# 第15章　提言

本調査の結果に基づき、下記の提言を行なう。

(1) 本計画は総合的に評価した結果、実施に値するものであると結論される。したがって、SPLに本計画の具体的実施を勧めるが実施に当り以下に述べる条件を整えることが望ましい。

(2) 輸入税が本計画の経済性に及ぼす影響がきわめて大きいことに鑑み、SPLは輸入税控除の策を積極的に検討する必要がある。

(3) SPLは本計画のためにできるだけ有利なファイナンスを求めるべきである。ペルーが慢性的に多大の負債を負っていることを考慮すれば、できるだけ有利な公的融資を用いることが望ましい。

(4) SPLはパイプ、絶縁電線、くつ、床材、玩具、家庭用品、事務用品などの成形品、シートなどの製造業者やプラスチック類の卸売業者に対し、安定した販売ルートを確立すべきである。

(5) SPLは本社と工場の双方に、生産部門とは独立して品質管理を行なう組織を新設する必要がある。本社の品質管理部門は市場の要求に関する情報を入手分析して生産に反映させる。工場の品質管理部門は規格不合格品の出荷が行なわれないよう点検することが必要である。

(6) SPLは将来電力料金が値上げされた場合、特恵料金で供給を受けられるよう交渉に努めるべきである。電力費の増加は、本計画の経済性に多大の影響を及ぼす。

(7) 石灰石の採鉱よりPVC生産に至る一連の生産プロセスには、経験的知識を必要とするので、SPLは工業的に既に確立した技術のみを採用し、経験豊かなプロセスライセンサーやエンジニアリング会社を起用すべきである。

(8) SPLは操業に当り、エンジニア、オペレーターの訓練を実施する必要がある。訓練は実地訓練が望ましく、始業運転、正常運転、操業停止、定期点検なども含むべきである。

(9) 石灰石鉱山を実際に開発するのに先立ち、詳細な地質調査、ボーリングテスト、鉱量評価、鉱山開発計画の立案などが専門家により行なわれるべきである。

# 第16章　謝辞

本報告書の最後に当り、本調査の実施に協力して頂いた関係諸氏に心より感謝の意を表する。とりわけ現地調査からドラフトミーティングに至るまで絶大なる協力を賜わったSPLの諸氏に深く感謝する。また在ペルー日本国大使館の担当諸氏には、本調査に関する有益な示唆を賜わった。そのほか協力を頂いた機関および企業を下記して謝意を表わしたい。

Ingemmet
Cement Lima
ENCI
COFIDE
PRIDI
PROCARBON
Elèctroperu
Hidrandina
HEFC
CAP
Minsterio de Agricultura
SIDERPERU
Ministerio de Industria, Turismo y Integracion
FUJITA GUMI
COSAPI
HORNOS ELECTRICOS S.A.
CORPORACION DE INDUSTRIAS PLASTICAS
PLASTICOS FORT
COPSA
INDECO PERUANA
Carbide Plant in Chimbote
IBERO INTERNATIONAL
PISOPAK DEL PERU
FABRICA DE CALZADO
JETRO

SOCIEDAD DE INDUSTRIAS
ANCOM
Ministerio de Economia, Finansa y Comercio
Metodos de Programacion de invesiones

PAGE 1 ---------- BREAKDOWN SUMMARY SHEET ----------

*** CAPITAL INVESTMENT COST ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| CAPITAL INVESTMENT | 5671.00 | 27799.40 | 26375.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 5550.00 | 27219.00 | 19152.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MINING | 0.00 | 1919.00 | 558.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PLANT | 4132.00 | 21782.00 | 16404.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CIVIL & BUILDING | 1418.00 | 3518.00 | 2190.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 121.00 | 121.00 | 1672.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 2840.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 459.35 | 2711.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| CAPITAL INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| MINING | 2171.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PLANT | 0.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CIVIL & BUILDING | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| CAPITAL INVESTMENT | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 0.00 | 0.00 | 0.00 |
| MINING | 0.00 | 0.00 | 0.00 |
| PLANT | 0.00 | 0.00 | 0.00 |
| CIVIL & BUILDING | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 0.00 | 0.00 |

*** INCREASING W/C ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 0.00 | 0.00 | 0.00 | 60.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| INCREASING W/C | 0.00 | 0.00 | 1055.20 | 131.90 | 131.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 |

## BREAKDOWN SUMMARY SHEET

### DEPRECIATION/AMORTIZATION

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| DPR./AMT. | 0.00 | 0.00 | 0.00 | 5473.18 | 5473.18 | 5473.18 | 5473.18 | 5473.18 | 4977.78 | 4977.78 |
| DEPRECIATION | 0.00 | 0.00 | 0.00 | 4964.73 | 4964.73 | 4964.73 | 4964.73 | 4964.73 | 4469.33 | 4469.33 |
| MINING | 0.00 | 0.00 | 0.00 | 495.40 | 495.40 | 495.40 | 495.40 | 495.40 | 0.00 | 0.00 |
| PLANT | 0.00 | 0.00 | 0.00 | 4231.80 | 4231.80 | 4231.80 | 4231.80 | 4231.80 | 4231.80 | 4231.80 |
| CIVIL & BUILDING | 0.00 | 0.00 | 0.00 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 |
| AMORTIZATION | 0.00 | 0.00 | 0.00 | 508.45 | 508.45 | 508.45 | 508.45 | 508.45 | 508.45 | 508.45 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 | 191.40 | 191.40 | 191.40 | 191.40 | 191.40 | 191.40 | 191.40 |
| IDC | 0.00 | 0.00 | 0.00 | 317.05 | 317.05 | 317.05 | 317.05 | 317.05 | 317.05 | 317.05 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| DPR./AMT. | 4977.78 | 5411.98 | 5411.98 | 912.33 | 912.33 | 912.33 | 737.83 | 737.83 | 1172.03 | 1172.03 |
| DEPRECIATION | 4469.33 | 4903.53 | 4903.53 | 912.33 | 912.33 | 912.33 | 737.83 | 737.83 | 1172.03 | 1172.03 |
| MINING | 0.00 | 434.20 | 434.20 | 434.20 | 434.20 | 434.20 | 0.00 | 0.00 | 434.20 | 434.20 |
| PLANT | 4231.80 | 4231.80 | 4231.80 | 240.60 | 240.60 | 240.60 | 500.30 | 500.30 | 500.30 | 500.30 |
| CIVIL & BUILDING | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 | 237.53 |
| AMORTIZATION | 508.45 | 508.45 | 508.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 191.40 | 191.40 | 191.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 317.05 | 317.05 | 317.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| DPR./AMT. | 1172.03 | 1172.03 | 1172.03 |
| DEPRECIATION | 1172.03 | 1172.03 | 1172.03 |
| MINING | 434.20 | 434.20 | 434.20 |
| PLANT | 500.30 | 500.30 | 500.30 |
| CIVIL & BUILDING | 237.53 | 237.53 | 237.53 |
| AMORTIZATION | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 0.00 | 0.00 |

## BREAKDOWN SUMMARY SHEET

### *** ANNUAL REVENUE ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 0.00 | 0.00 | 0.00 | 80.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| ANNUAL REVENUE | 0.00 | 0.00 | 0.00 | 22360.00 | 25155.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| PVC | 0.00 | 0.00 | 0.00 | 22000.00 | 24750.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 |
| CAPA.(TON/Y) | 0.00 | 0.00 | 0.00 | 20000.00 | 22500.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 |
| UNIT PRICE(USD/TON) | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 |
| S LIME | 0.00 | 0.00 | 0.00 | 360.00 | 405.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 |
| CAPA.(TON/Y) | 0.00 | 0.00 | 0.00 | 7200.00 | 8100.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 |
| UNIT PRICE(USD/TON) | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| PVC | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 | 27500.00 |
| CAPA.(TON/Y) | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 | 25000.00 |
| UNIT PRICE(USD/TON) | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 | 1100.00 |
| S LIME | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 | 450.00 |
| CAPA.(TON/Y) | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 | 9000.00 |
| UNIT PRICE(USD/TON) | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 |
| PVC | 27500.00 | 27500.00 | 27500.00 |
| CAPA.(TON/Y) | 25000.00 | 25000.00 | 25000.00 |
| UNIT PRICE(USD/TON) | 1100.00 | 1100.00 | 1100.00 |
| S LIME | 450.00 | 450.00 | 450.00 |
| CAPA.(TON/Y) | 9000.00 | 9000.00 | 9000.00 |
| UNIT PRICE(USD/TON) | 50.00 | 50.00 | 50.00 |

### *** RAW MATERIAL COST ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 0.00 | 0.00 | 0.00 | 80.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| RAW MATERIAL COST | 0.00 | 0.00 | 0.00 | 2962.40 | 3332.70 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| COKE | 0.00 | 0.00 | 0.00 | 2962.40 | 3332.70 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| UNIT CONS.(USD/TON) | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| RAW MATERIAL COST | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| COKE | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| UNIT CONS.(USD/TON) | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 | 148.12 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 |
| RAW MATERIAL COST | 3703.00 | 3703.00 | 3703.00 |
| COKE | 3703.00 | 3703.00 | 3703.00 |
| UNIT CONS.(USD/TON) | 148.12 | 148.12 | 148.12 |

## BREAKDOWN SUMMARY SHEET

### VARIABLE OPE-COST

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 0.00 | 0.00 | 0.00 | 80.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| VARIABLE OPE-COST | 0.00 | 0.00 | 0.00 | 6732.00 | 7573.50 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| HCL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| UNIT CONS.(USD/TON) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AUXI | 0.00 | 0.00 | 0.00 | 1640.80 | 1845.90 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 |
| UNIT CONS.(USD/TON) | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 |
| ELEC | 0.00 | 0.00 | 0.00 | 3904.00 | 4392.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 |
| UNIT CONS.(USD/TON) | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 |
| STEAM | 0.00 | 0.00 | 0.00 | 1187.20 | 1335.60 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 |
| UNIT CONS.(USD/TON) | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| HCL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| UNIT CONS.(USD/TON) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AUXI | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 | 2051.00 |
| UNIT CONS.(USD/TON) | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 | 82.04 |
| ELEC | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 | 4880.00 |
| UNIT CONS.(USD/TON) | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 | 195.20 |
| STEAM | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 | 1484.00 |
| UNIT CONS.(USD/TON) | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 | 59.36 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| ON-STREAM FACTOR (%) | 100.00 | 100.00 | 100.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 |
| HCL | 0.00 | 0.00 | 0.00 |
| UNIT CONS.(USD/TON) | 0.00 | 0.00 | 0.00 |
| AUXI | 2051.00 | 2051.00 | 2051.00 |
| UNIT CONS.(USD/TON) | 82.04 | 82.04 | 82.04 |
| ELEC | 4880.00 | 4880.00 | 4880.00 |
| UNIT CONS.(USD/TON) | 195.20 | 195.20 | 195.20 |
| STEAM | 1484.00 | 1484.00 | 1484.00 |
| UNIT CONS.(USD/TON) | 59.36 | 59.36 | 59.36 |

## BREAKDOWN SUMMARY SHEET

### *** FIXED OPE-COST ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| FIXED OPE-COST | 0.00 | 0.00 | 0.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| LABOR COST | 0.00 | 0.00 | 0.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 |
| PLANT OVERHEAD | 0.00 | 0.00 | 0.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 |
| MAINTENANCE | 0.00 | 0.00 | 0.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 |
| INSURANCE | 0.00 | 0.00 | 0.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 |
| ASSET TAX | 0.00 | 0.00 | 0.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| LABOR COST | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 | 1014.00 |
| PLANT OVERHEAD | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 | 1142.00 |
| MAINTENANCE | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 | 1240.00 |
| INSURANCE | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 | 332.00 |
| ASSET TAX | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 |
| LABOR COST | 1014.00 | 1014.00 | 1014.00 |
| PLANT OVERHEAD | 1142.00 | 1142.00 | 1142.00 |
| MAINTENANCE | 1240.00 | 1240.00 | 1240.00 |
| INSURANCE | 332.00 | 332.00 | 332.00 |
| ASSET TAX | 24.00 | 24.00 | 24.00 |

### *** INCOME TAX ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| NET INCOME B/TAX | 0.00 | 0.00 | 0.00 | -1407.08 | 176.13 | 1759.33 | 1759.33 | 2244.08 | 3224.23 | 3708.98 |
| LOSS CARRY FORWARD | 0.00 | 0.00 | 0.00 | 0.00 | -1407.08 | -1230.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| TAXABLE INCOME | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 528.38 | 1759.33 | 2244.08 | 3224.23 | 3708.98 |
| INCOME TAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 173.52 | 667.67 | 921.24 | 1323.61 | 1522.61 |
| NET INCOME A/TAX | 0.00 | 0.00 | 0.00 | -1407.08 | 176.13 | 1585.81 | 1091.66 | 1322.84 | 1900.62 | 2186.37 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| NET INCOME B/TAX | 4103.73 | 4244.28 | 4729.03 | 9713.42 | 10198.20 | 10682.90 | 11342.20 | 11342.20 | 10908.00 | 10908.00 |
| LOSS CARRY FORWARD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TAXABLE INCOME | 4103.73 | 4244.28 | 4729.03 | 9713.42 | 10198.20 | 10682.90 | 11342.20 | 11342.20 | 10908.00 | 10908.00 |
| INCOME TAX | 1721.61 | 1742.36 | 1941.36 | 3987.55 | 4186.55 | 4385.55 | 4656.19 | 4656.19 | 4477.94 | 4477.94 |
| NET INCOME A/TAX | 2472.12 | 2501.92 | 2787.67 | 5725.87 | 6011.62 | 6297.37 | 6685.98 | 6685.98 | 6430.03 | 6430.03 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| NET INCOME B/TAX | 10908.00 | 10908.00 | 10908.00 |
| LOSS CARRY FORWARD | 0.00 | 0.00 | 0.00 |
| TAXABLE INCOME | 10908.00 | 10908.00 | 10908.00 |
| INCOME TAX | 4477.94 | 4477.94 | 4477.94 |
| NET INCOME A/TAX | 6430.03 | 6430.03 | 6430.03 |

*** DEBT ( L-T LOAN ) ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| L-T LOAN | 3402.60 | 16679.60 | 15825.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| L-T LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| L-T LOAN | 0.00 | 0.00 | 0.00 |

*** DEBT SERVICE PAYMENT ( L-T LOAN ) ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| REMAINING L-T LOAN | 0.00 | 0.00 | 35907.40 | 35907.40 | 35907.40 | 35907.40 | 32316.70 | 28725.90 | 25135.20 | 21544.40 |
| REPAYMENT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3590.74 | 3590.74 | 3590.74 | 3590.74 |
| INTEREST | 0.00 | 0.00 | 0.00 | 4847.50 | 4847.50 | 4847.50 | 4847.50 | 4362.75 | 3878.00 | 3393.25 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| REMAINING L-T LOAN | 17953.70 | 14363.00 | 10772.20 | 7181.48 | 3590.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST | 2908.50 | 2423.75 | 1939.00 | 1454.25 | 969.50 | 484.75 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| REMAINING L-T LOAN | 0.00 | 0.00 | 0.00 |
| REPAYMENT | 0.00 | 0.00 | 0.00 |
| INTEREST | 0.00 | 0.00 | 0.00 |

*** DEBT ( S-T LOAN ) ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| S-T LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| S-T LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| S-T LOAN | 0.00 | 0.00 | 0.00 |

*** DEBT SERVICE PAYMENT ( S-T LOAN ) ***

| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| REMAINING S-T LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|
| REMAINING S-T LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| PROJECT YEAR | 18 | 19 | 20 |
|---|---|---|---|
| REMAINING S-T LOAN | 0.00 | 0.00 | 0.00 |
| REPAYMENT | 0.00 | 0.00 | 0.00 |
| INTEREST | 0.00 | 0.00 | 0.00 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | A INVESTMENT | B EQUITY | C DEBT | D INCREASING W/C | E ANNUAL REVENUE | F RAW MATERIAL | G VARIABLE OPE. COST | H FIXED OPE. COST | I CASH INCOME | J DEPR. AMT. |
|---|---|---|---|---|---|---|---|---|---|---|
| -3 | 5671.00 | 2268.40 | 3402.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -2 | 27709.40 | 11119.70 | 16679.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| -1 | 26375.30 | 10550.10 | 15825.20 | 1055.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | 0.00 | 0.00 | 0.00 | 131.90 | 22360.00 | 2962.40 | 6732.00 | 3752.00 | 8913.60 | 5473.18 |
| 2 | 0.00 | 0.00 | 0.00 | 131.90 | 25155.00 | 3332.70 | 7573.50 | 3752.00 | 10496.80 | 5473.18 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 5473.18 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 5473.18 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 5473.18 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 4977.78 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 4977.78 |
| 8 | 2171.00 | 2171.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 4977.78 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 5411.98 |
| 10 | 2406.00 | 2406.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 5411.98 |
| 11 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 912.33 |
| 12 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 912.33 |
| 13 | 2597.00 | 2597.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 912.33 |
| 14 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 737.83 |
| 15 | 2171.00 | 2171.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 737.83 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 1172.03 |
| 17 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 1172.03 |
| 18 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 1172.03 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 1172.03 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 27950.00 | 3703.00 | 8415.00 | 3752.00 | 12080.00 | 1172.03 |
| | | | | -1319.00 | | | | | | -3154.43 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | K<br>INTEREST | L<br>PROFIT<br>B/TAX | M<br>INCOME<br>TAX | N<br>PROFIT<br>A/TAX | O<br>REPAYMENT | P<br>CASH FLOW<br>A/TAX<br>ROE | Q<br>DISCOUNTED<br>A/TAX<br>ROE 15.54 | R<br>DISCOUNTED<br>B/TAX<br>ROE 19.72 | S<br>CASH FLOW<br>A/TAX<br>ROI | T<br>DISCOUNTED<br>A/TAX<br>ROI 11.89 |
|---|---|---|---|---|---|---|---|---|---|---|
| -3 | 0.00 | -5671.00 | 0.00 | -5671.00 | 0.00 | -2268.40 | -2268.40 | -2268.40 | -5671.00 | -5671.00 |
| -2 | 0.00 | -27799.40 | 0.00 | -27799.40 | 0.00 | -11119.70 | -9623.76 | -9287.88 | -27340.00 | -24434.30 |
| -1 | 0.00 | -26375.30 | 0.00 | -26375.30 | 0.00 | -10550.10 | -7902.38 | -7360.40 | -23664.20 | -18901.40 |
| 1 | 4847.50 | -1407.08 | 0.00 | -1407.08 | 0.00 | 3934.20 | 2550.39 | 2292.57 | 7239.18 | 5167.63 |
| 2 | 4847.50 | 176.13 | 0.00 | 176.13 | 0.00 | 5517.40 | 3095.53 | 2685.49 | 8172.45 | 5213.80 |
| 3 | 4847.50 | 1759.33 | 173.52 | 1585.81 | 0.00 | 7058.90 | 3427.63 | 2940.35 | 9237.62 | 5266.99 |
| 4 | 4847.50 | 1759.33 | 667.67 | 1091.66 | 3590.74 | 2974.10 | 1249.85 | 1236.64 | 9237.62 | 4707.20 |
| 5 | 4362.75 | 2244.08 | 921.24 | 1322.84 | 3590.74 | 3205.28 | 1165.78 | 1170.41 | 9237.62 | 4206.91 |
| 6 | 3878.00 | 3224.23 | 1323.61 | 1900.62 | 3590.74 | 3287.66 | 1034.88 | 1092.44 | 9034.25 | 3677.02 |
| 7 | 3393.25 | 3708.98 | 1522.61 | 2186.37 | 3590.74 | 3573.41 | 973.50 | 1008.39 | 9034.25 | 3286.22 |
| 8 | 2908.50 | 4193.73 | 1721.61 | 2472.12 | 3590.74 | 1688.16 | 398.03 | 563.57 | 6863.24 | 2231.18 |
| 9 | 2423.75 | 4244.28 | 1742.36 | 2501.92 | 3590.74 | 4323.15 | 862.17 | 837.36 | 9212.49 | 2676.60 |
| 10 | 1939.00 | 4729.03 | 1941.36 | 2787.67 | 3590.74 | 2202.91 | 389.04 | 477.87 | 6806.49 | 1767.38 |
| 11 | 1454.25 | 9713.42 | 3987.55 | 5725.87 | 3590.74 | 3047.46 | 465.79 | 677.57 | 7495.45 | 1739.42 |
| 12 | 969.50 | 10198.20 | 4186.55 | 6011.62 | 3590.74 | 3333.21 | 440.93 | 604.94 | 7495.45 | 1554.55 |
| 13 | 484.75 | 10682.90 | 4385.55 | 6297.37 | 3590.74 | 1021.96 | 117.00 | 363.35 | 4898.45 | 907.96 |
| 14 | 0.00 | 11342.20 | 4656.19 | 6685.98 | 0.00 | 7423.82 | 735.58 | 677.99 | 7423.82 | 1229.80 |
| 15 | 0.00 | 11342.20 | 4656.19 | 6685.98 | 0.00 | 5252.82 | 450.45 | 464.52 | 5252.82 | 777.68 |
| 16 | 0.00 | 10908.00 | 4477.94 | 6430.03 | 0.00 | 7602.06 | 564.20 | 473.00 | 7602.06 | 1005.87 |
| 17 | 0.00 | 10908.00 | 4477.94 | 6430.03 | 0.00 | 7602.06 | 488.30 | 395.08 | 7602.06 | 898.96 |
| 18 | 0.00 | 10908.00 | 4477.94 | 6430.03 | 0.00 | 7602.06 | 422.61 | 330.00 | 7602.06 | 803.42 |
| 19 | 0.00 | 10908.00 | 4477.94 | 6430.03 | 0.00 | 7602.06 | 365.75 | 275.63 | 7602.06 | 718.03 |
| 20 | 0.00 | 10908.00 | 4477.94 | 6430.03 | 0.00 | 13860.50 | 577.14 | 349.50 | 13860.50 | 1170.01 |

CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | U DISCOUNTED B/TAX ROI 16.76 |
|---|---|
| -3 | -5671.00 |
| -2 | -23415.10 |
| -1 | -17357.40 |
| 1 | 5516.56 |
| 2 | 5576.37 |
| 3 | 5566.09 |
| 4 | 4767.02 |
| 5 | 4082.66 |
| 6 | 3496.55 |
| 7 | 2994.59 |
| 8 | 2103.76 |
| 9 | 2196.49 |
| 10 | 1506.49 |
| 11 | 1611.10 |
| 12 | 1379.81 |
| 13 | 927.67 |
| 14 | 1012.08 |
| 15 | 711.01 |
| 16 | 742.35 |
| 17 | 635.77 |
| 18 | 544.50 |
| 19 | 466.33 |
| 20 | 606.30 |

## INCOME STATEMENT

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ANNUAL REVENUE | 0.00 | 0.00 | 0.00 | 22360.00 | 25155.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 0.00 | 0.00 | 0.00 | 13446.40 | 14658.20 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 0.00 | 0.00 | 0.00 | 2962.40 | 3332.70 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 0.00 | 0.00 | 0.00 | 6732.00 | 7573.50 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 0.00 | 0.00 | 0.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 0.00 | 0.00 | 0.00 | 8913.60 | 10496.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 0.00 | 0.00 | 0.00 | 5473.18 | 5473.18 | 5473.18 | 5473.18 | 5473.18 | 4977.78 | 4977.78 |
| INTEREST | 0.00 | 0.00 | 0.00 | 4847.50 | 4847.50 | 4847.50 | 4847.50 | 4362.75 | 3878.00 | 3393.25 |
| LONG TERM LOAN | 0.00 | 0.00 | 0.00 | 4847.50 | 4847.50 | 4847.50 | 4847.50 | 4362.75 | 3878.00 | 3393.25 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 0.00 | 0.00 | 0.00 | -1407.08 | 176.13 | 1759.33 | 1759.33 | 2244.08 | 3224.23 | 3708.98 |
| INCOME TAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 173.52 | 667.67 | 921.24 | 1323.61 | 1522.61 |
| NET INCOME A/TAX | 0.00 | 0.00 | 0.00 | -1407.08 | 176.13 | 1585.81 | 1091.66 | 1322.84 | 1900.62 | 2186.37 |

| YEAR | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 4977.78 | 5411.98 | 5411.98 | 912.33 | 912.33 | 912.33 | 737.83 | 737.83 | 1172.03 | 1172.03 |
| INTEREST | 2908.50 | 2423.75 | 1939.00 | 1454.25 | 969.50 | 484.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| LONG TERM LOAN | 2908.50 | 2423.75 | 1939.00 | 1454.25 | 969.50 | 484.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 4193.73 | 4244.28 | 4729.03 | 9713.42 | 10198.20 | 10682.90 | 11342.20 | 11342.20 | 10908.00 | 10908.00 |
| INCOME TAX | 1721.61 | 1742.36 | 1941.36 | 3987.55 | 4186.55 | 4385.55 | 4656.19 | 4656.19 | 4477.94 | 4477.94 |
| NET INCOME A/TAX | 2472.12 | 2501.92 | 2787.67 | 5725.87 | 6011.62 | 6297.37 | 6685.98 | 6685.98 | 6430.03 | 6430.03 |

| YEAR | 2008 | 2009 | 2010 |
|---|---|---|---|
| PROJECT YEAR | 18 | 19 | 20 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 1172.03 | 1172.03 | 1172.03 |
| INTEREST | 0.00 | 0.00 | 0.00 |
| LONG TERM LOAN | 0.00 | 0.00 | 0.00 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 10908.00 | 10908.00 | 10908.00 |
| INCOME TAX | 4477.94 | 4477.94 | 4477.94 |
| NET INCOME A/TAX | 6430.03 | 6430.03 | 6430.03 |

## INCOME STATEMENT

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| ANNUAL REVENUE | 0.00 | 0.00 | 0.00 | 22360.00 | 25155.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 0.00 | 0.00 | 0.00 | 13446.40 | 14658.20 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 0.00 | 0.00 | 0.00 | 2962.40 | 3332.70 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 0.00 | 0.00 | 0.00 | 6732.00 | 7573.50 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 0.00 | 0.00 | 0.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 0.00 | 0.00 | 0.00 | 8913.60 | 10496.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 0.00 | 0.00 | 0.00 | 7050.90 | 7050.90 | 7050.90 | 7050.90 | 7050.90 | 6309.50 | 6309.50 |
| INTEREST | 0.00 | 0.00 | 0.00 | 6080.85 | 6080.85 | 6080.85 | 6080.85 | 5472.76 | 4864.68 | 4256.60 |
| LONG TERM LOAN | 0.00 | 0.00 | 0.00 | 6080.85 | 6080.85 | 6080.85 | 6080.85 | 5472.76 | 4864.68 | 4256.60 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 0.00 | 0.00 | 0.00 | -4218.15 | -2634.95 | -1051.75 | -1051.75 | -443.66 | 905.82 | 1513.91 |
| INCOME TAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NET INCOME A/TAX | 0.00 | 0.00 | 0.00 | -4218.15 | -2634.95 | -1051.75 | -1051.75 | -443.66 | 905.82 | 1513.91 |

| YEAR | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 6309.50 | 6743.70 | 6743.70 | 946.30 | 946.30 | 946.30 | 771.80 | 771.80 | 1206.00 | 1206.00 |
| INTEREST | 3648.51 | 3040.43 | 2432.34 | 1824.26 | 1216.17 | 608.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| LONG TERM LOAN | 3648.51 | 3040.43 | 2432.34 | 1824.26 | 1216.17 | 608.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 2121.99 | 2295.88 | 2903.96 | 9309.45 | 9917.53 | 10525.60 | 11308.20 | 11308.20 | 10874.00 | 10874.00 |
| INCOME TAX | 413.18 | 942.50 | 1192.13 | 3821.71 | 4071.35 | 4320.98 | 4642.24 | 4642.24 | 4464.00 | 4464.00 |
| NET INCOME A/TAX | 1708.81 | 1353.37 | 1711.83 | 5487.73 | 5846.19 | 6204.64 | 6665.96 | 6665.96 | 6410.01 | 6410.01 |

| YEAR | 2008 | 2009 | 2010 |
|---|---|---|---|
| PROJECT YEAR | 18 | 19 | 20 |
| ANNUAL REVENUE | 27950.00 | 27950.00 | 27950.00 |
| OPERATING COST | 15870.00 | 15870.00 | 15870.00 |
| RAW MATERIAL | 3703.00 | 3703.00 | 3703.00 |
| VARIABLE OPE-COST | 8415.00 | 8415.00 | 8415.00 |
| FIXED OPE-COST | 3752.00 | 3752.00 | 3752.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 |
| DPR./AMT. | 1206.00 | 1206.00 | 1206.00 |
| INTEREST | 0.00 | 0.00 | 0.00 |
| LONG TERM LOAN | 0.00 | 0.00 | 0.00 |
| SHORT TERM LOAN | 0.00 | 0.00 | 0.00 |
| NET INCOME B/TAX | 10874.00 | 10874.00 | 10874.00 |
| INCOME TAX | 4464.00 | 4464.00 | 4464.00 |
| NET INCOME A/TAX | 6410.01 | 6410.01 | 6410.01 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR ( ROE ) ( ROI ) | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| SOURCE OF FUNDS ( ROE ) | 0.00 | 0.00 | 0.00 | 22360.00 | 25155.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| CASH INCOME | 0.00 | 0.00 | 0.00 | 8913.60 | 10496.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| PAID-IN CAPITAL | 2268.40 | 11119.70 | 10550.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 3402.60 | 16679.60 | 15825.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 5671.00 | 27799.40 | 26375.30 | 8913.60 | 10496.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | | | | | | | | |
| CAPITAL INVESTMENT | 5671.00 | 27799.40 | 26375.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 5550.00 | 27219.00 | 19152.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 121.00 | 121.00 | 1672.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 2840.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 459.35 | 2711.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 0.00 | 0.00 | 0.00 | 4847.50 | 4847.50 | 4847.50 | 8438.24 | 7953.49 | 7468.74 | 6983.99 |
| REPAYMENT (L-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3590.74 | 3590.74 | 3590.74 | 3590.74 |
| INTEREST (L-T LOAN) | 0.00 | 0.00 | 0.00 | 4847.50 | 4847.50 | 4847.50 | 4847.50 | 4362.75 | 3878.00 | 3393.25 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 | 131.90 | 131.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 173.52 | 667.67 | 921.24 | 1323.61 | 1522.61 |
| TOTAL APPLICATION | 5671.00 | 27799.40 | 26375.30 | 4979.40 | 4979.40 | 5021.02 | 9105.90 | 8874.73 | 8792.35 | 8506.60 |
| CASH INCREASE | 0.00 | 0.00 | 0.00 | 3934.20 | 5517.40 | 7058.99 | 2974.10 | 3205.28 | 3287.66 | 3573.41 |
| CUMULATIVE CASH INC. | 0.00 | 0.00 | 0.00 | 3934.20 | 9451.61 | 16510.60 | 19484.70 | 22690.00 | 25977.60 | 29551.00 |
| W/C RETURN & SALVAGE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CASH FLOW B/TAX | -2268.40 | -11119.70 | -10550.10 | 3934.20 | 5517.40 | 7232.51 | 3641.77 | 4126.52 | 4611.27 | 5096.02 |
| DISCOUNTED CASH FLOW | -2268.40 | -9287.88 | -7360.40 | 2292.57 | 2685.49 | 2940.35 | 1236.64 | 1170.41 | 1092.44 | 1008.39 |
| CASH FLOW A/TAX | -2268.40 | -11119.70 | -10550.10 | 3934.20 | 5517.40 | 7058.99 | 2974.10 | 3205.28 | 3287.66 | 3573.41 |
| DISCOUNTED CASH FLOW | -2268.40 | -9623.76 | -7902.38 | 2550.39 | 3095.53 | 3427.63 | 1249.85 | 1165.78 | 1034.88 | 973.50 |
| CASH FLOW B/TAX | -5671.00 | -27340.00 | -23664.20 | 8781.70 | 10364.90 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | -5671.00 | -23415.10 | -17357.40 | 5516.56 | 5376.37 | 5566.09 | 4767.02 | 4082.66 | 3496.55 | 2994.59 |
| CASH FLOW A/TAX | -5671.00 | -27340.00 | -23664.20 | 7239.18 | 8172.45 | 9237.62 | 9237.62 | 9237.62 | 9034.25 | 9034.25 |
| DISCOUNTED CASH FLOW | -5671.00 | -24434.30 | -18901.40 | 5167.63 | 5213.80 | 5266.99 | 4707.20 | 4206.91 | 3677.02 | 3286.22 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | -3 | -2 | -1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| SOURCE OF FUNDS | | | | | | | | | | |
| CASH INCOME | 0.00 | 0.00 | 0.00 | 8913.60 | 10496.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| SUBSIDY (OPERATION) | 0.00 | 0.00 | 0.00 | 2700.00 | 2700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PAID-IN CAPITAL | 2268.40 | 15280.50 | 12479.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 3402.60 | 22920.80 | 18719.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 5671.00 | 38201.40 | 31199.90 | 11613.60 | 13196.80 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | | | | | | | | |
| CAPITAL INVESTMENT | 5671.00 | 38201.40 | 31199.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 5550.00 | 37621.00 | 23134.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 121.00 | 121.00 | 1672.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 2840.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 459.35 | 3553.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 0.00 | 0.00 | 0.00 | 6080.85 | 6080.85 | 6080.85 | 10585.20 | 9977.10 | 9369.01 | 8760.93 |
| REPAYMENT (L-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4504.33 | 4504.33 | 4504.33 | 4504.33 |
| INTEREST (L-T LOAN) | 0.00 | 0.00 | 0.00 | 6080.85 | 6080.85 | 6080.85 | 6080.85 | 5472.76 | 4864.68 | 4256.60 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 | 131.90 | 131.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL APPLICATION | 5671.00 | 38201.40 | 31199.90 | 6212.75 | 6212.75 | 6080.85 | 10585.20 | 9977.10 | 9369.01 | 8760.93 |
| CASH INCREASE | 0.00 | 0.00 | 0.00 | 5400.85 | 6984.05 | 5999.15 | 1494.82 | 2102.91 | 2710.99 | 3319.07 |
| CUMULATIVE CASH INC. | 0.00 | 0.00 | 0.00 | 5400.85 | 12384.90 | 18384.10 | 19878.90 | 21981.80 | 24692.80 | 28011.80 |
| W/C RETURN & SALVAGE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CASH FLOW B/TAX ( ROE ) | -2268.40 | -15280.50 | -12479.90 | 5400.85 | 6984.05 | 5999.15 | 1494.82 | 2102.91 | 2710.99 | 3319.07 |
| DISCOUNTED CASH FLOW | -2268.40 | -13327.10 | -9493.13 | 3583.09 | 4041.12 | 3027.49 | 657.93 | 807.25 | 907.65 | 969.18 |
| CASH FLOW A/TAX ( ROE ) | -2268.40 | -15280.50 | -12479.90 | 5400.85 | 6984.05 | 5999.15 | 1494.82 | 2102.91 | 2710.99 | 3319.07 |
| DISCOUNTED CASH FLOW | -2268.40 | -13700.80 | -10032.90 | 3892.96 | 4513.69 | 3476.33 | 776.65 | 979.63 | 1132.34 | 1243.00 |
| CASH FLOW B/TAX ( ROI ) | -5671.00 | -37742.00 | -27646.20 | 11481.70 | 13064.90 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | -5671.00 | -33078.40 | -21236.10 | 7729.76 | 7708.78 | 6246.93 | 5475.03 | 4798.51 | 4205.58 | 3685.92 |
| CASH FLOW A/TAX ( ROI ) | -5671.00 | -37742.00 | -27646.20 | 10552.30 | 11485.50 | 9850.71 | 9850.71 | 9850.71 | 9546.35 | 9546.35 |
| DISCOUNTED CASH FLOW | -5671.00 | -34220.10 | -22727.30 | 7865.27 | 7762.02 | 6035.96 | 5472.70 | 4962.01 | 4359.97 | 3953.11 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR ( ROE ) ( ROI ) | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| SOURCE OF FUNDS ( ROE ) | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 | 27950.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| PAID-IN CAPITAL | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 14251.00 | 12080.00 | 14486.00 | 12080.00 | 12080.00 | 14677.00 | 12080.00 | 14251.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | | | | | | | | |
| CAPITAL INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 6499.24 | 6014.49 | 5529.74 | 5044.99 | 4560.24 | 4075.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT (L-T LOAN) | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 3590.74 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (L-T LOAN) | 2908.50 | 2423.75 | 1939.00 | 1454.25 | 969.50 | 484.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 1721.61 | 1742.36 | 1941.36 | 3987.55 | 4186.55 | 4385.55 | 4656.19 | 4656.19 | 4477.94 | 4477.94 |
| TOTAL APPLICATION | 10391.80 | 7756.85 | 9877.10 | 9032.54 | 8746.79 | 11058.00 | 4656.19 | 6827.19 | 4477.94 | 4477.94 |
| CASH INCREASE | 3859.16 | 4323.15 | 4608.91 | 3047.46 | 3333.21 | 3618.96 | 7423.82 | 7423.82 | 7602.06 | 7602.06 |
| CUMULATIVE CASH INC. | 33410.20 | 37733.30 | 42342.30 | 45389.70 | 48722.90 | 52341.90 | 59765.70 | 67189.50 | 74791.60 | 82393.60 |
| W/C.RETURN & SALVAGE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CASH FLOW B/TAX | 3409.77 | 6065.51 | 4144.26 | 7035.01 | 7519.76 | 5407.51 | 12080.00 | 9909.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | 563.57 | 837.36 | 477.87 | 677.57 | 604.94 | 363.35 | 677.99 | 464.52 | 473.00 | 395.08 |
| CASH FLOW A/TAX | 1688.16 | 4323.15 | 2202.91 | 3047.46 | 3333.21 | 1021.96 | 7423.82 | 5252.82 | 7602.06 | 7602.06 |
| DISCOUNTED CASH FLOW | 398.03 | 882.17 | 389.04 | 465.79 | 440.93 | 117.00 | 735.58 | 450.45 | 564.20 | 488.30 |
| CASH FLOW B/TAX | 9909.00 | 12080.00 | 9674.00 | 12080.00 | 12080.00 | 9483.00 | 12080.00 | 9909.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | 2103.76 | 2196.49 | 1506.49 | 1611.10 | 1379.81 | 927.67 | 1012.08 | 711.01 | 742.35 | 635.77 |
| CASH FLOW A/TAX | 6863.24 | 9212.49 | 6806.49 | 7495.45 | 7495.45 | 4898.45 | 7423.82 | 5252.82 | 7602.06 | 7602.06 |
| DISCOUNTED CASH FLOW | 2231.18 | 2676.60 | 1767.38 | 1739.42 | 1554.55 | 907.96 | 1229.80 | 777.68 | 1005.87 | 898.96 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT YEAR | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| SOURCE OF FUNDS | | | | | | | | | | |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 | 12080.00 |
| SUBSIDY (OPERATION) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PAID-IN CAPITAL | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 14251.00 | 12080.00 | 14486.00 | 12080.00 | 12080.00 | 14677.00 | 12080.00 | 14251.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | | | | | | | | |
| CAPITAL INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 2171.00 | 0.00 | 2406.00 | 0.00 | 0.00 | 2597.00 | 0.00 | 2171.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 413.18 | 942.50 | 1192.13 | 3821.71 | 4071.35 | 4320.98 | 4642.24 | 4642.24 | 4464.00 | 4464.00 |
| IDC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 8152.84 | 7544.76 | 6936.67 | 6328.59 | 5720.50 | 5112.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT (L-T LOAN) | 4504.33 | 4504.33 | 4504.33 | 4504.33 | 4504.33 | 4504.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (L-T LOAN) | 3648.51 | 3040.43 | 2432.34 | 1824.26 | 1216.17 | 608.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 413.18 | 942.50 | 1192.13 | 3821.71 | 4071.35 | 4320.98 | 4642.24 | 4642.24 | 4464.00 | 4464.00 |
| TOTAL APPLICATION | 10737.00 | 8487.26 | 10534.80 | 10150.30 | 9791.85 | 12030.40 | 4642.24 | 6813.24 | 4464.00 | 4464.00 |
| CASH INCREASE | 3513.98 | 3592.74 | 3951.20 | 1929.70 | 2288.15 | 2646.61 | 7437.76 | 7437.76 | 7616.01 | 7616.01 |
| CUMULATIVE CASH INC. | 31525.80 | 35118.60 | 39069.80 | 40999.50 | 43287.60 | 45934.20 | 53372.00 | 60809.80 | 68425.80 | 76041.80 |
| W/C RETURN & SALVAGE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CASH FLOW B/TAX ( ROE ) | 1756.16 | 4535.24 | 2737.33 | 5751.41 | 6359.50 | 4370.58 | 12080.00 | 9909.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | 447.25 | 1007.36 | 530.28 | 971.75 | 937.13 | 561.72 | 1354.08 | 968.73 | 1030.01 | 898.34 |
| CASH FLOW A/TAX ( ROE ) | 1342.98 | 3592.74 | 1545.20 | 1929.70 | 2288.15 | 49.61 | 7437.76 | 5266.76 | 7616.01 | 7616.01 |
| DISCOUNTED CASH FLOW | 450.95 | 1081.67 | 417.12 | 467.06 | 496.56 | 9.65 | 1297.60 | 823.65 | 1068.16 | 957.73 |
| CASH FLOW B/TAX ( ROI ) | 9909.00 | 12080.00 | 9674.00 | 12080.00 | 12080.00 | 9483.00 | 12080.00 | 9909.00 | 12080.00 | 12080.00 |
| DISCOUNTED CASH FLOW | 2649.00 | 2831.30 | 1987.22 | 2174.83 | 1906.10 | 1311.43 | 1464.15 | 1052.01 | 1124.67 | 985.70 |
| CASH FLOW A/TAX ( ROI ) | 7375.35 | 9724.60 | 7318.60 | 7509.40 | 7509.40 | 4912.40 | 7437.76 | 5266.76 | 7616.01 | 7616.01 |
| DISCOUNTED CASH FLOW | 2769.11 | 3310.43 | 2258.90 | 2101.50 | 1905.39 | 1130.13 | 1551.43 | 996.07 | 1305.96 | 1184.09 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR ( ROE ) ( ROI ) | 2008 | 2009 | 2010 |
|---|---|---|---|
| PROJECT YEAR | 18 | 19 | 20 |
| SOURCE OF FUNDS ( ROE ) | 27950.00 | 27950.00 | 27950.00 |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 |
| PAID-IN CAPITAL | 0.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 12080.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | |
| CAPITAL INVESTMENT | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 0.00 | 0.00 | 0.00 |
| IDC | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 0.00 | 0.00 | 0.00 |
| REPAYMENT (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| INTEREST (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 4477.94 | 4477.94 | 4477.94 |
| TOTAL APPLICATION | 4477.94 | 4477.94 | 4477.94 |
| CASH INCREASE | 7602.06 | 7602.06 | 7602.06 |
| CUMULATIVE CASH INC. | 89093.70 | 97597.80 | 105200.00 |
| W/C RETURN & SALVAGE | 0.00 | 0.00 | 6258.43 |
| CASH FLOW B/TAX | 12080.00 | 12080.00 | 18338.40 |
| DISCOUNTED CASH FLOW | 330.00 | 275.63 | 349.50 |
| CASH FLOW A/TAX | 7602.06 | 7602.06 | 13860.50 |
| DISCOUNTED CASH FLOW | 422.61 | 365.75 | 577.14 |
| CASH FLOW B/TAX | 12080.00 | 12080.00 | 18338.40 |
| DISCOUNTED CASH FLOW | 544.50 | 466.33 | 606.30 |
| CASH FLOW A/TAX | 7602.06 | 7602.06 | 13860.50 |
| DISCOUNTED CASH FLOW | 803.42 | 718.03 | 1170.01 |

## CASH FLOW TABLE

EQUITY : 40 %

UNIT : 1000 USD

| YEAR | 2008 | 2009 | 2010 |
|---|---|---|---|
| PROJECT YEAR | 18 | 19 | 20 |
| SOURCE OF FUNDS | | | |
| CASH INCOME | 12080.00 | 12080.00 | 12080.00 |
| SUBSIDY (OPERATION) | 0.00 | 0.00 | 0.00 |
| PAID-IN CAPITAL | 0.00 | 0.00 | 0.00 |
| DEBT (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| DEBT (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| TOTAL SOURCE | 12080.00 | 12080.00 | 12080.00 |
| APPLICATION OF FUNDS | | | |
| CAPITAL INVESTMENT | 0.00 | 0.00 | 0.00 |
| PLANT INVESTMENT | 0.00 | 0.00 | 0.00 |
| PRE-OPERATION COST | 0.00 | 0.00 | 0.00 |
| INITIAL W/C | 4464.00 | 4464.00 | 4464.00 |
| IDC | 0.00 | 0.00 | 0.00 |
| DEBT SERVICE PAYMENT | 0.00 | 0.00 | 0.00 |
| REPAYMENT (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| INTEREST (L-T LOAN) | 0.00 | 0.00 | 0.00 |
| REPAYMENT (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| INTEREST (S-T LOAN) | 0.00 | 0.00 | 0.00 |
| INCREASING W/C | 0.00 | 0.00 | 0.00 |
| INCOME TAX | 4464.00 | 4464.00 | 4464.00 |
| TOTAL APPLICATION | 4464.00 | 4464.00 | 4464.00 |
| CASH INCREASE | 7616.01 | 7616.01 | 7616.01 |
| CUMULATIVE CASH INC. | 83657.80 | 91273.80 | 98889.80 |
| W/C RETURN & SALVAGE | 0.00 | 0.00 | 6508.10 |
| CASH FLOW B/TAX ( ROE ) | 12080.00 | 12080.00 | 18678.10 |
| DISCOUNTED CASH FLOW | 783.50 | 683.34 | 921.51 |
| CASH FLOW A/TAX ( ROE ) | 7616.01 | 7616.01 | 14214.10 |
| DISCOUNTED CASH FLOW | 858.72 | 760.94 | 1288.41 |
| CASH FLOW B/TAX ( ROI ) | 12080.00 | 12080.00 | 18678.10 |
| DISCOUNTED CASH FLOW | 863.90 | 757.16 | 1026.06 |
| CASH FLOW A/TAX ( ROI ) | 7616.01 | 7616.01 | 14214.10 |
| DISCOUNTED CASH FLOW | 1073.60 | 973.41 | 1947.20 |

APPENDIX 2

## SCOPE OF WORK

This scope of work was agreed between Messrs C. Orams and A. Vargas of SPL and Mr. K. Iwaguchi of JICA on February 3, 1983 as follows:

1. Review on the background of the Project

   1.1 To review the present situation of the PVC industry in Peru.
   1.2 To review the present situation of supply/demand and price movement in Peru.
   1.3 to review the present situation of supply/demand of substitute products of PVC.
   1.4 To review the correlation of the Project with Andes Group including new PVC factory plans in the region.

2. Study on the PVC market and its distribution system

   2.1 To investigate the potential market of PVC in Peru by sector and products.
   2.2 To project future demand and supply of PVC in Peru.
   2.3 To project future price of PVC in Peru.
   2.4 To assess the system and cost of marketing and distribution.

3. Study on the raw materials for the PVC production

   3.1 To investigate availability of limestone including mining and transportation.
   3.2 To analyze the components of the limestone.
   3.3 To investigate the supply plan of hydrochloric acid.
   3.4 To investigate the availability of coal including mining and transportation.
   3.5 To investigate the availability of other auxiliaries
   (1) Cokes
   (2) Electrode and etc.

3.6 To investigate the price of raw materials.

4. Study on the project location and site(s)

4.1 To investigate the natural conditions of the site(s)
(1) Meteorology
(2) Geology and topography

4.2 To investigate the socio-economic conditions
(1) Population, labour force and wages, etc.
(2) Industries
(3) Regional administration

4.3 To investigate utilities and infrastructure such as electricity, water, transportation (road, port and railway) and communication.

4.4 To select the plant site(s) based on the results of the study on the availibility of raw materials, utilities, infrastructure and other factors.

5. Preparation of the basic plan and the conceptual design of the carbide/PVC plants.

5.1 To conduct study on PVC products and their optimum production scale.

5.2 To examine and determine the process of PVC production.

5.3 To determine the design standards of the proposed plants and facilities.

5.4 To prepare plant layout of the proposed plants and facilities.

5.5 To prepare process flow sheet including material balance.

5.6 To prepare drawings of plants and facilities.

5.7 To propose transport plan of materials for plant construction.

5.8 To prepare implementation program of plant construction.

5.9 To prepare organization and manpower plan for plant construction and operation of the commercial basis.

5.10 To propose the commercial operation program.

6. Study on environmental protection

7. Financial analysis
   - 7.1 Capital requirements
     - (1) Fixed Capital (Land cost, construction cost of plants and facilities, and pre-operation cost, etc.)
     - (2) Working Capital
     - (3) Expenditure Schedule
   - 7.2 Procurement of capital.
   - 7.3 Production cost.
   - 7.4 Projected balance sheet.
   - 7.5 Projected income statement.
   - 7.6 Projected cash flow statement.
   - 7.7 Financial internal rate of return.
   - 7.8 Sensitivity analysis based on possible variations in:
     - (1) Investment cost,
     - (2) Price of raw materials,
     - (3) Sales price,
     - (4) Interest rate, and
     - (5) Inflation rate

8. Economic and social evaluation

9. Conclusion and recommendations

APPENDIX 3

MINUTES OF A MEETING BETWEEN THE PRELIMINARY JAPANESE SURVEY TEAM AND SOCIEDAD PARAMONGA LIMITADA

FEBRUARY 2, 1983

1. During preliminary discussions, the JICA survey team pointed out that it was crucial to the project that the silica content of the limestone used for the production of calcium carbide, should be minimum.

The information to hand on the Rupay quarry shows that the silica content of this limestone seems to be higher than that normally employed in existing plants in Japan.

S.P.L. therefore agreed to look for alternative sources of limestone with a lower silica content, in particular in the Casma area, and requested that the scope of work include the study of alternative sources.

Accordingly both parties agreed as follows:

(1) The study of the raw material limestone will include the Rupay quarry as well as alternatives within 300 km. of Paramonga. The number of alternatives should be limited to two, these two having been previously selected by Paramonga as the most likely alternatives. Information on these two selected limestone sources will be sent to the JICA office in Lima by the end of March 1983.

(2) The study should include the possibility that the carbide plant could be situated outside Paramonga. In this case S.P.L. will suggest possible sites following the studies

..//..

cont.

(2) carried out as per 1. (1) above.

This information should be supplied to JICA (Lima) before the end of March.

2. Both parties agreed on the importance of communication during the feasibility study and that it would be advantageous for Sociedad Paramonga Ltda. counterpart personnel to be present in Japan with a view to taking part in the discussions for the preparation of the final report.
The Japanese preliminary survey team will endeavour to comply with this suggestion.

DATE: February 3rd, 1983

PLACE : Lima / Perú

KENJI IWAGUCHI
LEADER, PRELIMINARY SURVEY TEAM
JAPAN INTERNATIONAL COOPERATION AGENCY

CARLOS ORAMS BASADRE
GENERAL MANAGER
SOCIEDAD PARAMONGA LTDA. S.A.

ALVARO VARGAS GUACUCANO
ENGINEERING MANAGER
SOCIEDAD PARAMONGA LTDA. S.A.

AAPENDIX 4

## MINUTES OF DISCUSSION

THEME : PRESENTATION OF INTERIM REPORT FOR FEASIBILITY STUDY ON ESTABLISHMENT OF CARBIDE AND PVC PLANTS IN THE REPUBLIC OF PERU.

TIME : JULY 12, 1983

PLACE : SOCIEDAD PARAMONGA LIMITADA, LIMA

1. The study team of Japan International Cooperation Agency (JICA) presented Interim Report for Feasibility Study on Establishment of Carbide and PVC Plants in the Republic of Peru (Interim Report) to Sociedad Paramonga Limitada (SPL) on the said date at the said place.

2. SPL and the study team basically agreed on the contents of the Interim Report.

3. SPL and the study team agreed that JICA will develop the feasibility study report on the project scheme presented in Chapter 3 PROJECT SCHEME FOR FEASIBILITY STUDY and according to Chapter 5 BASIS FOR FINANCIAL AND ECONOMIC EVALUATIONS.

4. SPL shows particular concern about the impact of the price of electricity upon project viability. The study team explained that this will be part of the sensitivity analy-

sis of the financial evaluation of the feasibility report.

5. SPL also shows concern about the disturbances in electric power at the electric furnace on the operation of other facilities and requested a write-up about this question to which the study team agreed.

6. In recognition of the importance of feed limestone, SPL agreed to further investigate Pariahuanca quarry and also to search for other quarries as set for in Chapter 8, CONCLUSION.

7. In view of the presumably high transportation cost of limestone from the quarries, SPL asked the possibility of bricketing a portion of slaked lime and limestone fines to be recycled as feed. The study team agreed to examine such possibility.

DATE: JULY 13, 1983

PLACE: LIMA, PERU

ALVARO VARGAS GUACUCANO
Engineering Manager,
Sociedad Paramonga Ltda. S.A.

KOJI TANAKA
Leader of Study Team

APPENDIX 5.

Limestone cost

The cost of limestone at Paramonga Plant consists of the mining cost plus the cost of transportation from Pariahuanca to Paramonga. This is found to be 1,363 thousand US$ per year or 23.3 US$ per ton of limestone. The following table shows a preliminary calculation of mining and transportation costs. By way of comparison, the cost of quick lime purchased by Hornos Electricos, a Peruvian carbide manufacturer, is US$96/ton.

Limestone Mining and Transportation Cost

| Item (*) | Annual Consumption | Unit Price (US$/*) | Annual Cost ($X10^3$US$) |
|---|---|---|---|
| Mining | | | |
| Fuel (l) | 58,000 | 0.201 | 12 |
| Explosive (kg) | 17,400 | 2.58 | 45 |
| Electricity ($X10^3$ kwh) | 124 | 35 | 4 |
| Maintenance | | | 150 |
| Mining Right (55 US$/Year) | | | Nil |
| Transportation | | | |
| Fuel (l) | 664,000 | 0.201 | 133 |
| Tire (10) | 32 | 1,033 | 43 |
| Maintenance | | | 42 |
| Sub Total | | | 429 |
| Depreciation | | | 767 |
| Labor | | | 167 |
| Total | | | 1,363 |

APPENDIX 6

## EXAMPLE FOR CALCULATING CUSTOMS DUTIES

* CUSTOM CODE :

PRICE OF PURCHASE

| | | | |
|---|---|---|---|
| | FOB | | |
| + | FREIGHT | | |
| + | INSURANCE | | |
| | C & F | = | TAXABLE VALUE ( 1 ) |

LIQUIDATION :

( 2 ) AD VALOREM DUTY
( 3 ) OVER TAX 10 % OF ( 1 )
( 4 ) D.L. N°22342 1% OF (1)
( 5 ) INTERNAL TAX* ( SALES' TAXES ) 16 %
Applied on the bases of (1) + (2) + (3) + (4)
( 6 ) D.L. N°22448(10 % in maritime freight)
( 7 ) Custom Agents' commision and Expenses :
10 % of (2) + (3) + (4) + (5) + (6)

TOTAL OF LIQUIDATION

NOTE:

* The Custom Code according to the merchandise is determinant of the amount of the duties (2) and (5), as also of the payment or not of the duties (4) and (6)

APPENDIX 7

# INDUSTRIAL STATISTICS 1982 (PVC Plant)

| OCCUPYING CLASS | CODE | Number of Occupied Persons (average) March | June | September | December | Remunerations (Miles of Soles) In September | In the Year |
|---|---|---|---|---|---|---|---|
| Permanent Employees (02 to 04) | 01 | 97 | 97 | 97 | 96 | 33014 | 437381 |
| Directors and Managers | 02 | 2 | 2 | 2 | 2 | 1852 | 24537 |
| Professionals | 03 | 30 | 30 | 30 | 31 | 13097 | 173509 |
| Officeholders and Others | 04 | 65 | 65 | 65 | 63 | 18065 | 239335 |
| Permanent Workers (11 to 18) | 10 | 56 | 56 | 54 | 54 | 10661 | 163799 |
| Tecnics | 11 | 5 | 5 | 5 | 5 | 2294 | 35250 |
| Workers Qualified | 12 | 7 | 7 | 7 | 7 | 1972 | 30303 |
| Workers No Qualified | 13 | 44 | 44 | 42 | 42 | 6395 | 98246 |
| Contingent' Employees | 20 | | | | | | |
| Contingent' Workers | 30 | | | | | | |
| TOTAL REMUNERABLE (01 + 10 + 20 + 30) | 40 | 153 | 153 | 151 | 150 | 43075 | 601180 |
| Personal No Remunerable | 50 | | | | | | |
| TOTAL (40 + 50) | 60 | 153 | 153 | 151 | 150 | 43075 | 601180 |

S/ 114,000 by month (Min.Salary)
(minimum)

Salaries only

APPENDIX 8

## UTILITY' TAXES

| INCOME DUTIABLE | | | | | RATE |
|---|---|---|---|---|---|
| | | Until | 150 | U.I.T. | 30 % |
| For the Excess of | 150 U.I.T. and | Until | 1500 | U.I.T. | 40 % |
| For the excess of | 1500 U.I.T. and | Until | 3000 | U.I.T. | 50 % |
| For the excess of | 3000 U.I.T. | | | | 55 % |

U.I.T. = S/ 1'100,000

APPENDIX 9

## EXAMPLE

## REINVESTMENT INCOME TAX CREDIT

| | |
|---|---|
| Net Profit | 100'000 |
| Industrial Community 27 % | 27'000 |
| Income Tax 30 % | 21'900 |
| Profit before reinvestment | 51'100 |

A) Calculation of the maximum amount that may be reinvested

Average Income Tax Rate according to "selective index"

30 % x 1 = 30 %

100 % - 30 % = 70 %

70 % = 51'100 maximum amount that may be reinvested, 14.60 %

S/ 100'000 = 14'600,000 x 30 % = 4'380,000

B) Calculation of the credit against the income tax because of reinvestment

Average Income Tax rate according to "selective index', according to the maximum to be reinvested

30 % x 1 x 51'100 = 15'330

C)

| | |
|---|---|
| Tax Amount | 21'900 |
| Credit (Aditional) | ( 4'380) |
| Credit Reinvested | (15'330) |
| Net Payable Tax | 2'190 |

APPENDIX 10

## GENERAL TAX TO THE SALES

| | EXAMPLE |
|---|---|
| **NET SALE :** | |
| I) Price of Sale | S/ 100 |
| II) General Tax Sales 16 % (I) | 16 |
| III) Profit Decentralization 15 % (II) | ( 2) |
| **NET PAY I.G.V.** | S/ 14 |

APPENDIX 11

COMISION REGULADORA DE TARIFAS DE TRANSPORTES

"AÑO BICENTENARIO DEL NACIMIENTO DEL LIBERTADOR SIMON BOLIVAR"

C.R.T.T.

RESOLUCION DEL CONSEJO DIRECTIVO No.021-83-TC/CRTT/T.

Lima, 25 de Marzo de 1983.

Visto por el Consejo Directivo de la Comisión Reguladora de Tarifas de Transportes, en sesión No.12 de fecha 24 de Marzo de 1983, el estudio sobre regulación tarifaria para el Servicio Público de Transporte de Carga en Camión Regional Nacional.

CONSIDERANDO:

Que los estudios técnico-económicos practicados por el personal técnico de la Comisión revelan que los costos de operación del mencionado servicio han sufrido incrementos, por lo que resulta necesario efectuar un reajuste de los fletes vigentes conforme a los nuevos costos de operación resultantes señalados en el respectivo estudio.

Que igualmente en dichos estudios se ha determinado la necesidad de mantener los coeficientes de conversión por factores físicos aplicables por región, altura sobre el nivel del mar, gradiente y tipos de superficie de rodamiento.

Estando al mérito de lo informado por la Secretaría Técnica de la Comisión;

El Consejo Directivo de la Comisión Reguladora de Tarifas de Transportes en ejercicio de las facultades que el Decreto Legislativo No.166 le confiere;

Artículo 1º.- Aprobar para el Servicio Público de Transporte de Carga en Camión Regional Nacional para la Costa y en pista asfaltada las tarifas siguientes:

| | | | |
|---|---|---|---|
| De 0 hasta 500 Kms. virtuales | S/. 5,230 | Por tonelada de flete base más S/. 30.020 Ton.Km.Virtual | 20,240 |
| Mas de 500 Kms. virtuales | S/. 40.447 | Ton.Km.Virtual | 20,223 |

Artículo 2º.- Las tarifas para combustibles y líquidos para la Costa y en pista asfaltada serán las siguientes:

| | | | |
|---|---|---|---|
| De 0 hasta 400 Kms. virtuales | S/. 4,219 | Por tonelada de flete base más S/. 46.335 Ton.Km.virtual. | 22,953 |
| Más de 400 Kms.virtuales | S/. 58.316 | Ton.Km.Virtual. | 23,326 |

Artículo 3º.- Los coeficientes de conversión por factores físicos aplicables para este servicio serán las siguientes:

| REGION | | TIPO DE CARRETERA: Asfaltada | Afirmada | Sin afirmar o trocha |
|---|---|---|---|---|
| Costa: | 0 a 1,000 m.s.n.m. | 1.00 | 1.58 | 2.15 |
| Intermedia y Selva: | 1,000 á 2,500 m.s.n.m. Gradiente 3-5% | 1.20 | 2.10 | 2.90 |
| Sierra: | 2,500 á más m.s.n.m. Gradiente 5-7% | 1.40 | 2.60 | 3.90 |

Artículo 4º.- Para los otros tipos de servicio de carga que no estén comprendidos en la presente Resolución ni en las Resoluciones Nos.019 y 020-83-TC/CRTT/T, las tarifas serán incrementadas en 25.6% con relación a las tarifas vi al 31 de Diciembre de 1982.

..../

Artículo 5º.- Los módulos de 0 hasta 500 Kms. virtuales se aplicarán a los viajes desde el inicio hasta el fin del recorrido comprendido entre los límites mencionados. Los módulos de "más de 400 y 500 Kms. virtuales" se aplicarán a los viajes que excedan de estas distancias.

Artículo 6º.- Las presentes tarifas no incluyen los costos de carga, descarga, seguro de la carga, carta fianza, retención de pagos, diferencia de balanza y otros que son por parte del usuario.

Artículo 7º.- La C.R.T.T. fijará y publicará las tarifas de carga resultantes de la aplicación de los módulos Ton./Km. que motivan la presente Resolución para los lugares comprendidos en las rutas del Sistema Nacional de Carreteras, las que serán de exclusiva aplicación para este servicio.

Artículo 8º.- Las tarifas que se autorizan por la presente Resolución serán puestas en vigencia el día de su publicación en el Diario Oficial "EL PERUANO".

Regístrese y Comuníquese.

Lic. Eduardo Zúñiga Tafur
JEFE DE SECRETARIA TECNICA

C.R.T.T.

Rep. Navío AP (r) Germán Gonzáles U.
VICE-PRESIDENTE DEL CONSEJO DIRECTIVO.

APPENDIX 12

## SPL's Answers to JICA's Question

1. Common Section

2. Information of SPL Plant Site

3. Design Conditions

4. Information on the SPL Existing PVC Plant

5. Limestone Mining Survey Procedure

6. Calcium Carbide

7. Availability and Prices of Materials and Equipment

8. Import of Equipment and Materials

9. Supply and Demand

10. Financial, Economic & Social Information and Data

1. COMMON SECTION

1.1 The natural conditions of the site(s) excluding mining (quarrying) site.

1.1.1 Meteorology (Based on 5 years record) 75 thru 80

1) TEMPERATURE - PARAMONGA AREA

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. - °C | 32 | 32 | 27 | 27 | 25 | 24 | 24 | 20 | 22 | 22 | 23 | 27 |
| Min. - °C | 18 | 18 | 17 | 19 | 17 | 15 | 17 | 12 | 14 | 14 | 19 | 17 |
| Mean - °C | 26 | 26 | 25 | 25 | 22 | 20 | 20 | 18 | 19 | 19 | 20 | 24 |

2) RELATIVE HUMIDITY - PARAMONGA AREA

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. - % | 95 | 95 | 95 | 100 | 100 | 100 | 92 | 94 | 99 | 99 | 99 | 95 |
| Min. - % | 60.5 | 57 | 61 | 64 | 60 | 59 | 69 | 71 | 72 | 58 | 62 | 60 |
| Mean - % | 79 | 82 | 80 | 80 | 82 | 80 | 82 | 90 | 90 | 88 | 96 | 80 |

3) WIND (VELOCITY AND DIRECTION) - PARAMONGA AREA

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. - % (m/sec) | - | - | 20 Kmts / Hr | | | | | | | - | - | |
| Avc (M/sec) | | | | | | | | | | | | |
| Direction (E.W.N.S.) | - | South - North | | | | | | | | - | | |

4) RAINFALL (SNOWFALL) - PARAMONGA AREA

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Never | | | | | | | | | | | |
| Max. (mm) | - | - | 10 m.m./ H r | | | | | | | - | - | |
| Ave. (mm) | | | | | | | | | | | | |
| Number of rainfall days | | | | | | | | | | | | |

## 1.1.2 DISASTERS

### 1) EARTHQUAKE

#### a) GENERAL DESCRIPTION

Paramonga is located at an earthquake area. About description, we think it is not necessary, because it is similar to Japan areas.

#### b) MAX. AMPLITUD

Using the modified Mercalli intensity or international MKS scale for factory design use 8.0 equivalent to Ritchter 6.

#### c) REMARKABLE DISASTERS

Last earthquake happened in Paramonga destroyed the lineation of Paper Mill Cylinder, PVC Piping was broken, Brick walls fell down, etc. but we did not have injured people.

### 2) THUNDER

Never happens along Peruvian coast (nor in Paramonga)

### 3) STORM AND FLOOD

Never happens in Paramonga.

## 1.2 GEOLOGY AND TOPOGRAPHY

### 1.2.1 GEOLOGY

Paramonga area, million years ago was the bed of a river.

#### 1- GEOLOGICAL MAP

Mr. Figueroa will give you a clear and technical explanation about Paramonga area.

1.2.2 TOPOGRAPHY

1- TOPOGRAPHICAL MAP (with counterline).

Mr. Araki has received two drawings, one of them showing the place for the new plant including counterline and the other showing Paramonga Plants and Town which are there nowadays.

2- LOCATION

a) CITY (TOWN) NAME

Name is Paramonga

b) DISTANCE TO THE NEAREST BIG CITY

Lima is 200 Kms from Paramonga.

Barranca is another city near Paramonga - not a big one.

Population is about 60,000 people but has all the necessary services like Lima but in minimum capacity. It is located to 10 Kms from Paramonga.

1.3 INFRASTRUCTURE CONDITIONS

1.3.1 UTILITY SUPPLY

1- ELECTRICITY

There is enough electric power to 2 Km from PVC Plant.

2- WATER

There is river water piping with capacity over 6,000 GPM available.

1.3.2 COMMUNICATION FACILITY

There are telephoneline, radio and telex

between Paramonga and Lima.

1.3.3 TRANSPORTATION

1- TRAFFIC FACILITY

Along the coast of Peru exists the Panamerican Highway. For emergency it is possible to use air transportation. There is an airport in front of Paramonga only for small airplanes.

2- ROAD

Highway (Panamericana) for buses, trucks and automobiles.

3- PORT

The port of Callao is close to Lima and 200 Kms from Paramonga.

Chimbote is located north of Paramonga-220 Kms.

4- DISTANCE FROM THE SITE TO THE NEAREST CITY (NAME) AND THE NEAREST PORT: (KM), (HRS)

Paramonga nearest city is Barranca to 10 Kms (South).

Callao nearest port Paramonga to 200 Kms (South).

1.4 SOCIO-ECONOMIC CONDITIONS OF THE REGION

Paramonga is an industrial district. Actually exist Paper & Pulp, Caustic & Chlorine, PVC & Alcohol Plant owned by Sociedad Paramonga Ltd. S.A. Another is the Sugar Plant owned by Cooperativa Agro-Industrial Paramonga Ltda. [37].

1- POPULATION

Is about 30,000 people.

2- LABOR FORCE

We assume 20% of the population

3- INDUSTRIES

Paper, PVC, Chlorine, Alcohol, Sugar, etc.

4- REGIONAL ADMINISTRATION

Suprefecto is the Political Authority

Major is City Authority.

1.5 EXPANSION AND MODIFICATION PROGRAMS OF SPL PARAMONGA FACTORY

PVC Plant Expansion study by JICA.

2.0 INFORMATION OF SPL PLANT SITE

2.1 SPACE

Available area to PVC plant expansion existing to north of actual plant.

2.2 GROUND CONDITIONS (SLOPE)

Practically flat is the area available to the expansion plant.

2.3 SOIL BEARINGS STRENGTH

Average is 1 $Kg/cm^2$. Anyway will be necessary analysis at the moment to install heavy building or foundations for machinery.

## 2.4 SURROUNDING CONDITIONS

All area is flat.

## 3.0 DESIGN CONDITIONS

## 3.1 NATURAL CONDITIONS

1. TEMPERATURE

   See Section 1.1.1.1

   Barometric Pressure 760 mm Hg

2. RAIN FALL

   Maximum 10 mm/Hr

3. WIND VELOCITY AND DIRECTION

   20 Km/Hr Max. - South to North

4. EARTHQUAKE FACTOR

   8.0 Mercalli modified intensity or

   International MKS scale. (Richter Scale 6.0)

5. RELATIVE HUMIDITY

   Maximum 95%

   Minimum 70%

## 3.2 UTILITY CONDITIONS

1) WATER

- WATER RIVER ANALYSIS

| | |
|---|---|
| Pressure | 2 $Kg/cm^2$ gage |
| Temperature | Ambient (22°C) |

| | |
|---|---|
| p. H. | 7.4 |
| Total hardness (as $CaCO_3$) | 195 PPM |
| Ca Hardness (as $CaCO_3$) | 155 PPM |
| Mg Hardness (as $CaCO_3$) | 40 PPM |
| M Alkalinity (as $CaCO_3$) | 65 PPM |
| $SO_4$ | 112.8 PPM |
| Chlorides (as CL-) | 47.9 PPM |
| Total solid | 438 PPM |
| Turbidity | 50 degree max. |
| KMm $O_4$ Consumption | 10 PPM Max. |
| Si $O_2$ | 10 PPM |
| Si $O_2$ Colloidal | Trace |

- WELL WATER ANALYSIS

Not available at this time.

Average Total Hardness 820 PPM
(at May 1983)

- POTABLE WATER

| | |
|---|---|
| Chlorides | 0.250 grm/lt |
| $SO_4$ | 0.255 grm/lt |
| $M_g$ | 0.125 grm/lt |
| Total solid | 1.05 grm/lt |
| pH | 7.3 |

- DEMINERALIZED WATER

It is necessary to build a new plant.

- INDUSTRIAL SERVICE WATER (PROCESS WATER)

Will be necessary to install a new cooling tower.

c. PRICES

River Water - $0.097/1000 $m^3$

Well Water plus River Water- 0.22/$m^3$

Potable Water - 0.019/$m^3$

Demineralized Water -

d. COOLING TOWER TO BE RECYCLED

Cooling tower is recycled in the plant of Paramonga.

e. FOULING FACTOR OF COOLING TOWER

- $M^2$ Hr°C/Kcal. 0.0002

CAPACITY OF EXISTING COOLING TOWER

- 2,500 GPM Max.

2) STEAM

a) PRESSURE

450 PSI (31.6 Kg/$cm^2$) gage

b) PRICE

US$ 20.81 metric tons (May 83)

c) QUANTITY

There is enough

3) NITROGEN GAS

It does not exist any plant.

4) COMPRESSED AIR

It is necessary to get a new compressor

5) INSTRUMENT AIR

It is necessary to get a new compressor

6) ELECTRIC POWER

a) SUPPLY (TRANSMISSION) VOLTAGE

The main line gets 138,000 volts from hydraulic power Cahua and 220,000 volts from Mantaro Hydraulic Power Plant.

b) CYCLE

Tri-phase

c) CAPACITY OF EXISTING SUBSTATION

There is enough capacity

d) DISTANCE FROM SUPPLY POINT TO SUBSTATION IN PLANT SITE

Kmts

e) FLUCTUATION IN VOLTAGE AND FREQUENCY

Frequency fluctuation happens few times a year. Occasionally there are voltage problems.

f) SUPPLY FAILURE (FREQUENCY, TOTAL PER YEAR)

Almost zero, without stop advertisement.

g) EXISTING EMERGENCY POWER SUPPLY UNIT

Exist two main lines - From Cahua and Mantaro with enough capacity.

h) PRICE (Cahua) - See Hidrandina Invoice

(Mantaro) - See Electroperu Invoice

i) SINGLE LINE DIAGRAM FOR EXISTING SYSTEM (From transmission line)

We are including Diagram N°E-01.

7) BRINE

There is not refrigeration plant.

3.3 CONDITIONS OF FEEDSTOCK (Quality, quantity & Price)

a - LIMESTONE

Raw material conditions feedstock will be cleared when location is defined.

b - REDUCTANTS

Coke carbon is imported.

c - CHLORINE LIQUID (or HCl) GAS

Analysis: HCl Gas

| | |
|---|---|
| Purity | 99.999% |
| Water | 10 PPM |
| By stripping | |

d - FUEL OIL-BUNKER N°6 - PRICE US$ 0.738/Gl.

| | | |
|---|---|---|
| Analysis: | Flash Point °F | 226 Avg |
| | Gravity Deg. API | 16.9 " |
| | Say BdT Viscosity, Sec. (at 50°C) | 180 " |
| | Sulphur Total | 0.5 " |
| | BTU/LB | 18555 " |
| | Water & Sediment % by volume | 0.10 " |

3.4 DESIGN STANDARD/CODE/SPECIFICATION

1. CODES AND STANDARDS

a) UNFIRED PRESSURE VESSELS-ASME SECT.VIII
DIV.I & DIV.2, 1979
JIS B8243, 1977

b) WELDED STORAGE TANKS

| | |
|---|---|
| (General) | - API 620 5th Edition,July 1979 |
| | - API 650, 6th " ,Dec. 1978 |
| (Spherical Tanks) | - ASME Sect.VIII Div.I & Div.2 |
| | JIS B 8243 |
| (Space, Dike, Hydrant) | - Fire Service Law of Japan 1972 |
| | - High Pressure Gas Control Law (Japan) 1973 |
| | - Japan L.P. Gas Plant Assoc. Code 1967 |

c) SHELL & TUBE HEAT EXCHANGER - TEMA Class "C", 6th Edition 1978.

d) FIRE HEATER (For Tube) - API RP 530, 1958

e) ROTATING MACHINES - Manufacturer's Standard

f) THREADS (Except to Instrumentation)

| | |
|---|---|
| - Pipe Threads | NPT |
| - Bolts & Nuts for Pipe Flange | UNC & 8 UN (1 inch & over) |
| - Other Service | UNC |

g) PIPING

| | |
|---|---|
| (for Design) | - ANSI B 31.3, B 31.5. |
| (for Special | - Manufacturer's STD. |

h) ELECTRICAL - NEMA

- JIS, JEC, JEM

- Manufacturer's STD

i) INSTRUMENTATION - NEMA

- JIS, JEC, JEM

- Manufacturer's STD

j) FIRE FIGHTING & PROTECTION

(for System) - NFPA

(for Hand) - JFSL

k) CIVIL

-The design of reinforced concrete construction shall be in accordance with ACI-318-63.

-The design of structural steel (light gauge steel, tubular steel and steel)construction shall be in accordance with AISC (ASTM A 36).

-The design of building foundation, structure and various civil foundations shall be in accordance with CRSI Code.

-Design loading concerning external force such as wind and earthquake load shall be in accordance with Peruvian Regulations (Resolución Ministerial N°159-77-VC-1100) of April 5,1983.

2. MEASUREMENT SYSTEM AND WORDING

a) MEASUREMENT SYSTEM

Metric system and the Celsius system will be applied as the measurement system in all respects, except that nominal sizes

of piping components shall be in accordance with the English System (inches).

b) WORDING

English shall be used as wording for communications, documentation, etc.

c) CODING SYSTEM

The Deka's coding system will be adopted for all engineering and documentation.

3. VOLTAGE SYSTEM ELECTRIC POWER

Selection of voltage system will be in accordance with technology of the plant.

We suggest:

| | |
|---|---|
| H. T. Motors (above 151 KW) | A.C. 4000 V - 3 Phase |
| L. T. Motors (below 150 KW) | A.C. 440 V - 3 Phase |
| Lighting | A.C. 220 V - 1 Phase |
| Emergency Lighting | D.C. 100 V<br>A.C. 220 V - 1 Phase |
| Motor Control | A.C. 220 V |
| Instrument | A.C. 100 V<br>D.C. 24 V |

3.5 ENVIRONMENT PROTECTION

Our recommendation regarding pollution control is to use the Japan regulations.

3.6 OTHERS

1) DEGREE OF AUTOMATION & MECHANIZATION

Instruments for operation control must be electronic. Pneumatic-electric used in some areas dependable of requirements.

2) REQUIREMENTS FOR PLANT LAYOUT
(Relation with existing plants)

A new plant will be installed close to the existing PVC plant, but all services will be separate except water for fire fighting system which could be enlarged.

3) FUTURE EXPANSION PLANT

After factibility studies be finished by JICA.

4) PHILOSOPHY FOR STAND-BY MACHINERY, SPARE PARTS AND MAINTENANCE AND OPERATING SUPPLIES.

Normally heat exchanger, pumps and every minor equipment must have stand-by parts. Supplier will recommend all necessary spare parts for maintenance during the first year of plant operation. Chemical additives, coke or any material which is necessary for one year operation must be imported before the plant start-up.

## 4.0 INFORMATION ON THE SPL EXISTING PVC PLANT

### 4.1 PLANT CAPACITY

Capacity PVC Plant is 7,000 MT/Year

1. PROCESS PLANT

a) Electrolysis

Chlorine Plant by De-Nora technology

Capacity 40,000 MT/Year

b) HCL Plant

Capacity 1,400 Lbs/Hr. Actual HCl stripping

c) VCM BY SCIENTIFIC DESIGN

Capacity 7,260 ton/Year

d) PVC BY PFAULDER

Capacity 7,000 MT/Year

2. OFF-SITE CAPACITY

a) WAREHOUSE

Capacity 1,500 Tons PVC (2 Warehouses)

b) EFFLUENT TREATMENT FACILITY

There is not any.

c) WORKSHOP

Exists a small workshop to make normal maintenance. When large works are necessary we send them to workshops in Lima.

d) UTILITY FACILITY

There is a cooling tower with 2,500 GPM capacity.

e) LABORATORY

There is an Analytical Laboratory for all products of the actual PVC Plant. We recommend to review its capacity for the new plant.

4.2 RAW MATERIAL & PRODUCT

1) PRICE & SPECIFICATIONS OF RAW MATERIAL

a) NaCL

| | | |
|---|---|---|
| Price: | Salinas | US$ 1.89 MT |
| | Paramonga | 3.96 MT |

b) EDC

| | |
|---|---|
| Import Price | US$ 300/MT (CIF PGA) |
| ANALYSIS: | |
| EDC | 98.47 Wt % min (dry base) |
| Chloroethane | Trace (dry base) |
| 1.2 Dichloro-ethylene | 0.02 Wt % max (dry base) |
| Chloroform | 0.37 Wt % max (dry base) |
| Carbotetrachloride | 0.13 Wt % max (dry base) |
| Trichloroethylene | Trace (dry base) |
| Trichloroethane | 0.85 Wt % max (dry base) |
| Tetrachloroethylene | Trace (dry base) |
| Tetrachloroethane | 0.15 Wt % max (dry base) |
| Acid | 0.0030% Wt % max (dry base) |
| Iron | None |
| Water | 0.0050 Wt % max(dry base) |

c) $CL_2$ SPECIFICATION

| | |
|---|---|
| Pressure | 2.5 $Kg/cm^2$ |
| Temperature | 30°C |
| Cost Price | (By Mr. R. Echeandia) |

HCl 33% Concentration-Cost Price (By Mr. Echeandia)

d) CHEMICALS

| | |
|---|---|
| Vinyl Acetate | US$ 0.35/Kg |
| Lauroyl Peroxide | 3.64/Kg |
| Perkadox Y-16 | 9.35/Kg |
| MOK - 17 | 6.17/Kg |
| Methocel | 3.45/Kg |

2) CONSUMPTION DATA OF RAW MATERIALS AND UTILITIES.

1.9 DCE Raw /MT PVC

1.8 DCE Pure /MT PVC

1.1 MVC /MT PVC

1000 KW/MT PVC ELECTRICITY

$14.6 \times 10^6$ BTU/MT PVC STEAM

(5.511 MT Steam) MT PVC at

1204 BTU/LB.

3) PRODUCT

a) GRADE & APPLICATION

HOMOPOLYMER

| | |
|---|---|
| K - 55 | Bottles, liquid recipients |
| K - 60 | Pipe Connections |
| K - 65 | Piping |
| K - 70 | Hoses, plastified articles |

COPOLYMER

| | |
|---|---|
| K - 1450 | Records, Plastic floor |

b) PRODUCT MIX

| | |
|---|---|
| K - 57 | Bottles |
| K - 67 | Plastified articles, piping, electric cable covers. |

4.3 PERSONNEL REQUIREMENT BY SECTION

| | |
|---|---|
| E D C | 3 men/shift |
| V C M | 2 men/shift |
| P V C | 3 men/shift |
| Lab. | 2 men/shift |

PLANT SUPERVISOR

1 Chemical Engineer

2 Foremen

4.4 MAIN EQUIPMENT OF PVC PLANT

| | | |
|---|---|---|
| a) | REACTOR | Glass Lined |
| | Capacity | 3,900 Gls. each |
| | Number | 3 |

b) SLURRY TANK Glass Lined

Capacity 8 Tons

Number 3 (1 Discharge-2 Slurry)

c) VCM STRIPPER

Capacity Design 18 Tons

Actual Production 22 Tons

d) DECANTER - BIRD CENTRIFUGAL HORIZONTAL

Capacity 1 Ton/Hr

Product Outlet 18-20% Water

e) DRYER

Capacity 1 Ton/Hr

Rotary Cylinder Type

Final Product 0.5% Water

f) PRODUCT SILO

There is not any.

g) PACKER - BY AIR HANDLE

Capacity 15 Ton-1 Shift

ITEMS 5 AND 6 BY MR. J. BARRON AND FIGUEROA

## 7.0 AVAILABILITY OF MATERIALS AND EQUIPMENT, PRICES

| -MATERIALS | (US$ 1 = S/ 1,550)June 1983 |
|---|---|
| Sand | $ 3.23/$m^3$ |
| Aggregates | 5.81/$m^3$ |
| Portland Cement | 3.55/Bag (42.5 Kgs) |
| Ready-mixed Concrete | 48.95/$m^3$ 175 Kg/$cm^2$ |
| | 51.05/$m^3$ 210 Kg/$cm^2$ |
| | 58.10/$m^3$ 280 Kg/$cm^2$ |
| Concrete Pump Rental | 4.70/$m^3$ |
| Section (Shape) Steel | 1.40/Kg avg. |
| Steel Plate | 0.82/Kg " |
| Stainless Steel Plate | Imported |
| Gas Pipe | Imported |
| Solid Drawn Steel Pipe | Imported |
| Gun Metal Valves | Imported |
| Cast Steel Valves | Imported |
| Stainless Steel Valves | Imported |

Electric Cables TW Type-18 AWG $0.11/m - AWG $0.86/m

Indolene Type (Outdoor use)14 AWG $0.24/m - AWG $4.64/m

PVC Cover Cable - 16 AWG $0.15/m - 500 MCM $42.98/m

| | |
|---|---|
| Conduits | Imported |
| Refractories | Imported |
| Carbon Block/Paste | Imported |
| Clay | Imported |
| Graphite Powder | Imported |
| Machine Oils | Imported |

-EQUIPMENT

VESSEL, TANK, ETC.

1. Max. Pressure and Size

   Open Tank at the time 200,000 barrel capacity

   PRESSURE VESSELS

   500 PSI or more,depend of design

   There is no problem with any size.

2. Max. Size of Multitube Heat Exchanger

   There is no problem with any size.

3. Max. Size of Plate Heat Exchanger

   Imported

4. Fabrication of Stainless Steel Material

   Any size and pressure tanks and vessels are fabricated in Peru. Material is imported.

5. Glass Lining Vessel

   Imported

6. Hard Rubber Lining Vessels

   Peruvian companies make this type of work including Paramonga.

7. Towers made of Carbon

   Imported.

-MACHINES

1) TRANSFORMERS

   Up to 50 MVA (Up to 220 KV)

2) ACETYLENE ROOTS - BLOWERS

   Imported

3) VCM COMPRESSOR

Imported

4) HCL PUMP

Imported

5) VCM GEARED PUMP

Imported

6) CONVEYOR

Up to 6'0" wide, any length

7) CRUSHERS

Imported

8) BAG FILTER

Imported

-ELECTRICAL

1) MOTOR

Max.size open type Motor

Up to 200 HP - 600 Volts - 3 ph.- 60 Cycles

PRESSURE & EXPLOSION-PROOF MOTOR

Imported

2) SWITCHES

PRESSURE-PROOF TYPE (no fuse breaker)

Imported

-INSTRUMENTS

1) UTILIZATION OF PROCESS CONTROL COMPUTER

There are no computer instruments in Paramonga

2) ANALOGOUS INSTRUMENTS

Paramonga use electronic instruments in some Plants.

## 8.0 IMPORTATION OF EQUIPMENT & MATERIALS

### 8.1 REGULATIONS (RESTRICTIONS) AND DUTIES ON IMPORTS OF EQUIPMENT AND MATERIALS.

There are no restrictions to import machinery to build new plants.

TAXES ON IMPORTATIONS APPROX.

JICA have received the "Manual del Importador" from Camara de Comercio de Lima.

### 8.2 PORT FACILITIES

a) Max. allowable weight per one package

There is no problem.

b) Longest size per one package

There is no problem.

### 8.3 IN-LAND TRANSPORTATION

Up to 100 Tons

APPENDIX 13

## Field Survey Schedule

### TEAM ACTIVITIES

Brief records of activities conducted by the study team is as follows:

| Date | Place | Visit to |
|---|---|---|
| June 3, Fri | Arrive at Lima | (KO/JW) |
| June 4, Sat | Lima | |
| June 5, Sun | Lima | |
| June 6, Mon | Lima | JICA, Embassy of Japan, SPL (KO/JW) |
| June 7, Tue | Lima | INGEMMET (KO/JW) |
| June 8, Wed | Lima | CEMENT LIMA, MITSUI MINING AND SMELTING (KO/JW) |
| June 9, Thu | Lima/Paramonga | ENCI (JW), Paramonga (KO) |
| June 10, Fri | Lima/Yautan | COFIDE (JW), Yautan quarry (KO) |
| June 11, Sat | Lima/Chulin | Chulin (KO) |
| June 12, Sun | Lima/Paramonga | Rupay (KO) |
| June 13, Mon | Lima/Paramonga | PVC market survey (JW) |
| June 14, Tue | Lima/Huaraz | ENCI, PRIDI (JW), Norca quarry, Tarica quarry (KO) |
| June 15, Wed | Lima/Paramonga | Pariahuanca deposits (KO) |
| June 16, Thu | Lima | PROCARBON (JW) |
| June 17, Fri | Lima | Plastics market survey in Andean countries (JW) |
| | | Arrive at Lima (KT/RA/MA) |

| Date | Place | Visit to |
|---|---|---|
| June 18, Sat | Lima | (Internal meeting) |
| June 19, Sun | Lima | (Internal meeting) |
| June 20, Mon | Lima | JICA, Embassy of Japan, SPL (KT/KO/RA/MA/JW) |
| June 21, Tue | Lima | SPL (KT/KO/RA/MA/JW) |
| June 22, Wed | Lima | SPL (KT/KO/RA/MA/JW) |
| June 23, Thu | Lima/Paramonga | ELECTROPERU, HIDRANDINA (KT/RA), MEFC (KT/RA/MA), Paramonga (KO) |
| June 24, Fri | Lima/Paramonga | CAF (KT/MA), Min.Agricultura, SIDERPERU (JW), Tumac Calcite deposits (KO), Arrive at Lima (SK/TA) |
| June 25, Sat | Lima/Paramonga | (Internal meeting) |
| June 26, Sun | Lima/Paramonga | (Internal meeting) |
| June 27, Mon | Lima/Paramonga | MITI (KT/MA/JW), FUJITA GUMI (KT/RA), COSAPI (RA), Min.Agricultura (JW) |
| June 28, Tue | Lima/Huaraz | HORNOS ELECTRICOS (KT/RA/SK), COFIDE (MA), Pariahuanca & Maroara deposits (KO) |
| June 29, Wed | Lima/Paramonga/Huaraz | Move to Paramonga (KT/RA/SK/TA/MA), Pariahuanca & Maroara deposits (KO) |

| Date | Place | Visit to |
|---|---|---|
| June 30, Thu | Lima/Paramonga | Paramonga factory (KT/KO/RA/SK/TA/MA) |
| July 1, Fri | Lima/Paramonga | CORPORACION DE INDUSTRIAS PLASTICAS, PLASTICOS FORT, COPSA, INDECO PERUANA (JW), Paramonga factory (KT/RA/SK/TA/MA) |
| July 2, Sat | Lima/Paramonga | Chimbote port (KT/KO/RA/SK/TA/MA) |
| July 3, Sun | Lima/Paramonga | (Internal meeting) |
| July 4, Mon | Paramonga | Move to Paramonga (JW), Discussion about the survey. |
| July 5, Tue | Lima/Paramonga | Review & discussion of the survey, Carbide Plant in Chimbote (KO), Move to Lima (KT/RA/SK/TA/MA/JW) |
| July 6, Wed | Lima | IBRO INTERNACIONAL (KT/JW), Move to Lima (KO) |
| July 7, Thu | Lima/Oroya | Mr. Nozaki (Consultant of electricity), HIDRANDINA (RA/MA), PISOPAK DEL PERU, FABRICA DE CALZADO (JW) JETRO (KT/JW), Oroya quarry (KO) |

| Date | Place | Visit to |
|---|---|---|
| July 8, Fri | Lima | HORNOS ELECTRICOS (SK/JW), MPI (MA), FUJITA (RA), SOCIEDAD DE INDUSTRIAS (JW), Oroya quarry (KO) |
| July 9, Sat | Lima | (Prepare interim report) |
| July 10, Sun | Lima | (Prepare interim report) |
| July 11, Mon | Lima | ANCOM (JW) (Prepare interin report) |
| July 12, Tue | Lima | SPL (presentation of interim report) |
| July 13, Wed | Lima | SPL (signing of interim report) |
| July 14, Thu | Leave Lima | |

Note: Abbreviations of the study team names:

KT : Koji TANAKA
KO : Ken ONO
RA : Ryusuke ARAKI
SK : Sotoyuki KIRITANI
TA : Toshio ASANO
MA : Masaaki AWAMOTO
JW : Jun-ichi WATANABE

Works done by the study team during the field survey period may be summarized as follows:

1) Discuss with SPL and other sources of information to obtain information and data on local situations and conditions as in-

puts to the feasibility study,

2) Investigate candidate limestone deposits and identify the most promising limestone quarry for the project,

3) Visit the existing PVC and related plants to obtain technical and economic data for technical and economical studies,

4) Establish the most adequate project scheme from the viewpoints of market, technical and economical aspects,

5) Collect data and information required for establishment and confirmation of conditions and premises for the financial and economic evaluation

APPENDIX 14

## 1. ECONOMIC ANALYSIS

National parameters to adjust the market price of the specific resources are to be determined taking accounts of the opinions of officials.

| | | as of 1982 |
|---|---|---|
| 1) | Foreign exchange premium ..... | $\Phi = 2.65$ |
| 2) | Unskilled labour premium ..... | $\lambda = 0.33$ |
| 3) | Domestic skilled labour premium ..... | $\chi = 0.69$ |
| 4) | Marginal rate of return on investment ..... | $q = 20.3\%$ |
| 5) | Marginal rate of savings ..... | $s =$ |
| 6) | Social rate of discount ..... | $i = 6\%$ |
| 7) | Shadow price of investment ..... | $p^{inv} = 3.93$ |
| 8) | Marginal propensities to save: | |
| | a) Government ..... | $s_G =$ |
| | b) Private sector ..... | $s_P =$ |
| | c) Unskilled and semi-skilled labour ..... | $s_L =$ |
| 9) | Marginal propensity to respond in Paramonga ..... | $r = 21.4\%$ Industrial Division |
| 10) | Proportion of foreign personnel salary spent in Paramonga ..... | $\delta =$ |
| 11) | Weights on objectives: | |
| | a) Aggregate-consumption ..... | $\theta^c =$ |
| | b) Redistribution to Paramonga ..... | $\theta^{RS} =$ |

OSCAR QUIROZ ORTIZ
DIRECTOR DE METODOS DE PROGRAMACION DE INVERSIONES