equivalent to 3,538.9 lps.

6. Cane Varieties

The varieties of cane grown at Victoria de Julio are for the most part of Cuban origin. In descending order of magnitude they include the following varieties (in descending order of manzanas being grown): JA.60-5, C.87-51, L.68-40/90, Pindar, CP.62-374, and others.

No analysis of yields by varieties was made during this study but it would appear as if there is room to introduce new varieties into the project area to evaluate these new introductions and compare them to the existing varieties.

Of special importance would be the evaluation of new varieties that will adapt to the "suelos negros" which are the more difficult soils in the area.

7. Agricultural Practices

a. Land Preparation

The Victoria de Julio Sugar Company is still in the process of developing its sugar cane area and as a consequence the area of land to be prepared annually should be greater than if the project were already in a "steady state" situation where approximately 25% of the area would be renewed each year.

With a program such as the one outlined above it would be possible to renew old fields as well as bring in to production the thirty five additional lots for which irrigation equipment has already been purchased.

The usual sequence of land preparation at the Victoria de Julio sugar company includes up to five passes with various disc plows and harrows prior to furrowing the field. Land preparation does not normally include sub-soiling nor does it include land levelling, two operations that perhaps should be evaluated, specially in the black soils known as "suelos negros".

The first pass is carried out with a heavy to medium disc plow pulled by a John Deere 4560 tractor reported to have 160 HP and the implement used has 16 discs

of 28" diameter (16 x 28"). This operation is followed by two passes with a heavy disc plow 12 x 36" pulled by a russian built Kirovet K700 four wheel drive tractor with 250 HP. tractor. The four the operation is once again using the 16 x 28" disc plow and the final and fifth operation is carried out with a large 64 disc harrow with 15" diameter disc pulled by the Kirovet K700 tractor. The final operation is the opening of the furrows prior to planting with a two row furrowing plow pulled by the John Deere 4560 tractor.

b. Planting

One of the unique features of the Victoria de Julio sugar company is that the planting operations for the most part are mechanized using a Toft Cane Harvester to cut the cane used for seed, a Toft High Dump cane transport unit to transport the seed from the seed field to the cane planting field and a Toft two row cane planter to distribute the seed pieces (billets) in the rows. The covering of cane is done with a two row disc implement when planting takes place in the "suelos rojisos"; however, in the "suelos negros" management prefers to cover the seed by hand as the tilth on these black soils does not permit getting a good cover by mechanized means.

The planting of cane is carried out by a Toft two row cane planter pulled by a Russian-built T-150K tractor. The Toft two row cane planter comes equipped with a seed covering implement; however, local management prefer not to cover the seed immediately as they wish to verify density before covering consequently this operation is either carried out by a MTZ-80 tractor with a seed covering implement or by hand depending on the tilth of the soil.

Victoria de Julio has four Toft Cane Planters in their inventory. With three machines working ten hours per day the company has the capacity to plant up to forty manzanas per day. The cane planting season, because of the ability to irrigate throughout the year, is not limited to a specific season; however, when rains occur, machinery cannot operate efficiently. Consequently, most cane planting is carried out in the dry period from January to April. The planting period can therefore be considered to be 100 effective working days giving Victoria de Julio a cane planting capacity of 4,000 manzanas per year.

c. Fertilization

Fertilization of plant canes is usually accompanied with the application of an insecticide to control ground worms. The insecticide used has the trade name of Counter and is applied at the rate of 30 pounds per manzana. The only fertilizer element applied at the present time is Nitrogen in the form of Urea. Fertilizer and insecticide are applied with a special two row fertilizer implement mounted on a MTZ-80 tractor.

The transport of the fertilizer to the field is carried out by a MTZ-80 tractor pulling a five ton capacity trailer. It is estimated that the work of transporting and distributing 5 tons of fertilizer takes four hours of equipment time. Labor is also required to supply the tractor with fertilizer and to unload the trailer supplying fertilizer to the field.

d. Cultivation and Weed Control

Cultivation and weed control is carried out manually, by tractors and with the application of herbicides. Manual weed control is carried out using "machetes" to cut down overgrown weeds and is only recommended as a "last resort" method indicating that weed infestation has gotten out of hand and because of the growth of the weeds it would not be economical to apply herbicides. This work is usually given out by task.

Chemical weed control relies on a variety of herbicides. Separate grass control products are also used. The application of herbicides is either done manually with knapsack sprayers or by tractor-mounted spraying rigs. Manual application of herbicides is carried out by "norm", the "norm" being 12.5 knapsack loads per norm. Usually 9.8 knapsack loads will complete one manzana equivalent to 0.784 "norms".

The third method of weed control is mechanical cultivation with tractors. The tractor used for this operation is the MTZ-80 and a two-row cultivator. Herbicides are also sprayed with tractor mounted spraying rigs. The equipment used at Victoria de Julio is a Mataby spraying rig mounted on a MTZ-80 tractor. A second MTZ-80 tractor with a tank trailer is used to supply the rig.

Other manual cultivation practices carried out at Victoria de Julio are keeping in-field "fire breaks" free of weeds. Cleaning the head rows by hand is also carried out on occasion. Rat control is carried out using KLERAT.

e. Irrigation

The irrigation of cane at Victoria de Julio is currently not producing the results that should be obtained. The reason is not a shortage of water but rather the inability of applying the required water to the cane fields. Two aspects appear to be the primary causes of this deficiency in irrigation. One aspect is the continual interruption of electricity to the system which is causing severe downtime and is reflected by the observation of the stunted growth of cane, specially in the last three months as observed by internode development. The second major problem appears to be the problem of "bogging down" when soils, specially the black soils of the project, are wet. Several accidents have occurred to the pivot machines because they tend to get "bogged down" in the mud. Several towers have capsized and drive mechanisms have suffered with continuous break-downs.

The field management is aware of these problems and are now carrying out work tending to improve the drive paths on which the center pivot towers travel to avoid these problems. The cost of this work is high. It is imperative that an economical solution be found.

f. Sugar Cane Harvesting

Sugar cane harvesting at the Victoria de Julio Sugar Company is a completely mechanized system. The sugar cane fields are prepared for mechanized harvesting by first placing the center pivot in one of the quadrants that will not be harvested. Cane fire breaks are then prepared and the portion of the field required is set on fire to burn off as much of the cane leaves and trash as is possible.

To carry out the above work use is made of a T-150 tractor pulling a medium disc harrow as well as a MTZ-80 tractor pulling a tank trailer to water down the infield roads to be used to reduce dust. A crew of 20 workers then go about burning the field. The fire is organized by quadrants, each quadrant on average having 26 manzanas.

The actual cutting of cane is carried out by Austoft Combine Harvesters. These machines cut one row at a time and chop the cane and side deliver it to a cane transport unit driving along side the harvester. With each group of cane harvesters (usually four harvesters per cutting front) a MTZ-80 tractor stands by with a water tank trailer to permit the washing of the equipment prior to their scheduled service and maintenance work.

Cane transport is carried out by truck-tractors hauling semi-trailers with 18 ton capacity. These units drive in the field along side the cane harvesters receiving the chopped cane delivered by the harvesters.

8. Future Outlook on Production Costs

The performance figures for Victoria de Julio in 1991/92 can be found in Chapters VII and VIII which addresses the financial analysis of the operation. The assumptions made in the analysis are as follows:

1. Scenario 1, the "Base Case", is based on the historical performance of IVJ and assumes that the mill continues to perform as it has in the past.

2. Scenario 2 assumes that 322 manzanas of developed land owned by IVJ and 1,948 manzanas of developed colono land that was not in production in 1991/92 is put into production beginning in 1992/93.

3. Scenario 3 assumes, in addition to the assumptions in Scenario 2, that IVJ is privatized. The new management is assumed to be able to make reasonable improvements in the operations of the mill in order to achieve efficiency and productivity levels that are consistent with industry norms.

4. Scenario 4 assumes, in addition to the assumptions in Scenario 3, that an additional 6,613 manzanas of land is put into cultivation in order to reach a total amount of cane land, both colono and IVJ, of 20,000 manzanas.

5. Scenario 5 assumes, in addition to the assumptions in Scenario 4, that management is able to install two turbo-generators that it owns, but which are not currently in operation, in order to meet all of its electricity needs and sell excess energy to the national power grid.

The population of Nicaragua was estimated at 3,860,000 in 1990 and the present consumption of sugar to satisfy the local or domestic demand has been estimated to be 2.5 million quintals, giving the country an annual per capita consumption of 64.7 pounds.

The government sets the price of sugar that will prevail in the local market based on its projections of total sales to the three distinct markets that Nicaragua serves: domestic, USA and world markets. Traditionally, the government has set the price that sugar mills must pay per ton of cane delivered to the mill by independent cane producers known as "colonos" and this price has been based on the average selling price per quintal of sugar.

In the case of the Victoria de Julio Sugar Company it will be necessary to accomplish the following objectives in order to stay viable under present market conditions:

- Increase agricultural yields
- Reduce the cost of "standing cane"
- Reduce agricultural overhead expenses

a. Increasing cane yields

The history of the sugar cane yields at the Victoria de Julio Sugar Company reveals a situation that requires careful consideration.

The climatic data shows a high annual evaporation that would imply a potential for high sugar cane yields if cane were adequately supplied with water. Once this problem of water supply is resolved it should be possible to obtain a significant increase in cane yield.

The black soils of the Victoria de Julio project will require special attention in order to improve productivity.

Weed control requires closer supervision to obtain the desired weed-free environment for efficient cane production.

New varieties should be introduced and evaluated at the project sight. A coordinated national effort is required to catch up in this work that has been apparently neglected for many years.

b. Reduce cost of "standing cane"

A more rational use of labor is required to achieve a reduction in overall agricultural expenses. The budgeted costs for individual operations for the most part have been maintained as have therefore the labor costs; however, the operations have probably been rationalized and are calculated for the areas to be worked each year. The potential for more appropriately using labor will be examined as a scenario in Chapter VII.

c. Reduce agricultural overhead expenses

The staff could also look after services rendered to "colonos" such as land preparation, planting, harvesting, and repair and maintenance of the irrigation system to more efficiently handle overhead and administration.

9. Forestry Operations.

An integral part of the Victoria de Julio Sugar project is the generation of electricity for sale to the national grid.

The industrial installations include four boilers, each with a capacity to produce forty five tons of steam per hour and three steam turbine driven generators, each with four megawatts capacity. The project calls for the installation of one additional boiler and the installation of two additional steam turbo-generators, these additional units to have a capacity of twelve megawatts each for a total installed capacity of 36 megawatts. Fuel for this project will be sugar cane bagasse during the crop year and wood chips during the remainder of the year supplemented with bunker "c" fuel.

The forestry department at Victoria de Julio is responsible for developing the "wood-fuel" resources for this project. The land assigned to this project will be the four corners in the lots dedicated to sugar cane cultivation not covered by the center pivot machines and some lots where the soil conditions have been found to be unsuitable for sugar cane production. The project considers that in each square lot an average area of 17 hectares will be available for the forestry program equivalent to 24 manzanas. The trees will be harvested at five years of age.

During the first years the expected biomass yield with 18- 20% moisture content is 50 tons per manzana. As better techniques are employed and better species introduced it is felt that 70 tons per manzana will be feasible.

Once a steady state of exploitation is established the annual harvesting will be 2,650 manzanas per year with a yield of 70 tons of wood per manzana for a total annual production of 185,500 tons per year.

The original species introduced into the project was Leucaena leucocephala but observations indicated that this species was not achieving the desired rate of growth, consequently a new species was introduced Eucaliptus camaldulensis which is becoming the predominant species in the project.

Trees are planted in a delta grid 3 x 1.5 meters apart with a population of 2,222 trees per hectare (1,561 trees per manzana) with the best planting periods being the month of June and then later in the year in August/September. The project considers planting during seventy five days each year, 30 in June and 45 in the latter period. The seed for the Eucaliptus species originally was brought from Australia and the current supplier is the "Banco de Semilla" of the IRENA, the Nicaraguan Institute of Natural Resources.

Seed is planted directly in plastic bags with prepared soil and 30 grams of seed, reportedly is sufficient to sow 1,000 bags. This will give an initial density of 6 to 7 plantlets per bag. The bags are later thinned out leaving one plant per bag. To supply the annual programmed requirements of 1,300 manzanas per year the nursery department will require a production level of 2,100,000 bags per year. The actual nursery capacity is 15 million plants per year, so the project does not

foresee any problem in meeting its annual plantlet requirements. From sowing date to transplant date a total of 12 weeks is required at which time the young trees should be about 20 centimeters high. Planting will be carried out in the future with localized supply of water, calculated to be one liter per plantlet, transported to the field in 1,000 gallon trailer tanks hauled by the MTZ-80 tractors. Each trailer load will be sufficient to irrigate 3,785 plantlets. Experience has shown that this supply of water at the outset has greatly improved survival of the young trees.

The project considers that with additional experience in the planting and cultivation of the fields and the introduction of improved varieties and species yields of 70 tons per manzana will be possible.

Harvesting of trees is done with contractors who supply their own chain saws. Trees are cut leaving a stump 10 centimeters high for initiation of the new re-growth. Trees are allowed to dry in the field for a period of about 20 days prior to being loaded unto trucks by specialized equipment. Each truck has a capacity to transport 12.5 tons.

V. Factory/Sugar Production

A. Introduction

Of the commercial power generation project, only the additional boiler and the wood chipping plant have been installed. Two 12,000 kW generator and condensing turbine sets plus electrical switchgear have been on site for seven years, waiting for erection. So far, neither the excess bagasse available from cane processing nor the growth of eucalyptus trees in the star sections between pivot irrigation circles would provide the fuel basis required for the production of commercial power. A 120,000 liter per day ethyl alcohol plant, provided for in the original project, was dropped some years ago. A complete list of current equipment and installations is presented as Appendix G.

After 1989, the demand of sugar faced by Victoria de Julio has changed from 100% raw, as envisioned by the original project, to about 50% raw and 50% mill white. As the U.S. quota declines and the world market for raw sugar remains unattractive, it is likely that the white sugar percentage will increase further. Sulphitation and a used sugar drier were installed in 1990, and syrup clarification and a second drier in 1991.

B. Production Conditions

Pol and fiber of the cane delivered to Victoria de Julio are of reasonable levels, both averaging about 13%. The chopper-harvested cane arrives directly from the field, the average hauling distance being only 4 miles. These are truly ideal conditions and should insure negligible cane deterioration, provided the field is not burned too long before cutting. In spite of these conditions, however, mixed juice purity barely averages a little above 82 for the present crop, which still is high compared to past grinding seasons. It seems, that there is room for improvement with respect to the quality of cane delivered, which is the single most important determinant of the industrial yield of cane.

Next to industrial yield, the cost of labor is the most important term in the profitability equation of sugar making under Nicaraguan conditions. As grinding takes place during the smaller part of the year, -- a season of four months is considered reasonable at Victoria de Julio -- there are two distinct modes for the factory: crop, or production, and off-crop, or equipment repair.

For foundry and major mechanical work, there are no suitable commercial installations in Nicaragua. Work of this type for Victoria de Julio has traditionally been carried out in Cuba, an arrangement which continues even after the change of political regime. As would be expected, the mill has a very large and complete machine shop.

One of Victoria de Julio's more unusual operating conditions, at least for Central America where most sugar mills have gradually evolved from clusters of used machinery, is the generosity of its layout and infrastructure. The overall layout offers plenty of access to areas requiring maintenance, and there is no dearth of height, width and support capacity in building structures. Minimization of direct operating costs at the expense of capital costs is exemplified by the extra 25 feet in boiling house height which allow the cooling pond to operate by gravity rather than condenser water pumps.

Limitations in the flexibility of the original project have shown up in the additional installations made necessary by the production of white sugar. Both the syrup clarification and the sugar drying equipment have been wedged into the existing structure in a somewhat less than elegant way.

C. Plant and Operations

1. Cane Receiving and Preparation

Due to the physical form in which the cane arrives at the mill, chopper-harvester billets in side-dump cages, the work at this station is extremely simple. The two truck tippers are remotely controlled. Trash from the transfer points is weighed and reported at a proportion of 6 to 7% on gross cane.

The quality of cane preparation appeared satisfactory, even taking into account the billeted nature of the feed. There was an absence of uncut stalks at the bottom of the carrier. Even though average cane ground per crop day at Victoria de Julio was only 3,100 t, the throughput during actual working hours (lost time to date was 40%) amounted to 225 t per hour which is about three quarters of the rated 300 t per hour capacity. The equipment in this section should handle nominal capacity and beyond.

2. Cane Milling

This mill is electrically driven by AC motors, i.e., at constant speed. Possibly, very high expectations had been placed in the quality and reliability of cane supply, to rule out any temporary reduction of the tandem speed, and a uniform wear on the individual mills was assumed to dispense with the need for relative speed adjustments.

In most mills, the feed roller produced just about all of the juice, hardly any coming off the bagasse roller. This may be due to too light a load for the setting or insufficient maceration. The journal cooling system seems to be in somewhat of a disarray, open hoses discharging water in all directions on the outside of the mill

housings. Reportedly, there have been problems with the bearings of the 850 HP, 900 rpm mill drive motors, and also with their cooling.

3. Juice Treatment

The original Victoria de Julio project, molded after the Cuban template, was laid out for straight raw sugar production. Thus, the juice scale was installed just above the liming station, to save on juice pumping. When, in 1989, the need for juice sulphitation arose, the additional vertical process cascade required should have been fed by the existing limed juice heater supply pumps. An additional set of pumps, at the bottom of the new cascade, would then have taken the sulphitated and limed juice through the second stage heaters to the flash tank.

As it happened, the needed stainless steel pumps could not be obtained. This led to the short term solution of pumping mixed juice directly to the sulphitation column, gravity-feeding the acid juice to the juice scale, and then liming it as in the original project. The limed juice continued to enter the existing heater supply pumps. This solution resulted in a significant corrosion of the juice scale valves and, thus, in the discontinuation of measuring mixed juice. Juice is still not weighed two years later.

Some thought should be given to expanding the capacity of raw juice heaters (and clarified juice heaters as well). Clarifier capacity seems adequate. There is a record of throughput being increased by certain modifications to the original design. It is the misfortune of Victoria de Julio to never, as yet, have been tested at full capacity. At the slow pace at which the grinding rate has been increasing so far, process bottlenecks, inevitable in any newly erected plant, are likely to appear for quite some time.

Mud filters are of adequate capacity and cake thickness of at least one quarter of an inch was observed. As the elevation of the barometric condenser serving the three vacuum filters is too low to discharge into the elevated main condenser water canal, a special set of pumps is elevating the water from the filter condenser into that canal.

As a special feature, Victoria de Julio possesses a flotation-type clarifier for mud filtrate. It is of Tate & Lyle design and was installed simultaneously with the sulphitation equipment. The scum is recycled to the mud mixer, while the clear filtrate passes on to the clarified juice tank.

4. Juice Evaporation and Syrup Clarification

The five bodies making up each of the two multiple effect evaporators can work either as a quintuple or as a quadruple effect unit. In the latter case, the steam sides of "Pre" and "First" bodies are connected in parallel, while juice sides remain in series, with a pump transferring the juice from "Pre" to "First".

Since the turbo-generators are the only equipment feeding into the exhaust line, the indicated evaporator flexibility allows adjusting the exhaust pressure to mutually convenient operating conditions. If evaporators are clean, normal quintuple operation proceeds at an exhaust pressure of 12 psig. With incrustations, the pressure required may be as high as 30 psig. If the electric load on the generators demands a lower exhaust pressure at the turbines, evaporators can switch to quadruple operation. If backpressure at the turbines is not a constraint, some additional juice can be evaporated by quadruple operation before cleaning.

A flotation type clarifier, for use with a flocculent and phosphoric acid was installed in 1990, together with the required heaters and aerators, on the second floor of the fabrication building. The scum is recycled to the limed juice tank, the clarified syrup passes to the pan feed tanks. The installation of a second syrup clarifier, for use with a decolorizing agent, is planned.

5. Sugar Boiling, Centrifuging, and Drying

All of the eight 1,800 ft3 pans are fully automated, the three low grade pans are equipped with internal steam connections for massecuite circulation. They are of Honolulu-type design, allowing graining at one third of their working volume of 1,500 ft3.

In a central "control" room, levels and temperatures of all vessels are indicated on a huge wall panel, but no actual controlling of valves is carried out. Molasses Brix and temperature are controlled automatically.

For "A" massecuites, there are three 2,400 ft3 strike receivers and just as many 2,800 ft3 crystallizers. For "B" massecuites, there is one of each, and for "C" massecuites, the numbers, originally, were three and four, but recently were changed to two and five. This oversizing of commercial grade massecuite curing capacity and undersizing of capacity for low grade massecuites is odd, considering how conventional the design of most of the other stations is.

According to the centrifugal specifications available, capacity of the high grade machines will be inadequate for any grinding rate much beyond the present one. The original Cuban equipment list shows six 1,000 kg per charge machines, whereas the six units actually installed have a capacity of 670 kg per charge.

6. Sugar and Molasses Storage

The sugar warehouse at Victoria de Julio is fully equipped for bulk sugar handling, even though no bulk sugar terminal exists in the country. It can, however, also be used for bagged sugar. Actually, a 400' belt conveyor takes the dried mill white sugar to the top of the warehouse, where it falls into the bagging hoppers and from there into the bagging scales.

The two molasses tanks are located next to the sugar warehouse. The larger one, of 1.32 million gallons, was part of the original project. The smaller one, of 1.06 million gallons, was added last year.

7. Steam Generation and Distribution

The boiler station owes its present excess capacity to the provisions already taken for the commercial power project. For the 7,000 tons of cane per day sugar factory, four of the five 50 tph, 400 psig boilers are more than adequate. The fifth unit, earmarked exclusively for power generation, was erected along with the sugar factory units and ahead of the rest of the power equipment, to economize on erection costs.

A Brazilian engineered drier that will use flue gases from the first boiler to dry 20% of the bagasse is presently under construction. The bagasse and gas will be mixed in a vertical duct and, subsequently, separated in a cyclone. The bagasse will then be re-elevated to the main distribution carrier.

It appears that, if usable heat is still available from the flue gases, the operationally most simple way to recover it would be through economizers. They are more expensive to install than the comparable bagasse drying capacity. Bagasse, however, is the most difficult material to handle in a sugar factory, and it is doubtful, whether the operational problems accompanying a drier will be justified by its lower first cost.

The bagasse handling system, including a 600 t capacity enclosed, fully mechanized, excess bagasse storage area, is well designed and laid out. It also can be used for the handling of wood chips, which are intended to be the basic fuel in commercial power generation during the off-crop.

The two Finnish made 50 t per hour round wood chippers and their accessories were installed, probably, some time between 1987 and 1989. Presently, they are being used only at the beginning of the crop, to provide fuel reserves for a spotty initial factory operation. The three knives on each disk have to be changed every 12 hours. Some difficulties with uncut eucalyptus bark obstructing the normal flow of materials, reportedly, led to the question as to whether the right piece of

equipment had been specified in the first place. Lack of wood is the main reason why the chipper is not used to any greater extent and fuel oil continues to be fired as supplementary boiler fuel. An estimated 40,000 t of firewood as being available for harvest was picked up during the visit.

The boiler feed water system includes a make-up treatment plant, deaerating heater with plenty of height, and adequate boiler feed pumps. One of the four boiler pumps is turbine driven. The turbine has been inoperational for several years, due to mechanical problems.

8. Electric Power Generation and Distribution

The three existing 4 MW turbo-generators generate at 6.3 kV. At this voltage, power is distributed in the factory, to either the 6.3 kV motors or the transformers supplying the 480 V motor control centers. The INE public distribution system operates at 138 kV. The factory is connected with INE through a 138/13.8 kV transformer and a 13.8/6.3 kV one in series. A second 138/13.8 kV unit is at hand but is not connected. Irrigation pivots and pumps receive power through a 13.8 kV grid. It is supplied independently by INE. Presently, about 10 MW are generated, of which the factory consumes 10 and delivers to INE about 4. At the same time, the agricultural sector draws 6 MW from INE.

The intention is to link the 6.3 kV power plant buzz bar, the 13.8 kV irrigation distribution line, and the 138 kV INE access, via the transformers at the factory main substation. This would allow the direct power supply from mill to field, which presently is impossible. Excess power from the mill can only go to INE, while any irrigation power required must also be supplied by INE. Power failures by the public grid and the ensuing losses of irrigation are responsible to a large degree for the shortfalls in Victoria de Julio's cane yields.

It appears as a quirk of the system that, by national law, all industrial size power transformers in the country are controlled and operated directly by the government. There actually are "government transformer operators" spending their precious time at the Victoria de Julio substation.

9. Project of Commercial Power Generation

On the steam side, the project provides for a fifth 400 psig, 740 deg F, 50 t boiler, in addition to the four required for the operation of Victoria de Julio as a straight sugar factory. As mentioned earlier, this boiler already exists. During the crop, the five boilers will be fed with a mixture of bagasse and woodchips, the woodchips merely completing the bagasse available. During the off-crop, the boilers will be fed with chips only.

The chips are to be produced by the chipping plant, also mentioned above. This plant, although belonging to the power part of the project, was installed and commissioned in advance, just as the fifth boiler. It already is being used with eucalyptus logs, which are to be produced in large quantities in the star patches between the circular pivot-irrigation fields.

While live steam from four of the boilers will continue to drive the three 4 MW backpressure turbo-generators of the sugar factory, the output of the fifth boiler will go to a 12 MW condensing turbo-generator, the "Turbo Aleman", which, along with its condenser, cooling tower, and pumps, has been stored on the premises since 1986. The "Turbo Aleman" has two extraction studs, one for 45 t per hour at 25 psig, and one for 7 t per hour at 10 psig. This may have been specified with the no longer current distillery in mind.

The exhaust steam from the three backpressure turbines will go to the sugar factory process vessels during the crop. During the off-crop it will drive a condensing turbine, coupled to a 11.6 MW generator, the "Turbo Sueco". This machine and its accessories, manufactured by ASEA, have also been stored at the mill for six years. The factory spray-pond will be used to cool the condenser water for the off-crop-only operation of this unit.

On the electrical side, both of the new generators will be connected to the 13.8 kV buzz bar, the "Turbo Sueco" directly and the "Turbo Aleman", generating at 6.3 MV, through a 13.8/6.3 kV transformer. Tied into the 13.8 kV bar, there will be Victoria de Julio's external distribution grid supplying the agricultural sector. The 13.8 kV bar, also will absorb the excess power from the factory generators, and from it, INE will receive, at a stepped-up voltage, any commercially handled electricity. All the necessary transformers and switchgear are on the premises.

During the crop, with an average 6,000 tpd grinding rate, the three backpressure machines and the "Turbo Aleman" will generate an average of 20 MW. Of this, 7 MW will be required by the factory and 8 MW by the field, leaving 5 MW to be sold to INE. The fuel needed to satisfy the field and factory demands for electrical energy, in addition to the factory demand for thermal energy, and for having 5 MW available for sale, amounts to the bagasse supplied by the cane, supplemented by 250 t of wood chips or 80 t (20,000 gal) of fuel oil per day, or any proportional combination of the two.

During the off-crop, with a zero grinding rate, the three backpressure machines, the "Turbo Sueco", and the "Turbo Aleman" will generate an average of 27 MW. Of this, 3 MW will be required by the factory and 5 MW by the field, leaving 19 MW to be sold to INE. The fuel needed to satisfy the field and factory demands for electrical energy, and for having 19 MW available for sale, amounts to 750 t of

wood chips or 240 t (60,000 gal) of fuel oil per day, or any proportional combination of the two.

D. Results and Future Perspectives

1. Technical and Financial Results

The technical and financial results of the current operations at Victoria de Julio are outlined in Chapters VII and VIII.

2. Future Perspectives

In view of the information obtained at Victoria de Julio and presented in this report, it is reasonable to expect, in the short and medium term, the following variations or changes in the cost-determining parameters:

- Yearly cane supply will continue to increase, in spite of setbacks, due to the possibility of complementary sources of cane, like the area South of the Tipitapa River.

- Crop and off-crop personnel will decline to around 418 and 229 persons respectively within the next two years. Even if an average grinding rate of 4,500 t per day is assumed, man-days per ton of sugar are above 1.1 at the present level of staffing. A 20% reduction would leave crop personnel at 418 and, by symmetry, off-crop personnel at 229. This would mean 0.93 man-days per ton of sugar, which is entirely justifiable with a factory of this size and level of technology.

- The need to purchase electric power from INE during the crop will decrease as the power generating and distribution part of the original project is completed. Scenarios should be specified, taking account of the revenue potential of power sold commercially.

- The number of periods will vary as a function of both cane available and grinding rate per day. The range of variation will be between 4 and 5 periods, the average crop length should expand to 120 days.

- Sugar recovery from cane should stay between 200 and 220 pounds per ton while molasses might decrease below 8 gallons per ton, as the curing of "C" massecuites continues to improve.

- The white fraction of sugar is likely to increase, as Nicaragua's U.S. quota declines and domestic demand for mill white sugar

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increases. A 60-40 ratio, or even a 75-25 one, might be a more reasonable split in the near to medium future.

- Average unit costs of labor may go up, as the jobs will be displaced mostly at the lower end of the pay scale. No predictions are made at this point about any absolute or relative wage cost increases.

The chief determinant of cost reduction and, thus, the economic viability of Victoria de Julio, is the availability and dependability of its cane supply. This is true both for the short-term and long-term horizons.

In the short term, the situation will be improved by an effort to strengthen the factory's lifeline during the crop, i.e., the harvesting and transportation equipment, and by insuring an adequate application of water to the stands, by linking the factory's power supply directly to the irrigation installations.

In the long term, alternate sources of cane should be developed. If it turns out that the land in the original project is not as suitable for cane cultivation as was believed, sources at a greater distance should be opened up, by contracting with potential growers in better production areas. The degree to which costs at the mill can be reduced by an adequate and dependable cane supply will justify quite a few additional kilometers of trucking.

In the intermediate run, Victoria de Julio might also be thought of as a power station with a sugar mill attached. To keep economically afloat, it may want to complete the commercial power generating installation, operating it with fuel oil, if eucalyptus trees are not available or too costly to handle . Rather than with additional credits, the government could support Victoria de Julio by offering the same rate for power supplied to the national grid as it presently pays to Costa Rica. This would also alleviate the country's current power crisis.

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VI. MANAGEMENT, LABOR, LEGAL & OTHER ISSUES

This section of the report describes the management, labor and legal aspects relating to the valuation of Victoria de Julio.

A. Legal Entity

The Complejo Agroindustrial Azucarero de Reforma Agraria Victoria de Julio is a public enterprise assigned to CONAZUCAR, the holding company for the public sector sugar mills.

B. Organization and Management

Direction of Victoria de Julio is currently the responsibility of a four person administrative board composed of three members nominated by the government and one by the workers. The organization chart for Victoria de Julio is presented on the following page.

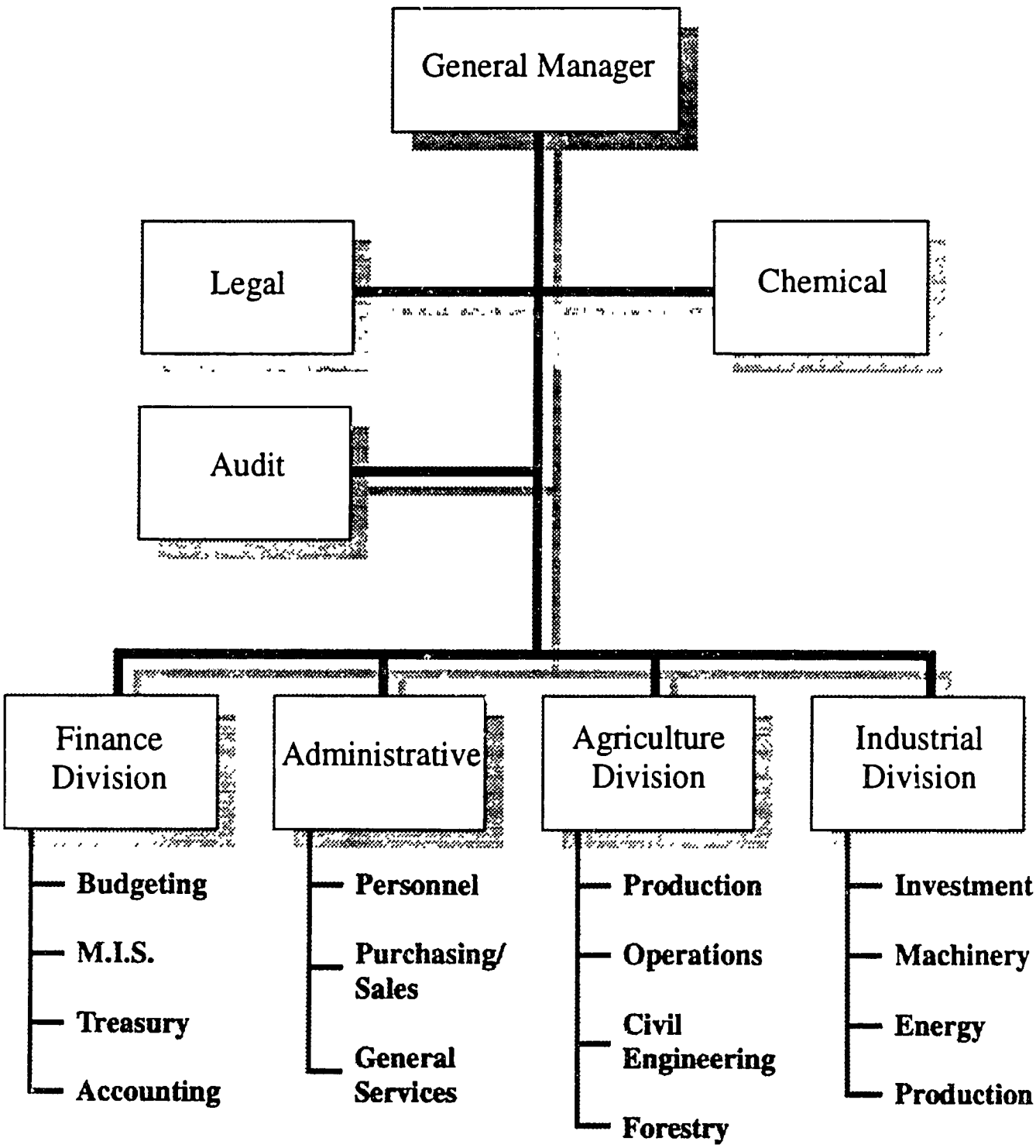
Victoria de Julio began operations in 1985. The Executive Director and most of the division management have university and master degrees. Most of the top management team of the mill have experience working in one or more of the other sugar companies in the country. Department managers generally have university degrees or extensive sugar mill experience. Several of the management team worked on the construction of Victoria de Julio.

Victoria de Julio was constructed in an area of the country that had no sugar industry tradition. Management and workers had to be recruited from other regions of the country or trained. As the industrial plant was donated by the Cubans, a large number of IVJ employees were trained in Cuba. Eight years later, 127 of these employees trained in Cuba are still working at Victoria de Julio.

The poor results of the mill during the 1980s can be attributed in part to the start up operations. Hyperinflation and the poor overall economic conditions prevailing in Nicaragua since the mid 80s certainly made financing, import procurement and operations management difficult. Personnel turnover was chaotic up until 1988, exceeding 100% per year.

Despite these conditions, industrial operations had normalized at a very good level by the end of the 1980s and have been maintained. Nonetheless, the industry experts performing the technical evaluation of the mill indicated that industrial management could still be strengthened.

Ingenio Victoria de Julio



Agricultural operations must overcome low rainfall, difficult soil conditions in some areas, electricity shortages which affects irrigation, and untimely and insufficient working capital and investment financing which affects fertilizer application and equipment maintenance. Although imposing, management's inability to solve these problems suggests that field management could be improved.

Financial management also needs strengthening to develop and implement the financial reporting systems required to operate the sugar company with a "bottom line," profit orientation.

Management stated that employment levels had been reduced by May 1992 to the following levels:

	CROP	OFF-CROP
Administration	295	219
Agriculture	1,091	680
Industrial	624	321
Total	2,010	1,220

Management indicated that the number of employees had been reduced from its previous level of 2,800 permanent employees in 1985, to 1,700 in 1991, to its current level of 1,220. Plans exist to pair employment even further. The accrued but unrecorded severance benefits owed current employees was not provided to us at the time of this report.

Recent personnel turnover was characterized as "minimal" although no statistics were provided. Current economic conditions have made job hopping difficult.

C. Information System

The existing information system at the mill is run on an IBM System 34 and assorted microcomputers. The accounting software package was adapted from San Antonio, but is not as flexible as the San Antonio package. Enhancements to the existing hardware and software will probably be required to improve financial reporting.

D. Labor Relations

Management stated that Victoria de Julio has one union, the CST. Labor relations have been relatively good the past two years. However, there have been two strikes in the past year -- one in November that lasted two weeks, and another in March of about 11 days. One of these walkouts was in sympathy for a labor dispute at another mill.

E. Land Titles

The lands conforming the Victoria de Julio sugar company were expropriated from the Somoza family and private land owners as part of the agraria reform. CONAZUCAR is processing the return of land to previous owners that will bring the total of colono land to approximately 6,810 manzanas, of which 4,403 are cultivated cane land. This area represents approximately 54 blocks ("lotes") with 43 central pivot systems. The remaining land was expropriated from the Somoza family and the government will not recognize any claims against this land. The CONAZUCAR Legal Department is coordinating with the Nicaraguan Attorney General's Office (Procuraduria) in this matter.

The government has also guaranteed the employees of IVJ the option to purchase up to 25% of the value of the IVJ in the form of land. It is expected that the employees of IVJ will exercise their right to purchase part of the IVJ land. The exact amount of land that may be purchased by the IVJ workers depends on the total value assigned to the sugar company, the value assigned to the company's lands and the number of employees that opt to exercise their right. It is expected that CORNAP/CONAZUCAR will determine these values at a later date. For the purpose of this valuation, it was estimated that 3,800 cultivated manzanas would be sold to the IVJ workers under a long-term contract to sell cane to the mill as a "colono".

The total projected cultivated land area of the IVJ project was 30,000 manzanas, broken down as follows:

	Mzas
Sugar cane	20,000
Forestry (Eucalyptus)	10,000
Total	30,000

The table on the following page shows the land currently held by IVJ and its independent growers ("colonos"), and the projected increase in land required to complete the project. The table reflects the effect of returning lands to their previous owners, but does not reflect the sale of land to IVJ workers.

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Ingenio Victoria De Julio (IVJ)
Land Distribution

	Sugar Cane			Forestry			Grand Total		
	Developed	Undeveloped	Total	Developed	Undeveloped	Total	Developed	Undeveloped	Total
IVJ	8,984	3,000	**11,984**	3,200	600	**3,800**	12,184	3,600	**15,784**
Growers	4,403	1,200	**5,603**	967	240	**1,207**	5,370	1,440	**6,810**
	13,387	4,200	**17,587**	4,167	840	**5,007**	17,554	5,040	**22,594**
Required	--	2,413	**2,413**	--	4,993	**4,993**	--	7,406	**7,406**
Plan	13,387	6,613	**20,000**	4,167	5,833	**10,000**	17,554	12,446	**30,000**

F. Pending Litigation

The Legal Department of CONAZUCAR was requested to perform a search for any existing or potential litigation against Victoria de Julio. CONAZUCAR has not notified us of any such pending litigation.

VII. CURRENT FINANCIAL CONDITION

A. Earnings and Cash Flows

An estimated 1991/92 statement of profit and loss for Ingenio Victoria de Julio appears on the following page. The statement of profit and loss is estimated based on cost, production, and price information provided by management of IVJ and CONAZUCAR. The statement of profit and loss was not prepared by IVJ management.

IVJ is projected to have an after-tax loss of 45.7 million cordobas on sales of 58.5 million cordobas for fiscal year 1991/92 (July 1, 1991 - June 30, 1992). Net cash flow for the year is estimated to be (45.7) million cordobas.

The largest cost item for the mill is salaries and benefits which constitute 43% of total cash operating costs for the year. These high personnel costs, combined with a poor agricultural yield of 31.2 tons of cane per manzana, contributed to the poor financial performance.

B. Balance Sheet

An estimated balance sheet for IVJ appears on the following page. The balance sheet is a reformatted version of a balance sheet prepared by IVJ management.

The unadjusted balance sheet for IVJ indicates a book value of (44.1) million cordobas at March 31, 1992. However, the accounting practices of the mill are extremely problematic and do not accurately reflect the mill's financial position. In particular, the value of the factory is not included in the fixed assets of the mill. In addition, the value of fixed assets have been readjusted numerous times for currency devaluations and no longer accurately reflect the value of these assets.

The current liabilities of the mill are estimated at 128 million cordobas. Of this, approximately 74 million cordobas is owed to CONAZUCAR, the state sugar company, for imported items and debt financing. The balance sheet contains an additional 71 million cordobas in long-term debt owed directly to a Nicaraguan government bank. For purposes of the financial valuation, IVJ's debt is assumed to be relieved by the government prior to privatization.

INGENIO VICTORIA DE JULIO
1991/92 Financial Highlights
(000's Cordobas)

UNADJUSTED STATEMENT OF PROFIT AND LOSS
Fiscal Year 1991/1992 *

Sales	58,498
Operating Costs (Cash Basis)	88,330
Depreciation	3,809
Operating Income	(33,640)
Interest Expense	12,106
Profit Before Tax	(45,746)
Tax	0
Net Profit	(45,746)

* Annualized for the fiscal year 7/1/91 to 6/30/92 based on data from 7/1/91 to 3/8/92. Profit and loss information was provided by management of Victoria De Julio and has not been audited by Price Waterhouse or any other firm. Management accounting practices may not be in accordance with Generally Accepted Accounting Principles.

UNADJUSTED BALANCE SHEET
As of March 31, 1992 *

ASSETS		LIABILITIES & STOCKHOLDERS' EQUITY	
Current Assets		**Current Liabilities**	127,609
Cash	465		
Accounts Receivable	9,687	**Long–Term Debt**	71,305
Inventory	71,570		
Pre–Paid Expenses and Deferred Charges	8,661	**Total Liabilities**	198,914
Total Current Assets	90,384		
Fixed Assets		**Stockholders' Equity**	(44,055)
Property, Plant & Equipment	87,673		
Less Accumulated Depreciation	23,199		
Net Fixed Assets	64,475		
		Total Liabilities & Stockholders' Equity	
Total Assets	154,859		154,859

* Balance sheet information was provided by management of Victoria De Julio and has not been audited by Price Waterhouse or any other firm. Management accounting practices may not be in accordance with Generally Accepted Accounting Principles.

VIII. FINANCIAL VALUATION

A. Assets to be Valued

The assets that are included in the financial valuation are the productive assets of the enterprise only. These assets include the sugar mill, 8,984 manzanas of developed land, 3,000 manzanas of undeveloped land, 3,800 manzanas of forested land, 5,026 manzanas of other land, the electric generation facilities, and all equipment and inventories associated with these assets.

IVJ also owns several assets that are not used in the operations of the mill or are expected to be returned to prior owners. These assets, which are not included in the financial valuation, include land to be returned to prior owners, various "protocol" houses, and employee housing.

B. Valuation Methodologies

Two methods were used to estimate the value of Ingenio Victoria de Julio ("IVJ"): the Discounted Cash Flow ("DCF") method and the liquidation value of IVJ assets.

The *DCF method* is considered the best method for estimating the value of IVJ as an ongoing enterprise. The DCF approach assumes that the price an investor is willing to pay for an enterprise depends on the net cash flows that the enterprise is expected to generate in the future and the riskiness of actually receiving those cash flows. DCF analysis requires projecting expected future cash flows and converting the cash flows into their present values using a discount rate that reflects the cost of capital and the riskiness of the cash flows. The sum of the present values of the cash flows is the net present value ("NPV") of the enterprise.

The *liquidation value* of IVJ is the price that could be achieved through an orderly sale of all the assets available to be privatized. The liquidation value is generally considered the minimum acceptable value of an enterprise. However, an enterprise may be sold as a going concern for less than the liquidation value due to employment objectives, anticipated future tax revenues, and other considerations.

A third commonly used method that is not included in our analysis is the comparable company method. Comparable company analysis estimates the value of a company based on the market value of other similar companies. However, due to worldwide trade distortions and the unique circumstances of the sugar industry in Nicaragua, comparable company analysis was determined to be inappropriate for estimating the value of IVJ.

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C. Discounted Cash Flow Analysis

The financial analysis tests five scenarios which are summarized below. Appendix H contains a detailed description of the assumptions and the results of the DCF analysis for each scenario.

1. Scenario 1, the "Base Case", is based on the historical performance of IVJ and assumes that the mill continues to perform as it has in the past.

2. Scenario 2 assumes that 322 manzanas of developed land owned by IVJ and 1,948 manzanas of developed colono land that was not in production in 1991/92 is put into production beginning in 1992/93.

3. Scenario 3 assumes, in addition to the assumptions in Scenario 2, that IVJ is privatized. Under this scenario 3,800 manzanas are sold to IVJ workers in fulfillment of the 1992 agreement granting IVJ workers an option to purchase 25% of the mill. In addition, management is assumed to be able to make reasonable improvements in the operations of the mill in order to achieve efficiency and productivity levels that are consistent with industry norms. The assumed operational improvements are as follows:

   - The agricultural yield is increased to achieve reasonable yields as a result of various improvements in the irrigation system and field cultivation practices.

   - The number of field workers is reduced to achieve reasonable field productivity levels.

   - The number of factory workers is reduced to achieve reasonable factory productivity levels.

   - The number of administrative workers is reduced according to work force reductions expected by management.

   - The milling rate of the factory is increased to keep the crop season within 4.5 28-day periods.

4. Scenario 4 assumes, in addition to the assumptions in Scenario 3, that an additional 6,613 manzanas of land is put into cultivation in order to reach a total amount of cane land, both colono and IVJ, of 20,000 manzanas. Of the 6,613 new manzanas, 5,413 are assumed to be owned and cultivated by IVJ and 1,200 are assumed to be owned and cultivated by colonos.

5. Scenario 5 assumes, in addition to the assumptions in Scenario 4, that management is able to install two turbo-generators that it owns but which are not currently in operation in order to meet all of its electricity needs and sell excess energy to the national power grid.

All of the scenarios assume that IVJ will not have to repay any of the debt on its balance sheet.

The results of the DCF analysis for the five scenarios are summarized below. The range of results for each scenario reflects the sensitivity of IVJ's value to different sugar price and discount rate assumptions. The sugar price of $13.78 per quintal was the weighted average price to producers for 1991/92. The price of $15.81 would be the weighted average price assuming the world market price returned to its historical average (see Section III for a further discussion of sugar prices). The price of $16.60 represents a 5% increase over $15.81. All negative results are recorded below with a dash.

Value of Ingenio Victoria de Julio
(Millions of Cordobas)

	Pessimistic	Mid-Range	Optimisitic
Avg. Sugar Price	$13.78	$15.81	$16.60
Discount Rate	22%	18%	14%
Scenario 1	--	--	--
Scenario 2	--	--	--
Scenario 3	--	43.2	83.0
Scenario 4	10.6	97.9	183.5
Scenario 5	14.1	104.3	194.8
Scenario 5 *		186.0	

* This value assumes a sale price of electricity of .500 C/kWh compared to .276 C/kWh in the original Scenario 5.

D. Valuation Based on Asset Liquidation

The asset liquidation analysis estimates the price that could be realized if mill operations were terminated and the assets were sold piecemeal. The price estimates are based on asset lists provided by IVJ management, the experience of

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the industry experts, and local valuation experts. These estimates should not be considered definitive values, but rather reasonable approximations of liquidation value.

FACTORY EQUIPMENT		
Cane Receiving and Preparation	US$	149,750
Cane Milling		1,117,000
Juice Treatment		548,500
Evaporation and Syrup Clarification		634,250
Sugar Boiling, Centrifuging, Drying		1,095,250
Sugar and Molasses Storage		118,500
Steam Generation and Distribution		2,784,000
Wood Chipping		272,900
Power Generation and Distribution		948,000
General Services		189,250
Machine Shop		148,000
		8,005,400
IDLE ELECTRIC TURBO-GENERATORS		
12 MW German Turbo-Generator	US$	1,000,000
11.6 MW Swedish Turbo-Generator		500,000
		1,500,000
FIELD EQUIPMENT		
Tractors	US$	830,000
Harvest and Transport Equipment		1,192,000
Vehicles		385,100
Other Equipment		314,550
		2,721,650
LAND		
8,984 mz. of cane developed @ $2,065 *	US$	18,551,960
3,000 mz. of cane undeveloped @ $250		750,000
3,200 mz. forested, developed @ $434		1,388,800
600 mz. forested, undeveloped @ $250		150,000
5,026 mz. other land @ $250		1,256,500
		22,097,260
TOTAL ESTIMATED LIQUIDATION VALUE	US$	34,324,310
Cordobas		171,621,550

* Includes the value of irrigation equipment and other infrastructure, including the Canoas dam.

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The estimated liquidation value above does not reflect the time and transactions costs that would be required to carry out an orderly liquidation of the mill's assets. In addition, it is possible that some assets could not be sold, particularly given currently low world sugar prices and the low level of new investment in the industry. Thus, the present value of the cash that could be realized from liquidation may be lower than the value listed above.

E. Summary and Conclusions

IVJ is currently operating at a loss and if it continues to be operated as it is now, the mill's value as an ongoing concern is zero. In order to become profitable, IVJ must implement operating improvements and increase the volume of cane that is processed in the mill. Under these conditions, the DCF analysis indicates that the mill could have a positive value of up to 186.0 million cordobas ($37.2 million), depending on the specific operating assumptions and discount rate used to calculate the net present value. A reasonable range of values may be estimated by limiting the analysis as follows:

- Scenarios 3, 4, and 5 only
- A discount rate of 18%
- An average sugar price at the historically-based level ($15.81), and
- An electricity price of .276 cordobas per kilowatt-hour

The value suggested by these assumptions is 43 to 104 million cordobas ($9 to $21 million).

The liquidation value of IVJ's assets is estimated at approximately C 172 million (US $34 million). The cash liquidation value can be considered a minimum value for the mill because an investor (or the Government of Nicaragua) should, at least, be able to realize this value by selling the mill's assets. However, an enterprise may be sold as a going concern for less than the liquidation value due to employment objectives, anticipated future tax revenues, and other considerations.

A primary Government objective of privatization is for IVJ to continue as a going concern. Thus, a reasonable range for the value of IVJ is the going concern value of C 43 to C 104 million ($9 to $21 million). These estimated values are based on numerous assumptions (described in Appendix H) and are particularly sensitive to variations in the discount rate, average sugar price, and sale price of electricity.

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IX. PRIVATIZATION STRATEGY

The Government of Nicaragua has decided to privatize Ingenio Victoria de Julio in order to improve the management and operations of the mill and reduce or eliminate the burden on Government resources. This section of the report describes the options and PW/IPG recommendations for successful privatization.

A. Privatization Objectives

In determining a privatization strategy, it is essential to address the objectives of the Government in pursuing privatization. The principal objectives of CORNAP in privatizing IVJ are as follows:

- Reduce or eliminate government financial losses resulting from the negative cash flow of the mill and future government investment.
- Transfer ownership of the mill as quickly as possible.
- Improve management and operations of the mill.
- Maintain employment at the mill.
- Maximize the cash generated from the sale of IVJ.

B. Privatization Options

The methods of privatization that have been used internationally can be categorized as follows:

- Public offering of shares
- Sale of shares in the existing enterprise
- Sale of enterprise assets for formation into a new company
- Infusion of new private investment (joint venture)
- Breakup and liquidation of individual assets separately
- Management/employee buyout
- Management contract or lease

Two of these options are not considered appropriate for the privatization of IVJ. A public share offering is considered inappropriate due to the lack of an equity market in Nicaragua. Although a public share offering would be possible, it would be extremely difficult and time consuming.

A sale of shares in the existing enterprise is not considered feasible due to the large magnitude of IVJ liabilities. As noted in Section VII, IVJ is currently

operating at loss before debt service. Even if IVJ is able to improve operations and become profitable, its estimated value as an going concern is $9 to $21 million which is lower than the $40.0 million of liabilities on its balance sheet at February 29, 1992. IVJ's status as a public enterprise under the Reforma Agraria also makes this option infeasible.

Thus, there are five potential options that may be appropriate for the privatization of IVJ: sale of assets, joint venture, liquidation, management/employee buyout, and management contract or lease.

Option 1: Sale of Assets

Under Option 1, CORNAP would sell the assets of IVJ as a going concern to an investor group with experience in the industry. The liabilities of IVJ would remain with the Government. The responsibility for severance benefits would also remain with the government, but would partially offset employees' payment for their option to buy 25% of the State's holding in IJB. The investors would form a new company, which would be set up at the time of the sale, with IVJ's assets and continue to operate the mill.

As a first step in this sale, CORNAP would negotiate with the workers to determine if they are interested in exercising their 25% option in specific assets. Assets purchased by employees would be set up in an employee-owned company. The remaining assets would be sold to investors as described above.

The advantages of this approach are as follows:

- Ownership of IVJ is transferred to a private owner which eliminates the responsibility of the Government for financial losses and further capital investments.

- Private, experienced owners have a strong incentive to improve management and operations.

- IVJ continues to be operated as a going concern and employment is maintained, although probably at a lower level.

- Cash is generated for the Government in the short-term.

The disadvantages of Option 1 are as follows:

- The Government may receive a lower price if the mill is expected to continue as a going concern rather than be liquidated. As noted in Section VIII, the ongoing concern value of IVJ is estimated at $9 to

$21 million while the cash liquidation value is estimated at $34 million.

- Private investor interest in IVJ may not be strong given IVJ's current financial position. A sale of assets may be difficult and time consuming compared to contracting out management and may result in a lower sales price than if the assets are sold after operations are improved via a management contract.

Option 2: Infusion of New Private Capital (Joint Venture)

Under Option 2 a new company would be formed with the assets of IVJ and new capital invested by a private investor group. The new company would be jointly owned by the private investor group and the Government with the private group holding majority control. As in Option 1, the sale of specific assets would be negotiated with employees and all liabilities would remain with the government.

The principal advantage of Option 2 over Option 1 is that private investors may be more interested in participating if their funds are infused into the company to improve performance rather than paid to the Government as under Option 1. The private owners could buy out the Government's share at a later date if the mill becomes successful. The sale of the Government's remaining shares after a period of private sector management would likely result in a higher value than could be received today. In this case, the government may receive a higher price the in Option 1.

The principal disadvantages of Option 2 compared to Option 1 are that the Government continues to bear partial responsibility for financial losses and the Government receives less or no cash as a result of privatization.

Option 3: Management/Employee Buyout

Option 3 is similar to Option 1 except that the private investors that purchase the assets of IVJ would be IVJ management and/or employees. The purchase would likely have to be financed with Government support.

The principal advantages of Option 3 are as follows:

- As owners of the mill, management and/or employees would have an extremely strong incentive to improve management, operations, and worker productivity.

- Management/employee ownership may be more acceptable politically.

The principal disadvantages of Option 3 compared to Option 1 are as follows:

- Ownership by current management and employees would bring no added industry experience to the management and operations of the mill.

- The government may have to support the financing of the buyout which would could result in a reduction or elimination of net cash proceeds from privatization.

Option 4: Breakup and Liquidation

Under Option 4, CORNAP (or a private party) would liquidate the assets of IVJ through an orderly sale of land, equipment, and inventories. The liabilities of IVJ would remain with the government.

The advantages of this approach are as follows:

- Operation of IVJ is terminated which eliminates the responsibility of the government for financial losses and further capital investment.

- Cash is generated for the government in the short-term.

- The government may receive the maximum price through liquidation.

- The termination of IVJ reduces national sugar production, thereby increasing the average sugar price and improving the financial viability of other Nicaraguan mills.

The disadvantages of Option 4 are as follows:

- The termination of IVJ results in the elimination of all employees.

- The termination of IVJ results in the loss of potential tax revenues to the government.

- Enterprise resources, including land and labor, must be redeployed to other uses which may involve substantial transition costs.

Option 5: Management Contract or Lease

Under Option 5, CORNAP would lease or contract out management of IVJ to a private firm with expertise in sugar mill operations. Ownership of IVJ would remain with CORNAP and the mill would continue as a going concern.

The advantages of this approach are as follows:

- Private, experienced management is introduced immediately.
- Private managers, with proper incentives, have a strong interest in improving management and operations.
- IVJ continues to be operated as a going concern and employment is maintained, although probably at a lower level.

The disadvantages of Option 5 are as follows:

- Ownership of IVJ remains with CORNAP and the government continues to be responsible for financial losses and further capital investments.
- The private management fee may be substantial, further increasing costs to the government.
- Cash proceeds from privatization are delayed.

C. Recommendations

Given the uncertainty concerning the attractiveness of IVJ to private parties, we recommend that CORNAP pursue a flexible strategy which maximizes the chances of achieving a successful privatization. Based on the Government objectives outlined above we recommend the following approach:

1. Solicit the participation of private investors in IVJ through a sale of assets or joint venture (Options 1 and 2). These options would reduce or eliminate Government financial exposure and inject private capital and technical expertise to the mill.

2. If private investment proves infeasible, solicit a private manager for a management contract or lease (Option 5). Management compensation should be closely tied to profitability. This option would at least bring improved management to the mill in a relatively short time period.

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Some additional recommendations concerning the privatization process are as follows:

- As an alternative to assuming the debt, the government could peg payment of the debt to the realization of a high sugar price or high sale price of electricity to INE, or negotiate a grace period.

- Similar to programs adopted by countries such as Ireland and a number of states in the U.S., investment incentives such as tax holidays could be offered.

- The price of electricity sold to INE could be set so that the value of IVJ rises significantly, increasing IVJ's marketability, and INE realizes a profit on the resale of the electricity. The nation would also benefit from a reduction in the national energy deficit.

D. Privatization Action Plan

The steps that CORNAP should follow to implement this privatization strategy are as follows:

- PW/IPG continues to identify potential investors.

- CORNAP/CONAZUCAR requests the renegotiation of the price paid for energy sold to INE prior to preparation of bidding documents.

- CORNAP/CONAZUCAR should resolve the following issues with the IVJ union:

  - The basis for calculating the employees 25% of IVJ (book value, asset value, net present value, or other), considering IVJ's debt

  - The timing of the sale of land to the employees in relation to the privatization of the remaining assets.

  - The number and identify of the specific manzanas to be sold to the employees.

  - The terms of payment for the employees' 25% purchase (termination payment, government financing, etc.)

  - Impact of the sale of land to employees on the mill's personnel requirements

- The management of the employees cane fields, terms of sale to the mill, and distribution of proceeds to the employees

If the sale to the employees precedes the sale of the remaining assets, this information should be available for inclusion in the bidding documents.

- If an asset sale, CORNAP identifies the specific assets to be included in the bidding documents (cash, accounts receivables, inventory, etc.)

- CORNAP/CONAZUCAR organizes preliminary meetings of provisional Board of Directors of sugar industry mill owners to determine issues regarding the future functioning of the industry such as the distribution of U.S. quota. This information may be required for the bidding documents.

- CORNAP/CONAZUCAR determines the disposition of the Las Canoas dam. This information should be available for the bidding documents.

- PW/IPG prepares prospectus and bidding documents and does mailing to interested parties.

- CORNAP forms evaluation committee and reviews bids. PW/IPG assistance is provided on request to analyze bids.

- CORNAP initiates negotiations with the most attractive bidder(s).

APPENDIX A

HISTORIC PRODUCTION, CONSUMPTION, EXPORTS, AND IMPORTS

DEPARTAMENTO HISTORICO PRODUCCION AZUCAR

CONSOLIDADO - EXPORTACIONES DIV.

VICE PRESIDENCIA AGRICOLA

ZAFRA	INICIO ZAFRA	PRODUCCION TOTAL	CONSUMO	EXPORTACIONES	IMPORTACIONES
70/71	---	3,688,583.00	1,518,871.00	2,169,712.00	
71/72	---	3,607,066.00	1,658,330.00	1,942,736.00	
72/73	---	3,124,031.00	1,808,128.00	1,694,940.00	374,000.00 *
73/74	963.00	3,535,729.00	1,884,107.00	1,451,380.00	
74/75	201,205.00	4,174,945.00	1,985,544.00	1,461,160.00	
75/76	929,446.00	5,349,439.00	2,143,552.00	3,378,800.00	
76/77	756,533.00	4,777,474.00	2,270,377.00	2,182,720.00	
77/78	1,180,910.00	4,611,793.00	2,271,954.00	2,217,900.00	
78/79	1,302,849.00	4,669,073.00	2,516,327.00	2,239,700.00	
79/80	1,215,895.00	3,740,216.00	2,588,288.00	1,754,377.00	
80/81	613,446.00	4,260,838.00	2,546,267.00	1,890,737.00	330,000.00 (*)(**)
81/82	767,280.00	4,950,576.00	2,603,194.00	2,036,239.00	
82/83	1,078,423.00	4,957,696.00	2,883,763.00	2,743,990.00	
83/84	408,366.00	5,191,608.00	3,193,059.00	1,882,392.00	
84/85	524,523.00	4,353,953.00	2,886,564.00	1,492,030.00	220,460.00 (*)
85/86	720,342.00	4,674,224.00	3,247,923.00	1,539,697.00	
86/87	606,946.00	4,152,545.00	2,958,953.00	1,091,842.00	95,314.00 (*)
87/88	804,010.00	3,103,962.00	3,309,346.00	857,682.00	264,000.00 (**)
88/89	4,944.00	3,483,798.00	1,666,738.00	1,693,464.00	176,460.00 (*)
89/90	305,000.00	4,360,584.00	2,089,328.00	2,531,040.00	636,102.00 (**)
90/91	263,629.00	4,772,923.00	2,286,314.00	2,600,704.00	150,000.00

CLAVES: (*) DONACIONES VARIAS; (*) ORIGEN: CUBA; (**) ORIGEN: VARIOS.
26/12/91
CGS*

APPENDIX A

APPENDIX B

NICARAGUAN SUGAR INDUSTRY

STATISTICS

Nicaragua Sugar Cost Estimate Crop 1991 1992

Company	Cane Own Plus Colono Purchases US$/Ton	Factory Plus Refinery US$/Ton	Finanzas US$/Ton	Admin Plus Recursos Humanos US$/Ton	Direccion General US$/Ton	Total Expenses US$/Ton of Cane	Quintales Sugar per Ton Cane	Total Expenses US$/ Quintal
San Antonio	15.97	5.20	0.65	3.86	0.20	25.88	1.80	14.38
Benjamin Zeledon	19.61	5.30	0.58	2.45	0.79	28.73	1.95	14.73
German Pomares	14.05	7.06	0.00	3.92	0.00	25.03	1.60	15.64
Victoria de Julio	19.05	10.26	0.00	5.66	0.00	34.97	2.20	15.90
Javier Guerra	17.25	10.17	0.00	0.00	5.45	32.87	2.05	16.03
Julio Buitrago	21.33	7.63	0.84	3.43	0.69	33.92	2.00	16.96
Camilo Ortega	18.80	7.31	0.19	3.19	1.02	30.51	1.30	23.47
Promedio Industria	17.22	6.83	0.43	3.73	0.62	28.83	1.89	15.29

APPENDIX B

APPENDIX C

WORLD SUGAR PRODUCTION

Table 23--Sugar: World production, supply and distribution, by selected countries and regions

Region/ country	Marketing year	Beginning stocks	Sugar production	Imports	Total supply/ distribution	Exports	Domestic consumption	Ending stocks	Population 1/	Per-capita consumption
		1 000 metric tons raw value							Thousands	Kilograms
North America:										
Canada	1989/90	100	121	824	1,045	33	862	150	26 538	32 5
	1990/91	150	138	900	1 188	25	913	250	26 835	34 0
	1991/92	250	145	860	1,255	15	940	300	27 129	34 6
Mexico	1989/90	605	3,100	1 100	4 805	17	4 038	750	87 870	46 0
	1990/91	750	3,600	1 400	5 750	285	4 240	1 225	89 847	[illegible]
	1991/92	1,225	3,450	400	5 075	50	4 360	665	91 859	47 5
United States 2/	1989/90	1 110	6 008	2,303	9 421	584	7 739	1 098	250 410	30 9
	1990/91	1 098	6,273	2,571	9 942	610	7 959	1,373	252 502	31 5
	1991/92	1,373	6,532	1,768	9,673	322	8 029	1,322	254,521	31 5
Total, North America	1989/90	1,815	9 229	4,227	15,271	634	12,639	1,998	364 818	34 6
	1990/91	1,998	10,011	4,871	16,880	920	13,112	2,848	369,184	35 5
	1991/92	2,846	10,127	3,028	16,003	387	13,329	2,287	373 509	35 7
Caribbean:										
Barbados	1989/90	4	69	0	73	57	12	4	263	45 6
	1990/91	4	66	0	70	54	12	4	264	45 5
	1991/92	4	65	1	70	54	12	4	266	45 1
Cuba	1989/90	340	8,000	0	8,340	7 065	800	475	10 620	75 3
	1990/91	475	7,623	0	8 098	6,500	850	748	10 732	79 2
	1991/92	748	6,000	0	6 748	5 000	925	823	10 843	85 3
Dominican Republic	1989/90	130	632	20	782	398	256	128	7 241	35 4
	1990/91	128	656	19	803	350	263	190	7 385	35 6
	1991/92	190	700	0	890	400	270	220	7 530	35 9
Haiti	1989/90	8	35	39	82	4	65	13	6 142	10 6
	1990/91	13	30	39	82	0	60	14	6,287	9 5
	1991/92	14	30	40	84	5	60	19	6 432	9 3
Jamaica	1989/90	19	219	45	283	149	120	14	2 441	49 2
	1990/91	14	233	31	278	142	121	15	2 456	49 3
	1991/92	15	240	21	276	145	121	10	2 474	48 9
Trinidad/Tobago	1989/90	3	121	5	129	65	61	3	1 345	45 4
	1990/91	3	110	16	129	59	61	9	1 374	44 4
	1991/92	9	110	16	135	61	62	12	1 404	44 2
Other	1989/90	80	131	77	288	105	154	29	5 231	29 4
	1990/91	29	156	78	263	75	159	29	5,254	30 3
	1991/92	29	168	81	278	81	161	36	5 278	30 5
Total, Caribbean	1989/90	584	9,207	186	9 977	7 843	1 468	666	33 283	44 1
	1990/91	666	8,874	183	9,723	7 187	1 526	1 009	33 752	45 2
	1991/92	1,009	7,313	159	8 481	5 746	1 611	1 124	34 227	[illegible]
Central America:										
Belize	1989/90	13	102	0	115	100	8	7	220	36 4
	1990/91	7	102	0	109	94	8	7	228	35 1
	1991/92	7	100	0	107	92	9	6	236	35 1
Costa Rica	1989/90	64	245	0	309	68	169	72	3 033	55 7
	1990/91	72	265	0	337	92	180	65	3 111	57 9
	1991/92	65	270	0	335	90	182	63	3,190	57 1
El Salvador	1989/90	20	211	0	231	52	164	15	5 310	30 9
	1990/91	15	270	0	285	89	181	15	5 419	33 4
	1991/92	15	250	0	265	70	181	14	5 530	32 7
Guatemala	1989/90	28	875	0	903	502	363	38	9 098	39 9
	1990/91	38	1,015	0	1,053	631	358	64	9,338	38 3
	1991/92	64	1,050	0	1,114	635	385	94	9 577	40 2
Honduras	1989/90	15	199	5	219	30	173	16	5,260	32 9
	1990/91	16	186	0	202	20	170	12	5 417	31 4
	1991/92	12	200	0	212	13	175	24	5 576	31 4
Nicaragua	1989/90	30	198	10	238	114	105	19	3 723	28 2
	1990/91	19	240	0	259	110	115	34	3 827	30 0
	1991/92	34	270	0	304	100	125	79	3 934	31 8

Continued

Table 23—Sugar: World production, supply and distribution, by selected countries and regions—continued

Region/ country	Marketing year	Beginning stocks	Sugar production	Imports	Total supply/ distribution	Exports	Domestic consumption	Ending stocks	Population 1/	Per-capita consumption
		1,000 metric tons, raw value							Thousands	Kilograms
Panama	1989/90	22	114	16	152	70	76	6	2,425	31.3
	1990/91	6	126	18	150	60	78	12	2,476	31.5
	1991/92	12	135	0	147	40	80	27	2,527	31.7
Total Central America	1989/90	192	1,944	31	2,167	936	1,058	174	29,068	36.4
	1990/91	173	2,204	18	2,395	1,096	1,090	209	29,816	36.6
	1991/92	209	2,275	0	2,484	1,040	1,137	307	30,571	37.2
South America:										
Argentina	1989/90	267	944	0	1,211	129	825	257	32,291	25.5
	1990/91	257	1,240	0	1,497	387	910	200	32,664	27.9
	1991/92	200	1,450	0	1,650	280	1,110	260	33,035	33.6
Bolivia	1989/90	81	180	0	261	74	175	12	6,707	26.1
	1990/91	12	225	0	237	30	175	32	6,847	25.6
	1991/92	32	230	0	262	20	180	62	6,987	25.8
Brazil	1989/90	1,382	7,793	289	9,464	1,500	6,800	1,164	152,505	44.6
	1990/91	1,164	7,900	81	9,145	1,300	6,800	1,045	155,356	43.8
	1991/92	1,045	9,000	0	10,045	1,700	7,050	1,295	158,202	44.6
Chile	1989/90	103	448	31	582	0	492	90	13,083	37.6
	1990/91	90	370	132	592	0	502	90	13,287	37.8
	1991/92	90	380	130	600	0	520	80	13,489	38.5
Colombia	1989/90	15	1,611	0	1,626	426	1,184	16	33,076	35.8
	1990/91	16	1,602	0	1,618	255	1,291	72	33,778	38.2
	1991/92	72	1,650	0	1,722	300	1,325	97	34,478	38.4
Ecuador	1989/90	19	331	52	402	9	373	20	10,507	35.5
	1990/91	20	352	52	424	17	380	27	10,752	35.3
	1991/92	27	360	55	442	17	400	25	10,999	36.4
Guyana	1989/90	4	130	32	166	130	32	4	765	41.8
	1990/91	4	147	30	181	140	32	9	764	41.9
	1991/92	9	175	25	209	166	32	11	765	41.8
Paraguay	1989/90	32	120	0	152	8	100	44	4,660	21.5
	1990/91	44	100	0	144	8	101	35	4,799	21.0
	1991/92	35	110	0	145	6	103	36	4,937	20.9
Peru	1989/90	63	620	130	813	79	700	34	21,906	32.0
	1990/91	34	560	200	794	65	680	49	22,362	30.4
	1991/92	49	600	150	799	55	700	44	22,818	30.7
Suriname	1989/90	3	1	10	14	0	12	2	397	30.2
	1990/91	2	1	10	13	0	11	2	402	27.4
	1991/92	2	1	12	15	0	12	3	408	29.4
Uruguay	1989/90	19	75	37	131	17	100	14	3,037	32.9
	1990/91	14	70	42	126	8	102	16	3,053	33.4
	1991/92	16	85	25	126	6	102	18	3,071	33.2
Venezuela	1989/90	192	495	180	867	0	715	152	19,698	36.3
	1990/91	152	515	180	847	0	715	132	20,189	35.4
	1991/92	132	520	220	872	0	715	157	20,681	34.6
Total, South America	1989/90	2,180	12,748	761	15,689	2,372	11,508	1,809	298,729	38.5
	1990/91	1,809	13,082	727	15,618	2,210	11,699	1,709	304,354	38.4
	1991/92	1,709	14,561	617	16,887	2,550	12,249	2,088	309,976	39.5
EC 3/:										
Belgium/ Luxembourg	1989/90	131	1,039	53	1,223	583	520	120	10,293	50.5
	1990/91	120	1,119	430	1,669	1,000	559	110	10,310	54.2
	1991/92	110	970	100	1,180	500	565	115	10,326	54.7
Denmark	1989/90	47	529	0	576	269	254	53	5,179	49.0
	1990/91	53	591	1	645	325	260	60	5,181	50.2
	1991/92	60	500	0	560	250	260	50	5,183	50.2
France(excluding overseas departments)	1989/90	842	4,204	358	5,204	2,753	2,026	425	56,358	35.9
	1990/91	425	4,744	355	5,524	2,703	2,045	776	56,596	36.1
	1991/92	776	4,400	355	5,531	2,700	2,045	786	56,830	36.0

Continued--

APPENDIX D

EXPORT VOLUMES AND PRICES

CORPORACION NICARAGUENSE DE LA AGROINDUSTRIA AZUCARERA

(C O N A Z U C A R)

EXPORTACIONES: VOLUMENES (QQ's) Y PRECIOS PROMEDIO (US$).

ZAFRA	VOLUMEN TOTAL EXPORTADO (QQ)	PRECIO PROMEDIO EXPORTACION (US$)	QUOTA (QQ)	PRECIO PROM. QUOTA (US$).
79-80	1,754,377	15.80		
80-81	1,890,737	24.75		
81-82	2,036,239	19.11		
82-83	2,743,990	12.73		
83-84	1,882,392	9.16		
84-85	1,4[illegible]2,030	7.10		
85-86	1,539,697	11.37		
86-87	1,091,842	12.59		
87-88	857,682	7.18		
88-89	1,693,464	10.19		
89-90	2,531,040	15.24	1,063,720	17.18
90-91	2,600,704	11.88	909,883	19.28

VICE PRESIDENCIA AGRICOLA

Managua, 4 de sept./91

APPENDIX D

APPENDIX E

SUGAR PRICES (BY TYPE)

PRECIOS DEL AZUCAR

	REFINADO	SULFITO	CRUDO
PRECIO PRODUCTOR	102.42	86.34	78.75
F.D.T. (2%)	2.05	1.72	1.57
COMISION (1.5%)	1.54	1.29	1.18
TRANSPORTE	1.68	1.68	1.68
CARGUE	0.15	0.15	0.15
SUB TOTAL	**107.84**	**91.18**	**83.33**
IMPUESTO	2.16	1.82	1.67
PRECIO DE VENTA	**110.00**	**93.00**	**85.00**

04 de marzo de 19[illegible]1

APPENDIX F

OPERATING STATISTICS

Tons Cane per Manzana

	88/89	89/90	90/91	Average for 3 Years
San Antonio	36.9	46.8	51.2	45.0
Victoria de Julio	42.9	33.2	41.1	39.1
Benjamin Zeledón	42.8	41.0	38.1	40.6
Javier Guerra	47.3	45.3	45.5	46.0
Julio Buitrago	55.7	62.4	57.5	58.5
German Pomares	44.6	54.3	53.4	50.8

Lb Sugar per Ton Cane

	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	AVG
Benjamin Zeledon	188.8	190.0	200.5	196.4	195.4	212.8	196.7	190.6	204.1	183.0	174.8	193.9
Javier Guerra		213.3	208.5	216.9	224.8	209.6	215.3	198.1	209.8	205.8	194.3	209.6
Julio Bustrago	173.8	174.6	186.0	199.4	213.4	211.6	211.5	184.2	215.0	202.8	183.8	196.0
German Pomares	162.6	153.1	178.0	171.3	184.6	183.2	155.8	153.3	155.9	150.7	141.8	162.8
Victoria De Julio					138.4	193.0	222.7	195.8	199.2	217.8	219.3	198.0
San Antonio	184.4	188.8	190.5	182.3	183.1	176.1	162.4	140.0	162.4	194.8	161.7	173.6

Number of Days of Harvest

	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	AVG
Benjamin Zeledon	159	143	179	177	138	123	156	78	103	122	119	136
Javier Guerra		110	136	181	166	122	127	103	121	150	149	137
Julio Bustrago	168	170	127	124	136	126	139	91	104	130	140	132
German Pomares	195	208	191	202	192	165	217	191	157	184	230	194
Victoria De Julio					31	64	71	93	74	99	109	77
San Antonio	210	190	193	219	190	197	219	197	147	169	226	196

APPENDIX F

Table 1 Factory Performance 1990/91

Time Lost % Time Available

	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	AVG
Benjamin Zeledon	26.2	21.6	21.2	30.8	31.7	25.2	29.9	24.6	16.8	27.7	23.7	25.4
Javier Guerra	-	22.5	20.9	13.5	20.4	10.3	12.1	14.1	9.8	10.5	11.0	14.5
Julio Buitrago	37.9	21.4	19.5	18.3	20.7	13.3	17.6	22.7	14.1	32.5	17.4	20.5
German Pomares	30.2	20.9	25.8	25.0	22.6	26.0	31.7	39.4	37.0	30.7	41.8	30.1
Victoria De Julio					70.7	61.7	56.8	35.2	21.5	37.0	22.7	42.1
San Antonio	23.1	15.0	20.1	27.6	30.0	23.6	37.1	36.1	27.2	21.6	34.2	26.9

Overall Recovery

	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	AVG
Benjamin Zeledon	77.0	82.1	82.5	79.9	81.2	82.5	81.1	77.7	82.1	77.5	80.0	80.3
Javier Guerra	-	78.2	80.5	82.1	83.1	84.8	83.8	82.5	83.9	79.3	83.4	82.2
Julio Buitrago	78.9	79.1	80.1	80.7	82.8	85.2	84.8	82.1	85.3	84.9	81.4	82.3
German Pomares	71.5	74.9	77.1	76.0	75.9	79.5	75.5	77.6	79.3	78.0	71.1	76.1
Victoria De Julio					57.1	72.3	78.6	77.2	78.7	80.8	85.3	75.7
San Antonio	79.1	79.4	78.3	78.9	78.5	77.0	74.9	80.7	83.0	83.1	75.4	78.9

APPENDIX F

APPENDIX G

LIST OF VICTORIA DE JULIO

AGRICULTURAL AND FACTORY ASSETS

VICTORIA DE JULIO - MAIN FACTORY INSTALLATIONS

CANE RECEIVING AND PREPARATION

2 Truck Scales, 60 t, 50'x 10', Automatic Register, Printer

2 Hydraulic Tippers for 20' Baskets Containing 10 t of Chopped Cane, Capacity 18 t, Vanguard, each connected to
  1 Hydraulic Pump, 55 m3/h, 110 m, 45 kW Motor

1 Auxiliary Cane Carrier, 108" x 160', 10' below Grade, Apron Slats and Roller Chains, Cuba, driven by
Hydraulic Motor, 77 bar, Hagglunds, complete with
Load Pump, 870 l/min, 85 bar, 160 HP Motor
Booster Pump, 150 l/min, 10 bar, 6 kW Motor
Control Pump, 10 l/min, 50 bar, 2.7 kW Motor

1 Cane Leveler, d 7', Cuba, Gearbox and 40 kW Motor, USSR

1 Main Cane Carrier, 84" x 160', inclined, Apron Slats and Roller Chains, Cuba, driven by
Hydraulic Motor, 77 bar, Hagglunds, complete with
Main Pump, 870 l/min, 85 bar, 160 HP Motor
Booster Pump, 150 l/min, 10 bar, 6 kW Motor
Control Pump, 10 l/min, 50 bar, 2.7 kW Motor

1 Magnetic Tramp-Iron Separator, 15 kW, Boxman Hapid

1 Cane Leveler, d 4.5', Cuba, Gearbox and 40 kW Motor, USSR

1 Set of Rotating Cane Knives (#1), 52 Blades, 6" Setting, 600 rpm, Cuba, driven by
Direct-Mounted 600 rpm, 400 HP, 6.3 kV Motor, USSR

1 Set of Rotating Cane Knives (#2), 104 Blades, 1.3" Setting, 600 rpm, Cuba, driven by
Direct-Mounted 600 rpm, 600 HP, 6.3 kV Motor, USSR

1 Drag-Type Inclined Carrier for Trash from Tippers and Carriers, Chain Drive, Gearbox, 10.5 kW Motor
1 Elevated Trash Hopper and Support Structure

1 Traveling Overhead Crane for Cane Preparation Area, w 48', h 33', 10 t Capacity, Cuba

CANE MILLING

1 Cane Crusher, 84", Cast Steel Housings, 7.5 rpm, Skoda, including
  2 Rollers, d 43", Cast Iron Shells
  1 Lower Feed Roller, d 33", Chain Drive

1 Electric Motor driving Crusher, AC, 500 kW, 6.3 kV, 900 rpm
AKZ, USSR, with Cooling Fan, 7.5 kW Motor
coupled to
1 Intermediate Speed Gearbox, Flender
1 Low Speed Single Stage Gear, Cuba

3 Cane Mills (#1, #2, #3), 84", Cast Steel Housing, 7.0 rpm,
Hamilton, Cuba, each including
3 Rollers, Cast Iron Shells, d 41", 2" Grooves
1 Lower Feed Roller, d 33", Chain Drive

3 Cane Mills (#4, #5, #6), 84", Cast Steel Housing, 7.0 rpm,
Hamilton, Cuba, each including
3 Rollers, Cast Iron Shells, d 41", 1" Grooves
1 Lower Feed Roller, d 33", Chain Drive

6 Electric Motors driving Mills, AC, 630 kW, 6.3 kV, 900 rpm
AKZ, USSR, with Cooling Fans, 7.5 kW Motors
each coupled to
1 Intermediate Speed Gearbox, Flender
1 Low Speed Single Stage Gear, Cuba

1 Centralized Mill Lubrication System, Farval-Type, Japan
1 Set of Hydraulic Accumulators and Centralized Pressure
System, Pump, 11 kW Motor

6 Mill Feed Carriers, Apron Slats, 4 Strands of Stainless
Steel Roller Chain, 80 fpm, Gearboxes, 7.5 HP Motors
2 Cush-Cush Screens, 48" x 50' Drag Conveyors (20' inclined),
with Scrolls, d 20", l 25', Chain Drives, Gearboxes,
13 kW Motors (Discharges in front of Mills #1 and #3)

4 Parabolic Juice Screens, DSM-Type, w 6', Cuba

4 Pumps, Imbibition Juice, 205 m3/h, 12 m, BSA, 18.4 kW Motors
2 Pumps, Mixed Juice to Screen, Non-Clog, 410 m3/h, 15 m,
ITUR, 36 kW Motors
2 Pumps, Mixed Juice to Scales, Non-Clog, 410 m3/h, 25 m,
ITUR, 44.7 kW Motors

1 Mill Journal Cooling Water Collecting Tank, 3.7 m3
1 Mill Journal Water Cooling Tower, 183 m3/h, Fan, Motor
2 Pumps, Cold Water to Mills, 186 m3/h, 34 m, 22 kW Motors
2 Pumps, Warm Water to Tower, 182 m3/h, 27 m, Motors

4 Mill Area Sump Pumps, 130 gpm, 75', 4 kW Motors

1 Traveling Overhead Crane, 2 Hoists, 15 t Capacity each,
w 83', h 41'

1 Installations for adapting one pair of mill housings to be
used as roller lathe

JUICE TREATMENT

1 Raw Juice Scale, Foxboro (Pneumatic) Type, Cuba
with
2 Measuring Tanks
1 Discharge (Liming) Tank, 24 m3
1 Holding (Reaction) Tank, 40 m3

Parentheses indicate function in process without sulphitation.

1 Rotating Horizontal Sulphur Burner, Cast Iron, d 1 m, 2 m3 Capacity, Chain Drive, Gearbox, 1 HP Motor complete with
1 Vibratory Sulphur Feed Hopper
1 Ash Box, Water-Cooled Walls
1 Gas Cooling Pipe, Water Jacket

1 Raw Juice Sulphitation Column, Stainless Steel Shell, Wooden Slats, with 1,000 cfm SS Extracting Fan, 2 HP Motor

1 Sulphitated Juice Liming Tank, Vertical Cylinder, 8 m3 complete with
1 Milk of Lime Dosing Device, Solenoid Control
1 Stirrer, 105 rpm, Gearbox, 1.5 HP Motor

1 Liming Reaction Tank, Vertical Cylinder, 14.7 m3 complete with
1 Stirrer, 85 rpm, Gearbox, 1.5 HP Motor

When sulphitation - the above four items - was installed in 1990, stainless steel pumps for sulphitated juice to heaters were not included. Mill juice was pumped directly to the column, the scales being gravity-fed with sulphitated juice en route to liming and to the existing juice heater supply pumps.

1 Hoist for Handling Bagged Hydrated Lime, 8 m, 0.5 t
1 Lime Slurry Tank, 30 m3, with Stirrer, Gearbox, 5.5 kW Motor
2 Lime Slurry Pumps, 16 m3/h, 11 m, 1.1 kW Motors

2 Milk of Lime Tanks, 10.2 m3, with Stirrers, Gearboxes, 5.5 kW Motors
2 MOL Pumps, Circulation, 25 m3/h, 35 m, 7.5 kW Motors
2 MOL Pumps, Hot Liming, 25 m3/h, 35 m, 7.5 kW Motors

2 Juice Heater Supply Pumps, 1,800 gpm, 300', Worthington, 250 HP Motors

8 Limed Juice Heaters, Webre Type, 115 m2, 6 Passes, 39 tpp (32 mm x 5.85 m Copper Tubes), Cuba
2 Limed Juice Heater Condensate Syphons and Flash Tanks

1 In-Line Flow Mixer for Hot Liming, d 400 mm, l 3,062 mm

1 Limed Juice Flash Tank, d 2.1 m, 8.5 m3
1 Flocculant Mixing Tank, 1,000 l, Stirrer, 2.2 kW Motor
2 Flocculant Dosing Tanks, 1,000 l, Stirrers, 2.2 kW Motors
2 Flocculant Dosing Pumps, 0.2 m3/h, 30 m, 7.5 kW Motors

3 Continuous Clarifiers, Concrete Bases, d 24', h 32', 72,000 gal, 5 Trays and Bottom, Pearson, Cuba, each including
  2 Clarified Juice Overflow Boxes
  4 Two Piston Diaphragm Pumps, Gearboxes, 2.2 kW Motors
  1 Scraper, Gearbox, Motor

3 Clarifier Liquidation Pumps, 600 gpm, 60', 13 kW Motors

1 Bagacillo Collecting System, Screen, Blower, 20 kW Motor, Tubing, Cyclone Separator
1 Bagacillo Bagging Bin, 25 m3, Vibrator, 1,1 kW Motor

1 Mud and Bagacillo Mixer, U-Type, r 0.52 m, l 3.05 m, 2.4 m3, Scroll, Gearbox, 3 kW Motor
1 Overflow Mud Mixer, U-Type, r 0.91 m, l 4.50 m, 8.35 m3, Scroll, Gearbox, 3 kW Motor
2 Mud Circulation Pumps, Non-Clog, 600 gpm, 85', 22 kW Motors

3 Rotary Vacuum Filters, d 10', l 20', 620 ft2, Stirrers and Drum Drives, Gearboxes, 1.5 kW Motors, Dorr Oliver
2 Filter Cake Wash Water Pumps, 200 gpm, 82', 5.5 kW Motors
2 Filtrate Separation Tanks, Low and High Vacuum, 2.5 m3
4 Filtrate Extraction Pumps, 400 gpm, 75', 10 kW Motors

1 Barometric Condenser, d 42", with Entrainment Separator
2 Condenser Water Recovery Pumps, 400 gpm, 77', 10 kW Motors
2 Water Ring Vacuum Pumps, 39.4 m3/h at 150 mm Hg, Nash, 85 kW Motors

1 Filtrate Holding Tank, 15 m3, Stirrer, Gearbox, 1 HP Motor
2 Filtrate Pumps, 56 m3/h, 30 m, Motors

1 Filtrate Treatment Tank, 1.3 m3, Stirrer, 0.75 HP Motor with Lime Splitter Box, Solenoid Control
2 Treated Filtrate Aerating Pumps, 22 m3/h, 30 m. Motor

1 Filtrate Clarifier, 17 m3, Tate & Lyle, Stirrer, Variable Speed DC Motor, Scum Scraper, Variable Speed DC Motor

1 Flocculant Make-Up Tank, 2.56 m3
1 Flocculant Holding Tank, 2.90 m3, Flocculant Dosing Pump
1 Phosphoric Acid Dosing Pump, Motor

Filtrate Clarification Scum goes to Mud Mixer, Clarified Filtrate to Clarified Juice Tank.

1 Filter Cake Collecting Conveyor, 24" x 107' Belt, Gearbox, 2.2 kW Motor
1 Belt Scale for Filter Cake, 24" x 10', 62 fpm, 25 t/h, 1.1 kW Motor
1 Filter Cake Loading Conveyor, 24" x 49' Belt, Gearbox, 2.2 kW Motor
1 Elevated Filter Cake Loading Bin, 57 m3, Steel Structure

2 Fixed Stainless Steel Clarified Juice Screens, 13 m2
1 Rectangular Clarified Juice Tank, 4 x 5 x 3 m, 60 m3

1 Hoist, Clarifier Area
1 Hoist, Filter Area

JUICE EVAPORATION AND SYRUP CLARIFICATION

2 Clarified Juice Pumps, 1,600 gpm, 196', Worthington, 140 HP Motors

4 Clarified Juice Heaters, Webre Type, 115 m2, 6 Passes, 39 tpp (32 mm x 5.85 m Copper Tubes), Cuba
1 Clarified Juice Heater Condensate Syphon and Flash Tank

2 Pre-Evaporator Bodies, 1,720 m2, Cuba

2 Quadruple Effect Evaporators, Total Area of 3,592 m2, Cuba, composed of
- 1 Body (#1), 998 m2
- 1 Body (#2), 1,048 m2
- 2 Bodies (#3, #4), 773 m2
- 4 Condensate Flashpots, d 600 mm
- 1 Barometric Condenser, d 90", with Entrainment Separator

2 Water Ring Vacuum Pumps, 141 m3/h at 125 mm Hg, Nash, 310 kW Motors, 6.3 kV

3 Pre-Evaporator Juice Pumps, 250 m3/h, 20 m, 22 kW Motors

The PEJ pumps are used to inject pre-evaporator juice into the first body whenever the Pre and first body steam sides are connected in parallel, i.e. when the set of five bodies works as a Quad. If the Pre and first body steam sides are connected in series, the set works as a Quint, and the above pumps are not used.

4 Syrup Extraction Pumps, 280 gpm, 113', 10 kW Motors
Cylindrical Syrup Screens at Suction End, d 600 mm

1 Clean Condensate Tank, 43 m3
2 Clean Condensate Storage Pumps, 250 m3/h, 20 m, 22 kW Motors

1 Contaminated Evaporator Condensate Tank, 38 m3
2 Contaminated General Condensate Collecting Pumps, 600 gpm, 44', 7.5 kW Motors
2 Contaminated Condensate Pumps, 1,400 gpm, 100', 30 kW Motors
1 Elevated Hot Process Water Tank, 40 m3

1 Evaporator Wash Pump, Motor
1 Hydrostatic Pressure Test Pump for Evaporator Bodies, Motor

1 Hoist for Caustic Soda Drums, 0.5 t, 5 m
1 Caustic Soda Dissolving Tank, 1.5 x 4 x 1.5 m, 9 m3
1 Caustic Soda Distribution Pump, 160 gpm, 40', 2.2 kW Motor

1 Caustic Soda Circulation Tank, Evaporator Bodies #3, #4, d 2,200 mm, 10 m3
1 Caustic Soda Circulation Tank, Evaporator Bodies #1, #2, Pre, d 2,200 mm, 10 m3
3 Caustic Soda Circulation Pumps, Evaporator Bodies, 91 m3/h, 50 m, 30 kW Motors

1 Caustic Soda Circulation Tank, Limed and Clarified Juice Heaters, d 2,200 mm, 10 m3
2 Caustic Soda Circulation Pumps, Limed and Clarified Juice Heaters, 600 gpm, 44', 7.5 kW Motors

1 Hydrochloric Acid Storage Tank, d 2,400 mm, 25 m3

1 Raw Syrup Holding Tank, d 4,300 mm, h 4,300 mm, 60 m3, Stirrer, Gearbox, 5.5 HP Motor
2 Raw Syrup Pumps, 85 m3/h, 50 m, Motors
2 Raw Syrup Heaters, Webre Type

1 Raw Syrup Treatment Tank, d 1,450 mm, h 1,905 mm, 3.1 m3, Stirrer, 1 HP Motor
1 Sample Circulation Pump, 4 m3/h, Motor

1 Treated Syrup Aerating Tank
2 Cavitation Aerators,, Motors

1 Syrup Clarifier, d 5,260, h 1,725 mm, 35.5 m3, Tate & Lyle, Scum Scraper, Variable Speed DC Motor

1 "Talodura" Make-Up Tank, 8.8 m3
1 "Talodura" Holding Tank, 9.0 m3, "Talodura" Dosing Pump
1 Phosphoric Acid Dosing Pump, Motor

Syrup Clarification Scum goes to Limed Juice Tank, Clarified Syrup to Pan Feed Tanks.

SUGAR BOILING, CENTRIFUGING, AND DRYING

4 Syrup Storage/Pan Feed Tanks, 4 x 4 x 2.5 m, 40 m3
4 Mill-Run "A" and "B" Molasses Storage Tanks, 40 m3
2 "A" and "B" Molasses Dilution Tanks, Stirrers, 3 kW Motors
2 Dilute "A" and "B" Molasses Pan Feed Tanks, 40 m3, Automatic Temperature Controls
1 Sodium Hydroxide Tank, 1.2 m3, for Molasses Neutralization

8 Vacuum Pans, Honolulu Type Body, 51 m3, 380 m2, Cuba Automatic Feed Controls, Barometric Condensers, d 90"
3 Pans for "A" Massecuite (#4, #5, #6)
2 Pans for "B" Massecuite (#7, #8)
3 Pans for "C" Massecuite (#1, #2, #3), Steam Agitation

1 Water Ring Vacuum Pump, 141 m3/h at 125 mm Hg, Nash, 310 kW Motor, 6.3 kV
2 Water Ring Vacuum Pumps, 68 m3/h at 125 mm Hg, Nash, 125 kW Motors

1 Pan Wash Water Tank, 40 m3
1 Pan Wash Water Pump, 41 m3/h, 20 m, 4 kW Motor

1 Graining Charge Preparation Tank, 29.5 m3
4 Grain Crystallizers, 48.3 m3, Stirrers, Worm Gears, Gearboxes, 5.5 kW Motors
1 Magma Crystallizer, 48.3 m3, Stirrer, Worm Gear, Gearbox, 5.5 kW Motor
1 Magma Dissolving Tank, 5 m3, Stirrer, 3 kW Motor

3 "A" Strike Receivers, 70 m3, Stirrers, 5.5 kW Motors
1 "B" Strike Receiver, 70 m3, Stirrer, 5.5 kW Motor
2 "C" Strike Receivers, 70 m3, Stirrers, 5.5 kW Motors

3 "A" Massecuite Crystallizers, 80 m3, Stirrers, Motor
1 "B" Massecuite Crystallizer, 64 m3, 22 Pairs of Stationary Cooling Elements ("Pulmones"), Stirrer, Motor
5 "C" Massecuite Crystallizers, 64 m3, 22 Pairs of Stationary Cooling Elements ("Pulmones"), Stirrers, Motors, (one is a former "C" Strike Receiver), Connected in Series

1 Final Molasses Tank, "C" Massecuite Lubrication, 3.4 m3

2 Crystallizer Cooling Pumps, 159 m3/h, 35 m, 22 kW Motors
1 Crystallizer Cooling Water Head Tank, 1.2 m3
1 Receiving Tank for Cooling Water from Crystallizers, 2.3 m3
2 Crystallizer Cooling Water Tail Pumps, 41 m3/h, 20 m, 4 kW Motors (to Hot Condenser Water Canal)

1 Crystallizer Heating Water Tank, 2.3 m3
2 Crystallizer Heating Pumps, 159 m3/h, 35 m, 22 kW Motors
1 Crystallizer Heating Water Head Tank, 1.2 m3

1 Massecuite Mixer for High Grade Centrifugals, 10.8 x 0.9 m, Stirrer, 2 Drives, Gearboxes, Motors
6 Batch Type Centrifugals for High Grade Massecuites, fully automatic, d 42", h 48", 7", 670 kg/Charge, 1,300 rpm, Nils/Weibuell/ASEA
  3 Machines for "A" Massecuites
  1 Machine for "A" or "B" Massecuites
  2 Machines for "B" Massecuites

1 Scroll Conveyor for High Grade Sugar, 13 m, Gearbox, 17 kW Motor

Ancillary Installations for Automatic Centrifugals:
2 Hot Water Pumps, 100 gpm, 100', 4 kW Motors
2 Air Compressors, 10 kg/cm2, 9 kW Motors
2 Suction Fans, Motors
1 Steam Pressure Reducing Valve, 1.76/1.2 kg/cm2
Electronic Controls and Panels

1 "A" Molasses Receiving Tank, 6.2 m3
3 "A" Molasses Pumps, 140 gpm, 230', Motors

1 "B" Molasses Receiving Tank, 6.2 m3
2 "B" Molasses Pumps, 90 gpm, 230', Motors

1 Massecuite Distributor for "C" Centrifugals, 10.9 x 0.8 m, Stirrer, Gearbox, 7.5 kW Motor
6 Continuous Centrifugals for "C" Massecuites, 1,800 rpm, #3630, Silver/Weibuell/ASEA

1 Scroll Conveyor for Low Grade Sugar, 1 15 m, Gearbox, 10 kW Motor
2 Magma Pumps, 18.6 m3/h, 30 m, Gearboxes, Motors

1 Final Molasses Receiving Tank, 6.2 m3
2 Final Molasses Pumps, 90 gpm, 125', Motors
1 Final Molasses Scale, 15 t/h
2 Final Molasses Storage Pumps, 90 gpm, 295', Motors

2 Hoists, Centrifugal Maintenance, 3 t, 12 m

1 Scroll Conveyor for Wet Sugar, 7.3 m, 60 t/h. Gearbox, Motor
1 Wet Sugar Bucket Elevator, Drive, Gearbox, Motor

1 Drier-Cooler for White Sugar, 30t/h, Squier, consisting of
  1 Rotating Drying Drum, d 2.2 m, 11 m, with Steam-Operated Air Heater, Drive, Falk Gearbox, 25 HP Motor
  1 Rotating Cooling Drum, d 2.2 m, 11 m, Drive, Falk Gearbox, 25 HP Motor

1 Suction Fan for both Drums, Ducts, Dust Collector, V-Belt Drive, 50 HP Motor

1 Scroll Conveyor for Wet Sugar, 7.3 m, 60 t/h. Gearbox, 4 kW Motor
1 Wet Sugar Bucket Elevator, 60 t/h, 10 m, Drive, Gearbox, 8 kW Motor

1 Drier-Cooler for White Sugar, 20t/h, BMA, consisting of
1 Rotating Cooling-Drying Drum, d 2.4 m, 11 m, with Steam-Operated Air Heater for Drying Section, Drive, Gearbox, 30 kW Motor
1 Suction Fan, 1,000 m3/min, Ducts, Dust Collector, V-Belt Drive, 36 kW Motor
1 Cyclone, d 4 m, 13 m,

2 Dust Collector Sweet Water Pumps, 10 l/sec. 45 m, Motors
1 Dust Collector Sweet Water Pump, 2 l/sec, 15 m, Motor

SUGAR AND MOLASSES STORAGE

1 Bulk/Bagged Sugar Warehouse, 125 m x 30 m, 300,000 q

1 Belt Conveyor for Transporting Bulk Sugar from Fabrication Building to Warehouse, 600 mm, 125 m, 0.62 m/sec, 50 t/h, Gearbox, 7.5 kW Motor, Steel Support Structure

1 Belt Conveyor for Distributing Bulk Sugar in Warehouse, Central, Elevated, 600 mm, 125 m, 0.62 m/sec, 50 t/h, Gearbox, 7.5 kW Motor

1 Belt Conveyor for Reclaiming Bulk Sugar from Warehouse, Lateral and above Grade, 600 mm, 125 m, 1.26 m/sec, 120 t/h, Gearbox, Motor

1 Moveable Belt Conveyor for Reclaiming Bulk Sugar, 600 mm, 1.50 m/sec, 120 t/h, Gearbox, 7.5 kW Motor, with Moveable Hopper, 2.60 x 1.26 x 2.66 m(h), to be fed by Front End Loader

1 Bulk Sugar Scale, 30 t/h, Steel Structure
2 Elevated Bulk Sugar Bins, 40 t, Steel Structure
2 Sugar Bagging Scales, Toledo
2 Belt Conveyor for Filled Bags, 500 mm, 10.7 m, 30 t/h, Gearboxes, 2 kW Motors
2 Sewing Machines, 600 Bags/h
1 Inclined Belt Conveyor for Closed Bags, 10 m, 0.7 m/sec, Gearbox, Motor

1 Cylindrical Steel Tank for Final Molasses (#1), d 24.82 m, h 10.85 m, 5,000 m3 Capacity
1 Cylindrical Steel Tank for Final Molasses (#2), d 23.00 m, h 10.20 m, 4,000 m3 Capacity

2 Final Molasses Loading Pumps, 31.8 m3/h, 103 m, Motors
1 Final Molasses Loading Tank, d 4 m, h 5 m, 60 m3

STEAM GENERATION AND DISTRIBUTION

1 Drag-Type Bagasse Elevating Conveyor (#1), 2.10 x 44 m, 0.8 m/sec, 100 t/h, Chain Drive, Gearbox, 30 kW Motor

1 Drag-Type Bagasse Distribution Conveyor (#2), 2.10 x 76 m, 0.8 m/sec, 100 t/h, Chain Drive, Gearbox, 40 kW Motor

1 Belt Conveyor for Excess Bagasse (#3), 42" x 126 m, 2.22 m/sec, 100 t/h, Chain Drive, Gearbox, 30 kW Motor including
2 Belt Flattening and Bagasse Scraping Dollies, one for enclosed, one for open bagasse storage

1 Fully Mechanized Enclosed Bagasse Storage, 18 x 42 m, 7 m of Usable Height, 600 t Approximate Capacity

1 Moveable and Adjustable Bagasse Distribution and Reclaiming Rake (#4), 1.50 x 14.40 m, 0.8 m/sec, 87 t/h, Chain Drive, Gearbox, 7.5 kW Motor, including
Receiving Chute for Bagasse from Dolly on #3
2 Hoists for Vertical Displacement, 10 t
1 Transmission for 2 m/min lengthwise Displacement Gearboxes, Motors

1 Drag-Type Conveyor below Grade (#9), for Reclaiming Bagasse from Enclosed and Open Storage, 2.1 x 55 m, 0.8 m/sec, 80 t/h, Chain Drive, Gearbox, 40 kW Motor

1 Drag-Type Bagasse Return Conveyor (#10), 2.1 x 30 m, 0.8 m/sec, 80 t/h, Inclined, Chain Drive, Gearbox, 30 kW Motor

1 Drag-Type Bagasse Transfer Conveyor (#11), 2.1 x 9 m, 0.67 m/sec, 80 t/h, Chain Drive, Gearbox, 5.5 kW Motor

There is under construction a drier that will use flue gases from boiler #1 to dry 20% of the bagasse. Bagasse will be mixed with gas in a vertical duct and subsequently separated by a cyclone. It will then be re-elevated to the main distribution carrier.

5 Boilers 45,000 kg/h, 28 kg/cm2, 400 C,
VEB Dampferzeugerbau, Berlin, including
2 Drums
Superheater, 2 Stages
5 Solid Fuel Feed Chutes
4 Fuel Oil Injection Nozzles
1 Dump Grate
1 Forced Draft Fan, 89 kW Motor
1 Secondary Air Fan, 23.7 kW Motor
1 Induced Draft Fan, 200 kW Motor, 6.3 kV
1 Air Pre-Heater
1 Steel Stack
1 Set of Automatic Controls

1 Auxiliary Air Compressor, 315 m3/h

2 Phosphate Mixing Tanks, d 1.420 mm, 1.2 m3
5 Phosphate Dosing Pumps, 22 l/h, 400 m, 0.85 kW Motor

2 Flash Tanks for Continuous Blow-Down, 10 TM/h

1 Boiler Feed Water Make-Up Treatment Supply Tank, 1,000 l

1 Flocculant Preparation and Dosing Tank, 1,000l
2 Flocculant Dosing Pumps, 100 l/h, 10 m, Motors

1 Milk of Lime Mixing and Storage Tank, 3.2 m3, Stirrer, Motor
2 MOL Circulation Pumps, 18 m3/h, 15 m, 3 kW Motors
1 MOL Dosing Tank, 1,000 l
2 MOL Dosing Pumps, 100 l/h, 15 m, Motors

1 Clarifier, 115 m3/h

4 Mechanical Filters, 31 m3/h
2 Filter Supply Pumps, 91 m3/h, 45 m, 25 HP Motors

1 Filter Wash Tank, 30 m3
2 Filter Wash Pumps, 159 m3/h, 22 m, 13 kW Motors

3 Cation Exchange Columns, d 1,750 mm
1 Column Blow-Up Tank, 10 m3
1 Resin Regenerating Agent Tank, 7m3
2 Salt Solution Pumps, 11.4 m3/h, 7.5 m, 0.75 kW Motors
1 Filter for Salt Solution, d 620 mm

1 Hoist, BFW Make-Up Treatment Station, 1 t

3 Boiler Feed Water Storage Tanks, 1,000 m3
1 Intermediate BFW Tank, 43 m3

2 Pumps, BFW from Storage to Intermediate Tank, 1,200 gpm, 88', 30 kW Motors
2 Pumps, BFW from Intermediate Tank to Deaerating Heaters, 1,200 gpm, 88', 30 kW Motors

2 Boiler Feed Water Deaerating Heaters, 50 m3, 150 TM/h, 2.8 ata, 127 C

2 Boiler Feed Pumps, 230 m3/h, 410 m, 400 kW Motors, 6.3 kV
1 Boiler Feed Pump, 230 m3/h, 410 m, 380 kW Turbine, 28.5/2.8 kg/cm2, Lang
1 Boiler Feed Pump, 70 m3/h, 410 m, 132 kW Motor, 480 V

1 Fuel Oil Receiving Tank, 60 m3
1 Fuel Oil Storage Tank, 1,000 m3
2 Fuel Oil Pumps, 25 m3/h, 53 m, 7 kW Motors
2 Fuel Oil Pumps, 20 m3/h, 42.5 m, Motors

1 Daily Use Fuel Oil Tank, 64 m3
1 Double Fuel Oil Filter, 58 m3/h, 5 kg/cm2
2 Low Pr. Fuel Oil Pumps, 18 m3/h, 60 m, 50 C, 8 kW Motors
2 High Pr. Fuel Oil Pumps, 18 m3/h, 400 m, 50 C, 32 kW Motors
1 Fuel Oil Heater, 46 m2, 50 - 180 C, Steam at 19 kg/cm2
1 Electric Fuel Oil Heater, 2 TM/h
2 Scraper-Type Ash conveyors, 600 mm, 30 m, 2.2 kW Motors
1 Scraper-Type Ash conveyor, 32 m, 0.16 m/sec, 5 t/h, 1.5 kW Motor
1 Elevated Ash Bin, 40 m3, Steel Structure
2 Sump Pumps, 25 m3/h, 10 m, 3.4 kW Motors

1 Automatic Steam Pressure Reducing and Cooling Station, 28 kg/cm2 abs., 390 C to 2.8 kg/cm2 abs., 135 C, including
  1 Valve, 45 TM/h
  1 Valve, 12 TM/h

WOOD CHIPPING

2 Inclined Cordwood Feed Tables, w 6.35 m, l 6.03 m, 45 deg, 8 Roller Chains with Wooden Cross Pieces every 2', Sprockets, Hydraulic Drives, Rexroth Pumps, 15 kW Motors

2 Belt Conveyors, 500 mm(?), 13.75 m, Gearboxes, 9 kW Motors
2 Magnetic Tramp Iron Separators

1 Gantry covering Cordwood Handling Area, 3,650 kg at 3.0 m, 1,250 kg at 8.8 m, Hydraulic Pump, 22 kW Motor

1 Cordwood Handling Area Control Room

2 Round-Wood Chipper/Blowers 320V-1028V, 45 TM/h, Ahlstroem, Finland, each one including
- 1 Disk with 3 Blades (to be changed every 12 hours)
- 1 Motor Stroemberg, 550 kW, 6.3 kV
- 1 Feed Hopper
- 1 Cyclone, d 2,000 mm

1 Cooling Fan for Electric Motors, 3.6 kW Motor

2 Vibrating Screens for Chip Separation, 6.6 kW Motors
3 Belt Conveyors, w 300 mm, 15.5 m, 10.4 m, 10.7 m, Gearboxes, 3.6 kW Motors, for recycling of oversized material

1 Inclined Drag-Type Conveyor, 800 mm, 40.48 m, Gearbox, 22 kW Motor, Steel Structure, Chips from Screens, 300 m3/h
1 Elevated Belt Conveyor, 800 mm, 121 m, Gearbox, 18 kW Motor, Steel Structure, Chips to Bagasse Conveyor #2, 300 m3/h

ELECTRIC POWER GENERATION AND DISTRIBUTION

3 Electric Generators, 4,000 kW, 6.3 kV, 60 Hz, BEM Steam Turbines, 27.5 vs 2.8 kg/cm2 abs., Sachsenwerk

9 Turbine Control Panels
20 Generator Control Panels
24 Control Panels, 6.3 kV Bar Connections, Corresponding Switch Gear

1 Generator Station Traveling Overhead Crane, 10 t, 9 m

1 Elevated Cooling Tower for Turbo-Generator Water, 227 m3/h, Fan, Motor
2 Pumps, Water from T-G to Cooling Tower, 227 m3/h, 28 m, 22 kW Motors
2 T-G Cooling Water Make-Up Pumps, 41 m3/h, 25 m, 5.5 kW Motors
4 Auxiliary Turbo-Generator Cooling Pumps, 65 m3/h, 24.5 m, 6.6 kW Motors

1 Transformer, 13.8/6.3 kV, 9 mVA, Existing Generators Bar to Present Public-Grid-Tie-In Bar
2 Transformers, 138/13.8 kV, 22 mVA, INE-Tie-In Bar to INE
10 Transformers, 6.30/.48 kV, 1 mVA, Existing Generators Bar to 26 Factory Motor Control Centers

Only one of the 138/13.8 kV transformers has been connected. There is no connection between the 13.8 kV INE-Tie-In Bar and the Existing 13.8 kV Irrigation Grid, making it impossible for the Mill to drive its own field pumps. Excess Power only can go to the INE grid. From there, all power for irrigation has to be drawn.

GENERAL SERVICES

1 Fabrication Building General Service Elevator, 2,000 kg
1 Fabrication Building Hoist

2 General Service Air Compressors, 10 m3/min, 8 kg/cm2, Air Driers, Air Coolers, 35 kW Motors
2 Compressed Air Storage Tanks, d 1,010 mm, h 2.91 m, 2 m3

3 Instrument Air Compressors, 11.5 kg/cm2, Air Driers, Motors, Hitachi
3 Instrument Air Storage Tanks, 2 m3

2 Instrument Air Compressors, 3 m3/min, 8 kg/cm2, 13 kW Motors
1 Instrument Air Storage Tank, 2 m3

1 Steel Tank for General Use Water Storage, d 12.3 m, 1,000 m3
1 Elevated Steel Tank for GU Water, 200 m3, at 30 m, Structure
1 Tank for Drinking Water, 40 m3, above Pan Floor

2 Deep Well Pumps, Water to General Use Storage, Motors
2 Elevated Tank Supply Pumps, 1,400 gpm, 100', 30 kW Motors
2 Drinking Water Supply Pumps, 450 gpm, 92', 13 kW Motors

1 Fire Protection System, 10 kg/cm2, Piping, 35 Hydrants
1 Fire Protection Pump, 750 gpm, 280', Electric Motor
1 Fire Protection Pump, 750 gpm, 280', Diesel Engine

1 Vacuum Pump and Air Compressor Water Collecting Tank, 3.7 m3
1 VP and AC Water Cooling Tower, 123 m3/h, Fan, Motor
2 Pumps, Cold Water to VP & AC, 123 m3/h, 18 m, 7.5 kW Motors
2 Pumps, Warm Water to Tower, 123 m3/h, 30.5 m, 18.5 kW Motors

1 Elevated Barometric Condenser Water Collecting Trough, 160 m, with 10 Condenser Leg Pipe Seal Tanks
1 Spray Pond Stand Pipe, 11 m

1 Concrete, Gravity Operated Spray Pond, 144 x 38 m, 126 Founts, 5 Nozzles @ 50 gpm each, 7,154 m3/h
1 Cold Water Return Canal, 95 m

4 Cold Water Pumps, 10,000 gpm, 100', 267 kW Motors, 6.3 kV, Injection to Barometric Condensers

1 Hoist, Injection Water Pumping Station

Chemical Control Laboratory Installations

MACHINE SHOP

4 Horizontal Lathes
- 1 7.50 x 1.70 x 1.28 m (overall dimensions), 15 kW Motor
- 3 3.21 x 1.17 x 1.33 m (overall dimensions), 11 kW Motors
- 1 2.19 x 0.93 x 1.50 m (overall dimensions), 4.5 kW Motor

1 Vertical Lathe
- 3.38 x 3.28 x 4.14 m (overall dimensions), 32 kW Motor

1 Milling Machine
- 2.85 x 3.04 x 1.77 m (overall dimensions), 13 kW Motor

1 Planer
- 7.95 x 3.70 x 3.55 m (overall dimensions), 40 kW Motor

1 Radial Drill
- 2.63 x 0.97 x 3.63 m (overall dimensions), 7 kW Motor

2 Boring Machines
- 0.98 x 0.83 x 2.50 m (overall dimensions), 3 kW Motors

2 Plate Cutters
- 1 3.60 x 1.86 x 1.05 m (overall dimensions), 10 kW Motor
- 1 2.34 x 1.36 x 1.45 m (overall dimensions), 4.5 kW Motor

1 Stamper
- 1.90 x 0.70 x 2.00 m (overall dimensions), 2.5 kW Motor

1 Angle Press
- 4.00 x 1.00 x 1.40 m (overall dimensions), 10 kW Motor

3 Grinders
- 1.20 x 1.20 x 1.00 m (overall dimensions), 3 kW Motors

1 Portable Welding Machine
- 1.00 x 0.80 x 1.00 m (overall dimensions), 14 kW Motor

1 Terraja(?)
- 1.50 x 0.70 x 1.25 m (overall dimensions), 3.8 kW Motor

1 Martinete(?)
- 2.50 x 1.20 x 2.20 m (overall dimensions), 10 kW Motor

1 Segueta Mecanica(?)
- 1.47 x 0.88 x 0.93 m (overall dimensions), 1.8 kW Motor

1 Overhead Traveling Crane, 10 t, w 17 m, h 8 m, Motor

Victoria de Julio

Equipment Evaluation.

Tractors.

Make.	Model.	Type.	HP.	Qty.
Caterpillar	D6-C	Track	120	2
International	TG-140	Track	110	2
Komatzu	D8-5A	Track	160	1
Kirovet	K-700	4WD	300	5
Belaruz	T-150	4WD	150	14
Belaruz	MTZ-80	2WD	80	55
John Deere	4255	2WD	120	5
John Deere	4560	2WD	155	3
Total tractors.				87

Implements.

Rome	10 x 36" Harrow	3
Rome	20 x 36" Harrow	4
Rome	20 x 28" Harrow	2
Rome	40 x 26" Harrow	2
Rome	24 x 24" Harrow	1
Cima	20 x 28" Harrow	6
	Ditching plow	3
Taino	Furrowing plows	2
Implagsa	Furrowing plows	5
Taino	Cultivator/Fertilizer	8
Rome	Sub-soiler	13
Taino	Sub-soiler	1
Rome	STB- Sub-soiler	20
Total implements		70

Victoria de Julio

Equipment Evaluation.

Harvesting Equipment.

Make.	Model.	Description.	Qty.
Toft		Chopper Harvester	14
Ford	6000	Cane Loader	1
John Deere	4255	Cane Loader	1
Kamaz		Truck-tractor	15
Belaruz	T-150	5th.Wheel Hauler	20
Emensa	18 Ton	Cane trailer	22
Vanguard	18 Ton	Cane trailer	10
Froestnas	18 Ton	CAne trailer	10
Toft	High Dump in-field cane cart		4
Vanguard	Dolly		4
Total harvesting equipment			101

Other Agricultural Equipment.

Make.	Model.	Description.	Qty.
Toft	85	Cane Planter	4
Mataby		Boom Sprayer	2
Taino		Brush Chopper	5
Assorted		Knapsack Sprayers	87
Caterpillar	930	Front End Loader	1
Valmet		Forestry Loaders	2
John Deere		Back Hoe	1
Omega		Hoist Crane	1
Pegaso		Hoist Crane	2
Was		Hoist Crane	1
Balkan Car		Fork Lift Truck	2
Various		Welding Machines	45
Total Other Agricultural Equipment.			153

Victoria de Julio

Vehicle Evaluation.

Make.	Model.	Qty.
GMC	Buses (Thomas)	3
na	Ambulance	1
Toyota	Mini-bus	4
Mitsubishi	Automobile	5
Toyota	Automobile	3
Honda	Automobile	2
Subaru	Automobile	1
Lada	Automobile	3
Nissan	Jeep	1
Isuzu	Jeep	1
Land Rover	Jeep	1
Niva	Jeep	3
Toyota	Jeep	8
Bandeirante	Jeep	2
Montero	Jeep	3
Waz	Pick-up	10
Toyota	Pick-up	10
Mitsubishi	Pick-up	9
Isuzu	Pick-up	1
Various	Pick-up trucks	10
MAZ LD	Truck	1
Mercedes Benz	Truck	3
Kamaz	Truck	2
Liaz	Truck	5
Zastava	Truck	3
Kraz	Dump Truck	1
Various	Motorcycles	14
Trailers	220 Glns. tank	11
Trailers	1000 Glns. tank	22
Taino	Low-boy trailer	1
Vanguard	Flat bed trailer	3
Taino	Flat bed trailer	4
Total vehicles		151

Victoria de Julio

Irrigation Equipment Evaluation.

The total area under irrigation is made up of:

128	center pivot units.	13,312 Mz.
2	traditional sprinkler units	208 Mz.
2	gravity furrow irrigation lots.	208 Mz.
	Total	13,728 Mz.

APPENDIX H

FINANCIAL ANALYSIS

APPENDIX H

Appendix H presents the cash flow assumptions and Discounted Cash Flow analysis for each of the five scenarios analyzed:

1. Scenario 1, the "Base Case", is based on the historical performance of IVJ and assumes that the mill continues to perform as it has in the past.

2. Scenario 2 assumes that 322 manzanas of developed land owned by IVJ and 1,948 manzanas of developed colono land that was not in production in 1991/92 is put into production beginning in 1992/93.

3. Scenario 3 assumes, in addition to the assumptions in Scenario 2, that IVJ is privatized. Under this scenario 3,800 manzanas are sold to IVJ workers in fulfillment of the 1992 agreement granting IVJ workers an option to purchase 25% of the mill. In addition, management is assumed to be able to make reasonable improvements in the operations of the mill in order to achieve efficiency and productivity levels that are consistent with industry norms.

4. Scenario 4 assumes, in addition to the assumptions in Scenario 3, that an additional 6,613 manzanas of land is put into cultivation in order to reach a total amount of cane land, both colono and IVJ, of 20,000 manzanas. Of the 6,613 new manzanas, 5,413 are assumed to be owned and cultivated by IVJ and 1,200 are assumed to be owned and cultivated by colonos.

5. Scenario 5 assumes, in addition to the assumptions in Scenario 4, that management is able to install two turbo-generators that it owns but which are not currently in operation in order to meet all of its electricity needs and sell excess energy to the national power grid.

The financial projections are based on management's expectations of future performance; financial information on IVJ for the first 9 of 13 periods for fiscal year 1991/92; performance indicators from 1987/88 through 1991/92; interviews with management of IVJ and CONAZUCAR, the state sugar corporation; and industry experts in cane cultivation and processing.

The analysis does not rely on financial information from before 1991/92 due to the distortions resulting from the numerous currency devaluations that occurred prior to July 1, 1991. The cordoba - U.S. dollar exchange rate has been stable at 5:1 since the beginning of fiscal year 1991/92 and so financial information over this period is assumed to be free of exchange rate distortions.

Following are detailed descriptions of the assumptions used in each scenario. The detailed assumptions are also listed in the assumptions table at the end of Appendix H.

Scenario 1: Base Case

The Base Case is based on the historical performance of the mill and assumes that the mill continues to perform as it has in the past. Following is a description of the Base Case.

- **IVJ Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
8,662	8,662	8,662	8,662	8,662	8,662

IVJ cultivated 8,662 manzanas in 1991/92. IVJ land in cultivation is assumed to remain constant over the next five year. This excludes land cultivated by colonos.

- **Colono Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
2,455	2,455	2,455	2,455	2,455	2,455

Colonos cultivated 2,455 manzanas in 1991/92. Colono land in cultivation is assumed to remain constant over the next five year.

- **Agricultural Yield**

	Projected (Tons/Manzana)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
31.2	39.2	39.2	39.2	39.2	39.2

The agricultural yield was 31.2 tons per manzana in 1991/92. The yield for the next five years is assumed to be the average for years 1987/88 - 1991/92, or 39.2.

- **Cane Harvested**

	Projected (Tons)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
270,664	339,550	339,550	339,550	339,550	339,550

Cane harvested is the product of IVJ land cultivated (manzanas) and the agricultural yield (tons per manzana). Cane harvested is expected to increase over 1991/92 results due to the increase in agricultural yield to its historical average.

- **Cane Purchased**

	Projected (Tons)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
83,776	96,236	96,236	96,236	96,236	96,236

Cane harvested is the product of colono land cultivated (manzanas) and the agricultural yield (tons per manzana). Actual cane purchased was 83,776 tons in 1991/92. Cane harvested is expected to increase over 1991/92 results based on the assumption that the agricultural yield for colonos increases to the yields achieved on IVJ land.

- **Total Cane**

	Projected (Tons)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
354,440	435,786	435,786	435,786	435,786	435,786

Total cane is the sum of cane harvested and cane purchased. Total cane is expected to increase over 1991/92 results due to an increase in the agricultural yield to its historical average.

- **Industrial Yield**

	Projected (Quintals/Ton)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
2.22	2.20	2.20	2.20	2.20	2.20

The actual industrial yield was 2.22 quintals of sugar per ton of cane in 1991/92. The industrial yield for the next five years is assumed to be the average level from 1989/90 - 1991/92, or 2.20.

- **Sugar Produced**

	Projected (Quintals)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
787,767	958,730	958,730	958,730	958,730	958,730

Sugar produced is the product of total cane and the industrial yield. Sugar produced is expected to increase over 1991/92 results due to an expected increase in total cane available for the mill.

- **Sugar Revenues**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
54,277	75,788	75,788	75,788	75,788	75,788

Sugar revenues are the product of sugar produced and the average price of sugar. The average price for the 1991/92 crop is estimated by CONAZUCAR to be 68.90 cordobas/quintal. The average price is assumed to increase to 79.05 based on historical world sugar prices. (See Section III for a further discussion of the average sugar price).

- **Molasses Revenues**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
4,221	4,951	4,951	4,951	4,951	4,951

Molasses revenues are the product of molasses output and price. Molasses output is the product of total cane and molasses yield. Molasses yield was 8.27 gallons per ton in 1991/92 and is assumed to decline to its average level from 1989/90 - 1991/92, or 7.89 gallons per ton. The molasses price is assumed to remain constant at its 1991/92 level of 1.44 cordobas per gallon.

- **Electric Generation Revenues**

Electric generation revenues in 1991/92 were low and were netted from electricity costs. Electricity revenues are assumed to continue to offset electricity costs over the next five years in an amount equal to 1991/92.

- **Field Costs**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
48,374	50,210	50,210	50,210	50,210	50,210

The salaries and benefits component of field costs are projected by calculating the estimated 1991/92 salaries and benefits cost per field worker, as shown in the assumptions table at the end of Appendix H, and multiplying this factor by the weighted average number of field workers for each year. In 1991/92 the mill employed 859 full-time and 432 temporary field workers. This results in a weighted average number of crop and off-crop field workers of 1,032, assuming the full-time workers work 300 days per year and the temporary workers work 120 days per year. The average number of field workers is assumed to remain constant over the next five years.

The cost of purchasing cane is the product of tons of cane purchased and the cane purchase price. The cane purchase price in 1991/92 is equal to 68.90 cordobas per ton. After 1991/92, the cane purchase price is assumed to equal the average sales price of sugar per quintal, or 79.05 cordobas.

All other components of field costs (Materials, Agrochemicals, Tires, Fuel & Lubricants, and Other costs) are projected by calculating the estimated 1991/92 cost per manzana of IVJ land and multiplying this factor by the number of manzanas of IVJ land in cultivation each year.

- **Factory Costs**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
19,178	21,344	21,344	21,344	21,344	21,344

Factory costs are broken down between crop period costs and off-crop period costs because the length of the crop season is significant in determining total factory costs. The length of the crop season is estimated as the total cane divided by the milling rate, or 4.0 periods for 1991/92. Since there are 13 periods in a

year, off-crop periods are estimated as 13 less the number of crop periods, or 9.0 for 1991/92. The milling rate in 1991/92 was 88,200 tons per period and is assumed to increase to 96,841 in order to maintain the crop length at 4.5 28-day periods. The maximum crop season at IVJ is approximately 4.5 periods due to climactic constraints.

In addition, the average level of factory employment is calculated for crop and off-crop periods as 542 and 286 respectively. These numbers are assumed to remain constant over the next five years.

Crop Costs

SALARIES & BENEFITS
Based on cost information provided by management, the cost per factory worker per crop-period is calculated for 1991/92. This factor, shown in the assumptions table, is multiplied by the number of crop period workers and crop periods for each year to arrive at crop salaries & benefits for each year.

ELECTRIC POWER
Based on cost information provided by management, electric power costs per crop-period are calculated for 1991/92. This factor, shown in the assumptions table, is then multiplied by the number of crop periods for each year to arrive at crop electric power costs for each year.

PROCESS CHEMICALS, LUBRICANTS, GENERAL SUPPLIES AND SERVICES
Based on cost information provided by management, these costs are calculated per ton of cane processed for 1991/92. These factors, shown in the assumptions table, are then multiplied by the total cane for each year to arrive at the cost for each year.

PACKING MATERIALS
Based on cost information provided by management, packing material costs are calculated per quintal of sugar produced for 1991/92. This factor, shown in the assumptions table, is then multiplied by total sugar produced for each year to arrive at the packing material cost for the year.

Off-Crop Costs

SALARIES & BENEFITS, ELECTRIC POWER, GEN. SUPPLIES AND SERVICES
These costs are calculated for the off-crop with the same methods used to calculate the crop costs.

PARTS & MATERIALS

Parts & materials costs are annualized for 1991/92 using actual cost information for the first 9 periods of the year. Parts & materials costs are assumed to remain at the 1991/92 level over the next five years.

- **Administrative Costs**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
20,778	20,778	20,778	20,778	20,778	20,778

The salaries and benefits component of administrative costs are projected by calculating the estimated 1991/92 salaries and benefits cost per administrative worker and multiplying this factor by the average number of administrative workers for each year. The average number of administrative workers is assumed to remain constant at 441.

All other components of administrative costs (Materials, Agrochemicals, Tires, Fuel & Lubricants, and Other costs) are assumed to remain constant over the next five years.

- **Depreciation**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
3,809	4,344	5,743	6,702	7,212	8,568

Total depreciation is the sum of depreciation on existing assets and depreciation on new capital investments (excluding land). Depreciation on existing assets for 1991/92 through 1996/97 was provided by management. Depreciation on new capital investments is estimated by depreciating each year's investment (excluding land) over seven years using the straight line method.

- **Taxes**

Federal Tax

Corporations are taxed at 30% of their tax base. The tax base is calculated as the maximum of the following three items:

1. Profit before tax, adjusted for up to two years of tax loss carryforward
2. 4% of corporate net worth
3. 2% of gross revenues

The corporate net worth of the new company that is composed of IVJ assets (but without IVJ liabilities) will be equal to the sale price of IVJ. For purposes of the tax calculation, the purchase price and corporate net worth of IVJ is assumed to be 20 million U.S. dollars or 100 million cordobas.

Municipal Tax

In addition to the federal tax above, corporations are taxed at 1% of total fixed assets. Fixed assets for the beginning of fiscal year 1992/93 are estimated as the purchase price for IVJ's assets, or 100 million cordobas. For each following year, fixed assets are increased by the capital expenditures and reduced by the depreciation for the prior year.

- **Capital Expenditures**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
3,750	10,000	10,000	10,000	10,000	10,000

Capital expenditures to replace and maintain the current facilities are estimated at 3,750,000 cordobas for 1991/92. This is assumed to increase to 10,000,000 over the next five years.

- **Net Working Capital Needs**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
53,683	55,618	55,618	55,618	55,618	55,618

Net working capital needs are estimated as the sum of the off-crop portion of field costs, administrative costs, and factory costs. For field and administrative costs, the off-crop portion is estimated as the number of off-crop periods divided by 13. Off-crop factory costs are projected separately.

- **Discount Rate**

The cash flow projections used in our analysis are denominated in real 1991/92 cordobas and must therefore be discounted back to their present values using a real discount rate.

The annual yield on a one-year, cordoba-denominated bank certificate of deposit is 14%, as of May 1992. Although these CDs are denominated in cordobas, the 14% yield is guaranteed in dollar terms in order to protect the investor from a cordoba devaluation during the term of the security. If it is assumed that cordoba inflation remains close to zero and no devaluations occur, then the 14% yield can be considered a real rate of return.

An investment in a Nicaraguan sugar mill is considered to be more risky then a bank CD due to the vulnerability of the sugar business to the business cycle, the government's role in setting sugar prices, and the general economic and political conditions in Nicaragua. Therefore, our analysis uses 14% as a ***minimum*** expected real annual return. Discount rates of 18% and 22% are also used to take into account the higher returns that investors may expect as compensation for the added long-term business, economic, and political risk of investing in a Nicaraguan sugar company.

- **Terminal Value**

The terminal value represents the value of all cash flows after the last year of the projection period, 1996/97. The terminal value is estimated according to the following formula:

Terminal Value In 1996/97 = 1996/97 Cash Flow x Capitalization Rate

Assuming that cash flows are constant in real terms after the end of the projection period and into perpetuity, the capitalization rate is defined as the reciprocal of the discount rate.

In the event that the 1996/97 cash flow is less than zero, the terminal value is assumed to be zero. That is, it is assumed that the investor would discontinue operations rather than run the mill at a loss into the future.

- **Inflation and Exchange Rates**

The projections are denominated in thousands of cordobas, assume zero inflation, and assume a constant cordoba/$U.S. exchange rate.

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- **Timing of Cash Flows**

All cash flows are assumed to be received or disbursed in the middle of the year in which they occur. Thus, all cash flows are discounted back to their present values from the middle of the fiscal year in which they occur to July 1, 1992.

- **Exclusion of Debt**

The financial projections and DCF analysis exclude all costs of debt.

Ingenio Victoria de Julio		Scenario
Discounted Cash Flow Analysis (000s Cordobas)	05-Oct-92	1

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	8,662	8,562	8,662	8,662	8,662
Colono Land (Manzanas)	2,455	2,455	2,455	2,455	2,455	2,455
Total Land (Manzanas)	11,117	11,117	11,117	11,117	11,117	11,117
Agricultural Yield (Tons/Manzana)	31.25	39.20	39.20	39.20	39.20	39.20
Cane Harvested (Tons)	270,664	339,550	339,550	339,550	339,550	339,550
Cane Purchased (Tons)	83,776	96,236	96,236	96,236	96,236	96,236
Total Cane (Tons)	354,440	435,786	435,786	435,786	435,786	435,786
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	958,730	958,730	958,730	958,730	958,730
Average Personnel	1,838	1,848	1,848	1,848	1,848	1,848
Field Cost Per Ton ($US)	$27.30	$23.04	$23.04	$23.04	$23.04	$23.04
Cash Operat. Cost Per Quintal ($US)	$22.43	$19.26	$19.26	$19.26	$19.26	$19.26

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES		80,739	80,739	80,739	80,739	80,739
OPERATING COSTS						
Field Costs		50,210	50,210	50,210	50,210	50,210
Factory Costs		21,344	21,344	21,344	21,344	21,344
Administrative Costs		20,778	20,778	20,778	20,778	20,778
Depreciation		4,344	5,743	6,702	7,212	8,568
Total		96,676	98,075	99,033	99,543	100,900
PROFIT BEFORE TAX		(15,937)	(17,336)	(18,294)	(18,804)	(20,161)
TAX		2,200	2,257	2,299	2,332	2,360
PROFIT AFTER TAX		(18,137)	(19,592)	(20,593)	(21,136)	(22,521)
DEPRECIATION (+)		4,344	5,743	6,702	7,212	8,568
CAPITAL EXPENDITURES (−)		10,000	10,000	10,000	10,000	10,000
INCREASE IN NET WORKING CAPITAL (−)		1,935	0	0	0	0
CASH FLOW BEFORE LEVERAGE		(25,728)	(23,849)	(23,892)	(23,925)	(23,952)
NET PRESENT VALUE @ 18%	(82,864)					
TERMINAL VALUE *						0
NET PRESENT VALUE @ 18%	0					
FIRM VALUE BEFORE LEVERAGE	(82,864)					

Sensitivity Analysis of Firm Value Before Leverage

Discount Rate

			14%	18%	22%
Average	91/92	68.90	(120,772)	(111,981)	(104,320)
Sugar Price	Hist.	79.05	(89,315)	(82,864)	(77,241)
	+5%	83.00	(77,065)	(71,525)	(66,696)

* The terminal value is the greater of 1) zero and 2) the 1996/97 cash flow divided by the discount rate.

Ingenio Victoria de Julio
Cash Flow Projections (Cordobas) 06-Oct-92

Scenario 1

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	8,662	8,662	8,662	8,662	8,662
Colono Land (Manzanas)	2,455	2,455	2,455	2,455	2,455	2,455
Total Land (Manzanas)	11,117	11,117	11,117	11,117	11,117	11,117
Agricultural Yield (Tons/Manzana)	31.2	39.2	39.2	39.2	39.2	39.2
Cane Harvested (Tons)	270,664	339,550	339,550	339,550	339,550	339,550
Cane Purchased (Tons)	83,776	96,236	96,236	96,236	96,236	96,236
Total Cane (Tons)	354,440	435,786	435,786	435,786	435,786	435,786
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	958,730	958,730	958,730	958,730	958,730
Average Personnel	1,838	1,848	1,848	1,848	1,848	1,848
REVENUES						
Sugar	54,277,139	75,787,613	75,787,613	75,787,613	75,787,613	75,787,613
Molasses	4,220,956	4,951,231	4,951,231	4,951,231	4,951,231	4,951,231
Electric Generation	0	0	0	0	0	0
Total	**58,498,096**	**80,738,844**	**80,738,844**	**80,738,844**	**80,738,844**	**80,738,844**
FIELD COSTS						
Salaries & Benefits	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714
Purchase of Cane	5,772,166	7,607,456	7,607,456	7,607,456	7,607,456	7,607,456
Materials	7,726,402	7,726,402	7,726,402	7,726,402	7,726,402	7,726,402
Agrochemicals	3,972,702	3,972,702	3,972,702	3,972,702	3,972,702	3,972,702
Tires	1,197,804	1,197,804	1,197,804	1,197,804	1,197,804	1,197,804
Fuel & Lubricants	6,996,391	6,996,391	6,996,391	6,996,391	6,996,391	6,996,391
Other	5,177,149	5,177,149	5,177,149	5,177,149	5,177,149	5,177,149
Total	**48,374,328**	**50,209,618**	**50,209,618**	**50,209,618**	**50,209,618**	**50,209,618**
$U.S. Per Ton	$27.30	$23.04	$23.04	$23.04	$23.04	$23.04
$U.S. Per Quintal	$12.28	$10.47	$10.47	$10.47	$10.47	$10.47
FACTORY COSTS						
Crop Periods:	4.0	4.5	4.5	4.5	4.5	4.5
Salaries & Benefits	4,260,322	4,770,684	4,770,684	4,770,684	4,770,684	4,770,684
Electric Power	1,555,486	1,741,824	1,741,824	1,741,824	1,741,824	1,741,824
Fuel Oil	549,382	675,469	675,469	675,469	675,469	675,469
Process Chemicals	2,144,363	2,636,508	2,636,508	2,636,508	2,636,508	2,636,508
Lubricants	453,683	557,807	557,807	557,807	557,807	557,807
Gen. Suppl. & Serv.	3,367,181	4,139,971	4,139,971	4,139,971	4,139,971	4,139,971
Packing Material	939,806	1,143,765	1,143,765	1,143,765	1,143,765	1,143,765
Total	13,270,223	15,666,027	15,666,027	15,666,027	15,666,027	15,666,027
Off-Crop Periods:	9.0	8.5	8.5	8.5	8.5	8.5
Salaries & Benefits	2,681,704	2,537,964	2,537,964	2,537,964	2,537,964	2,537,964
Electric Power	1,151,578	1,089,853	1,089,853	1,089,853	1,089,853	1,089,853
Gen Suppl. & Serv.	449,070	425,000	425,000	425,000	425,000	425,000
Parts & Materials	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000
Total	5,907,352	5,677,817	5,677,817	5,677,817	5,677,817	5,677,817
Electric Generation	0	0	0	0	0	0
Total Factory Costs	**19,177,575**	**21,343,844**	**21,343,844**	**21,343,844**	**21,343,844**	**21,343,844**
$U.S. Per Quintal	$4.87	$4.45	$4.45	$4.45	$4.45	$4.45
GROSS MARGIN	**(9,053,807)**	**9,185,382**	**9,185,382**	**9,185,382**	**9,185,382**	**9,185,382**
	-15%	11%	11%	11%	11%	11%
ADMINISTRATIVE COSTS						
Salaries & Benefits	13,836,333	13,836,333	13,836,333	13,836,333	13,836,333	13,836,333
Materials	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals	36,111	36,111	36,111	36,111	36,111	36,111
Tires	57,056	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants	957,667	957,667	957,667	957,667	957,667	957,667
Other	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
Total	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**
$U.S Per Quintal	$5.28	$4.33	$4.33	$4.33	$4.33	$4.33
TOTAL CASH OPERATING COSTS	**83,329,731**	**92,331,290**	**92,331,290**	**92,331,290**	**92,331,290**	**92,331,290**
$U.S Per Quintal	$22.43	$19.26	$19.26	$19.26	$19.26	$19.26
DEPRECIATION	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
PROFIT BEFORE TAX	**(33,640,329)**	**(15,936,854)**	**(17,335,853)**	**(18,294,232)**	**(18,804,223)**	**(20,160,873)**
	-58%	-20%	-21%	-23%	-23%	-25%
TAXES	0	2,200,000	2,256,556	2,299,122	2,332,104	2,359,986
PROFIT AFTER TAX	**(33,640,329)**	**(18,136,854)**	**(19,592,409)**	**(20,593,354)**	**(21,136,327)**	**(22,520,859)**
	-58%	-22%	-24%	-26%	-26%	-28%
DEPRECIATION (+)	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
CAPITAL EXPENDITURES (-)	3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
INCREASE IN NET WORKING CAPITAL (-)	0	1,935,245	0	0	0	0
CASH FLOW BEFORE LEVERAGE	**(33,581,635)**	**(25,727,691)**	**(23,849,002)**	**(23,891,568)**	**(23,924,550)**	**(23,952,432)**

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Ingenio Victoria de Julio Working Capital Schedule (Cordobas)	06-Oct-92					Scenario 1
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Off-Crop Field Costs	33,420,724	34,688,684	34,688,684	34,688,684	34,688,684	34,688,684
Off-Crop Factory Costs	5,907,352	6,574,637	6,574,637	6,574,637	6,574,637	6,574,637
Off-Crop Admin. Costs	14,354,929	14,354,929	14,354,929	14,354,929	14,354,929	14,354,929
Net Working Capital Needs	53,683,005	55,618,250	55,618,250	55,618,250	55,618,250	55,618,250
Increase in Net Working Capital	0	1,935,245	0	0	0	0

Ingenio Victoria de Julio Depreciation Schedule (Cordobas)		06-Oct-92					Scenario 1
		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment (Excluding Land)		3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Cumulative New Capital Investments (Excluding Land)			3,750,000	13,750,000	23,750,000	33,750,000	43,750,000
Depreciation, Avg. Life (Yrs.):	7.0	0	535,714	1,964,286	3,392,857	4,821,429	6,250,000
Depreciation on Existing Assets		3,808,694	3,808,694	3,779,121	3,308,929	2,390,348	2,318,427
Total Depreciation		3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427

Ingenio Victoria de Julio Tax Schedule (Cordobas)		06-Oct-92				Scenario 1
		1992/93	1993/94	1994/95	1995/96	1996/97
Profit Before Tax		(15,936,854)	(17,335,853)	(18,294,232)	(18,804,223)	(20,160,873)
Tax Loss Carryforward		0	(18,136,854)	(37,729,263)	(40,185,763)	(41,729,681)
Taxable Profit		(15,936,854)	(35,472,707)	(56,023,495)	(58,989,985)	(61,890,554)
4% of Corporate Net Worth		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
2% of Gross Income		1,614,777	1,614,777	1,614,777	1,614,777	1,614,777
Tax Base (Maximum of Above)		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Corporate Tax @	30%	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Fixed Assets (Beginning of Year)		100,000,000	105,655,592	109,912,185	113,210,399	115,998,622
Municipal Tax @	1%	1,000,000	1,056,556	1,099,122	1,132,104	1,159,986
Total Taxes		2,200,000	2,256,556	2,299,122	2,332,104	2,359,986

Scenario 2

Scenario 2 assumes that 322 manzanas of developed land owned by IVJ and 1,948 manzanas of developed colono land that was not in production in 1991/92 is put into production beginning in 1992/93.

- **IVJ Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
8,662	8,984	8,984	8,984	8,984	8,984

IVJ has 322 manzanas of land developed for cultivation that was not in production in 1991/92. This land is assumed to be put into production beginning in 1992/93.

- **Colono Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
2,455	4,403	4,403	4,403	4,403	4,403

Colonos have 1,948 manzanas of land developed for cultivation that was not in production in 1991/92. This land is assumed to be put into production beginning in 1992/93.

- **Milling Rate**

	Projected (Tons/Period)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
88,200	116,616	116,616	116,616	116,616	116,616

The milling rate is assumed to improve in order to contain the crop season to 4.5 28-day periods. The maximum crop season at IVJ is approximately 4.5 periods due to climactic restraints.

Ingenio Victoria de Julio		Scenario
Discounted Cash Flow Analysis (000s Cordobas)	06-Oct-92	2

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	8,984	8,984	8,984	8,984	8,984
Colono Land (Manzanas)	2,455	4,403	4,403	4,403	4,403	4,403
Total Land (Manzanas)	11,117	13,387	13,387	13,387	13,387	13,387
Agricultural Yield (Tons/Manzana)	31.25	39.20	39.20	39.20	39.20	39.20
Cane Harvested (Tons)	270,664	352,173	352,173	352,173	352,173	352,173
Cane Purchased (Tons)	83,776	172,598	172,598	172,598	172,598	172,598
Total Cane (Tons)	354,440	524,770	524,770	524,770	524,770	524,770
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,154,495	1,154,495	1,154,495	1,154,495	1,154,495
Average Personnel	1,838	1,848	1,848	1,848	1,848	1,848
Field Cost Per Ton ($US)	$27.30	$21.79	$21.79	$21.79	$21.79	$21.79
Cash Operat. Cost Per Quintal ($US)	$22.43	$17.53	$17.53	$17.53	$17.53	$17.53

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES		97,225	97,225	97,225	97,225	97,225
OPERATING COSTS						
Field Costs		57,178	57,178	57,178	57,178	57,178
Factory Costs		23,213	23,213	23,213	23,213	23,213
Administrative Costs		20,778	20,778	20,778	20,778	20,778
Depreciation		4,344	5,743	6,702	7,212	8,568
Total		105,513	106,912	107,870	108,380	109,737
PROFIT BEFORE TAX		(8,288)	(9,687)	(10,645)	(11,155)	(12,512)
TAX		2,200	2,257	2,299	2,332	2,360
PROFIT AFTER TAX		(10,488)	(11,944)	(12,945)	(13,488)	(14,872)
DEPRECIATION (+)		4,344	5,743	6,702	7,212	8,568
CAPITAL EXPENDITURES (–)		10,000	10,000	10,000	10,000	10,000
INCREASE IN NET WORKING CAPITAL (–)		7,325	0	0	0	0
CASH FLOW BEFORE LEVERAGE		(23,469)	(16,200)	(16,243)	(16,276)	(16,304)
NET PRESENT VALUE @ 18%	(61,843)					
TERMINAL VALUE *						0
NET PRESENT VALUE @ 18%	0					
FIRM VALUE BEFORE LEVERAGE	(61,843)					

Sensitivity Analysis of Firm Value Before Leverage

Discount Rate

			14%	18%	22%
Average	91/92	68.90	(101,724)	(94,584)	(88,355)
Sugar Price	Hist.	79.05	(66,326)	(61,843)	(57,928)
	+5%	83.00	(52,542)	(49,093)	(46,079)

* The terminal value is the greater of 1) zero and 2) the 1996/97 cash flow divided by the discount rate.

Ingenio Victoria de Julio Cash Flow Projections (Cordobas) 06-Oct-92						Scenario 2
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	8,984	8,984	8,984	8,984	8,984
Colono Land (Manzanas)	2,455	4,403	4,403	4,403	4,403	4,403
Total Land (Manzanas)	11,117	13,387	13,387	13,387	13,387	13,387
Agricultural Yield (Tons/Manzana)	31.2	39.2	39.2	39.2	39.2	39.2
Cane Harvested (Tons)	270,664	352,173	352,173	352,173	352,173	352,173
Cane Purchased (Tons)	83,776	172,598	172,598	172,598	172,598	172,598
Total Cane (Tons)	354,440	524,770	524,770	524,770	524,770	524,770
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,154,495	1,154,495	1,154,495	1,154,495	1,154,495
Average Personnel	1,838	1,848	1,848	1,848	1,848	1,848
REVENUES						
Sugar	54,277,139	91,262,820	91,262,820	91,262,820	91,262,820	91,262,820
Molasses	4,220,956	5,962,231	5,962,231	5,962,231	5,962,231	5,962,231
Electric Generation	0	0	0	0	0	0
Total	**58,498,096**	**97,225,052**	**97,225,052**	**97,225,052**	**97,225,052**	**97,225,052**
FIELD COSTS						
Salaries & Benefits	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714
Purchase of Cane	5,772,166	13,643,840	13,643,840	13,643,840	13,643,840	13,643,840
Materials	7,726,402	8,013,622	8,013,622	8,013,622	8,013,622	8,013,622
Agrochemicals	3,972,702	4,120,383	4,120,383	4,120,383	4,120,383	4,120,383
Tires	1,197,804	1,242,331	1,242,331	1,242,331	1,242,331	1,242,331
Fuel & Lubricants	6,996,391	7,256,474	7,256,474	7,256,474	7,256,474	7,256,474
Other	5,177,149	5,369,604	5,369,604	5,369,604	5,369,604	5,369,604
Total	**48,374,328**	**57,177,968**	**57,177,968**	**57,177,968**	**57,177,968**	**57,177,968**
$U.S. Per Ton	$27.30	$21.79	$21.79	$21.79	$21.79	$21.79
$U.S. Per Quintal	$12.28	$9.91	$9.91	$9.91	$9.91	$9.91
FACTORY COSTS						
Crop Periods:	4.0	4.5	4.5	4.5	4.5	4.5
Salaries & Benefits	4,260,322	4,770,684	4,770,684	4,770,684	4,770,684	4,770,684
Electric Power	1,555,486	1,741,824	1,741,824	1,741,824	1,741,824	1,741,824
Fuel Oil	549,382	813,394	813,394	813,394	813,394	813,394
Process Chemicals	2,144,363	3,174,861	3,174,861	3,174,861	3,174,861	3,174,861
Lubricants	453,683	671,706	671,706	671,706	671,706	671,706
Gen. Suppl. & Serv.	3,367,181	4,985,319	4,985,319	4,985,319	4,985,319	4,985,319
Packing Material	939,806	1,377,312	1,377,312	1,377,312	1,377,312	1,377,312
Total	13,270,223	17,535,100	17,535,100	17,535,100	17,535,100	17,535,100
Off-Crop Periods:	9.0	8.5	8.5	8.5	8.5	8.5
Salaries & Benefits	2,681,704	2,537,964	2,537,964	2,537,964	2,537,964	2,537,964
Electric Power	1,151,578	1,089,853	1,089,853	1,089,853	1,089,853	1,089,853
Gen Suppl. & Serv.	449,070	425,000	425,000	425,000	425,000	425,000
Parts & Materials	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000
Total	5,907,352	5,677,817	5,677,817	5,677 817	5,677,817	5,677,817
Electric Generation	0	0	0	0	0	0
Total Factory Costs	**19,177,575**	**23,212,917**	**23,212,917**	**23,212,917**	**23,212,917**	**23,212,917**
$U.S. Per Quintal	$4.87	$4.02	$4.02	$4.02	$4.02	$4.02
GROSS MARGIN	**(9,053,807)** -15%	**16,834,167** 17%	**16,834,167** 17%	**16,834,167** 17%	**16,834,167** 17%	**16,834,167** 17%
ADMINISTRATIVE COSTS						
Salaries & Benefits	13,836,333	13,836,333	13,836,333	13,836,333	13,836,333	13,836,333
Materials	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals	36,111	36,111	36,111	36,111	36,111	36,111
Tires	57,056	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants	957,667	957,667	957,667	957,667	957,667	957,667
Other	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
Total	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**	**20,777,828**
$U.S. Per Quintal	$5.28	$3.60	$3.60	$3.60	$3.60	$3.60
TOTAL CASH OPERATING COSTS	**88,329,731**	**101,168,713**	**101,168,713**	**101,168,713**	**101,168,713**	**101,168,713**
$U.S. Per Quintal	$22.43	$17.53	$17.53	$17.53	$17.53	$17.53
DEPRECIATION	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
PROFIT BEFORE TAX	**(33,640,329)** -58%	**(8,288,069)** -9%	**(9,687,068)** -10%	**(10,645,447)** -11%	**(11,155,438)** -11%	**(12,512,088)** -13%
TAXES	0	2,200,000	2,256,556	2,299,122	2,332,104	2,359,986
PROFIT AFTER TAX	**(33,640,329)** -58%	**(10,488,069)** -11%	**(11,943,624)** -12%	**(12,944,569)** -13%	**(13,487,542)** -14%	**(14,872,074)** -15%
DEPRECIATION (+)	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
CAPITAL EXPENDITURES (-)	3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
INCREASE IN NET WORKING CAPITAL (-)	0	7,325,259	0	0	0	0
CASH FLOW BEFORE LEVERAGE	**(33,581,635)**	**(23,468,920)**	**(16,200,217)**	**(16,242,783)**	**(16,275,765)**	**(16,303,647)**

Ingenio Victoria de Julio Working Capital Schedule (Cordobas)	06-Oct-92					Scenario 2
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Off-Crop Field Costs	33,420,724	39,502,959	39,502,959	39,502,959	39,502,959	39,502,959
Off-Crop Factory Costs	5,907,352	7,150,376	7,150,376	7,150,376	7,150,376	7,150,376
Off-Crop Admin. Costs	14,354,929	14,354,929	14,354,929	14,354,929	14,354,929	14,354,929
Net Working Capital Needs	53,683,005	61,008,264	61,008,264	61,008,264	61,008,264	61,008,264
Increase in Net Working Capital	0	7,325,259	0	0	0	0

Ingenio Victoria de Julio Depreciation Schedule (Cordobas)		06-Oct-92					Scenario 2
		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment (Excluding Land)		3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Cumulative New Capital Investments (Excluding Land)			3,750,000	13,750,000	23,750,000	33,750,000	43,750,000
Depreciation, Avg. Life (Yrs.):	7.0	0	535,714	1,964,286	3,392,857	4,821,429	6,250,000
Depreciation on Existing Assets		3,808,694	3,808,694	3,779,121	3,308,929	2,390,348	2,318,427
Total Depreciation		3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427

Ingenio Victoria de Julio Tax Schedule (Cordobas)		06-Oct-92				Scenario 2
		1992/93	1993/94	1994/95	1995/96	1996/97
Profit Before Tax		(8,288,069)	(9,687,068)	(10,645,447)	(11,155,438)	(12,512,088)
Tax Loss Carryforward		0	(10,488,069)	(22,431,693)	(24,888,193)	(26,432,111)
Taxable Profit		(8,288,069)	(20,175,137)	(33,077,140)	(36,043,631)	(38,944,199)
4% of Corporate Net Worth		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
2% of Gross Income		1,944,501	1,944,501	1,944,501	1,944,501	1,944,501
Tax Base (Maximum of Above)		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Corporate Tax @	30%	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Fixed Assets (Beginning of Year)		100,000,000	105,655,592	109,912,185	113,210,399	115,998,622
Municipal Tax @	1%	1,000,000	1,056,556	1,099,122	1,132,104	1,159,986
Total Taxes		2,200,000	2,256,556	2,299,122	2,332,104	2,359,986

Scenario 3

Scenario 3 assumes, in addition to the assumptions in Scenario 2, that IVJ is privatized. Under this scenario 3,800 manzanas are sold to IVJ workers in fulfillment of the 1992 agreement granting IVJ workers an option to purchase 25% of the mill. In addition, management is assumed to be able to make reasonable improvements in the operations of the mill in order to achieve efficiency and productivity levels that are consistent with industry norms.

- **IVJ Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
8,662	5,184	5,184	5,184	5,184	5,184

An agreement between the Government of Nicaragua and the workers allows the workers to buy up to 25% of the mill in the form of land. Scenario 3 assumes that the workers buy approximately 3,800 manzanas through this agreement. Thus, IVJ land declines to 5,184 manzanas in 1992/93 from the 8,894 assumed in Scenario 2.

- **Colono Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
2,455	8,203	8,203	8,203	8,203	8,203

Under the agreement described above, 3,800 manzanas are assumed to be transferred to the workers in 1992/93.

- **Agricultural Yield**

	Projected (Tons/Manzana)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
31.2	41.9	52.5	52.5	52.5	52.5

The agricultural yield is assumed to improve to 52.5 tons per manzana by 1993/94 -- above the five year average of 39.2. The field industry expert estimates that the field ought to be able to achieve this agricultural yield with reasonable improvements in field management, such as improvements in the management and operation of the pivot irrigation system and improved weed control.

- **Field and Administrative Personnel**

The mill is assumed to require fewer field and administrative workers as a result of the reduction in land under cultivation. Approximately 159 full-time and 50% of the temporary field workers are assumed to be eliminated, resulting in 700 full-time and 216 temporary field workers. This represents a weighted average number of field workers of 786. The reduction in field personnel is assumed to be phased in over a two year period.

With regard to administrative workers, approximately 172 full-time and 50% of the temporary workers are assumed to be eliminated, resulting in 200 full-time and 87 temporary administrative workers. This represents a weighted average number of administrative workers of 235. The reduction in administrative personnel is assumed to be phased in over a two year period.

- **Factory Personnel**

	Projected (Workers)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
CROP:					
542	480	418	418	418	418
OFF-CROP:					
286	258	229	229	229	229

The industry expert estimates, based on industry productivity levels, that the factory could operate with 418 workers during the crop and 229 workers during the off-crop. This reduction would require cutting 124 crop workers (23%) and 57 off-crop workers (20%). The reduction is assumed to be phased in over two years.

- **Milling Rate**

	Projected (Tons/Period)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
88,200	124,499	156,182	156,182	156,182	156,182

The milling rate is assumed to improve in order to contain the crop season to 4.5 28-day periods. The maximum crop season at IVJ is approximately 4.5 periods due to climactic constraints. The maximum milling rate for the mill is approximately 7,700 tons per day or 215,600 tons per period.

Ingenio Victoria de Julio		Scenario
Discounted Cash Flow Analysis (000s Cordobas)	06-Oct-92	3

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	5,184	5,184	5,184	5,184	5,184
Colono Land (Manzanas)	2,455	8,203	8,203	8,203	8,203	8,203
Total Land (Manzanas)	11,117	13,387	13,387	13,387	13,387	13,387
Agricultural Yield (Tons/Manzana)	31.25	41.85	52.50	52.50	52.50	52.50
Cane Harvested (Tons)	270,664	216,950	272,160	272,160	272,160	272,160
Cane Purchased (Tons)	83,776	343,296	430,658	430,658	430,658	430,658
Total Cane (Tons)	354,440	560,246	702,818	702,818	702,818	702,818
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,546,199	1,546,199	1,546,199	1,546,199
Average Personnel	1,838	1,582	1,315	1,315	1,315	1,315
Field Cost Per Ton ($US)	$27.30	$20.56	$17.76	$17.76	$17.76	$17.76
Cash Operat. Cost Per Quintal ($US)	$22.43	$15.95	$13.20	$13.20	$13.20	$13.20

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES		103,798	130,212	130,212	130,212	130,212
OPERATING COSTS						
Field Costs		57,584	62,400	62,400	62,400	62,400
Factory Costs		23,164	25,355	25,355	25,355	25,355
Administrative Costs		17,546	14,315	14,315	14,315	14,315
Depreciation		4,344	5,743	6,702	7,212	8,568
Total		102,638	107,814	108,772	109,282	110,639
PROFIT BEFORE TAX		1,159	22,398	21,440	20,930	19,573
TAX		2,200	7,776	7,531	7,411	7,032
PROFIT AFTER TAX		(1,041)	14,622	13,909	13,519	12,541
DEPRECIATION (+)		4,344	5,743	6,702	7,212	8,568
CAPITAL EXPENDITURES (–)		10,000	10,000	10,000	10,000	10,000
INCREASE IN NET WORKING CAPITAL (–)		5,358	1,770	0	0	0
CASH FLOW BEFORE LEVERAGE		(12,054)	8,596	10,611	10,731	11,110

NET PRESENT VALUE @	18%	13,912
TERMINAL VALUE *		61,721
NET PRESENT VALUE @	18%	29,307
FIRM VALUE BEFORE LEVERAGE		43,219

Sensitivity Analysis of Firm Value Before Leverage

Discount Rate

			14%	18%	22%
Average	91/92	68.90	1,650	(2,932)	(5,706)
Sugar Price	Hist.	79.05	60,369	43,219	32,448
	+5%	83.00	83,046	61,004	47,123

* The terminal value is the greater of 1) zero and 2) the 1996/97 cash flow divided by the discount rate.

Ingenio Victoria de Julio
Cash Flow Projections (Cordobas) 06-Oct-92

Scenario 3

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	5,184	5,184	5,184	5,184	5,184
Colono Land (Manzanas)	2,455	8,203	8,203	8,203	8,203	8,203
Total Land (Manzanas)	11,117	13,387	13,387	13,387	13,387	13,387
Agricultural Yield (Tons/Manzana)	31.2	41.9	52.5	52.5	52.5	52.5
Cane Harvested (Tons)	270,664	216,950	272,160	272,160	272,160	272,160
Cane Purchased (Tons)	83,776	343,296	430,658	430,658	430,658	430,658
Total Cane (Tons)	354,440	560,246	702,818	702,818	702,818	702,818
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,546,199	1,546,199	1,546,199	1,546,199
Average Personnel	1,838	1,582	1,315	1,315	1,315	1,315
REVENUES						
Sugar	54,277,139	97,432,373	122,226,991	122,226,991	122,226,991	122,226,991
Molasses	4,220,956	6,365,290	7,985,131	7,985,131	7,985,131	7,985,131
Electric Generation	0	0	0	0	0	0
Total	**58,498,096**	**103,797,664**	**130,212,123**	**130,212,123**	**130,212,123**	**130,212,123**
FIELD COSTS						
Salaries & Benefits	17,531,714	15,442,179	13,352,643	13,352,643	13,352,643	13,352,643
Purchase of Cane	5,772,166	27,137,513	34,043,475	34,043,475	34,043,475	34,043,475
Materials	7,726,402	4,624,067	4,624,067	4,624,067	4,624,067	4,624,067
Agrochemicals	3,972,702	2,377,567	2,377,567	2,377,567	2,377,567	2,377,567
Tires	1,197,804	716,857	716,857	716,857	716,857	716,857
Fuel & Lubricants	6,996,391	4,187,173	4,187,173	4,187,173	4,187,173	4,187,173
Other	5,177,149	3,098,400	3,098,400	3,098,400	3,098,400	3,098,400
Total	**48,374,328**	**57,583,756**	**62,400,182**	**62,400,182**	**62,400,182**	**62,400,182**
$U.S. Per Ton	$27.30	$20.56	$17.76	$17.76	$17.76	$17.76
$U.S. Per Quintal	$12.28	$9.34	$8.07	$8.07	$8.07	$8.07
FACTORY COSTS						
Crop Periods:	4.0	4.5	4.5	4.5	4.5	4.5
Salaries & Benefits	4,260,322	4,224,960	3,679,236	3,679,236	3,679,236	3,679,236
Electric Power	1,555,486	1,741,824	1,741,824	1,741,824	1,741,824	1,741,824
Fuel Oil	549,382	868,381	1,089,367	1,089,367	1,089,367	1,089,367
Process Chemicals	2,144,363	3,389,488	4,252,046	4,252,046	4,252,046	4,252,046
Lubricants	453,683	717,115	899,606	899,606	899,606	899,606
Gen. Suppl. & Serv.	3,367,181	5,322,337	6,676,766	6,676,766	6,676,766	6,676,766
Packing Material	939,805	1,470,422	1,844,615	1,844,615	1,844,615	1,844,615
Total	13,270,223	17,734,526	20,183,460	20,183,460	20,183,460	20,183,460
Off-Crop Periods:	9.0	8.5	8.5	8.5	8.5	8.5
Salaries & Benefits	2,681,704	2,289,492	2,032,146	2,032,146	2,032,146	2,032,146
Electric Power	1,151,578	1,089,853	1,089,853	1,089,853	1,089,853	1,089,853
Gen Suppl. & Serv.	449,070	425,000	425,000	425,000	425,000	425,000
Parts & Materials	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000
Total	5,907,352	5,429,345	5,171,999	5,171,999	5,171,999	5,171,999
Electric Generation	0	0	0	0	0	0
Total Factory Costs	**19,177,575**	**23,163,871**	**25,355,459**	**25,355,459**	**25,355,459**	**25,355,459**
$U.S. Per Quintal	$4.87	$3.76	$3.28	$3.28	$3.28	$3.28
GROSS MARGIN	**(9,053,807)**	**23,050,037**	**42,456,481**	**42,456,481**	**42,456,481**	**42,456,481**
	-15%	22%	33%	33%	33%	33%
ADMINISTRATIVE COSTS						
Salaries & Benefits	13,836,333	10,604,718	7,373,103	7,373,103	7,373,103	7,373,103
Materials	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals	36,111	36,111	36,111	36,111	36,111	36,111
Tires	57,056	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants	957,667	957,667	957,667	957,667	957,667	957,667
Other	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
Total	**20,777,828**	**17,546,213**	**14,314,597**	**14,314,597**	**14,314,597**	**14,314,597**
$U.S Per Quintal	$5.28	$2.85	$1.85	$1.85	$1.85	$1.85
TOTAL CASH OPERATING COSTS	**88,329,731**	**98,293,839**	**102,070,239**	**102,070,239**	**102,070,239**	**102,070,239**
$U.S. Per Quintal	$22.43	$15.95	$13.20	$13.20	$13.20	$13.20
DEPRECIATION	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
PROFIT BEFORE TAX	**(33,640,329)**	**1,159,418**	**22,398,477**	**21,440,098**	**20,930,107**	**19,573,457**
	-58%	1%	17%	16%	16%	15%
TAXES	0	2,200,000	7,776,099	7,531,151	7,411,136	7,032,023
PROFIT AFTER TAX	**(33,640,329)**	**(1,040,584)**	**14,622,378**	**13,908,947**	**13,518,971**	**12,541,434**
	-58%	-1%	11%	11%	10%	10%
DEPRECIATION (+)	3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427
CAPITAL EXPENDITURES (-)	3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
INCREASE IN NET WORKING CAPITAL (-)	0	5,357,851	1,769,995	0	0	0
CASH FLOW BEFORE LEVERAGE	**(33,581,635)**	**(12,054,026)**	**8,595,790**	**10,810,733**	**10,730,748**	**11,109,861**

Ingenio Victoria de Julio Working Capital Schedule (Cordobas)	06-Oct-92					Scenario 3
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Off-Crop Field Costs	33,420,724	39,783,308	43,110,868	43,110,868	43,110,868	43,110,868
Off-Crop Factory Costs	5,907,352	7,135,268	7,810,352	7,810,352	7,810,352	7,810,352
Off-Crop Admin. Costs	14,354,929	12,122,280	9,889,630	9,889,630	9,889,630	9,889,630
Net Working Capital Needs	53,683,005	59,040,856	60,810,850	60,810,850	60,810,850	60,810,850
Increase in Net Working Capital	0	5,357,851	1,769,995	0	0	0

Ingenio Victoria de Julio Depreciation Schedule (Cordobas)		06-Oct-92					Scenario 3
		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment (Excluding Land)		3,750,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Cumulative New Capital Investments (Excluding Land)			3,750,000	13,750,000	23,750,000	33,750,000	43,750,000
Depreciation, Avg. Life (Yrs.):	7.0	0	535,714	1,964,286	3,392,857	4,821,429	6,250,000
Depreciation on Existing Assets		3,808,694	3,808,694	3,779,121	3,308,929	2,390,348	2,318,427
Total Depreciation		3,808,694	4,344,408	5,743,407	6,701,786	7,211,777	8,568,427

Ingenio Victoria de Julio Tax Schedule (Cordobas)		06-Oct-92				Scenario 3
		1992/93	1993/94	1994/95	1995/96	1996/97
Profit Before Tax		1,159,416	22,398,477	21,440,098	20,930,107	19,573,457
Tax Loss Carryforward		0	(1,040,584)	(1,040,584)	0	0
Taxable Profit		1,159,416	21,357,893	20,399,514	20,930,107	19,573,457
4% of Corporate Net Worth		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
2% of Gross Income		2,075,953	2,604,242	2,604,242	2,604,242	2,604,242
Tax Base (Maximum of Above)		4,000,000	22,398,477	21,440,098	20,930,107	19,573,457
Corporate Tax @	30%	1,200,000	6,719,543	6,432,029	6,279,032	5,872,037
Fixed Assets (Beginning of Year)		100,000,000	105,655,592	109,912,185	113,210,399	115,998,622
Municipal Tax @	1%	1,000,000	1,056,556	1,099,122	1,132,104	1,159,986
Total Taxes		2,200,000	7,776,099	7,531,151	7,411,136	7,032,023

Scenario 4

Scenario 4 assumes, in addition to the assumptions in Scenario 3, that an additional 6,613 manzanas of land is put into cultivation in order to reach a total amount of cane land, both colono and IVJ, of 20,000 manzanas. Of the 6,613 new manzanas, 5,413 are assumed to be owned and cultivated by IVJ and 1,200 are assumed to be owned and cultivated by colonos.

- **IVJ Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
8,662	5,184	8,184	10,597	10,597	10,597

Management is assumed to cultivate an additional 3,000 manzanas in 1993/94 and an additional 2,413 manzanas in 1994/95. The 3,000 additional manzanas in 1993/94 is land owned by IVJ but not developed, while the 2,413 additional manzanas in 1994/95 would have to be purchased and developed. As in Scenario 3, 3,800 manzanas are assumed to be sold to IVJ workers in 1992/93.

- **Colono Land**

	Projected (Manzanas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
2,455	8,203	8,203	9,403	9,403	9,403

An additional 1,200 manzanas are assumed to be cultivated by colonos beginning in 1994/95. This land is currently owned by colonos but not developed.

- **Operating Efficiencies**

The agricultural yield improvements, factory labor reductions, and administrative labor reductions described in Scenario 3 are also assumed in Scenario 4.

- **Field Personnel**

The number of field personnel is assumed to remain at its current level of 1,032. The current personnel level is assumed to be sufficient even with the increase in IVJ land from 8,662 to 10,597 manzanas.

- **Milling Rate**

	Projected (Tons/Period)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
88,200	124,499	191,182	215,600	215,600	215,600

The milling rate is assumed to improve in order to contain the crop season to 4.5 28-day periods. The maximum crop season at IVJ is approximately 4.5 periods due to climactic constraints. However, under this scenario, the number of crop periods required to mili the total amount of cane available increases to 4.9, which is considered reasonable. The maximum milling rate for the mill is approximately 7,700 tons per day or 215,600 tons per period.

- **Capital Expenditures**

	Projected (000s Cordobas)				
1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
PLANT AND EQUIPMENT					
3,750	10,000	34,360	39,338	10,000	10,000
LAND					
0	0	0	3,016	0	0

Capital costs are assumed to increase due to the investment required to purchase and develop the additional land put into production. IVJ is assumed to provide the investment required for the 5,413 new manzanas of its own and the 1,200 new manzanas cultivated by colonos.

The first 3,000 manzanas of IVJ land put into production in 1993/94 are assumed to cost 8,120 cordobas (US $1,624) per manzana, or 24,360,000 cordobas. Since this land is already owned by IVJ, the full investment would be for plant and equipment to develop the land.

The next 2,413 manzanas of IVJ land put into production in 1994/95 would cost 22,609,810 cordobas. IVJ would have to purchase this land for 1,250 cordobas (US $250) per manzana, or 3,016,250 cordobas. The remaining investment of 19,593,560 cordobas would be for plant and equipment to develop the land.

The 1,200 manzanas of colono land put into production in 1994/95 is assumed to cost 8,120 cordobas (US $1,624) per manzana, or 9,744,000 cordobas. Since this land is already owned by colonos, the full investment would be for plant and equipment to develop the land.

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Ingenio Victoria de Julio — **Scenario 4**

Discounted Cash Flow Analysis (000s Cordobas) — 06-Oct-92

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
VJ Land (Manzanas)	8,662	5,184	8,184	10,597	10,597	10,597
Colono Land (Manzanas)	2,455	8,203	8,203	9,403	9,403	9,403
Total Land (Manzanas)	11,117	13,387	16,387	20,000	20,000	20,000
Agricultural Yield (Tons/Manzana)	31.25	41.85	52.50	52.50	52.50	52.50
Cane Harvested (Tons)	270,664	216,950	429,660	556,343	556,343	556,343
Cane Purchased (Tons)	83,776	343,296	430,658	493,658	493,658	493,658
Total Cane (Tons)	354,440	560,246	860,318	1,050,000	1,050,000	1,050,000
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,892,699	2,310,000	2,310,000	2,310,000
Average Personnel	1,838	1,705	1,561	1,567	1,567	1,567
Field Cost Per Ton ($US)	$27.30	$21.30	$17.50	$16.61	$16.61	$16.61
Cash Operat. Cost Per Quintal ($US)	$22.43	$16.29	$12.49	$11.64	$11.64	$11.64

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES		103,798	159,392	194,535	194,535	194,535
OPERATING COSTS						
Field Costs		59,673	75,262	87,226	87,226	87,226
Factory Costs		23,164	28,664	32,939	32,939	32,939
Administrative Costs		17,546	14,315	14,315	14,315	14,315
Depreciation		4,344	5,743	10,182	14,883	16,240
Total		104,728	123,984	144,662	149,363	150,720
PROFIT BEFORE TAX		(930)	35,409	49,873	45,172	43,815
TAX		2,200	11,679	16,305	15,186	14,730
PROFIT AFTER TAX		(3,130)	23,729	33,569	29,986	29,085
DEPRECIATION (+)		4,344	5,743	10,182	14,883	16,240
CAPITAL EXPENDITURES (–)		10,000	34,360	42,354	10,000	10,000
INCREASE IN NET WORKING CAPITAL (–)		6,801	10,231	9,583	0	0
CASH FLOW BEFORE LEVERAGE		(15,587)	(15,119)	(8,186)	34,869	35,325

NET PRESENT VALUE @	18%	4,754
TERMINAL VALUE *		
NET PRESENT VALUE @	18%	93,184
FIRM VALUE BEFORE LEVERAGE		97,937

TERMINAL VALUE *		196,249

Sensitivity Analysis of Firm Value Before Leverage

Discount Rate

			14%	18%	22%
Average	91/92	68.90	58,990	28,578	10,623
Sugar Price	Hist.	79.05	148,633	97,937	67,131
	+5%	83.00	183,541	124,946	89,136

* The terminal value is the greater of 1) zero and 2) the 1996/97 cash flow divided by the discount rate.

Ingenio Victoria de Julio — **Scenario 4**

Cash Flow Projections (Cordobas) 06-Oct-92

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	5,184	8,184	10,597	10,597	10,597
Colono Land (Manzanas)	2,455	8,203	8,203	9,403	9,403	9,403
Total Land (Manzanas)	11,117	13,387	16,387	20,000	20,000	20,000
Agricultural Yield (Tons/Manzana)	31.2	41.9	52.5	52.5	52.5	52.5
Cane Harvested (Tons)	270,664	216,950	429,660	556,343	556,343	556,343
Cane Purchased (Tons)	83,776	343,296	430,658	493,658	493,658	493,658
Total Cane (Tons)	354,440	560,246	860,318	1,050,000	1,050,000	1,050,000
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,892,699	2,310,000	2,310,000	2,310,000
Average Personnel	1,838	1,705	1,561	1,567	1,567	1,567
REVENUES						
Sugar	54,277,139	97,432,373	149,617,816	182,605,500	182,605,500	182,605,500
Molasses	4,220,956	6,365,290	9,774,583	11,929,680	11,929,680	11,929,680
Electric Generation	0	0	0	0	0	0
Total	**58,498,096**	**103,797,664**	**159,392,400**	**194,535,180**	**194,535,180**	**194,535,180**
FIELD COSTS						
Salaries & Benefits	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714
Purchase of Cane	5,772,166	27,137,513	34,043,475	39,023,625	39,023,625	39,023,625
Materials	7,726,402	4,624,067	7,300,031	9,452,399	9,452,399	9,452,399
Agrochemicals	3,972,702	2,377,567	3,753,475	4,860,163	4,860,163	4,860,163
Tires	1,197,804	716,857	1,131,705	1,465,380	1,465,380	1,465,380
Fuel & Lubricants	6,996,391	4,187,173	6,610,305	8,559,311	8,559,311	8,559,311
Other	5,177,149	3,098,400	4,891,456	6,333,670	6,333,670	6,333,670
Total	**48,374,328**	**59,673,291**	**75,262,161**	**87,226,263**	**87,226,263**	**87,226,263**
$U.S. Per Ton	$27.30	$21.30	$17.50	$16.61	$16.61	$16.61
$U.S. Per Quintal	$12.28	$9.68	$7.95	$7.55	$7.55	$7.55
FACTORY COSTS						
Crop Periods:	4.0	4.5	4.5	4.9	4.9	4.9
Salaries & Benefits	4,260,322	4,224,960	3,679,236	3,981,857	3,981,857	3,981,857
Electric Power	1,555,486	1,741,824	1,741,824	1,885,091	1,885,091	1,885,091
Fuel Oil	549,382	868,381	1,333,492	1,627,500	1,627,500	1,627,500
Process Chemicals	2,144,363	3,389,488	5,204,921	6,352,500	6,352,500	6,352,500
Lubricants	453,683	717,115	1,101,206	1,344,000	1,344,000	1,344,000
Gen. Suppl. & Serv.	3,367,181	5,322,337	8,173,016	9,975,000	9,975,000	9,975,000
Packing Material	939,806	1,470,422	2,257,989	2,755,830	2,755,830	2,755,830
Total	13,270,223	17,734,526	23,491,685	27,921,778	27,921,778	27,921,778
Off-Crop Periods:	9.0	8.5	8.5	8.1	8.1	8.1
Salaries & Benefits	2,681,704	2,289,492	2,032,146	1,943,657	1,943,657	1,943,657
Electric Power	1,151,578	1,089,853	1,089,853	1,042,396	1,042,396	1,042,396
Gen Suppl. & Serv.	449,070	425,000	425,000	406,494	406,494	406,494
Parts & Materials	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000
Total	5,907,352	5,429,345	5,171,999	5,017,546	5,017,546	5,017,546
Electric Generation	0	0	0	0	0	0
Total Factory Costs	**19,177,575**	**23,163,871**	**28,663,684**	**32,939,324**	**32,939,324**	**32,939,324**
$U.S. Per Quintal	$4.87	$3.76	$3.03	$2.85	$2.85	$2.85
GROSS MARGIN	**(9,053,807)**	**20,960,501**	**55,466,555**	**74,369,593**	**74,369,593**	**74,369,593**
	-15%	20%	35%	38%	38%	38%
ADMINISTRATIVE COSTS						
Salaries & Benefits	13,836,333	10,604,718	7,373,103	7,373,103	7,373,103	7,373,103
Materials	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals	36,111	36,111	36,111	36,111	36,111	36,111
Tires	57,056	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants	957,667	957,667	957,667	957,667	957,667	957,667
Other	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
Total	**20,777,828**	**17,546,213**	**14,314,597**	**14,314,597**	**14,314,597**	**14,314,597**
$U.S. Per Quintal	$5.28	$2.85	$1.51	$1.24	$1.24	$1.24
TOTAL CASH OPERATING COSTS	**88,329,731**	**100,383,375**	**118,240,442**	**134,480,184**	**134,480,184**	**134,480,184**
$U.S. Per Quintal	$22.43	$16.29	$12.49	$11.64	$11.64	$11.64
DEPRECIATION	3,808,694	4,344,408	5,743,407	10,181,786	14,882,857	16,239,507
PROFIT BEFORE TAX	**(33,640,329)**	**(930,120)**	**35,408,551**	**49,873,210**	**45,172,140**	**43,815,489**
	-58%	-1%	22%	26%	23%	23%
TAXES	0	2,200,000	11,679,121	16,304,685	15,185,921	14,730,098
PROFIT AFTER TAX	**(33,640,329)**	**(3,130,120)**	**23,729,430**	**33,568,525**	**29,986,218**	**29,085,391**
	-58%	-3%	15%	17%	15%	15%
DEPRECIATION (+)	3,808,694	4,344,408	5,743,407	10,181,786	14,882,857	16,239,507
CAPITAL EXPENDITURES (-)	3,750,000	10,000,000	34,360,000	42,353,810	10,000,000	10,000,000
INCREASE IN NET WORKING CAPITAL (-)	0	6,801,463	10,231,477	9,582,770	0	0
CASH FLOW BEFORE LEVERAGE	**(33,581,635)**	**(15,587,175)**	**(15,118,641)**	**(8,186,269)**	**34,869,075**	**35,324,898**

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Ingenio Victoria de Julio
Working Capital Schedule (Cordobas) 06-Oct-92 **Scenario 4**

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Off-Crop Field Costs	33,420,724	41,226,921	51,996,917	60,262,643	60,262,643	60,262,643
Off-Crop Factory Costs	5,907,352	7,135,268	8,829,399	10,146,443	10,146,443	10,146,443
Off-Crop Admin. Costs	14,354,929	12,122,280	9,889,630	9,889,630	9,889,630	9,889,630
Net Working Capital Needs	53,683,005	60,484,469	70,715,946	80,298,716	80,298,716	80,298,716
Increase in Net Working Capital	0	6,801,463	10,231,477	9,582,770	0	0

Ingenio Victoria de Julio
Depreciation Schedule (Cordobas) 06-Oct-92 **Scenario 4**

		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment (Excluding Land)		3,750,000	10,000,000	34,360,000	39,337,560	10,000,000	10,000,000
Cumulative New Capital Investments (Excluding Land)			3,750,000	13,750,000	48,110,000	87,447,560	97,447,560
Depreciation, Avg. Life (Yrs.):	7.0	0	535,714	1,964,286	6,872,857	12,492,509	13,921,080
Depreciation on Existing Assets		3,808,694	3,808,694	3,779,121	3,308,929	2,390,348	2,318,427
Total Depreciation		3,808,694	4,344,408	5,743,407	10,181,786	14,882,857	16,239,507

Ingenio Victoria de Julio
Tax Schedule (Cordobas) 06-Oct-92 **Scenario 4**

		1992/93	1993/94	1994/95	1995/96	1996/97
Profit Before Tax		(930,120)	35,408,551	49,873,210	45,172,140	43,815,489
Tax Loss Carryforward		0	(3,130,120)	(3,130,120)	0	0
Taxable Profit		(930,120)	32,278,431	46,743,090	45,172,140	43,815,489
4% of Corporate Net Worth		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
2% of Gross Income		2,075,953	3,187,848	3,890,704	3,890,704	3,890,704
Tax Base (Maximum of Above)		4,000,000	35,408,551	49,873,210	45,172,140	43,815,489
Corporate Tax @	30%	1,200,000	10,622,565	14,961,963	13,551,642	13,144,647
Fixed Assets (Beginning of Year)		100,000,000	105,655,592	134,272,185	163,427,959	158,545,102
Municipal Tax @	1%	1,000,000	1,056,556	1,342,722	1,634,280	1,585,451
Total Taxes		2,200,000	11,679,121	16,304,685	15,185,921	14,730,098

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Scenario 5

Scenario 5 assumes, in addition to the assumptions in Scenario 4, that management is able to install two turbo-generators that it owns but which are not currently in operation in order to meet all of its electricity needs and sell excess energy to the national power grid.

- **Electricity Available For Sale**

During the crop periods, the existing 4 MW back pressure machines and the new 12 MW German condensing machine will generate an average of 20 MW of electricity. Of this 20 MW, 7 MW will be required by the factory and 8 MW by the field, leaving 5 MW to be sold to INE, the Nicaraguan electric company.

During the off-crop periods, the existing three 4 MW back pressure machines, in series with the new 11.6 MW Swedish condensing machine, plus the new 12 MW German condensing machine will generate an average of 27 MW of electricity. Of this 27 MW, 3 MW will be required by the factory and 5 MW by the field, leaving 19 MW to be sold to INE.

- **Avoided Cost of Electricity**

The two newly installed turbo-generators will allow IVJ to meet all of its electricity needs, thereby avoiding the cost of buying the electricity from INE. Thus, in Scenario 5 the electricity costs in the factory and the field are reduced to zero beginning in 1994/95. Field electricity costs are deducted from the "Fuel and Lubricants" line item.

- **Sale Price of Electricity**

In February 1992 IVJ and INE signed a contract concerning the installation of the two turbo-generators, the price at which INE would buy electricity from IVJ, and the cost at which INE would supply certain materials to IVJ. That contract guaranteed a sales price of .276 cordobas per kilowatt-hour for electricity sold from IVJ to INE. This price is assumed to be the price that IVJ could sell its excess electricity under Scenario 5. This price is substantially lower than the price that INE currently charges to IVJ -- .720 cordobas per kilowatt-hour. Due to the potential for a higher sales price, sensitivity analysis is conducted for sales prices of .388 and .500, or 40% and 80% above the .276 cordoba level.

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- **Fuel Costs**

The price of bunker fuel is assumed to be 862.5 cordobas per ton and the cost of eucalyptus is assumed to be 100 cordobas per ton. The bagasse used in the electric plant is assumed to be free.

- **Fuel Use**

The fuel requirements for the electric plant during the crop period are assumed to be satisfied by the bagasse generated from the field, bunker fuel, and eucalyptus wood. During the off-crop period the plant is assumed to be powered by bunker fuel and eucalyptus only. Of the fuel requirement that is not met by bagasse, 50% is assumed to be provided by eucalyptus trees and 50% from bunker fuel.

- **Other Operating Costs**

The electric plant is assumed to require 20 additional workers during the off-crop, each of which would be paid the average off-crop salary in 1991/92 of 1,044 cordobas per person per period.

Repair and maintenance on the electric plant is assumed to be approximately 500,000 cordobas per year.

- **Capital Costs**

According to the IVJ-INE contract, the cost of installing the two turbo-generators will be approximately US $2,660,000 (13,300,000 cordobas) over a 16 month period.

- **Project Timing**

The development of the energy project, and hence the capital expenditures, are assumed to begin in the beginning of fiscal year 1993/94. Given the 16 month development period, project revenues, operating costs, and avoided costs are assumed to begin in 1994/95.

Ingenio Victoria de Julio		Scenario
Discounted Cash Flow Analysis (000s Cordobas)	06-Oct-92	5

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	5,184	8,184	10,597	10,597	10,597
Colono Land (Manzanas)	2,455	8,203	8,203	9,403	9,403	9,403
Total Land (Manzanas)	11,117	13,387	16,387	20,000	20,000	20,000
Agricultural Yield (Tons/Manzana)	31.25	41.85	52.50	52.50	52.50	52.50
Cane Harvested (Tons)	270,664	216,950	429,660	556,343	556,343	556,343
Cane Purchased (Tons)	83,776	343,296	430,658	493,658	493,658	493,658
Total Cane (Tons)	354,440	560,246	860,318	1,050,000	1,050,000	1,050,000
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,892,699	2,310,000	2,310,000	2,310,000
Average Personnel	1,838	1,705	1,561	1,567	1,567	1,567
Field Cost Per Ton ($US)	$27.30	$21.30	$17.50	$16.13	$16.13	$16.13
Cash Operat. Cost Per Quintal ($US)	$22.43	$16.29	$12.49	$14.28	$14.14	$14.14

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES		103,798	159,392	227,701	227,701	227,701
OPERATING COSTS						
Field Costs		59,673	75,262	84,658	84,658	84,658
Factory Costs		23,164	28,664	65,961	64,349	64,349
Administrative Costs		17,546	14,315	14,315	14,315	14,315
Depreciation		4,344	5,743	11,726	16,783	18,140
Total		104,728	123,984	176,660	180,104	181,461
PROFIT BEFORE TAX		(930)	35,409	51,041	47,596	46,240
TAX		2,200	11,679	16,763	16,031	15,556
PROFIT AFTER TAX		(3,130)	23,729	34,278	31,566	30,684
DEPRECIATION (+)		4,344	5,743	11,726	16,783	18,140
CAPITAL EXPENDITURES (–)		10,000	45,166	44,848	10,000	10,000
INCREASE IN NET WORKING CAPITAL (–)		6,801	10,231	6,406	0	0
CASH FLOW BEFORE LEVERAGE		(15,587)	(25,925)	(5,250)	38,349	38,823

NET PRESENT VALUE @	18%	1,875
TERMINAL VALUE *		215,685
NET PRESENT VALUE @	18%	102,412
FIRM VALUE BEFORE LEVERAGE		104,288

Sensitivity Analysis of Firm Value Before Leverage

Discount Rate

			14%	18%	22%
Average	91/92	**68.90**	70,226	34,928	14,053
Sugar Price	Hist.	**79.05**	159,868	104,288	70,562
	+5%	**83.00**	194,776	131,297	92,567

Discount Rate

			14%	18%	22%
Electricity	Base	**0.276**	159,868	104,288	70,562
Sale Price	+40%	**0.388**	215,154	145,120	102,340
	+80%	**0.500**	270,440	185,952	134,119

* The terminal value is the greater of 1) zero and 2) the 1996/97 cash flow divided by the discount rate.

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Ingenio Victoria de Julio
Cash Flow Projections (Cordobas) 06-Oct-92

Scenario 5

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
IVJ Land (Manzanas)	8,662	5,184	8,184	10,597	10,597	10,597
Colono Land (Manzanas)	2,455	8,203	8,203	9,403	9,403	9,403
Total Land (Manzanas)	11,117	13,387	16,387	20,000	20,000	20,000
Agricultural Yield (Tons/Manzana)	31.2	41.9	52.5	52.5	52.5	52.5
Cane Harvested (Tons)	270,664	216,950	429,660	556,343	556,343	556,343
Cane Purchased (Tons)	83,776	343,296	430,658	493,658	493,658	493,658
Total Cane (Tons)	354,440	560,246	860,318	1,050,000	1,050,000	1,050,000
Industrial Yield (Quintals/Ton)	2.22	2.20	2.20	2.20	2.20	2.20
Sugar Produced (Quintals)	787,767	1,232,541	1,892,699	2,310,000	2,310,000	2,310,000
Average Personnel	1,838	1,705	1,561	1,567	1,567	1,567
REVENUES						
Sugar	54,277,139	97,432,373	149,617,816	182,605,500	182,605,500	182,605,500
Molasses	4,[illegible]0,956	6,365,290	9,774,583	11,929,680	11,929,680	11,929,680
Electric Generation	0	0	0	33,165,766	33,165,766	33,165,766
Total	**58,498,096**	**103,797,664**	**159,392,400**	**227,700,946**	**227,700,946**	**227,700,946**
FIELD COSTS						
Salaries & Benefits	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714	17,531,714
Purchase of Cane	5,772,166	27,137,513	34,043,475	39,023,625	39,023,625	39,023,625
Materials	7,726,402	4,624,067	7,300,031	9,452,399	9,452,399	9,452,399
Agrochemicals	3,972,702	2,377,567	3,753,475	4,860,163	4,860,163	4,860,163
Tires	1,197,804	716,857	1,131,705	1,465,380	1,465,380	1,465,380
Fuel & Lubricants	6,996,391	4,187,173	6,610,305	5,991,518	5,991,518	5,991,518
Other	5,177,149	3,098,400	4,891,456	6,333,670	6,333,670	6,333,670
Total	**48,374,328**	**59,673,291**	**75,262,161**	**84,658,469**	**84,658,469**	**84,658,469**
$U.S. Per Ton	$27.30	$21.30	$17.50	$16.13	$16.13	$16.13
$U.S. Per Quintal	$12.28	$9.68	$7.95	$7.33	$7.33	$7.33
FACTORY COSTS						
Crop Periods:	4.0	4.5	4.5	4.9	4.9	4.9
Salaries & Benefits	4,260,322	4,224,960	3,679,236	3,981,857	3,981,857	3,981,857
Electric Power	1,555,486	1,741,824	1,741,824	0	0	0
Fuel Oil	549,382	868,381	1,333,492	0	0	0
Process Chemicals	2,144,363	3,389,488	5,204,921	6,352,500	6,352,500	6,352,500
Lubricants	453,683	717,115	1,101,206	1,344,000	1,344,000	1,344,000
Gen. Suppl. & Serv.	3,367,181	5,322,337	8,173,016	9,975,000	9,975,000	9,975,000
Packing Material	939,806	1,470,422	2,257,989	2,755,830	2,755,830	2,755,830
Total	13,270,223	17,734,526	23,491,685	24,409,187	24,409,187	24,409,187
Off-Crop Periods:	9.0	8.5	8.5	8.1	8.1	8.1
Salaries & Benefits	2,681,704	2,289,492	2,032,146	1,943,657	1,943,657	1,943,657
Electric Power	1,151,578	1,089,853	1,089,853	0	0	0
Gen Suppl. & Serv.	449,070	425,000	425,000	406,494	406,494	406,494
Parts & Materials	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000
Total	5,907,352	5,429,345	5,171,999	3,975,150	3,975,150	3,975,150
Electric Generation	0	0	0	37,576,706	35,964,206	35,964,206
Total Factory Costs	**19,177,575**	**23,163,871**	**28,663,684**	**65,961,044**	**64,348,544**	**64,348,544**
$U.S. Per Quintal	$4.87	$3.76	$3.03	$5.71	$5.57	$5.57
GROSS MARGIN	**(9,053,807)**	**20,960,501**	**55,466,555**	**77,081,433**	**78,693,933**	**78,693,933**
	-15%	20%	35%	34%	35%	35%
ADMINISTRATIVE COSTS						
Salaries & Benefits	13,836,333	10,604,718	7,373,103	7,373,103	7,373,103	7,373,103
Materials	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals	36,111	36,111	36,111	36,111	36,111	36,111
Tires	57,056	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants	957,667	957,667	957,667	957,667	957,667	957,667
Other	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
Total	**20,777,828**	**17,546,213**	**14,314,597**	**14,314,597**	**14,314,597**	**14,314,597**
$U.S. Per Quintal	$5.28	$2.85	$1.51	$1.24	$1.24	$1.24
TOTAL CASH OPERATING COSTS	**88,329,731**	**100,383,375**	**118,240,442**	**164,934,110**	**163,321,610**	**163,321,610**
$U.S. Per Quintal	$22.43	$16 29	$12.49	$14.28	$14.14	$14.14
DEPRECIATION	3,808,694	4,344,408	5,743,407	11,725,536	16,782,857	18,139,507
PROFIT BEFORE TAX	**(33,640,329)**	**(930,120)**	**35,408,551**	**51,041,299**	**47,596,479**	**46,239,829**
	-58%	-1%	22%	22%	21%	20%
TAXES	0	2,200,000	11,679,121	16,763,174	16,030,786	15,555,962
PROFIT AFTER TAX	**(33,640,329)**	**(3,130,120)**	**23,729,430**	**34,278,125**	**31,565,693**	**30,683,867**
	-58%	-3%	15%	15%	14%	13%
DEPRECIATION (+)	3,808,694	4,344,408	5,743,407	11,725,536	16,762,857	18,139,507
CAPITAL EXPENDITURES (-)	3,750,000	10,000,000	45,166,250	44,847,560	10,000,000	10,000,000
INCREASE IN NET WORKING CAPITAL (-)	0	6,801,463	10,231,477	6,405,648	0	0
CASH FLOW BEFORE LEVERAGE	**(33,581,635)**	**(15,587,175)**	**(25,924,891)**	**(5,249,546)**	**38,348,550**	**38,823,374**

Ingenio Victoria de Julio Working Capital Schedule (Cordobas)	06-Oct-92					Scenario 5
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Off-Crop Field Costs	33,420,724	41,226,921	51,996,917	58,488,613	58,488,613	58,488,613
Off-Crop Factory Costs	5,907,352	7,135,268	8,829,399	8,743,351	8,743,351	8,743,351
Off-Crop Admin. Costs	14,354,929	12,122,280	9,889,630	9,889,630	9,889,630	9,889,630
Net Working Capital Needs	53,683,005	60,484,469	70,715,946	77,121,594	77,121,594	77,121,594
Increase in Net Working Capital	0	6,801,463	10,231,477	6,405,648	0	0

Ingenio Victoria de Julio Depreciation Schedule (Cordobas)		06-Oct-92					Scenario 5
		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment (Excluding Land)		3,750,000	10,000,000	45,166,250	41,831,310	10,000,000	10,000,000
Cumulative New Capital Investments (Excluding Land)			3,750,000	13,750,000	58,916,250	100,747,560	110,747,560
Depreciation, Avg. Life (Yrs.):	7.0	0	535,714	1,964,286	8,416,607	14,392,509	15,821,080
Depreciation on Existing Assets		3,808,694	3,808,694	3,779,121	3,308,929	2,390,348	2,318,427
Total Depreciation		3,808,694	4,344,408	5,743,407	11,725,536	16,782,857	18,139,507

Ingenio Victoria de Julio Tax Schedule (Cordobas)		06-Oct-92				Scenario 5
		1992/93	1993/94	1994/95	1995/96	1996/97
Profit Before Tax		(930,120)	35,408,551	51,041,299	47,596,479	46,239,829
Tax Loss Carryforward		0	(3,130,120)	(3,130,120)	0	0
Taxable Profit		(930,120)	32,278,431	47,911,180	47,596,479	46,239,829
4% of Corporate Net Worth		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
2% of Gross Income		2,075,953	3,187,848	4,554,019	4,554,019	4,554,019
Tax Base (Maximum of Above)		4,000,000	35,408,551	51,041,299	47,596,479	46,239,829
Corporate Tax @	30%	1,200,000	10,622,565	15,312,390	14,278,944	13,871,949
Fixed Assets (Beginning of Year)		100,000,000	105,655,592	145,078,435	175,184,209	168,401,352
Municipal Tax @	1%	1,000,000	1,056,556	1,450,784	1,751,842	1,684,014
Total Taxes		2,200,000	11,679,121	16,763,174	16,030,786	15,555,962

Ingenio Victoria de Julio
Projections for Expanded Electric Generation (Cordobas)

	1992/93	1993/94	1994/95	1995/96	1996/97
Sales Revenues					
Crop Sales Revenues	0	0	4,516,364	4,516,364	4,516,364
Off-Crop Sales Revenues	0	0	28,649,402	28,649,402	28,649,402
Total Sales Revenues	0	0	33,165,766	33,165,766	33,165,766
Operating Costs					
Bunker Fuel	0	0	27,088,773	25,912,636	25,912,636
Eucalyptus	0	0	9,818,182	9,381,818	9,381,818
Personnel (Off-Crop Only)	0	0	169,752	169,752	169,752
Repairs & Maintenance	0	0	500,000	500,000	500,000
Total Operating Costs	0	0	37,576,706	35,964,206	35,964,206
Capital Costs	0	10,806,250	2,493,750	0	0

Ingenio Victoria de Julio
Cash Flow Assumptions (Constant 1991/92 Cordobas) 06-Oct-92

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
PRODUCTION					
IVJ Land (Manzanas)					
1991/92	8,662	8,662	8,662	8,662	8,662
1992/93	8,662	8,984	5,184	5,184	5,184
1993/94	8,662	8,984	5,184	8,184	8,184
1994/95	8,662	8,984	5,184	10,597	10,597
1995/96	8,662	8,984	5,184	10,597	10,597
1996/97	8,662	8,984	5,184	10,597	10,597
Colono Land (Manzanas)					
1991/92	2,455	2,455	2,455	2,455	2,455
1992/93	2,455	4,403	8,203	8,203	8,203
1993/94	2,455	4,403	8,203	8,203	8,203
1994/95	2,455	4,403	8,203	9,403	9,403
1995/96	2,455	4,403	8,203	9,403	9,403
1996/97	2,455	4,403	8,203	9,403	9,403
Agricultural Yield (Tons/Manzana)					
1991/92	31.2	31.2	31.2	31.2	31.2
1992/93	39.2	39.2	41.9	41.9	41.9
1993/94	39.2	39.2	52.5	52.5	52.5
1994/95	39.2	39.2	52.5	52.5	52.5
1995/96	39.2	39.2	52.5	52.5	52.5
1996/97	39.2	39.2	52.5	52.5	52.5
Cane Purchased (Tons)					
1991/92	83,776	83,776	83,776	83,776	83,776
1992/93	96,236	172,598	343,296	343,296	343,296
1993/94	96,236	172,598	430,658	430,658	430,658
1994/95	96,236	172,598	430,658	493,658	493,658
1995/96	96,236	172,598	430,658	493,658	493,658
1996/97	96,236	172,598	430,658	493,658	493,658
Industrial Yield (Quintals/Ton)					
1991/92	2.22	2.22	2.22	2.22	2.22
1992/93	2.20	2.20	2.20	2.20	2.20
1993/94	2.20	2.20	2.20	2.20	2.20
1994/95	2.20	2.20	2.20	2.20	2.20
1995/96	2.20	2.20	2.20	2.20	2.20
1996/97	2.20	2.20	2.20	2.20	2.20
Molasses Yield (Gallons/Ton)					
1991/92	8.27	8.27	8.27	8.27	8.27
1992/93	7.89	7.89	7.89	7.89	7.89
1993/94	7.89	7.89	7.89	7.89	7.89
1994/95	7.89	7.89	7.89	7.89	7.89
1995/96	7.89	7.89	7.89	7.89	7.89
1996/97	7.89	7.89	7.89	7.89	7.89
PRICES					
Average Sugar Price (C$/Quintal)					
1991/92	68.90	68.90	68.90	68.90	68.90
1992/93 – 1996/97	79.05	79.05	79.05	79.05	79.05
Molasses Price (C$/Gallon)	1.44	1.44	1.44	1.44	1.44

Ingenio Victoria de Julio
Cash Flow Assumptions (Constant 1991/92 Cordobas) 06-Oct-92

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
PERSONNEL					
Field					
1991/92	1,032	1,032	1,032	1,032	1,032
1992/93	1,032	1,032	909	1,032	1,032
1993/94	1,032	1,032	786	1,032	1,032
1994/95	1,032	1,032	786	1,032	1,032
1995/96	1,032	1,032	786	1,032	1,032
1996/97	1,032	1,032	786	1,032	1,032
Factory: Crop					
1991/92	542	542	542	542	542
1992/93	542	542	480	480	480
1993/94	542	542	418	418	418
1994/95	542	542	418	418	418
1995/96	542	542	418	418	418
1996/97	542	542	418	418	418
Factory: Off-Crop					
1991/92	286	286	286	286	286
1992/93	286	286	258	258	258
1993/94	286	286	229	229	229
1994/95	286	286	229	229	229
1995/96	286	286	229	229	229
1996/97	286	286	229	229	229
Administrative					
1991/92	441	441	441	441	441
1992/93	441	441	338	338	338
1993/94	441	441	235	235	235
1994/95	441	441	235	235	235
1995/96	441	441	235	235	235
1996/97	441	441	235	235	235
FACTORY COSTS					
Milling Rate (Tons/Period)					
1991/92	88,200	88,200	88,200	88,200	88,200
1992/93	96,841	116,616	124,499	124,499	124,499
1993/94	96,841	116,616	156,182	191,182	191,182
1994/95	96,841	116,616	156,182	215,600	215,600
1995/96	96,841	116,616	156,182	215,600	215,600
1996/97	96,841	116,616	156,182	215,600	215,600
Crop					
Salaries & Benefits/Personel-Period					
1991/92	1,956	1,956	1,956	1,956	1,956
1992/93	1,956	1,956	1,956	1,956	1,956
1993/94	1,956	1,956	1,956	1,956	1,956
1994/95	1,956	1,956	1,956	1,956	1,956
1995/96	1,956	1,956	1,956	1,956	1,956
1996/97	1,956	1,956	1,956	1,956	1,956
Electric Power/Period	387,072	387,072	387,072	387,072	387,072
Fuel Oil/Ton	1.55	1.55	1.55	1.55	1.55
Proccess Chemicals/Ton	6.05	6.05	6.05	6.05	6.05
Lubricants/Ton	1.28	1.28	1.28	1.28	1.28
Gen Suppl & Serv./Ton	9.50	9.50	9.50	9.50	9.50
Packing Materials/Quintal	1.19	1.19	1.19	1.19	1.19
Off-Crop					
Salaries & Benefits/Personel-Period					
1991/92	1,044	1,044	1,044	1,044	1,044
1992/93	1,044	1,044	1,044	1,044	1,044
1993/94	1,044	1,044	1,044	1,044	1,044
1994/95	1,044	1,044	1,044	1,044	1,044
1995/96	1,044	1,044	1,044	1,044	1,044
1996/97	1,044	1,044	1,044	1,044	1,044
Electric Power/Period	128,218	128,218	128,218	128,218	128,218
Gen Suppl & Serv./Period	50,000	50,000	50,000	50,000	50,000
Parts & Materials/Year	1,625,000	1,625,000	1,625,000	1,625,000	1,625,000

Ingenio Victoria de Julio
Cash Flow Assumptions (Constant 1991/92 Cordobas) 06-Oct-92

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
FIELD COSTS					
Salaries & Benefits/Personnel					
1991/92	16,988	16,988	16,988	16,988	16,988
1992/93	16,988	16,988	16,988	16,988	16,988
1993/94	16,988	16,988	16,988	16,988	16,988
1994/95	16,988	16,988	16,988	16,988	16,988
1995/96	16,988	16,988	16,988	16,988	16,988
1996/97	16,988	16,988	16,988	16,988	16,988
Purchase of Cane/Ton					
1991/92	68.90	68.90	68.90	68.90	68.90
1992/93 – 96/97	79.05	79.05	79.05	79.05	79.05
Materials/Manzana	892	892	892	892	892
Agrochemicals/Manzana	459	459	459	459	459
Tires/Manzana	138	138	138	138	138
Fuel & Lubricants/Manzana	808	808	808	808	808
Other/Manzana	598	598	598	598	598
ADMINISTRATIVECOSTS					
Salaries & Benefits/Personnel					
1991/92	31,375	31,375	31,375	31,375	31,375
1992/93	31,375	31,375	31,375	31,375	31,375
1993/94	31,375	31,375	31,375	31,375	31,375
1994/95	31,375	31,375	31,375	31,375	31,375
1995/96	31,375	31,375	31,375	31,375	31,375
1996/97	31,375	31,375	31,375	31,375	31,375
Materials/Year	1,742,722	1,742,722	1,742,722	1,742,722	1,742,722
Agrochemicals/Year	36,111	36,111	36,111	36,111	36,111
Tires/Year	57,056	57,056	57,056	57,056	57,056
Fuel & Lubricants/Year	957,667	957,667	957,667	957,667	957,667
Other/Year	4,147,939	4,147,939	4,147,939	4,147,939	4,147,939
DEPRECIATION					
Existing Assets					
1991/92	3,808,694	3,808,694	3,808,694	3,808,694	3,808,694
1992/93	3,808,694	3,808,694	3,808,694	3,808,694	3,808,694
1993/94	3,779,121	3,779,121	3,779,121	3,779,121	3,779,121
1994/95	3,308,929	3,308,929	3,308,929	3,308,929	3,308,929
1995/96	2,390,348	2,390,348	2,390,348	2,390,348	2,390,348
1996/97	2,318,427	2,318,427	2,318,427	2,318,427	2,318,427
Average Life of New Capital Investments (Yrs.)	7.0	7.0	7.0	7.0	7.0
CAPITAL EXPENDITURES					
Plant and Equipment					
1991/92	3,750,000	3,750,000	3,750,000	3,750,000	3,750,000
1992/93	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
1993/94	10,000,000	10,000,000	10,000,000	34,360,000	34,360,000
1994/95	10,000,000	10,000,000	10,000,000	39,337,560	39,337,560
1995/96	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
1996/97	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000
Land					
1991/92	0	0	0	0	0
1992/93	0	0	0	0	0
1993/94	0	0	0	0	0
1994/95	0	0	0	3,016,250	3,016,250
1995/96	0	0	0	0	0
1996/97	0	0	0	0	0
TAX RATES					
Corporate Tax Rate	30.0%	30.0%	30.0%	30.0%	30.0%
Municipal Tax Rate	1.0%	1.0%	1.0%	1.0%	1.0%
DISCOUNT RATE	18.0%	18.0%	18.0%	18.0%	18.0%

Ingenio Victoria de Julio
Cash Flow Assumptions (Constant 1991/92 Cordobas) 06-Oct-92

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
ELECTRIC GENERATION					
Expanded Generation Capacity?	No	No	No	No	Yes
Electricity Available For Sale (MW)					
Crop					5.0
Off-Crop					19.0
Sale Price (C$/kWh)					0.276
Fuel Costs					
Bunker Fuel Cost (C$/Ton)					862.5
Eucalyptus Cost (C$/Ton)					100.0
Crop Fuel Use (Tons/Day)					
Bunker					
1992/93					0
1993/94					0
1994/95					30
1995/96					20
1996/97					20
Eucalyptus					
1992/93					0
1993/94					0
1994/95					94
1995/96					62
1996/97					62
Off-Crop Fuel Use (Tons/Day)					
Bunker					
1992/93					0
1993/94					0
1994/95					120
1995/96					120
1996/97					120
Eucalyptus					
1992/93					0
1993/94					0
1994/95					375
1995/96					375
1996/97					375
Other Operating Costs (C$)					
Additional Personnel, Off-Crop					20
Personnel Cost (C$/Person-Period)					1,044
Repair & Maintenance (C$/Year)					500,000
Capital Costs (C$)					
1992/93					0
1993/94					10,806,250
1994/95					2,493,750
1995/96					0
1996/97					0