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Price Waterhouse L.L.P.



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**COMPAÑIA NACIONAL PRODUCTORA
DE CEMENTO**

**Diagnostic, Valuation,
and Privatization Strategy Report**

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COMPAÑIA NACIONAL PRODUCTORA DE CEMENTO

Diagnostic, Valuation, and Privatization Strategy Report

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EXECUTIVE SUMMARY

Compañía Nacional Productora de Cemento (CANAL) is a state-owned enterprise assigned to the Nicaraguan privatization Corporation, CORNAP, for privatization. This report, prepared by the Price Waterhouse International Privatization Group (PW/IPG), presents a diagnostic of CANAL's operations, an estimate of the value of the company, and a recommended strategy for privatization.

A. Diagnosis of CANAL Operations

1. Company and Industry Description

CANAL is the only cement company in Nicaragua and began operations at its plant in San Rafael del Sur in 1942. Nearly 95% of the company was owned by the Somoza family prior to 1979, at which point the majority ownership interest was transferred to the Government.

CANAL has the capacity to produce approximately 300,000 tons of clinker (the intermediate cement product) and 315,000 tons of Portland cement per year. CANAL cement sales in fiscal year 1992/93 are expected to be approximately 280,000 tons. Cement capacity could likely be expanded to approximately 415,000 tons per year with moderate capital investments and the addition of pozzolana to the cement mixture. This may be necessary if cement demand increases above its currently depressed levels.

In addition to the clinker and grinding facilities in San Rafael, CANAL owns a grinding mill (Exmisa) in Managua which currently grinds a portion of the company's clinker into cement. CANAL's administrative headquarters are also located in Managua.

CANAL currently experiences several deficiencies that will need to be addressed in the coming years:

- the plant and equipment at CANAL is extremely old and has not received adequate replacement investments,
- the plant uses a wet-process technology which results in higher operating costs than the modern dry-process technology,
- the plant emits an unacceptable level of dust particles which will likely have to be addressed within the next five to ten years, and
- plant capacity will fall short of demand within ten years even with moderate market growth rates over that period.

These factors clearly indicate the need for an additional supply of cement in Nicaragua over the next seven to ten years. The supply could be provided by a new high capacity dry-process cement plant which could cost approximately \$US 120 million,

according to the U.S. Portland Cement Association. Alternatively, cement or clinker could be imported into Nicaragua from neighboring countries.

CANAL's strengths include access to over 40 years of limestone reserves at current production levels (according to CANAL reserve data), a strong market position in Nicaragua, and a functionally designed plant which, in spite of its age, has no serious operational problems. In addition, limited operating cost reductions and capacity expansions could be achieved over the next few years with moderate investments.

The sales price of cement in Nicaragua is currently fixed by the Ministry of Economy and Development in consultation with CANAL. The price is determined based on CANAL's estimated production and financing costs, plus a profit margin of 5 to 10%. The current average sales price is 416 cordobas or US\$ 67.37 per ton for cement in bags. (The June, 1993 bulk price in the U.S. ranged across regions from \$48 to \$85.20 and averaged \$63.78).

The Nicaraguan cement industry is protected by 20% import tariffs in addition to the high costs of transporting cement. An importer may have to pay as much as 60% of the Nicaraguan sales price in tariffs and transport costs in order to truck cement into the country. As a result, imports have not been significant.

2. Current Financial Condition

CANAL is a profitable enterprise with fiscal year 1991/92 profits of 2 million cordobas on 85 million in sales, according to CANAL financial statements that were audited by a local Nicaraguan firm (the financial statements were not audited by Price Waterhouse). Fiscal year 1992/93 profits are expected to be over 6 million cordobas on 98 million in sales, based on CANAL's unaudited financial statements through February, 1993.

CANAL's principal operating costs are bunker fuel (45% of operating costs), labor costs (15%), electric energy (10%), and paper bags (9%). Energy is typically the highest operating cost item for a cement company, however, CANAL's energy costs are particularly high due to its use of wet-process technology which requires more energy than the newer dry-process.

CANAL's balance sheet includes several items in addition to the company's productive assets. CANAL owns shares in other companies including its Mayco subsidiary (99.99% ownership), Nicalit (47%), a Costa Rican cement company (1%), and the Intercontinental Hotel in Managua (5%). CANAL also owns a large unused spare parts inventory that was purchased in 1987 due to the uncertainty of the company's ability to obtain spare parts in the future.

B. Estimated Value of CANAL

The assets that are included in the financial valuation are the productive assets of the enterprise, the spare parts inventories owned by the plant, and financial investments which CANAL holds in other companies.

Two methods were used to estimate the value of CANAL's productive assets: the Discounted Cash Flow (DCF) method and the liquidation value of CANAL's assets.

1. Discounted Cash Flow Valuation

The DCF method is considered the best method for estimating the value of CANAL as an ongoing enterprise. The DCF analysis was performed by projecting the expected future cash flows of the enterprise and converting the cash flows into their present values using a discount rate that reflects the riskiness of the cash flows. The analysis is based on CANAL's cash flows over the next seven to ten years, with no terminal value after that time period. CANAL's terminal value is assumed to be zero because the plant is expected to discontinue operations within seven to ten years. After that time the Nicaraguan cement market will have to be supplied by a new plant, costing approximately US\$ 120 million, or imports of cement or clinker from other countries. Neither of these alternatives is expected to provide significant future value for an investor that could not be achieved without acquiring CANAL.

CANAL is currently a profitable company and its future cash flows could have a range of values, depending on the assumptions used regarding the market demand and cash flow term. Assuming a ten year cash flow period and conservative to moderate market demand projections results in a reasonable range of values for CANAL's productive assets of 33.5 million cordobas (US\$ 5.6) to 67.1 million cordobas (US\$ 11.2).

2. Valuation Based on Asset Liquidation

The liquidation value of CANAL is the price that could be achieved through an orderly sale of CANAL's productive assets. These assets include CANAL's plant and equipment, land and buildings, and vehicles. The liquidation value of CANAL's productive assets is estimated at approximately 13.2 million cordobas (US\$ 2.2). The low estimated value reflects the old age of the plant and equipment (20 to 50 years) and obsolete nature of most of these assets.

The estimated liquidation value above does not reflect the time and transaction costs that would be required to carry out an orderly liquidation of the plant's assets. In addition, it is possible that some assets could not be sold, particularly given the low level of new investment in wet process cement plants worldwide. Thus, the present

value of the cash that could be realized from liquidation may be lower than the value listed above.

3. CANAL Non-Productive Assets

The value of CANAL's spare parts inventory and financial investments can be realized by an investor in addition to the productive assets of the company. Thus, the value of these assets must be added to the DCF or liquidation value in order to arrive at the total value of CANAL shares.

The value of the spare parts inventory is assumed to be 7 million cordobas based on estimates provided by an industry expert and CANAL management. These estimates should not be considered a definitive value, but rather a reasonable approximation of value.

According to CANAL management, CANAL's ownership interest in Mayco, Nicalit, Proinco, and Coprenic will be privatized separately from the divestiture of CANAL. This effort may be reviewed for legal reasons; however, for purposes of this valuation, these companies are assumed not to be transferred to the acquiror of CANAL.

The estimated value of CANAL's remaining investments is 2.0 million cordobas (US\$.3) for CANAL's shares in the Hotel Intercontinental and Industria Nacional de Cemento Costa Rica (INCSA). The value of CANAL's interest in the Intercontinental Hotel is estimated using the recent sale price of shares in this enterprise. CANAL is assumed to own 754 of the 14,000 shares in the hotel for a value of 1.96 million cordobas. CANAL owns 1% of INCSA. A valuation of INCSA is beyond the scope of this report so the 8,081 cordoba value of these shares on CANAL's balance sheet is used as an estimate for the true market value.

4. Summary and Conclusions

CANAL's liquidation value is below the lowest suggested discounted cash flow value and is therefore dismissed since the company is expected to continue as a going concern and realize at least the lowest DCF value. Thus, the total estimated value of CANAL shares is as follows:

	<u>Estimated Value</u> <u>(millions of cordobas)</u>
DCF Analysis	33.5 to 67.1
Spare Parts Inventory	7.0
CANAL Investments	<u>2.0</u>
Total	42.5 to 76.1
	US\$ 7.1 to 12.7

As CANAL has no long-term debt, the range above represents the estimated value of 100% of CANAL's equity shares.

C. Recommended Privatization Strategy

1. Government Objectives

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

- Transfer ownership of CANAL to the private sector as soon as possible.
- Attract capital and technical expertise to maintain the existing plant and implement capacity expansions in the future.
- Improve management and operations.
- Maintain employment.
- Maximize the cash generated from the sale of CANAL.

2. Privatization Options

PW/IPG has identified three potential options that may be appropriate for the privatization of CANAL:

- **OPTION 1: SALE OF GON SHARES**

Under Option 1, CORNAP would sell the GON's shares in CANAL to an investor group with experience in the cement industry. CANAL's existing shares may need to be reissued in order to clarify the current share ownership. The GON shares would represent a majority ownership position in CANAL. CANAL would remain unchanged as a legal corporate entity and would continue to be responsible for assets and liabilities currently on its balance sheet.

- **OPTION 2: SALE OF NEW SHARES**

Under Option 2, a private investor would acquire majority control of CANAL by purchasing new shares of the company. For example, if CANAL's current shares have a value of US\$ 10 million, then a private investor could acquire a majority interest by investing \$US 10.1 million in new shares of the company. The total value of the new and existing shares would be \$20.1 million so the investor's \$10.1 million would represent just over 50% of the total. Alternatively, the investor could acquire majority control through a combination of purchasing GON shares and new shares.

The principal advantage of Option 2 over Option 1 is that private investors may be more interested in participating if their funds are contributed to 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 enterprise is successful. Given CANAL's high capital investment requirements, private investors may prefer this option.

The principal disadvantages of Option 2 compared to Option 1 are that the Government would continue to hold a minority equity interest in CANAL after privatization, and the Government may receive less cash up front as a result.

- **OPTION 3: MANAGEMENT CONTRACT OR LEASE**

Under Option 3, management of CANAL would be leased or contracted out to a private firm with expertise in cement enterprise operations. Ownership of CANAL would remain with its current shareholders. CANAL could be sold to the private sector several years later after operations, management, and financial performance had been improved, and the private manager had developed greater experience and confidence in the Nicaraguan market.

The principal advantage of Option 3 is that a private investor may have a stronger interest in managing CANAL under contract for several years prior to making a substantial financial commitment to the company. However, ownership of CANAL would remain with the GON, the Government would continue to be responsible for capital investments, and cash proceeds from privatization would be delayed.

3. Recommended Strategy

PW/IPG recommends 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 CANAL through a sale of existing GON shares, a new share issue, or a combination of the two (Options 1 or 2). These options would attract private capital and technical expertise to the enterprise without delaying the transfer of ownership to the private sector.
2. If private investment proves infeasible, solicit a private manager for a management contract or lease (Option 3). Management compensation should be closely tied to profitability. This option would at least bring improved management to the enterprise in a relatively short time period and prepare the enterprise for future privatization.

4. Outstanding Issues

Several outstanding issues should be resolved as part of the privatization process:

- **Share ownership.** PW/IPG recommends calling a shareholders' meeting and reissuing CANAL shares in order to clarify what portion of GON share ownership is disputed. The undisputed portion, which is likely to represent a clear majority, could then be sold to private investors.
- **Employee participation.** The form of the 25% worker participation in CANAL will have to be resolved.
- **Land ownership.** The Nicaraguan army (EPS) claims ownership of the land at CANAL's administrative headquarters in Managua, although CANAL management expects this dispute to be settled soon in CANAL's favor. In addition, official Catastro records list CANAL land ownership at 419 manzanas while CANAL claims to own 707 manzanas.
- **Treatment of CANAL's financial investments in other companies.** PW/IPG recommends that CANAL retain ownership of Mayco due to the interdependency of these two companies. If Mayco is privatized separately, then CANAL's Exmisa facilities will need to have sufficient access to the premises shared with Mayco and enough land to accommodate future expansion plans.
- **Environmental standards.** PW/IPG recommends that investors be provided with a clear assessment of the Government's expectations for addressing dust emissions from the plant.
- **Government pricing and import tariff policies.** PW/IPG recommends that the Government of Nicaragua remove cement price restrictions and import tariffs prior to privatization. If this is not possible then the Government may want to guarantee that the current dollar-denominated cement price will not be reduced over a specified time period, such as ten years. Such assurances concerning Government pricing policy would increase interest among potential investors and result in a higher sales price for CANAL shares.

5. Privatization Action Plan

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

1. PW/IPG continues to identify potential investors and send them a preliminary announcement of the sale of CANAL along with a company profile.

2. **CORNAP acts to resolve the outstanding issues listed above with PW/IPG assistance.**
3. **PW/IPG prepares a prospectus and bidding documents, and mails copies to interested parties. PW/IPG recommends that the bidding period be a minimum of two months in order to provide potential investors with enough time to thoroughly evaluate CANAL and the prospects for the Nicaraguan industry.**
4. **CORNAP develops privatization selection criteria.**
5. **CORNAP places announcements internationally for the sale of CANAL.**
6. **PW/IPG contacts prospective bidders and assists them in their evaluation of CANAL.**
7. **CORNAP forms evaluation committee and reviews bids. PW/IPG provides assistance on request to analyze bids.**
8. **CORNAP initiates negotiations with the most attractive bidder(s).**

I. INTRODUCTION

Price Waterhouse (PW) has been contracted by the United States Agency for International Development (USAID) to assist the Nicaraguan Government in the privatization of Compañía Nacional Productora de Cemento (CANAL), which is administered by the Corporación Industrial del Pueblo (COIP), under the Corporaciones Nacionales del Sector Público (CORNAP).

The Price Waterhouse International Privatization Group (PW/IPG) has undertaken the preparation of this diagnostic, valuation and privatization strategy report for CANAL and thereafter will assist CORNAP in its promotion and eventual divestiture. Technical evaluations of the CANAL operations were performed by an industry expert contracted by PW/IPG. A technical team from PW/IPG visited the plant and headquarters and met with appropriate officials representing its management, as well as COIP/CORNAP in April 1993.

Readers of the report should consider that statements, estimates, and projections provided by CANAL reflect assumptions concerning future results that may or may not prove to be correct.

The contents of this report are the result of our inspections of the cement company; review of company documents and industry statistics; numerous and extensive interviews with the CANAL management, factory and administrative personnel; COIP personnel; CORNAP management and others. PW/IPG would like to thank all those who assisted us during the project.

II. WORLD CEMENT INDUSTRY

A. World Production

World cement production has increased in recent years due to a significant amount of cement plant modernization and expansion. World cement production was 1,365,000 metric tons in 1992, 4% above its 1991 level. China remains the largest producer with 22.1% of world production. The Commonwealth of Independent States (CIS) accounts for 10%, Japan has 7%, and the U.S. has 6%. China continues with new plant construction, modernization and expansion projects, as well as joint ventures with Japanese cement producers. Countries with excess capacity continue to export their cement. In 1990, the U.S. imported cement from at least 28 countries.

WORLD PRODUCTION AND CAPACITY (In 000s of metric tons)				
Country	Cement Production		Clinker Capacity	
	1991	1992 e	1991	1992 e
U.S.A. (& Puerto Rico)	73,000	78,000	82,000	83,000
China	273,000	295,000	280,000	290,000
France	29,000	30,000	46,000	30,000
Germany	46,000	47,000	45,000	45,000
India	55,000	59,000	60,000	70,000
Italy	44,000	45,000	97,000	98,000
Japan	98,000	102,000	99,000	104,000
Korea, Republic of	37,000	40,000	38,000	42,000
CIS	140,000	143,000	155,000	156,000
Other Countries	513,000	526,000	530,000	640,000
World Total	1,308,000	1,365,000	1,432,000	1,558,000
e= estimated				

Source: Annual Survey, Bureau of Mines, U.S. Government, January 1993

LATIN AMERICAN CEMENT PRODUCTION, EXPORTS AND IMPORTS
(in 000s of metric tons)

Country	1989			1990		
	Production	Exports	Imports	Production	Exports	Imports
Brazil	25,920	65	64	25,848	54	63
Mexico	23,409	4,158		23,854	2,594	
Colombia	6,600	1,235		6,842	1,350	
Venezuela	5,617	496		5,948	2,445	
Argentina	4,449	245		3,612	210	
Ecuador	1,998		330	2,185		365
Peru	2,146			2,185	10	30
Chile	2,007	47	48	2,050	50	50
Bolivia	512		1	522		37
Guatemala	1,873		14	1,889		10
Costa Rica	610	25	1	620	30	
Honduras	618	68		619	50	
El Salvador	577		2	500		2
Nicaragua	300			300		
Panama	250	1	4	300	1	4
L. American Total	76,866	6,340	464	77,274	6,794	561

Source: World Statistical Review, U.S. CEMENT BUREAU.

The largest cement producing countries in Latin America are Brazil, Mexico, Colombia and Venezuela. Mexico, one of the largest cement producers in the region, continues to increase production capacity as a result of modernization and expansion projects. Mexico's largest cement producer, CEMEX, plans to increase its productive capacity by 35% by the end of 1994. Central America's production is relatively small, approximately 5% of total production in Latin America. Only two Central American countries, Honduras and Costa Rica, had significant exports in 1990.

B. Industry Structure

Cement plants generally serve their regional markets because the cost of transporting cement is extremely high relative to its value. However, cement plants usually require high capacity in order to cover large capital costs and produce at a competitive price. A minimum efficient plant size is considered to be 500,000 tons per year. The need to maintain economies of scale often results in large scale producers with supply in excess of the regional market who ship cement to more remote markets. The high transportation costs of shipping cement can be somewhat offset by large scale production, improved plant efficiency, and the use of water transport in lieu of land transportation. In addition, cement producers often "dump" their production at prices close to the marginal cost of production in order to maintain high plant capacity utilization.

The two main technologies utilized to manufacture cement are the wet-process and the newer dry-process. The wet-process uses water in the grinding and blending operations, and generally results in higher operating costs compared to the dry-process. The most important difference between the two technologies is that the dry process can improve energy efficiency significantly, thus reducing costs.

Cement production costs are largely determined by plant size, plant age, type of production process used, and proximity and price of raw materials and labor. Energy expenses comprise the largest portion of production expenses, representing up to 40% of the total cost for dry process plants. Undertaking modernization projects (e.g. wet to dry process) can not only conserve energy but also increase production capacity. However, the lack of investment capital for capacity modernization and expansion or new plant construction is a major dilemma facing many of the smaller producers in the cement industry. Decreased margins due to extreme competition among producers and importers also limits the investment funds needed for capital improvement and expansion.

Cement prices are influenced by a variety of complex factors, including production costs, transportation costs, tariffs, and regional demand. The factors affecting regional demand, such as economic growth, government infrastructure spending, and regional residential and non-residential construction trends, have a major impact on local prices. Because cement markets are segmented geographically, prices may differ significantly across regions. For example, low supply during a period of increased infrastructure spending would result in higher prices and be partially offset by imports. Excess supply in a region would cause lower prices and be partially offset by exports.

Cyclical demand, high fixed costs, and poor financial performance in the 1980s has encouraged industry-wide consolidation. Acquisitions worldwide have helped diversify earnings sources, provide access to new markets, and improve profitability. For

example, during the past few years there have been numerous joint ventures between foreign and U.S. producers. Foreign investors owned an estimated 70% of the installed capacity in the U.S. in 1991.

Several of the largest producers in Europe have acquired many smaller plants worldwide and expanded into other regions of the world. For example, Financiera & Minera of Spain has been restructured to channel investment to Southern Europe and Latin America for its parent company, Ciments Francais. In addition, Cemex of Mexico acquired two leading cement producers in Spain to offset the impact of regional cycles. Cemex's presence in many foreign markets allows it to balance its available supply with the demand across several regional markets, thereby reducing transportation costs and delivery times.

C. World Trade

In general, cement markets have been local as a result of the high costs of transportation. However, with increased large scale production, automated shipping barges, and distribution terminals many producers have been able to expand their market territory. For example, low-priced cement was imported from Canada, Mexico, and Spain into U.S. markets throughout the 1980s. However, this trade pattern has shifted because of increased demand within exporting countries and declining demand in certain U.S. markets. In 1991, there was a 16% decline in imports in the U.S.

Trade barriers such as tariffs and anti-dumping restrictions have been utilized worldwide to protect domestic markets. However, worldwide industry consolidation and the need to sell excess capacity have resulted in increased foreign trade of cement.

D. World Prices

Cement prices can vary substantially because of local supply and demand factors, proximity to imports, trade policies, relative energy costs and plant efficiencies, and suppliers' market share strategies. For example, low-cost imports during the 1980s have helped keep prices down in the U.S. However, cement prices could increase due to a recent restriction on cement imports. Recent anti-dumping duties imposed on Mexico and Japan by the U.S. International Trade Commission could dramatically impact the pricing structure of cement in the U.S.

Following is a sample price list for Central America and the United States. The price of cement in Nicaragua is relatively high because CANAL uses an inefficient wet process plant and must pay a price for bunker fuel which is the largest single operating cost.

SAMPLE CEMENT PRICES (per ton in bags, in US\$ w/taxes)	
	1991
U.S.*	62.10
El Salvador	47.38
Honduras	47.53
Nicaragua	64.71
Costa Rica	70.63

Source: Compañía Nacional Productora de Cemento
 * U.S. Bureau of Mines, April 1992 average bulk price
 (prices ranged from \$46 in Texas to \$76 in Michigan)

The June, 1993 bulk price in the U.S. ranged across regions from \$48 to \$85.20 and averaged \$63.78

E. Industry Outlook

Modern, efficient production and high capacity plants that allow producers to spread their high fixed costs are becoming requirements in the current competitive market. The necessity of maintaining economies of scale has impelled the industry to undergo a consolidation process. This will allow producers to diversify their earnings sources, provide them with access to new markets, and minimize the effect of local economic downturns. Thus, the leading country producers continue to go through a wave of modernization and expansion projects in order to increase efficiency and capacity.

III. NICARAGUAN INDUSTRY

A. Industry Structure

Compañía Nacional Productora de Cemento (CANAL) is the only cement company in Nicaragua. Current demand for cement in Nicaragua, based on CANAL's 1992/93 sales, is estimated as 278,489 tons per year, and is probably too low to support more than one local producer given the large economies of scale in cement production. The minimum competitive plant size is considered to be 500,000 tons per year. Nicaragua has not imported significant amounts of cement because CANAL has generally been able to satisfy domestic demand and because of the substantial natural and government imposed barriers to imports.

As discussed in the previous section, cement is extremely heavy relative to its price and is therefore very costly to transport over long distances. Thus, intra-regional transportation costs form a natural barrier to cement imports. Following is a sample list of intra-regional commercial transportation prices by shipment weight.

INTRA-REGIONAL TRANSPORTATION COSTS (by truck to Managua, Nicaragua)		
Location	Cost per 20 tons	Cost per ton
San José, Costa Rica	US\$700	US\$35
Tegucigalpa, Honduras	650	32.50
San Pedro Sula, Honduras	950	47.50
San Salvador, El Salvador	900	45
Guatemala City, Guatemala	1,300	65

Source: FETRACANIC, Nicaragua

The land transportation costs above generally make exporting to Nicaragua prohibitively expensive given that the current sales price of cement in Nicaragua is \$69 per ton. The INCSA cement plant in Costa Rica, however, is located near the southern border of Nicaragua and may be able to ship cement to Managua at a competitive price. In addition, exporters could absorb the transportation costs and remain competitive if they are willing to "dump" their excess capacity on the Nicaraguan market at a below market price.

In addition to these natural barriers, cement remains a protected industry in Nicaragua, with relatively high import duties. Cement imports are presently taxed 20% (Derecho Arrancelario de Importación 15%, and Timbre of 5%, according to MEDE, Ministry of

Economy and Development, Department of Economic Integration). Despite the recent signing of the regional market agreement between Nicaragua, Honduras, Guatemala, and El Salvador, cement is expected to remain a protected product.

As a result of these natural and government-imposed import barriers, a Costa Rican or Honduran competitor would have to pay as much as 60% of the Nicaraguan sales price in tariffs and transport costs to export to the Nicaraguan market. Consequently, cement imports into the country are extremely low.

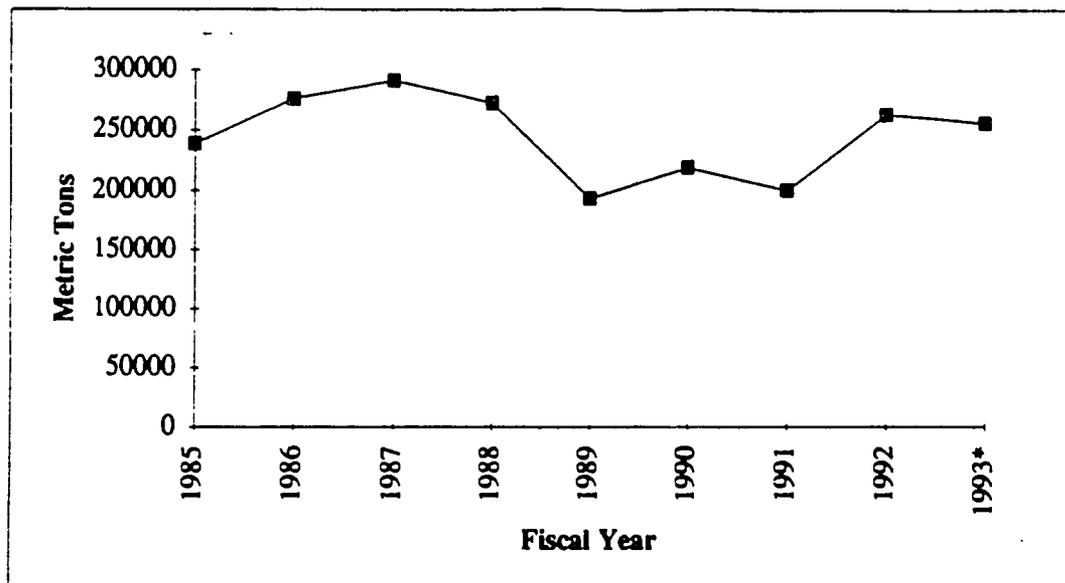
B. Production and Capacity

CANAL has 5 wet-process kilns, of which only 4 are presently in use. Total production is 1000 tons/day or approximately 315,000 tons of Portland cement per year.

CANAL PRODUCTION DATA	
Daily Production of Clinker (100%)	1,000 tons/day
Clinker in Cement	95%
Annual Clinker Production	300,000 tons/year
Annual Cement Production	315,000 tons/year

Source: Compañía Nacional Productora de Cemento
CANAL

Annual Sales of Cement



* Note: 1993 sales are for 11 months ending in May

C. Prices and Pricing Policy

The sale price of cement is determined by the Ministry of Economy and Development (MEDE) in consultation with CANAL. The price is determined based on CANAL's estimated production and financing costs, plus a profit margin of 5-10%. The regulation of both electricity and bunker prices in Nicaragua affects a large portion of CANAL's production costs.

Due to changes in government policy, there have been three modifications in the price of cement over the past few years. The most recent price change was in January 1993 as a result of the devaluation of the Cordoba from 5 to US\$1 to 6 to US\$1.

PRICE CHANGES 1991-1993 (in Cordobas per ton)				
	San Rafael del Sur		Exmisa	
	Bag	Bulk	Bag	Bulk
March 1991	13.75	12.60	15.30	14.15
September 1991	14.25	13.10	15.75	14.60
March 1992	13.70	12.60	14.50	13.40
October 1992	15.00	14.00	15.80	14.60
January 1993	17.60	16.50	18.60	17.50

Source: Compañía Nacional Productora de Cemento
Prices include a .50 cordoba per bag tax and a 2% tax on sales at San Rafael.

The weighted average price of CANAL sales, based on sales volumes at each price through April of fiscal year 1992/93, is 17.69 cordobas per bag or US\$ 69.37 per metric ton.

D. Distribution

The majority of cement sales is transported by private individuals from San Rafael and Exmisa. These individual transporters utilize their own vehicles to move bagged cement and are the final destination point for the billing system. Once the cement is sold to these transporters, there is no official tracking mechanism to determine the end-user. CANAL only receives "word of mouth" information from these individual

transporters on the final destination and use of the cement. This system inhibits the company's ability to determine who is the final customer and how the cement is used.

Only a small portion of cement sales is dispersed through construction material distributors and small stores. The 8 regional distributors (Estelí, Matagalpa, Chimantego, Masaya, León, Ocotal, Juigalpa, and Managua) are presently being integrated into a new credit system, which will provide CANAL with information regarding cement destination and use. There are also some individual transporters who are being extended credit. Once this system is fully developed, it could provide the company with valuable final customer and cement use information, thus allowing CANAL to undertake marketing and promotion activities.

E. Major Customers

The following table represents the breakdown of sales by customer estimated through informal information retained by CANAL. It indicates that Government and Military cement consumption has decreased since 1988 while consumption by small enterprises, distributors, and individuals has increased.

Cement Consumption in Nicaragua

	May-88	1990	1991	1992
Government	34%	18%	15%	10%
Military	5%	5%	3.5%	2%
Industrial Customers	16%	14%	12%	8%
Small Enterprises	15%	18%	20%	25%
Others in Managua *	9%	25%	27.5%	30%
Others in Region *	21%	20%	22%	25%

* Note: other customers include small dealers, distributors, producers and private persons.

Source: Compañía Nacional Productora de Cemento

As seen on the following page, the Pacific region has the highest cement consumption level, with Managua being the central point for sales.

SALES BREAKDOWN BY REGION	
Area 1 Esteli, Ocotal	3.00%
Area 2 Leon, Chinandega	3.05%
Area 3 Managua	82.00%
Area 4 Masaya, Carazo, Rivas	3.25%
Area 5 Juigalpa, Boaco	2.85%
Area 6 Matagalpa, Jinotega	5.55%
Area 7 Others	.30%
Total	100%

Source: Compañía Nacional Productora de Cemento

F. Comparison with Central American Industry

Central American production is relatively low compared to total production in Latin America. These countries have generally been supplying their indigenous demand, exporting only a small portion to neighboring countries. As seen in the table on the following page, Nicaragua's installed capacity is the second lowest, just ahead of Cementos Maya of El Salvador. However, CANAL ranks about average in terms of utilized capacity. In comparison, cement plants in countries such as Honduras and Costa Rica, have the highest capacities, allowing them to generate excess supply for limited export (i.e. 5% of total production is exported at Incsa in Costa Rica).

Nicaragua's high cement prices relative to the region makes competitive exports within Central America unrealistic at present. CANAL's price is substantially higher than the price in Honduras, El Salvador and Guatemala, and reflects CANAL's high costs due to inefficient wet-process production and high energy prices.

As the level of real GDP per capita in Central America begins to recover in the 1990s and as countries move towards more stable exchange rates, it is expected that the level of intraregional trade will increase. The new regional integration program (Central American Common Market, CEC) created in 1990 serves as a catalyst towards improved regional trade. This regional integration effort attempts to undertake a difficult and lengthy task of accomplishing general tariff reductions on imports and creating a new common external tariff. The impact of these reductions will vary from sector to sector.

CENTRAL AMERICAN CEMENT PRODUCERS

	NICARAGUA	GUATEMALA	EL SALVADOR		HONDURAS		COSTA RICA		PANAMA
	CANAL	Cementos Progreso	Cementos Maya	Cementos El Salvador	Incehsa	Cementos del Norte	Cempasa	Incsa	Cementos Panama
Installed Capacity (clinker; cement)	300,000 * 315,000 *	1,100,000 1,683,000	240,000 365,000	624,150 734,294	380,000 440,000	657,000 740,000	410,000 707,000	443,475 583,416	325,000 470,982
Sales 1992 (cement)	262,976 *	980,000	188,000	526,864	430,000	300,000	310,000	431,000	240,000
Exports 1992	0	0	1,500	3,962	13,000	30,000	45	17,139	0
Utilized Capacity	83%	58%	75%	71.40%	95.55%	44%	72%	79.7%	51%
Cost of Bunker US\$/GJ	4.7	4.2	2.9	2.9	3.8	2.8	4.3	4.2	3.3
Price per Ton in Bag with taxes US\$/Tm	64.71	61.54	47.38	47.47	47.53	46.15	70.63	70.63	105.12
Taxes %	3.63%	7%	.4%	.04%	1.24%	1.24%	17.59%	17.59%	5%
Process Technology	Wet	Dry	Dry	Dry and Wet	Dry	Dry	Dry	Dry	Dry

Source: Meeting of Cement Producers, 1992

* Information provided by CANAL management

In spite of this movement towards regional free trade, the weaker industrial countries such as Nicaragua may continue to protect various industries. In Nicaragua, there are presently three general product groups within the tariff structure: Group one which includes products whose tariffs have already been reduced, Group Two which includes products in the process of receiving tariff reduction, and Group Three which is a protected product group that will not face tariff reductions in the foreseeable future. Cement falls into Group Three, which presently maintains a total tariff of 20%.

G. Market Outlook

Economic output in Nicaragua has declined substantially since 1979, with a negative economic growth rate from 1984 to 1991. GDP in 1990 had fallen to the level of 1965 and was below its 1950 level on a per-capita basis. Market demand for cement, which is tied closely to overall economic output, has also been depressed during this period.

Three factors could potentially cause a substantial increase in the demand for cement through the end of the decade: overall economic growth, increased infrastructure spending, and improved marketing and distribution at CANAL to reach currently unserved markets.

Economic Growth Potential

After a decade of economic deterioration, Nicaragua has embarked upon a program of economic recovery. The new government's efforts to correct the country's large internal and external imbalances during 1990 were largely unsuccessful. However, in March 1991 the government launched an effective stabilization program, with a dramatic lowering of inflation from 13,490% to 775%, a real exchange rate depreciation of 34%, and only a slight decline in the GDP. In 1992, Nicaragua experienced its first positive GDP growth since 1984 of 8% and a 4% inflation rate. An improvement in the economy to near pre-war levels over the next seven years would provide a substantial boost to the cement industry. Following are projections of economic growth in Nicaragua by the WEFA Group, an econometric research firm based in the United States.

WEFA Group Economic Growth Rate Projections	
Year	Economic Growth Rate
1993	3.5%
1994	4%
1995	4.7%
1996	5%

Infrastructure Spending

After a decade of civil strife, Nicaragua undoubtedly needs to rebuild its infrastructure, including housing and non-residential buildings. The large housing deficit of at least 300,000 units, according to the 1991 Matconsult report, exemplifies the importance of rebuilding the country. Rebuilding the nation's infrastructure will depend upon the availability of external funding, which has been limited until recently. Donors have recently expressed substantial support for Nicaragua through bilateral contributions, arrears clearance, balance of payments support, sectoral programs, and co-financing initiatives. In the Nicaragua public investment program for 1993, 71% of the funds are comprised of foreign aid (53% in donations and 47% in loans). Approximately 14% of this funding is allocated to construction, transportation and housing. Increased infrastructure spending would have an impact on cement demand.

CANAL Marketing and Promotion

CANAL's poor distribution system and lack of marketing has impeded the company from reaching regions outside of Managua and other market segments. Comparatively high prices and a lack of promotional programs (e.g. quantity discounts) have also inhibited sales. Improvements in these areas could allow the company to reach the latent demand in the country and result in substantial increases in sales.

Various cement market projections have been performed, most recently in 1991 by Matconsult, a government company providing consulting services to CANAL. The Matconsult study concluded that there exists significant latent demand for cement which can not be satisfied by CANAL's production capacity. The Matconsult demand projection is based on expected population levels, housing demand, and non-residential construction in Nicaragua.

The Matconsult projections do not reflect at least two important factors, however: the uncertainty of substantial economic growth and the lack of funding to rebuild both residential and non-residential infrastructure. Consideration of these important factors would likely reduce Matconsult's optimistic demand projections.

POTENTIAL DEMAND	
Year	Quantity Projected (in 000s tons)
1991	564.3
1992	581.7
1993	599.8
1994	618.5
1995	637.8
1996	657.8
1997	678.4
1998	699.8
1999	721.8
2000	744.6

Source: Matconsult report, 1991

An alternative method of estimating future demand is to base cement demand projections on future economic growth projections. As the Nicaraguan economy grows, the construction sector will expand and cement demand will grow, as well. As an industry rule of thumb, cement demand generally grows at twice the rate of economic growth in developing countries.

Thus, the following scenarios were developed to estimate future cement demand in Nicaragua:

Scenario One assumes that the Nicaraguan economy and therefore the cement market does not grow at all over the next seven years. Future demand is project at CANAL's fiscal year 1992/93 level with no growth.

Scenario Two assumes that CANAL's 1992/93 sales grow at an annual rate equal to the overall growth rate of the Nicaraguan economy as projected by the WEFA Group in September, 1992. (The WEFA Group projection is through 1996 only. Scenario two assumes that the 5% growth rate continues to the year 2000).

Scenario Three assumes that CANAL's 1992/93 sales grow at an annual rate equal to twice the overall growth rate of the Nicaraguan economy as projected by the WEFA

Group in September, 1992. (The WEFA Group projection is through 1996 only. Scenario two assumes that the 5% growth rate continues to the year 2000).

Scenario Four is the demand forecast estimated by Matconsult in 1991, based on population growth, housing demand, and non-residential construction.

H. Future Nicaraguan Capacity Requirements

The actual Portland cement capacity of the existing plant is approximately 315,000 tons/year. CANAL capacity could be expanded to 415,00 tons per year with the introduction of various operating improvements, as discussed in the following section.

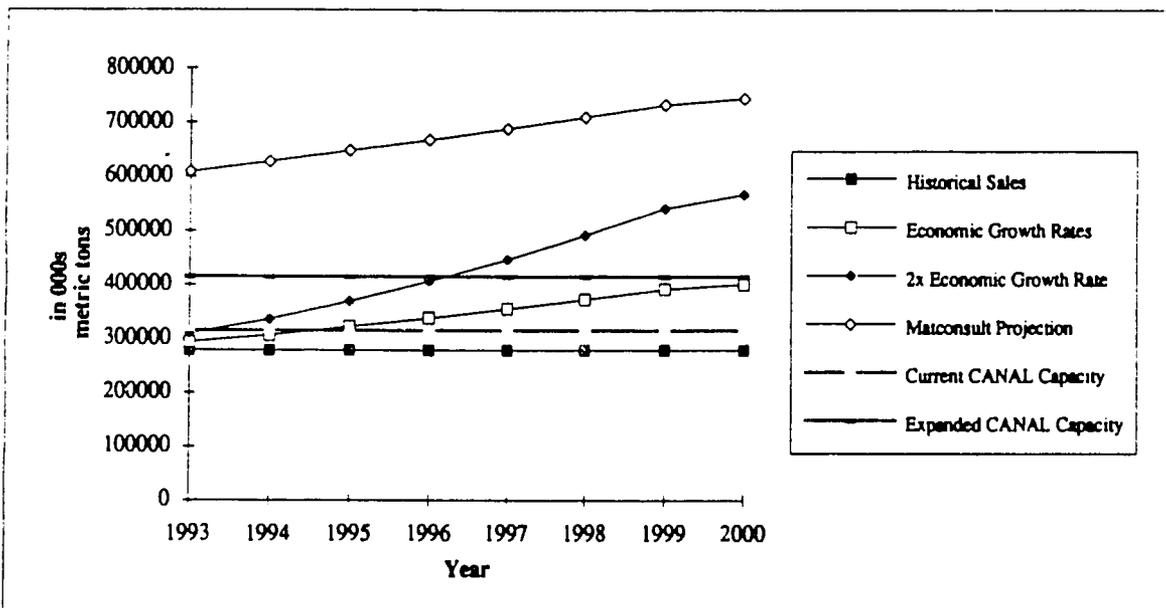
Under the Scenario 2 projections, the market will reach CANAL's existing capacity by 1995 and reach the expanded capacity by the end of the decade. Under Scenario 3, the market will reach the expanded capacity by 1996. Under Scenario 4, total demand, including latent demand, already exceeds CANAL's expanded capacity. In addition, continuing deterioration of CANAL's plant and equipment will reduce production capabilities and make it more difficult for CANAL to satisfy the Nicaraguan market.

The market demand projections demonstrate the need for an additional supply of cement in Nicaragua. A new high capacity dry-process cement plant could be developed in Nicaragua before the end of the decade in order to meet market demand. Alternatively, cement or clinker could be imported into Nicaragua from neighboring countries.

CEMENT DEMAND PROJECTIONS (in metric tons)				
	SCENARIO ONE	SCENARIO TWO	SCENARIO THREE	SCENARIO FOUR
YEAR	Constant 1992/93 Sales	Sales Growth Equal to Economic Growth Rate	Sales Growth Equal to Twice Economic Growth Rate	Matconsult Projections
1993/94	278,489	294,001	309,903	609,158
1994/95	278,489	307,260	336,948	628,150
1995/96	278,489	322,623	369,677	647,794
1996/97	278,489	338,754	406,645	668,104
1997/98	278,489	355,692	447,309	689,089
1998/99	278,489	373,476	492,040	710,775
1999/2000	278,489	392,150	541,244	733,208
2000/01	278,489	401,715	567,017	744,620

Note: Matconsult projections have been adjusted from calendar years to fiscal years.

Cement Demand Projection



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IV. CANAL OPERATIONS

A. Company History and Management

Compañía Nacional Productora de Cemento (CANAL), the only cement company in Nicaragua, began operations in 1942. The factory at San Rafael del Sur, 60 km Southwest of Managua, was built in the 1940s by F.L. Smidth & Co. In the 1970s a mill (Exmisa) was established in the city of Managua. Clinker is produced in San Rafael with a yearly capacity of 300,000 tons. The Exmisa mill was originally built to produce Puzzolanic cement, however, at present it is only used to grind 10-15% of the clinker. This portion of clinker is used by Mayco, a subsidiary company of CANAL which produces cement blocks in Managua.

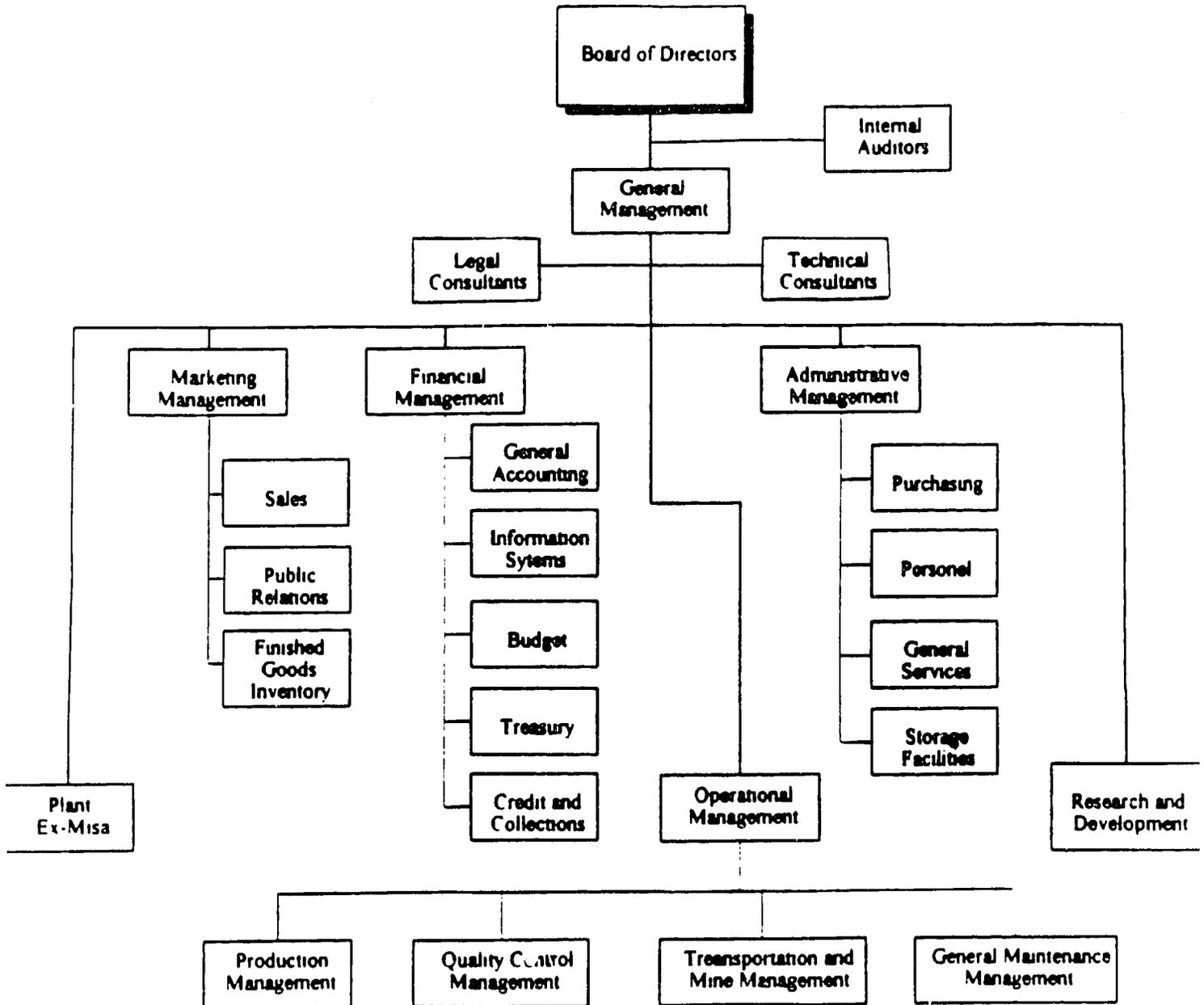
The total staff is comprised of approximately 453 employees. The staff generally has extensive experience at the plant and operates the plant well. Following is a departmental breakdown of staff:

EMPLOYEE BREAKDOWN	
Board of Directors	2
General Management	4
Technical Assistant	1
Marketing	7
Financial Management	13
Administration and Sales	105
Production	97
Quality Control	27
Transport and Mines	44
General Maintenance	138
Reforestation	1
Exmisa	9
Central	5
TOTAL	453

Source: Compañía Nacional Productora de Cemento

The Compañía Nacional Productora de Cemento

Organizational Chart



B. Description of Facilities

1. San Rafael Plant

The plant at San Rafael is a wet process cement plant, consisting of 4 operating cement kilns of a total clinker production capacity of 1000 tons/day. Reported plant capacity is 315,000 tons of ordinary Portland cement per year. Specifications of its main equipment are shown in Table 1. The plant layout is indicated in Table 2 and its flow chart in Table 3.

The plant reflects old technology, with the first kiln (now no longer in use) being built in 1941 and the last one (kiln 5) in 1973. Nevertheless, the plant is well maintained and reasonably clean. It is of simple and functional design and does not have any serious problems which could hamper its operation.

The size of the crushing, transport, storing, slurry grinding and mixing equipment for preparing the kiln feed material is well proportioned and is able to handle increased kiln outputs.

The kilns are fired with fuel oil supplied from the refinery at a government fixed price. Present loads of the kiln and running times are somewhat low. Moreover, heat consumption is high. Thus, there is leeway for increasing the plants clinker production capacity. In fact, clinker output of 340,000 tons/year and output of up to 360,000 tons/year should be attainable.

The kiln exhaust gases are not dedusted. Presently there are no regulations on dust emissions of cement plants in Nicaragua and there have not been any complaints from the neighborhood. However, we feel that dust filters will have to be installed in the long run, if the kilns are to be operated for more than 5 to 10 years.

San Rafael's cement grinding capacity is sufficient to grind ordinary Portland cement (at 2800-3000 blaine) from present kiln output, i.e. for grinding 315,000 tons type I cement annually from 300,000 tons of clinker.

For coping with kiln capacity increases and for manufacturing other cements (particularly pozzolanic cements) it is necessary to utilize the facilities at Exmisa.

TABLE 1

SPECIFICATION OF MAIN PLANT EQUIPMENT

Limestone Crushing

- Hammer crusher, 2*40 HP, 30 t/h
- Hammer crusher, 2*120 HP, 100 t/h

Limestone Store

- Low grade limestone: 6 000 t
- High grade limestone: 6 000 t

Slurry Grinding

- Three open circuit mills, each 700 HP, 35 t/h (dry product) at a fineness of 10 % R on 90 μ

Slurry Tanks

- Tank 1: 800 m³ - Tank 2: 1700 m³ - Tank 3: 3450 m³

Kilns

- Kiln 2: 2.4 m Θ * 68 m, 120 t/d, planetary cooler, heat consumption of 580 kcal/kg clinker
- Kiln 3: 2.4 m Θ * 80 m, 160 t/d, planetary cooler, heat consumption of 1650 kcal/kg clinker
- Kiln 4 and 5: each 3.3 m Θ * 98 m, 360 t/d, planetary cooler, heat consumption of 1470 kcal/kg clinker

Clinker Store

- Crane hall: 10 000 t

Cement Grinding

- Three open circuit mills, each 700 HP, 15 t/h at a fineness of 2800-3000 blaine (type I cement)

Cement Storage

- Four silos with a total capacity of 4500 tons

Cement Bagging and Bulk Loading

- two 12-spout bagging machines, each 1800 bags/h,
- one 100 t/h bulk loader

TABLE 2
PLANT LAYOUT

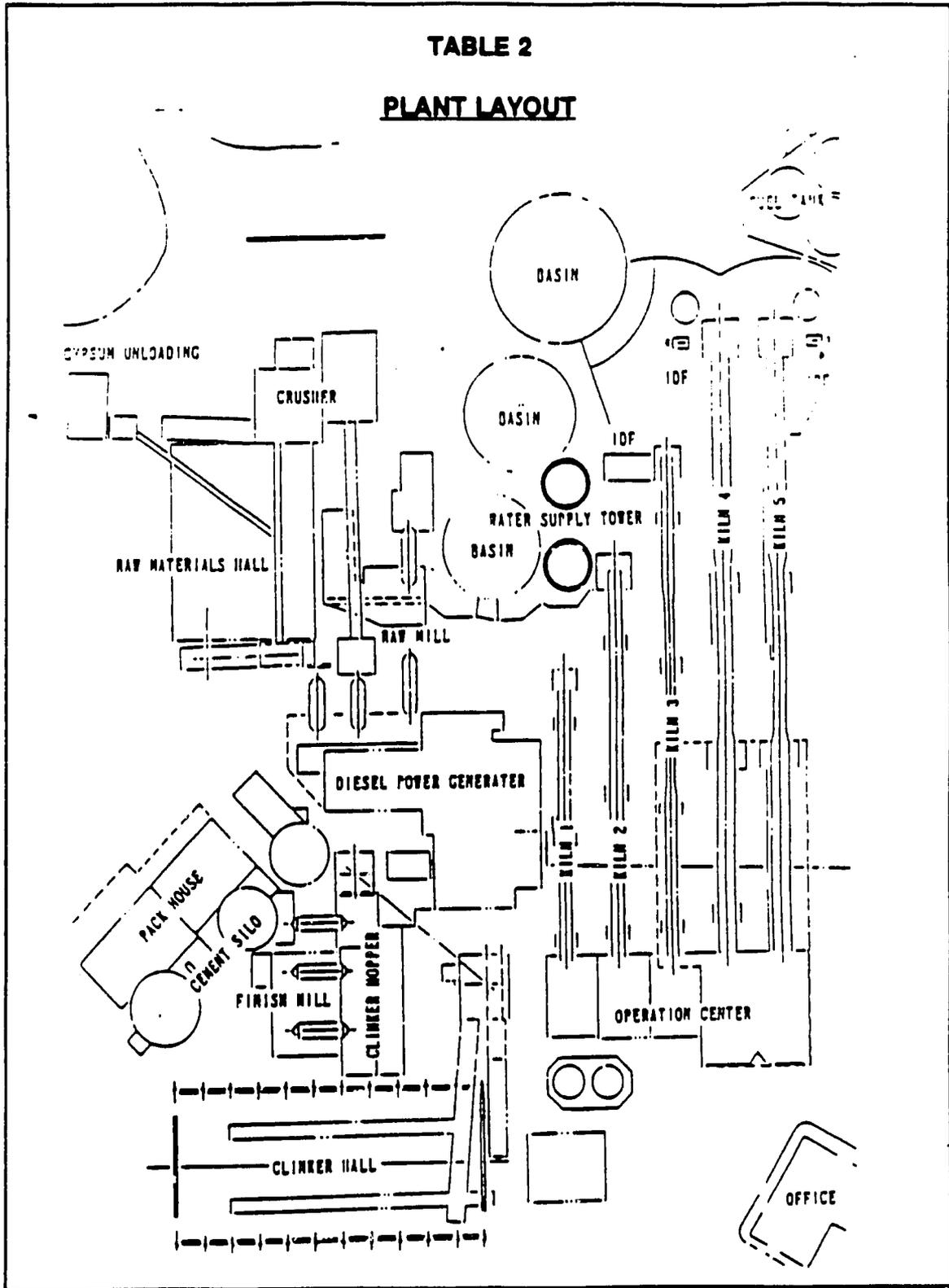
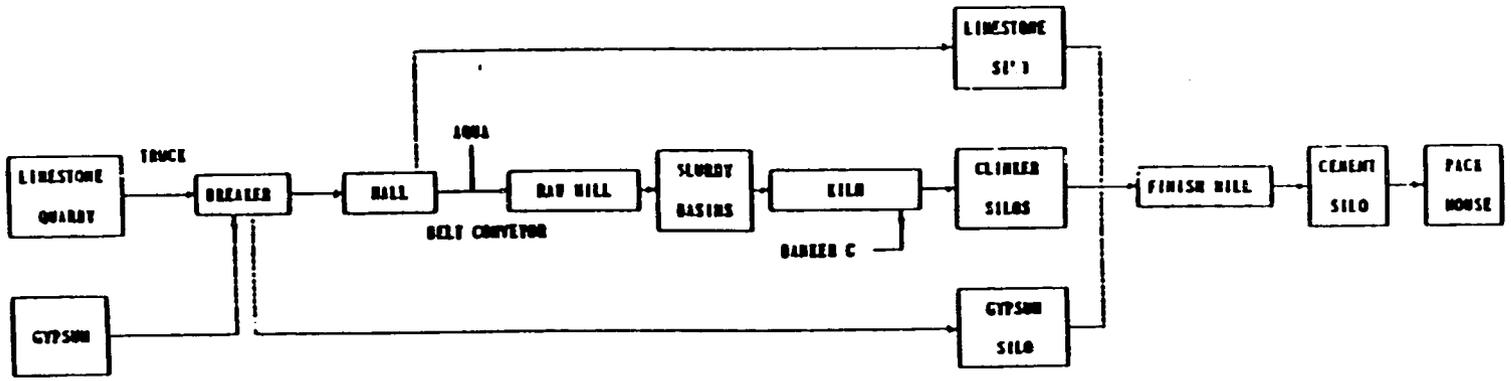


TABLE 3
FLOW CHART



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2. ExMisa

Exmisa is a cement grinding plant located on the premises of Mayco. It consists mainly of a raw material storage hall, two 800 ton clinker silos, a drier for pozzolana, three open circuit cement mills of 200 and 2*700 HP with total capacity for Type I cement of 32 tons/hour, two 1,300 ton cement silos and two 4-spout packers.

The mills and packers were brought from San Rafael, where they were not being utilized. The plant layout is not as well thought-out and generous as that of San Rafael nor the equipment as well maintained.

A rather small portion of total sales of the company is presently being dispatched from Exmisa. This is partially due to the pricing of the product ex-factory gate at both places and partly to the state of the equipment.

Presently, only ordinary Portland cement (ASTM type I) is being produced. It complies with the ASTM standards and is fairly homogeneous. Table 4 shows the compressive strength values of CANAL's type I cement over the last three years. Pozzolanic cement has been produced in the past as "low heat" cement for dam construction purposes. The production of pozzolanic cement has, however, been discontinued.

Exmisa is presently CANAL's best potential for decreasing production costs by manufacturing pozzolanic cements and increasing total output. In addition, it could provide further product diversification, such as dry mortars and eventually ready mix cement.

It has been CANAL's intention to manufacture a pozzolanic cement again with qualities similar to ordinary Portland cement, and market it for all-round purposes. Although good quality pozzolanas are reportedly readily available, the subject does not appear to receive much attention. There have not even been any preliminary investigative steps taken such as product testing or market analysis.

The manufacture of pozzolanic cements would probably require the conversion of at least one of the mills to a closed circuit mill. Moreover it would probably require the installation of packing facilities. In general it is considered imperative for Exmisa to ensure that enough suitable land is available for future expansion and diversification plans. In this respect and concerning the access to the site, it becomes very important to establish an agreement with Mayco.

TABLE 4**COMPRESSIVE STRENGTH OF CANAL'S TYPE I CEMENT (PSI)**

		1 day	3 days	7 days	28 days
1990	January	947	2166	3217	5404
	February	740	1972	2919	5213
	March	956	2081	3046	5447
	April	945	2066	3113	5200
	May	1070	2060	3000	5130
	June	1100	2360	3425	5630
	July	1010	2180	3180	5360
	August	1070	2100	3195	5400
	September	1090	2290	3290	5890
	October	1060	2210	3280	5730
	November	1097	2398	3560	5996
	December	959	2041	2943	5440
		Average	1003	2166	3161
1991	January	1170	2350	3290	5670
	February	995	2120	3100	5330
	March	930	1990	3000	5230
	April	1070	2200	3145	5275
	May	1180	2390	3400	5635
	June	1060	2220	3210	5575
	July	1020	2200	3220	5410
	August	1140	2430	3400	5840
	September	1050	2220	3290	5640
	October	806	2010	2975	5910
	November	910	2025	3010	5690
	December	845	1935	2980	5106
		Average	1016	2173	3173

TABLE 4 (continued)

COMPRESSIVE STRENGTH OF CANAL'S TYPE I CEMENT (PSI)

		1 day	3 days	7 days	28 days
1992	January	870	1975	2910	5360
	February	966	2203	3330	5785
	March	1125	2366	3484	5750
	April	1035	2415	3530	5990
	May	990	2166	3243	5640
	June	1024	2224	3406	5818
	July	1210	2613	3696	6086
	August	1210	2533	3635	5651
	September	1082	2529	3560	5803
	October	1038	2449	3513	5850
	November	1045	2418	3400	5868
	December	1148	2592	3743	5960
	Average	1061	2373	3454	5795
ASTM requirements		1800	2800

C. Quarry

1. Quarry Reserves

a. Limestone in Nicaragua

Manufacturing of cement mainly consists of burning a finely ground limestone mix to "cement clinker", and grinding the clinker with approximately 5% gypsum (and possible additives, like blast furnace slag or pozzolana) to a fine powder (cement).

The price/weight ratio of cement is extremely low. Thus minimization of transport costs/distances is of prime importance in the cement business. Cement plants are therefore usually located as close as possible to their markets.

On the other hand, limestone, the main ingredient for the manufacture of cement, has about 1.6 times the weight of cement clinker. In order to minimize transport costs, it becomes even more important to locate the plants as close as possible to secured

limestone deposits. In fact, cement plants are usually located adjacent to limestone deposits.

Limestone deposits far from the cement market are of practically no value if there are enough other deposits closer to the market. Therefore, those deposits closer to the market will usually be utilized. In Nicaragua, the limestone deposits around San Rafael are most probably the only deposits within a reasonable distance to the market and large enough to justify the manufacture of Portland cement.

Volcanic formations predominate in Western Nicaragua and the Andes, the inhabited cement consuming part of the country. Therefore, no limestone formations at economically extractable levels below surface are likely to be encountered there.

Only in the South-West of the country, close to the border of Costa Rica, are there some small marble (ball) formations of fairly pure limestone (up to 99 % CaCO_3). However, these marbles are quite scattered and difficult to detect. They are relatively small (the biggest so far encountered was 320,000 tons) and are neither adequate nor sufficient for the production of cement. They are presently being used for the small scale manufacture of lime for the adjacent sugar mills.

Huge limestone deposits are reportedly located in the area of Kuikuina, East of the Andes and approximately 480 km North-East of Managua (i.e. one day journey from the center of the cement market). Moreover, it is likely that further limestone deposits can be detected in the nearly uninhabited Eastern part of the country. However, any limestone East of the Andes is too far away from the market and will not present a short term competitive threat to the San Rafael region. CANAL is therefore in a very favorable position regarding its location.

2. San Rafael Deposits

The San Rafael del Sur and adjacent deposits all originate from the same formation. They consist of a horizontal layer of an average width of 4 meters (m) underlying volcanic sediments of varying thickness. About 10 m of volcanic material must be removed to reach the limestone at present quarry operations. However, for the purpose of quantifying reserves it is considered that removing up to 28 m is still economical.

Extensive drilling campaigns have been carried out by the company during the last few years. According to Mr. Hugo Moreno, CANAL's consulting geologist, 12 million tons of limestone reserves should be considered as 'proven' and an additional 10 million tons considered as "probable". The total amount of 22 million tons is sufficient for operating the plant at present output for an additional 44 years.

The bulk of the accessible deposits is within a distance of 4-5 km from the plant. There are also "probable" reserve deposits at distances of up to 10 km from the plant.

3. CANAL Extraction Rights

CANAL has mining rights to extract the limestone from the general area. However, only a small portion of the land pertaining to the investigated deposits is actually owned by CANAL (approximately 7%). The land of the area is generally held by many very small owners and is of very little agricultural value. If CANAL wishes to mine limestone from these lands, an extraction concession is required from the owner. Concessions for quarrying limestone are readily obtained at a rate of 6000 cordobas/manzana (which amounts to an average payment of 0.15 cordobas/ton of cement produced). CANAL has acquired many concessions, (for approximately 40% of the investigated deposits) and is in the process of acquiring additional rights (further 10%).

Opportunities for third parties to acquire deposits in the area are practically non-existent. In fact, total reserves do not justify the installation of a second plant and CANAL is in a very favorable position to handle threats from potential competitors.

On the other hand it must be stressed that quarrying is rather expensive in the San Rafael deposits and will become even more expensive as the layers of overburden increase and as the single quarries become smaller. The competitive threat from clinker/cement imports and the feasibility of installing a plant in the Eastern part of the country are thus expected to increase in the forthcoming years.

CANAL's present favorable competitive position, derived from the geography and the limestone geology of the country, is not impenetrable and will decrease over time.

D. Historical Operating Data and Operating Cost Analysis

Average heat consumption for clinker burning is rather high, approximately 1600 kcal/kg clinker (6700 kJ/kg clinker). Heat savings of 5% should therefore be attainable. Considering that fuel oil (bunker C) consumption comprises approximately 45% of total costs, such savings should result in total cost savings of nearly 2.5%.

Electric energy consumption is reportedly quite low, 70 - 80 kWh/ton of cement. Further energy savings are not expected.

As for the other inputs and consumptions, they are in the order of magnitude of comparable plants.

The San Rafael plant has about 453 employees, which appears to have a low output per employee. However, in view of the amount of equipment (6 mills, 4 kilns, etc.), its age which requires intensive maintenance, and that the majority of the maintenance is done internally (the quarry vehicle workshop alone employs 50 people), the number of employees is reasonable.

From an analysis of historic costs we conclude CANAL's present total costs to amount to 23.9 million cordobas/year of fixed costs (excluding depreciation) plus 240,70 cordobas/ton of variable costs. Details of the estimate are given in Table 5.

	Fixed Costs (million cordobas/year)	Variable Costs (cordobas/t)
Total labor costs	11.6	
Gypsum (5 % at 90 cord/t)		4.50
Explosives		1.60
Tires and chains		2.80
Fuel and lubricants		5.50
Electrical energy (max. demand + 92 kWh/t * 0.275 cord/kWh)	2.6	25.30
Bunker C (42 gall/t * 3.50 cord/gall)		147.-
Refractory bricks		1.70
Grinding media		2.10
Paper bags (1.005/0.0425 bags/t * 1.21 cord/bag)		28.60
Materials and supplies		16.10
Repair and maintenance	1.5	
Insurances	0.3	
Administration expenses	4.2	
Social expenses	3.7	
Selling expenses		5.50
Totals	23.9	240.70

1. Required Capital Costs

a. Investment Requirements

Repair requirements of quarry equipment (especially the trucks) already hamper a smooth quarry operation and lack of spare parts for plant equipment could cause harmfully long stoppages.

The following is an estimate of investment requirements for assuring continued operations for the forthcoming years:

QUARRY EQUIPMENT	
1 drill	US\$ 250,000
10 trucks (35 ton)	US\$ 3,300,000
1 dozer (D8 or similar)	US\$ 450,000
2 loaders (966/988)	US\$ 500,000

	US\$ 4,600, 000
PLANT SPARES AND IMMEDIATE REPAIRS	
1 mill spare drive	US\$ 80,000
1 ring and rollers for kiln 2	US\$ 160,000
2 ring and rollers for kilns 4 & 5	US\$ 600,000
2 elevator chains for clinker and cement transport	US\$ 90,000
- dedusting of packers	US\$ 100,000
- laboratory equipment	US\$ 70,000
- conclusion of rehabilitation of Exmisa (gear, packer, etc)	US\$ 1,000,000

	US\$ 2,100,000

b. Replacement Investments

Replacement investments have been kept at a minimum for many years. However, cement plants normally require approximately 1-2 US\$ per annual ton of cement

produced for replacement investments. Considering that there is no intention to maintain the heart of the plant for more than 10 years, we estimate a replacement investment of only US\$ 400,000 per year.

CANAL might be requested to counteract its dust emissions if it is intended to run the existing plant for more than 10 years. We presume that this would require an investment in excess of 3 million US\$ and that such a demand would jeopardize the plants survival. We believe that this would accelerate the decision to set up a new clinker plant and have thus disregarded any investment related to the dedusting of kiln exhaust gases.

Assuming that the quarry equipment is acquired within the next 5 years, the referred spare parts are acquired, and the immediate repairs carried out within the next two years, we propose the following investment schedule:

<u>Years</u>	<u>Investment</u> <u>(1000 cordobas/year)</u>
1	2,400
2-3	14,220
4-6	7,920
7-10	2,400

2. Potential Operating and Capital Improvements

Considering that the plant utilizes the wet process and consumes nearly double the amount of fuel (bunker C) of a modern dry process plant, the age of the plant (outdated technology), the difficulty of obtaining spare parts, and its pollution problem (dust emissions which will not be tolerable for much longer), it will become imperative to change or totally reshape at least its clinker manufacturing section from raw grinding to clinker burning in the near future.

The feasibility design of such a project and development of alternatives requires detailed planning and can by no means be analyzed within the scope of the present assignment. Judging from projects of similar size in the Central American region it can be presumed extremely difficult to develop an economically attractive project proposition.

In view of this, we suggest to ignore the potential present value of totally reshaping and extending the plant. The value of the company is not given by its future

prospects but nearly exclusively by its expected short term cash flows (of 5-10 years, in accordance with the state of the equipment).

On the other hand, there are certain improvements which could be carried out in the short run and which should be considered for evaluating the company. These improvements are described in the following section.

a. Operational Improvements

The main attainable improvement will be to reduce the heat consumption of the kilns and to increase their outputs and running times.

By decreasing the water content of the slurry, false air leakages and kiln stoppages, we believe it should be feasible to reduce the kilns heat consumption by approximately 5%. Variable costs would be reduced by 7.35 to 233.35 cordobas/ton of cement. Such reduction of heat consumption should allow kiln output to increase at the same rate, i.e. 5%.

Plant management is presently functioning on kiln running times of 300 d/a. Through improving maintenance planning and brick quality, it should be possible to attain running times of 320-330 d/a.

Total kiln capacity is presently 1000 tons/day, however it should be realistic to bring clinker output to 340,000 tons/year and cement output to 360,00/year. These above savings and output increases will not require any significant investments.

Clinker:

$$1000 * 1.05 * 325 = 340,000 \text{ tons/year}$$

Cement: total Portland cement output from 315,000 tons to

$$340\ 000 / 0.95 = 360,000 \text{ tons/year.}$$

There are also other cost saving potentials, related to consumables, repair work, maintenance planning, and other items. However we consider these to be rather minor and of a similar order of magnitude as the required additional know-how and management inputs.

b. Manufacture of Pozzolan Cement

We envisage that about one-third of CANAL's clinker output could be used within two years for making pozzolan cement (30% pozzolana). Thus, total cement production could then reach 415,000 tons/year.

$$240,000 + 120,000 * 0.95/0.65 = 415,000 \text{ tons/year}$$

Assuming that the pozzolana placed at Exmisa will cost 20 cordobas/ton, and that grinding pozzolan cement will require 55 kWh/ton as opposed to 35 kWh/ton for ordinary Portland cement (as it requires finer grinding), the result would be additional grinding costs (grinding media, spares, etc.) of 2 cordobas/ton. We would expect variable operating costs for pozzolan cement of 179.75 cordobas/ton and costs for the production mix of 210.75/ton. This will result in a total savings of 22.60 cordobas/ton of cement.

$$233.35*0.7 + 0.275(55 - 35*0.7) + 0.3*20 + 2 = 179.75 \text{ cordobas/ton}$$

and product mix costs of

$$(179.75*175 + 233.35*240)/415 = 210.75 \text{ /ton,}$$

Grinding 240,000 tons of ordinary Portland cement and 175,000 tons of pozzolan cement will require a cement grinding capacity of approximately 2730 kW.

$$(175000*55 + 240000*35)/330*0 = 2730 \text{ kW,}$$

i.e. 3640 HP, this almost exactly corresponds to the installed capacity of all the mills in San Rafael and Exmisa of 3700 HP.

Thus it would be imperative to keep all the mills in perfect running condition. Moreover, in order to reach the required fineness, it will probably be required to convert at least one of the Exmisa mills to a closed circuit mill by adding a separator.

Actual investment requirements for increasing the reliability of the mills and for finer grinding are not possible to assess without further investigations. For the purpose of the present evaluation, we recommend to plan for investment requirements of 10 million cordobas.

E. Environmental Aspects

Judging from the short plant visits, there appears to be only one major environmental issue concerning the plants-dust emissions. However, at this stage we can not state with certainty that there are no further environmental issues to be considered. The elaboration of an environmental audit report might thus be advisable.

The main plant dust emissions are from the kilns. Particles of material are thrown out of the kiln with the exhaust gases via the chimney. Such cement raw material dust is neither toxic nor dangerous, however, it is a nuisance to the people working at the factory and to the surrounding neighborhood.

Exhaust gases of cement kilns are usually dedusted. Either electrostatic precipitators or bag dust collectors are usually used.

Final dust loads permissible in exhaust gases of cement kilns (i.e. the specific amount of particles of the filtered gas) are nowadays regulated in most countries. While cement kilns were typically restricted to emission of 500 mg/Nm³ some 20 years ago, presently emissions are restricted to 100 mg/Nm³ in many countries (i.e. in Germany the limit value is 50 mg/Nm³).

Highly industrialized and densely populated countries tend to have very stringent dust emission standards. However, such regulations are usually more lenient in developing countries. Nicaragua has no dust emission regulations, which explains why the CANAL plant never conceived installing kiln exhaust gas filters.

World Bank and affiliated organizations are introducing emission standards worldwide. For cement kiln exhaust gases, they have specified an upper limit of 100 mg/Nm³. Cement groups operating worldwide are introducing similar internal standards. Holderbank, for instance, has a standard of 100 mg/Nm³ applicable to all new plants being installed, regardless of the country or regulations.

Investment costs for equipment and installations for dedusting cement kilns are usually very high, particularly if it was not planned for within the original project (due to problems with other installations which have to be removed). At CANAL, the required investment costs for filters for all four kilns would most probably jeopardize the financial feasibility of keeping the plant in operation.

However, in view of worldwide environmental standards it would be unreasonable to continue to operate the plant in its present state for more than a limited period of time (5 or 10 years maximum).

The present buyer of the plant should thus be encouraged (or even contractually committed) to analyze the situation and to develop an action plan to ameliorate plant dust emissions within a pre-established period of time. Such commitment will also encourage the buyer to accelerate the planning for the installation of a new clinker plant (therefore avoiding additional installations for the old wet process kilns).

Kiln exhaust gases are presently the major but not the only source of dust emissions within the plant. There are noticeable dust emissions at the storage halls, transport transfer points, cement mills and the packing plant. The cement mills have electrostatic precipitators and the packing machines bag filters. Nevertheless, dust emissions are considerable at the mills and around the packers. Better maintenance will most probably alleviate the situation, however, some reorganization may be required.

V. LEGAL ISSUES

There are several outstanding legal issues concerning CANAL's privatization which are discussed below. None of these issues is expected to impede the divestiture of at least a majority interest in CANAL.

A. Share Ownership

There is some uncertainty with respect to the ownership of CANAL's 810,000 outstanding shares. A pre-1979 registry of shares kept in-house at CANAL shows the breakdown of these shares as follows:

<u>Owner</u>	<u>Shares</u>	<u>Percent of Total</u>
Somoza Family (government-owned)	767,026	94.69%
Private Citizens	25,027	3.09%
Other Somoza Relatives	13,510	1.67%
Military	<u>4,437</u>	<u>0.55%</u>
Total	810,000	100

Several individuals are expected to claim a portion of the Somoza family shares, alleging that these shares were transferred legally to them from Somoza even though the transfers do not appear in CANAL's registry. To date, PW/IPG is not aware of any formal claims that have been made for CANAL shares.

Resolving this issue could be time consuming and PW/IPG therefore recommends that CORNAP divest CANAL prior to resolution of the issue, according to the following strategy:

1. CORNAP makes a public announcement in the local newspapers for a shareholder meeting. Anyone with any claims on CANAL shares would have to appear with documentation or their ownership rights would be forfeited.
2. At the meeting, CORNAP recommends that CANAL issue new shares in order to clarify current share ownership. Since the GON is the majority shareholder, approval of a new share issue should not be a problem. A portion of the GON's shares would likely be claimed by others, however, the GON would maintain a clear majority ownership based solely on its undisputed shares.
3. CORNAP sells the GON's undisputed shares to a private investors which represents a majority ownership of CANAL.
4. CORNAP resolves the claim on its disputed shares over time.

This strategy would allow the privatization of CANAL to proceed on a timely basis without having to wait for the resolution of outstanding legal ownership claims.

B. 25% Employee Participation

CORNAP has agreed to provide CANAL employees a 25% ownership interest in CANAL, however the form of this participation is uncertain. The employee participation could conceivably be in the form of land, other assets, CANAL shares, or share participation in a different state-owned enterprise.

The form of CANAL employee participation will have to be resolved before bidding documents are released for the sale of the GON's shares in CANAL. The form of employee participation should not effect the share ownership strategy described above since the GON would retain a majority of CANAL even if CORNAP agreed to transfer 25% of the GON's shares to the employees.

C. EPS Land Ownership Claim

According to the 1956 Articles of Constitution, CANAL was granted ownership of the land and the administrative buildings where CANAL and Nicalit offices are currently housed in Managua. In 1985 the EPS, the Sandinista Army, had the Nicaraguan government transfer the CANAL land to them for reasons of national security. CANAL management was not informed of this transfer and believes that the land transfer was illegal. CANAL has appealed to the Procuraduria (the national government agency which settles all such land and title disputes) and to the Office of the President. According to CANAL in-house counsel, this issue is expected to be resolved soon and in the favor of CANAL.

D. CANAL Investment in Other Companies to be Privatized

As described in Chapter III, CANAL has ownership shares in several companies: MAYCO, S.A.; Nicalit, S.A.; Industria Nacional de Cemento Costa Rica (INCSA); Coprenic; and Proinco. With the exception of INCSA, these companies are all planned to be privatized separately from the divestiture of CANAL. This raises an issue as to whether these investments can be removed from CANAL's balance sheet without compensating CANAL's shareholders, some of whom are private citizens.

In addition, CANAL is purported to have an ownership interest in the recently privatized Intercontinental Hotel. There is some uncertainty as to the number of shares that CANAL owns, and this will have to be clarified prior to divestiture. PW/IPG assumes that CANAL owns 754 of the 14,000 Intercontinental shares for purposes of this report.

For purposes of estimating the value of CANAL and developing a privatization strategy, PW/IPG will assume that CANAL's shares in INCSA and the Intercontinental are retained after privatization, while CANAL's shares in all other companies are privatized separately.

E. CANAL Rights to Limestone Quarry Reserves

As discussed in Chapter III, the San Rafael del Sur and adjacent deposits all originate from the same formation. Extensive drilling campaigns within this formation during the past few years have identified 12 million tons of proven reserves and 10 million tons of probable reserves. The bulk of the accessible deposits is located within 4-5 km of the plant. Within the probable reserves there are, however, deposits at distances of up to 10 km from the plant.

Only 5% of the land encompassing the investigated proven and probable deposits is actually owned by CANAL. Where CANAL does not own the land, it must enter into a contract with the owner allowing for the right of exploitation. These mining rights are readily obtained for an average of approximately 6,000 cordobas per manzana (0.15 cordobas per ton of cement produced). CANAL has already acquired the mining rights for 38% of the total proven and probable reserves. The table on the following page outlines the location and size of the various reserve sites as well as the current status of ownership and mining rights at the sites.

CANAL will have to obtain mining rights for the remaining 57% of the proven and probable reserves that it does not already have rights to or own. Obtaining these rights should not be a problem since the land is not very useful for other purposes, such as farming, and ownership is dispersed among numerous owners.

**CANAL PROPERTY AND MINING RIGHTS FOR THE
LIMESTONE RESERVES IN SAN RAFAEL DEL SUR**

<u>SECTOR</u>	<u>CEMENT RESERVES (000s TM)</u>	<u>AREA (hectares)</u>	<u>AREA OWNED BY CANAL (hectares)</u>	<u>CANAL OWNS MINING RIGHTS (hectares)</u>	<u>CANAL HAS NO CLAIMS OR RIGHTS (hectares)</u>
SANTO DOMINGO	2,729	21		21	
EL JORDAN/EL VANAGUENO	1,261	12			12
MINA K-2	1,015	9		9	
LA CALIFORNIA	1,479	22			22
EL DIAMANTE	1,445	27			27
SAN PABLO	1,999	21	9		12
EL HATO	2,366	24		13	11
TOTAL	12,294	136	9	43	84
			6.6%	31.6%	61.8%

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Note: The information listed above only refers to the proven limestone reserves in San Rafael del Sur. The limestone reserve information was provided by CANAL management and was not independently verified by Price Waterhouse.

VI. CURRENT FINANCIAL CONDITION

A. Balance Sheet

Balance sheets for CANAL for June 30, 1992 and February 28, 1993 appear on the following page. The June 30, 1992 figures were audited by the Nicaraguan firm Estrada Solis Compañía Limitada and indicate a book value of 63.4 million cordobas. The adjusted February 28, 1993 figures are taken from CANAL's internal accounting records (these numbers for the February 28, 1993 balance sheet were not audited) and indicate a book value of 73.8 million cordobas. In examining the difference between the two balance sheets, one must consider the devaluation of the cordoba in January of 1993. The June 30, 1992 balance sheet reflects a 5:1 cordoba to U.S. dollar exchange rate while the February 28, 1993 balance sheet reflects a 6:1 exchange rate.

The most significant assets on CANAL's balance sheet are inventories; investments in other companies; property, plant, and equipment; and deferred charges and other assets (these items are described in detail in the notes to the balance sheet). The value of inventories and property, plant, and equipment are substantially overstated on the balance sheet compared to their market values. In addition, the deferred charges and other assets are almost entirely composed of adjustments for the exchange rate conversion. Thus, the asset value of CANAL is actually substantially lower than the values indicated on their balance sheets. Further discussion of the market value of CANAL's assets appears in Chapter VII.

The current liabilities of CANAL are largely composed of short-term bank loans and various accounts payable. The company has no long-term debt.

B. Income Statement

Statements of profit and loss for 1991/92 and 1992/93 appear on the following pages. The 1991/92 figures were audited by the Nicaraguan firm Estrada Solis Compañía Limitada. The expected 1992/93 figures are taken from CANAL's internal accounting records (these numbers for the income statement through February 28, 1993 were not audited) and have been annualized.

CANAL had an after-tax net profit of 1,995,000 cordobas in 1991/92 (including the investment in Nicalit) and is expected to have a profit of 6,232,000 cordobas in 1992/93. The company invested 1,521,000 cordobas worth of cement into Nicalit, S.A. in 1991/92 (tax-deductible) and is expected to total 4,175,000 cordobas of investment in Nicalit, S.A. in 1992/93. Nicalit, S.A. uses CANAL cement for its roof and tile construction business. CANAL has committed to investing \$1 million in Nicalit, S.A. in the form of bags of cement.

The largest operating costs for the company are bunker (which makes up approximately 45% of the production costs), labor costs (approx. 15%), electrical energy (approx. 10%), and paper bags (approx. 9%).

CANAL BALANCE SHEET
(000s of Cordobas)

ASSETS

	<u>2/28/93 *</u>	<u>6/30/92 **</u>
Current Assets		
Cash and Bank Accounts	167	249
Employee Loans	253	396
Pre-Paid Expenses	2,955	935
Accounts Receivable	3,254	1,932
Less: Allowance for Bad Debt	8	8
Inventories (Note 1)	24,623	24,502
Less: Allowance for Decline in Value	2,325	2,470
Total Current Assets	<u>28,919</u>	<u>25,537</u>
Investments (Note 2)	18,717	21,649
Property, Plant and Equipment (Note 3)	11,108	12,083
Less: Accumulated Depreciation	3,299	3,624
Deferred Charges and Other Assets (Note 4)	<u>18,391</u>	<u>7,774</u>
TOTAL ASSETS	<u><u>73,837</u></u>	<u><u>63,420</u></u>

LIABILITIES & SHAREHOLDERS' EQUITY

	<u>2/28/93</u>	<u>6/30/92</u>
Current Liabilities		
Short Term Bank Loans (Note 5)	2,990	3,416
Accounts Payable	7,361	9,212
Outstanding Contributions	0	3,639
Other Current Liabilities	676	656
Total Current Liabilities	<u>11,027</u>	<u>16,923</u>
Long-Term Debt	<u>0</u>	<u>0</u>
Total Liabilities	11,027	16,923
Total Shareholders' Equity	62,810	46,497
TOTAL LIABILITIES & SHAREHOLDERS' EQUITY	<u><u>73,837</u></u>	<u><u>63,420</u></u>

* Balance sheet information for the period ended 2/28/93 was provided by management of CANAL and has not been audited by Price Waterhouse or any other firm. Management accounting principles may not be in accordance with Generally Accepted Accounting Principles.

** Balance sheet information for the period ended 6/30/92 was audited by Estrada Solis Compania Limitada, an independent Nicaraguan accounting firm. The information was not audited by Price Waterhouse.

Note: Some of the discrepancies between the 2/28/93 and 6/30/92 accounts are attributable to different asset classifications between the audited and unaudited statements.

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NOTES TO THE BALANCE SHEET

The following notes provide a detailed description of selected balance sheet accounts.

(1) Inventories:

	<u>2/28/93</u>	<u>6/30/92</u>
Finished products	2,443,722	1,680,881
Construction materials	104,474	164,675
Intermediate products	542,962	433,029
Raw materials	1,332,884	2,801,870
Spare parts and accessories	17,773,43	17,012,165
Fuel and lubricants	450,640	628,871
Tires and chains	246,317	450,308
Imports in transit	1,378,747	1,044,879
Stationary and office supplies	212,326	208,016
Commissary merchandise	<u>137,769</u>	<u>77,661</u>
Total	24,623,27	24,502,355

The large supply of spare parts and accessories is explained by a large purchase in 1987. From 1979 to 1987 CANAL was unable to buy any spare parts. In 1987 the plant had the opportunity to buy spare parts under favorable terms. Unsure about when the next opportunity to buy spare parts would arise, the plant's management purchased several years' supply of spare parts, much of which is still in inventory.

(2) Investments:

	<u>2/28/93</u>	<u>6/30/92</u>
Mayco, S.A. (a)	7,928,571	7,928,571
Nicalit, S.A. (b)	10,621,376	13,552,527
Industria Nacional de Cemento C.R. (c)	8,081	8,081
Coprenic (d)	158,575	158,575
Proinco (e)	740	740
Ecomat (f)	<u>0</u>	<u>109</u>
Total	18,717,452	21,648,603
Hotel Intercontinental in Managua (g)	1,956,178	1,956,178

(a) Mayco, S.A. uses CANAL Portland cement for its production of cement blocks and paving stones. CANAL's investment in Mayco, S.A. represents

99.99% ownership of the company. The company is a state-owned company and will be privatized in the near future.

(b) Nicalit, S.A. uses CANAL Portland cement for its roof and tile construction business. CANAL's recent investment in Nicalit, S.A. has come in the form of cement in exchange for shares in the company. CANAL has committed to providing \$1 million to Nicalit, S.A.. CANAL's investment in Nicalit, S.A. represents 47% ownership of the company. Lamarco Holding A.G., a private Swiss firm, owns 50% of Nicalit, S.A.. The state-owned 50% of Nicalit, S.A. (excluding the Swiss-owned 50%) will be privatized in the near future.

(c) Industria Nacional de Cemento Costa Rica is a Costa Rican cement company.

(d) Coprenic builds pretensed concrete and aqueducts. The company is a state-owned company and will be privatized in the near future.

(e) Proinco builds "piedras trituradas". The company is a state-owned company and will be privatized in the near future.

(f) Ecomat is a company which went bankrupt and closed down.

(g) CANAL owns approximately 754 shares in the Hotel Intercontinental in Managua. The market value of these shares is estimated as US\$326,030 based on the privatization sale of the hotel. The ownership of these shares is under legal discussion and, therefore, they do not appear on the balance sheet.

(3) Property, Plant and Equipment:

	<u>2/28/93</u>	<u>6/30/92</u>
Land	1,230,254	1,230,253
Buildings	2,042,631	2,032,750
Production Equipment and Tools	4,418,288	4,616,577
Furniture and Office Equipment	180,804	199,160
Transportation Equipment	728,731	774,068
Laboratory Equipment	2,110,633	2,840,186
Construction in Progress	366,072	389,920
	<u>30,765</u>	<u>0</u>
Total	11,108,178	12,082,914

All of the equipment (except for some small accessory equipment, drives, pumps, etc.) is of rather old age (20-50 years). The reported book value, as listed above, appears to be somewhat overstated. Much of the very old equipment is only partially depreciated and the original acquisition costs have not been properly revalued. The entire kiln I, for example, was acquired in 1942, is no longer in use, and its accumulated depreciation is only about 1/3 of its acquisition value. The plant is economically almost fully depreciated, but does not appear that way on the balance sheet.

- (4) The "Deferred Charges and Other Assets" line item largely consists of changes in the valuation of assets due to devaluations of the cordoba. More detail for the line item can be broken out as follows:

	<u>2/28/93</u>	<u>6/30/92</u>
Studies and Projects	500,781	195,363
Adjustments for Monetary	17,585,946	7,575,183
Guaranteed Deposits	0	3,750
Amortized Installation Costs	244,666	0
Managua Office	<u>59,780</u>	<u>0</u>
Total	18,391,173	7,774,296

- (5) The balance sheet for February 28, 1993 includes an adjustment of 1.6 M cordobas from long-term debt to short-term bank loans. The adjustment was made because the loan matures before the end of 1993.

CANAL STATEMENT OF PROFIT AND LOSS

(000s of Cordobas)

	Expected <u>1992/93</u> *	Actual <u>1991/92</u> **
Gross Sales	91,807	83,437
Sales Taxes (Note 1)	<u>2,122</u>	<u>1,914</u>
Net Sales	89,685	81,523
Operating Costs (Note 2)	82,092	77,128
Depreciation (Note 3)	<u>1,138</u>	<u>921</u>
Operating Income	6,455	3,474
Net Financial Charges (Note 4)	<u>386</u>	<u>589</u>
Profit Before Taxes	6,069	2,885
Taxes (Note 5)	<u>4,012</u>	<u>2,411</u>
Net Income	2,057	474
Nicalit Investment	<u>4,175</u>	<u>1,521</u>
Net Profit	<u><u>6,232</u></u>	<u><u>1,995</u></u>

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* Income statement figures for the projected 1992/93 period have been annualized based on information provided by management of CANAL through 2/28/93. This information has not been audited by Price Waterhouse or any other firm. Management accounting principles may not be in accordance with Generally Accepted Accounting Principles.

** Income statement figures for the 1991/92 period were audited by Estrada Solis Compania Limitada, an independent Nicaraguan accounting firm. The information was not audited by Price Waterhouse.

NOTES TO THE INCOME STATEMENT

The following notes provide a detailed description of selected income statement line items.

- (1) Sales Taxes include the 2% sales tax assessed on CANAL's cement sales in San Rafael del Sur. This tax is not assessed on the sales of cement in Managua, which constitutes approximately 13% of total cement sales.
- (2) Operating Costs include the costs of goods sold as well as administrative costs, such as insurance, social expenses, selling expenses, and general administrative expenses.
- (3) Depreciation includes depreciation on all CANAL assets.
- (4) Net Financial Charges include the financial expenses faced by CANAL net of the interest income earned by the company.
- (5) Taxes include the 2% of sales payment to COIP, the 1% municipal property tax assessed on the unmovable assets (land and buildings) of the company, and the 35.5% corporate tax. The COIP charges will be eliminated after privatization and the corporate tax will be 30% beginning after April, 1993.

VII. FINANCIAL VALUATION

A. Components of CANAL's Value

The value that investors may be willing to pay for CANAL can be separated into its near-term value over the next seven to ten years and its future or "strategic" value beyond the seven to ten year time frame. Investors should be willing to pay for the value of CANAL's cash flows over the next seven to ten years since CANAL is currently a profitable enterprise. However, CANAL has a very low strategic value for the reasons discussed below.

As described in Sections III and IV, CANAL experiences several deficiencies:

- The plant and equipment at CANAL is extremely old and has not received adequate replacement investments,
- The plant uses a wet-process technology which results in higher operating costs than the modern dry-process technology,
- The plant emits an unacceptable level of dust particles which will likely have to be addressed within the next five to ten years, and
- Plant capacity is expected to fall short of demand within ten years even with moderate market growth rates over that period.

These factors clearly indicate the need for an additional supply of cement in Nicaragua over the next seven to ten years. The supply could be provided by the construction of a new high capacity dry-process cement plant which could cost approximately \$US 120 million, according to the U.S. Portland Cement Association. The value of this investment opportunity is considered to be low for the following reasons:

- The price of cement is currently controlled by the Government of Nicaragua which limits the "upside" profit potential of a new cement plant. At current cement prices, a new cement plant would not provide an adequate return on investment for the project sponsors.
- The success of the project would depend on a recovery in the Nicaraguan construction sector and overall economy, both of which are highly uncertain.

Alternatively, the additional supply could be provided by cement or clinker imports from neighboring countries. The future value associated with an import operation, however, could be realized without acquiring CANAL and is therefore not considered part of CANAL's strategic value.

CANAL does have some long-term strategic value given its limestone reserve rights, monopoly market position in Nicaragua, and grinding facilities in Managua. However, these benefits are extremely difficult to quantify and are expected to be low relative to CANAL's near-term value.

Thus, the valuation of CANAL is based solely on its near-term value over the next seven to ten years and the company is assumed to have no value after that time.

B. Assets to be Valued

The assets that are included in the financial valuation are the productive assets of the enterprise, the spare parts inventories owned by the plant, and financial investments which CANAL holds in other companies.

The productive assets of the enterprise which contribute to the generation of future cash flows for an investor include the plant and equipment at San Rafael and Exmisa, the company's vehicles, and the land and buildings owned by CANAL (including the administrative headquarters in Managua).

CANAL also owns several assets that are not used in the operations of the plant. These include a large unused inventory of spare parts which was purchased in 1987 and ownership shares in several other companies. These assets have value in addition to the value of CANAL's future expected cash flows.

C. Valuation Methodologies

Two methods were used to estimate the value of CANAL's productive assets: the Discounted Cash Flow (DCF) method and the estimated liquidation value of these assets. In addition, the estimated market value of the spare parts inventory and CANAL's shares in other companies are added to both the DCF and liquidation values to arrive at the total estimated value of the company.

The DCF method is considered the best method for estimating the value of CANAL 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 calculating the present values of these cash flows using a discount rate that reflects 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 operations.

The liquidation value of CANAL is the price that could be achieved through an orderly sale of all of 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, domestic market 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 the unique circumstances of the cement industry in Nicaragua, including the age of CANAL's plant and equipment and CANAL's monopoly position, comparable company analysis was determined to be inappropriate for estimating the value of CANAL.

D. Discounted Cash Flow Analysis

The discounted cash flow analysis tests three scenarios which are summarized below. The Appendix contains a detailed description of the assumptions and the results of the analysis for each scenario.

1. Scenario 1, the "Base Case", is based on the historical performance of CANAL and assumes that the plant continues to operate as it has in the past.
2. Scenario 2 assumes that management is able to make reasonable operating improvements in the plant resulting in a 5% reduction in energy costs and an expanded cement capacity of 360,000 tons per year.
3. Scenario 3 assumes, in addition to the assumptions in Scenario 2, that 1/3 of CANAL's clinker output will be used for making pozzolanic cement containing 30% pozzolana. This process will reduce the cost per ton of the cement produced and increase the capacity of the plant to 415,000 tons per year.

The DCF analysis estimates the value of future cash flows under each scenario for a period of seven and ten years. The analysis assumes that CANAL will have no value after seven or ten years into the future for the reasons discussed in subsection A above.

The results of the DCF analysis for the three scenarios are summarized below. The range of results for each scenario reflects the sensitivity of CANAL's value to different market demand scenarios and a seven versus a ten year cash flow term. A description of the demand scenarios appears in Section III. All results below assume a discount rate of 18%. The Appendix contains a detailed analysis of the sensitivity of each scenario to changes in the discount rate.

**Estimated Discounted Cash Flow Values
(millions of cordobas)**

	<u>Sales Growth Constant 1992/93 Sales</u>	<u>Sales Growth Equal to Economic Growth</u>	<u>2 Times Economic Growth</u>	<u>Matconsult Projections</u>
Scenario 1				
7 Years	24.5	37.3	39.3	39.8
10 Years	33.5	48.9	51.0	51.5
Scenario 2				
7 Years	30.0	50.8	58.9	65.7
10 Years	39.9	67.1	75.2	82.0
Scenario 3 *				
10 Years	28.7	59.9	77.3	97.5

The results of the DCF analysis for scenarios 3 indicate that the additional investment required would not be worth undertaking if the plan was expected to operate for only seven years into the future. Only a ten year time frame, therefore, is considered for Scenario 3.

E. Valuation Based on Asset Liquidation

The asset liquidation analysis estimates the price that could be realized if plant operations were terminated and CANAL's productive assets were so'd piecemeal. The price estimates are based on asset lists provided by CANAL management. These estimates should not be considered definitive values, but rather reasonable approximations of liquidation value.

	<u>Estimated Value (in cordobas)</u>
Land and Buildings	4,242,509
Plant and Equipment	6,000,000
Vehicles	<u>3,000,000</u>
Total	13,242,509

The value of the land and buildings includes 419 manzanas of land and building installations at San Rafael, Managua administrative headquarters, and Exmisa. These estimates were provided by CATASTRO in Managua. Note that CANAL claims to own 707 manzanas of land, compared to CATASTRO's official government record of 419. This discrepancy will have to be addressed prior to privatization. In addition, there is an outstanding disagreement between the EPS and CANAL regarding the ownership of the land at CANAL headquarters in Managua, as discussed in Section V.

The low estimated value of the plant and equipment reflects the old age (20 to 50 years) and obsolete nature of most of these assets. Only newer state-of-the-art equipment is actually traded in used equipment markets. Certain small pieces of equipment may have some limited value. One million US dollars is considered to be an optimistic estimate of the value of this equipment.

According to CANAL management, CANAL owns 69 vehicles, 43 of which are actually in operation. Of the 43 operational vehicles, 16 are of Eastern European make and are 5 to 12 years old. These vehicles are generally in poor condition and spare parts for these vehicles can not be obtained. For the remaining 27 operational western vehicles, PW/IPG estimated their depreciated value based on auction quotations for these models over the past year. The estimated value for these vehicles is US\$ 370,000 to US\$ 445,000. Thus, US\$ 500,000 or 3 million cordobas is considered to be an optimistic value for all of CANAL's vehicles.

The estimated liquidation value above does not reflect the time and transaction costs that would be required to carry out an orderly liquidation of the plant's assets. In addition, it is possible that some assets could not be sold, particularly given the low level of new investment in wet process cement plants worldwide. Thus, the present value of the cash that could be realized from liquidation may be lower than the value listed above.

F. Valuation of Spare Parts Inventory

The spare parts inventory has a value of 17,773,437 on CANAL's balance sheet as of February 28, 1993. The large supply of spare parts is explained by a large purchase in 1987, as discussed in the notes to the balance sheet in Section VI. Many of these parts have remained in inventory for six years and have very little value, according to CANAL management. A detailed evaluation of the spare parts inventory is beyond the scope of this study, however, the value of this inventory is assumed to be 7 million cordobas based on estimates provided by an industry expert and CANAL management. These estimates should not be considered definitive values, but rather reasonable approximations of sale price.

	Estimated Value <u>(in cordobas)</u>
Spare Parts Inventory	7,000,000

The estimated inventory value above does not reflect the time and transaction costs that would be required to carry out a sale of the many items. In addition, it is possible that some items could not be sold, particularly given the age of the items and low level of investment in wet process cement production worldwide. Thus, the present value of the cash that could be realized from a sale of the spare parts inventory may be lower than the value listed above.

G. Valuation of Investments

CANAL hold shares in several companies, including Mayco, Nicalit, Proinco, Coprenic, INCSA, and the Intercontinental Hotel. A description of these investments appears in the notes to the balance sheet in Section VI.

According to CANAL management, CANAL's interest in Mayco, Nicalit, Proinco, and Coprenic will be privatized separately from the divestiture of CANAL. This effort may be reviewed for legal reasons, as discussed in Section V. However, for purposes of this valuation these companies are assumed to be privatized separately and will not be transferred to the acquiror of CANAL. The value of CANAL's remaining investments are estimated as follows:

	Estimated Value <u>(in cordobas)</u>
Hotel Intercontinental	1,956,178
Industria Nacional de Cemento Costa Rica (INCSA)	8,081

Total	1,964,259

The value of CANAL's interest in the Intercontinental Hotel is estimated using the recent sale price of shares in this enterprise. CANAL is assumed to own 754 of the 14,000 shares in the hotel, as discussed in Section V.

CANAL owns 1% of INCSA. A valuation of INCSA is beyond the scope of this report so the value of these shares on CANAL's balance sheet is used as an estimate for the true market value.

H. Summary and Conclusions

CANAL is currently a profitable company and its future cash flows could have a value as low as 24.5 million cordobas (US\$ 4.1) or up to 97.5 million cordobas (US\$ 16.3), depending on the assumptions used regarding the market demand and cash flow term. In order to arrive at narrower reasonable range of values, the following assumptions are made:

- To be conservative, the constant 1992/93 sales and one times economic growth demand scenarios are used. The Matconsult and two times economic growth assumptions are considered to be overly optimistic given the uncertain future of the Nicaraguan economy.
- A ten year cash flow term is assumed since the plant is expected to be able to operate for ten more years, barring unforeseen problems.
- The results of Scenarios 1 and 2 only are used since the Scenario 3 results are, in some cases, lower. It is assumed that an investor would avoid the higher capital expenditure requirements of Scenario 3 unless the higher demand scenarios were achieved.

The assumptions above suggest a reasonable range for the value of CANAL's productive assets of 33.5 million cordobas (US\$ 5.6) to 67.1 million cordobas (US\$ 11.2).

The liquidation value of CANAL's productive assets is estimated at approximately 11.4 million cordobas (US\$ 1.9), excluding the time and transactions costs that may be required to carry out liquidation. The liquidation value can be considered a minimum value because an investor (or the Government) should, at least, be able to realize this value by selling the mill's assets. Since CANAL's liquidation value is below the lowest suggested discounted cash flow value, the liquidation value is dismissed since the company is expected to continue as a going concern and realize at least the lowest DCF value.

As noted above, the value of CANAL's spare parts inventory and financial investments can be realized by an investor in addition to the productive assets of the company. Thus, the value of these assets must be added to the DCF value in order to arrive at the total value of CANAL shares.

	<u>Estimated Value</u> <u>(millions of cordobas)</u>
DCF Analysis	33.5 to 67.1
Spare Parts Inventory	7.00
CANAL Investments	<u>1.96</u>
Total	42.5 to 76.1
	US\$ 7.1 to 12.7

As CANAL has no long-term debt, the range above represents the estimated value of 100% CANAL's equity shares.

VIII. PRIVATIZATION STRATEGY

The Government of Nicaragua has decided to privatize CANAL in order to improve the management and operations of the enterprise, attract capital and technical expertise for a major expansion of CANAL facilities, and to generate proceeds for the Government. 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 CANAL are as follows:

- Transfer ownership of CANAL to the private sector as soon as possible.
- Attract capital and technical expertise to maintain the existing plant and implement capacity expansions in the future.
- Improve management and operations.
- Maintain employment.
- Maximize the cash generated from the sale of CANAL.

B. Privatization Options

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

- Public offering of shares
- Private sale of existing shares
- Private sale of new shares
- Sale of enterprise assets
- Joint venture of enterprise assets and private capital
- Management/employee buyout
- Breakup and liquidation of individual assets separately
- Management contract or lease

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

A sale or joint venture of enterprise assets may not be appropriate because the Government of Nicaragua does not own 100% of CANAL shares. Without an agreement by all CANAL shareholders, the Government may not have the legal authority to terminate the company and sell CANAL's assets. In addition, CANAL has no long-term debt or other problematic liabilities that would deter investors and therefore support an asset sale over a sale of CANAL shares.

A management and employee buyout is not considered appropriate because of the need for a substantial capital investment in the company and the technical expertise of an experienced cement manufacturer. Although minority ownership by management and employees would be acceptable, a management and employee buyout of the majority of CANAL would inhibit the future development of the Nicaraguan cement industry.

The breakup and liquidation of individual assets is not considered appropriate since CANAL is the only cement producer in Nicaragua and a primary Government objective is to improve and expand the cement industry. Asset liquidation is also inconsistent with the Government objective of maintaining employment at CANAL and generating the maximum cash from the transaction.

Thus, there are three potential options that may be appropriate for the privatization of CANAL: sale of GON shares, sale of new shares, and management contract or lease.

Option 1: Sale of GON Shares

Under Option 1, CORNAP would sell the GON's shares in CANAL to an investor group with experience in the cement industry. CANAL's existing shares may need to be reissued, as discussed in Section V. These shares would represent a majority ownership position in CANAL. CANAL would remain unchanged as a legal corporate entity and would continue to be responsible for assets and liabilities currently on its balance sheet.

The advantages of this approach are as follows:

- Ownership of CANAL is transferred to a private party which eliminates the responsibility of the Government for future financial requirements.
- Private, experienced owners have a strong incentive and the capability to improve management and operations. The private owners also have access to capital for future investments in the facility.
- CANAL continues to be operated as a going concern and employment is maintained, although possibly at a lower level.

- Cash is generated for the Government in the short-term.
- The private owners retain CANAL's trade name, contractual rights to limestone reserves, and other intangible assets of the company.
- The private owners retain all CANAL liabilities, including legal claims and bank debt.
- The Government can legally sell its ownership interest in CANAL without approval by other shareholders.

The disadvantages of Option 1 are as follows:

- A private investor may be more interested in purchasing new shares of CANAL so that the investment is contributed to improving the operations of CANAL rather than paid to the Government.
- A private investor may have a stronger interest in managing CANAL under contract for several years prior to making a substantial financial commitment to the company.

Option 2: Sale of New Shares

Under Option 2, a private investor would acquire majority control of CANAL by purchasing new shares of the company. For example, if CANAL's current shares have a value of US\$ 10 million, then a private investor could acquire a majority interest by investing \$US 10.1 million in new shares of the company. The total value of the new and existing shares would be \$20.1 million so the investor's \$10.1 million would represent just over 50% of the total.

Alternatively, the investor could acquire majority control through a combination of purchasing GON shares and new shares. For example, the investor could acquire a majority interest by purchasing US\$ 5.0 million of new shares and US\$ 2.7 million of GON shares. The new company would have a total equity value of \$US 15 million (US\$ 10 million of old shares and US\$ 5 million of new shares). The new share purchase would therefore represent 33% of the company and the GON share purchase would represent 18% of the company, for a total of 51%.

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 enterprise is successful. In this case, the Government may receive a higher price than under Option 1. Given CANAL's high capital investment requirements, private investors may prefer this option.

The principal disadvantages of Option 2 compared to Option 1 are that the Government would continue to hold a minority equity interest in CANAL after privatization, and the Government may receive less cash up front as a result.

Option 3: Management Contract or Lease

Under Option 5, management of CANAL would be leased or contracted out to a private firm with expertise in cement enterprise operations. Ownership of CANAL would remain with its current shareholders and the enterprise would continue as a going concern.

Ownership of CANAL could be sold to the private sector several years later after operations, management, and financial performance had been improved, and the private manager had developed greater experience and confidence in the Nicaraguan market.

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.
- CANAL continues to be operated as a going concern and employment is maintained, although probably at a lower level.
- The private manager has an opportunity to gain experience and confidence in the Nicaraguan cement market prior to making a substantial financial commitment.

The disadvantages of Option 5 are as follows:

- Ownership of CANAL remains with the GON and the Government continues to be responsible for capital investments.
- The private management fee may be substantial, further increasing costs to the Government.

- Cash proceeds from privatization are delayed.

C. Recommendations

PW/IPG recommends 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 CANAL through a sale of existing GON shares, a new share issue, or a combination of the two (Options 1 or 2). These options would reduce or eliminate Government financial exposure and attract private capital and technical expertise to the enterprise.
2. If private investment proves infeasible, solicit a private manager for a management contract or lease (Option 3). Management compensation should be closely tied to profitability. This option would at least bring improved management to the enterprise in a relatively short time period and prepare the enterprise for future privatization.

D. Outstanding Issues

Several outstanding issues should be resolved as part of the privatization process:

- **Share ownership.** PW/IPG recommends calling a shareholders' meeting and reissuing CANAL shares in order to clarify what portion of GON share ownership is disputed. The undisputed portion, which is likely to represent a clear majority, could then be sold to private investors.
- **Employee participation.** The form of the 25% worker participation in CANAL will have to be resolved.
- **Land ownership.** The Nicaraguan Army (EPS) claims ownership of the land at CANAL's administrative headquarters in Managua, although CANAL management expects this dispute to be settled soon in CANAL's favor. In addition, official Catastro records list CANAL land ownership at 419 manzanas while CANAL claims to own 707 manzanas.
- **Treatment of CANAL's financial investments in other companies.** PW/IPG recommends that CANAL retain ownership of Mayco due to the interdependency of these two companies. If Mayco is privatized separately, then CANAL's Exmisa facilities will need to have sufficient access to the premises shared with Mayco and enough land to accommodate future expansion plans.

- **Environmental standards.** PW/IPG recommends that investors be provided with a clear assessment of the Government's expectations for addressing dust emissions from the plant.
- **Government pricing and import tariff policies.** PW/IPG recommends that the Government of Nicaragua remove cement price restrictions and import tariffs prior to privatization. If this is not possible then the Government may want to guarantee that the current dollar-denominated cement price will not be reduced over a specified time period, such as ten years. Such assurances concerning Government pricing policy would increase interest among potential investors and result in a higher sales price for CANAL shares.

E. Privatization Action Plan

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

1. PW/IPG continues to identify potential investors and send them a preliminary announcement of the sale of CANAL along with a company profile.
2. CORNAP acts to resolve the outstanding issues listed above with PW/IPG assistance.
3. PW/IPG prepares a prospectus and bidding documents, and mails copies to interested parties. PW/IPG recommends that the bidding period be a minimum of two months in order to provide potential investors with enough time to thoroughly evaluate CANAL and the prospects for the Nicaraguan industry.
4. CORNAP develops privatization selection criteria.
5. CORNAP places announcements internationally for the sale of CANAL.
6. PW/IPG contacts prospective bidders and assists them in their evaluation of CANAL.
7. CORNAP forms evaluation committee and reviews bids. PW/IPG provides assistance on request to analyze bids.
8. CORNAP initiates negotiations with the most attractive bidder(s).

APPENDIX

This appendix presents the cash flow assumptions and Discounted Cash Flow analysis for each of the three scenarios analyzed:

1. Scenario 1, the "Base Case", is based on the historical performance of CANAL and assumes that the plant continues to operate as it has in the past.
2. Scenario 2 assumes that, by decreasing the water content of the slurry, false air leakages, and kiln stoppages, it will be possible to reduce the kilns' heat consumption by 5%. This reduction of heat consumption will allow for reduced energy costs and increased kiln output of 5%. In addition, by improving kiln maintenance planning and brick quality, kiln running times are assumed to increase to 325 days per year from the current rate of 300 days per year. These improvements will result in an increased Portland cement capacity of 360,000 tons per year.
3. Scenario 3 assumes, in addition to the assumptions in Scenario 2, that 1/3 of CANAL's clinker output will be used for making pozzolanic cement containing 30% pozzolana. This process will reduce the cost per ton of the cement produced and increase the capacity of the plant to 415,000 tons per year.

The financial projections are based on management's expectations of future performance; audited financial information on CANAL for fiscal year 1991/92; unaudited financial information on CANAL for the first eight months of fiscal year 1992/93; interviews with management of CANAL and COIP, the Nicaraguan industrial corporation; and experts in the cement industry.

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 actual numbers for 1991/92 and the projected numbers for 1992/93 are not comparable to the future projections due to the devaluation of the cordoba against the U.S. dollar from 5:1 to 6:1 in January, 1993. The 1991/92 figures reflect a 5:1 exchange rate, while the 1992/93 figures reflect a devaluation at mid-year. The future financial projections are denominated in real 1993 cordobas at an exchange rate of 6:1.

Because of the devaluation in January, 1993 certain operating cost projections may vary significantly from their historical cordoba-denominated averages. If an operating input is hard-currency-based, such as an import like the cement bags or bunker, then its unit cost is assumed to increase by 20% to reflect the devalued cordoba. However, other inputs, such as labor, are paid for in cordobas and their costs may not change as much as the change in the exchange rate.

The operating cost assumptions used for the financial analysis consist of both fixed-cost inputs and variable-cost inputs. The variable-cost inputs are tied to the tons of cement produced.

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 this appendix.

Scenario 1: Base Case

The Base Case is based on the historical performance of CANAL and assumes that the plant continues to operate as it has in the past. The assumptions made for each input into the financial analysis, including capacity, operating costs, capital investment, depreciation, and taxes, are outlined below.

- **Plant Capacity**

The plant at San Rafael is a wet process cement plant consisting of four operational cement kilns of a total clinker production capacity of 1,000 tons per day. With a kiln running time of 300 days per year, the plant clinker capacity is 300,000 tons per year. Therefore, the capacity for manufacturing Portland cement (consisting of 95% clinker and 5% gypsum) is 315,000 tons per year.

- **Sales Volumes**

The assumptions for estimating the market demand faced by the plant are explained in Chapter III. The analysis estimates the value of CANAL based on each of the four demand projections. Since CANAL is the only cement producer in Nicaragua, sales are assumed to equal national demand (i.e., no importing or exporting) until the plant reaches capacity. Therefore, if demand increases above 315,000 tons per year, then the plant cannot satisfy all of the market demand and will produce at capacity.

With the exception of 1991/92 and the projections for 1992/93, CANAL is assumed to sell all of the Portland cement produced. In 1991/92 the plant sold 262,976 tons after producing 259,043 tons. Projections for the tons of cement sold for the year 1992/93 (based on information through May) were 278,489. The figures for 1991/92 and 1992/93 both include cement which was contributed as an investment to Nicalit, S.A.. This cement was not actually sold (and therefore does not appear in the plant revenues), but instead is reflected by the "Nicalit investment" line item. After 1992/93, CANAL's investment in Nicalit, S.A. is expected to be complete and the plant will begin collecting revenues from the sale of this cement.

- **Sales Prices**

The current weighted average sales price of cement, as of June 1993, is 17.19 cordobas per bag and is assumed to remain at that level through the projection period. This weighted average price accounts for the prices of cement sold at both San Rafael del Sur and Ex-misa in Managua, and is net of the 0.50 cordoba per bag tax. The price also accounts for cement sold in bulk as well as per bag. A further discussion of cement prices appears in Chapter III.

- **Labor Costs**

Actual	Projected	
<u>1991/92</u>	<u>1992/93</u>	<u>1993/94 - 2002/03</u>
9,637,037	11,044,769	11,600,000

CANAL has 453 employees. This figure is high in terms of output per employee, but, given the amount of equipment (six mills and four kilns), the age of the equipment (requiring significant maintenance), and the fact that most maintenance is done in-house (vehicle workshop employs 50 people alone), it can be considered reasonable. The plant is assumed to be able to increase productivity to achieve higher levels of output without increasing the labor force.

Salary increases resulted in an 8% increase in labor costs after the devaluation in January. Part of this increase is reflected in the projected 1992/93 labor cost, but 1993/94 will be the first full year facing the higher labor costs.

- **Electrical Energy Costs**

The electrical energy costs for the cement plant are composed of two different types of costs. CANAL is charged a fixed cost for the maximum electrical demand (in kW) of the plant. In addition to this fixed cost, CANAL is charged a variable cost (per kWh) for the actual electricity used. The plant's historical financial information does not break down electrical energy costs into these two parts, but the projections will use both fixed and variable costs.

	Actual	Projected	
	<u>1991/92</u>	<u>1992/93</u>	<u>1993/94 - 2002/03</u>
Fixed			2,600,000
Variable (per ton)			25.3
Total	5,815,143	7,776,857	* 9,645,772

* Assuming 1992/93 production of 278,489 tons of cement.

The lower historical electrical energy costs are explained by recent changes in electricity prices. In September, 1992, a 15% sales tax on electricity was implemented. Then, in January, 1993, electricity costs increased 17-20% due to the currency devaluation. Finally, not reflected in the historical figures, but incorporated into the post-1993/94 projections, the sales tax on electricity was removed after April of 1993. The resulting fixed cost for electrical energy is approximately 2.6 M cordobas and the variable cost is approximately 25.3 cordobas per ton of cement.

- **Bunker Costs**

	<u>Actual</u> <u>1991/92</u>	<u>Projected</u> <u>1992/93</u>	<u>1993/94 - 2002/03</u>
(per ton)	130	127	147

The price of bunker is set by the Government of Nicaragua. The current price is 3.5 cordobas per gallon. Based on the use of 42 gallons to produce one ton of cement, the price for bunker is $42 \times 3.5 = 147$ cordobas per ton of cement. This price is higher than the historical price largely due to the currency devaluation in January of 1993.

- **Paper Bag Costs**

	<u>Actual</u> <u>1991/92</u>	<u>Projected</u> <u>1992/93</u>	<u>1993/94 - 2002/03</u>
(per ton)	22.7522	23.0673	28.6

The price of paper bags is 1.21 cordobas per bag. On average each bag holds 42.5 kg (or .0425 tons) of cement. Assuming that 0.5% of the bags are torn and unusable, the price per ton for paper bags is $1.21 / .0425 * 1.005 = 28.6$ cordobas. The bags are imported and therefore their price increased with the January currency devaluation, thus explaining the jump from the historical cost figures to the new projected unit cost.

- **Other Variable Costs**

The following costs, largely costs of production, are assumed to be variable with the level of cement production (costs per ton) at the plant. The projections for these costs were obtained by examining the historical costs and from CANAL management's estimates of the unit prices for the items.

	Actual <u>1991/92</u>	Projected <u>1992/93</u>	<u>1993/94 - 2002/03</u>
Gypsum	3.8504	4.4876	4.5
Explosives	1.9248	1.5551	1.6
Tires and chains	1.7145	2.3594	2.8
Fuels and lubricants	5.9806	4.5505	5.5
Refractory bricks	0.6855	1.7336	1.7
Grinding media	0.6560	2.1377	2.1
Materials & supplies	7.8821	13.3862	16.1
Selling expenses	4.6692	4.9875	5.5

In 1992/93, CANAL changed the type of explosives used in the quarries, explaining the lower costs for explosives than in 1991/92. The tires and chains, the fuel and lubricants, and the materials and supplies are imported; therefore, the price of these items increased 20% with the currency devaluation in January, 1993.

The selling expenses include the selling and marketing costs for the plant as well as the costs for the operating license (2% of one month's sales). The sales tax and municipal property tax which was included in this line item in the plant's accounting records have been transferred to a separate tax line item for these cash flow projections.

- **Fixed Costs**

The following costs are assumed to be fixed at the plant rather than increasing or decreasing with production. The projections for these costs were obtained by examining the historical costs, which in most cases did not fluctuate significantly, and from CANAL management's estimates of what the costs will be in the future.

	Actual <u>1991/92</u>	Projected <u>1992/93</u>	<u>1993/94 - 2002/03</u>
Repair and Maintenance	1,091,269	1,472,523	1,500,000
Insurance	258,415	277,658	300,000
Administration	4,310,458	4,226,508	4,200,000
Social Expenses	3,135,727	3,655,592	3,700,000
Net Financial Expenses	563,765	399,617	399,617
Other Expenses	2,965,552	2,668,520	2,668,520
Other Income	233,085	323,579	323,579

The repair and maintenance line item is the amount which is contracted out to outside parties and is assumed to be fixed at approximately 1.5 M cordobas. The plant's insurance is also assumed to be fixed at approximately 300,000 cordobas.

The administrative costs for CANAL include administrative salaries and benefits, supplies and maintenance costs, and general expenses for the accounting, finance, purchasing, sales, and executive offices. Depreciation which was embedded in the administrative costs line item (152,789 cordobas in 1991/92) has been taken out and included in the separate depreciation line item.

The social expenses include the costs of the commissary at the plant, the medical facility at the plant, and other services provided by CANAL for the workers. Depreciation which was embedded in the social expenses line item (230 cordobas in 1991/92) has been taken out and included in the separate depreciation line item.

The net financial expenses include interest expenses, interest earnings, commissions, and other miscellaneous financial expenses. These expenses are assumed to be for short-term operating costs and are fixed for the future cash flow projections.

The other expenses include missing inventories, breakdown costs, accounting corrections, and other diverse expenses. The other expenses also include the amortization of monetary conversion costs. This amortization expense will be deducted from the future cash flow projections.

The other income includes payments for transportation services, surplus and recovered inventory, and rental income. This income is assumed to be fixed for the future cash flow projections.

- **Capital Expenditures**

Replacement investments have been kept at a minimum for many years. Repair requirements for the quarry equipment (especially the trucks) already hamper smooth quarry operations and the current state of the plant equipment could cause plant stoppages. The following is an estimate of investment requirements for insuring continued operations for the ten years beginning in 1993/94.

<u>Years</u>	<u>Capital Expenditures</u>
1	2,400,000
2-3	14,220,000
4-6	7,920,000
7-10	2,400,000

These capital expenditures include investment in new quarry equipment (1 drill, 10 trucks, 1 dozer, and 2 loaders) during years 2-6, immediate repairs and new plant spares (including 1 mill spare drive, rings and rollers for kilns 2,4, and 5, and rehabilitation of Ex-misa) during years 2 and 3, and annual replacement investments of 2.4 M cordobas. Further discussion of CANAL's capital expenditure requirements appears in Chapter IV.

- **Depreciation**

The depreciation for the cement plant includes the depreciation on current assets, which was provided by plant management, and the depreciation of the new capital investment listed above. The depreciation on current assets is 492,054 cordobas per year through 1996/97. The new capital investment is straight-line depreciated over a useful life of five years (the average useful life for quarry equipment, transport equipment, and laboratory equipment). A depreciation schedule is included at the end of this section. Because the depreciation projections are denominated in nominal cordobas it is necessary to convert these estimates to real cordobas by deflating them by the estimated inflation rate of 5%.

- **Taxes**

The following is a list of the Federal and municipal taxes paid by CANAL:

- a 15% sales tax on the purchase of its inputs with the exception of explosives, gypsum, paper bags, grinding media, refractory bricks, and, as of April, 1993, electricity;
- 0.50 cordobas per bag of cement sold, which goes to the Finance Ministry;
- a 2% tax on cement sales (net of the 0.50 cordoba tax listed above) which are sold in San Rafael del Sur. The tax, which was 3% until March, 1993, does not apply to the cement sold in Managua. Therefore, an weighted average tax of 1.74% is applied to total cement sales based on the percentage of cement sold in San Rafael del Sur (approximately 87% in 1993).
- a payment of 2% of cement sales (net of the 0.50 cordoba tax listed above) made to COIP. The plant is assumed not to pay this tax after privatization in 1993/94.
- a municipal property tax of 1% of the value of the plant's "immovable" assets, which include land and buildings;
- the cement contributed as the plant's investment in Nicalit, S.A. during 1991/92 and 1992/93 is exempt from sales and corporate taxes;
- a Federal corporate tax on profits of 30%. Before April, 1993 this tax rate was 35.5%.

The sales and municipal taxes listed above are deductible for purposes of calculating the corporate tax, with the exception of the payment to COIP.

- **Net Working Capital Needs**

CANAL's payables period to its supplier of bunker (the largest operating cost for the plant) is 25 days, while it generally receives payment for sales within 15 days.

CANAL's total current assets (excluding the spare parts inventory) equal 11.1 M cordobas, while total current liabilities (excluding bank loans) equal 8.0 M cordobas.

Thus, the net working capital needs for CANAL are low. The change in net working capital needs, therefore, is not expected to have a significant impact on CANAL's future cash flows and is not included in the financial projections.

- **Discount Rate**

The cash flow projections used in our analysis are denominated in real 1993 cordobas and must therefore be discounted back to their present values using a real discount rate.

The annual yield on six-month, cordoba-denominated bank certificates of deposit is approximately 15% with a dollar-value maintenance guarantee. This suggests a real lending rate of approximately 10%, assuming 4-5% inflation. Investors would expect a substantially higher return on an equity investment in the cement plant, perhaps as much as 30% in real terms.

Thus, the real weighted average cost of capital for the cement company, assuming approximately equal portions of debt and equity financing, is estimated as 18%.

$$\begin{aligned}
 \text{Weighted average cost of capital} &= (1-t) * r_D * D/(D+E) + r_E * E/(D+E) \\
 &= (.7) * .10 * .50 + .30 * .50 \\
 &= .035 + 1.50 \\
 &= .185
 \end{aligned}$$

Discount rates of 14% and 18% are also used in order to evaluate the sensitivity of the discounted cash flow analysis to changes in the discount rate assumption.

- **Terminal Value**

Given the old age of the plant and equipment (20-50 years), the energy intensive wet process technology used in the plant, and the very low pollution standard at the plant, it is assumed that the current plant and equipment will not be of any value after ten years and that a new modern dry process plant will have to be constructed to replace it. In addition, the new capital investments which are made in the short run to improve the operation of the plant will largely be depreciated within ten years, assuming that the investments are made within five years. Therefore, a terminal value of zero is

assumed for the plant in the last year of the projection period, 2002/03. Further discussion of the terminal value of CANAL appears in Chapter VII.

- **Inflation and Exchange Rates**

The financial projections are denominated in real 1993 cordobas (i.e., with no adjustment for future inflation) and assume a constant 6:1 cordoba-U.S. dollar exchange rate.

- **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, 1993.

- **Exclusion of Debt**

The financial projections and DCF analysis exclude all costs of long-term debt as CANAL has no long-term debt as of February 28, 1993.

CANAL
Discounted Cash Flow Analysis
(000s of Cordobas)

23 Jun 93

Scenario
1

	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
NET SALES	117,169	122,439	125,515	125,515	125,515	125,515	125,515	125,515	125,515	125,515
OPERATING COSTS										
Labor	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600
Electrical Energy	10,038	10,374	10,570	10,570	10,570	10,570	10,570	10,570	10,570	10,570
Bunker	43,218	45,167	46,305	46,305	46,305	46,305	46,305	46,305	46,305	46,305
Paper Bags	8,408	8,788	9,009	9,009	9,009	9,009	9,009	9,009	9,009	9,009
Administrative Costs	10,505	10,578	10,621	10,621	10,621	10,621	10,621	10,621	10,621	10,621
Other Operating Costs	11,584	12,039	12,305	12,305	12,305	12,305	12,305	12,305	12,305	12,305
Depreciation	469	926	3,634	6,343	7,851	9,360	10,411	8,160	5,909	4,857
Total	95,823	99,472	104,043	106,752	108,260	109,769	110,820	108,569	106,318	105,266
PROFIT BEFORE TAXES	21,346	22,967	21,472	18,763	17,254	15,746	14,694	16,946	19,197	20,249
TAXES (excluding sales taxes)	6,427	6,913	6,464	5,652	5,199	4,747	4,431	5,107	5,782	6,097
PROFIT AFTER TAXES	14,919	16,054	15,007	13,111	12,055	10,999	10,263	11,839	13,415	14,151
DEPRECIATION (+)	469	926	3,634	6,343	7,851	9,360	10,411	8,160	5,909	4,857
CAPITAL EXPENDITURES (-)	2,400	14,220	14,220	7,920	7,920	7,920	2,400	2,400	2,400	2,400
CASH FLOW	12,988	2,760	4,422	11,534	11,987	12,439	18,275	17,599	16,924	16,608
NET PRESENT VALUE @ 18%	48,885	37,214								
	(10 years)	(7 years)								
TERMINAL VALUE	0	0								
FIRM VALUE	48,885	37,214								

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Sensitivity Analysis of Firm Value

Demand Scenarios	No Growth Ec. Growth Ec. Growth *2 Matconsult	10-Year Cash Flows			7-Year Cash Flows		
		Discount Rates			Discount Rates		
		14%	18%	22%	14%	18%	22%
1		40,160	33,445	28,322	28,023	24,508	21,670
2		58,380	48,885	41,579	42,526	37,214	32,892
3		60,564	50,973	43,579	44,710	39,302	34,893
4		61,055	51,447	44,038	45,201	39,776	35,351

CANAL

Cash Flow Projections (Cordobas)

	23-Jun-93					Scenario
	Actual	Projected				
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES						
Portland Cement	83,436,917	91,807,428	118,914,757	124,277,633	127,408,235	127,408,235
Pozzolanic Cement	0	0	0	0	0	0
Municipal Sales Tax	1,913,969	2,121,501	2,069,117	2,162,431	2,216,903	2,216,903
Other Income	233,085	323,579	323,579	323,579	323,579	323,579
Net Revenues	81,756,033	96,009,505	117,169,219	122,438,781	125,514,911	125,514,911
PRODUCTION COSTS						
Labor costs		11,044,769	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum		1,249,746	1,323,005	1,382,670	1,417,500	1,417,500
Pozzolana		0	0	0	0	0
Explosives		433,073	470,402	491,616	504,000	504,000
Tires and chains		657,074	823,203	860,328	882,000	882,000
Fuel and lubricants		1,267,259	1,617,006	1,689,930	1,732,500	1,732,500
Electrical energy (fixed)		7,776,857	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)		0	7,438,225	7,773,678	7,969,500	7,969,500
Hunker		35,314,560	43,218,147	45,167,220	46,305,000	46,305,000
Refractory bricks		482,798	499,802	522,342	535,500	535,500
Grinding media		595,329	617,402	645,246	661,500	661,500
Paper bags		6,423,991	8,408,429	8,787,636	9,009,000	9,009,000
Materials and supplies		3,727,902	4,733,416	4,946,886	5,071,500	5,071,500
Add'l pozz. op. costs		0	0	0	0	0
Repair and maintenance		1,472,523	1,500,000	1,500,000	1,500,000	1,500,000
Total	65,610,223	70,445,882	84,849,035	87,967,552	89,788,000	89,788,000
GROSS OPERATING MARGIN	16,145,810	19,563,624	32,320,184	34,471,229	35,726,911	35,726,911
ADMINISTRATIVE COSTS						
Insurance	258,415	277,658	300,000	300,000	300,000	300,000
Administrative expenses	4,242,147	4,084,454	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,135,497	3,655,592	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,174,734	1,378,551	1,617,006	1,689,930	1,732,500	1,732,500
Net Financial expenses	563,775	399,617	399,617	399,617	399,617	399,617
Other expenses	2,965,552	2,668,520	288,849	288,849	288,849	288,849
Total	12,340,120	12,464,390	10,505,472	10,578,396	10,620,966	10,620,966
TOTAL CASH OPERATING MARGIN	3,805,690	7,099,234	21,814,712	23,892,833	25,105,945	25,105,945
DEPRECIATION	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909
PROFIT BEFORE TAXES	2,884,899	5,961,421	21,346,090	22,967,067	21,471,607	18,763,036
TAXES (excluding sales taxes)	2,410,531	3,973,499	6,426,668	6,912,961	6,464,323	5,651,752
PROFIT AFTER TAXES	474,369	1,987,922	14,919,422	16,054,106	15,007,284	13,111,284
DEPRECIATION (+)	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909
NON CASH EXPENSES (+)	2,334,566	2,379,671				
NET CASH INVESTMENT (+)	1,520,528	4,175,366				
CAPITAL EXPENDITURES (-)	0	0	2,400,000	14,220,000	14,220,000	7,920,000
CASH FLOW	5,250,254	9,680,771	12,988,045	2,759,872	4,421,621	11,534,193
Cash Flow % of Costs	6.7%	11.5%	13.6%	2.8%	4.2%	10.8%

CANAL

Cash Flow Projections (Cordobas)

Scenario

1

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
REVENUES						
Portland Cement	127,408,235	127,408,235	127,408,235	127,408,235	127,408,235	127,408,235
Pozzolanic Cement	0	0	0	0	0	0
Municipal Sales Tax	2,216,903	2,216,903	2,216,903	2,216,903	2,216,903	2,216,903
Other Income	323,579	323,579	323,579	323,579	323,579	323,579
Net Revenues	125,514,911	125,514,911	125,514,911	125,514,911	125,514,911	125,514,911
PRODUCTION COSTS						
Labor costs	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum	1,417,500	1,417,500	1,417,500	1,417,500	1,417,500	1,417,500
Pozzolana	0	0	0	0	0	0
Explosives	504,000	504,000	504,000	504,000	504,000	504,000
Tires and chains	882,000	882,000	882,000	882,000	882,000	882,000
Fuel and lubricants	1,732,500	1,732,500	1,732,500	1,732,500	1,732,500	1,732,500
Electrical energy (fixed)	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)	7,969,500	7,969,500	7,969,500	7,969,500	7,969,500	7,969,500
Bunker	46,305,000	46,305,000	46,305,000	46,305,000	46,305,000	46,305,000
Refractory bricks	535,500	535,500	535,500	535,500	535,500	535,500
Grinding media	661,500	661,500	661,500	661,500	661,500	661,500
Paper bags	9,009,000	9,009,000	9,009,000	9,009,000	9,009,000	9,009,000
Materials and supplies	5,071,500	5,071,500	5,071,500	5,071,500	5,071,500	5,071,500
Add'l pozz op. costs	0	0	0	0	0	0
Repair and maintenance	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Total	89,788,000	89,788,000	89,788,000	89,788,000	89,788,000	89,788,000
GROSS OPERATING MARGIN	35,726,911	35,726,911	35,726,911	35,726,911	35,726,911	35,726,911
ADMINISTRATIVE COSTS						
Insurance	300,000	300,000	300,000	300,000	300,000	300,000
Administrative expenses	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,732,500	1,732,500	1,732,500	1,732,500	1,732,500	1,732,500
Net Financial expenses	399,617	399,617	399,617	399,617	399,617	399,617
Other expenses	288,849	288,849	288,849	288,849	288,849	288,849
Total	10,620,966	10,620,966	10,620,966	10,620,966	10,620,966	10,620,966
TOTAL CASH OPERATING MARGIN	25,105,945	25,105,945	25,105,945	25,105,945	25,105,945	25,105,945
DEPRECIATION	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194
PROFIT BEFORE TAXES	17,254,465	15,745,893	14,694,465	16,945,893	19,197,322	20,248,750
TAXES (excluding sales taxes)	5,199,180	4,746,609	4,431,180	5,106,609	5,782,038	6,097,466
PROFIT AFTER TAXES	12,055,284	10,999,284	10,263,284	11,839,284	13,415,284	14,151,284
DEPRECIATION (+)	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194
NON-CASH EXPENSES (+)						
NICALIT INVESTMENT (+)						
CAPITAL EXPENDITURES (-)	7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
CASH FLOW	11,986,764	12,439,336	18,274,764	17,599,336	16,923,907	16,608,478
Cash Flow % of Costs	11.1%	11.3%	16.5%	16.2%	15.9%	15.8%

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CANAL		23-Jun-93					Scenario
Depreciation Schedule (Cordobas)							1
		Actual <u>1991/92</u>	Projected <u>1992/93</u>	<u>1993/94</u>	<u>1994/95</u>	<u>1995/96</u>	<u>1996/97</u>
Annual New Capital Investment		0	0	2,400,000	14,220,000	14,220,000	7,920,000
Cumulative New Capital Investment		0	0	0	2,400,000	16,620,000	30,840,000
Depreciation, Avg. Life (Yrs.):	5	0	0	0	480,000	3,324,000	6,168,000
Depreciation on Existing Assets		920,791	1,137,813	492,054	492,054	492,054	492,054
Total Depreciation		920,791	1,137,813	492,054	972,054	3,816,054	6,660,054
Depreciation in '93 cordobas @	5%	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909

CANAL		23-Jun-93					Scenario
Tax Schedule (Cordobas)							1
		Actual <u>1991/92</u>	Projected <u>1992/93</u>	<u>1993/94</u>	<u>1994/95</u>	<u>1995/96</u>	<u>1996/97</u>
Sales		83,436,917	91,807,428	118,914,757	124,277,633	127,408,235	127,408,235
COIP Payment (Approx. 2% of Sales)		1,365,345	1,836,149	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		2,884,899	5,961,421	21,346,090	22,967,067	21,471,607	18,763,036
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		2,852,269	5,928,791	21,313,460	22,934,437	21,438,977	18,730,406
Corporate Tax Rate		35.5%	35.5%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		1,012,555	2,104,721	6,394,038	6,880,331	6,431,693	5,619,122
Total Miscellaneous Taxes		2,410,531	3,973,499	6,426,668	6,912,961	6,464,323	5,651,752

CANAL Depreciation Schedule (Cordobas)		Scenario 1					
		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Annual New Capital Investment		7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
Cumulative New Capital Investment		38,760,000	46,680,000	54,600,000	57,000,000	59,400,000	61,800,000
Depreciation, Avg. Life (Yrs.):	5	7,752,000	9,336,000	10,440,000	8,076,000	5,712,000	4,608,000
Depreciation on Existing Assets		492,054	492,054	492,054	492,054	492,054	492,054
Total Depreciation		8,244,054	9,828,054	10,932,054	8,568,054	6,204,054	5,100,054
Depreciation in '93 cordobas @	5%	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194

CANAL Tax Schedule (Cordobas)		Scenario 1					
		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Sales		127,408,235	127,408,235	127,408,235	127,408,235	127,408,235	127,408,235
COIP Payment (Approx. 2% of Sales)		0	0	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		17,254,465	15,745,893	14,694,465	16,945,893	19,197,322	20,243,750
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		17,221,834	15,713,263	14,661,834	16,913,263	19,164,692	20,216,120
Corporate Tax Rate		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		5,166,550	4,713,979	4,398,550	5,073,979	5,749,407	6,064,836
Total Miscellaneous Taxes		5,199,180	4,746,609	4,431,180	5,106,609	5,782,038	6,097,466

Scenario 2: Improved Case

Scenario 2 assumes, in addition to the assumptions made in Scenario 1, the following operational improvements achieved at the plant. The main attainable improvements will be to reduce the heat consumption of the kilns, increase their outputs, and increase their running times.

- **Bunker Cost**

	Actual	Projected	
	<u>1991/92</u>	<u>1992/93</u>	<u>1993/94 - 2002/03</u>
(per ton)	130	127	139.65

By decreasing the water content of the slurry, false air leakages, and kiln stoppages, it should be feasible to reduce the kiln's heat consumption by 5%. The variable costs of bunker would then be reduced by 7.35 cordobas per ton from the unit cost assumed in Scenario 1.

- **Plant Capacity**

The above mentioned reduction of heat consumption should allow for increased kiln output of 5% over the current kiln capacity of 1000 tons of clinker per day. Additional improved maintenance planning and brick quality should allow for a running time of 325 days. Therefore, the new clinker capacity becomes $1000 \times 1.05 \times 325 = 340,000$ tons per year. Assuming 95% clinker and 5% gypsum in the Portland cement produced, the new cement capacity of the plant becomes $340,000 / .95 = 360,000$ tons per year.

CANAL
Discounted Cash Flow Analysis
(000s of Cordobas)

23 Jun-93

Scenario
2

	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
NET SALES	117,169	122,439	128,545	134,956	141,687	143,399	143,399	143,399	143,399	143,399
OPERATING COSTS										
Labor	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600
Electrical Energy	10,038	10,374	10,762	11,170	11,599	11,708	11,708	11,708	11,708	11,708
Bunker	41,057	42,909	45,054	47,307	49,672	50,274	50,274	50,274	50,274	50,274
Paper Bags	8,408	8,788	9,227	9,688	10,173	10,296	10,296	10,296	10,296	10,296
Administrative Costs	10,505	10,578	10,663	10,752	10,845	10,868	10,868	10,868	10,868	10,868
Other Operating Costs	11,584	12,039	12,566	13,119	13,700	13,848	13,848	13,848	13,848	13,848
Depreciation	469	926	3,634	6,343	7,851	9,360	10,411	8,160	5,909	4,857
Total	93,662	97,213	103,507	109,980	115,441	117,955	119,006	116,755	114,503	113,452
PROFIT BEFORE TAXES	23,507	25,225	25,038	24,976	26,247	25,445	24,393	26,645	28,896	29,948
TAXES (excluding sales taxes)	7,075	7,590	7,534	7,516	7,897	7,656	7,341	8,016	8,692	9,007
PROFIT AFTER TAXES	16,432	17,635	17,504	17,460	18,350	17,789	17,053	18,629	20,205	20,941
DEPRECIATION (+)	469	926	3,634	6,343	7,851	9,360	10,411	8,160	5,909	4,857
CAPITAL EXPENDITURES (-)	2,400	14,220	14,220	7,920	7,920	7,920	2,400	2,400	2,400	2,400
CASH FLOW	14,501	4,341	6,918	15,883	18,281	19,229	25,064	24,389	23,713	23,398
NET PRESENT VALUE @ 18%	67,096	50,791								
TERMINAL VALUE	(10 years)	(7 years)								
	0	0								
FIRM VALUE	67,096	50,791								

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Sensitivity Analysis of Firm Value

Demand Scenarios	No Growth	Ec. Growth	10-Year Cash Flows			7-Year Cash Flows		
			Discount Rates			Discount Rates		
			14%	18%	22%	14%	18%	22%
1			47,634	39,884	33,944	34,167	29,969	26,563
2			80,558	67,096	56,741	58,405	50,791	44,608
3			89,383	75,181	64,178	67,230	58,876	52,045
4			96,468	81,959	70,673	74,315	65,653	58,540

Matconsult *2

CANAL

Cash Flow Projections (Cordobas)

23-Jun-93

Scenario

2

	Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES						
Portland Cement	83,436,917	91,807,428	118,914,757	124,277,633	130,491,515	137,016,030
Pozzolanic Cement	0	0	0	0	0	0
Municipal Sales Tax	1,913,969	2,121,501	2,069,117	2,162,431	2,270,552	2,384,079
Other Income	233,085	323,579	323,579	323,579	323,579	323,579
Net Revenues	81,756,033	90,009,505	117,169,219	122,438,781	128,544,541	134,955,529
PRODUCTION COSTS						
Labor costs		11,044,769	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum		1,249,746	1,323,005	1,382,670	1,451,804	1,524,393
Pozzolana		0	0	0	0	0
Explosives		433,073	470,402	491,616	516,197	542,006
Tires and chains		657,074	823,203	860,328	903,344	948,511
Fuel and lubricants		1,267,259	1,617,006	1,689,930	1,774,427	1,863,147
Electrical energy (fixed)		7,776,857	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)		0	7,438,225	7,773,678	8,162,362	8,570,476
Bunker		35,314,560	41,057,240	42,908,859	45,054,302	47,306,996
Refractory bricks		482,798	499,802	522,342	548,459	575,882
Grinding media		595,329	617,402	645,246	677,508	711,383
Paper bags		6,423,991	8,408,429	8,787,636	9,227,018	9,688,364
Materials and supplies		3,727,902	4,733,416	4,946,886	5,194,230	5,453,939
Add'l pozz. op. costs		0	0	0	0	0
Repair and maintenance		1,472,523	1,500,000	1,500,000	1,500,000	1,500,000
Total	65,610,223	70,445,182	82,688,128	85,709,191	89,209,651	92,885,099
GROSS OPERATING MARGIN	16,145,810	19,563,624	34,481,091	36,729,590	39,334,890	42,070,430
ADMINISTRATIVE COSTS						
Insurance	258,415	277,658	300,000	300,000	300,000	300,000
Administrative expenses	4,242,147	4,084,454	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,135,497	3,655,592	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,174,734	1,378,551	1,617,006	1,689,930	1,774,427	1,863,147
Net Financial expenses	563,775	399,617	399,617	399,617	399,617	399,617
Other expenses	2,965,552	2,668,520	288,849	288,849	288,849	288,849
Total	12,340,120	12,464,390	10,505,472	10,578,396	10,662,893	10,751,613
TOTAL CASH OPERATING MARGIN	3,805,690	7,099,234	23,975,620	26,151,194	28,671,998	31,318,817
DEPRECIATION	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909
PROFIT BEFORE TAXES	2,884,899	5,961,421	23,506,997	25,225,428	25,037,661	24,975,909
TAXES (excluding sales taxes)	2,410,531	3,973,499	7,074,940	7,590,469	7,534,139	7,515,614
PROFIT AFTER TAXES	474,369	1,987,922	16,432,057	17,634,959	17,503,521	17,460,295
DEPRECIATION (+)	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909
NON-CASH EXPENSES (+)	2,334,566	2,379,671				
NICALIT INVESTMENT (+)	1,520,528	4,175,366				
CAPITAL EXPENDITURES (-)	0	0	2,400,000	14,220,000	14,220,000	7,920,000
CASH FLOW	5,250,254	9,680,771	14,500,680	4,340,724	6,917,859	15,883,204
Cash Flow % of Costs	6.7%	11.5%	15.5%	4.5%	6.7%	14.4%

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CANAL
Cash Flow Projections (Cordobas)

Scenario

2

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
REVENUES						
Portland Cement	143,866,952	145,609,412	145,609,412	145,609,412	145,609,412	145,609,412
Pozzolanic Cement	0	0	0	0	0	0
Municipal Sales Tax	2,503,285	2,533,604	2,533,604	2,533,604	2,533,604	2,533,604
Other Income	323,579	323,579	323,579	323,579	323,579	323,579
Net Revenues	143,687,246	143,399,387	143,399,387	143,399,387	143,399,387	143,399,387
PRODUCTION COSTS						
Labor costs	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum	1,600,614	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000
Pozzolana	0	0	0	0	0	0
Explosives	569,107	576,000	576,000	576,000	576,000	576,000
Tires and chains	995,938	1,008,000	1,008,000	1,008,000	1,008,000	1,008,000
Fuel and lubricants	1,956,306	1,980,000	1,980,000	1,980,000	1,980,000	1,980,000
Electrical energy (fixed)	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)	8,999,008	9,108,000	9,108,000	9,108,000	9,108,000	9,108,000
Bunker	49,672,388	50,274,000	50,274,000	50,274,000	50,274,000	50,274,000
Refractory bricks	604,676	612,000	612,000	612,000	612,000	612,000
Grinding media	746,953	756,000	756,000	756,000	756,000	756,000
Paper bags	10,172,791	10,296,000	10,296,000	10,296,000	10,296,000	10,296,000
Materials and supplies	5,726,641	5,796,000	5,796,000	5,796,000	5,796,000	5,796,000
Add'l pozz. op. costs	0	0	0	0	0	0
Repair and maintenance	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Total	96,744,422	97,726,000	97,726,000	97,726,000	97,726,000	97,726,000
GROSS OPERATING MARGIN	44,942,824	45,673,387	45,673,387	45,673,387	45,673,387	45,673,387
ADMINISTRATIVE COSTS						
Insurance	300,000	300,000	300,000	300,000	300,000	300,000
Administrative expenses	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,956,306	1,980,000	1,980,000	1,980,000	1,980,000	1,980,000
Net Financial expenses	399,617	399,617	399,617	399,617	399,617	399,617
Other expenses	288,849	288,849	288,849	288,849	288,849	288,849
Total	10,844,772	10,868,466	10,868,466	10,868,466	10,868,466	10,868,466
TOTAL CASH OPERATING MARGIN	34,098,052	34,804,921	34,804,921	34,804,921	34,804,921	34,804,921
DEPRECIATION	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194
PROFIT BEFORE TAXES	26,246,572	25,444,869	24,393,441	26,644,869	28,896,298	29,947,726
TAXES (excluding sales taxes)	7,896,813	7,656,302	7,340,873	8,016,302	8,691,730	9,007,159
PROFIT AFTER TAXES	18,349,759	17,788,567	17,052,567	18,628,567	20,204,567	20,940,567
DEPRECIATION (+)	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194
NON-CASH EXPENSES (+)						
NICALIT INVESTMENT (+)						
CAPITAL EXPENDITURES (-)	7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
CASH FLOW	18,281,239	19,228,619	25,064,047	24,388,619	23,713,190	23,397,762
Cash Flow % of Costs	15.8%	16.3%	21.1%	20.9%	20.7%	20.6%

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CANAL		23-Jun-93					Scenario
Depreciation Schedule (Cordobas)							2
		Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment		0	0	2,400,000	14,220,000	14,220,000	7,920,000
Cumulative New Capital Investment		0	0	0	2,400,000	16,620,000	30,840,000
Depreciation, Avg. Life (Yrs.):	5	0	0	0	480,000	3,324,000	6,168,000
Depreciation on Existing Assets		920,791	1,137,813	492,054	492,054	492,054	492,054
Total Depreciation		920,791	1,137,813	492,054	972,054	3,816,054	6,660,054
Depreciation in '93 cordobas @	5%	920,791	1,137,813	468,623	925,766	3,634,337	6,342,909

CANAL		23-Jun-93					Scenario
Tax Schedule (Cordobas)							2
		Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
Sales		83,436,917	91,807,428	118,914,757	124,277,633	130,491,515	137,016,030
COIP Payment (Approx. 2% of Sales)		1,365,345	1,836,149	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		2,884,899	5,961,421	23,506,997	25,225,428	25,037,661	24,975,909
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		2,852,269	5,928,791	23,474,367	25,192,798	25,005,031	24,943,279
Corporate Tax Rate		35.5%	35.5%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		1,012,555	2,104,721	7,042,310	7,557,839	7,501,509	7,482,984
Total Miscellaneous Taxes		2,410,531	3,973,499	7,074,940	7,590,469	7,534,139	7,515,614

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CANAL Depreciation Schedule (Cordobas)							Scenario 2
		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Annual New Capital Investment		7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
Cumulative New Capital Investment		38,760,000	46,680,000	54,600,000	57,000,000	59,400,000	61,800,000
Depreciation, Avg. Life (Yrs.):	5	7,752,000	9,336,000	10,440,000	8,076,000	5,712,000	4,608,000
Depreciation on Existing Assets		492,054	492,054	492,054	492,054	492,054	492,054
Total Depreciation		8,244,054	9,828,054	10,932,054	8,568,054	6,204,054	5,100,054
Depreciation in '93 cordobas @	5%	7,851,480	9,360,051	10,411,480	8,160,051	5,908,623	4,857,194

CANAL Tax Schedule (Cordobas)							Scenario 2
		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Sales		143,866,952	145,609,412	145,609,412	145,609,412	145,609,412	145,609,412
COIP Payment (Approx. 2% of Sales)		0	0	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		26,246,572	25,444,869	24,393,441	26,644,869	28,896,298	29,947,726
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		26,213,942	25,412,239	24,360,810	26,612,239	28,863,668	29,915,096
Corporate Tax Rate		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		7,864,183	7,623,672	7,308,243	7,983,672	8,659,100	8,974,529
Total Miscellaneous Taxes		7,896,813	7,656,302	7,340,873	8,016,302	8,691,730	9,007,159

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Scenario 3: Pozzolanic Cement

Scenario 3 assumes, along with the operational improvements in Scenario 2, that CANAL will use one-third of its clinker output towards the production of pozzolanic cement, made of 30% pozzolana. This new production will increase the plant's production capacity, as well as reducing the operating costs per ton of cement. The capital expenditures to allow for the production of pozzolanic cement are assumed to be completed in 1995/96 so that the new operations can begin in 1996/97.

- **Plant Capacity**

Using two-thirds of the clinker output (under the improved scenario described above) to produce Portland cement will result in a capacity of approximately $340,000 * 2/3 / .95 = 240,000$ tons of Portland cement per year. Assuming a mix of 65% clinker, 30% pozzolana, and 5% gypsum in the pozzolanic cement produced, the pozzolanic cement capacity (using 1/3 of the clinker output) of the plant becomes approximately $340,000 * 1/3 / .65 = 175,000$ tons per year. Therefore, the new cement capacity for CANAL becomes approximately $240,000 + 175,000 = 415,000$ tons per year.

- **Pozzolana Costs**

	<u>Actual</u> <u>1991/92</u>	<u>Projected</u> <u>1992/93</u>	<u>1993/94 - 2002/03</u>
(per ton)	0	0	20

It is assumed that the pozzolana will cost 20 cordobas per ton. This pozzolana will make up 30% of the pozzolanic cement produced.

- **Electrical Energy Costs**

	<u>Actual</u> <u>1991/92</u>	<u>Projected</u> <u>1992/93</u>	<u>1993/94 - 2002/03</u>
Fixed			2,600,000
Variable (per ton of Portland cement)			25.3
Variable (per ton of pozzolanic cement)			30.8
Total	5,815,143	7,776,857	* 10,292,093

* Assuming 1992/93 production of 278,489 tons, with 160,976 tons of Portland cement and 117,513 tons of pozzolanic cement.

It is assumed that grinding pozzolanic cement will require 55 kWh/t as opposed to 35 kWh/t for ordinary Portland cement. These increased electrical energy costs are due

to the finer grinding required for pozzolanic cement. Assuming a cost of 0.275 cordobas per kWh, the increase of 20 kWh/t will increase the variable costs for producing pozzolanic cement at CANAL to $25.3 + 20 * 0.275 = 30.8$ cordobas per ton.

- **Additional Grinding Costs**

	<u>Actual</u> <u>1991/92</u>	<u>Projected</u> <u>1992/93</u>	<u>1993/94 - 2002/03</u>
(per ton)	0	0	2

It is assumed that grinding pozzolanic cement at CANAL will result in additional grinding costs for grinding media, spares, etc. to account for the finer grinding which is required for the pozzolanic cement. These additional grinding costs will amount to two cordobas per ton of pozzolanic cement produced per year.

- **Capital Expenditures**

For grinding pozzolanic cement it might be required to convert at least one of the present mills from an open circuit mill to a closed circuit mill. This conversion would include adding a separator and the necessary transport equipment to it. The conversion would also require extending the mill buildings. Therefore, it is assumed that, in addition to the capital expenditures assumed in Scenaric 1, to allow for the finer grinding and to increase the reliability of the mills, an additional 16 million cordobas of capital expenditures will be invested into the plant. The resulting capital expenditure schedule for Scenario 3 is:

<u>Years</u>	<u>Capital Expenditures</u>
1	2,400,000
2	14,220,000
3	30,220,000
4-6	7,920,000
7-10	2,400,000

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CANAL
Discounted Cash Flow Analysis
(000s of Cordobas)

23 Jun-93

Scenario
1

	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
NET SALES	117,169	122,439	128,545	134,956	141,687	148,755	156,177	159,978	159,978	159,978
OPERATING COSTS										
Labor	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600	11,600
Electrical Energy	10,038	10,374	11,511	11,957	12,425	12,916	13,432	13,696	13,696	13,696
Bunker	41,057	42,909	45,054	47,307	49,672	52,156	54,764	56,099	56,099	56,099
Paper Bags	8,408	8,788	9,227	9,688	10,173	10,681	11,215	11,489	11,489	11,489
Administrative Costs	10,505	10,578	10,663	10,752	10,845	10,943	11,045	11,098	11,098	11,098
Other Operating Costs	11,584	12,039	13,655	14,263	14,901	15,571	16,275	16,635	16,635	16,635
Depreciation	469	926	3,634	9,391	10,899	12,408	13,459	11,208	5,909	4,857
Total	93,662	97,213	105,345	114,957	120,515	126,274	131,790	131,825	126,526	125,474
PROFIT BEFORE TAXES	23,507	25,225	23,200	19,999	21,173	22,481	24,387	28,154	33,453	34,504
TAXES (excluding sales taxes)	7,075	7,590	6,983	6,022	6,375	6,767	7,339	8,469	10,059	10,374
PROFIT AFTER TAXES	16,432	17,635	16,217	13,976	14,798	15,714	17,048	19,685	23,394	24,130
DEPRECIATION (+)	469	926	3,634	9,391	10,899	12,408	13,459	11,208	5,909	4,857
CAPITAL EXPENDITURES (-)	2,400	14,220	30,220	7,920	7,920	7,920	2,400	2,400	2,400	2,400
CASH FLOW	14,501	4,341	(10,369)	15,447	17,777	20,201	28,107	28,492	26,903	26,587
NET PRESENT VALUE @ 18%	59,865	41,140								
(10 years)										
(7 years)										
TERMINAL VALUE	0	0								
FIRM VALUE	59,865	41,140								

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Sensitivity Analysis of Firm Value

Demand Scenarios	No Growth Ec. Growth Ec. Growth *2 Matconsult	10-Year Cash Flows			7-Year Cash Flows		
		Discount Rates			Discount Rates		
		14%	18%	22%	14%	18%	22%
1		34,989	28,634	23,874	22,232	19,234	16,871
2		73,309	59,865	49,695	47,876	41,140	35,756
3		93,404	77,300	64,960	66,605	57,569	50,274
4		114,832	97,504	84,063	88,032	77,774	69,377

CANAL
Cash Flow Projections (Cordobas)

Scenario

	23 Jun 93					
	Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
REVENUES						
Portland Cement	83,436,917	91,807,428	118,914,757	124,277,633	75,428,621	79,200,017
Pozzolanic Cement	0	0	0	0	55,062,893	57,816,013
Municipal Sales Tax	1,913,969	2,121,501	2,069,117	2,162,431	2,270,552	2,384,079
Other Income	233,085	323,579	323,579	323,579	323,579	323,579
Net Revenues	81,756,033	90,009,505	117,169,219	122,438,781	128,544,541	134,955,529
PRODUCTION COSTS						
Labor costs		11,044,769	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum		1,249,746	1,323,005	1,382,670	1,451,804	1,524,393
Pozzolana		0	0	0	816,814	857,655
Explosives		433,073	470,402	491,616	516,197	542,006
Tires and chains		657,074	823,203	860,328	903,344	948,511
Fuel and lubricants		1,267,259	1,617,006	1,689,930	1,774,427	1,863,147
Electrical energy (fixed)		7,776,857	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)		0	7,438,225	7,773,678	8,911,108	9,356,660
Bunker		35,314,560	41,057,240	42,908,859	45,054,302	47,306,996
Refractory bricks		482,798	499,802	522,342	548,459	575,882
Grinding media		595,329	617,402	645,246	677,508	711,383
Paper bags		6,423,991	8,408,429	8,787,636	9,227,018	9,688,364
Materials and supplies		3,727,902	4,733,416	4,946,886	5,194,230	5,453,939
Add'l pozz. op. costs		0	0	0	272,271	285,885
Repair and maintenance		1,472,523	1,500,000	1,500,000	1,500,000	1,500,000
Total	65,610,223	70,445,882	82,688,128	85,709,191	91,047,483	94,814,822
GROSS OPERATING MARGIN	16,145,810	19,563,624	34,481,091	36,729,590	37,497,058	40,140,707
ADMINISTRATIVE COSTS						
Insurance	258,415	277,658	300,000	300,000	300,000	300,000
Administrative expenses	4,242,147	4,084,454	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,135,497	3,655,592	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,174,734	1,378,551	1,617,006	1,689,930	1,774,427	1,863,147
Net Financial expenses	563,775	399,617	399,617	399,617	399,617	399,617
Other expenses	2,965,552	2,668,520	288,849	288,849	288,849	288,849
Total	12,340,120	12,464,390	10,505,472	10,578,396	10,662,893	10,751,613
TOTAL CASH OPERATING MARGIN	3,805,690	7,099,234	23,975,620	26,151,194	26,834,166	29,389,094
DEPRECIATION	920,791	1,137,813	468,623	925,766	3,614,337	9,390,528
PROFIT BEFORE TAXES	2,884,899	5,961,421	23,506,997	25,225,428	23,199,828	19,998,567
TAXES (excluding sales taxes)	2,410,531	3,973,499	7,074,940	7,590,469	6,982,790	6,022,411
PROFIT AFTER TAXES	474,369	1,987,922	16,432,057	17,634,959	16,217,039	13,976,156
DEPRECIATION (+)	920,791	1,137,813	468,623	925,766	3,614,337	9,390,528
NON CASH EXPENSES (+)	2,334,566	2,379,671				
NET CASH INVESTMENT (+)	1,520,528	4,175,366				
CAPITAL EXPENDITURES (-)	0	0	2,400,000	14,220,000	30,220,000	7,920,000
CASH FLOW	5,250,254	9,680,771	14,500,680	4,340,724	(10,368,624)	15,446,683
Cash Flow % of Costs	6.7%	11.5%	15.5%	4.5%	9.8%	11.4%

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CANAL

Cash Flow Projections (Cordobas)

Scenario

1

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
REVENUES						
Portland Cement	83,160,088	87,317,952	91,683,897	93,920,175	93,920,175	93,920,175
Pozzolanic Cement	60,706,864	63,742,105	66,929,245	68,561,728	68,561,728	68,561,728
Municipal Sales Tax	2,503,285	2,628,445	2,759,869	2,827,185	2,827,185	2,827,185
Other Income	323,579	323,579	323,579	323,579	323,579	323,579
Net Revenues	141,687,246	148,755,191	156,176,851	159,978,296	159,978,296	159,978,296
PRODUCTION COSTS						
Labor costs	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum	1,600,614	1,680,642	1,764,675	1,807,718	1,807,718	1,807,718
Pozzolana	900,538	945,564	992,842	1,017,059	1,017,059	1,017,059
Explosives	569,107	597,562	627,440	642,744	642,744	642,744
Tires and chains	995,938	1,045,733	1,098,020	1,124,802	1,124,802	1,124,802
Fuel and lubricants	1,956,306	2,054,118	2,156,825	2,209,433	2,209,433	2,209,433
Electrical energy (fixed)	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (variable)	9,824,501	10,315,709	10,831,500	11,095,693	11,095,693	11,095,693
Bunker	49,672,388	52,155,923	54,763,748	56,099,500	56,099,500	56,099,500
Refractory bricks	604,676	634,909	666,655	682,916	682,916	682,916
Grinding media	746,953	784,300	823,515	843,602	843,602	843,602
Paper bags	10,172,791	10,681,414	11,215,490	11,489,049	11,489,049	11,489,049
Materials and supplies	5,726,641	6,012,964	6,313,615	6,467,612	6,467,612	6,467,612
Add'l pozz. op. costs	300,179	315,188	330,947	339,020	339,020	339,020
Repair and maintenance	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Total	98,770,633	102,924,025	107,285,272	109,519,145	109,519,145	109,519,145
GROSS OPERATING MARGIN	42,916,613	45,831,166	48,891,579	50,459,151	50,459,151	50,459,151
ADMINISTRATIVE COSTS						
Insurance	300,000	300,000	300,000	300,000	300,000	300,000
Administrative expenses	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses	1,956,306	2,054,118	2,156,825	2,209,433	2,209,433	2,209,433
Net Financial expenses	399,617	399,617	399,617	399,617	399,617	399,617
Other expenses	288,849	288,849	288,849	288,849	288,849	288,849
Total	10,844,772	10,942,584	11,045,291	11,097,899	11,097,899	11,097,899
TOTAL CASH OPERATING MARGIN	32,071,841	34,888,582	37,846,288	39,361,252	39,361,252	39,361,252
DEPRECIATION	10,899,099	12,407,670	13,459,099	11,207,670	5,908,623	4,857,194
PROFIT BEFORE TAXES	21,172,742	22,480,912	24,387,189	28,153,582	33,452,629	34,504,058
TAXES (excluding sales taxes)	6,374,664	6,767,115	7,338,998	8,468,916	10,058,630	10,374,058
PROFIT AFTER TAXES	14,798,078	15,713,797	17,048,191	19,684,666	23,394,000	24,130,000
DEPRECIATION (+)	10,899,099	12,407,670	13,459,099	11,207,670	5,908,623	4,857,194
NON CASH EXPENSES (+)						
REALITY INVESTMENT (+)						
CAPITAL EXPENDITURES (-)	7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
CASH FLOW	17,777,177	20,201,468	28,107,290	28,492,337	26,902,622	26,587,194
Cash Flow % of Costs	14.8%	16.0%	21.3%	21.6%	21.3%	21.3%

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CANAL Depreciation Schedule (Cordobas)		23 Jun 93					Scenario 3
		Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
Annual New Capital Investment		0	0	2,400,000	14,220,000	30,220,000	7,920,000
Cumulative New Capital Investment		0	0	0	2,400,000	16,620,000	46,840,000
Depreciation, Avg. Life (Yrs.):	5	0	0	0	480,000	3,324,000	9,368,000
Depreciation on Existing Assets		920,791	1,137,813	492,054	492,054	492,054	492,054
Total Depreciation		920,791	1,137,813	492,054	972,054	3,816,054	9,860,054
Depreciation in '93 cordobas @	5%	920,791	1,137,813	468,623	925,766	3,634,337	9,390,528

CANAL Tax Schedule (Cordobas)		23-Jun-93					Scenario 3
		Actual 1991/92	Projected 1992/93	1993/94	1994/95	1995/96	1996/97
Sales		83,436,917	91,807,428	118,914,757	124,277,633	130,491,515	137,016,030
COIP Payment (Approx. 2% of Sales)		1,365,345	1,836,149	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		2,884,899	5,961,421	23,506,997	25,225,428	23,199,828	19,998,567
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		2,852,269	5,928,791	23,474,367	25,192,798	23,167,198	19,965,937
Corporate Tax Rate		35.5%	35.5%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		1,012,555	2,104,721	7,042,310	7,557,839	6,950,160	5,989,781
Total Miscellaneous Taxes		2,410,531	3,973,499	7,074,940	7,590,469	6,982,790	6,022,411

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CANAL	Scenario
Depreciation Schedule (Cordobas)	3

		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Annual New Capital Investment		7,920,000	7,920,000	2,400,000	2,400,000	2,400,000	2,400,000
Cumulative New Capital Investment		54,760,000	62,680,000	70,600,000	73,000,000	75,400,000	77,800,000
Depreciation, Avg. Life (Yrs.):	5	10,952,000	12,536,000	13,640,000	11,276,000	5,712,000	4,608,000
Depreciation on Existing Assets		492,054	492,054	492,054	492,054	492,054	492,054
Total Depreciation		11,444,054	13,028,054	14,132,054	11,768,054	6,204,054	5,100,054
Depreciation in '93 cordobas @	5%	10,899,099	12,407,670	13,459,099	11,207,670	5,908,623	4,857,194

CANAL	Scenario
Tax Schedule (Cordobas)	3

		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Sales		143,866,952	151,060,057	158,613,141	162,481,902	162,481,902	162,481,902
COIP Payment (Approx. 2% of Sales)		0	0	0	0	0	0
Unmovable Assets		3,263,003	3,263,003	3,263,003	3,263,003	3,263,003	3,263,003
Municipal property tax (1%)		32,630	32,630	32,630	32,630	32,630	32,630
Profit Before Taxes		21,172,742	22,480,912	24,387,189	28,153,582	33,452,629	34,504,058
Less: Municipal property tax		(32,630)	(32,630)	(32,630)	(32,630)	(32,630)	(32,630)
Profit Before Corporate Tax		21,140,112	22,448,282	24,354,559	28,120,952	33,419,999	34,471,428
Corporate Tax Rate		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Corporate Tax		6,342,034	6,734,485	7,306,368	8,436,286	10,026,000	10,341,428
Total Miscellaneous Taxes		6,374,664	6,767,115	7,338,998	8,468,916	10,058,630	10,374,058

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CANAL

Cash Flow Assumptions

23-Jun-93

		Actual	Projected				
		1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
CAPACITY (TONS)							
	Scenario 1	315,000					
	Scenario 2	360,000					
	Scenario 3	415,000					
	Selected	2	360,000				
DEMAND (TONS)							
	No Growth	262,976	278,489	278,489	278,489	278,489	278,489
	Economic Growth	262,976	278,489	294,001	307,260	322,623	338,754
	Economic Growth*2	262,976	278,489	309,903	336,948	369,677	406,645
	Matconsult	262,976	278,489	609,158	628,150	647,794	668,104
	Selected	2	262,976	278,489	294,001	307,260	322,623
PRODUCTION (TONS)							
Portland							
	Scenario 1	259,043	277,982	294,001	307,260	315,000	315,000
	Scenario 2	259,043	277,982	294,001	307,260	322,623	338,754
	Scenario 3	259,043	277,982	294,001	307,260	186,487	195,812
	Selected	2	259,043	277,982	294,001	307,260	322,623
Pozzolanic							
	Scenario 1	0	0	0	0	0	0
	Scenario 2	0	0	0	0	0	0
	Scenario 3	0	0	0	0	136,136	142,942
	Selected	2	0	0	0	0	0
SALES (TONS)							
Portland							
	Scenario 1	262,976	278,489	294,001	307,260	315,000	315,000
	Scenario 2	262,976	278,489	294,001	307,260	322,623	338,754
	Scenario 3	262,976	278,489	294,001	307,260	186,487	195,812
	Selected	2	262,976	278,489	294,001	307,260	322,623
Pozzolanic							
	Scenario 1	0	0	0	0	0	0
	Scenario 2	0	0	0	0	0	0
	Scenario 3	0	0	0	0	136,136	142,942
	Selected	2	0	0	0	0	0

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CANAL
Cash Flow Assumptions

		<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
CAPACITY (TONS)							
Scenario 1							
Scenario 2							
Scenario 3							
Selected	2						
DEMAND (TONS)							
No Growth		278,489	278,489	278,489	278,489	278,489	278,489
Economic Growth		355,692	373,476	392,150	401,715	401,715	401,715
Economic Growth*2		447,309	492,040	541,244	567,017	567,017	567,017
Matconsult		689,089	710,775	733,208	744,620	744,620	744,620
Selected	2	355,692	373,476	392,150	401,715	401,715	401,715
PRODUCTION (TONS)							
Portland							
Scenario 1		315,000	315,000	315,000	315,000	315,000	315,000
Scenario 2		355,692	360,000	360,000	360,000	360,000	360,000
Scenario 3		205,602	215,882	226,676	232,205	232,205	232,205
Selected	2	355,692	360,000	360,000	360,000	360,000	360,000
Pozzolanic							
Scenario 1		0	0	0	0	0	0
Scenario 2		0	0	0	0	0	0
Scenario 3		150,090	157,594	165,474	169,510	169,510	169,510
Selected	2	0	0	0	0	0	0
SALES (TONS)							
Portland							
Scenario 1		315,000	315,000	315,000	315,000	315,000	315,000
Scenario 2		355,692	360,000	360,000	360,000	360,000	360,000
Scenario 3		205,602	215,882	226,676	232,205	232,205	232,205
Selected	2	355,692	360,000	360,000	360,000	360,000	360,000
Pozzolanic							
Scenario 1		0	0	0	0	0	0
Scenario 2		0	0	0	0	0	0
Scenario 3		150,090	157,594	165,474	169,510	169,510	169,510
Selected	2	0	0	0	0	0	0

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CANAL
Cash Flow Assumptions

23-Jun-93

	Actual <u>1991/92</u>	Projected <u>1992/93</u>	<u>1993/94</u>	<u>1994/95</u>	<u>1995/96</u>	<u>1996/97</u>
NICALIT INVESTMENT	1,520,528	4,175,366				
PRICES (/TON)						
Scenario 1	317	330	404	404	404	404
Scenario 2	317	330	404	404	404	404
Scenario 3	317	330	404	404	404	404
Selected	2 317	330	404	404	404	404
OPERATING COSTS (CORDOBAS)						
Labor costs (fixed)	9,637,037	11,044,769	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum (/ton)	3.8504	4.4876	4.5000	4.5000	4.5000	4.5000
Pozzolana (/ton pozz.)	0	0	6	6	6	6
Explosives (/ton)	1.9248	1.5551	1.6000	1.6000	1.6000	1.6000
Tires and chains (/ton)	1.7145	2.3594	2.8000	2.8000	2.8000	2.8000
Fuel and lubricants (/ton)	5.9806	4.5505	5.5000	5.5000	5.5000	5.5000
Electrical energy (fixed)	5,815,143	7,776,857	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (/ton)	0.0	0.0	25.3	25.3	25.3	25.3
Electrical energy (/ton pozz.)	0	0	30.8	30.8	30.8	30.8
Bunker (/ton)	130	127	140	140	140	140
Refractory bricks (/ton)	0.6855	1.7336	1.7000	1.7000	1.7000	1.7000
Grinding media (/ton)	0.6560	2.1377	2.1000	2.1000	2.1000	2.1000
Paper bags (/ton)	22.7522	23.0673	28.6000	28.6000	28.6000	28.6000
Materials and supplies (/ton)	7.8821	13.3862	16.1000	16.1000	16.1000	16.1000
Add'l pozz. op costs (/ton pozz.)	0	0	2	2	2	2
Repair and maintenance (fixed)	1,091,269	1,472,523	1,500,000	1,500,000	1,500,000	1,500,000
Insurance (fixed)	258,415	277,658	300,000	300,000	300,000	300,000
Administrative expenses (fixed)	4,242,147	4,084,454	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses (fixed)	3,135,497	3,655,592	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses (/ton)	4.6609	4.9501	5.5000	5.5000	5.5000	5.5000
Net Financial expenses (fixed)	563,775	399,617	399,617	399,617	399,617	399,617
Other expenses (fixed)	2,965,552	2,668,520	288,849	288,849	288,849	288,849
Other income (fixed)	233,085	323,579	323,579	323,579	323,579	323,579
Non-cash expenses (fixed)	2,334,566	2,379,671				

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Cash Flow Assumptions

	<u>1997/98</u>	<u>1998/99</u>	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
NICALIT INVESTMENT						
PRICES (/TON)						
Scenario 1	404	404	404	404	404	404
Scenario 2	404	404	404	404	404	404
Scenario 3	404	404	404	404	404	404
Selected	2 404	404	404	404	404	404
OPERATING COSTS (CORDOBAS)						
Labor costs (fixed)	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000	11,600,000
Gypsum (/ton)	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000
Pozzolana (/ton pozz.)	6	6	6	6	6	6
Explosives (/ton)	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Tires and chains (/ton)	2.8000	2.8000	2.8000	2.8000	2.8000	2.8000
Fuel and lubricants (/ton)	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Electrical energy (fixed)	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000	2,600,000
Electrical energy (/ton)	25.3	25.3	25.3	25.3	25.3	25.3
Electrical energy (/ton pozz.)	30.8	30.8	30.8	30.8	30.8	30.8
Bunker (/ton)	140	140	140	140	140	140
Refractory bricks (/ton)	1.7000	1.7000	1.7000	1.7000	1.7000	1.7000
Grinding media (/ton)	2.1000	2.1000	2.1000	2.1000	2.1000	2.1000
Paper bags (/ton)	28.6000	28.6000	28.6000	28.6000	28.6000	28.6000
Materials and supplies (/ton)	16.1000	16.1000	16.1000	16.1000	16.1000	16.1000
Add'l pozz. op costs (/ton pozz.)	2	2	2	2	2	2
Repair and maintenance (fixed)	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Insurance (fixed)	300,000	300,000	300,000	300,000	300,000	300,000
Administrative expenses (fixed)	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000	4,200,000
Social expenses (fixed)	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000	3,700,000
Selling expenses (/ton)	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Net Financial expenses (fixed)	399,617	399,617	399,617	399,617	399,617	399,617
Other expenses (fixed)	288,849	288,849	288,849	288,849	288,849	288,849
Other income (fixed)	323,579	323,579	323,579	323,579	323,579	323,579
Non-cash expenses (fixed)						

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