ETHYLENE AND VINYL CHLORIDE MONOMER PLANTS

VOL. III

FEASIBILITY STUDY REPORT

FOR

ETHYLENE AND VINYL CHLORIDE MONOMER PLANTS

IN

THE KINGDOM OF THAILAND

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SUPPLEMENTARY STUDY

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ABBREVIATIONS AND SYMBOLS

Unit and Conversion

mm	Millimeter
cm	Centimeter
m	Meter
km	Kilometer
in	Inch (1 in = 2.54 cm)
ft	Foot (pl. feet) (1ft = 0.305m)
cm^2	Square centimeter
m^2	Square meter
ha	Hectare (1 ha = 10,000 m^2 = 2.471 acres)
ft^2	Square foot (1 ft^2 = 0.0929 m^2)
Rai	(1 Rai = 1,600 m^2)
m^3	Cubic meter
Nm^3	Normal cubic meter
MMm^3	Million cubic meters
ft^3, cu ft	Cubic foot (1 ft^3 = 0.0283 m^3)
SCF	Standard cubic foot
MMSCF	Million standard cubic feet
l	Liter
gal	Gallon (1 British gallon = 4.546 liters, 1 U.S. gallon = 3.785 liters)
bbl	Barrel (1 barrel = 42 U.S. gallons)
g	Gram
kg	Kilogram
t, T, ton, Ton,	Metric ton
lb (s)	Pound (1 lb = 0.454 kg)
LMT	Liquid metric ton (50% aques solution of caustic soda)
sec	Second
min	Minute
h, hr, Hr	Hour
d, D	Day
m, M	Month
y, Y	Year
°C	Degree centigrade
°F	Degree fahrenheit
cal	Calorie
Kcal, K cal	Kilo calorie
BTU, Btu	British thermal unit (1 BTU = 0.252 K cal)
MMBTU, MMBtu	Million British thermal units

LHV	Low heating value
HHV	High heating value
A	Ampere
V	Volt
W	Watt
kW	Kilowatt
mW	Megawatt
kVA	Kilo-volt ampere
mVA	Mega-volt ampere
kWH, kWh	Kilowatt-hour
mWG, mWh	Megawatt-hour
HP, HP	Horsepower
%	Percent
ppm	Parts per million
g/Nm^3	Gram per normal cubic meter
pH, PH	Hydrogen ion concentration
kg/cm^2	Kilogram per square centimeter
lb/in^2	pounds per square inch
mmAq	mm aqua (= water)
t/d, ton/day, T/D	Tons per day
t/y, ton/year, MTA, MT/Y	
T/Y	Tons per year
MMSCFD, MMscfd	Million standard cubic feet per day

Technical Terms

ABS	Acrylonitrile-butadiene-styrene copolymer
AS	Acrylonitrile-styrene copolymer
PE	Polyethylene
HDPE	High density polyethylene
LDPE	Low density polyethylene
PO	Polyolefin
PP	Polypropylene
PS	Polystylene
FS	Foamed polystyrene
GPPS (GP)	General purpose polystyrene
HIPS (HI)	High impact polystyrene
PVC	Polyvinyl chloride
EDC	Ethylene dichloride
EG	Ethylene glycol
EO	Ethylene oxide
SM	Styrene monomer
VCM	Vinyl chloride monomer
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
NG	Natural gas
NGL	Natural gas liquid
BOD	Biological oxygen demand
COD	Chemical oxygen demand
ISBL	Inside battery limit
OSBL	Outside battery limit
MSL	Mean sea level

Financial and Economic Terms

DCF	Discounted cash flow
IRR	Internal rate of return
EIRR	Economic internal rate of return
FIRR	Financial internal rate of return
ROI	Return on investment
GDP	Gross domestic product
GNP	Gross national product
C & F	Customs, and freight
CIF	Customs insurance and freight
FOB	Free on board

Exchange Rate

Baht	Thailand Baht (1 U.S. dollar = 20.5 Bahts)
$, U.S.$,	U.S. dollar
yen	Japanese yen (1 U.S. dollar = 215 yen)

Organization and Company

GOT	The Government of Thailand
PTT	Petroleum Authority of Thailand
BOI	Office of the Board of Investment
NESDB	Office of the National Economic and Social Development Board
DTEC	Department of Technical and Economic Cooperation
MOI	Ministry of Industry
ETO	Express Transportation Organization of Thailand
EGAT	Electricity Generating Authority of Thailand
NEA	National Energy Administration
PEA	Provincial Electricity Authority
IEAT	Industrial Estate Authority of Thailand
TAPLACO	Thai Plastic and Chemical Co., Ltd.
THASCO	Thai Asahi Caustic Soda Co., Ltd.
FOIS	Fluor Ocean International Services Inc.
JICA	Japan International Cooperation Agency
JETRO	Japan External Trade Organization

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I. INTRODUCTION

This supplementary study is a comparative evaluation of ethylene plant production capacity, done independently of the study report proper and done on the basis of the assumption that the following conditions are met.

Conditions for the Supplementary Study

A. Not only will feedstock ethane be recovered from the Phase I gas processing plant (350 MMSCFD) now being constructed but ethane from the Phase II plant to be constructed in the future is also to be used.

B. Downstream plants for ethylene derivatives (LDPE, HDPE, VCM/PVC and EO/EG) are to be constructed in order to satisfy domestic demand by means of domestic production. That is, so that potential demand for ethylene is equivalent to effective demand, capacity of downstream plants will at all times exceed demand.[1)]

C. In the event that natural gas is used as feedstock for olefin production, the yield of propylene will be less than that of ethylene, resulting in a constraint on propylene production. Further, considering the pattern of petroleum refining in Thailand, recovery of a large quantity of propylene from refineries is not to be expected. Therefore the quantity of domestically suppliable propylene will be low, to the extent that it will not be sufficient to satisfy domestic demand. Therefore, there will be no choice but to meet the shortfall in supply by means of polyethylene as a substitute.

On the basis of projection of ethylene, assuming that the above conditions are satisfied, and using the forecast demand quantities, the economics of ethylene plant production scale is evaluated as given below.

1) For example, by expansion of capacity at the time that domestic demand exceeds production capacity, whereby overall utilization of capacity does not become 100%.

II. THE MARKET ASPECTS

1. DEMAND PROJECTIONS

1–1 PLASTICS MATERIALS

The possibility of substitution of polypropylene by polyethylene is examined in this section. Demand analysis and demand projections for plastics materials other than polypropylene and polyethylene are taken to be the same as given in the main text.

1–1–1 Replacement of Polypropylene by Polyethylene

(1) Competition between polyethylene and polypropylene

Both polyethylene and polypropylene have many characteristics in common and with the exception of certain special fields they are used in the same way in molding processes, and are used for many of the same purposes.

Table II-1 provides a comparison of the features of polyethylene and polypropylene products, by area of demand. Because polypropylene has many advantages which polyethylene does not have, demand for it is increasing on a global scale.

Demand for polypropylene in Thailand in 1970 was 5,700t but by 1979 annual demand had increased to the level of 54,000t, as the average annual growth rate during that period was 28%; this was more than 3 times as great as the average growth of demand of polyethylene which was 9% p.a. Therefore, the share of demand accounted for by polypropylene in all polyolefins rose from 13% in 1970 to 39% in 1979. This is a reflection of the speed with which polypropylene, on the strength of recognition of its advantages in processability and product quality, has penetrated the plastics industry in Thailand, and has been accepted there.

Furthermore, the price of polypropylene has declined to less than that of polyethylene, resulting in substitution of the latter by the former for production of film. Nevertheless, substitution effects caused by differentials in price are believed to be considerably weaker than technical factors such as examined in preceding pages. That is, if the share of polypropylenes in total polyolefins in Thailand is represented as W(%), the following linear regression equation is derived.

$$W = 14.67 + 1.98t - 0.29v$$

(coefficient of correlation: 0.9566)

Table II—1 ADVANTAGES AND DISADVANTAGES OF POLYPROPYLENE IN APPLICATIONS WHERE IT COMPETES WITH POLETHYLENE

	Advantages	Disadvantages
Film	High rigidity.	
	Good transparency.	
	Productivity of CPP and OPP is high and OPP film is used as high-grade wrapping material in place of cellophane.	HDPE is superior for very thin film.
Woven bags	Nonslip quality; stacked bags stay in place.	Weaving is difficult because of high stiffness and nonslip qualities.
Rope, net		Somewhat stiff.
Injection molded products	High stiffness.	
	High surface hardness.	
	Good gloss.	
	Good anti-creep properties.	Homopolymers have low impact strength.
	High hinge strength.	
	Shrinkage during molding is less than that of HDPE; this with low directionality bias facilitate molding.	Molding of large products is difficult.
	Reinforcement with glass fiber is possible.	
Blow molded products	Stretched blow molding is possible.	Processability of blow-molded products is generally difficult; inferior in impact strength.

Here,

t = number of years with 1970 = 0, and

v = ratio of the price differential between polypropylene and polyethylene to polyethylene price (%)

The equation indicates that the ratio of polypropylene demand to polyolefins demand increases 2% a year regardless of the price, and that the influence of price is about 0.3% for each 1% price difference.

Therefore, even if in the future the price of domestically-produced polyethylene becomes lower than the price of imported polypropylene, it will be difficult for that alone to cause substitution by polyethylene for polypropylene in a large number of the latter's applications.

Most of the areas of application shown in Table II-1, however, are applications for which polyethylene was used in Japan in the past, or for which polyethylene is used today in America, Europe and elsewhere, and logically substitution in these applications is feasible. It is therefore necessary to solve the technical problems involved in substituting polypropylene for polyethylene. Unless this is done even if there is a decline in quantity demanded of polypropylene because of insufficient supply, it will not mean that there will immediately result in an increase in polyethylene demand.

(2) Share of polypropylene in total polyolefins

The following comparison can be made of the shares of LDPE, HDPE and polypropylene in the three areas of greater polypropylene demand, namely film, injection molded products, and filament and fiber (spun; film) in Japan, America and West Europe (also refer to Table II-2.

(Unit: %)

	Japan			America			West Europe		
	LDPE	HDPE	PP	LDPE	HDPE	PP	LDPE	HDPE	PP
Film	59	18	23	90	5	5	91	4	5
Injection molded products	10	26	64	23	35	42	22	35	43
Filament, fiber	0	48	52	0	0	100	0	12	88

That is, 23% of film, which accounts for 36% of domestic Japanese demand for polyolefins, in accounted for by polypropylene, a level of demand for polypropylene which surpasses by far the 5% in America and West Europe. In Thailand, as is mentioned in the main text, the share of polypropylene as a material for production of film is very high. This indicates that it is possible that in Thailand a large portion of PP used for film can be replaced by LDPE.

Injection molded products account for shares of 27%, 20% and 23% respectively in polyolefin demand in Japan, America and West Europe. Polypropylene's share of estimated products is 64% in Japan, 42% in America and 43% in West Europe. In Thailand the polypropylene share is high, similar to the situation in Japan, indicating the possibility of being replaced by HDPE and LDPE in the future.

Table II–2 POLYETHYLENE AND POLYPROPYLENE CONSUMPTION IN MAJOR APPLICATION FIELD (1979)

(1) Japan

(Unit: 1,000 t/y)

	LDPE	HDPE	PP	Total
Blow Molding	49	119	25	193
Film	549	167	213	929
Coating	154	–	–	154
Wire and Cable	76	–	–	76
Injection Molding	67	178	441	686
Pipe	9	13	–	22
Fiber and Stretched Tape	1	116	127	244
Others	96	71	86	253
Domestic Consumption Total	1,001	665	892	2,558

Source: Association of Petrochemical Industries of Japan.

(continued)

(2) America

(Unit: 1,000 t/y)

	LDPE	HDPE	PP	Total
Blow Molding	26	764	28	818
Injection Molding	295	466	550	1,311
Extrusion Molding				
Coating	250	–	–	250
Film	1,941	102	123	2,166
Pipe	15	239	11	265
Sheet	13	30	15	58
Wire & Cable	191	59	5	255
Fiber & Filament	—	–	455	455
Others	36	20	28	84
Others	330	229	216	775
Domestic Consumption Total	3,097	1,914	1,431	6,442

(3) West Europe

(Unit: 1,000 t/y)

	LDPE	HDPE	PP	Total
Blow Molding	102	622	–	724
Film & Sheet	2,708	115	145	2,968
Coating	196	–	–	196
Injection Molding	329	513	633	1,475
Spun Fiber	–	–	155	155
Film Fiber	–	39	287	326
Pipe	122	89	–	211
Wire & Cable	167	10	–	177
Others	116	32	–	148
Total	3,740	1,424	1,220	6,384

Source: Modern Plastics International (Jan., 1980).

Filament, stretched tape and fiber in America and West Europe for the most part is made of multi-filament and substitution by polyethylene is not possible, but in Japan stretched tape (poly-rope, woven bags) is commonly used. Because conditions in Thailand are about the same as in Japan, it is thought to be possible for polypropylene to be replaced by HDPE to a certain extent.

At present the share of polypropylene in polyolefins is 40% in Japan, 22% in America, and 15% in France and West Germany (20% for West Europe as a whole) (see 1–1–1, in Chapter 1, Part II, in the main text), and in Thailand it is 40%, the same as in Japan.

Until Thailand begins production of LDPE and HDPE from domestic ethylene in 1985, it is thought that polypropylene will continue to be imported, and that the structure of demand will not change, but the ratio of polypropylene demand thereafter is presumed to be decreased to 20% in 1990,[1] assuming that a tax barrier of more than 40% (existing tariff) is applied to PP imports, suitable polyethylene price policy (for instance, price controll by the government is adopted and progress is made in the substitution of PP by PE.

1–1–2 Olefin Demand Projections

(1) Polyolefins

Elasticity analysis was performed for the total of polyethylene (HDPE, LDPE) and polypropylene, in relation to real GDP and real prices.[2] The results of elasticity analysis are as follows.

$$\log Q = -1.1076 + 1.7349 \log \Theta - 1.2626 \log p$$

where,

Q = Quantity of polyolefin demand (1,000 t/y)
Θ = Real GDP (10^9 Baht)
p = Real price (Baht/kg)
[Weighted average price of PE and PP]

Table II-3 gives the assumptions required for projection of demand. The results of demand projections are given in Table II-4.

(2) Polyethylene, polypropylene

It is assumed that the present trends of demand for both polyethylene and polypropylene will continue unchanged to 1985, and that the ratio of polypropylene demand in total polyolefin demand is 40%. The polypropylene ratio thereafter will decrease gradually, to 20% in 1990 and polypropylene demand was calculated on that basis (see Table II-5 and Fig. II-3).

---

1) It is though that supply of propylene in Thailand is about 40,000t, from FCC plants (including expansion at TORC). Therefore demand in 1990 for polypropylene is taken as about 48,000t including imports and the share in polyolefins is taken as 20%.

2) See Part II, the main text.

The shares of HDPE and LDPE used are the same as the figures given in Table II-34, Chapter I, Part II, in the main text. Results of calculations are given in Table II-6.

Table II–3 REQUISITE CONDITIONS FOR DEMAND FORECAST FOR POLYOLEFINS IN THAILAND

GDP Growth Rate	6.5 %/y
Average GDP (Bil. Baht) (at 1972 Price)	
1981 – 1990	435.7
1991 – 2000	817.9
GDP Elasticity	
1981 – 1990	1.2523
1991 – 2000	1.1217
Average Price of Polyolefins (at 1972 Prices)	8.3 Baht/kg

Source: Table II-29, Vol. I.

Table II—4 DEMAND FORECAST FOR POLYOLEFINS

	(Unit: 1,000 t/y)
1981	118.0
1982	127.7
1983	138.1
1984	149.5
1985	161.8
1986	175.0
1987	189.4
1988	204.9
1989	221.7
1990	239.9
1991	257.5
1992	276.4
1993	296.6
1994	318.3
1995	341.6
1996	366.6
1997	393.4
1998	422.2
1999	453.1
2000	486.3

Table II–5 ESTIMATED CONSUMPTION PATTERN OF POLYETHYLENE AND POLYPROPYLENE

(Unit: %)

	LDPE	HDPE	PP	Total
1981	36	24	40	100
1982	36	24	40	100
1983	36	24	40	100
1984	36	24	40	100
1985	37	23	40	100
1986	40	24	36	100
1987	43	25	32	100
1988	45	27	28	100
1989	48	28	24	100
1990	50	30	20	100
1991	51	29	20	100
1992	52	28	20	100
1993	52	28	20	100
1994	52	28	20	100
1995	52	28	20	100
1996	52	28	20	100
1997	52	28	20	100
1998	52	28	20	100
1999	52	28	20	100
2000	52	28	20	100

Table II–6 DEMAND FORECAST FOR POLYETHYLENE AND POLYPROPYLENE

(Unit: 1,000 t/y)

	LDPE	HDPE	PP
1981	42.5	28.3	47.2
1982	46.0	30.6	51.1
1983	49.7	33.1	55.2
1984	53.8	35.9	59.8
1985	59.9	37.2	64.7
1986	70.0	42.0	63.0
1987	81.4	47.4	60.6
1988	92.2	55.3	57.4
1989	106.4	62.1	53.2
1990	120.0	72.0	48.0
1991	131.3	74.7	51.5
1992	143.7	77.4	55.3
1993	154.2	83.0	59.3
1994	165.5	89.1	63.7
1995	177.6	95.6	68.3
1996	190.6	102.6	73.3
1997	204.6	110.2	78.7
1998	219.5	118.2	84.4
1999	235.6	126.9	90.6
2000	252.9	136.2	97.3

2. ETHYLENE DERIVATIVES PLANTS

Future new construction or expansion of derivatives production facilities as given in the main text is predicted on the assumption of prior emergence of a suitable corresponding volume of additional domestic demand (for example, at the point when the second phase plant is being operated at least 50% of capacity). Therefore, there would be, for a certain period of time, a shortfall in domestic supply capability, which would have to be compensated for by imports.

From the viewpoint of making effective use of ethylene, however, it is thought that there is no choice but to build a derivatives plant which has small initial scale, and increase its capacity at a later date, and to realize potential demand to the greater extent possible.

2–1 PLASTICS MATERIALS

2–1–1 Polyethylene

At the point when domestic demand exceeds the level of derivatives plant production capacity, newly provided expansion facilities go on stream, and the total plant facilities are operating at 75% of capacity or a higher rate, in view of the initial scale of 73,000 t/y of LDPE and 36,000 t/y of HDPE for the plant now being constructed, the additional capacity which will be required in keeping with the above demand projections is as follows (see also Fig. II-1).

(Unit: 1,000 t/y)

LDPE	1982	73	New plant construction, first phase
	1987	37	Expansion
	1990	50	Expansion
	1994	60	New plant construction, second phase
	1998	80	
HDPE	1983	36	New plant construction, first phase
	1985	14	Expansion with original 50,000t capacity
	1988	23	Expansion
	1992	37	New plant construction, second phase
	1997	40	

Among the above, it is thought that construction of 37,000 t/y and 50,000 t/y of LDPE capacity is not very likely to take place because of the high cost of the reactor and pelletizer construction, so that it is expeccted that the date for construction of new capacity will be moved up and that existing facilities will be modified so as to increase their capacity

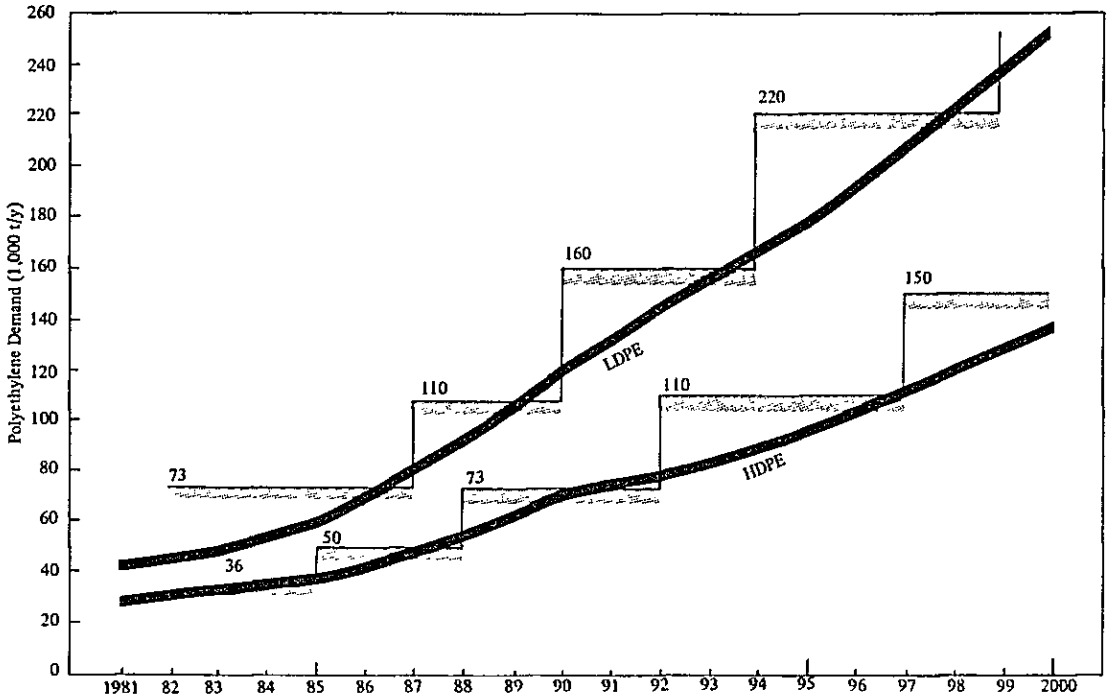

Fig. II–1 SUPPLY/DEMAND BALANCE OF POLYETHYLENE

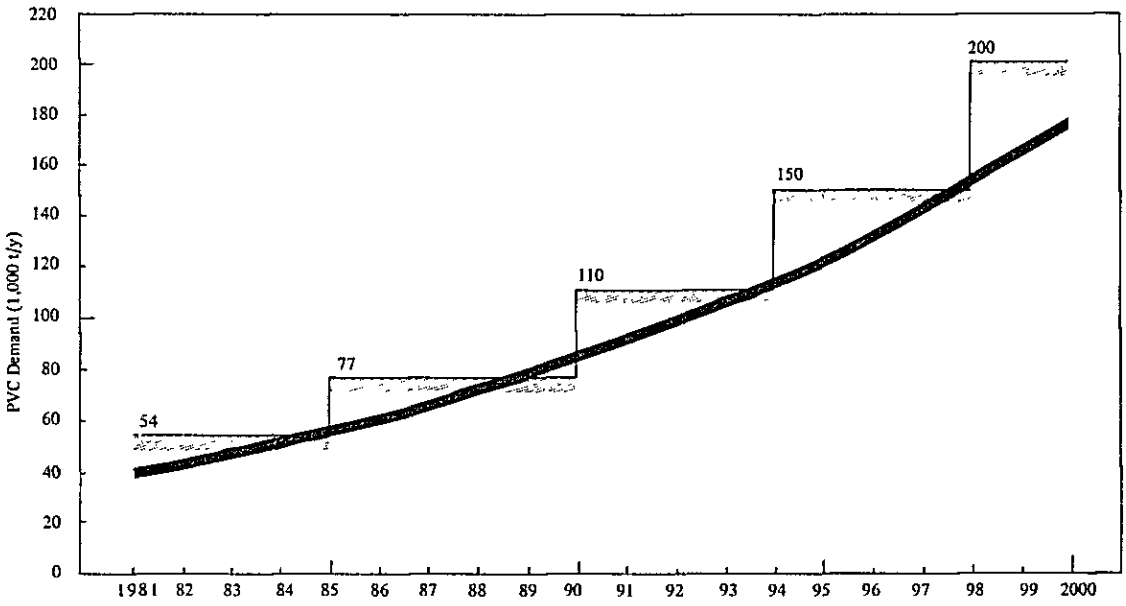

Fig. II–2 SUPPLY/DEMAND BALANCE OF PVC

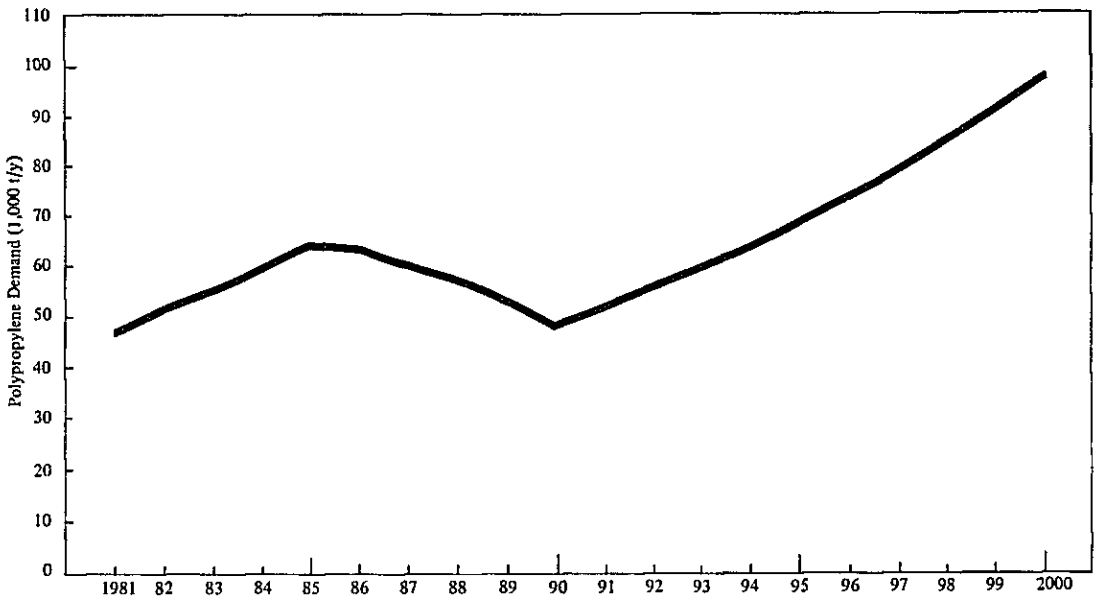

Fig. II–3 DEMAND FOR POLYPROPYLENE

prior to that construction. Because of that, it will be unavoidable for a gap of a certain extent to develop between domestic supply and demand of LDPE.

In the case of HDPE, in contrast to that of LDPE, the construction cost of the reacotr and pelletizer is not very great and even at the present time it is thought that the minimum economic scale for plant construction is about 30,000 t/y. Therefore, the likelihood is high that the above HDPE capacity expansion plan will be realized.

2–1–2 PVC

As is indicated in Fig. II-15, Chapter 2, Part II, Vol. II in Korea there have been several occasions in the past when there have addition of small scale increments, of about 50,000 t/y, and almost all of the domestic demand has been satisfied by this means. Imports have been only of limited grades of paste resins etc. In the case of Thailand, new construction would be needed as follows for PVC, along the same line of thinking as used above.

	(Unit: 1,000 t/y)	
Prior to 1984	54	
1985	23	Expansion
1990	33	Expansion
1995	40	New plant construction, second phase
1998	50	

Because it is possible to add relatively small scale plants in the case of PVC, an increase of 23,000 t/y in 1985 is feasible, and it will be feasible to provide the 33,000 t/y addition in 1990 by a scrap-and-build approach.

It is believed that construction of a new plant or entry of a new producer of PVC in Thailand will be in or after 1995.

2–2 ETHYLENE GLYCOL

It is reported that the ethylene oxide/ethylene glycol plant now being newly constructed is to have minimum and maximum capacities of 100,000 t/y and 300,000 t/y. However, in the case of Thailand from the viewpoint of efficient use of ethylene, it is thought that a plant having the capacity of about 60,000 t/y ethylene oxide equivalent will be constructed by 1985 (see Fig. II-4).

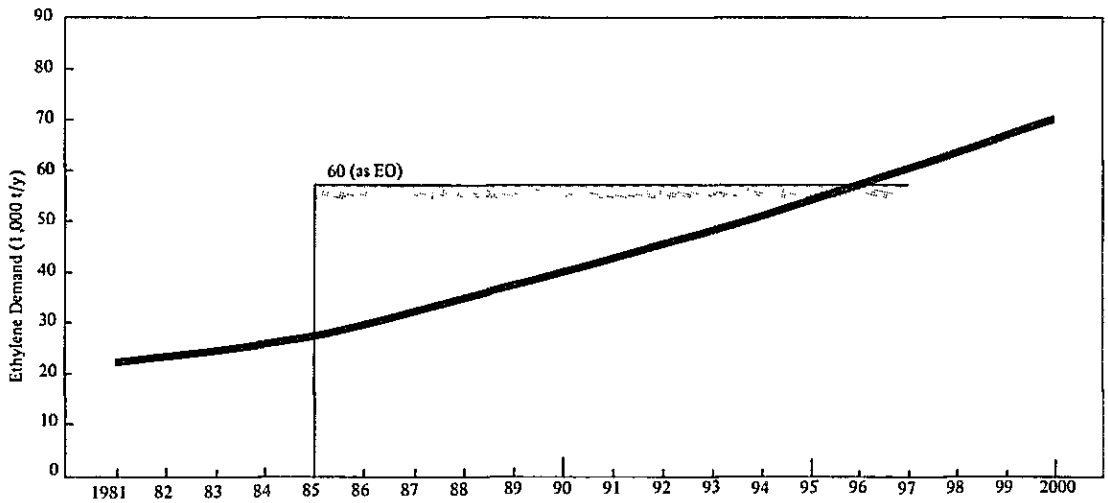

Fig. II–4 SUPPLY/DEMAND BALANCE OF ETHYLENE OXIDE

Demand for ethylene glycol in Thailand according to the projection made by the study team will be 30,000 t/y ethylene oxide equivalent in 1985, so that at the outset the plant would operate at about 50% of capacity, and reach the level of full use of capacity 10 years later, in 1995. If, provisionally, there are 40,000 t/y capacity at the beginning of operation, it would be necessary to expand to 60,000 t/y in 1991, so that it is desirable for the reactor to be of 60,000 t/y capacity from the beginning, and it is possible to increase the capacity of the distilling tower in keeping with the increase in production.

The problem encountered when a 60,000 t/y plant is operated at minimum load is that unit utilities costs are extremely high, and plant facilities depreciation and interest costs are high so that production cost is increased. In order to compensate for this, it is necessary to give consideration to the level of price at which ethylene is supplied.

3. QUANTITY OF ETHYLENE REQUIRED, AND PRODUCTION CAPACITY OF THE ETHYLENE PLANT

3–1 QUANTITY OF ETHYLENE REQUIRED

As is stated above if the derivatives plant is constructed so as to match increases in domestic demand levels, the quantity of ethylene demand will be as given in Table II-7 and Fig. II-5 (Case II). That is,

	(Unit: 1,000 t/y)
1985	157
1990	284
1995	402
2000	566

3–2 PRODUCTION CAPACITY OF THE ETHYLENE PLANT

Because the minimum level of capacity utilization of an ethylene plant is 50%, for the quantity of demand of 173,000 t/y[1] of ethylene in 1986, as obtained from Table II-7, the maximum possible capacity of an ethylene plant completed during 1985 is 350,000 t/y.

Futher, it is desirable that in 1985 the ethylene plant have 5 furnaces (or an additional furnace for stand-by) and capacity of about 250,000 t/y, and that production capacity be gradually increased in keeping with the rise in the level of domestic demand.

1) In the event of completion during 1985, because there would be plant operation for only half a year, production in 1986 is used as the base.

Table II–7 ETHYLENE DEMAND

(Unit: 1,000 t/y)

	PE	PVC	Ethylene for EO	Ethylene Demand
1985	97.1	56.1	27.9	157.3
1986	112.0	61.0	30.0	177.5
1987	128.8	66.4	32.4	200.2
1988	147.5	72.2	34.8	225.1
1989	168.5	78.6	37.5	252.9
1990	191.9	85.6	40.4	283.8
1991	206.0	92.0	42.9	304.3
1992	221.1	99.0	45.6	326.3
1993	237.3	106.5	48.5	349.9
1994	254.6	114.5	51.6	375.0
1995	273.3	123.2	54.8	402.1
1996	293.3	132.5	57.6	430.5
1997	314.7	142.6	60.6	460.9
1998	337.8	153.4	63.7	493.6
1999	362.5	164.9	67.0	528.4
2000	389.0	177.4	70.5	565.9

Note: (Ethylene Demand) = (PE) x 1.05 + (PVC) x 0.49 + (Ethylene for EO).

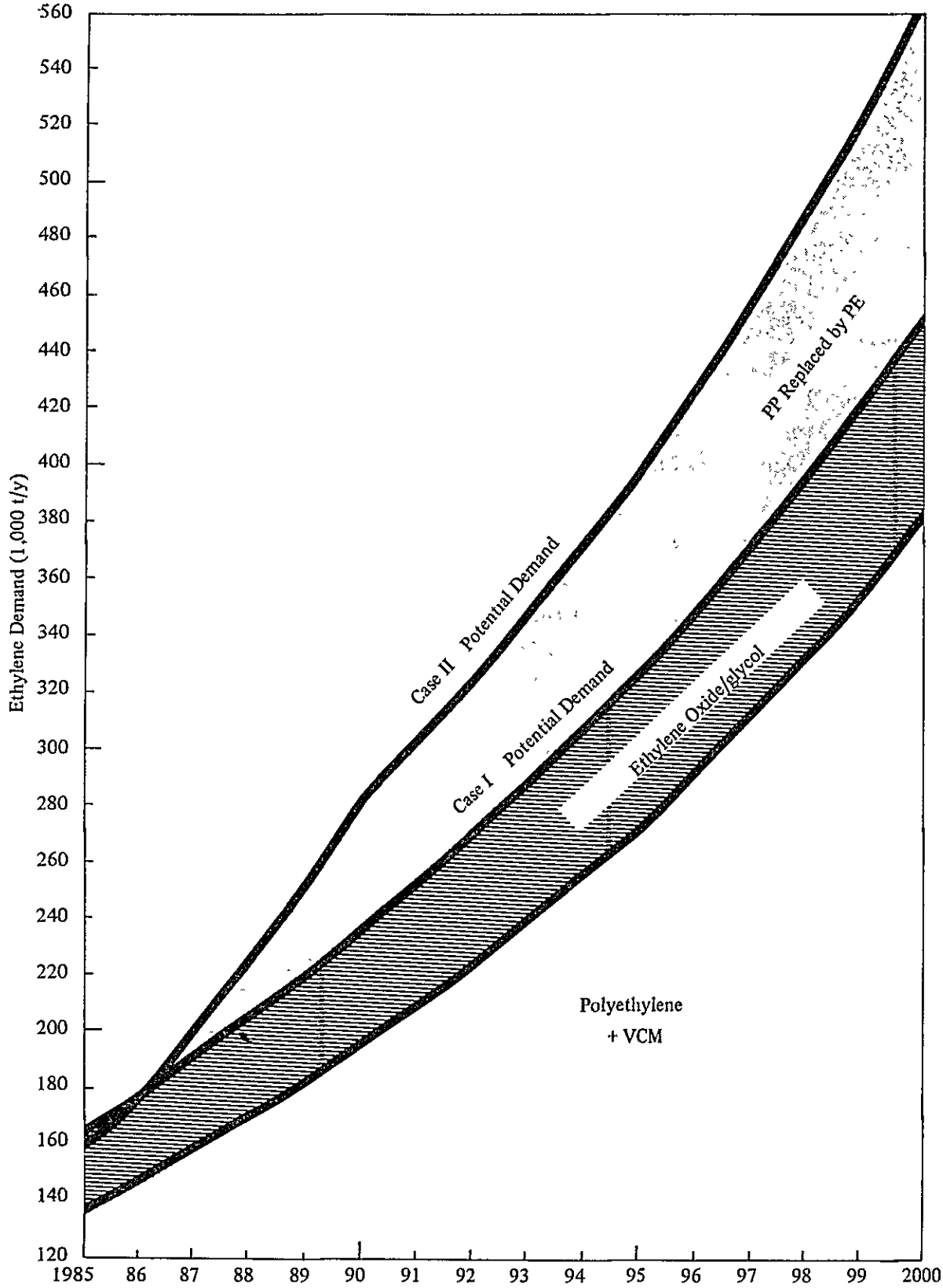

Fig. II—5 SUPPLY/DEMAND BALANCE FOR ETHYLENE

III. TECHNICAL, FINANCIAL AND ECONOMIC STUDY

1. TECHNICAL STDUY

Details concerning the technical study are contained in the main text of the report. Therefore, here only the materials and utilities balance of a 300,000 MTA plant, and the cost breakdown, are given.

1-1 MATERIALS AND UTILITIES BALANCE

Table III-1 shows the materials and utilities balance for an ethylene plant of 300,000 MTA scale. The quantities of materials and utilities supplies for a 350,000 MTA plant, which are needed for financial and economic analyses, were calculated on the supposition that unit requirements are the same as for a 300,000 MTA plant.

1-2 INVESTMENT AMOUNT

The total required investment is as follows.

(US$ thousand in constant 1980 prices)

Ethylene plant scale	Foreign portion	Domestic portion	Total
230,000 MTA	153,775	79,988	233,763
300,000 MTA	174,028	87,637	261,645
350,000 MTA	186,426	93,910	280,336

The breakdown of the capital investment for a 300,000 MTA plant is given in Table III-2.

Table III—1 ESTIMATED BLANCE AND REQUIREMENTS FOR RAW MATERIALS AND UTILITIES (ETHYLENE 300,000 MT/Y)

(Unit. MT/H) 8,000 hrs/year basis

Companies, Plants and Facilities / Requirements of Raw Materials and Utilities	Petrochemical Complex., Total																	
	Petroleum Authority of Thailand (PTT)												Outside of PTT					
		Utilities Center											Thai VCM Co					
	Ethylene plant	Raw Water Clarifier and Sand filter	Demineraliz-er	Polisher	Deaerator & BFW pump & Drivers	Cooling Water System	Portable Water	Steam & Power Generation	Instrument & Plant Air Generation	Air Separa-tion	Utilities Center Sub-total	PTT Sub-total	VCM Plant	Chlor-Alkali Plant	Thai VCM Sub-total	HDPE Plant	Sub-total	Total (Supply from outside)
Ethylene	Δ37.5										–	Δ37.5	4.75		4.75		–	Δ32.75
VCM											–	–	Δ10.0		Δ10.0		Δ10.0	Δ10.0
Caustic Soda (as 100%)											–	–		Δ6 45	Δ6 45		Δ6.45	Δ6.45
Ethane	46 79										–	46.79					–	46.79
Salt											–	–		11.4	11.4		11.4	11.4
Chlorine											–	–	6.0	Δ6.0	–		–	–
Hydrochloric Acid											–	–	Δ0.9	0.9	–		–	–
Fuel Gas (MMBTu/H)	59.5							227.5			227.5	287					–	287
Raw Water		530									530	530					–	530
Power (KW)	1535	303	113	57		623	9	Δ3400		760	Δ1535	–	2367	17280	19647	5300	24947	24947
Steam, 42K	18				3.52	14.68		Δ48.54	3.64		Δ26.7	Δ8 7				8.7	8.7	–
Steam, 15K								Δ8.6			Δ8.6	Δ8.6	6.2	2.4	8.6		8 6	–
Steam, 2K					22.77	Δ14.68		Δ8.95	Δ3 64		Δ4.5	Δ4.5	4.5		4.5		4.5	–
Filtered Water		487.46	62.46			276	10				Δ139	Δ139	80	14	94	45	139	–
DMW			Δ49.97	40.17							Δ9.8	Δ9.8		9.8	9 8		9.8	–
Condensate	Δ166			166							166	–					–	–
Polished Water				Δ203.52	203.52						–	–					–	–
BFW	162				Δ229.71			67.71			Δ162	–					–	–
Portable Water	5						Δ10				Δ10	Δ5	2.5	2 5	5		5	–
Cooling Water	7780					Δ8280		350	50	100	Δ7780	–					–	–
Instr.&Plant Air (Nm^3/H)	1168	20	20	20	20	20		50	Δ2500	140	Δ2210	Δ1042	450	592	1042		1042	–
Oxygen (Nm^3/H)										Δ1050	Δ1050	Δ1050	1050		1050		1050	–
Inert Gas (Nm^3/H)	500									Δ1130	Δ1130	Δ630	200	20	220		220	Δ410
Catalysts Chemicals ($/H)	187	9	12	3		38					62	249	11	148	159		159	408

Note: Δ = Generation or production.

Table III—2 CAPITAL COST ESTIMATE FOR PTT ETHYLENE PROJECT (300,000 MT/Y ETHYLENE PLANT)

(US$ thousand in constant 1980 prices)

	Ethylene			Tank Yard			Utilities Center			Offsite			Total		
	F.C[3]	L.C[4]	Total	F.C	L.C	Total	F.C	L.C	Total	F.C	L.C	Total	F.C	L.C	Total
FOB Equipment[1]	54,743	–	54,743	8,279	–	8,279	19,070	–	19,070	8,232	–	8,232	90,324	–	90,324
License, Basic & Detail Engineering, Project Management	18,046	–	18,046	605	–	605	2,186	–	2,186	2,093	–	2,093	22,930	–	22,930
Transportation	8,279	2,093	10,372	3,302	1,116	4,418	2,605	698	3,303	1,805	474	2,279	15,991	4,381	20,372
Supervising	4,744	698	5,442	814	116	930	1,860	279	2,139	814	116	930	8,232	1,209	9,441
Erection	3,298	11,679	14,977	1,065	4,098	5,163	1,553	5,981	7,534	721	2,581	3,302	6,637	24,339	30,976
Civil	2,056	10,874	12,930	56	409	465	595	3,033	3,628	2,770	15,141	17,911	5,477	29,457	34,934
Plant Cost (as erected)	91,166	25,344	116,510	14,121	5,739	19,860	27,869	9,991	37,880	16,435	18,312	34,747	149,591	59,386	208,977
Land Cost													–	373	373
Preoperation and Star-up Expenses													1,256	10,889	12,145
Interest during Construction													23,181	10,856	34,037
Total Fixed Capital													174,028	81,504	255,532
Initial Working Capital													–	6,133	6,113
Total Capital Investment													174,028	87,637	261,645

Notes: 1) Incld. spareparts and catalysts for 2 years operation
2) Incld. inland transportation.
3) Foreign currency portion.
4) Local currency portion.

2. FINANCIAL AND ECONOMIC STUDY

2–1 BASIS FOR FINANCIAL AND ECONOMIC STUDY

With the exception of the below-enumerated assumptions for the financial and economic analysis, the basis for the study is the same as that described in the main text of the report.

(1) Ethylene production and marketing plans

On the basis of the results given in Chapter 1 of this Supplementary Study report, the ethylene production and marketing plans are determined to be as shown in Table III-3.

(2) Ethylene and ethane prices

	(financial analysis)	(economic analysis)
Ethylene :	$ 700/T	$600/T
Ethane :	$ 300/T	$240/T

(3) Capital source and financial conditions[1)]

Equity/debt ratio: Entire capital requirement is met by borrowing

Interest:

- Long-term interest; average 9.8% p.a.
- Short-term interest; average 18 % p.a.

Repayment period:

- Long-term debt; 13 years including 3 years grace period
- Short-term debt; Following year

1) Taking into consideration the opinion given at the meeting with PTT officials on March 5 and 6, 1981, in Bangkok, the tentative situation given here was used for the study.

Table III—3 PRODUCTION AND SALES PLAN

	Ethylene plant capacity 300,000 MTA			Ethylene plant capacity 350,000 MTA			Ethylene plant capacity 230,000 MTA		
	Production	Sales	Inventory	Production	Sales	Inventory	Production	Sales	Inventory
1985	82,200	78,700	3,500	82,200	78,700	3,500	82,200	78,700	3,500
1986	177,500	177,500	3,500	177,500	177,500	3,500	177,500	177,500	3,500
1987	200,200	200,200	3,500	200,200	200,200	3,500	200,200	200,200	3,500
1988	225,100	225,100	3,500	225,100	225,100	3,500	225,100	225,100	3,500
1989	252,900	252,900	3,500	252,900	252,900	3,500	230,000	230,000	3,500
1990	283,800	283,800	3,500	283,800	283,800	3,500	230,000	230,000	3,500
1991	300,000	300,000	3,500	304,300	304,300	3,500	230,000	230,000	3,500
1992	300,000	300,000	3,500	326,300	326,300	3,500	230,000	230,000	3,500
1993	300,000	300,000	3,500	349,900	349,900	3,500	230,000	230,000	3,500
1994	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500
1995	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500
1996	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500
1997	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500
1998	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500
1999	300,000	300,000	3,500	350,000	350,000	3,500	230,000	230,000	3,500

2–2 RESULTS OF FINANCIAL AND ECONOMIC STUDIES

The financial statements gained as a results of financial analysis are provided in the Appendix. Fig. III-1 illustrates the relation between the financial internal rate of return, the economic internal rate of return, and the production capacity of the ethylene plant. No significant difference can be discemed between the financial IRR and the economic IRR.

If opportunity loss[1)] which can be anticipated in connection with future supply and demand of ethylene is taken into account, the economic IRR of a 230,000 MTA plant is considerably lower than the economic IRRs of either a 300,000 MTA plants or a 350,000 MTA plant. The results of calculation of the economic IRR are shown in Tables III-4, 5, 6.

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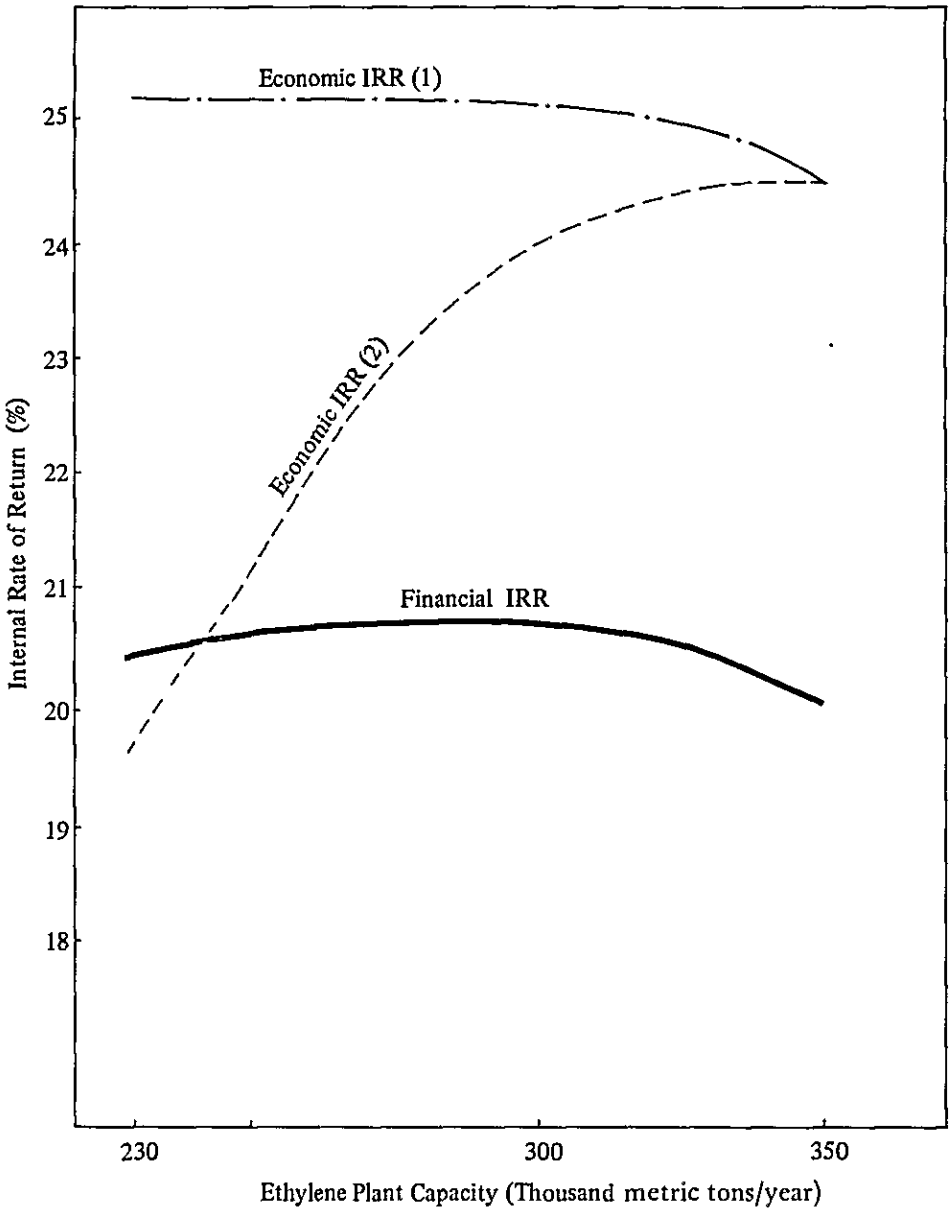
1) For example, the opportunity loss (when compared to that of a 350,000 MTA plant) for a 230,000 MTA ethylene plant is calculated by the following equation.

$$\sum_{m=1}^{15} (Qm - qm)(P_i - P_p)(Es)$$

Where,

Qm : The quantity of actual production of ethylene (tons) in the mth year after the start of operation of a 350,000 MTA plant.
qm : The quantity of actual production of ethylene (tons) in the mth year after the start of operation of a 230,000 MTA plant.
P_i : Ethylene import price estimated at US$1,000/ton.
P_p : Economic price of produced ethylene, US$600/ton.
Es : Shadow exchange rate (20.5)/(0.791) = 25.91 Baht/US$.



Note: 1) Opportunity loss is not taken into account
2) Opportunity loss is taken into account

Fig. III—1 COMPARISON OF INTERNAL RATE OF RETURN FOR DIFFERENT PRODUCTION CAPACITIES OF ETHYLENE PLANT

Table III—4 COMPARATIVE ECONOMIC INTERNAL RATE OF RETURN (230,000 MTA ETHYLENE PLANT)

(Unit: Million Baht)

	Economic Cost				Economic Benefit	Discount Factor	Present Value (Discount Rate = 0.192)	
	Capital Cost	Operating Cost	Opportunity Loss	Total			Economic Cost	Economic Benefit
1982	711			711		1.0000	711	
1983	1,611			1,611		0.8389	1,351	
1984	1,655			1,655		0.7038	1,165	
1985	938	622		1,560	1,224	0.5904	921	723
1986		1,416		1,416	2,760	0.4953	701	1,367
1987		1,568		1,568	3,113	0.4155	652	1,293
1988		1,734		1,734	3,500	0.3486	604	1,220
1989		1,761	237	1,998	3,577	0.2925	584	1,046
1990		1,761	558	2,319	35,77	0.2454	569	875
1991		1,761	770	2,531	3,577	0.2058	521	736
1992		1,761	998	2,759	3,577	0.1727	476	615
1993		1,761	1,243	3,004	3,577	0.1449	435	515
1994		1,761	1,244	3,005	3,577	0.1215	365	435
1995		1,756	1,244	3,000	3,577	0.1020	306	365
1996		1,750	1,244	2,994	3,577	0.0855	256	306
1997		1,750	1,244	2,994	3,577	0.0718	215	257
1998		1,750	1,244	2,994	3,577	0.0602	180	215
1999		1,750	1,244	2,994	3,731	0.0505	151	188
Total							10,163	≒10,165

Note: EIRR = 19.2%

Table III—5 COMPARATIVE ECONOMIC INTERNAL RATE OF RETURN (300,000 MTA ETHYLENE PLANT)

(Unit: Million Baht)

Year	Economic Cost				Economic Benefit	Discount Factor	Present Value (Discount Rate = 0.240)	
	Capital Cost	Operating Cost	Opportunity Loss	Total			Economic Cost	Economic Benefit
1982	797			797		1.0000	797	
1983	1,809			1,809		0.8065	1,459	
1984	1,860			1,860		0.6504	1,210	
1985	1,041	630		1,671	1,224	0.5245	876	642
1986		1,434		1,434	2,760	0.4230	607	1,167
1987		1,585		1,585	3,113	0.3411	541	1,062
1988		1,750		1,750	3,500	0.2751	481	963
1989		1,937		1,937	3,933	0.2218	430	872
1990		2,152		2,152	4,413	0.1789	385	789
1991		2,265	45	2,310	4,665	0.1443	333	673
1992		2,265	273	2,538	4,665	0.1164	295	543
1993		2,265	517	2,782	4,665	0.0938	261	438
1994		2,265	518	2,783	4,665	0.0757	211	353
1995		2,259	518	2,777	4,665	0.0610	169	285
1996		2,253	518	2,771	4,665	0.0492	136	230
1997		2,253	518	2,771	4,665	0.0397	110	185
1998		2,253	518	2,771	4,665	0.0320	89	149
1999		2,253	518	2,771	4,822	0.0258	71	124
Total							8,461	≒8,475

Note: EIRR = 24.0%

Table III–6 COMPARATIVE ECONOMIC INTERNAL RATE OF RETURN (350,000 MTA ETHYLENE PLANT)

(Unit: Million Baht)

	Economic Cost				Economic Benefit	Discount Factor	Present Value (Discount Rate = 0.245)	
	Capital Cost	Operating Cost	Opportunity Loss	Total			Economic Cost	Economic Benefit
1982	854			854		1.0000	854	
1983	1,938			1,938		0.8032	1,557	
1984	1,995			1,995		0.6451	1,287	
1985	1,110	637		1,747	1,224	0.5182	905	634
1986		1,451		1,451	2,760	0.4162	604	1,149
1987		1,602		1,602	3,113	0.3343	536	1,041
1988		1,767		1,767	3,500	0.2685	474	940
1989		1,954		1,954	3,933	0.2156	421	848
1990		2,170		2,170	4,413	0.1732	376	764
1991		2,313		2,313	4,732	0.1391	322	658
1992		2,467		2,467	5,074	0.1117	276	567
1993		2,632		2,632	5,441	0.0897	236	488
1994		2,633		2,633	5,443	0.0721	190	392
1995		2,626		2,626	5,443	0.0579	152	315
1996		2,620		2,620	5,443	0.0465	122	253
1997		2,620		2,620	5,443	0.0373	98	203
1998		2,620		2,620	5,443	0.0300	79	163
1999		2,620		2,620	5,601	0.0241	63	135
Total							8,552	≒8,550

Note: EIRR = 24.5%

ATTACHMENT III–1

FINANCIAL STATEMENTS FOR 230,000 MTA

ETHYLENE PLANT PROJECT

- Income Statement
- Fund Flow Statement
- Balance Sheet
- Production Cost Statement
- IRR Calculation on Total Investment
- Profitability and Financial Indicators

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(CASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION AND SALES											
CAPACITY	230000.	230000.	230000.	230000.	230000.	230000.	230000.	230000.	230000.	230000.	230000.
CAPACITY UTILIZATION	0.357	0.772	0.870	0.979	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	82200.	177500.	200200.	225100.	230000.	230000.	230000.	230000.	230000.	230000.	230000.
INCREASE IN INVENTORIES	3500.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	78700.	177500.	200200.	225100.	230000.	230000.	230000.	230000.	230000.	230000.	230000.
SALES REVENUE	55090.	124250.	140140.	157570.	161000.	161000.	161000.	161000.	161000.	161000.	161000.
COST OF SALES	45919.	101390.	110304.	120091.	121715.	121715.	121715.	121715.	121715.	121715.	110346.
VARIABLE COST	31464.	68398.	77311.	87098.	88722.	88722.	88722.	88722.	88722.	88722.	88722.
DEPRECIATION & AMORTIZATION	11369.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	11369.
OTHER FIXED COST	5128.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.
(INC) IN PRODUCT INVENTORIES	-2042.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	9171.	22860.	29836.	37479.	39285.	39285.	39285.	39285.	39285.	39285.	50654.
LESS. SALES EXPENSES	959.	2028.	2206.	2402.	2434.	2434.	2434.	2434.	2434.	2434.	2207.
OPERATING PROFIT OR (LOSS)	8212.	20832.	27630.	35077.	36851.	36851.	36851.	36851.	36851.	36851.	48447.
LESS. INTEREST											
ON LONG TERM DEBT	11524.	22600.	21281.	19273.	16968.	14663.	12358.	10053.	7748.	5443.	3138.
ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	-3312.	-1768.	6350.	15805.	19883.	22188.	24493.	26798.	29103.	31408.	45309.
LESS. INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	-3312.	-1768.	6350.	15805.	19883.	22188.	24493.	26798.	29103.	31408.	45309.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1996	1997	1998	1999
PRODUCTION AND SALES				
CAPACITY	230000.	230000.	230000.	230000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	230000.	230000.	230000.	230000.
INCREASE IN INVENTORIES	0.	0.	0.	0.
SALES VOLUME	230000.	230000.	230000.	230000.
SALES REVENUE	161000.	161000.	161000.	161000.
COST OF SALES	98977.	98977.	98977.	98977.
VARIABLE COST	88722.	88722.	88722.	88722.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
OTHER FIXED COST	10255.	10255.	10255.	10255.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	62023.	62023.	62023.	62023.
LESS. SALES EXPENSES	1980.	1980.	1980.	1980.
OPERATING PROFIT OR (LOSS)	60043.	60043.	60043.	60043.
LESS. INTEREST				
ON LONG TERM DEBT	1283.	297.	0.	0.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	58761.	59746.	60043.	60043.
LESS. INCOME TAX	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	58761.	59746.	60043.	60043.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS	34162.	79712.	79712.	64005.	48555.	51571.	59136.	59808.	59589.	59589.	59589.
CASH GENERATED FROM OPERATION	0.	0.	0.	19581.	43569.	50368.	57815.	59589.	59589.	59589.	59589.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	8212.	20832.	27630.	35077.	36851.	36851.	36851.	36851.
DEPRECIATION & AMORTIZATION	0.	0.	0.	11369.	22737.	22737.	22737.	22737.	22737.	22737.	22737.
FINANCIAL RESOURCES	34162.	79712.	79712.	40177.	0.	0.	0.	0.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	34162.	79712.	79712.	40177.	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN ACCT PAYABLE	0.	0.	0.	4248.	4986.	1203.	1321.	219.	0.	0.	0.
USES OF FUNDS	33958.	76973.	79060.	61253.	44232.	43001.	45239.	40854.	38039.	35734.	33429.
INVESTMENT IN FIXED ASSET	33958.	76973.	79060.	37758.	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	373.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	27991.	65312.	65312.	27991.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	1043.	1043.	3130.	5217.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	4550.	10618.	10618.	4550.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	0.	10262.	10244.	2361.	2590.	510.	0.	0.	0.
INCR(DECR) ACCT RECEIVABLE	0.	0.	0.	7437.	9337.	2145.	2353.	463.	0.	0.	0.
INCR(DECR) IN INVENTORIES											
PRODUCTS	0.	0.	0.	2042.	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	783.	908.	216.	237.	47.	0.	0.	0.
DEBT SERVICES	0.	0.	0.	13233.	33987.	40639.	42649.	40344.	38039.	35734.	33429.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	1708.	11387.	19359.	23376.	23376.	23376.	23376.	23376.
REPAYMNT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	11524.	22600.	21281.	19273.	16968.	14663.	12358.	10053.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	205.	2739.	652.	2752.	4324.	8570.	13897.	18954.	21549.	23854.	26159.
BEGINNING CASH BALANCE	0.	205.	2944.	3596.	6348.	10672.	19242.	33139.	52093.	73642.	97497.
ENDING CASH BALANCE	205.	2944.	3596.	6348.	10672.	19242.	33139.	52093.	73642.	97497.	123656.

*** FINANCIAL PROJECTIONS OF PIT ETHYLENE PLANT PROJECT ***

FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS	59589.	59589.	59816.	60043.	60043.	60043.	60043.
CASH GENERATED FROM OPERATION	59589.	59589.	59816.	60043.	60043.	60043.	60043.
PROFIT BEFORE TAX, INTEREST	36851.	36851.	48447.	60043.	60043.	60043.	60043.
DEPRECIATION & AMORTIZATION	22737.	22737.	11369.	0.	0.	0.	0.
FINANCIAL RESOURCES	0.	0.	0.	0.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCREASE IN ACCT PAYABLE	0.	0.	0.	0.	0.	0.	0.
USES OF FUNDS	31125.	28820.	24807.	13272.	4315.	0.	0.
INVESTMENT IN FIXED ASSET	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.
INCR(DECR) ACCT RECEIVABLE	0.	0.	0.	0.	0.	0.	0.
INCR(DECR) IN INVENTORIES							
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	31125.	28820.	24807.	13272.	4315.	0.	0.
REPAYMENT OF LONG TERM DEBT	23376.	23376.	21668.	11989.	4018.	0.	0.
REPAYMNT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	7748.	5443.	3138.	1283.	297.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	28464.	30769.	35009.	46772.	55729.	60043.	60043.
BEGINNING CASH BALANCE	123656.	152120.	182889.	217898.	264670.	320398.	380442.
ENDING CASH BALANCE	152120.	182889.	217898.	264670.	320398.	380442.	440485.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS	34162.	113874.	193586.	232990.	224820.	213015.	206764.	203490.	202302.	203419.	206841.
CURRENT ASSETS	205.	2944.	3596.	16611.	31179.	42110.	58597.	78061.	99610.	123465.	149624.
CASH	205.	2944.	3596.	6348.	10672.	19242.	33139.	52093.	73642.	97497.	123656.
ACCOUNTS RECEIVABLE	0.	0.	0.	7437.	16774.	18919.	21272.	21735.	21735.	21735.	21735.
INVENTORIES											
PRODUCTS	0.	0.	0.	2042.	2042.	2042.	2042.	2042.	2042.	2042.	2042.
MATERIALS	0.	0.	0.	783.	1691.	1907.	2144.	2191.	2191.	2191.	2191.
NET FIXED ASSETS	33958.	110930.	189990.	216379.	193642.	170904.	148167.	125429.	102692.	79954.	57217.
INVESTMENT	33958.	110930.	189990.	227748.	227748.	227748.	227748.	227748.	227748.	227748.	227748.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	27991.	93302.	158614.	186605.	186605.	186605.	186605.	186605.	186605.	186605.	186605.
PRE-INVEST. & START-UP EXP	1043.	2087.	5217.	10434.	10434.	10434.	10434.	10434.	10434.	10434.	10434.
INTEREST DURING CONSTRUCTN	4550.	15168.	25786.	30336.	30336.	30336.	30336.	30336.	30336.	30336.	30336.
LESS.DEPRECIATN & AMORTIZTN	0.	0.	0.	11369.	34106.	56844.	79581.	102319.	125056.	147794.	170531.
LIABILITIES	34162.	113874.	193586.	236302.	229901.	211746.	189691.	166533.	143157.	119781.	96405.
CURRENT LIABILITIES	0.	0.	1708.	15635.	28592.	33813.	35135.	35354.	35354.	35354.	35354.
ACCOUNTS PAYABLE	0.	0.	0.	4248.	9234.	10437.	11758.	11977.	11977.	11977.	11977.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT											
LONG TERM DEBT	0.	0.	1708.	11387.	19359.	23376.	23376.	23376.	23376.	23376.	23376.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	34162.	113874.	191878.	220667.	201309.	177932.	154556.	131180.	107803.	84427.	61051.
LONG TERM DEBT BALANCE	34162.	113874.	191878.	220667.	201309.	177932.	154556.	131180.	107803.	84427.	61051.
STOCK HOLDERS EQUITY	0.	0.	0.	-3312.	-5080.	1269.	17074.	36957.	59145.	83638.	110436.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	0.	0.	0.	-3312.	-5080.	1269.	17074.	36957.	59145.	83638.	110436.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1993	1994	1995	1996	1997	1998	1999
ASSETS	212507.	220596.	244239.	291011.	340739.	406783.	406826.
CURRENT ASSETS	178088.	208857.	243866.	290638.	346366.	406410.	466453.
CASH	152120.	182869.	217898.	264670.	320398.	380442.	440485.
ACCOUNTS RECEIVABLE	21735.	21735.	21735.	21735.	21735.	21735.	21735.
INVENTORIES							
PRODUCTS	2042.	2042.	2042.	2042.	2042.	2042.	2042.
MATERIALS	2191.	2191.	2191.	2191.	2191.	2191.	2191.
NET FIXED ASSETS	34479.	11742.	373.	373.	373.	373.	373.
INVESTMENT	227748.	227748.	227748.	227748.	227748.	227748.	227748.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	186605.	186605.	186605.	186605.	186605.	186605.	186605.
PRE-INVEST. & START-UP EXP	10434.	10434.	10434.	10434.	10434.	10434.	10434.
INTEREST DURING CONSTRUCTN	30336.	30336.	30336.	30336.	30336.	30336.	30336.
LESS.DEPRECIATN & AMORTIZTN	193269.	216006.	227375.	227375.	227375.	227375.	227375.
LIABILITIES	73026.	49052.	27984.	15955.	11977.	11977.	11977.
CURRENT LIABILITIES	35354.	33046.	23966.	15955.	11977.	11977.	11977.
ACCOUNTS PAYABLE	11977.	11977.	11977.	11977.	11977.	11977.	11977.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT							
LONG TERM DEBT	23376.	21066.	11989.	4018.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	37672.	16007.	4018.	0.	0.	0.	0.
LONG TERM DEBT BALANCE	37672.	16007.	4018.	0.	0.	0.	0.
STOCK HOLDERS EQUITY	139534.	170944.	216255.	275016.	334762.	394805.	454849.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
RETAINED ERNINGS	139534.	170944.	216255.	275016.	334762.	394805.	454849.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PRODUCTION COST STATEMENTS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	82200.	177600.	200200.	225100.	230000.	230000.	230000.	230000.	230000.	230000.	230000.
ETHANE	30767.	66438.	74935.	84255.	86089.	86089.	86089.	86089.	86089.	86089.	86089.
CATALYSTS & CHEMICALS	575.	1243.	1401.	1576.	1610.	1610.	1610.	1610.	1610.	1610.	1610.
RAW MATERIAL COST	31343.	67681.	76336.	85831.	87699.	87699.	87699.	87699.	87699.	87699.	87699.
FUEL GAS (1)	2244.	4846.	5465.	6145.	6279.	6279.	6279.	6279.	6279.	6279.	6279.
FUEL GAS (2)	902.	1762.	1919.	2088.	2245.	2245.	2245.	2245.	2245.	2245.	2245.
RAW WATER (1)	76.	165.	186.	209.	214.	214.	214.	214.	214.	214.	214.
RAW WATER (2)	63.	122.	133.	145.	156.	156.	156.	156.	156.	156.	156.
UTILITIES SALE (TO VCM/HDPE)	-5164.	-6179.	-6730.	-7320.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.
UTILITIES COST	122.	717.	975.	1267.	1023.	1023.	1023.	1023.	1023.	1023.	1023.
VARIABLE COST	31464.	68398.	77311.	87098.	88722.	88722.	88722.	88722.	88722.	88722.	88722.
DEPRECIATION (PROCESS PLANT)	9330.	18660.	18660.	18660.	18660.	18660.	18660.	18660.	18660.	18660.	9330.
DEPRECIATION (PRE-INVEST)	522.	1043.	1043.	1043.	1043.	1043.	1043.	1043.	1043.	1043.	522.
DEPRECIATION (INTEREST DUR.)	1517.	3034.	3034.	3034.	3034.	3034.	3034.	3034.	3034.	3034.	1517.
DEPRECIATION	11369.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	11369.
AMORTIZATION	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	11369.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	22737.	11369.
LABOR COST	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
OVERHEAD	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
EMPLOYMENT COST	929.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.
MAINTENANCE COST	2799.	5598.	5598.	5598.	5598.	5598.	5598.	5598.	5598.	5598.	5598.
TAX & INSURANCE	1400.	2799.	2799.	2799.	2799.	2799.	2799.	2799.	2799.	2799.	2799.
OTHER FIXED COST	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIRECT FIXED COST	5128.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.	10255.
EX-FACTORY PRODUCTION COST	47961.	101390.	110304.	120091.	121715.	121715.	121715.	121715.	121715.	121715.	110346.
UNIT DIRECT OPERATING COST	0.5835	0.5712	0.5510	0.5335	0.5292	0.5292	0.5292	0.5292	0.5292	0.5292	0.4798
HEAD OFFICE EXP.	959.	2028.	2206.	2402.	2434.	2434.	2434.	2434.	2434.	2434.	2207.
INTEREST ON LOAN NO.1	1684.	3116.	2779.	2442.	2105.	1768.	1432.	1095.	758.	421.	84.
INTEREST ON LOAN NO.2	3930.	7603.	6877.	6091.	5305.	4519.	3733.	2947.	2161.	1375.	589.
INTEREST ON LOAN NO.3	3930.	7660.	7663.	6877.	6091.	5305.	4519.	3733.	2947.	2161.	1375.
INTEREST ON LOAN NO.4	1684.	3368.	3368.	3284.	2947.	2611.	2274.	1937.	1600.	1263.	926.
INTEREST ON LOAN NO.5	297.	593.	593.	578.	519.	460.	400.	341.	282.	222.	163.
INTEREST ON LONG-TERM DEBT	11524.	22600.	21281.	19273.	16968.	14663.	12358.	10053.	7748.	5443.	3138.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	60443.	140018.	133790.	141765.	141117.	138812.	136207.	134202.	131897.	129592.	115691.
UNIT PRODUCTION COST	0.7353	0.7100	0.6683	0.6298	0.6136	0.6035	0.5935	0.5835	0.5735	0.5634	0.5030

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PRODUCTION COST STATEMENTS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1996	1997	1998	1999
PRODUCTION	230000.	230000.	230000.	230000.
ETHANE	86089.	86089.	86089.	86089.
CATALYSTS & CHEMICALS	1610.	1610.	1610.	1610.
RAW MATERIAL COST	87699.	87699.	87699.	87699.
FUEL GAS (1)	6279.	6279.	6279.	6279.
FUEL GAS (2)	2245.	2245.	2245.	2245.
RAW WATER (1)	214.	214.	214.	214.
RAW WATER (2)	156.	156.	156.	156.
UTILITIES SALE (TO VCM/HDPE)	-7871.	-7871.	-7871.	-7871.
UTILITIES COST	1023.	1023.	1023.	1023.
VARIABLE COST	88722.	88722.	88722.	88722.
DEPRECIATION (PROCESS PLANT)	0.	0.	0.	0.
DEPRECIATION (PRE-INVEST)	0.	0.	0.	0.
DEPRECIATION (INTEREST DUR.)	0.	0.	0.	0.
DEPRECIATION	0.	0.	0.	0.
AMORTIZATION	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
LABOR COST	929.	929.	929.	929.
OVERHEAD	929.	929.	929.	929.
EMPLOYMENT COST	1858.	1858.	1858.	1858.
MAINTENANCE COST	5598.	5598.	5598.	5598.
TAX & INSURANCE	2799.	2799.	2799.	2799.
OTHER FIXED COST	0.	0.	0.	0.
DIRECT FIXED COST	10255.	10255.	10255.	10255.
EX-FACTORY PRODUCTION COST	98977.	98977.	98977.	98977.
UNIT DIRECT OPERATING COST	0.4303	0.4303	0.4303	0.4303
HEAD OFFICE EXP.	1980.	1980.	1980.	1980.
INTEREST ON LOAN NO.1	0.	0.	0.	0.
INTEREST ON LOAN NO.2	0.	0.	0.	0.
INTEREST ON LOAN NO.3	569.	0.	0.	0.
INTEREST ON LOAN NO.4	565.	253.	0.	0.
INTEREST ON LOAN NO.5	104.	44.	0.	0.
INTEREST ON LONG-TERM DEBT	1203.	297.	0.	0.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	102439.	101454.	100957.	100957.
UNIT PRODUCTION COST	0.4445	0.4402	0.4389	0.4389

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

IRR CALCULATION ON TOTAL INVESTMENT

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATN	INTEREST ON L-T DEBT	RETURN BEFORE TAX	DISCOUNT FACTOR	(BEFORE TAX) PRESENT VALUE INVEST.	(BEFORE TAX) PRESENT VALUE RETURN	(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX) PRESENT VALUE INVEST.	(AFTER TAX) PRESENT VALUE RETURN
1982	29407.	0.	0.	0.	0.	1.0000	29407.	0.	0.	0.	1.0000	29407.	0.
1983	66355.	0.	0.	0.	0.	0.8302	55085.	0.	0.	0.	0.8302	55085.	0.
1984	68442.	0.	0.	0.	0.	0.6892	47167.	0.	0.	0.	0.6892	47167.	0.
1985	39222.	-3312.	11369.	11524.	19581.	0.5721	22439.	11202.	0.	19581.	0.5721	22439.	11202.
1986	0.	-1768.	22737.	22600.	43569.	0.4749	0.	20693.	0.	43569.	0.4749	0.	20693.
1987	0.	6350.	22737.	21281.	50368.	0.3943	0.	19859.	0.	50368.	0.3943	0.	19859.
1988	0.	15805.	22737.	15273.	57815.	0.3273	0.	18923.	0.	57815.	0.3273	0.	18923.
1989	0.	19883.	22737.	16968.	59589.	0.2717	0.	16191.	0.	59589.	0.2717	0.	16191.
1990	0.	22168.	22737.	14663.	59589.	0.2256	0.	13441.	0.	59589.	0.2256	0.	13441.
1991	0.	24493.	22737.	12358.	59589.	0.1873	0.	11158.	0.	59589.	0.1873	0.	11158.
1992	0.	26798.	22737.	10053.	59589.	0.1555	0.	9263.	0.	59589.	0.1555	0.	9263.
1993	0.	29103.	22737.	7748.	59589.	0.1290	0.	7690.	0.	59589.	0.1290	0.	7690.
1994	0.	31406.	22737.	5443.	59589.	0.1071	0.	6384.	0.	59589.	0.1071	0.	6384.
1995	0.	45309.	11369.	3136.	59816.	0.0889	0.	5320.	0.	59816.	0.0889	0.	5320.
1996	0.	58761.	0.	1283.	60043.	0.0738	0.	4433.	0.	60043.	0.0738	0.	4433.
1997	0.	59746.	0.	297.	60043.	0.0613	0.	3680.	0.	60043.	0.0613	0.	3680.
1998	0.	60043.	0.	0.	60043.	0.0509	0.	3055.	0.	60043.	0.0509	0.	3055.
1999	-6388.	60043.	0.	0.	60043.	0.0422	-270.	2536.	0.	60043.	0.0422	-270.	2536.
TOTAL	197089.				828853.		153829.	153829.		828853.		153829.	153829.

***** INTERNAL RATE OF RETURN ***** 20.46 PER CENT (BEFORE TAX) 20.46 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** 5.05 YEAR (BEFORE TAX) 5.05 YEAR (AFTER TAX)

(THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION)

CAPITAL REQUIREMENTS		SOURCE OF FUNDS	
LAND COST	573.	OWN CAPITAL	0.
PLANT COST	186005.	LONG TERM DEBT	233763.
PRE-INVEST AND START-UP EXP.	10434.	SHORT TERM DEBT	0.
INTEREST DURING CONSTRUCTION	30336.	FINANCIAL RESOURCES	233763.
TOTAL FIXED CAPITAL	227748.		
INITIAL WORKING CAPITAL	6015.		
TOTAL CAPITAL COST	233763.		

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PROFITABILITY AND FINANCIAL INDICATORS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TC- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TC- INVESTMNT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TC- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1985	-0.0	100.0	-1.4	*******	1.06	0.88	1.48	102./ -2.	39.9	645.3	26.1
1986	-1.4	34.8	-0.8	*******	1.09	0.96	1.28	103./ -3.	79.7	646.0	63.4
1987	4.5	500.3	2.7	*******	1.25	1.13	1.24	99./ 1.	77.9	651.4	73.1
1988	10.0	92.6	6.8	*******	1.67	1.55	1.36	90./ 10.	75.1	632.6	76.1
1989	12.3	53.8	8.5	*******	2.21	2.09	1.48	78./ 22.	71.5	616.3	72.4
1990	13.8	37.5	9.5	*******	2.82	2.70	1.57	65./ 35.	68.2	606.3	69.1
1991	15.2	29.3	10.5	*******	3.49	3.37	1.67	50./ 50.	64.9	596.3	65.8
1992	16.6	24.3	11.5	*******	4.23	4.11	1.78	36./ 64.	61.6	586.3	62.5
1993	18.1	20.9	12.4	*******	5.04	4.92	1.91	21./ 79.	58.3	576.2	59.2
1994	19.5	18.4	13.4	*******	6.21	6.08	2.07	9./ 91.	55.0	566.2	55.9
1995	20.1	21.0	19.4	*******	10.18	10.00	2.41	2./ 98.	35.3	547.8	50.0
1996	36.5	21.4	25.1	*******	18.17	17.91	4.52	0./100.	16.4	496.6	33.5
1997	37.1	17.8	25.6	*******	28.92	28.56	13.92	0./100.	15.0	457.7	20.7
1998	37.3	15.2	25.7	*******	33.93	33.58**********		0./100.	14.6	438.9	14.6
1999	37.3	13.2	25.7	*******	38.94	38.59**********		0./100.	14.6	438.9	14.6
AVERAGE1	16.0	60.7	12.0	*******	10.61	10.43**********		44./ 56.	49.9	566.9	50.5
AVERAGE2	20.2	15.7	13.0	*******	6.86	6.71	2.18	34./ 66.			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)
(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)
* NOTE FOR (9)(10)(11)
WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

ATTACHMENT III–2

FINANCIAL STATEMENTS FOR 300,000 MTA

ETHYLENE PLANT PROJECT

- Income Statement
- Fund Flow Statement
- Balance Sheet
- Production Cost Statement
- IRR Calculation on Total Investment
- Profitability and Financial Indicators

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION AND SALES											
CAPACITY	300000.	300000.	300000.	300000.	300000.	300000.	300000.	300000.	300000.	300000.	300000.
CAPACITY UTILIZATION	0.274	0.592	0.667	0.750	0.843	0.946	1.000	1.000	1.000	1.000	1.000
PRODUCTION	82200.	177500.	200200.	225100.	252900.	283800.	300000.	300000.	300000.	300000.	300000.
INCREASE IN INVENTORIES	3500.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	78700.	177500.	200200.	225100.	252900.	283800.	300000.	300000.	300000.	300000.	300000.
SALES REVENUE	55090.	124250.	140140.	157570.	177030.	198660.	210000.	210000.	210000.	210000.	210000.
COST OF SALES	47544.	104755.	113614.	123342.	134279.	146860.	153456.	153456.	153456.	153456.	140698.
VARIABLE COST	31270.	67977.	72837.	80565.	87501.	110082.	116678.	116678.	116678.	116678.	116678.
DEPRECIATION & AMORTIZATION	12758.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	12758.
OTHER FIXED COST	5831.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.
(INC) IN PRODUCT INVENTORIES	-2114.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	7546.	19495.	26526.	34228.	42751.	51800.	56544.	56544.	56544.	56544.	69302.
LESS. SALES EXPENSES	993.	2095.	2272.	2467.	2686.	2937.	3069.	3069.	3069.	3069.	2814.
OPERATING PROFIT OR (LOSS)	6553.	17400.	24253.	31761.	40066.	48863.	53475.	53475.	53475.	53475.	66488.
LESS. INTEREST											
ON LONG TERM DEBT	12099.	25294.	23814.	21563.	18963.	16403.	13823.	11244.	8664.	6084.	3504.
ON SHORT TERM DEBT	0.	0.	923.	751.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	-5546.	-7894.	-483.	9446.	21103.	32460.	39652.	42231.	44811.	47391.	62984.
LESS. INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	-5546.	-7894.	-483.	9446.	21103.	32460.	39652.	42231.	44811.	47391.	62984.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1996	1997	1998	1999
PRODUCTION AND SALES				
CAPACITY	300000.	300000.	300000.	300000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	300000.	300000.	300000.	300000.
INCREASE IN INVENTORIES	0.	0.	0.	0.
SALES VOLUME	300000.	300000.	300000.	300000.
SALES REVENUE	210000.	210000.	210000.	210000.
COST OF SALES	127940.	127940.	127940.	127940.
VARIABLE COST	116678.	116678.	116678.	116678.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
OTHER FIXED COST	11262.	11262.	11262.	11262.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	82060.	82060.	82060.	82060.
LESS. SALES EXPENSES	2559.	2559.	2559.	2559.
OPERATING PROFIT OR (LOSS)	79501.	79501.	79501.	79501.
LESS. INTEREST				
ON LONG TERM DEBT	1428.	329.	0.	0.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	78073.	79173.	79501.	79501.
LESS. INCOME TAX	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	78073.	79173.	79501.	79501.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS	38330.	89436.	89436.	67975.	52997.	55140.	58590.	67658.	76077.	79881.	78991.
CASH GENERATED FROM OPERATION	0.	0.	0.	19311.	42916.	49769.	57277.	65582.	74379.	78991.	78991.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	6553.	17400.	24253.	31761.	40066.	48863.	53475.	53475.
DEPRECIATION & AMORTIZATION	0.	0.	0.	12758.	25516.	25516.	25516.	25516.	25516.	25516.	25516.
FINANCIAL RESOURCES	38330.	89436.	89436.	44443.	5120.	4175.	0.	0.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	38330.	89436.	89436.	44443.	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	5120.	4175.	0.	0.	0.	0.	0.
INCREASE IN ACCT PAYABLE	0.	0.	0.	4221.	4955.	1196.	1313.	1476.	1698.	890.	0.
USES OF FUNDS	38040.	86269.	88698.	67675.	48315.	53944.	55244.	48040.	45782.	41673.	37408.
INVESTMENT IN FIXED ASSET	38040.	86269.	88698.	42525.	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	373.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	31347.	73142.	73142.	31347.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	1215.	1215.	3644.	6073.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	5106.	11913.	11913.	5106.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	0.	10335.	10244.	2361.	2590.	2892.	3214.	1685.	0.
INCR(DECR) ACCT RECEIVABLE	0.	0.	0.	7437.	9337.	2145.	2353.	2627.	2920.	1531.	0.
INCR(DECR) IN INVENTORIES											
PRODUCTS	0.	0.	0.	2114.	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	783.	908.	216.	237.	265.	294.	154.	0.
DEBT SERVICES	0.	0.	0.	14816.	38071.	51563.	52654.	45146.	42566.	39988.	37408.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	1916.	12777.	21720.	26165.	26165.	26165.	26165.	26165.
REPAYMNT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	5126.	4175.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	12899.	25294.	23814.	21563.	18983.	16403.	13823.	11244.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	923.	751.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	290.	3167.	738.	300.	4682.	1196.	3346.	19019.	30295.	38208.	41583.
BEGINNING CASH BALANCE	0.	290.	3457.	4195.	4495.	9177.	10373.	13719.	32737.	63032.	101241.
ENDING CASH BALANCE	290.	3457.	4195.	4495.	9177.	10373.	13719.	32757.	63032.	101241.	142823.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS	78991.	78991.	79246.	79501.	79501.	79501.	79501.
CASH GENERATED FROM OPERATION	78991.	78991.	79246.	79501.	79501.	79501.	79501.
PROFIT BEFORE TAX, INTEREST	53475.	53475.	66488.	79501.	79501.	79501.	79501.
DEPRECIATION & AMORTIZATION	25516.	25516.	12758.	0.	0.	0.	0.
FINANCIAL RESOURCES	0.	0.	0.	0.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCREASE IN ACCT PAYABLE	0.	0.	0.	0.	0.	0.	0.
USES OF FUNDS	34828.	32248.	27752.	14816.	4773.	0.	0.
INVESTMENT IN FIXED ASSET	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.
(INCREASE) ACCT RECEIVABLE	0.	0.	0.	0.	0.	0.	0.
(INCREASE) IN INVENTORIES							
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	34828.	32248.	27752.	14816.	4773.	0.	0.
REPAYMENT OF LONG TERM DEBT	26165.	26165.	24248.	13388.	4444.	0.	0.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	8664.	6084.	3504.	1428.	329.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	44163.	46742.	51494.	64685.	74728.	79501.	79501.
BEGINNING CASH BALANCE	142823.	186986.	233728.	285222.	349907.	424636.	504137.
ENDING CASH BALANCE	186986.	233728.	285222.	349907.	424636.	504137.	583638.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS	38330.	127706.	217202.	257604.	247014.	225056.	205476.	201870.	209864.	224242.	240308.
CURRENT ASSETS	290.	3457.	4195.	14830.	29756.	35313.	39249.	61160.	94669.	134563.	176146.
CASH	290.	3457.	4195.	4495.	9177.	10373.	13719.	32737.	63032.	101241.	142823.
ACCOUNTS RECEIVABLE	0.	0.	0.	7437.	16774.	18919.	21272.	23899.	26819.	28350.	28350.
INVENTORIES											
PRODUCTS	0.	0.	0.	2114.	2114.	2114.	2114.	2114.	2114.	2114.	2114.
MATERIALS	0.	0.	0.	780.	1691.	1907.	2144.	2409.	2703.	2858.	2858.
NET FIXED ASSETS	38040.	124309.	213007.	242774.	217258.	191742.	166226.	140710.	115195.	89679.	64163.
INVESTMENT	38040.	124309.	213007.	255532.	255532.	255532.	255532.	255532.	255532.	255532.	255532.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	31347.	104486.	177630.	208977.	208977.	208977.	208977.	208977.	208977.	208977.	208977.
PRE-INVEST. & START-UP EXP	1215.	2429.	6073.	12145.	12145.	12145.	12145.	12145.	12145.	12145.	12145.
INTEREST DURING CONSTRUCTN	5106.	17018.	28931.	34037.	34037.	34037.	34037.	34037.	34037.	34037.	34037.
LESS.DEPRECIATN & AMORTIZTN	0.	0.	0.	12758.	38274.	63790.	89306.	114822.	140337.	165853.	191369.
LIABILITIES	38330.	127706.	217202.	263950.	261255.	239780.	210754.	186069.	161599.	136325.	110161.
CURRENT LIABILITIES	0.	0.	1916.	16998.	36025.	40712.	37851.	39327.	41026.	41916.	41916.
ACCOUNTS PAYABLE	0.	0.	0.	4221.	9177.	10373.	11660.	13163.	14861.	15752.	15752.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT											
LONG TERM DEBT	0.	0.	1916.	12777.	21720.	26165.	26165.	26165.	26165.	26165.	26165.
SHORT TERM DEBT	0.	0.	0.	0.	5128.	4175.	0.	0.	0.	0.	0.
FIXED LIABILITIES	38330.	127706.	215286.	246952.	225232.	199067.	172903.	146738.	120574.	94409.	68245.
LONG TERM DEBT BALANCE	38330.	127706.	215286.	246952.	225232.	199067.	172903.	146738.	120574.	94409.	68245.
STOCK HOLDERS EQUITY	0.	0.	0.	-6346.	-14241.	-14724.	-5276.	15805.	48265.	87916.	130148.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	0.	0.	0.	-6346.	-14241.	-14724.	-5276.	15805.	48265.	87916.	130148.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)
(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1993	1994	1995	1996	1997	1998	1999
ASSETS	258955.	280102.	318918.	383003.	458331.	537632.	617433.
CURRENT ASSETS	220308.	267051.	318545.	383230.	457958.	537459.	616960.
CASH	186986.	233728.	285222.	349907.	424636.	504137.	583638.
ACCOUNTS RECEIVABLE	28350.	28350.	28350.	28350.	28350.	28350.	28350.
INVENTORIES							
PRODUCTS	2114.	2114.	2114.	2114.	2114.	2114.	2114.
MATERIALS	2858.	2858.	2858.	2858.	2858.	2858.	2858.
NET FIXED ASSETS	38647.	13131.	373.	373.	373.	373.	373.
INVESTMENT	255532.	255532.	255532.	255532.	255532.	255532.	255532.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	208977.	208977.	208977.	208977.	208977.	208977.	208977.
PRE-INVEST. & START-UP EXP	12145.	12145.	12145.	12145.	12145.	12145.	12145.
INTEREST DURING CONSTRUCTN	34037.	34037.	34037.	34037.	34037.	34037.	34037.
LESS.DEPRECIATN & AMORTIZTN	216685.	242401.	255159.	255159.	255159.	255159.	255159.
LIABILITIES	83490.	57852.	33284.	20196.	15752.	15752.	15752.
CURRENT LIABILITIES	41916.	40000.	29139.	20196.	15752.	15752.	15752.
ACCOUNTS PAYABLE	15752.	15752.	15752.	15752.	15752.	15752.	15752.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT							
LONG TERM DEBT	26164.	24248.	13388.	4444.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	42060.	17852.	4444.	0.	0.	0.	0.
LONG TERM DEBT BALANCE	42060.	17852.	4444.	0.	0.	0.	0.
STOCK HOLDERS EQUITY	174959.	222350.	285334.	363407.	442579.	522081.	601582.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	174959.	222350.	285334.	363407.	442579.	522081.	601582.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PRODUCTION COST STATEMENTS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	82200.	177500.	200200.	225100.	252900.	283800.	300000.	300000.	300000.	300000.	300000.
ETHANE	30767.	66438.	74935.	84255.	94660.	106226.	112290.	112290.	112290.	112290.	112290.
CATALYSTS & CHEMICALS	575.	1243.	1401.	1576.	1770.	1987.	2100.	2100.	2100.	2100.	2100.
RAW MATERIAL COST	31343.	67681.	76336.	85831.	96431.	108213.	114390.	114390.	114390.	114390.	114390.
FUEL GAS (1)	2055.	4437.	5005.	5627.	6322.	7095.	7500.	7500.	7500.	7500.	7500.
FUEL GAS (2)	902.	1762.	1919.	2088.	2245.	2245.	2245.	2245.	2245.	2245.	2245.
RAW WATER (1)	71.	153.	172.	194.	217.	244.	258.	258.	258.	258.	258.
RAW WATER (2)	63.	122.	133.	145.	156.	156.	156.	156.	156.	156.	156.
UTILITIES SALE (TO VCM/HDPE)	-3164.	-6179.	-6730.	-7320.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.
UTILITIES COST	-73.	296.	500.	734.	1070.	1869.	2288.	2288.	2288.	2288.	2288.
VARIABLE COST	31270.	67977.	76837.	86565.	97501.	110082.	116678.	116678.	116678.	116678.	116678.
DEPRECIATION (PROCESS PLANT)	10449.	20898.	20898.	20898.	20898.	20898.	20898.	20898.	20898.	20898.	10449.
DEPRECIATION (PRE-INVEST)	607.	1214.	1214.	1214.	1214.	1214.	1214.	1214.	1214.	1214.	607.
DEPRECIATION (INTEREST DUR.)	1702.	3404.	3404.	3404.	3404.	3404.	3404.	3404.	3404.	3404.	1702.
DEPRECIATION	12758.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	12758.
AMORTIZATION	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	12758.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	25516.	12758.
LABOR COST	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
OVERHEAD	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
EMPLOYMENT COST	929.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.
MAINTENANCE COST	3135.	6269.	6269.	6269.	6269.	6269.	6269.	6269.	6269.	6269.	6269.
TAX & INSURANCE	1567.	3135.	3135.	3135.	3135.	3135.	3135.	3135.	3135.	3135.	3135.
OTHER FIXED COST	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIRECT FIXED COST	5631.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.	11262.
EX-FACTORY PRODUCTION COST	49659.	104755.	113614.	123342.	134279.	146860.	153456.	153456.	153456.	153456.	140698.
UNIT DIRECT OPERATING COST	0.6041	0.5902	0.5675	0.5479	0.5310	0.5175	0.5115	0.5115	0.5115	0.5115	0.4690
HEAD OFFICE EXP.	993.	2095.	2272.	2467.	2686.	2937.	3069.	3069.	3069.	3069.	2814.
INTEREST ON LOAN NO.1	1890.	3496.	3118.	2740.	2362.	1984.	1606.	1228.	850.	472.	94.
INTEREST ON LOAN NO.2	4409.	8548.	7716.	6834.	5952.	5071.	4189.	3307.	2425.	1543.	661.
INTEREST ON LOAN NO.3	4405.	8818.	8398.	7716.	6834.	5952.	5071.	4189.	3307.	2425.	1543.
INTEREST ON LOAN NO.4	1870.	3779.	3779.	3685.	3307.	2925.	2551.	2173.	1795.	1417.	1039.
INTEREST ON LOAN NO.5	301.	603.	603.	588.	527.	467.	407.	347.	286.	226.	166.
INTEREST ON LONG-TERM DEBT	12899.	25264.	23814.	21963.	18963.	16403.	13823.	11244.	8664.	6084.	3504.
INTEREST ON SHORT-TERM DEBT	0.	0.	923.	751.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	63951.	132144.	140626.	148124.	155947.	166200.	170343.	167769.	165189.	162609.	147016.
UNIT PRODUCTION COST	0.7781	0.7445	0.7024	0.6580	0.6166	0.5856	0.5678	0.5592	0.5506	0.5420	0.4901

*** FINANCIAL PROJECTIONS OF PT* ETHYLENE PLANT PROJECT ***

PRODUCTION COST STATEMENTS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

	1996	1997	1998	1999
PRODUCTION	300000.	300000.	300000.	300000.
ETHANE	112290.	112290.	112290.	112290.
CATALYSTS & CHEMICALS	2100.	2100.	2100.	2100.
RAW MATERIAL COST	114390.	114390.	114390.	114390.
FUEL GAS (1)	7500.	7500.	7500.	7500.
FUEL GAS (2)	2245.	2245.	2245.	2245.
RAW WATER (1)	258.	258.	258.	258.
RAW WATER (2)	156.	156.	156.	156.
UTILITIES SALE (TO VCM/HDPE)	-7671.	-7671.	-7671.	-7671.
UTILITIES COST	2288.	2288.	2288.	2288.
VARIABLE COST	116678.	116678.	116678.	116678.
DEPRECIATION (PROCESS PLANT)	0.	0.	0.	0.
DEPRECIATION (PRE-INVEST)	0.	0.	0.	0.
DEPRECIATION (INTEREST DUR.)	0.	0.	0.	0.
DEPRECIATION	0.	0.	0.	0.
AMORTIZATION	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
LABOR COST	929.	929.	929.	929.
OVERHEAD	929.	929.	929.	929.
EMPLOYMENT COST	1858.	1858.	1858.	1858.
MAINTENANCE COST	6269.	6269.	6269.	6269.
TAX & INSURANCE	3135.	3135.	3135.	3135.
OTHER FIXED COST	0.	0.	0.	0.
DIRECT FIXED COST	11262.	11262.	11262.	11262.
EX-FACTORY PRODUCTION COST	127940.	127940.	127940.	127940.
UNIT DIRECT OPERATING COST	0.4265	0.4265	0.4265	0.4265
HEAD OFFICE EXP.	2559.	2559.	2559.	2559.
INTEREST ON LOAN NO.1	0.	0.	0.	0.
INTEREST ON LOAN NO.2	0.	0.	0.	0.
INTEREST ON LOAN NO.3	661.	0.	0.	0.
INTEREST ON LOAN NO.4	661.	283.	0.	0.
INTEREST ON LOAN NO.5	105.	45.	0.	0.
INTEREST ON LONG-TERM DEBT	1426.	329.	0.	0.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	131427.	130827.	130499.	130499.
UNIT PRODUCTION COST	0.4381	0.4361	0.4350	0.4350

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

IRR CALCULATION ON TOTAL INVESTMENT

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATN	INTEREST ON NET DEBT	RETURN BEFORE TAX	DISCOUNT FACTOR	(BEFORE TAX) PRESENT VALUE INVEST.	(BEFORE TAX) PRESENT VALUE RETURN	(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX) PRESENT VALUE INVEST.	(AFTER TAX) PRESENT VALUE RETURN
1982	32934.	0.	0.	0.	0.	1.0000	32934.	0.	0.	0.	1.0000	32934.	0.
1983	74356.	0.	0.	0.	0.	0.8284	61596.	0.	0.	0.	0.8284	61596.	0.
1984	76785.	0.	0.	0.	0.	0.6862	52691.	0.	0.	0.	0.6862	52691.	0.
1985	43932.	-6346.	12758.	12899.	19311.	0.5684	24746.	10977.	0.	19311.	0.5684	24746.	10977.
1986	0.	-7894.	25516.	25294.	42916.	0.4709	0.	20209.	0.	42916.	0.4709	0.	20209.
1987	0.	-483.	25516.	23814.	48847.	0.3901	0.	19054.	0.	48847.	0.3901	0.	19054.
1988	0.	9446.	25516.	21963.	56525.	0.3231	0.	18265.	0.	56525.	0.3231	0.	18265.
1989	0.	21063.	25516.	16963.	65582.	0.2677	0.	17555.	0.	65582.	0.2677	0.	17555.
1990	0.	32469.	25516.	16403.	74379.	0.2217	0.	16493.	0.	74379.	0.2217	0.	16493.
1991	0.	39092.	25516.	13823.	78991.	0.1837	0.	14509.	0.	78991.	0.1837	0.	14509.
1992	0.	42231.	25516.	11644.	78991.	0.1522	0.	12019.	0.	78991.	0.1522	0.	12019.
1993	0.	44611.	25516.	8664.	78991.	0.1260	0.	9957.	0.	78991.	0.1260	0.	9957.
1994	0.	47391.	25516.	6084.	78991.	0.1044	0.	8248.	0.	78991.	0.1044	0.	8248.
1995	0.	62984.	12758.	3504.	79246.	0.0865	0.	6854.	0.	79246.	0.0865	0.	6854.
1996	0.	78073.	0.	1428.	79501.	0.0717	0.	5696.	0.	79501.	0.0717	0.	5696.
1997	0.	79173.	0.	329.	79501.	0.0594	0.	4719.	0.	79501.	0.0594	0.	4719.
1998	0.	79501.	0.	0.	79501.	0.0492	0.	3909.	0.	79501.	0.0492	0.	3909.
1999	-6486.	79501.	0.	0.	79501.	0.0407	-264.	3238.	0.	79501.	0.0407	-264.	3238.
TOTAL	221122.				1020775.		171703.	171702.		1020775.		171703.	171702.

***** INTERNAL RATE OF RETURN ***** 20.72 PER CENT (BEFORE TAX) 20.72 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** 5.38 YEAR (BEFORE TAX) 5.38 YEAR (AFTER TAX)

(THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION)

CAPITAL REQUIREMENTS		SOURCE OF FUNDS	
LAND COST	373.	OWN CAPITAL	0.
PLANT COST	206977.	LONG TERM DEBT	261645.
PRE-INVEST AND START-UP EXP.	12145.	SHORT TERM DEBT	0.
INTEREST DURING CONSTRUCTION	34037.	FINANCIAL RESOURCES	261645.
TOTAL FIXED CAPITAL	255532.		
INITIAL WORKING CAPITAL	6113.		
TOTAL CAPITAL COST	261645.		

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PROFITABILITY AND FINANCIAL INDICATORS

(BASE : UTILITIES CENTER IS INTEGRATED) (US$ 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMNT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1985	-11.5	100.0	-2.4	*******	0.87	0.70	1.30	103./ -3.	33.9	669.8	22.2
1986	-0.4	55.4	-3.0	*******	0.83	0.72	1.13	107./ -7.	67.8	672.7	53.9
1987	-0.3	3.3	-0.2	*******	0.82	0.72	1.07	108./ -8.	67.3	683.5	63.1
1988	0.0	-179.0	3.4	*******	1.04	0.92	1.18	103./ -3.	64.7	660.9	65.4
1989	11.9	133.4	8.1	*******	1.56	1.44	1.45	90./ 10.	61.2	619.2	61.9
1990	16.3	67.3	12.4	*******	2.31	2.19	1.75	71./ 29.	58.7	587.9	59.5
1991	18.9	45.1	15.2	*******	3.21	3.09	1.98	52./ 48.	56.1	570.0	56.8
1992	20.1	32.4	16.1	*******	4.20	4.08	2.11	34./ 66.	53.2	561.4	53.9
1993	21.3	25.6	17.1	*******	5.26	5.14	2.27	19./ 81.	50.3	552.8	51.1
1994	22.6	21.3	18.1	*******	6.68	6.55	2.45	7./ 93.	47.5	544.2	48.2
1995	30.0	22.1	24.1	*******	10.93	10.76	2.86	2./ 98.	30.4	528.4	43.1
1996	37.2	21.5	29.8	*******	18.98	18.73	5.37	0./100.	14.0	484.4	28.7
1997	37.7	17.9	30.3	*******	29.07	28.76	16.66	0./100.	12.8	450.9	17.7
1998	37.9	15.2	30.4	*******	34.12	33.81	**********	0./100.	12.4	435.0	12.4
1999	37.9	13.2	30.4	*******	39.17	38.85	**********	0./100.	12.4	435.0	12.4
AVERAGE1	18.6	26.3	15.3	*******	10.60	10.43	**********	46./ 54.	42.8	563.7	43.3
AVERAGE2	21.9	21.1	15.3	*******	7.14	6.99	2.40	32./ 68.			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)

(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)

* NOTE FOR (9)(10)(11)

WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.

ATTACHMENT III–3

FINANCIAL STATEMENTS FOR 350,000 MTA ETHYLENE PLANT PROJECT

- Income Statement
- Fund Flow Statement
- Balance Sheet
- Production Cost Statement
- IRR Calculation on Total Investment
- Profitability and Financial Indicators

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION AND SALES											
CAPACITY	350000.	350000.	350000.	350000.	350000.	350000.	350000.	350000.	350000.	350000.	350000.
CAPACITY UTILIZATION	0.235	0.507	0.572	0.643	0.723	0.811	0.869	0.932	1.000	1.000	1.000
PRODUCTION	82200.	177500.	200200.	225100.	252900.	283800.	304300.	326300.	349900.	350000.	350000.
INCREASE IN INVENTORIES	3500.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	78700.	177500.	200200.	225100.	252900.	283800.	304300.	326300.	349900.	350000.	350000.
SALES REVENUE	55090.	124250.	140140.	157570.	177030.	198660.	213010.	228410.	244930.	245000.	245000.
COST OF SALES	48757.	107288.	116148.	125876.	136812.	149393.	157740.	166698.	176307.	176347.	162657.
VARIABLE COST	31270.	67977.	76837.	86565.	97501.	110082.	118429.	127386.	136995.	137036.	137036.
DEPRECIATION & AMORTIZATION	13690.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	13690.
OTHER FIXED COST	5966.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.
(INC) IN PRODUCT INVENTORIES	-2166.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	6333.	16962.	23992.	31694.	40218.	49267.	55270.	61712.	68623.	68653.	82343.
LESS. SALES EXPENSES	1019.	2148.	2325.	2516.	2736.	2968.	3155.	3334.	3526.	3527.	3253.
OPERATING PROFIT OR (LOSS)	5315.	14816.	21669.	29177.	37482.	46279.	52115.	58378.	65097.	65126.	79089.
LESS. INTEREST											
ON LONG TERM DEBT	13621.	27100.	25512.	23098.	20334.	17570.	14806.	12041.	9277.	6513.	3749.
ON SHORT TERM DEBT	0.	197.	1827.	2539.	2486.	485.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	-8306.	-12481.	-5670.	3540.	14662.	28224.	37310.	46337.	55820.	58613.	75340.
LESS. INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	-8506.	-12481.	-5670.	3540.	14662.	28224.	37310.	46337.	55820.	58613.	75340.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
INCOME STATEMENTS (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1996	1997	1998	1999
PRODUCTION AND SALES				
CAPACITY	350000.	350000.	350000.	350000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	350000.	350000.	350000.	350000.
INCREASE IN INVENTORIES	0.	0.	0.	0.
SALES VOLUME	350000.	350000.	350000.	350000.
SALES REVENUE	245000.	245000.	245000.	245000.
COST OF SALES	148968.	148968.	148968.	148968.
VARIABLE COST	137036.	137036.	137036.	137036.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
OTHER FIXED COST	11932.	11932.	11932.	11932.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	96032.	96032.	96032.	96032.
LESS. SALES EXPENSES	2979.	2979.	2979.	2979.
OPERATING PROFIT OR (LOSS)	93053.	93053.	93053.	93053.
LESS. INTEREST				
ON LONG TERM DEBT	1526.	350.	0.	0.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	91527.	92703.	93053.	93053.
LESS. INCOME TAX	0.	0.	0.	0.
NET PROFIT OR (LOSS) AFTER TAX	91527.	92703.	93053.	93053.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS	41125.	95959.	95959.	71612.	57300.	64349.	71678.	69030.	75357.	80622.	86967.
CASH GENERATED FROM OPERATION	0.	0.	0.	19004.	42196.	49049.	56556.	64861.	73658.	79495.	85758.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	5315.	14816.	21669.	29177.	37482.	46279.	52115.	58378.
DEPRECIATION & AMORTIZATION	0.	0.	0.	13690.	27380.	27380.	27380.	27380.	27380.	27380.	27380.
FINANCIAL RESOURCES	41125.	95959.	95959.	48386.	10149.	14105.	13809.	2693.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	41125.	95959.	95959.	47292.	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	1094.	10149.	14105.	13809.	2693.	0.	0.	0.
INCREASE IN ACCT PAYABLE	0.	0.	0.	4221.	4955.	1196.	1313.	1476.	1698.	1127.	1209.
USES OF FUNDS	40772.	92475.	95158.	72030.	52344.	63153.	70365.	67554.	51995.	44972.	42364.
INVESTMENT IN FIXED ASSET	40772.	92475.	95158.	45765.	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	373.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	33579.	78351.	78351.	33579.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	1342.	1342.	4025.	6708.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	5478.	12782.	12782.	5478.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	0.	10389.	10244.	2361.	2590.	2892.	3214.	2133.	2289.
INCR(DECR) ACCT RECEIVABLE	0.	0.	0.	7437.	9337.	2145.	2353.	2627.	2920.	1937.	2079.
INCR(DECR) IN INVENTORIES											
PRODUCTS	0.	0.	0.	2168.	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	783.	908.	216.	237.	265.	294.	195.	210.
DEBT SERVICES	0.	0.	0.	15877.	42100.	60792.	67775.	64662.	48781.	42839.	40075.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	2056.	13708.	23304.	28034.	28034.	28034.	28034.	28034.
REPAYMNT OF SHORT TERM DEBT	0.	0.	0.	0.	1094.	10149.	14105.	13809.	2693.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	13821.	27100.	25512.	23098.	20334.	17570.	14806.	12041.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	197.	1827.	2539.	2486.	485.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	354.	3485.	801.	-418.	4955.	1196.	1313.	1476.	23362.	35650.	44604.
BEGINNING CASH BALANCE	0.	354.	3838.	4640.	4221.	9177.	10373.	11686.	13163.	36525.	72174.
ENDING CASH BALANCE	354.	3838.	4640.	4221.	9177.	10373.	11686.	13163.	36525.	72174.	116778.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
FUNDS FLOW STATEMENTS (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS	93774.	92511.	92779.	93053.	93053.	93053.	93053.
CASH GENERATED FROM OPERATION	92477.	92505.	92779.	93053.	93053.	93053.	93053.
PROFIT BEFORE TAX, INTEREST	65097.	65126.	79089.	93053.	93053.	93053.	93053.
DEPRECIATION & AMORTIZATION	27380.	27380.	13690.	0.	0.	0.	0.
FINANCIAL RESOURCES	0.	0.	0.	0.	0.	0.	0.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCREASE IN ACCT PAYABLE	1297.	5.	0.	0.	0.	0.	0.
USES OF FUNDS	34766.	34557.	29726.	15851.	5079.	0.	0.
INVESTMENT IN FIXED ASSET	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	2450.	10.	0.	0.	0.	0.	0.
INCR(DECR) ACCT RECEIVABLE	2230.	5.	0.	0.	0.	0.	0.
INCR(DECR) IN INVENTORIES							
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	225.	1.	0.	0.	0.	0.	0.
DEBT SERVICES	37311.	34547.	29726.	15851.	5079.	0.	0.
REPAYMENT OF LONG TERM DEBT	28034.	28034.	25977.	14325.	4729.	0.	0.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	9277.	6513.	3749.	1526.	350.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	59008.	57954.	63053.	77202.	87974.	93053.	93053.
BEGINNING CASH BALANCE	111778.	170786.	228740.	291793.	368995.	456969.	550022.
ENDING CASH BALANCE	170786.	228740.	291793.	368995.	456969.	550022.	643075.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS	41125.	137084.	233044.	275089.	262909.	239087.	215611.	192600.	191797.	202199.	221712.
CURRENT ASSETS	354.	3838.	4640.	14610.	29810.	33367.	37271.	41639.	68215.	105998.	152890.
CASH	354.	3838.	4640.	4221.	9177.	10373.	11686.	13163.	36525.	72174.	116778.
ACCOUNTS RECEIVABLE	0.	0.	0.	7437.	16774.	18915.	21272.	23899.	26819.	28756.	30835.
INVENTORIES											
PRODUCTS	0.	0.	0.	2168.	2168.	2168.	2168.	2168.	2168.	2168.	2168.
MATERIALS	0.	0.	0.	783.	1691.	1907.	2144.	2409.	2703.	2899.	3108.
NET FIXED ASSETS	40772.	133246.	228404.	260479.	233100.	205720.	178340.	150961.	123581.	96202.	68822.
INVESTMENT	40772.	133246.	228404.	274169.	274169.	274169.	274169.	274169.	274169.	274169.	274169.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	33579.	111930.	190281.	223860.	223860.	223860.	223860.	223860.	223860.	223860.	223860.
PRE-INVEST. & START-UP EXP	1342.	2683.	6708.	13416.	13416.	13416.	13416.	13416.	13416.	13416.	13416.
INTEREST DURING CONSTRUCTN	5478.	18260.	31042.	36520.	36520.	36520.	36520.	36520.	36520.	36520.	36520.
LESS.DEPRECIATN & AMORTIZTN	0.	0.	0.	13690.	41069.	68449.	95829.	123208.	150588.	177967.	205347.
LIABILITIES	41125.	137084.	233044.	283595.	283897.	265745.	238729.	201055.	172027.	145120.	118296.
CURRENT LIABILITIES	0.	0.	2056.	19024.	42630.	52511.	53529.	43889.	42895.	44021.	45231.
ACCOUNTS PAYABLE	0.	0.	0.	4221.	9177.	10373.	11686.	13163.	14861.	15988.	17197.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT											
LONG TERM DEBT	0.	0.	2056.	13706.	23364.	28034.	28034.	28034.	28034.	28034.	28034.
SHORT TERM DEBT	0.	0.	0.	1094.	10149.	14105.	13809.	2693.	0.	0.	0.
FIXED LIABILITIES	41125.	137084.	230987.	264571.	241267.	213233.	185200.	157166.	129133.	101099.	73065.
LONG TERM DEBT BALANCE	41125.	137084.	230987.	264571.	241267.	213233.	185200.	157166.	129133.	101099.	73065.
STOCK HOLDERS EQUITY	0.	0.	0.	-8506.	-20987.	-26657.	-23117.	-8455.	19769.	57079.	103416.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	0.	0.	0.	-8506.	-20987.	-26657.	-23117.	-8455.	19769.	57079.	103416.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
BALANCE SHEET (FOR YEARS ENDING DECEMBER 31)
- ALTERNATIVE - ETHYLENE 350000 MT/Y -

	1993	1994	1995	1996	1997	1998	1999
ASSETS	250796.	281380.	330743.	407945.	495919.	588972.	682025.
CURRENT ASSETS	209355.	267317.	330370.	407572.	495546.	588599.	681652.
CASH	170786.	228740.	291793.	368995.	456969.	550022.	643075.
ACCOUNTS RECEIVABLE	33066.	33075.	33075.	33075.	33075.	33075.	33075.
INVENTORIES							
PRODUCTS	2166.	2166.	2166.	2166.	2166.	2166.	2166.
MATERIALS	3333.	3334.	3334.	3334.	3334.	3334.	3334.
NET FIXED ASSETS	41442.	14063.	373.	373.	373.	373.	373.
INVESTMENT	274169.	274169.	274169.	274169.	274169.	274169.	274169.
LAND & SITE IMPROVEMENT	373.	373.	373.	373.	373.	373.	373.
CONSTRUCTED FACILITIES	223860.	223860.	223860.	223860.	223860.	223860.	223860.
PRE-INVEST. & START-UP EXP	13416.	13416.	13416.	13416.	13416.	13416.	13416.
INTEREST DURING CONSTRUCTN	36520.	36520.	36520.	36520.	36520.	36520.	36520.
LESS.DEPRECIATN & AMORTIZTN	232727.	260106.	273796.	273796.	273796.	273796.	273796.
LIABILITIES	91500.	63532.	37554.	23229.	18500.	18500.	18500.
CURRENT LIABILITIES	46528.	44477.	32825.	23229.	18500.	18500.	18500.
ACCOUNTS PAYABLE	18494.	18500.	18500.	18500.	18500.	18500.	18500.
INCOME TAX PAYABLE	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT							
LONG TERM DEBT	28034.	25977.	14325.	4729.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	45032.	19054.	4729.	0.	0.	0.	0.
LONG TERM DEBT BALANCE	45032.	19054.	4729.	0.	0.	0.	0.
STOCK HOLDERS EQUITY	159236.	217848.	293189.	384716.	477419.	570472.	663525.
SHARE CAPITAL	0.	0.	0.	0.	0.	0.	0.
RETAINED EARNINGS	159236.	217848.	293189.	384716.	477419.	570472.	663525.

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
PRODUCTION COST STATEMENTS
- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	82200.	177500.	200200.	225100.	252900.	283800.	304300.	326300.	349900.	350000.	350000.
ETHANE	30767.	66438.	74935.	84255.	94660.	106226.	113899.	122134.	130968.	131005.	131005.
CATALYSTS & CHEMICALS	575.	1243.	1401.	1576.	1770.	1987.	2130.	2284.	2449.	2450.	2450.
RAW MATERIAL COST	31343.	67681.	76336.	85831.	96431.	108213.	116030.	124418.	133417.	133455.	133455.
FUEL GAS (1)	2055.	4437.	5005.	5627.	6322.	7095.	7607.	8157.	8747.	8750.	8750.
FUEL GAS (2)	902.	1762.	1919.	2088.	2245.	2245.	2245.	2245.	2245.	2245.	2245.
RAW WATER (1)	71.	153.	174.	194.	217.	244.	262.	281.	301.	301.	301.
RAW WATER (2)	63.	122.	133.	145.	156.	156.	156.	156.	156.	156.	156.
UTILITIES SALE (TO VCM/HDPE)	-3164.	-6179.	-6730.	-7320.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.	-7871.
UTILITIES COST	-73.	296.	500.	734.	1070.	1869.	2399.	2968.	3578.	3581.	3581.
VARIABLE COST	31270.	67977.	76837.	86565.	97501.	110082.	118429.	127386.	136995.	137036.	137036.
DEPRECIATION (PROCESS PLANT)	11193.	22386.	22386.	22386.	22386.	22386.	22386.	22386.	22386.	22386.	11193.
DEPRECIATION (PRE-INVEST)	671.	1342.	1342.	1342.	1342.	1342.	1342.	1342.	1342.	1342.	671.
DEPRECIATION (INTEREST DUR.)	1826.	3652.	3652.	3652.	3652.	3652.	3652.	3652.	3652.	3652.	1826.
DEPRECIATION	13690.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	13690.
AMORTIZATION	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	13690.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	27380.	13690.
LABOR COST	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
OVERHEAD	465.	929.	929.	929.	929.	929.	929.	929.	929.	929.	929.
EMPLOYMENT COST	929.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.	1858.
MAINTENANCE COST	3358.	6716.	6716.	6716.	6716.	6716.	6716.	6716.	6716.	6716.	6716.
TAX & INSURANCE	1679.	3358.	3358.	3358.	3358.	3358.	3358.	3358.	3358.	3358.	3358.
OTHER FIXED COST	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DIRECT FIXED COST	5966.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.	11932.
EX-FACTORY PRODUCTION COST	50925.	107288.	116148.	125870.	136812.	149393.	157740.	166698.	176307.	176347.	162657.
UNIT DIRECT OPERATING COST	0.6195	0.6044	0.5802	0.5592	0.5410	0.5264	0.5184	0.5109	0.5039	0.5038	0.4647
HEAD OFFICE EXP.	1019.	2146.	2323.	2518.	2736.	2988.	3155.	3334.	3526.	3527.	3253.
INTEREST ON LOAN NO.1	4027.	3791.	3345.	2940.	2534.	2129.	1723.	1318.	912.	507.	101.
INTEREST ON LOAN NO.2	4731.	9225.	8279.	7333.	6387.	5440.	4494.	3548.	2602.	1656.	710.
INTEREST ON LOAN NO.3	4731.	9462.	9225.	8279.	7333.	6387.	5440.	4494.	3548.	2602.	1656.
INTEREST ON LOAN NO.4	2027.	4055.	4055.	3954.	3548.	3143.	2737.	2332.	1926.	1521.	1115.
INTEREST ON LOAN NO.5	304.	608.	608.	593.	532.	471.	410.	350.	289.	228.	167.
INTEREST ON LONG-TERM DEBT	13821.	27100.	25512.	23098.	20334.	17570.	14806.	12041.	9277.	6513.	3749.
INTEREST ON SHORT-TERM DEBT	0.	197.	1627.	2539.	2486.	465.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	69764.	136731.	145910.	154030.	162308.	174426.	175700.	182073.	189110.	186387.	169660.
UNIT PRODUCTION COST	0.8001	0.7703	0.7263	0.6843	0.6420	0.6005	0.5774	0.5580	0.5405	0.5325	0.4847

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PRODUCTION COST STATEMENTS

- ALTERNATIVE ETHYLENE 350000 MT/Y -

	1996	1997	1998	1999
PRODUCTION	350000.	350000.	350000.	350000.
ETHANE	131005.	131005.	131005.	131005.
CATALYSTS & CHEMICALS	2450.	2450.	2450.	2450.
RAW MATERIAL COST	133455.	133455.	133455.	133455.
FUEL GAS (1)	8750.	8750.	8750.	8750.
FUEL GAS (2)	2245.	2245.	2245.	2245.
RAW WATER (1)	301.	301.	301.	301.
RAW WATER (2)	150.	150.	150.	150.
UTILITIES SALE (TO VCM/HDPE)	-7871.	-7871.	-7871.	-7871.
UTILITIES COST	3581.	3581.	3581.	3581.
VARIABLE COST	137036.	137036.	137036.	137036.
DEPRECIATION (PROCESS PLANT)	0.	0.	0.	0.
DEPRECIATION (PRE-INVEST)	0.	0.	0.	0.
DEPRECIATION (INTEREST DUR.)	0.	0.	0.	0.
DEPRECIATION	0.	0.	0.	0.
AMORTIZATION	0.	0.	0.	0.
DEPRECIATION & AMORTIZATION	0.	0.	0.	0.
LABOR COST	929.	929.	929.	929.
OVERHEAD	929.	929.	929.	929.
EMPLOYMENT COST	1858.	1858.	1858.	1858.
MAINTENANCE COST	6716.	6716.	6716.	6716.
TAX & INSURANCE	3358.	3358.	3358.	3358.
OTHER FIXED COST	0.	0.	0.	0.
DIRECT FIXED COST	11932.	11932.	11932.	11932.
EX-FACTORY PRODUCTION COST	148968.	148968.	148968.	148968.
UNIT DIRECT OPERATING COST	0.4256	0.4256	0.4256	0.4256
HEAD OFFICE EXP.	2979.	2979.	2979.	2979.
INTEREST ON LOAN NO.1	0.	0.	0.	0.
INTEREST ON LOAN NO.2	0.	0.	0.	0.
INTEREST ON LOAN NO.3	710.	0.	0.	0.
INTEREST ON LOAN NO.4	710.	304.	0.	0.
INTEREST ON LOAN NO.5	140.	46.	0.	0.
INTEREST ON LONG-TERM DEBT	1520.	350.	0.	0.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	153473.	152297.	151947.	151947.
UNIT PRODUCTION COST	0.4385	0.4351	0.4341	0.4341

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***
IRR CALCULATION ON TOTAL INVESTMENT
- ALTERNATIVE ETHYLENE 350000 MT/Y -

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATN	INTEREST ON L-T DEBT	RETURN BEFORE TAX	DISCOUNT FACTOR	(BEFORE TAX) PRESENT VALUE INVEST.	(BEFORE TAX) PRESENT VALUE RETURN	(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX) PRESENT VALUE INVEST.	(AFTER TAX) PRESENT VALUE RETURN
1982	35294.	0.	0.	0.	0.	1.0000	35294.	0.	0.	0.	1.0000	35294.	0.
1983	79693.	0.	0.	0.	0.	0.8330	66385.	0.	0.	0.	0.8330	66385.	0.
1984	82376.	0.	0.	0.	0.	0.6939	57161.	0.	0.	0.	0.6939	57161.	0.
1985	46454.	-8506.	13690.	13821.	19004.	0.5780	26852.	10985.	0.	19004.	0.5780	26852.	10985.
1986	0.	-12481.	27380.	27100.	41999.	0.4815	0.	20222.	0.	41999.	0.4815	0.	20222.
1987	0.	-5670.	27380.	25512.	47222.	0.4011	0.	18940.	0.	47222.	0.4011	0.	18940.
1988	0.	3540.	27380.	23098.	54017.	0.3341	0.	18048.	0.	54017.	0.3341	0.	18048.
1989	0.	14662.	27380.	20354.	62376.	0.2783	0.	17360.	0.	62376.	0.2783	0.	17360.
1990	0.	28224.	27380.	17570.	73174.	0.2318	0.	16965.	0.	73174.	0.2318	0.	16965.
1991	0.	37310.	27380.	14806.	79495.	0.1931	0.	15353.	0.	79495.	0.1931	0.	15353.
1992	0.	46337.	27380.	12041.	85758.	0.1609	0.	13796.	0.	85758.	0.1609	0.	13796.
1993	0.	55820.	27380.	9277.	92477.	0.1340	0.	12393.	0.	92477.	0.1340	0.	12393.
1994	0.	58613.	27380.	6513.	92505.	0.1116	0.	10327.	0.	92505.	0.1116	0.	10327.
1995	0.	75340.	13690.	3749.	92779.	0.0930	0.	8628.	0.	92779.	0.0930	0.	8628.
1996	0.	91527.	0.	1526.	93053.	0.0775	0.	7208.	0.	93053.	0.0775	0.	7208.
1997	0.	92703.	0.	350.	93053.	0.0645	0.	6004.	0.	93053.	0.0645	0.	6004.
1998	0.	93053.	0.	0.	93053.	0.0538	0.	5002.	0.	93053.	0.0538	0.	5002.
1999	-6540.	93053.	0.	0.	93053.	0.0448	-293.	4166.	0.	93053.	0.0448	-293.	4166.
TOTAL	237276.				1113018.		185398.	185396.		1113018.		185398.	185398.

***** INTERNAL RATE OF RETURN ***** 20.05 PER CENT (BEFORE TAX) 20.05 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** 5.76 YEAR (BEFORE TAX) 5.76 YEAR (AFTER TAX)
(THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION)

CAPITAL REQUIREMENTS		SOURCE OF FUNDS	
LAND COST	375.	OWN CAPITAL	0.
PLANT COST	229860.	LONG TERM DEBT	280336.
PRE-INVEST AND START-UP EXP.	15416.	SHORT TERM DEBT	0.
INTEREST DURING CONSTRUCTION	36520.	FINANCIAL RESOURCES	280336.
TOTAL FIXED CAPITAL	274169.		
INITIAL WORKING CAPITAL	6167.		
TOTAL CAPITAL COST	280336.		

*** FINANCIAL PROJECTIONS OF PTT ETHYLENE PLANT PROJECT ***

PROFITABILITY AND FINANCIAL INDICATORS

- ALTERNATIVE ETHYLENE 350000 MT/Y -

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMNT (PCT)	(4) AFT TAX PROFIT -TO- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1985	-15.4	100.0	-3.0	*******	0.77	0.61	1.20	103./ -3.	31.1	687.8	20.3
1986	-10.0	59.5	-4.5	*******	0.70	0.61	1.03	110./-10.	62.4	693.3	49.6
1987	-4.0	21.3	-2.0	*******	0.64	0.56	0.97	114./-14.	62.5	708.0	58.7
1988	2.2	-15.3	1.3	*******	0.70	0.62	1.06	114./-14.	61.0	687.2	61.6
1989	8.3	-173.4	5.2	*******	0.95	0.84	1.29	106./ -6.	58.5	644.6	59.1
1990	14.2	142.8	10.1	*******	1.59	1.48	1.60	87./ 13.	54.3	602.9	55.0
1991	17.5	65.4	13.3	*******	2.41	2.29	1.86	64./ 36.	51.5	579.5	52.1
1992	20.3	44.8	16.5	*******	3.38	3.26	2.14	41./ 59.	49.0	560.0	49.6
1993	22.8	35.1	19.9	*******	4.50	4.38	2.48	22./ 78.	46.5	542.3	47.1
1994	23.9	26.9	20.9	*******	6.01	5.89	2.68	8./ 92.	43.9	534.4	44.5
1995	30.8	25.7	26.9	*******	10.06	9.90	3.12	2./ 98.	28.0	519.8	39.8
1996	37.4	23.8	32.6	*******	17.55	17.31	5.87	0./100.	12.8	479.4	26.5
1997	37.8	19.4	33.1	*******	26.79	26.49	18.32	0./100.	11.7	448.6	16.2
1998	38.0	16.3	33.2	*******	31.82	31.52**********		0./100.	11.4	434.1	11.4
1999	38.0	14.0	33.2	*******	36.85	36.55**********		0./100.	11.4	434.1	11.4
AVERAGE1	17.4	27.1	15.8	*******	4.65	9.49**********		51./ 49.	39.7	570.4	40.2
AVERAGE2	22.1	23.2	15.8	*******	6.34	6.21	2.44	33./ 67.			

(AVERAGE1) : SUM OF ANNUAL FIGURES OF PERCENTAGE AND RATIO IS DIVIDED BY NO. OF YEARS(SIMPLE AVERAGE)

(AVERAGE2) : AVERAGE FIGURES ARE CALCULATED BY ACTUAL VALUES ACCUMULATED OVER THE PROJECT LIFE(WEIGHTED AVERAGE)

* NOTE FOR (9)(10)(11)

WHEN THERE ARE TWO OR MORE PRODUCTS, AND DURING THE YEARS WHEN ALL OF PRODUCTS ARE NOT PRODUCED AT THE SAME RATE OF CAPACITY UTILIZATION, ABOVE BREAK-EVEN-POINTS CANNOT GIVE CORRECT FIGURES.