

CHAPTER 2 FINANCING PLAN

As was agreed at the ASEAN Economic Ministers Meeting, of the capital requirements for the Project, 30% would be financed from the equity capital of the joint venture company which is to be established and the remaining 70% would be financed through long-term loans. It has already been decided that the ownership of the company would be in the following ratios, and that the company's shares would be paid up in U.S. dollars:

Thailand	60%
Indonesia	13%
Malaysia	13%
Philippines	13%
Singapore	1%

About 70% of the capital requirements is projected for foreign exchange requirements and the remaining portion is projected for local currency requirements. Therefore, it is anticipated that loans would be sufficient to cover the requirements of foreign exchange funds.

At the present time, since the source of financing for this Project has not yet been determined, the terms and conditions necessarily are not known. The terms and conditions generally used as the basis for financial evaluation of the ASEAN Industrial Project were, according to the ASEAN Economic Ministers the interest rate on loans of 5% p.a., and repayment in 15 years (including a three-year grace period). The same terms and conditions were used for this study, with the additional use of interest rates of 4% p.a. and 6% p.a.

The schedule for disbursement, as mentioned in the item on interest during construction in the preceding chapter of this Part, has been assumed to be as follows:

First year	30%
Second year	40%
Third year	30%
Total	100%

EXPLANATORY NOTES
ON
THE CAPITAL COST ESTIMATE

ROCK SALT MINE

A. Land Acquisition

Mine Site and Town Site

- (1) Area: 159 ha (994 Rai)
- (2) Cost: 20,000 Baht/Rai

B. Site Preparation

1. Design Basis

- (1) Area to be improved 66,770 m²
- (2) Soil excavation 28,000 m³
- (3) Soil filling and compaction 28,000 m³
- (4) Soil disposal 0 m³

2. Scope of the Site Preparation Works

Grading of the Town Site

3. Estimated Construction Cost

(End Sept. -1980 Price: US\$1,000)

- a) Materials 48,000
 - b) Labor 5,000
- 1) Construction Equipment (lease base), fuel and lube oil and consumables.
 - 2) Laborers and operators: 490 man-days

C. Facilities Direct Cost

(a) Equipment and Materials

Facilities equipment and materials include the following items:

Crushing and Screening Equipment

Grizzly, primary and secondary screen, impeller-breaker.

Conveying and loading equipment

Hopper, belt feeder, belt conveyor.

Mining Equipment

Undercutter, excavation; jumbo, small crusher for scaling and others.

Maintenance and Service Equipment

Motor grader, vibrating roller, welding machine and others.

Electric Equipment

Transformer, power distribution, switchgear and others.

Electric Equipment

Transformer, power distribution, switchgear and others.

Communication System

(b) Spare Parts

7% of the equipment and materials cost is allowed for two years supply of spare parts.

(c) Civil Materials include materials for:

Civil materials include materials for site improvement, road pavement, foundations, drainages, concrete structures, steel structures, architectural buildings.

Main items to be locally produced:

Cement, river sand, aggregate, crusher run, crushed stone, asphalt, primer, timber, brick, plywood, reinforced concrete pile, precast concrete pipe, earthenware pipe, rubble stone, gasoline, fuel oil, kerosene.

(d) Construction Labor

- Unit labor cost
US\$10.2/man-day
- Man-hour requirements:

	<u>Man-day</u>	<u>Man-hour</u>
Mine Site	70,000	0.56 million
Town Site except for Housing	60,800	0.49 million
Underground and Equipment Installation	13,000	0.10 million

D. Railway Spur

		(US\$ 1,000)		
		Foreign	Local	Total
1.	Land Acquisition (30,000 Bahts/Rai x 33.4 Rai or 5.4 ha)	0	49 ¹⁾	49
2.	Facilities Direct Cost	717	697	1,414 ²⁾
	(1) Materials ¹⁾			
	(2) Construction Labor ²⁾	0	296	296 ³⁾
Facilities Direct Cost Total		717	993	1,710
3.	Construction Equipment	0	263	263
4.	Ocean Freight Insurance & Local Handling ³⁾	112	42	154
Total		829	1,347	2,176

1) — Materials to be imported: Rail, fish plate, tie plate, turnout and others

— Materials locally available: Sleeper, ballast and others

2) — Man-hour requirements

34,800 man-days

— Average labor wage (Sept. End-1980)

US\$8.5/man-day (= Baht 174/man-day)

3) — Total freight tons: 798 t

— Average cost: US\$196 t

E. Construction Equipment

<u>Foreign Portion</u>	(US\$ 1,000)
Temporary Crushing Equipment	313
<u>Local Portion</u>	
(1) Equipment Lease for Decline Shaft	2,099
(2) Equipment Lease for Excavation for Plant	772
(3) Used Temporary Crushing Equipment	Δ 94
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Total	2,777

F. Ocean Freight, Insurance & Local Handling

(1) Total freight tons of imported materials	4,990 t
(2) Average Cost	US\$196 /t

G. Indirect Field Expenses ¹⁾

- (a) Temporary field buildings ²⁾
- (b) Temporary houses for expatriates
- (c) Temporary houses for local laborers
- (d) Utility supply facilities for the camps ³⁾
- (e) Construction supplies ⁴⁾
- (f) Field office expenses
- (g) Insurance ⁵⁾ and miscellaneous

(Notes) 1) Expenses incurred during the plant construction period at the construction site.

Expenses for the site preparation work are separately estimated in item B of this attachment.

2) Administration offices and workshops.

3) Includes drinking water & power supply facilities.

4) Fuel & lubricant oil for the construction equipment, tools for safety and miscellaneous consumables.

5) Insurance on construction works.

H. Services

Foreign portion

(1) Engineering Fee		US\$ 605,000
(2) General Contractor's expatriates (US\$82/man-day)		
i) Decline Shaft	(13,400 man-days)	US\$ 1,099,000
ii) Excavation for Plant	(6,090 man-days)	US\$ 499,000

Local portion

US\$ 3,166,000

(1) Local Contractor's Supervision

(2) Local Staff Supervision

I. Project Management

1. Technical Advisor for Implementation Stage

Unit cost: US\$ 9,740/man-month

Required man-months: 3 men x 36 months = 108 man-month

2. Production Management

Unit cost: US\$ 7,440/man-month

Required man-months: 4 men x 48 months = 192 man-month

The above capital cost estimate is based upon a mine with the decline shaft to the depth of 160 m under the surface. Capital cost of an alternative, in which the decline shaft and the conveying equipment are extended to the depth of 200 m under the ground surface is stated in Table VIA-3.

SODA ASH PLANT

A. Land Acquisition

Plant Site

(1) Area:	68 ha (425 Rai)
(2) Cost:	56,000 Baht/Rai

B. Site Preparation

1. Design Basis

	BMC	BNY
(1) Plant site area (ha)	136	136
(2) Area to be improved (ha)	70	70
(3) Finished grade (+MSL m)	19.5	18.0
(4) Soil excavation (10^3 m^3)	428	679
(5) Soil filling & compaction (10^3 m^3)	288	554
(6) Soil disposal (10^3 m^3)	140	124

2. Scope of the Site Preparation Works

- (1) Clearing and grubbing
- (2) Soil excavation
- (3) Soil filling and compaction
- (4) Slope protection
- (5) Drainage on the slope

3. Estimated Construction Cost

	BMC	(US\$1,000) BNY
(1) Civil materials	3	3
(2) Construction labor	457	669
(3) Construction equipment	2,383	3,171
Total	<u>2,843</u>	<u>3,843</u>

(Local currency portion only)

C. Plant Direct Cost

(a) Plant Equipment and Materials

Plant Equipment includes the following items;

Dryers, heat exchangers, reactors, towers, drums & tanks, pumps with drivers, compressors with drivers, special equipment & machines, utility equipment, transportation & conveying equipment, fire & safety equipment.

Plant Materials include following items;

Piping, electrical instruments, insulation, painting.

(b) Spare Parts

3% of the plant equipment and materials cost is allowed for two years supply of spare parts.

(c) Civil Materials include materials for:

Piling, site improvement, road pavement, foundations, drainages, concrete structures, steel structures, architectural buildings.

Main items to be locally procured:

Cement, river sand, aggregate, crusher run, crushed stone, asphalt, primer, timber, brick, plywood, precast concrete pipe, reinforced concrete pipe, earthenware pipe, rubble stone, gasoline, fuel oil, kerosene.

(d) Construction Labor

-- Unit labor cost comprises the basic salary, overtime, leave, and allowances (meal, medical, retirement pay, etc.) at the end of September, 1980 in the Eastern Seaboard area.

Grade		Baht/day	US\$/day
A	General foreman	520	25.4
B	Foreman	416	20.3
C	Heavy machine operator	390	19.0
D	Office clerk, accountant, typist	364	17.8
E	Skilled laborers: Carpenter, bar bender, rigger, plaster, mechanic, driver, welder, electrician, plumber, mason, painter	325	15.9
	Office boy, cook (female)		
F	House boy	182	8.9
G	Unskilled laborers	156	7.6
H	At 8 hours per working day	78	3.8

- Man-hour requirements (See item B, as to man-hours required for the site preparation work)

	Man-days	Man-hours
Civil work	500,000	4.0 million
Erection work	430,000	3.44 million
Total	930,000	7.44 million

- Average labor wage (Sept. End-1980)

$$\text{US\$13,500,000/930,000 man-days} = \text{US\$15/man-day}$$

$$(\text{= Baht308/man-day})$$

- (e) Differences of Off-site Facilities Cost among each Alternative (in 1980 price)

Plant Direct Cost
Off-site Facilities

Case	F.C.	L.C.	Total
BMCD	8,426	0	8,426
BMCI	19,427	160	19,587
BNYD	12,166	0	12,166
BNYI	14,481	160	14,641

D. Railway Spur

Plant Site	(US\$1,000)					
	BMC			BNY		
	F.C.	L.C.	Total	F.C.	L.C.	Total
Land acquisition	0	35	35	0	60	60
Facilities direct cost	485	367	852	742	859	1,601
Construction equipment	0	193	193	0	303	303
Ocean Freight, Insurance & Local Handling	77	28	105	118	43	161
Total	562	623	1,185	860	1,205	2,065

E. Construction Equipment ¹⁾

(a) Main Construction Equipment List

(Imported from overseas) ²⁾		(Locally available) ³⁾	
Erection & Transportation ⁴⁾		Civil Works ⁵⁾	
Truck crane (45-180 ton)	4	Bulldozer (BD-2, D-6 D-7, D-8)	12
Hydraulic crane (20 ton, 35 ton)	7	Pay loader (2.1 M ³ , 3.1 M ³)	7
Trailer truck (30 ton)	2	Dump truck (11 ton)	26
		Compactor (BW-210)	2
Common Use		Back hoe (0.6 M ³)	2
Hydraulic crane (15-35 ton)	5	Erection & Transportation	
Air compressor (100 PS)	3	Trailer truck (200 ton)	1
Engine generator (125 KVA)	2		
Welder (400A)	2		
Welder (300A)	5		
Truck (4 ton, 8 ton)	8		

(Notes) Assumptions and bases used for the cost estimate

- 1) All the equipment is estimated on a rental or lease basis.
- 2) Shall be re-exported to overseas after the completion of erection.
- 3) Shall be removed by local contractors or equipment suppliers after the completion of erection.
- 4) A part of the equipment shall be kept at the plant for the plant maintenance even after the completion of erection.
- 5) Includes equipment for the site preparation use (item B) and for the plant civil works. Most of the site preparation works shall be undertaken using locally available equipment.

(b) Common and Miscellaneous Use ¹⁾

Welder, compressor, pump, belt conveyor and others	1 set
Tools for repairing	1 set
Miscellaneous equipment and machines	1 set

F. Ocean Freight, Insurance & Local Handling

(US\$1,000 at 1980 price)

<u>Case</u>	<u>F.C.</u>	<u>L.C.</u>	<u>Total</u>
BMCD	13,585	2,895	16,480
BMCI	15,127	3,197	18,324
BNYD	14,120	3,047	17,167
BNYI	14,444	3,107	17,551

G. Indirect Field Expenses ²⁾

- (a) Temporary field buildings ³⁾
- (b) Temporary houses for expatriates
- (c) Temporary houses for local laborers
- (d) Utilities supply facilities for the camps ⁴⁾
- (e) Construction supplies ⁵⁾
- (f) Field office expenses
- (g) Insurance ⁶⁾ and miscellaneous

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- (Notes)
- 1) Assumed that some of equipment shall be locally available.
 - 2) Expenses incurred during the plant construction period at the construction site.
Expenses for the site preparation work are separately estimated in item B of this attachment.
 - 3) Administration offices and workshops
 - 4) Includes drinking water & power supply facilities.
 - 5) Fuel & lubricant oil for the construction equipment, tools for safety and miscellaneous consumables.
 - 6) Insurance on construction works.

H. Services

- (a) General contractor's Fee
 - License and know-how fee
 - Basic design fee
 - Detail engineering fee
 - Procurement services
 - Inspection
 - Documentation services
 - Provision for bonus
- (b) Expatriates and Supervision
 - General contractor's expatriates
(construction & start-up)
 - Vendor's servicemen
 - Local staff supervision

I. Project Management

- (a) Technical Advisor (Implementation stage)
- (b) Management Contractor (Operation advisor)
- (c) Marketing Advisor

TABLE VIA-1 (K., L.) CONTINGENCY SCHEDULE (PHYSICAL & PRICE)

ROCK SALT MINE

(Unit: %)

	Physical Contingency		Months to Expend Date	Price Contingency to Mid. 1985		Combined Contingency	
	(Foreign)	(Local)		(Foreign)	(Local)	(Foreign)	(Local)
A. Land Acquisition	-	-	18	-	23.3	-	23.3
B. Site Preparation	-	5	32	-	35.3	-	42.1
C. Facilities Direct Cost							
(a) Equipment & Materials	5	5	41	34.2	47.3	40.9	54.7
(b) Spare Parts	5	5	41	34.2	-	40.9	-
(c) Civil Materials	10	10	<u>F 39</u> <u>L 33</u>	32.3	36.6	45.5	50.3
(d) Construction Labor	10	10	43	36.2	50.1	49.8	65.1
E. Construction Equipment	10	10	33	26.7	36.6	39.4	40.3
F. Ocean Freight, Insurance Local Handling	10	10	35	28.6	39.2	41.5	53.1
G. Indirect Field Expenses	10	10	30	24.0	32.8	36.4	46.1
H. Services	5	5	42	35.2	48.7	42.0	56.1
I. Project Management	0	0	52	23.5	23.5	23.5	23.5

(Remarks) : Price Contingency (Escalation in compound rate)

- Foreign exchange; 9% per annum

- Local currency; 12% per annum

TABLE VIA-2 (L., M.) CONTINGENCY SCHEDULE (PHYSICAL & PRICE)

SODA ASH PLANT

(Unit: %)

	Physical Contingency		Months to Expend Date	Price Contingency to Mid. 1985		Combined Contingency	
	(Foreign)	(Local)		(Foreign)	(Local)	(Foreign)	(Local)
A. Land Acquisition	-	-	18	-	23.3	-	23.3
B. Site Preparation	-	-	31	-	34.0	-	40.7
C. Plant Direct Cost							
(a) Plant Equipment & Materials	10	10	35	28.6	39.2	41.2	53.1
(b) Spare Parts	10	-	35	28.6	-	41.5	-
(c) Civil Materials	5	5	35	28.6	39.2	35.0	46.2
(d) Construction Labor	-	10	45	-	53.0	-	68.3
E. Construction Equipment	10	10	24	18.8	25.4	30.7	37.9
F. Ocean Freight, Insurance & Local Handling	10	10	30	24.0	32.8	36.4	46.1
G. Indirect Field Expenses	10	10	24	18.8	25.4	30.7	37.9
H. Services	5	5	40	33.3	45.9	40.0	53.2
I. Project Management	0	0	52	23.5	23.5	23.5	23.5
J. Pre-Operation Expenses	0	0	52	34.1	34.1	34.1	34.1

(Remarks) : Price Contingency (Escalation in compound rate)

- Foreign exchange; 9% per annum
 - Local currency; 12% per annum

TABLE VIA-3 : (D., D.) CONTINGENCY SCHEDULE (PHYSICAL & PRICE)

SIDING

	Physical Contingency		Months to Expend Date	Price Contingency to Mid. 1985		Combined Contingency	
	(Foreign)	(Local)		(Foreign)	(Local)	(Foreign)	(Local)
	(Unit: %)						
A. Land Acquisition	-	-	18	-	23.3	-	23.3
B. Facilities Direct Cost							
(a) Equipment & Materials	0	0	45	38.2	53.0	38.2	53.0
	10	10	44	37.2	51.5	50.9	66.7
(b) Spare Parts	5	5	45	38.2	53.0	45.1	60.7
(c) Civil Materials	10	10	42	35.2	48.7	48.7	63.6
(d) Construction Labor	-	10	42	35.2	48.7	-	63.6
C. Construction Equipment	10	10	42	35.2	48.7	48.7	63.6
D. Ocean Freight, Insurance & Local Handling	10	10	36	29.5	40.5	42.5	54.6
E. Services	5	5	41	34.2	47.3	40.9	54.7

(Remarks) : Price Contingency (Escalation in compound rate)

- Foreign exchange; 9% per annum

- Local currency: 12% per annum

PART VII FINANCIAL PROJECTIONS

PART VII FINANCIAL PROJECTIONS

CHAPTER 1 GENERAL

This Part presents financial projections and analyses for individual two profit centers, i.e., the rock salt mine and the soda ash project as well as the assessment of the entire project.

There are two objectives for these assessment. Those are:

1. To make a comparison study among alternatives set up, i.e., site location and ammonia sources
2. To make an absolute assessment for the financial and economic viability of the Project

Between these two alternatives, the emphasis is to be put on site alternatives as the decision by the GOT on the location of the soda ash plant is to be based on the comparison data projected by this Report.

Therefore, this Part describes the comparison study in detail and gives only overview of the absolute assessment. These assessment are based on the presumption that commercial operation of the rock salt mine and the soda ash plant which are the components of the Project are started in July 1985 and both components have an economic life span of 15 years after the commencement of commercial operation. These estimates and projections are given in terms of 1985 constant price.

CHAPTER 2 FINANCIAL PROJECTIONS

2-1 GENERAL

Major differences from the Previous Report are:

1. Housing colony is deleted from the scope of the Project for both rock salt mine and soda ash plant according to the resolution of the meeting of the Shareholders Entitys for the Project. Thus, the capital requirements are reduced approximately 6% from the capital requirements of the Previous Report.
2. The plant site of the soda ash plant is moved from Laem Chabang in the Previous Report to either Ban Mab Chalood or Ban Nong Yai. This relocation of the soda ash plant site leads to slight changes of rock salt transportation cost by railway, i.e. US\$10.3/ton for Ban Mab Chalood and US\$10.1/ton for Ban Nong Yai.
3. The site relocation results in the modification of the facilities, especially off-site facilities in the soda ash plant, thus the capital requirement of the Project is modified.
4. No major change is anticipated in the variable cost factors except rail way and electric power tariff which are revised in 1981.

2-2 BASE DATA FOR FINANCIAL ANALYSIS

1. Sales price (1985 prices):

Soda ash	US\$225/T (Ex-factory price to Thailand)*
Ammonium chloride	US\$150/T (Ex-factory price to Thailand)*
Rock salt	US\$ 11.42/T (Ex-mine price)**

Notes: * For soda ash to be exported to ASEAN countries (except Thailand), the prices as shown below (estimated on the basis of CIF competitive prices in each destination) are used.

<u>Destination</u>	<u>CIF Price</u>	(US\$/ton)
		<u>Ocean Freight</u>
Thailand	225	—
Singapore	229	15
Malaysia	230	17
Indonesia	229	19
Philippines	225	23

** Ex-mine price calculated on the basis of the Supplementary Agreement for the ASEAN Rock Salt — Soda Ash Project (Thailand).

2. Raw materials and utilities prices:

	<u>1980 Prices</u>	<u>1985 Prices</u>
Ammonia	—	US\$235/T
Carbon dioxide gas	—	0
Quicklime	US\$20/T	US\$ 28/T
Soda ash	—	US\$225/T
Power	US\$ 0.076/KWH*	US\$ 0.092/KWH
Water	US\$ 0.08/m ³	US\$ 0.108/m ³
Natural gas	—	US\$ 4.6/MMBTU (fuel oil equivalent, US\$181.6/m ³)

Note: * 1981 price

3. Railway freight:

	<u>1981 Rate</u>	<u>1985 Rate</u>
Rock Salt		
B.N.* — Sattahip	US\$8.38/T	US\$10.19/T
B.N.* — BMC	US\$8.52/T	US\$10.36/T
B.N.* — BNY	US\$8.23/T	US\$10.00/T
Soda Ash		
BMC — Sattahip } BNY — Sattahip }	US\$0.7/T	US\$ 0.85/T

Note: * Bamnet Narong

4. Assumption:

Corporate tax	: Waived for 8 years, thereafter 40% of taxable income
Import duty, business tax	: Waived
Depreciation and amortization	: Straight-line method for 15 years, with zero salvage value
Terms and conditions	: Grace period, 3 years; repayment over the period of 15 years; interest rates: 4%, 5%, 6%
Royalty	: 4% of ex-mine rock salt price

5. Sales plan

As shown in Tables VII-1 to VII-3.

Table VII-1 PROJECTED SALES OF ROCK SALT
(Rated Capacity: 1,800,000 t/y)

(Unit: tons)

(Year)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
Capacity Utilization (%)	(70)	(80)	(90)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Production	1,260,000	1,440,000	1,620,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
Inventory Increase	210,000	30,000	30,000	30,000	0	0	0	0	0	0	0	0	0	0	0
Sales Volume	1,050,000	1,410,000	1,590,000	1,770,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
Supply to Soda Ash Plant	395,640	452,160	508,680	565,200	565,200	565,200	565,200	565,200	565,200	565,200	565,200	565,200	565,200	565,200	565,200
Thai Domestic Sales	87,400	116,450	145,700	158,500	171,300	184,400	197,800	211,200	224,600	238,000	251,400	264,800	278,200	291,600	305,000
Export to Malaysia	152,000	162,000	172,250	182,800	193,550	200,710	204,330	207,950	211,570	215,190	218,810	222,430	226,050	229,670	233,290
Export to Singapore	7,750	7,850	7,950	8,050	8,150	8,250	8,350	8,450	8,550	8,650	8,750	8,850	8,950	9,050	9,150
Export to Taiwan	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Export to other non-ASEAN countries	307,210	571,540	655,420	755,450	761,800	741,320	707,200	690,080	672,960	672,960	655,840	638,720	621,600	604,480	587,360

Table VII-2 PROJECTED SALES OF SODA ASH
(Soda Ash : 400,000 t/y)

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
Capacity (%)	(70)	(80)	(90)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Utilization															
Production	280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Inventory Increase	23,333	3,333	3,333	3,333	-	-	-	-	-	-	-	-	-	-	-
Sales Volume	256,667	316,667	356,667	356,667	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Thailand	124,600	135,200	146,350	157,650	169,350	180,100	189,700	199,300	208,900	218,500	228,100	237,700	247,300	256,900	266,500
Singapore	7,987	11,326	12,600	11,950	11,500	11,350	10,520	10,030	9,550	9,070	8,600	8,120	7,630	7,150	6,670
Malaysia	22,440	30,770	37,800	43,020	41,400	39,920	37,850	36,130	34,400	32,670	30,940	29,210	27,490	25,760	24,030
Indonesia	50,160	68,780	79,800	90,820	87,400	83,220	79,910	76,270	72,620	68,970	65,320	61,670	58,030	54,380	50,730
Philippines	51,480	70,590	80,117	93,227	90,350	85,410	82,020	78,270	74,530	70,790	67,040	63,300	59,550	55,810	52,070

(Unit: tons)

Table VII-3 PROJECTED SALES OF AMMONIUM CHLORIDE
(Ammonium Chloride: 400,000 t/y)

(Unit: tons)

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
Capacity Utilization (%)	(70)	(80)	(90)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
Production	280,000	320,000	360,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Inventory Increase	23,333	3,334	3,333	3,333	-	-	-	-	-	-	-	-	-	-	-
Sales Volume	256,667	316,666	356,667	396,667	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Thai Domestic Sales	256,667	316,666	334,700	350,950	366,100	179,200	379,200	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Exports to Non-ASEAN	-	-	21,967	45,717	33,990	33,990	8,800	-	-	-	-	-	-	-	-

2-3 FINANCIAL PROJECTIONS

2-3-1 Introduction

In this paragraph, financial projections are made for following three profit centers:

1. Rock salt mine
2. Soda ash plant
3. Entire project

Sensitivity analysis for these profit centers are also made and evaluated.

2-3-2 Rock Salt Mine

As per the Supplementary Agreement for the Project, the rock salt mine will have a production capacity of 1.8 million tons/year and the product rock salt shall be off-taken by the soda ash plant and the Thai Rock Salt – Soda Ash Shareholders Entity at the price set forth to attain Internal Rate of Return on Investment (IRROI) after tax of 12.7% of the rock salt mine.

This price is assessed through the sensitivity analysis of IRROI varying the sales price of rock salt to find followings:

<u>Production Capacity of the Mine (t/y)</u>	<u>Sales Price at Ex-Mine (US\$/ton)</u>
1,800,000	11.42
1,200,000	15.72

2-3-3 Soda Ash Plant

The alternatives may be compared by means of their Internal Rates of Return, as follows.

IRROI (%)
FOR EACH ALTERNATIVE
(Soda Ash Plant)

<u>Case</u>	<u>Before Tax</u>	<u>After Tax</u>
BMCD	10.01	8.97
BMCI	8.90	7.93
BNYD	9.30	8.31
BNYI	9.09	8.11

The difference in IRROI principally stems from differences in capital requirement, in the case of domestic production of ammonia siting the soda ash plant at Ban Mab Chalood provides a higher IRR, whereas in the case of importation of ammonia Ban Nong Yai siting gives higher IRROI.

2-3-4 Entire Project

The Internal Rate of Return for the entire project including the rock salt mine and the soda ash plant, are as follows.

IRROI
FOR ENTIRE PROJECT (%)

<u>Case</u>	<u>Before Tax</u>	<u>After Tax</u>
BMCD	10.02	8.94
BMCI	9.07	8.04
BNYD	9.42	8.37
BNYI	9.24	8.20

The results for the entire project demonstrate the same ranking as in the case of the soda ash plant alone, for the reason that the rock salt mine does not differ case to case.

For the alternative case of producing 1.2 million tons/year of rock salt, following results are obtained.

- (1) Ex-mine price of rock salt: US\$15.72/ton
(at IRROI after tax of the rock salt mine 12.7%)

(2) IRROI (%)

<u>Case</u>	<u>Before Tax</u>	<u>After Tax</u>
BMCD	9.45	8.37
BMCI	8.51	7.50
BNYD	8.86	7.82
BNYI	8.67	7.65

CHAPTER 3 EVALUATION

3-1 COMPARISON OF ALTERNATIVES

Results of sensitivity analysis on IRROI after tax for Case BMCD and BNYI are shown in Fig. VII-1, Fig. VII-2 and Table VII-4.

- (1) Ranking in order of capital requirements (excluding interest during construction) and IRROI is shown below.

Rank	Case	Capital Req't (US\$1,000)	IRROI After Tax (%)
1	BMCD	355,546	8.94
2	BNYD	370,001	8.37
3	BNYI	374,166	8.20
4	BMCI	376,366	8.04

The requirement for ammonia transport and storage costs would be lower in the case where ammonia is supplied from the proposed fertilizer complex. Consequently the IRROI for the said alternatives is higher than those where ammonia is imported.

From the above, it can be concluded that, in the case of importation of ammonia, siting of the soda ash plant at Ban Nong Yai is preferable, whereas in the case of ammonia supply from the proposed fertilizer plant, Ban Mab Chalood siting is preferable.

- (2) In all cases, the IRROI after tax for the entire project are higher than the minimum 8% requirement for the ASEAN Industrial Projects set by ASEAN Economic Ministers.
- (3) In any case in order to be able to implement this Project, it is essential to install storage facilities for rock salt and soda ash must be provided at Sattahip Deep Sea Port.
- (4) In case that such facilities could not be provided at the Port, it is not possible to select Ban Mab Chalood as a soda ash plant site. In stead, Ban Nong Yai site could possibly be used, by installing one each belt conveyor for rock salt and soda ash for direct loading from the plant to ships berthed at the Sattahip Port.

Fig. VII-1 SENSITIVITY ANALYSIS (CASE: BMCD)

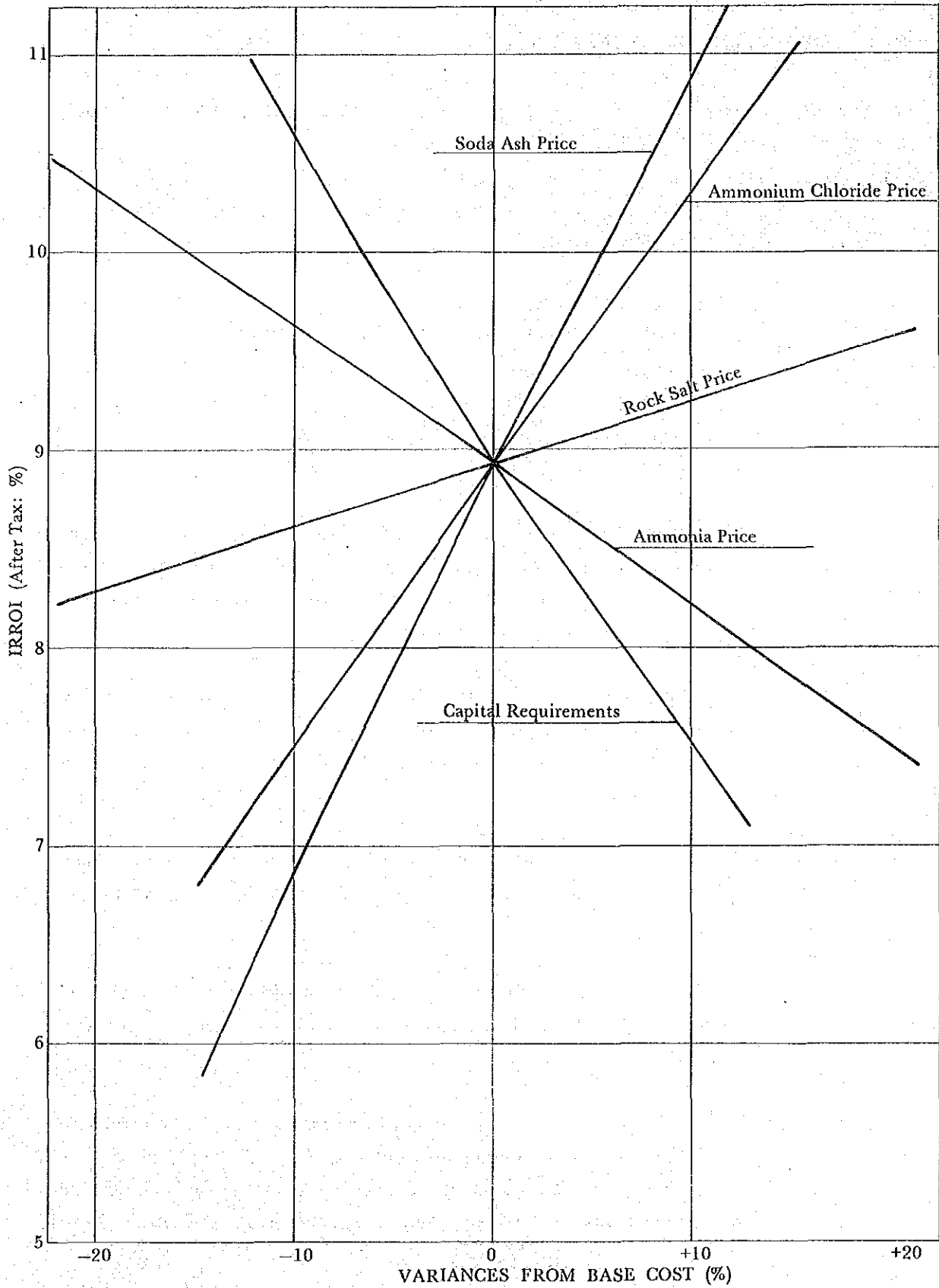


Fig. VII-2 SENSITIVITY ANALYSIS (CASE: BNYI)

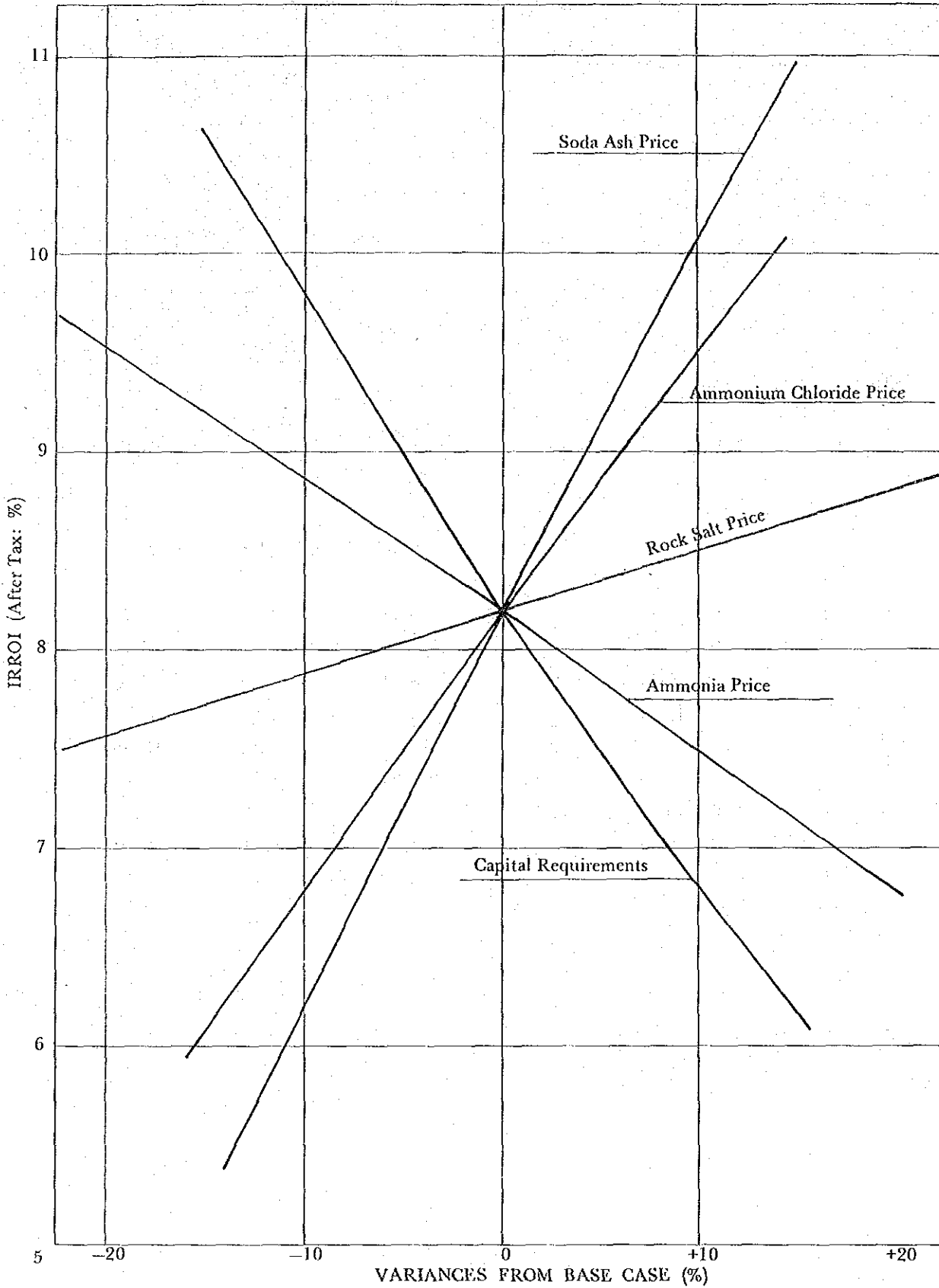


Table VII-4 SENSITIVITY ANALYSIS ON OVERALL PROJECT
(Rock Salt Mine: 1,800,000 t/y)

Case	IRR (Before)	IRR (After)
BMCD	10.02	8.94
BNYI	9.24	8.20
BNYD	9.42	8.37
BMCI	9.07	8.04

Sensitivity		Case BMCD		Case BNYI	
		Before	After	Before	After
IRR on Equity	4%	—	14.76	—	13.05
	5%	—	14.26	—	12.57
	6%	—	11.87	—	10.13
Investment	10% up	6.52	7.52	7.76	6.82
	10% down	11.74	10.58	10.93	9.80
Sales R/S	20% up	10.69	9.57	9.89	8.82
	10% up	10.36	9.26	9.57	8.51
	10% down	9.68	8.61	8.90	7.88
	20% down	9.33	8.28	8.56	7.56
Sales S/A	10% up	12.05	10.88	11.22	10.08
	10% down	7.81	6.87	7.07	6.19
Sales A/C	10% up	11.46	10.31	10.65	9.53
	10% down	8.50	7.50	7.74	6.80
Ammonia	20% down	11.46	10.31	10.65	9.54
	10% down	10.75	9.63	9.95	8.87
	10% up	9.27	8.22	8.50	7.51
	20% up	8.49	7.50	7.74	6.80

In such a case construction cost for these belt conveyors, in 1985 price, is estimated as follows.

(Unit: US\$1,000)	
Foreign currency	48,327
Domestic currency	10,020
Total	58,347

This increase in construction cost would substantially reduce the IRROI to an unacceptable level as follows:

	Base Case	Alternative Case
Case BNYD	8.37%	5.5%
Case BNYI	8.20%	5.4%

This indicates the necessity for the government to provide the rock salt and soda ash storage facilities at Sattahip Deep Sea Port. In view of the large amount of rock salt and soda ash to be exported to the ASEAN and the non-ASEAN countries, it is also imperative in all cases that the Sattahip Port be expanded.

- (5) In view of the fact that water, power and natural gas will be supplied to the Plant by GOT, the choice in siting the soda ash plant should take into account the differences in the delivery distances for these utilities as shown below:

Distances from the Main Utilities Systems to
the Battery Limit of the Soda Ash Plant

	Ban Mab Chalood	Ban Nong Yai
Water pipeline (m)	3,000	3,000
Power cable (m)	2,000	24,000
Natural gas pipeline (m)	1,000	24,000

3-2 EVALUATION OF THE PROJECT

Evaluation of the Project shows that the Project is technically and financially feasible, however, GOT has to undertake followings:

- (1) Sattahip Deep Sea Port expansion must be completed by the time this Project begins operations.
- (2) The water and power supply projects must be implemented in parallel to construction work of this Project.
- (3) Facilities for transport of rock salt and soda ash (locomotives, hopper wagon, extension of railway line) must be provided in time before the Project become operational.
- (4) There must be a guarantee that carbon dioxide gas will be supplied from PTT gas separation plant free of charge.
- (5) A source of supply of ammonia, price according to the Supplementary Agreement of the ASEAN Rock Salt – Soda Ash Project (Thailand), must be assured before the Project is implemented.

CHAPTER 4 ECONOMIC EVALUATION

Economic comparison among two proposed sites is not assessed due to following reason:

Although two sites, i.e., Ban Mab Chalood and Ban Nong Yai, belong to different administrative districts, Rayong Province and Chonburi Province respectively, these are located within a distance of approximately 23 km of each other. Therefore, it is considered that the two sites are in the same economic bloc, because the Thai government is planning to develop the region, where the two sites are, as a unit called the Eastern Seaboard.

APPENDIX— I
INTERIM REPORT

APPENDIX-I INTERIM REPORT

**THE ADDITIONAL EVALUATION STUDY
ON
THE ASEAN ROCK SALT – SODA ASH PROJECT
IN
THE KINGDOM OF THAILAND**

NOVEMBER 1981

**JAPANESE EVALUATION TEAM
FOR THE ASEAN ROCK SALT – SODA ASH PROJECT
IN THAILAND**

**JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO, JAPAN**

1. INTRODUCTION

- 1) The Minutes of Meetings, which are to define the Scope of Work for the Additional Evaluation Study (the Study) on the ASEAN Rock Salt – Soda Ash Project (the Project) the Kingdom of Thailand, were signed between Mr. S. Changkasiri, the leader of Thai Counterpart Team (Thai Team), and Mr. J. Koizumi, the leader of JICA preliminary study team on November 13, 1981 in Bangkok. (The Minutes of Meetings are attached as Appendix--1.)
- 2) Following the agreement on the Minutes of Meetings, the JICA evaluation study team (the JICA Team of which member list appears in Annex I of Appendix--1) arrived Bangkok on November 19, 1981 and made a on-the-spot survey as well as meetings and discussions with various Thai authorities concerned through December 2, 1981.
- 3) This is the Interim Report, by which JICA Team summarizes the followings:
 1. Findings through the on-the-spot survey and results of discussions/meetings
 2. Set-up of basic design and evaluation criteria
 3. Schedule and plan for further study in the home office

The itinerary is attached as Appendix--2 and the officers met are attached as Appendix --3.

- 4) Full assistance and cooperation extended by the Thai Team as well as various authorities of the Thai Government enabled the JICA Team to perform its duties with successful results. The JICA Team acknowledges and takes this opportunity to express its gratitude for such assistance and cooperation of the Thai Team and other authorities.

2. FINDINGS

2.1 Proposed Plant Sites

The Cabinet of Thai Government recommended that the Project be located either Ban Mab Chalood in Rayong Province or Ban Nong Yai in Chonburi Province. The JICA Team conducted a on-the-spot survey as well as discussions with various offices to find the followings:

2.1.1 Physical Condition of Two Sites

Fig. 1 and Fig. 2 show Ban Mab Chalood and Ban Nong Yai site respectively.

From the on-the-spot survey made by the JICA Team and the discussion with Geological Survey Div. of MOI, the JICA Team overviewed the physical conditions of the two proposed sites as follows:

The topography of both sites are generally flat and plain. Elevation differences in the required area (approximately 1 km x 1 km) are less than 10 m at both of two sites. Two sites are covered by mostly tapioka and some kinds of tropical vegetations.

Soil conditions are also the same for both sites such that the surface layer about 2 – 3 m of loose to medium dense silty sand will be expected. In some area, dense silty sand formations (wethered soft sand rock) are partially exposed.

In addition to above mentioned physical conditions, Ban Mab Chalood is identified by the Thai Government as a heavy industrial zone where the natural gas based industries, such as gas separation plant, olefine plant, fertilizer plant and so on are planned to be located. Therefore, IEAT commenced their operation of zoning of the area, assessment for the land procurement and conceptual design of infrastructure provision. Location of fertilizer plant is allotted by Thai Government at the shore line of Ban Mab Chalood. Therefore the Project is to be located at a plot of land zoned by IEAT, if Ban Mab Chalood is selected.

As for Ban Nong Yai site, there are two candidates, either to the west or to the east of Wat Ko Mo 5. The east area is located down stream of Phlu Ta Luang reservoir, therefore the soil condition of area is observed to be worse than that of the west area. The east area is narrowly surrounded by highways, hills, a golf course and reservoir.

Thus the west area to Wat Ko Mo 5 is selected as a candidate site in Ban Nong Yai. The west area is surrounded by hills and highway and is adjacent to the housing complex of Royal Thai Navy. In the west area, a plot of 2 km x 2 km will be secured for industrial location including area for the Project.

2.1.2 Macroscopic Study of Eastern Sea Bord Development

An English consultant is carrying out a macroscopic study for the Eastern Sea Board Development covering the fields of land availability, water resources, agricultural as well as industrial development, urban growth etc.. Further to above, from December 1981, the consultant is to commence on industrial opportunity study, including industries such as basic

industries using natural gas and small and medium scale industries, which will be completed by March 1982.

2.1.3 Development of Sattahip Deep Sea Port (SDSP) Present

Sattahip Commercial Port, which was built by US Army in 1968 for the military purpose, is to be developed as a deep sea port to accommodate vessels carrying general cargo, container cargo as well as industrial cargo relative to the Eastern Sea Board Development.

The SDSP project is planned to be implemented as per following schedule.

i. Master Plan of SDSP

An Australian consultant, Monsell & Partner Inc. will make a master plan of SDSP by June 1982. The master plan study will be conducted by a grant technical assistance by the Australian Government.

ii. Detailed Design of SDSP

Immediately after the completion of the master plan, a tender will be invited for the detailed design of the SDSP using the Engineering Loan of World Bank. The tender will be issued by May 1982.

iii. Completion of the First Berth

The first berth in SDSP will be completed construction and be operational by the end of 1984, when the Fertilizer Plant will commence their commercial operation.

Therefore, the JICA Team are requested by CIPO/NESDB to submit the requirements of the Project in the SDSP project, i.e. wharf, stock pile yard, storages, utilities etc. before the Master Plan Study commences.

The preliminary study of SDSP identifies that approximately 1,100 Rai (1.76 million sq.m) of land will be made available for warehousing and stock pile area including area for light industry.

The Project is to rely on these expanded port facilities at Sattahip.

2.1.4 Thai Governmental Concession to the Project

It was decided by Thai Government that the Government will provide necessary infrastructure to support the Project at either of two sites in accordance with the ruling of the Eastern Sea Board Development Committee. These infrastructures are:

- i. Rail way sidings
- ii. Access road
- iii. Electric power, 230 KV line from Bang Pakong Thermal Power Station
- iv. Industrial Water, from Dok Krai Reservoir to the battery limit of the Project after certain treatment.
- v. Natural gas, if required, pipe line from PTT's Gas Processing Plant to the battery limit of the Project.

However, among others, 230 KV cable and natural gas pipe line to the Ban Nong Yai site is exclusive use for the Project at the expense of Thai Government, but not at the expense of the Project.

As for industrial water to the Ban Nong Yai site, the Project is to share water, which flow through Sattahip Deep Sea Port.

On the other hand, in Ban Mab Chalood site, all facilities listed above are available within the vicinity for the supply to the proposed heavy industries including, if the site is selected, the Project.

2.2 Railway Development and Rock Salt -- Soda Ash Transportation

2.2.1 Chachoengsao -- Sattahip line

The railway line connecting between Chachoengsao -- Sattahip (C-S line) has commenced construction to make the line operation by End'83/Beginning'84 by the finance of the Thai Government. The principal criteria and dimensions of the C-S line are as follows:

Number of Tracks:	Single
Max. Gradient:	10 0/00

Min. Radius Curve:	800 m (Partially 400 m)
Possible Axle Load:	20 ton
Permissible Speed:	Passenger train 100 km/h Freight train 80 km/h
Effective Length of Main Track:	850 m

The C-S line will be extended to Rayon Town via Ban Mab Chalood by the end of 1984 installing a marshaling yard at Ban Khao Phlu Ta Luang.

2.2.2 Sidings in Sattahip Port

The railway sidings as well as the stock pile yard will be constructed in the proposed expansion area of SDSP by the responsibility and cost of the Thai Government. The capacity of these facilities will be fixed on the request of the Project.

2.2.3 Bangkok By-Pass Line

A new railway line is now under proposed program to link the C-S line to the existing North-Eastern line directly without passing Bangkok city. If this line is put into operation, the length of route to transport the rock salt from the mine to the SDSP and/or the proposed plant sites will be shortened by approximately 80 km to reduce the freight cost of the rock salt. However, this program is not fixed yet.

2.2.4 Purchasing Cost of Freight Cars

The specialized freight cars to be operated on the RSR line for the Project will be purchased with governmental subsidy.

2.2.5 Freight Charges on Rock Salt and Soda Ash

The freight charges on rock salt, soda ash and others will be set up under the standard tariff rate in principle. However, it can be reduced, if the purchasing cost of freight cars and/or locomotives is subsidized by the government.

2.3 Fertilizer Project

The Thai Government is now negotiating with a Scandinavian group (Swedyard group) to implement the fertilizer project in Thailand. Outline of the project is described hereunder.

i. Schedule

Negotiations will be finalized by December 1981 and the plant will commence the commercial operation by November 1984.

ii. Production scheme

Ammonia:	1,350 t/d
Urea:	1,725 t/d
MAP/DAP:	1,300 t/d
NPK:	2,200 t/d

iii. Investment cost

US\$590 million

iv. Projected sales price

Swedyard group projected the products price at C.I.F. Bangkok in 1984:

Ammonia:	US\$380/ton
Urea:	US\$450/ton (in Bulk)
MAP/DAP:	US\$468/ton

These will be escalated in later years at the rate of 6%/year.

For Thai domestic market, they will sell at the price approximately 20% less than the above projected price.

3. BASES FOR ADDITIONAL EVALUATION STUDY

3.1 General

In this additional evaluation study, principal criteria and design basis are to be applied with those of the Previous Evaluation Study Report. However, changes are expected from the Previous Report in view of conceptual design and investment cost estimate of the Off-Site Facilities due to the relocation of the plant site.

Therefore, clarification shall be made for each factor which cause the changes by relocation of the plant site.

3.2 Scope of the Project

Housing colony was deleted from the Project scope and will be provided by the Thai Government. Infrastructures of the Thai Governmental provision will be quite same among two candidate site, although capacity and/or requirements are different subject to conceptual design of the facilities for two sites.

3.3 Conceptual Design of the Plant Facilities

Conceptual design of the Process Plants and the Utilities Facilities remain same as the Previous Report. Only the Off — Site Facilities, raw materials and products handling facilities, will be conceptually designed for the two plant sites.

3.3.1 Stock Piling Yard at SDSP

Since the Thai Government is to prepare stock piling yard including for the heavy industries, i.e., the fertilizer project and the soda ash project, through their master plan and detail design of SDSP, it is a basic case for the Additional Evaluation Study to secure stock piling yards for the raw materials and the products of the Project at SDSP. The requirements of the stock piling yard as well as port facilities requirements of the Project will be defined by the JICA Team before middle of January 1982 so that the requirements should be taken in the master plan of SDSP.

However, a case study is to be made for the case when, by some reasons or other, the stock piling yard is not available for the Project.

3.3.2 Loading Facilities at SDSP

There is a possibility to share loading/unloading facilities at SDSP with other industrial projects, however, conceptual design should be made for loading facilities of the Project in order to budget the investment cost of these facilities in the Project cost.

3.3.3 Raw Materials and Product Transportation

i. Rock Salt

Rock Salt will be transported by the railway from the mine at Bamnet Narong to

one of the two sites and to the stock piling yard at SDSP. Therefore, a proper siding and unloading system will be conceptually designed for each of two sites.

ii. Ammonia

Detail discussion shall be made in following paragraph. For both import case and domestic production case, study should be made for pipe line transportation and lorry transportation to each of the two sites from the import stock pile and the storage in the fertilizer project.

iii. Carbon Dioxide

There are two carbon dioxide sources, i.e. Gas Processing Plant of PTT and the fertilizer plant. However, carbon dioxide from PTT will be a base case for the Project.

iv. Soda Ash

Soda Ash will be transported by railway to the SDSP for export and to the Thai market.

3.4 Relation with Fertilizer Project

The soda ash project and the fertilizer project are closely related each other in view of ammonia supplier/user, nitrogen fertilizer producers and intermediate ammonium chloride for compound fertilizer production supplier/user relationships.

3.4.1 Ammonia Trade

In the fertilizer project implementation, the Thai Government is negotiating with the Swedyard group for the pricing of their products of Thai domestic market with a primary proposal of ammonia price in 1984 US\$380/ton C.I.F. Bangkok minus some 20% discount.

On the other hand, Thai soda ash project team commenced their negotiations with the Indonesian Government for the supply of ammonia to the Project.

Since both of the above mentioned arrangements are yet to be made and the price of ammonia is crucial to the viability of the Project, IRR will be assessed varying the price of ammonia including Swedyard's primary quotation and the projected international competitive price by the JICA Team.

In the price of ammonia to the Project, a transportation cost is duly taken into account for between the supplier, i.e. import or the fertilizer project, and each of the two sites.

3.4.2 Ammonium Chloride Trade

Thai domestic fertilizer market is, in principle, compound fertilizer market as Swedyard proposed that 65% of ammonia product (1,350 t/d) is allocated for NP and NPK production including via urea production.

Therefore ammonium chloride from the Project should be primarily distributed to compound fertilizer manufacturers, i.e. the fertilizer project as well as existing manufacturers in order to share the limited market of Thai domestic fertilizer market with urea from the fertilizer project.

Under these circumstances, pricing of ammonia chloride is crucial for the trade in close relation with ammonia pricing. In the Previous Report, analyzing world wide fertilizer market, it is projected that the price of ammonium chloride be US\$150/ton at ex-factory of the Project. This compares Swedyard proposal of urea price at US\$477/ton both at 1985 price with parity of nutrient to find $477 \times 25/46 = \text{US}\$259/\text{ton}$ with big discrepancy between the two. (20% less is US\$207/ton)

3.4.3 Case Studies

As has been discussed above, these ammonia and ammonium chloride trade involve various alternatives. Therefore, assessment should be made by financial analyses for each case stipulated below.

Sensitivity analyses of IRR (after tax)

- 1) Fixing the price of ammonium chloride at US\$150/ton, to vary ammonia price
- 2) Varying both ammonia and ammonium chloride price in due consideration of Swedyard proposal and ASEAN Urea projects.

3.5 Alternatives to be studied

Based on the discussion in the foregoings, following matrix is set up for alternative study.

Alternative Cases

<u>Plant Site</u>	<u>Ammonia Supply</u>	
	<u>Import</u>	<u>Domestic</u>
Ban Mab Chalood	I	II
Ban Nong Yai	III	IV

As an extra alternative, a case will be set for Ban Nong Yai in which case, no stock pile yard is available in SDSP, thus for export operation of rock salt/soda ash has to rely on the direct loading from the plant, which operation is practically impossible at Ban Mab Chalood as the plant site. In the extra alternative case, also assessment should be made for both of ammonia supply, i.e. import and domestic.

For the all of alternatives set up above, facilities, the Off-site Facilities, will be conceptually designed and the total investment cost will be reestimated for the financial and economic analysis.

4. STUDY SCHEDULE

Study schedule is defined in paragraph IV of scope of work in Annex—II.

However, the JICA Team will inform the Thai Team Leader by Telex, as soon as an English draft report is ready so that the Thai Team Leader will come to Tokyo to review and finalize the draft final report.

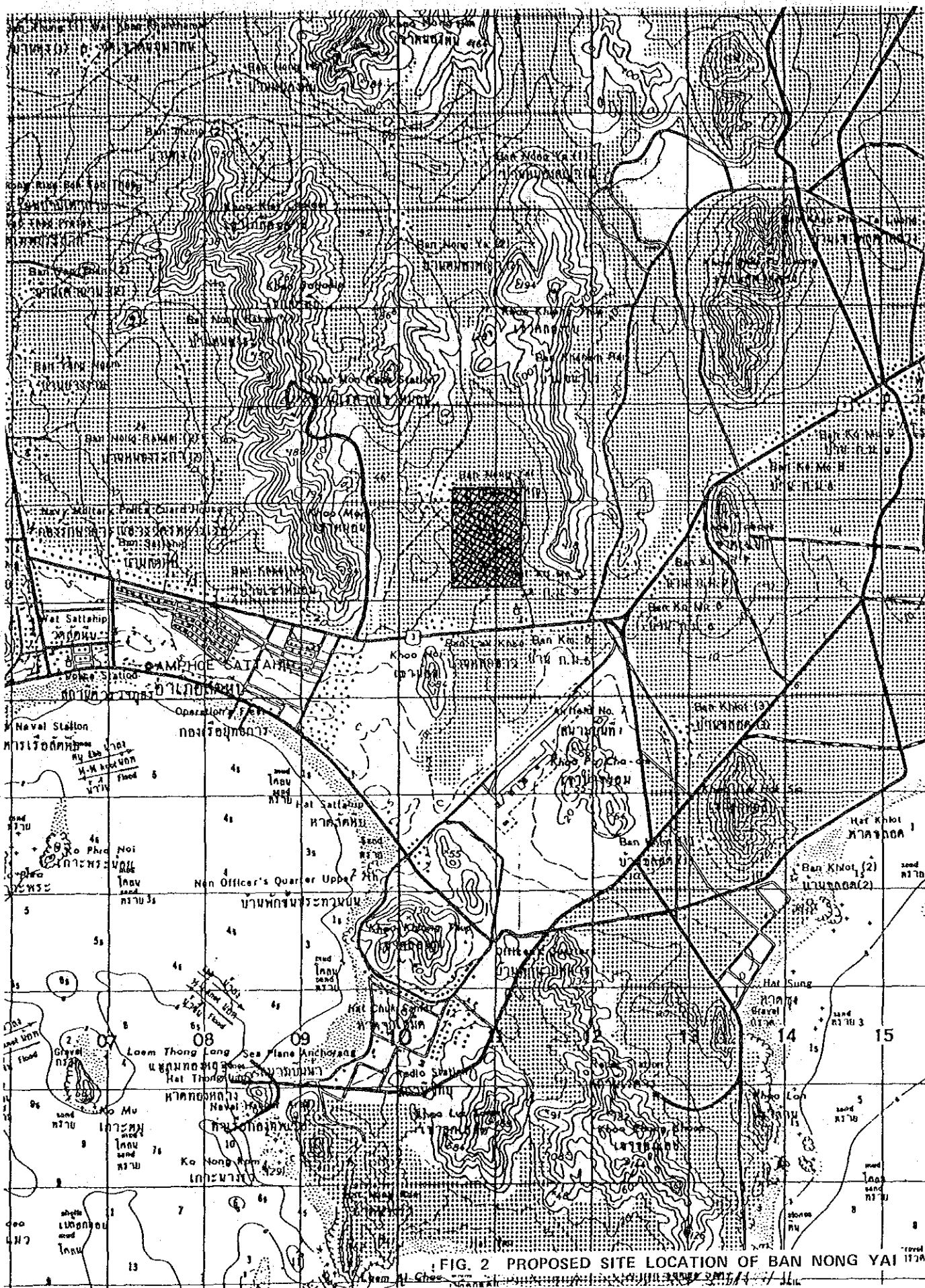


FIG. 2 PROPOSED SITE LOCATION OF BAN NONG YAI

MINUTES OF MEETINGS
ON
THE ADDITIONAL EVALUATION STUDY
ON
THE ASEAN ROCK SALT -- SODA ASH PROJECT
IN
THE KINGDOM OF THAILAND
NOVEMBER 13, 1981, BANGKOK

(Signed)

SIVAVONG CHANGKASIRI

Leader of the Thai Team
for the ASEAN Rock Salt --
Soda Ash Project

(Signed)

JUNSAKU KOIZUMI

Leader of the Preliminary Study Team
for the ASEAN Rock Salt --
Soda Ash Project

ATTENDANTS

1. JICA TEAM

<u>Name</u>	<u>Position</u>
Mr. Junsaku Koizumi (Team Leader)	Head of Industry Division, Japan International Cooperation Agency (JICA)
Mr. Shohei Maeno	Senior Project Engineer, UNICO International Corporation

2. Thai Counterpart Team

Mr. Sivavong Changkasiri (Team Leader)	Deputy Under-Secretary of State Ministry of Industry
Mr. Songkram Thamagasorn	Director Office of National Committee for UNIDO Office of the Under-Secretary of State Ministry of Industry
Mr. Sukon Kuansuwan	Foreign Affairs Officer Office of National Committee for UNIDO Office of the Under-Secretary of State Ministry of Industry
Ms. Achariya Sutinont	Foreign Affairs Officer Office of National Committee for UNIDO Office of the Under-Secretary of State Ministry of Industry
Ms. Siriporn Wacharasemakul	Foreign Affairs Officer Office of National Committee for UNIDO Office of the Under-Secretary of State Ministry of Industry

Tel. 281-3238

MINUTES OF THE MEETINGS
(NOVEMBER 9 – 13, 1981)

The preliminary study team sent by the Japan International Cooperation Agency (JICA) and the Thai counterparts discussed the additional study of the ASEAN Rock Salt – Soda Ash Project in the Kingdom of Thailand.

The lists of members of both sides appears as Annex I. Both sides agreed on the Scope of Works which appears as Annex II and in that connection both sides had the following discussions:

1. In April 1981, the Committee on the Development of Heavy Industries in the Eastern Sea Board, chaired by the Prime Minister, recommended to the Cabinet for final decision two locations for Heavy Industrial Establishments namely, Ban Mab Chalood in Rayong Province and Ban Nong Yai in Chonburi Province. For the site of the Soda Ash Plant, the location at Ban Nong Yai or at Ban Mab Chalood near the Gas Separation Plant was recommended. The Cabinet approved the locations as proposed by the Committee.
2. With regard to the Soda Ash Plant Site, Ban Mab Chalood has certain advantages because of its proximity to an industrial complex based on natural gas. On the other hand, the principal advantage of locating the Soda Ash Plant at Ban Nong Yai are its proximity to the Sattahip Deep Sea Port and to the Chachengsao – Sattahip railway, which is now under construction and the lower investment and operating costs.
3. Therefore the Thai Counterpart Team strongly requested JICA to conduct the field survey and the evaluation study on the two proposed sites in order to present technical and economic advantages of each site, which are mentioned in paragraph 2. above, between the two sites.
4. JICA Team stated, in principle, a specific plant site should be decided by the Thai Government before the commencement of the evaluation study to be conducted by JICA. However, JICA Team, in due consideration of above mentioned situation, agreed to conduct the field survey and present the evaluation study of the two sites; Ban Nong Yai and Ban Mab Chalood.

SCOPE OF WORKS
OF
THE TECHNICAL COOPERATION
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE MINISTRY OF INDUSTRY
ON
THE ADDITIONAL EVALUATION STUDY
ON
A NEW PLANT SITE OF THE ASEAN ROCK SALT – SODA ASH PROJECT
IN
THE KINGDOM OF THAILAND

I. Background

In response to the request of the Kingdom of Thailand, the Government of Japan dispatched a preliminary survey team headed by Mr. Junsaku Koizumi from 9th to 15th November, 1981 through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation of the Government of Japan, to carry out the preliminary survey for the Additional Evaluation Study (the Additional Study) on a new plant site of the ASEAN Rock Salt – Soda Ash Project (the Project) and to discuss the Scope of Works for the Additional Study with the Ministry of Industry (MOI).

1. Outline of the Project in the Previous Evaluation Study

The Previous Evaluation Study (the Previous Study) was conducted in Thailand for a period of twenty three (23) days from September 10th, 1980 and the report, entitled "EVALUATION STUDY REPORT FOR ASEAN ROCK SALT – SODA ASH PROJECT IN THE KINGDOM OF THAILAND"; was submitted to the Government of Thailand in March, 1981. In the Previous Study, JICA identified the following outline features of the Project.

1) Rock Salt Mine

- Mine Site : Bamnet Narong
- Mining Capacity : 600,000 tons/year/shift x 2 shifts
- Sales Plan : A part of the mined rock salt is to be supplied to the Soda Ash Plant for use as a raw material and the remainder is to be marketed to the Thai domestic market as well as other markets.

2) Soda Ash Plant

- Plant Site : Laem Chabang
- Plant Capacity : Soda Ash 400,000 t/y
Ammonium Chloride 400,000 t/y
- Process Technology : Full AC Co-production Process
- Sales Plan : All the output is to be absorbed by marketing to the Thai Domestic market and to other ASEAN markets.

2. New Candidate Plant Sites

After the Previous Study, the Government of Thailand stated its intention to alter the plant site from Laem Chabang to one of the two candidate sites, i.e. Ban Nong Yai or Ban Mab Chalood.

II. Objectives of the Additional Study

The objectives of the Additional Study are to review, update and revise, the Previous Study for the Project in view of change of plant site from Laem Chabang to one of the two new candidate sites, i.e. Ban Nong Yai or Ban Mab Chalood and to reevaluate the technical and economic feasibility and financial viability of the Project.

III. Scope of Works for the Additional Study

1. Scope of the Study to be Excluded from the Additional Study

1) Market aspects of the Project

In the Previous Study report, the demand forecasts were made and concluded the size of the markets for product from the Project (i.e. markets for Soda Ash, Rock Salt and Ammonium Chloride) were estimated. Therefore because site relocation cannot cause the change of demand for the products, the results of the Previous Study report will be followed without changes.

2) Process evaluation for the Soda Ash Plant

In the Previous Study report, processes are evaluated technoeconomically, enabling the conclusion that the optimized scheme is to employ the Full AC Co-production Process with the production capacity of 400,000 t/y. Site relocation cannot cause the change of this conclusion.

3) Rock Salt Mine Part of the Project

So far as Rock Salt Mine at Bamnet Narong is concerned, no changes are anticipated by the relocation of the plant site. However, transportation of rock salt is to be reassessed especially beyond the projected railway of Chachengsao – Sattahip Line.

2. Scope of the Study for the Additional Study

1) General

The additional evaluation study can be divided into following four broad segments.

- i. Candidate plant sites study
- ii. Transportation study
- iii. Technical study for the Soda Ash Plant
- iv. Financial and economic analysis

2) Candidate plant sites study

With regards to the two candidate sites, Ban Nong Yai (Case 1) and Ban Mab Chalood (Case 2), studies shall be made in the following aspects.

- a) Geological and soil conditions of the sites
Field surveys are to be conducted.
- b) Availability and proximity of utilities
Utilities include electric power, water and natural gas, they are to be studied.
- c) A harbour including facilities is to be studied from the view point of transportation of equipment and materials in the construction stage and products (i.e., soda ash, rock salt and ammonium chloride) in the operation stage.
The projected plan of the Sattahip Deep Sea Port shall be studied.
- d) Availability of related infrastructures

3) Transportation study

- a) Transportation plan of rock salt and products by railway
- b) Requirements of improvement, modification and extension of railway in addition to the existing as well as planned railway systems.
- c) Conceptual design of required facilities such as sidings and lorries

d) Capital cost requirements for the facilities excluding Thai government's contribution to the Project.

e) Estimated of transportation cost

4) Technical study for the Soda Ash Project

a) Availability and proximity to raw material ammonia and carbon dioxide

The fertilizer project being planned by the Thai Government shall be carefully examined to ascertain the possibility of supply to the Project in addition to the case study for ammonia by import and carbon dioxide from PTT.

b) Confirmation of the Scope of the Project

c) Conceptual design of the facilities

Among various facilities in the Scope of the Project, the off-site facilities shall be re-designed in view of relocation of the plant site.

The off-sites cover:

- i. Rock salt handling facilities both for Soda Ash raw material and for export
- ii. Raw materials (Ammonia and Carbon Dioxide) handling facilities
- iii. Products (Soda Ash and Ammonium Chloride) handling facilities
- iv. Utilities (Natural Gas, Electric Power) handling facilities

As for i, ii, iii and iv. above, the conceptual design shall be carried out through optimization of various alternatives considered, because the candidate sites are rather remote from the Sattabip Deep Sea Port.

d) Estimate of investment cost requirements

Other than the off-site facilities discussed in c) above, the investment cost is already estimated in the Previous Study report on the basis of prevailing price in the beginning of 1980. Therefore, the investment cost for the off-

site facilities shall be firstly estimated on the basis of beginning 1980 price and then all the investment cost will be escalated from the beginning of 1980 to the middle of 1981 by the actual escalation factor. The investment cost in the middle of 1981 price will be escalated to the project completion date by the assumed escalation rate.

5) Financial and economic analysis

a) Estimate of capital cost requirement

b) Production cost estimate

Cost factors such as raw materials and utilities prices and labour cost shall be reassessed in the prevailing prices at the middle of 1981 and the production cost shall be estimated accordingly.

c) Financial analysis

Adjustment shall be made in view of the recent Thai government policy as well as the decisions made by the share holder's meetings for the Projects.

d) Economic analysis

3. Report Compiling Plan

Although the Additional Study is an additional study to the Previous Study, the report for this study shall be compiled independently using the unchanged factors in the Previous Report. Therefore, the major contents of the Previous Report shall be transferred in fact to this new report, and detailed discussion shall be made in reference to the contents of the Previous Report.

IV. Study Schedule

1. The Government of Japan will dispatch the Additional Study team (the Team) through JICA within one (1) month after the preliminary survey.
2. The Team will prepare and submit the following reports, including all related maps and plans, in English, within the time period indicated, to MOI.

- 1) Interim Report at the end of study in Thailand (10 copies).
- 2) Draft Final Report within three (3) months after the return of the Team to Japan (20 copies).
- 3) Final Report by the end of March, 1982 on the receipt of comments on the Draft Final Report (30 copies).

V. Roles of the Government of Thailand

1. To designate a sufficient number of full-time counterparts accompanying the Team.
2. To arrange the Team's visits to relevant ministries, agencies, institutes, plants and/or places and ensure that the Team have access to all relevant informations required for the execution of the Additional Study.
3. To provide suitable office with necessary office supplies and equipment.
4. To provide requisite information and data available to the Team.
5. To exempt the Team from taxes, duties and charges on materials, equipment and personal effects brought into and brought out from Thailand for the purpose of the Additional Study.
6. To make the best efforts to ensure the security of the members of the Team during their stay in Thailand.

VI. Roles of the Government of Japan

1. To dispatch the Team to Thailand to undertake the Additional Study
2. To extend the technical cooperation to transfer the technology related to the Project for the Thai counterparts through their participation in the Additional Study.

ITINERARY

Date	Week	Activity	
		AM	PM
Nov. 19	Th.		Arr. BKK NARAI HOTEL
20	Fr.	JICA Japanese Embassy	MOI C/P
21	Sa.	Sattahip Port	Ban Mab Chalood Dok Krai Reservoir Ban Nong Yai
22	Su.	Shore Line Ban Mab Chalood	Ban Nong Yai
23	Mo.	Sattahip Port Authority	PTT Dew Point Control Unit
24	Tu.	CIPO/NESDB	Port Authority of Thailand (PAT) Royal State Railway (RSR)
25	We.	Bank of Thailand	Petroleum Authority (PTT)
26	Th.	IEAT, MOC Sino Thai Engineering	MOI
27	Fr.	Geological Surv. Div. National Fertilizer Committee	Meteorological Dpt. BKK–Pattaya
28	Sa.	Ban Mab Chalood	Sattahip Port
29	Su.	I/R Preparation	Pattaya–BKK
30	Mo.	MOI Chachengsao Railway Construction	MOI Charchengsao Railway Construction
Dec. 1	Tu.	Jap. Emb./JICA I/R Pres.	
Dec. 2	We.	LV. BKK by CX-712	

Note: C/P = Counterpart Team
I/R = Interim Report

OFFICES VISITED AND OFFICERS MET

1. Thai Counterpart Team

Mr. Sivavong Changkasiri (Team Leader) Deputy Under-Secretary of State Ministry
of Industry

Mr. Songkram Thamagasorn Director
Office of National Committee for UNIDO
Office of the Under-Secretary of State
Ministry of Industry

Mr. Sukon Kuansuwan Assistant Director
– ditto –

Ms. Achariya Sutinont Foreign Affairs Officer
– ditto –

Ms. Siriporn Wacharasemakul – ditto –

2. Sattahip Commercial Port

Commander Kam Tantivejakul Chief of Central Division

3. PTT Dew Point Control Unit

Mr. Ratanachalee K. Chalee Mechanical Engineer

4. Center for Integrated Plan of Operation/NESDB

Dr. Savit Bhotiwihok Director CIPO

Mr. Somchet Taeracoop Officer CIPO

Ms. Ratana Suthapong – ditto –

5. Port Authority of Thailand

L. Com. Monthien Ruenwongsa Chief, Technical Office

6. Royal State Railway of Thailand

Mr. Siri Pipithsombat	Superintendent Engineer, Construction Div.
Mr. Prasith Singhapundu	Marketing Manager
Mr. Umphon Liemrug	Chief, Freight Marketing Div.
Mr. Boonpho Bavaratat	Chief, Agricultural Marketing Div.

7. Ministry of Communication

Ms. Sachee Sirison	Inspector General Office of the Under-Secretary of State
Ms. Krishnee Varanusupukul	Transport Technology Officer

8. Bank of Thailand

Dr. Kanitta M. Meesook

9. Petroleum Authority of Thailand

Mr. Pratin Pathanoporn	Deputy Governor
Mr. Adul Leelapatranurak	Director, Project Analysis Div.
Dr. Siri Chirapongpun	Director, System Planning & Analysis Div.

10. Industrial Estate Authority of Thailand

Mr. Wanchak Voradilok	Governor
Mr. Pratecb Chuntaketta	Director, Technical Dpt.

11. National Committee on Fertilizer Industry Development

Mr. Trakarn Chairat	Director
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APPENDIX— II
PROCESS DESCRIPTION OF
SODA ASH PLANT

APPENDIX-II PROCESS DESCRIPTION OF SODA ASH PLANT

The following description is not of any particular process but is intended only to give a typical example of the Full AC Process (see Figure V-5).

The Full AC Process can be divided into following sections:

1. Crude salt purification
2. Ammonium chloride crystallization
3. Carbonation
4. Calcination and densification
5. Ammonium chloride drying
6. Ammonia recovery

The general features of each section are described below.

(1) Crude salt purification section

Crude salt – rock salt in this Project – contains a higher level of sulfates than crude salt generally used, and because presence of a high level of sulfates could result in a lowering of soda ash quality, sulfates are removed as the first step.

Rock salt which has been received from the mine is conveyed to the Crusher from storage. Crushed salt is fed to the Slurry Tank, where sulfates in the rock salt are dissolved by the saturated salt solution. Then slurry is fed to a Centrifuge, where purified salt and sulfates-containing salt solution are separated.

The purified salt is then fed to the Ammonium Chloride Crystallizer. The separated salt solution is then clarified through reaction with quicklime and carbon dioxide gas in a Brine Tank. Clarified salt solution is recycled to a Slurry Tank. Deposited slurry is filtered through a Filter Press, and the filtrate is recycled to the Brine Tank and filter cake is removed from the process to the Waste Treatment System.

(2) Ammonium chloride crystallization section

Purified salt in the above section is fed to the Salt Slurry Tank, where it is mixed with the liquid from the first Ammonia Absorber and the mother liquor from Ammonium Chloride Separator. This mixture is fed to the First Ammonium Chloride Crystallizer, Second Ammonium Chloride Crystallizer, and then to the AC Thickener.

In the First and Second AC Crystallizer, ammonium chloride (AC) is cooled using the latent heat of evaporation of liquid ammonia. In due course of this cooling process, AC is crystallized to form a slurry. The slurry with suspended AC crystal is sent to the AC Thickener, where AC crystal is settled. Most of the vaporized ammonia in AC Crystallizers is sent to Ammonia Absorbers, and the balance is recycled to the Ammonia Refrigerator, where ammonia is liquefied to be mixed with fresh feed ammonia to be fed to AC Crystallizers.

Settled AC crystal in the AC Thickener is then separated by the AC Centrifuge. AC crystal is sent to the AC Drier, and the part of the mother liquor and the top liquor of AC Thickener are fed to the Salt Slurry Tank and the balance of the mother liquor is fed to the Second Ammonia Absorber. The solution from the Second Ammonia Absorber is sent to the Carbonation Section.

(3) Carbonation section

The solution from the Second Ammonia Absorber is fed to a Reacting Tank, where the solution is reacted with quicklime. Reacted solution is then sent to the Ammoniated Brine Thickener, where the impurities from rock salt are settled. Top solution of Ammoniated Brine Thickener is then reacted with carbon dioxide gas in the cleaning Tower and then in the Making Tower. Unreacted off-gas from these towers is scrubbed with treated water in the Carbonator Scrubber in order to recover carbon dioxide.

The solution from the Making Tower is fed to a centrifuge (Sodium Bicarbonate Separator) to separate crude sodium bicarbonate in crystal form. The major part of mother liquor from Bicarbonate Separator is sent to the AC Crystallization Section and the residual mother liquor is sent to the Ammonia Recovery Tower.

(4) Calcination and Densification Section

Crude sodium bicarbonate from the carbonation section contains moisture and ammonium bicarbonate. In order to achieve a higher yield of ammonia and carbon dioxide and to avoid scaling in the Calciner, crude sodium bicarbonate is mixed with recycled soda ash be-

fore it is fed to the Calciner. In the Calciner, sodium bicarbonate is decomposed by indirect heat from steam to form light ash. Off-gas from the Calciner is mainly carbon dioxide containing a small amount of ammonia and is washed by treated water in the Calciner Gas Washer. Washed gas is sent to the Carbonator and bottom liquid of the Calciner Gas Washer is fed to the Bicarbonate Separator as rinsing water.

Light ash from the Calciner is a dusty fine crystal form which is inconvenient for use, so it is converted into dense ash. Dense ash is mixed with water containing about 20% of sodium bicarbonate in the Monohydrate Crystallizer and then is dehydrated in a steam tube drier (Dense Ash Drier) to obtain soda ash as a final product. Gaseous effluent from the Dense Ash Drier is washed in a Drier Gas Washer, of which bottom solution is fed to the Monohydrate Crystallizer.

(5) Ammonium chloride drying section

Crude AC crystal from the AC Crystallization section is mixed with off-grades AC at the AC Mixer before these are fed to the AC Granulator. In the AC Granulator, crystal AC is prilled and then prilled AC is fed to the AC Drier, where prilled AC is dehydrated by hot air. After the AC Drier, prilled AC is screened to cut over sizes (off-grades) which are recycled to the AC Mixer.

(6) Ammonia recovery section

In the Full AC Process, impurities in the rock salt are accumulated in the recycle solution so that the solution is continuously blown down in order to remove the impurities. This blow down solution is mixed with sludge from the Ammoniated Brine Thickener in order to separate ammonia and carbon dioxide in the Ammonia Distiller, where the mixture is reacted with caustic soda under indirect heat of steam.

Separated ammonia from the Ammonia Distiller is then absorbed by recycling mother liquor from the Sodium Bicarbonate Separator in the Ammonia Recovery Tower. Top gas from the Ammonia Recovery Tower, containing mainly carbon dioxide, is fed to the Distiller Scrubber, where the gas is washed by treated water in order to recycle carbon dioxide gas to Carbonator.

Bottom solution of Ammonia Distiller is fed to the Filter Press, from which filter cake is disposed as a process waste and filtrated is sent back to the process.

APPENDIX—III
FINANCIAL PROJECTIONS

FINANCIAL PROJECTIONS

(1) ROCK SALT MINE

ASEAN KS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 - HGCK SALT MINE: BASE CASE (180000T/Y) - (US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION AND SALES											
CAPACITY	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	1260000.	1440000.	1620000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
INCREASE IN INVENTORIES	210000.	30000.	30000.	30000.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	1050000.	1410000.	1590000.	1770000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
SALES REVENUE	11991.	16102.	18158.	20213.	20556.	20556.	20556.	20556.	20556.	20556.	20556.
COST OF SALES	8637.	10959.	11798.	12634.	12832.	12817.	12801.	12785.	12769.	12753.	12737.
VARIABLE COST	5907.	6751.	7595.	8439.	8439.	8439.	8439.	8439.	8439.	8439.	8439.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.
OTHER FIXED COST	1077.	1081.	1045.	1029.	1013.	997.	981.	965.	949.	933.	917.
(INC) IN PRODUCT INVENTORIES	-1727.	-233.	-223.	-214.	0.	0.	0.	0.	0.	0.	0.
GRUSS PROFIT OR (LOSS) ON SALES	3354.	5143.	6360.	7579.	7724.	7739.	7755.	7771.	7787.	7803.	7819.
LESS: SALES EXPENSES	480.	644.	720.	805.	822.	822.	822.	822.	822.	822.	822.
OPERATING PROFIT OR (LOSS)	2874.	4499.	5634.	6771.	6901.	6917.	6933.	6949.	6965.	6981.	6997.
LESS: INTEREST											
ON LONG TERM DEBT	1871.	1746.	1621.	1497.	1372.	1247.	1122.	998.	873.	748.	624.
ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	1003.	2753.	4012.	5274.	5529.	5670.	5811.	5951.	6092.	6233.	6373.
LESS: INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	2437.	2493.	2549.
NET PROFIT OR (LOSS) AFTER TAX	1003.	2753.	4012.	5274.	5529.	5670.	5811.	5951.	3655.	3740.	3824.

ASEAN RS/SA PROJECT IN THAILAND)
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 - ROCK SALT MINE: BASE CASE (1800000/Y) - (US\$ 1000)

	1986	1997	1998	1995
PRODUCTION AND SALES				
CAPACITY UTILIZATION	1800000.	1800000.	1800000.	1800000.
PRDUCTION	1.000	1.000	1.000	1.000
INCREASE IN INVENTORIES	0.	0.	0.	0.
SALES VOLUME	1800000.	1800000.	1800000.	1800000.
SALES REVENUE	20556.	20556.	20556.	20556.
COST OF SALES	12721.	12705.	12689.	12673.
VARIABLE CCST	8439.	8439.	8439.	8435.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.
OTHER FIXEC COST	901.	885.	869.	853.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	7835.	7851.	7867.	7883.
LESS. SALES EXPENSES	822.	822.	822.	822.
OPERATING PROFIT OR (LOSS)	7013.	7029.	7045.	7061.
LESS. INTEREST				
ON LONG TERM DEBT	499.	374.	249.	125.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	6514.	6655.	6796.	6936.
LESS. INCOME TAX	2606.	2662.	2718.	2774.
NET PROFIT OR (LOSS) AFTER TAX	3908.	3993.	4077.	4162.

ASEAN RS/SA PROJECT IN THAILAND
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
 - ROCK SALT MINE: BASE CASE (180000T/Y) - (US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS	27260.	14966.	11225.	6747.	7949.	9084.	10221.	10282.	10298.	10314.	10330.
CASH GENERATED FROM OPERATION	0.	0.	0.	6255.	7879.	9014.	10151.	10282.	10298.	10314.	10330.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	2874.	4499.	5634.	6771.	6901.	6917.	6933.	6949.
DEPRECIATION & AMORTIZATION	0.	0.	0.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.
FINANCIAL RESOURCES	27260.	14966.	11225.	0.	0.	0.	0.	0.	0.	0.	0.
SHARE CAPITAL	16035.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	11225.	14966.	11225.	0.	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.	452.	70.	70.	70.	0.	0.	0.	0.
USES OF FUNDS	16483.	20283.	15549.	7591.	5036.	4643.	4510.	3909.	3742.	3617.	3492.
INVESTMENT IN FIXED ASSET	16483.	20283.	15212.	0.	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	1271.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	14370.	19160.	14370.	0.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	842.	1122.	842.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	0.	0.	337.	3226.	795.	528.	519.	43.	0.	0.	0.
OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCR(DECR) ACCY RECEIVABLE	0.	0.	0.	1499.	514.	257.	257.	43.	0.	0.	0.
INCR(DECR) IN INVENTORIES	0.	0.	0.	1727.	233.	223.	214.	0.	0.	0.	0.
RECEIVABLES	0.	0.	337.	0.	48.	48.	48.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	4365.	4240.	4116.	3991.	3866.	3742.	3617.	3492.
DEBT SERVICES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	2494.	2494.	2494.	2494.	2494.	2494.	2494.	2494.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	1871.	1746.	1621.	1497.	1372.	1247.	1122.	998.
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)	10777.	-5317.	-4324.	-845.	2914.	4441.	5711.	6373.	6556.	6697.	6838.
BEGINNING CASH BALANCE	0.	10777.	5460.	1136.	291.	3205.	7646.	13357.	19730.	26286.	32983.
ENDING CASH BALANCE	10777.	5460.	1136.	291.	3205.	7646.	13357.	19730.	26286.	32983.	39820.

ASEAN RS/SA PROJECT IN THAILAND
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
 - RCKK SALT MINES BASE CASE (1800000TY) - (US\$ 1000)

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS	10346.	10362.	10378.	10394.	10409.	10425.	10441.
CASH GENERATED FROM OPERATION	10346.	10362.	10378.	10394.	10409.	10425.	10441.
PROFIT BEFORE TAX, INTEREST	6965.	6981.	6997.	7013.	7029.	7045.	7061.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.	3380.	3380.	3380.
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	3367.	5680.	5611.	5543.	5474.	5406.	5337.
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 CONSTRUCTA	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	0.	0.	0.	0.	0.	0.	0.
OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.
INCR(DECR) ACC T RECEIVABLE	0.	0.	0.	0.	0.	0.	0.
INCR(DECR) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	3367.	3243.	3118.	2993.	2869.	2744.	2619.
REPAYMENT OF LONG TERM DEBT	2494.	2494.	2494.	2494.	2494.	2494.	2494.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	873.	748.	624.	499.	374.	249.	125.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	2437.	2493.	2549.	2606.	2662.	2718.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	6978.	4682.	4766.	4851.	4935.	5020.	5104.
BEGINNING CASH BALANCE	39820.	46798.	51480.	56247.	61098.	66033.	71053.
ENDING CASH BALANCE	46798.	51480.	56247.	61098.	66033.	71053.	76157.

ASEAN RS/SA PROJECT IN THAILAND
 BALANCE SHEET (FOR YEARS ENDING JUNE 30)
 - ROCK SALT MINE: BASE CASE (1800000T/Y) - (US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS											
27260.	42226.	53451.	52452.	52781.	54369.	57219.	60254.	63429.	66746.	70203.	
CURRENT ASSETS	10777.	5460.	1473.	3855.	7564.	12532.	18762.	25178.	31734.	38431.	45268.
CASH	10777.	5460.	1136.	291.	3205.	7646.	13357.	19730.	26286.	32983.	39820.
ACCOUNTS RECEIVABLE	0.	0.	0.	1455.	2013.	2270.	2527.	2569.	2569.	2569.	2569.
INVENTORIES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	1727.	1961.	2183.	2397.	2397.	2397.	2397.	2397.
MATERIALS	0.	0.	337.	337.	385.	433.	481.	481.	481.	481.	481.
NET FIXED ASSETS	16483.	36766.	51978.	48598.	45217.	41837.	38456.	35076.	31695.	28315.	24934.
INVESTMENT	16483.	36766.	51978.	51978.	51978.	51978.	51978.	51978.	51978.	51978.	51978.
LAND & SITE IMPROVEMENT	1271.	1271.	1271.	1271.	1271.	1271.	1271.	1271.	1271.	1271.	1271.
CONSTRUCTED FACILITIES	14370.	33531.	47901.	47901.	47901.	47901.	47901.	47901.	47901.	47901.	47901.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	842.	1964.	2806.	2806.	2806.	2806.	2806.	2806.	2806.	2806.	2806.
LESS DEPRECIATION & AMORTIZTN	0.	0.	0.	3380.	6761.	10141.	13522.	16902.	20283.	23663.	27044.
LIABILITIES	11225.	26191.	37416.	35413.	32989.	30565.	28141.	25647.	23152.	20658.	18164.
CURRENT LIABILITIES	0.	0.	2494.	2986.	3057.	3127.	3197.	3197.	3197.	3197.	3197.
ACCOUNTS PAYABLE	0.	0.	0.	492.	562.	633.	703.	703.	703.	703.	703.
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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	2494.	2494.	2494.	2494.	2494.	2494.	2494.	2494.	2494.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	11225.	26191.	34921.	32427.	29933.	27438.	24944.	22449.	19955.	17461.	14966.
LONG TERM DEBT BALANCE	11225.	26191.	34921.	32427.	29933.	27438.	24944.	22449.	19955.	17461.	14966.
STOCK HOLDERS EQUITY	16035.	16035.	16035.	17035.	19791.	23804.	29077.	34607.	40277.	46088.	52039.
SHARE CAPITAL	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.
RETAINED EARNINGS	0.	0.	0.	1003.	3756.	7768.	13042.	18572.	24242.	30052.	36004.

ASEAN RS/SA PROJECT IN THAILAND
 BALANCE SHEET (FOR YEARS ENDING JUNE 30)
 - ROCK SALT MINE: BASE CASE (180000T/Y) - (US\$ 1000)

	1993	1994	1995	1996	1997	1998	1999
ASSETS							
CURRENT ASSETS	52247.	56929.	61695.	66546.	71481.	76501.	81605.
CASH	46798.	51480.	56247.	61098.	66033.	71053.	76157.
ACCOUNTS RECEIVABLE	2569.	2569.	2569.	2569.	2569.	2569.	2569.
INVENTORIES	2397.	2397.	2397.	2397.	2397.	2397.	2397.
PRODUCTS	481.	481.	481.	481.	481.	481.	481.
MATERIALS							
NET FIXED ASSETS	21554.	18173.	14793.	11412.	8032.	4651.	1271.
INVESTMENT	51978.	51978.	51978.	51978.	51978.	51978.	51978.
LAND & SITE IMPROVEMENT	1271.	1271.	1271.	1271.	1271.	1271.	1271.
CONSTRUCTED FACILITIES	47901.	47901.	47901.	47901.	47901.	47901.	47901.
PRE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	2806.	2806.	2806.	2806.	2806.	2806.	2806.
LESS-DEPRECIATION & AMORTIZTN	30424.	33805.	37185.	40566.	43946.	47327.	50707.
LIABILITIES	18106.	15668.	13230.	10792.	8354.	5916.	3477.
CURRENT LIABILITIES	5634.	5690.	5747.	5803.	5859.	5916.	3477.
ACCOUNTS PAYABLE	703.	703.	703.	703.	703.	703.	703.
INCOME TAX PAYABLE	2437.	2493.	2549.	2606.	2662.	2718.	2774.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT	2494.	2494.	2494.	2494.	2494.	2494.	2494.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT							
FIXED LIABILITIES	12472.	9978.	7483.	4989.	2494.	-0.	-0.
LONG TERM DEBT BALANCE	12472.	9978.	7483.	4989.	2494.	-0.	-0.
STOCK HOLDERS EQUITY	55694.	59434.	63258.	67167.	71159.	75237.	79398.
SHARE CAPITAL	16035.	16035.	16035.	16035.	16035.	16035.	16035.
RETAINED EARNINGS	39659.	43399.	47223.	51131.	55124.	59201.	63363.

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 - RECK SALT MINE: BASE CASE (1800000T/Y) -
 (US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION (S/A PLANT)	1260000.	1440000.	1620000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
DIRECT LABOUR	1359.	1598.	1798.	1998.	1998.	1998.	1998.	1998.	1998.	1998.	1998.
MATERIALS	4045.	4622.	5200.	5778.	5778.	5778.	5778.	5778.	5778.	5778.	5778.
POWER	464.	530.	597.	663.	663.	663.	663.	663.	663.	663.	663.
DIRECT OP. COST	5907.	6751.	7595.	8439.	8439.	8439.	8439.	8439.	8439.	8439.	8439.
VARIABLE CCST	5907.	6751.	7595.	8439.	8439.	8439.	8439.	8439.	8439.	8439.	8439.
DEPRECIATION	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.
AMORTIZATION (INTEREST DUF.)	187.	187.	187.	187.	187.	187.	187.	187.	187.	187.	187.
AMORTIZATION	187.	187.	187.	187.	187.	187.	187.	187.	187.	187.	187.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.
LABOUR CCST	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.
MATERIALS	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.
TAX & INSURANCE	260.	244.	228.	212.	196.	180.	164.	148.	132.	116.	100.
DIRECT FIXED CCST	1077.	1061.	1045.	1029.	1013.	997.	981.	965.	949.	933.	917.
EX-FACTORY PRODUCTION CCST	10365.	11193.	12021.	12848.	12832.	12817.	12801.	12785.	12769.	12753.	12737.
UNIT DIRECT OPERATING COST	0.0082	0.0078	0.0074	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071	0.0071
ROYALTY	480.	644.	726.	809.	822.	822.	822.	822.	822.	822.	822.
INTEREST ON LONG-TERM DEBT	1871.	1746.	1621.	1497.	1372.	1247.	1122.	998.	873.	748.	624.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	12715.	13583.	14368.	15154.	15027.	14886.	14745.	14605.	14464.	14323.	14183.
UNIT PRODUCTION COST	0.0101	0.0094	0.0089	0.0084	0.0083	0.0083	0.0082	0.0081	0.0080	0.0080	0.0079

ASEAN KS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 - ROCK SALT MINE: BASE CASE (1800000T/Y) -
 (US\$ 1000)

	1996	1997	1998	1999
PRODUCTION (S/A PLANT)	1800000.	1800000.	1800000.	1800000.
DIRECT LABOUR	1998.	1998.	1998.	1998.
MATERIALS	5778.	5778.	5778.	5778.
POWER	663.	663.	663.	663.
DIRECT OP. CCST	8439.	8439.	8439.	8439.
VARIABLE CCST	8439.	8439.	8439.	8439.
DEPRECIATION	3193.	3193.	3193.	3193.
AMORTIZATION(INTEREST DUF.)	187.	187.	187.	187.
AMORTIZATION	187.	187.	187.	187.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.
LABOUR CCST	482.	482.	482.	482.
MATERIALS	335.	335.	335.	335.
TAX & INSURANCE	64.	68.	52.	36.
DIRECT FIXED CCST	901.	885.	869.	853.
EX-FACTORY PRODUCTION CCST	12721.	12705.	12689.	12673.
UNIT DIRECT OPERATING CCST	0.0071	0.0071	0.0070	0.0070
ROYALTY	822.	822.	822.	822.
INTEREST LN LONG-TERM DEBT	459.	374.	249.	125.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	14042.	13901.	13760.	13620.
UNIT PRODUCTION COST	0.0078	0.0077	0.0076	0.0076

ASEAN RS/SA PROJECT IN THAILAND
 IRR CALCULATION ON TOTAL INVESTMENT (US\$ 1000)
 - ROCK SALT MINE: BASE CASE (1800000T/Y) -

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	(BEFORE TAX)		(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
					RETURN BEFORE TAX	PRESENT VALUE INVEST.				PRESENT VALUE INVEST.	RETURN
1982	15641.	0.	0.	0.	0.	15641.	0.	0.	1.0000	15641.	0.
1983	15160.	0.	0.	0.	0.	16831.	0.	0.	0.8873	17001.	0.
1984	15843.	0.	0.	0.	0.	12226.	0.	0.	0.7873	12474.	0.
1985	0.	1003.	3380.	1871.	6255.	0.	0.	6255.	0.6986	0.	4365.
1986	0.	2753.	3380.	1746.	7879.	0.	0.	7879.	0.6199	0.	4884.
1987	0.	4012.	3380.	1621.	9014.	0.	0.	9014.	0.5500	0.	4958.
1988	0.	5274.	3380.	1457.	10151.	0.	0.	10151.	0.4880	0.	4954.
1989	0.	5529.	3380.	1372.	10282.	0.	0.	10282.	0.4330	0.	4452.
1990	0.	5670.	3380.	1247.	10298.	0.	0.	10298.	0.3842	0.	3957.
1991	0.	5811.	3380.	1122.	10314.	0.	0.	10314.	0.3409	0.	3516.
1992	0.	5951.	3380.	998.	10330.	0.	0.	10330.	0.3025	0.	3125.
1993	0.	6092.	3380.	873.	10346.	0.	2437.	7909.	0.2684	0.	2123.
1994	0.	6233.	3380.	748.	10362.	0.	2493.	7868.	0.2382	0.	1874.
1995	0.	6373.	3380.	624.	10378.	0.	2549.	7828.	0.2113	0.	1654.
1996	0.	6514.	3380.	499.	10394.	0.	2606.	7788.	0.1875	0.	1460.
1997	0.	6655.	3380.	374.	10409.	0.	2662.	7748.	0.1664	0.	1289.
1998	0.	6756.	3380.	249.	10425.	0.	2718.	7707.	0.1476	0.	1138.
1999	-2744.	6936.	3380.	125.	10441.	-303.	2774.	7667.	0.1310	-359.	1004.
TOTAL	47901.			147276.		44395.		129036.		44756.	44756.

**** INTERNAL RATE OF RETURN ***** 13.84 PER CENT (BEFORE TAX) 12.70 PER CENT (AFTER TAX)

***** PAY-OFF PERIOD ***** (THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION) 5.96 YEAR (AFTER TAX)

CAPITAL REQUIREMENTS

SOURCE OF FUNDS

LAND & SITE IMPROVEMENT	1271.	PAID-UP SHARE CAPITAL	16035.
PLANT DIRECTS (HARD)	30927.	LONG TERM DEBT	37416.
FREIGHT & INSURANCE	1415.	SHORT TERM DEBT	0.
SERVICES & MAINT	12116.	FINANCIAL RESOURCES	53451.
RAILWAY SPUR	3443.		
CONSTRUCTED FACILITIES	47901.		
PRE-INVEST AND STAT-UP EXP	0.		
INTEREST DURING CONSTRUCTION	2806.		
TOTAL FIXED CAPITAL	51978.		
INITIAL WORKING CAPITAL	1473.		
TOTAL CAPITAL COST	53451.		

ASEAN RS/JSA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 - ROCK SALT MINE: BASE CASE (1800000T/Y) - (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- INVESTMENT (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	8.4	5.9	1.9	6.3	1.29	0.60	1.43	66.7/34.	55.4	11.3	47.6
1986	17.1	13.9	5.1	17.2	2.47	1.71	1.86	60.7/40.	54.7	9.0	46.9
1987	22.1	16.9	7.5	25.0	4.01	3.17	2.19	54.7/46.	53.5	8.5	45.6
1988	26.1	18.1	9.9	32.9	5.87	4.97	2.54	46.7/54.	52.2	8.1	44.4
1989	26.5	16.0	10.3	34.5	7.87	6.97	2.66	39.7/61.	51.0	7.9	43.2
1990	27.6	14.1	10.6	35.4	9.93	9.02	2.75	33.7/67.	49.8	7.8	42.0
1991	28.3	12.6	10.9	36.2	12.02	11.12	2.85	27.7/73.	48.6	7.7	40.7
1992	29.0	11.4	11.1	37.1	14.16	13.26	2.96	22.7/78.	47.3	7.6	39.5
1993	17.8	6.6	11.4	22.8	9.27	8.76	2.35	18.7/82.	46.1	7.5	38.2
1994	18.2	6.3	11.7	23.3	10.00	9.50	2.43	14.7/86.	44.8	7.5	37.0
1995	18.6	6.0	11.9	23.8	10.74	10.23	2.51	11.7/89.	43.6	7.4	35.7
1996	19.0	5.8	12.2	24.4	11.47	10.97	2.60	7.7/93.	42.3	7.3	34.5
1997	19.4	5.6	12.5	24.9	12.20	11.71	2.70	3.7/97.	41.1	7.2	33.2
1998	19.8	5.4	12.7	25.4	13.93	12.45	2.81	-0.7/100.	39.8	7.2	32.0
1999	20.2	5.2	13.0	26.0	23.47	22.64	2.93	-0.7/100.	38.6	7.1	30.7
AVERAGE1	21.2	10.0	10.2	26.3	9.85	9.14	2.50	27.7/73.	47.2	7.9	39.4
AVERAGE2	21.7	8.6	10.2	26.3	10.28	9.62	2.46	24.7/76.			

(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.

FINANCIAL PROJECTIONS

(2) SODA ASH

*** ASEAN RS/SA PROJECT IN THAILAND ***
 IRR CALCULATION ON TOTAL INVESTMENT
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

CASE BMCI

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	(BEFORE TAX)			(AFTER TAX)			
					RETURN BEFORE TAX	DISCOUNT FACTOR	PRESENT VALUE INVEST.	RETURN AFTER TAX	DISCOUNT FACTOR	PRESENT VALUE INVEST.	
1982	90634.	0.	0.	0.	0.0000	90634.	0.	0.	1.0000	90634.	0.
1983	113014.	0.	0.	0.	0.9183	104332.	0.	0.	0.9265	105265.	0.
1984	121471.	0.	0.	0.	0.8493	102435.	0.	0.	0.8584	104275.	0.
1985	0.	-6442.	20851.	12032.	0.7144	0.	20476.	0.	0.7953	0.	21030.
1986	0.	859.	20851.	11230.	0.7111	0.	23446.	0.	0.7369	0.	24296.
1987	0.	7977.	20851.	10428.	0.6330	0.	25635.	0.	0.6827	0.	26802.
1988	0.	15070.	20851.	9626.	0.5937	0.	27313.	0.	0.6326	0.	28812.
1989	0.	16352.	20851.	8823.	0.5507	0.	25346.	0.	0.5861	0.	26976.
1990	0.	17415.	20851.	8021.	0.5057	0.	23408.	0.	0.5430	0.	25135.
1991	0.	18453.	20851.	7219.	0.4644	0.	21623.	0.	0.5031	0.	23427.
1992	0.	19553.	20851.	6417.	0.4264	0.	19967.	0.	0.4661	0.	21826.
1993	0.	20618.	20851.	5615.	0.3916	0.	18438.	8247.	0.4319	0.	16773.
1994	0.	21683.	20851.	4813.	0.3566	0.	17027.	8673.	0.4002	0.	15475.
1995	0.	22748.	20851.	4011.	0.3302	0.	15722.	9099.	0.3707	0.	14278.
1996	0.	23805.	20851.	3209.	0.3033	0.	14516.	9523.	0.3435	0.	13172.
1997	0.	24873.	20851.	2406.	0.2785	0.	13403.	9949.	0.3183	0.	12152.
1998	0.	25938.	20851.	1604.	0.2557	0.	12376.	10375.	0.2949	0.	11211.
1999	-30998.	26999.	20851.	802.	0.2348	-7279.	11425.	10800.	0.2732	-8469.	10342.
TOTAL	254722.			665000.		250122.	290121.	598333.		291705.	291705.

***** INTERNAL RATE OF RETURN ***** 8.90 PER CENT (BEFORE TAX) 7.93 PER CENT (AFTER TAX)

***** PAY-CUT PERIOD ***** (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 AND SITE IMPROVEMENT	5424.
CONSTRUCTED FACILITIES	282286.
RAILWAY SPUR	1747.
CONSTRUCTED FACILITIES	284035.
PRE-INVEST AND START-UP EXP	10687.
INTEREST DURING CONSTRUCTION	18048.
TOTAL FIXED CAPITAL	318194.
INITIAL WORKING CAPITAL	25574.
TOTAL CAPITAL COST	343768.

PAID-UP SHARE CAPITAL	103130.
LONG TERM DEBT	240638.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	343768.

CASE BMC1

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PROFITABILITY AND FINANCIAL INDICATORS
 - BASE CASE (SODA ASH PLANT) -
 (US\$ 1000)

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PLT)	(2) AFT TAX PROFIT -TC- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TC- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TC- 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	6.9	6.7	1.9	0.2	1.38	0.76	0.94	68./ 32.	23.1	831.7	20.9
1986	0.8	0.5	0.3	0.9	1.63	0.94	1.21	66./ 34.	19.2	821.0	17.3
1987	6.1	7.6	2.3	7.7	2.19	1.44	1.48	63./ 37.	17.9	808.8	16.1
1988	10.4	12.5	4.4	14.6	3.02	2.22	1.77	57./ 43.	16.8	797.6	15.2
1989	11.2	11.9	4.8	15.9	3.94	3.14	1.85	51./ 49.	17.9	731.2	16.1
1990	11.9	11.3	5.1	16.9	4.91	4.11	1.92	45./ 55.	19.0	688.2	17.1
1991	12.6	10.7	5.4	17.9	5.93	5.13	2.00	39./ 61.	20.0	648.6	17.9
1992	13.3	10.2	5.7	19.0	6.95	6.19	2.08	33./ 67.	21.0	612.9	18.7
1993	8.4	6.0	6.0	12.0	5.96	5.37	1.79	28./ 72.	21.9	580.4	19.5
1994	8.9	6.0	6.3	12.6	6.45	5.88	1.85	23./ 77.	22.8	550.8	20.2
1995	9.3	5.5	6.6	13.2	6.96	6.39	1.92	17./ 83.	23.8	523.7	21.0
1996	9.7	5.8	6.9	13.9	7.47	6.90	1.99	12./ 88.	24.7	498.8	21.8
1997	10.1	5.7	7.2	14.5	7.98	7.43	2.07	6./ 94.	25.6	475.8	22.5
1998	10.6	5.6	7.5	15.1	8.51	7.96	2.15	-0./ 100.	26.5	454.5	23.2
1999	11.0	5.5	7.9	15.7	17.23	16.20	2.25	-0./ 100.	27.4	434.8	23.9
AVERAGE1	8.5	6.6	5.0	12.2	6.04	5.34	1.82	34./ 66.	21.8	631.0	19.4
AVERAGE2	9.0	6.7	5.0	12.2	6.11	5.44	1.78	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.

CASE BMCD
 *** ASEAN RS/SA PROJECT IN THAILAND ***
 IRR CALCULATION ON TOTAL INVESTMENT
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	RETURN BEFORE TAX	(BEFORE TAX)			(AFTER TAX)		
						DISCOUNT FACTOR	PRESENT VALUE INVEST.	RETURN	DISCOUNT FACTOR	PRESENT VALUE INVEST.	RETURN
1982	84388.	0.	0.	0.	0.	1.0000	84388.	0.	1.0000	84388.	0.
1983	105286.	0.	0.	0.	0.	0.9090	95708.	0.	0.9177	96617.	0.
1984	115225.	0.	0.	0.	0.	0.8263	95214.	0.	0.8421	97032.	0.
1985	0.	-3657.	19386.	11263.	26993.	0.7512	0.	20276.	0.7728	0.	20859.
1986	0.	3777.	19386.	10512.	33675.	0.6828	0.	22994.	0.7091	0.	23880.
1987	0.	10809.	19386.	5761.	39956.	0.6207	0.	24801.	0.6507	0.	26001.
1988	0.	17846.	19386.	5010.	46242.	0.5642	0.	26091.	0.5972	0.	27614.
1989	0.	19088.	19386.	8259.	46734.	0.5125	0.	23970.	0.5480	0.	25610.
1990	0.	20093.	19386.	7509.	46988.	0.4662	0.	21907.	0.5029	0.	23629.
1991	0.	21112.	19386.	6758.	47256.	0.4238	0.	20028.	0.4615	0.	21807.
1992	0.	22114.	19386.	6007.	47508.	0.3853	0.	18303.	0.4235	0.	20118.
1993	0.	23121.	19386.	5256.	47763.	0.3502	0.	16727.	0.3886	0.	14967.
1994	0.	24127.	19386.	4505.	48019.	0.3184	0.	15287.	0.3566	0.	13682.
1995	0.	25134.	19386.	3754.	48275.	0.2894	0.	13970.	0.3272	0.	12508.
1996	0.	26137.	19386.	3003.	48526.	0.2631	0.	12766.	0.3003	0.	11433.
1997	0.	27143.	19386.	2253.	48782.	0.2391	0.	11665.	0.2756	0.	10451.
1998	0.	28150.	19386.	1502.	49038.	0.2174	0.	10660.	0.2529	0.	9553.
1999	-30998.	29152.	19386.	751.	49290.	0.1976	-6125.	9740.	0.2321	-7192.	8732.
TOTAL	272902.			675044.			269185.	269184.		601858.	270843.

***** INTERNAL RATE OF RETURN ***** 10.01 PER CENT (BEFORE TAX) 8.97 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** (THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION)
 7.71 YEAR (BEFORE TAX) 7.71 YEAR (AFTER TAX)

CAPITAL REQUIREMENTS

SOURCE OF FUNDS

LAND AND SITE IMPROVEMENT	5424.
CONSTRUCTED FACILITIES	261468.
RAILWAY SPUR	1747.
CONSTRUCTED FACILITIES	263215.
PRE-INVEST AND START-UP EXP	10687.
INTEREST DURING CONSTRUCTION	16894.
TOTAL FIXED CAPITAL	296220.
INITIAL WORKING CAPITAL	25574.
TOTAL CAPITAL COST	321794.

PAID-UP SHARE CAPITAL	96538.
LONG TERM DEBT	225256.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	321794.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PROFITABILITY AND FINANCIAL INDICATORS
 - BASE CASE (SCDA ASH PLANT) -
 (US\$ 1000)

CASE BMCD

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BKR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- 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	3.9	-3.9	-1.1	-3.8	1.57	0.92	1.03	68./ 32.	21.7	811.4	19.7
1986	3.3	3.9	1.2	3.9	1.95	1.24	1.32	65./ 35.	18.0	802.7	16.3
1987	8.3	10.1	3.4	11.2	2.63	1.86	1.61	61./ 39.	16.8	792.3	15.2
1988	12.3	14.2	5.5	18.5	3.59	2.77	1.92	55./ 45.	15.9	782.6	14.3
1989	13.1	13.2	5.9	19.8	4.66	3.84	2.01	48./ 52.	16.9	723.6	15.2
1990	13.7	12.2	6.2	20.8	5.78	4.96	2.09	42./ 58.	17.9	675.8	16.1
1991	14.4	11.4	6.6	21.9	6.94	6.12	2.17	36./ 64.	18.8	637.1	16.9
1992	15.1	10.6	6.9	22.9	8.15	7.33	2.26	30./ 70.	19.7	602.2	17.7
1993	9.5	6.3	7.2	14.4	6.62	6.04	1.90	25./ 75.	20.6	570.5	18.4
1994	9.5	6.1	7.5	15.0	7.14	6.57	1.97	20./ 80.	21.5	541.6	19.2
1995	10.3	6.0	7.8	15.6	7.67	7.11	2.04	15./ 85.	22.4	515.2	19.9
1996	10.7	5.9	8.1	16.2	8.21	7.65	2.11	10./ 90.	23.3	490.8	20.6
1997	11.1	5.8	8.4	16.9	8.75	8.20	2.20	5./ 95.	24.1	468.4	21.3
1998	11.4	5.6	8.7	17.5	9.30	8.76	2.29	-0./ 100.	25.0	447.6	22.0
1999	11.8	5.5	9.1	18.1	17.83	16.86	2.39	-0./ 100.	25.8	428.4	22.7
AVERAGE1	10.1	7.5	6.1	15.3	6.72	6.02	1.95	32./ 68.	20.6	619.4	18.4
AVERAGE2	10.5	7.4	6.1	15.3	6.88	6.20	1.91	31./ 69.			

(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.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 IRR CALCULATION ON TOTAL INVESTMENT
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

CASE BNYI

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON DEBT	RETURN BEFORE TAX	(BEFORE TAX)		(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
						INVEST.	RETURN				INVEST.	RETURN
1982	50959.	0.	0.	0.	0.	1.0000	50959.	0.	0.	1.0000	50959.	0.
1983	112171.	0.	0.	0.	0.	0.9167	102826.	0.	0.	0.9250	103756.	0.
1984	120389.	0.	0.	0.	0.	0.8403	101165.	0.	0.	0.8556	103004.	0.
1985	0.	-5852.	20603.	11951.	26661.	0.7703	0.	20537.	26661.	0.7914	0.	21100.
1986	0.	1489.	20603.	11154.	32466.	0.7061	0.	23476.	32466.	0.7320	0.	24337.
1987	0.	8552.	20603.	10357.	35551.	0.6473	0.	25602.	35551.	0.6771	0.	26781.
1988	0.	15658.	20603.	5560.	45862.	0.5934	0.	27213.	45862.	0.6263	0.	28724.
1989	0.	16979.	20603.	8764.	46346.	0.5439	0.	25209.	46346.	0.5793	0.	26850.
1990	0.	18035.	20603.	7967.	46605.	0.4986	0.	23238.	46605.	0.5359	0.	24975.
1991	0.	15106.	20603.	7170.	46879.	0.4571	0.	21428.	46879.	0.4957	0.	23237.
1992	0.	20160.	20603.	6374.	47137.	0.4190	0.	19750.	47137.	0.4585	0.	21612.
1993	0.	21218.	20603.	5577.	47398.	0.3841	0.	18205.	47398.	0.4241	0.	16502.
1994	0.	22276.	20603.	4780.	47659.	0.3521	0.	16781.	47659.	0.3829	0.	14002.
1995	0.	23335.	20603.	3984.	47921.	0.3228	0.	15467.	47921.	0.3629	0.	12896.
1996	0.	24385.	20603.	3187.	48178.	0.2959	0.	14255.	48178.	0.3356	0.	11878.
1997	0.	25447.	20603.	2390.	48440.	0.2712	0.	13138.	48440.	0.3105	0.	10941.
1998	0.	26505.	20603.	1593.	48701.	0.2486	0.	12108.	48701.	0.2872	0.	10077.
1999	-32405.	27559.	20603.	797.	48959.	0.2275	-7385.	11158.	37535.	0.2656	-8608.	10077.
TOTAL	251115.			669543.			267565.	287565.	601251.		289112.	289112.

***** INTERNAL RATE OF RETURN ***** 5.05 PER CENT (BEFORE TAX) 8.11 PER CENT (AFTER TAX)

***** PAY-OFF PERIOD ***** 8.19 YEAR (BEFORE TAX) 8.24 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 AND SITE IMPROVEMENT	6931.
CONSTRUCTED FACILITIES	277275.
RAILWAY SPUR	3153.
CONSTRUCTED FACILITIES	280428.
PRE-INVEST AND START-UP EXP	10687.
INTEREST DURING CONSTRUCTION	17926.
TOTAL FIXED CAPITAL	515872.
INITIAL WORKING CAPITAL	25574.
TOTAL CAPITAL COST	341446.

PAID-UP SHARE CAPITAL	102434.
LONG TERM DEBT	239012.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	341446.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PROFITABILITY AND FINANCIAL INDICATORS
 - BASE CASE (SCDA ASH PLANT) -
 (US\$ 1000)

CASE BNYI

YEAR	(1) AFT TAX PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TO- S/F 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	5.3	5.1	1.7	5.8	1.41	0.78	0.96	68./ 32.	22.9	828.1	20.7
1986	1.3	1.5	0.4	1.5	1.68	0.99	1.23	66./ 34.	19.0	817.5	17.2
1987	6.5	8.1	2.5	8.4	2.26	1.51	1.50	62./ 38.	17.7	805.5	16.0
1988	10.9	12.8	4.6	15.3	3.11	2.32	1.80	57./ 43.	16.7	794.4	15.0
1989	11.0	12.2	5.0	16.6	4.06	3.27	1.88	51./ 49.	17.7	734.3	16.0
1990	12.3	11.5	5.3	17.6	5.06	4.26	1.95	45./ 55.	18.9	685.5	16.9
1991	15.1	10.8	5.6	18.7	6.10	5.30	2.03	39./ 61.	19.8	646.1	17.7
1992	13.8	10.3	5.9	19.7	7.19	6.39	2.11	33./ 67.	20.7	610.5	18.5
1993	3.7	6.1	6.2	12.4	6.07	5.49	1.81	28./ 72.	21.7	578.2	19.3
1994	9.1	6.0	6.5	13.0	6.57	5.99	1.87	22./ 78.	22.6	548.7	20.1
1995	9.5	5.5	6.8	13.7	7.08	6.51	1.94	17./ 83.	23.5	521.7	20.8
1996	9.9	5.3	7.1	14.3	7.59	7.03	2.01	11./ 89.	24.4	496.9	21.6
1997	10.4	5.7	7.5	14.9	8.11	7.56	2.09	6./ 94.	25.3	474.0	22.3
1998	10.8	5.6	7.8	15.5	8.64	8.09	2.17	-0./ 100.	26.2	452.9	23.0
1999	11.2	5.5	8.1	16.1	17.33	16.31	2.27	-0./ 100.	27.1	433.2	23.7
AVERAGE1	6.9	6.8	5.2	12.8	6.15	5.45	1.84	34./ 66.	21.6	628.5	19.3
AVERAGE2	9.4	6.9	5.2	12.8	6.24	5.57	1.80	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.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 IRR CALCULATION ON TOTAL INVESTMENT
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

CASE BNYD

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-I DEBT	RETURN BEFORE TAX	(BEFORE TAX)			RETURN AFTER TAX	(LESS) INCOME TAX	(AFTER TAX)		
						DISCOUNT FACTOR	PRESENT VALUE INVEST.	RETURN			DISCOUNT FACTOR	PRESENT VALUE INVEST.	RETURN
1982	89710.	0.	0.	0.	0.	1.0000	89710.	0.	0.	1.0000	89710.	0.	
1983	110505.	0.	0.	0.	0.	0.9149	101098.	0.	0.	0.9233	102024.	0.	
1984	115140.	0.	0.	0.	0.	0.8370	95719.	0.	0.	0.8524	101555.	0.	
1985	0.	-5335.	20310.	11797.	26771.	0.7657	0.	20500.	26771.	0.7870	0.	21069.	
1986	0.	2067.	20310.	11010.	33387.	0.7006	0.	23389.	33387.	0.7266	0.	24258.	
1987	0.	9138.	20310.	10224.	39692.	0.6409	0.	25439.	39692.	0.6708	0.	26626.	
1988	0.	16254.	20310.	5437.	46001.	0.5864	0.	26973.	46001.	0.6193	0.	28490.	
1989	0.	17526.	20310.	6651.	46487.	0.5364	0.	24937.	46487.	0.5718	0.	26582.	
1990	0.	18571.	20310.	7864.	46745.	0.4908	0.	22941.	46745.	0.5279	0.	24678.	
1991	0.	19030.	20310.	7078.	47018.	0.4490	0.	21111.	47018.	0.4874	0.	22917.	
1992	0.	20672.	20310.	6292.	47274.	0.4108	0.	19419.	47274.	0.4500	0.	21273.	
1993	0.	21715.	20310.	5505.	47534.	0.3758	0.	17863.	8688.	0.4155	0.	16139.	
1994	0.	22766.	20310.	4719.	47794.	0.3438	0.	16432.	38846.	0.3836	0.	14940.	
1995	0.	23812.	20310.	3932.	48054.	0.3145	0.	15115.	38529.	0.3541	0.	13645.	
1996	0.	24855.	20310.	3146.	48310.	0.2878	0.	13902.	38368.	0.3270	0.	12545.	
1997	0.	25901.	20310.	2359.	48570.	0.2633	0.	12787.	38210.	0.3019	0.	11534.	
1998	0.	26948.	20310.	1573.	48830.	0.2409	0.	11761.	38051.	0.2787	0.	10405.	
1999	-32405.	27990.	20310.	786.	49086.	0.2204	-7141.	10816.	37890.	0.2573	-8338.	9750.	
TOTAL	266950.				671553.		283386.	283386.	601957.		284951.	284950.	

**** INTERNAL RATE OF RETURN ***** 9.30 PER CENT (BEFORE TAX) 8.31 PER CENT (AFTER TAX)

**** PAY-OUT PERIOD ***** 8.08 YEAR (BEFORE TAX) 8.09 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

	6831.	273110.	3153.	276263.	10687.	17695.	311476.	25574.	337050.
LAND AND SITE IMPROVEMENT									
CONSTRUCTED FACILITIES									
RAILWAY SPUR									
CONSTRUCTED FACILITIES									
PRE-INVEST AND START-UP EXP									
INTEREST DURING CONSTRUCTION									
TOTAL FIXED CAPITAL									
INITIAL WORKING CAPITAL									
TOTAL CAPITAL CCST									

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	101115.
LONG TERM DEBT	235935.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	337050.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PROFITABILITY AND FINANCIAL INDICATORS
 - BASE CASE (SCCA ASH PLANT) - (US\$ 1000)

CASE 2NYD

YEAR	(1) AFT TAX PROFIT -I-C- SALES REV (PCT)	(2) AFT TAX PROFIT -I-C- S/H EQUITY (PCT)	(3) BFR TAX PKCFIT -I-C- INVESTMENT (PCT)	(4) AFT TAX PROFIT -I-C- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -I-C- S/F 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	-5.7	-5.6	-1.6	-5.3	1.44	0.81	0.97	68./ 32.	22.6	824.0	20.5
1986	1.0	2.1	0.6	2.0	1.74	1.05	1.25	66./ 34.	18.7	813.9	17.0
1987	7.0	8.6	2.7	9.1	2.35	1.60	1.53	62./ 38.	17.5	802.2	15.8
1988	11.2	13.2	4.8	16.1	3.23	2.42	1.83	56./ 44.	16.5	791.4	14.9
1989	12.0	12.4	5.2	17.3	4.20	3.40	1.91	50./ 50.	17.5	731.6	15.8
1990	12.7	11.7	5.5	18.4	5.23	4.43	1.98	44./ 56.	18.6	683.0	16.7
1991	13.4	11.0	5.8	19.4	6.30	5.50	2.06	38./ 62.	19.6	643.8	17.5
1992	14.1	10.4	6.1	20.4	7.42	6.62	2.15	32./ 68.	20.5	608.4	18.3
1993	8.5	6.1	6.4	12.9	8.20	5.62	1.83	27./ 73.	21.4	576.2	19.1
1994	9.3	6.0	6.8	13.5	6.71	6.13	1.89	22./ 78.	22.3	546.9	19.9
1995	9.7	5.9	7.1	14.1	7.22	6.65	1.96	16./ 84.	23.2	520.0	20.6
1996	10.1	5.8	7.4	14.7	7.74	7.18	2.03	11./ 89.	24.1	495.3	21.4
1997	10.5	5.7	7.7	15.4	8.26	7.71	2.11	5./ 95.	25.0	472.6	22.1
1998	11.0	5.6	8.0	16.0	8.79	8.25	2.20	-0./ 100.	25.9	451.5	22.8
1999	11.4	5.5	8.3	16.6	17.45	16.45	2.29	-0./ 100.	26.7	431.9	23.5
AVERAGE1	9.2	7.0	5.4	13.4	6.29	5.59	1.87	33./ 67.	21.4	626.2	19.1
AVERAGE2	9.7	7.0	5.4	13.4	6.35	5.72	1.82	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.

FINANCIAL PROJECTIONS

(3) ENTIRE PROJECT

ASEAN RS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 OVERALL PROJECT (US\$ 1000)

CASE BMCD

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
SALES REVENUE	101435.	126545.	154731.	157656.	159901.	160267.	160447.	160611.	160779.	160947.	161115.
COST OF SALES	91774.	108404.	116820.	125226.	126315.	126211.	126108.	126004.	125900.	125797.	125693.
VARIABLE COST	59250.	67714.	76178.	84642.	84642.	84642.	84642.	84642.	84642.	84642.	84642.
DEPRECIATION & AMORTIZATION	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.
OTHER FIXED COST	19321.	19217.	19113.	19009.	18906.	18802.	18698.	18595.	18491.	18387.	18283.
(INC) IN PRODUCT INVENTORIES	-5563.	-1294.	-1238.	-1193.	0.	0.	0.	0.	0.	0.	0.
GROSS PROFIT OR (LOSS) ON SALES	9660.	18141.	17911.	32430.	33586.	34055.	34340.	34607.	34879.	35151.	35423.
LESS: SALES EXPENSES	480.	644.	726.	809.	822.	822.	822.	822.	822.	822.	822.
OPERATING PROFIT OR (LOSS)	5180.	17497.	17185.	31621.	32764.	33233.	33518.	33785.	34057.	34329.	34601.
LESS: INTEREST											
ON LONG TERM DEBT	10507.	9806.	9106.	8405.	7705.	7005.	6304.	5604.	4903.	4203.	3502.
ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	-1326.	7690.	8079.	23215.	25059.	26229.	27214.	28182.	29154.	30126.	31098.
LESS: INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	11662.	12050.	12439.
NET PROFIT OR (LOSS) AFTER TAX	-1326.	7690.	8079.	23215.	25059.	26229.	27214.	28182.	17492.	18076.	18659.

ASEAN RS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 OVERALL PROJECT
 (US\$ 1000)

CASE BMCD

	1956	1957	1958	1959
SALES REVENUE	161279.	161447.	161615.	161779.
CCST OF SALES	125589.	125485.	125362.	125278.
VARIABLE CCST	84642.	84642.	84642.	84642.
DEPRECIATION & AMORTIZATION	22767.	22767.	22767.	22767.
OTHER FIXED COST	16180.	18076.	17972.	17869.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT CR (LOSS) ON SALES	35650.	35962.	36234.	36501.
LESS. SALES EXPENSES	822.	822.	822.	822.
OPERATING PROFIT CR (LCSS)	34868.	35140.	35412.	35679.
LESS. INTEREST				
ON LONG TERM DEBT	2802.	2101.	1401.	700.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT CR (LOSS) BEFORE TAX	32066.	33039.	34011.	34979.
LESS. INCOME TAX	12827.	13215.	13604.	13552.
NET PROFIT CR (LOSS) AFTER TAX	19240.	19823.	20406.	20987.

ASEAN RS/SA PROJECT IN THAILAND
FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30) (US\$ 1000)
OVERALL PROJECT

CASE EMCO

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS											
CASH GENERATED FROM OPERATION	112573.	150098.	112573.	36883.	40989.	40657.	55093.	55531.	56000.	56285.	56552.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	31947.	40264.	39952.	54386.	55531.	56000.	56285.	56552.
DEPRECIATION & AMORTIZATION	0.	0.	0.	9180.	17497.	17185.	31621.	32764.	33233.	33518.	33785.
FINANCIAL RESOURCES	112573.	150098.	112573.	0.	22767.	22767.	22767.	22767.	22767.	22767.	22767.
SHARE CAPITAL	53772.	45029.	33772.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	78801.	105065.	78801.	0.	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.	4536.	705.	705.	705.	0.	0.	0.	0.
USES OF FUNDS											
INVESTMENT IN FIXED ASSET	105940.	132326.	114132.	50261.	32351.	29479.	30575.	25497.	24562.	23838.	23136.
LAND AND SITE IMPROVEMENT	6655.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	93939.	124446.	93335.	0.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	10687.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTION	5910.	7880.	5910.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	0.	0.	4200.	22242.	5033.	2861.	4659.	281.	46.	23.	20.
OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE (DECR) ACCT RECEIVABLE	0.	0.	0.	12679.	3139.	1023.	2866.	281.	46.	23.	20.
INCREASE (DECR) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	5563.	1294.	1235.	1193.	0.	0.	0.	0.
MATERIALS	0.	0.	4200.	0.	600.	600.	600.	0.	0.	0.	0.
DEBT SERVICES	0.	0.	0.	28018.	27318.	26617.	25917.	25216.	24516.	23816.	23115.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	17511.	17511.	17511.	17511.	17511.	17511.	17511.	17511.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	10507.	9806.	9105.	8405.	7705.	7005.	6304.	5604.
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)	6634.	17772.	-1559.	-13378.	8618.	11178.	24517.	30034.	31438.	32446.	33417.
BEGINNING CASH BALANCE	0.	6634.	24405.	22847.	9469.	18087.	29266.	53783.	83817.	115255.	147702.
ENDING CASH BALANCE	6634.	24405.	22847.	9469.	18087.	29266.	53783.	83817.	115255.	147702.	181119.

ASEAN RS/SA PROJECT IN THAILAND
FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30) (US\$ 1000)
CASE BMCO OVERALL PROJECT

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS							
CASH GENERATED FROM OPERATION	56824.	57096.	57367.	57635.	57907.	58179.	58446.
PROFIT BEFORE TAX, INTEREST	34057.	34329.	34601.	34868.	35140.	35412.	35679.
DEPRECIATION & AMORTIZATION	22767.	22767.	22767.	22767.	22767.	22767.	22767.
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							
INVESTMENT IN FIXED ASSET	22430.	33397.	33085.	32773.	32460.	32149.	31837.
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 CONSTRUCTION	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	21.	21.	21.	20.	21.	21.	21.
OTHER THAN CASH	21.	21.	21.	20.	21.	21.	21.
INCR(DECUR) ACCT RECEIVABLE	21.	21.	21.	20.	21.	21.	21.
INCR(DECUR) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	22415.	21714.	21014.	20313.	19613.	18912.	18212.
REPAYMENT OF LONG TERM DEBT	17511.	17511.	17511.	17511.	17511.	17511.	17511.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	4903.	4203.	3502.	2802.	2101.	1401.	700.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	11662.	12050.	12439.	12827.	13215.	13604.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	34366.	23699.	24282.	24862.	25446.	26030.	26610.
BEGINNING CASH BALANCE	181119.	215507.	239206.	263488.	288350.	313797.	339827.
ENDING CASH BALANCE	215507.	239206.	263488.	288350.	313797.	339827.	366436.

ASEAN KS/SA PROJECT IN THAILAND
BALANCE SHEET (FOR YEARS ENDING JUNE 30)
OVERALL PROJECT

CASE BMCD

(US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS											
CURRENT ASSETS	6634.	24405.	27047.	35912.	49563.	63602.	92778.	123093.	154577.	187046.	220483.
CASH	6634.	24405.	22847.	9469.	18087.	29266.	53783.	83817.	115255.	147702.	181119.
ACCOUNTS RECEIVABLE	0.	0.	0.	12675.	15818.	16841.	19707.	19988.	20033.	20056.	20076.
INVENTORIES	0.	0.	0.	9563.	10857.	12095.	13248.	13268.	13288.	13288.	13288.
PRODUCTS	0.	0.	4200.	4200.	4800.	5400.	6001.	6001.	6001.	6001.	6001.
MATERIALS	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET FIXED ASSETS	105940.	236266.	348198.	325431.	302664.	279897.	257131.	234364.	211597.	188830.	166063.
INVESTMENT	105940.	236266.	348198.	348198.	348198.	348198.	348198.	348198.	348198.	348198.	348198.
LAND & SITE IMPROVEMENT	6695.	6695.	6695.	6695.	6695.	6695.	6695.	6695.	6695.	6695.	6695.
CONSTRUCTED FACILITIES	93355.	217781.	311116.	311116.	311116.	311116.	311116.	311116.	311116.	311116.	311116.
PRE-INVEST. & START-UP EXP	0.	0.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCT	5910.	13750.	19700.	19700.	19700.	19700.	19700.	19700.	19700.	19700.	19700.
LESS DEPRECIATION & AMORTIZTN	0.	0.	0.	22767.	45534.	68301.	91067.	113834.	136601.	159368.	182135.
LIABILITIES	78801.	183870.	262671.	250096.	233289.	216483.	199676.	182165.	164654.	147142.	129631.
CURRENT LIABILITIES	0.	0.	17511.	22447.	23152.	23857.	24562.	24562.	24562.	24562.	24562.
ACCOUNTS PAYABLE	0.	0.	0.	4936.	5641.	6346.	7051.	7051.	7051.	7051.	7051.
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 LEET	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	17511.	17511.	17511.	17511.	17511.	17511.	17511.	17511.	17511.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	78801.	183870.	245160.	227649.	210137.	192626.	175114.	157603.	140091.	122580.	105069.
LONG TERM DEBT BALANCE	78801.	183870.	245160.	227649.	210137.	192626.	175114.	157603.	140091.	122580.	105069.
STOCK HOLDERS EQUITY	53772.	78801.	112573.	111247.	118938.	127017.	150232.	175291.	201520.	228734.	256916.
SHARE CAPITAL	33772.	78801.	112573.	112573.	112573.	112573.	112573.	112573.	112573.	112573.	112573.
RETAINED EARNINGS	0.	0.	0.	-1326.	6364.	14443.	37659.	62718.	89947.	116160.	144342.

ASEAN RS/SA PROJECT IN THAILAND
BALANCE SHEET (FOR YEARS ENDING JUNE 30)
OVERALL PROJECT (US\$ 1000)

CASE BMCU

	1993	1994	1995	1996	1997	1998	1999
ASSETS							
CURRENT ASSETS	398189.	399142.	400676.	402794.	405495.	408779.	412642.
CASH	254893.	278613.	302916.	327795.	353266.	379317.	403947.
ACCOUNTS RECEIVABLE	215507.	239206.	263486.	288350.	313797.	339827.	366436.
INVENTORIES	20097.	20118.	20139.	20160.	20181.	20202.	20222.
PRELUDS	13288.	13288.	13288.	13288.	13288.	13288.	13288.
MATERIALS	6001.	6001.	6001.	6001.	6001.	6001.	6001.
NET FIXCD ASSETS	143296.	120529.	97762.	74956.	52229.	29462.	6695.
INVESTMENT	348198.	348198.	348198.	348198.	348198.	348198.	348198.
LAND & SILL IMPROVEMENT	6695.	6695.	6695.	6695.	6695.	6695.	6695.
CONSTRUCTED FACILITIES	311116.	311116.	311116.	311116.	311116.	311116.	311116.
PRE-INVEST. & START-UP EXP	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCTN	15700.	19700.	19700.	19700.	19700.	19700.	19700.
LESS DEPRECIATN & AMORTIZTN	204902.	227665.	250436.	273202.	295969.	318736.	341503.
LIABILITIES	125781.	106638.	89536.	72412.	55289.	38166.	21042.
CURRENT LIABILITIES	36224.	36613.	37001.	37389.	37778.	38166.	21042.
ACCOUNTS PAYABLE	7051.	7051.	7051.	7051.	7051.	7051.	7051.
INCOME TAX PAYABLE	11662.	12056.	12439.	12827.	13215.	13604.	13992.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT	17511.	17511.	17511.	17511.	17511.	17511.	17511.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
FAVOR LIABILITIES	87557.	70046.	52534.	35023.	17511.	-0.	-0.
LONG TERM DEBT BALANCE	87557.	70046.	52534.	35023.	17511.	-0.	-0.
STOCK HOLDERS EQUITY	274406.	292484.	311143.	330383.	350206.	370612.	391600.
SHARE CAPITAL	112573.	112573.	112573.	112573.	112573.	112573.	112573.
RETAINED EARNINGS	161835.	179910.	198569.	217809.	237632.	258039.	279026.

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION AND SALES PLAN
 OVERALL PROJECT

CASE BMCC

(US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CAPACITY (SUDBASH)	400000	400000	400000	400000	400000	400000	400000	400000	400000	400000	400000
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	280000	320000	360000	400000	400000	400000	400000	400000	400000	400000	400000
INCREASE IN INVENTORY	23332	3333	3333	3333	0	0	0	0	0	0	0
SALES VOLUME	256667	316666	356667	396667	400000	400000	400000	400000	400000	400000	400000
UNIT PRICE	0.2161	0.2151	0.1931	0.2128	0.2145	0.2154	0.2159	0.2163	0.2167	0.2171	0.2175
SALES REVENUE	55462	68106	68883	84397	85800	86165	86346	86510	86678	86846	87014
CAPACITY (K/S PLANT)	1300000	1800000	1800000	1800000	1800000	1800000	1800000	1800000	1800000	1800000	1800000
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	1260000	1440000	1620000	1800000	1800000	1800000	1800000	1800000	1800000	1800000	1800000
INCREASE IN INVENTORY	210000	30000	30000	30000	0	0	0	0	0	0	0
SALES VOLUME	654360	957840	1081320	1204800	1234800	1234800	1234800	1234800	1234800	1234800	1234800
UNIT PRICE	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114	0.0114
SALES REVENUE	7475	10935	12345	13759	14101	14101	14101	14101	14101	14101	14101
CAPACITY (AMVO. CHL.)	400000	400000	400000	400000	400000	400000	400000	400000	400000	400000	400000
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	280000	320000	360000	400000	400000	400000	400000	400000	400000	400000	400000
INCREASE IN INVENTORY	23332	3333	3333	3333	0	0	0	0	0	0	0
SALES VOLUME	256667	316667	356667	396667	400000	400000	400000	400000	400000	400000	400000
UNIT PRICE	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500
SALES REVENUE	38500	47500	53500	59500	60000	60000	60000	60000	60000	60000	60000
*** TOTAL SALES REVENUE ***	101435	125545	134731	157656	159401	160267	160447	160611	160779	160947	161115
*** TOTAL SALES VOLUME ***	1167634	1591173	1794654	1998134	2034800	2034800	2034800	2034800	2034800	2034800	2034800
*** AVERAGE SALES PRICE ***	0.0869	0.0795	0.0751	0.0789	0.0786	0.0788	0.0789	0.0789	0.0790	0.0791	0.0792

(US\$ 1000)

ASEAN RS/SA PROJECT IN THAILAND
PRODUCTION AND SALES PLAN
OVERALL PROJECT

CASE BPCC

1996 1997 1998 1999

CAPACITY (SODA ASH)	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	400000.	400000.	400000.	400000.
UNIT PRICE	0.2179	0.2184	0.2188	0.2192

SALES REVENUE	87178.	87346.	87514.	87678.
CAPACITY (N/S PLANT)	1800000.	1800000.	1800000.	1800000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	1800000.	1800000.	1800000.	1800000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	1234800.	1234800.	1234800.	1234800.
UNIT PRICE	0.0114	0.0114	0.0114	0.0114

SALES REVENUE	14101.	14101.	14101.	14101.
CAPACITY (AMM. CHL.)	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	400000.	400000.	400000.	400000.
UNIT PRICE	0.1500	0.1500	0.1500	0.1500

SALES REVENUE	60000.	60000.	60000.	60000.
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*** TOTAL SALES REVENUE *** 161279. 161447. 161615. 161779.
 *** TOTAL SALES VOLUME *** 2034800. 2034800. 2034800. 2034800.
 *** AVERAGE SALES PRICE *** 0.0793 0.0793 0.0794 0.0795

ASEAN FS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 OVERALL PROJECT

CASE BMCC

(US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	280000.	320000.	360000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
AMMONIA	21056.	24064.	27072.	30080.	30080.	30080.	30080.	30080.	30080.	30080.	30080.
COILN LINE	361.	413.	464.	516.	516.	516.	516.	516.	516.	516.	516.
SUVA ASH	3780.	4320.	4860.	5400.	5400.	5400.	5400.	5400.	5400.	5400.	5400.
RAN MATERIAL	45197.	28797.	32396.	35996.	35996.	35996.	35996.	35996.	35996.	35996.	35996.
UTILITIES	25808.	27210.	30611.	34012.	34012.	34012.	34012.	34012.	34012.	34012.	34012.
DIRECT UP. COST	5907.	6751.	7595.	8439.	8439.	8439.	8439.	8439.	8439.	8439.	8439.
TRANSPORTATION (K/S)	4059.	4684.	5270.	5855.	5855.	5855.	5855.	5855.	5855.	5855.	5855.
TRANSPORTATION (S/A)	238.	272.	306.	340.	340.	340.	340.	340.	340.	340.	340.
TRANSPORTATION COST	4337.	4956.	5576.	6195.	6195.	6195.	6195.	6195.	6195.	6195.	6195.
VARIABLE COST	59250.	67714.	76178.	84642.	84642.	84642.	84642.	84642.	84642.	84642.	84642.
DEPRECIATION	20741.	20741.	20741.	20741.	20741.	20741.	20741.	20741.	20741.	20741.	20741.
AMORTIZATION (PRE-INVEST)	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.
AMORTIZATION (INTEREST DUR.)	1313.	1313.	1313.	1313.	1313.	1313.	1313.	1313.	1313.	1313.	1313.
AMORTIZATION	2026.	2026.	2026.	2026.	2026.	2026.	2026.	2026.	2026.	2026.	2026.
DEPRECIATION & AMORTIZATION	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.	22767.
LABOUR (S/A)	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.
LABOUR (R/S)	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.
OVER HEAD	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.
EMPLOYMENT COST	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.
MAINTENANCE COST	9333.	9333.	9333.	9333.	9333.	9333.	9333.	9333.	9333.	9333.	9333.
TAX & INSURANCE	1589.	1485.	1382.	1278.	1174.	1071.	967.	863.	759.	656.	552.
MATERIALS	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.
DIRECT FIXED COST	15321.	19217.	19113.	19009.	18906.	18802.	18698.	18595.	18491.	18387.	18283.
EX-FACTORY PRODUCTION COST	101337.	109698.	118058.	126419.	126315.	126211.	126108.	126004.	125900.	125797.	125693.
UNIT DIRECT OPERATING COST	0.3619	0.3428	0.3279	0.3160	0.3158	0.3155	0.3153	0.3150	0.3148	0.3145	0.3142
ROYALTY	480.	644.	726.	805.	822.	822.	822.	822.	822.	822.	822.
INTEREST ON LONG-TERM DEBT	10507.	9806.	9106.	8405.	7705.	7005.	6304.	5604.	4903.	4203.	3502.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	112324.	120148.	127890.	135633.	134842.	134038.	133234.	132430.	131625.	130821.	130017.
UNIT PRODUCTION COST	0.4012	0.3755	0.3553	0.3391	0.3371	0.3351	0.3331	0.3311	0.3291	0.3271	0.3250

ASEAN FS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 OVERALL PROJECT

(US\$ 1000)

CASE: BMCC

	1996	1997	1998	1999
PRODUCTION	400000.	400000.	400000.	400000.
AMMONIA	40080.	30080.	30080.	30080.
WACK LIME	516.	516.	516.	516.
SODA ASF	5400.	5400.	5400.	5400.
RAW MATERIAL	35996.	35996.	35996.	35996.
UTILITIES	34012.	34012.	34012.	34012.
DIRECT OP. COST	8439.	8439.	8439.	8439.
TRANSPORTATION (M/S)	5855.	5855.	5855.	5855.
TRANSPORTATION (S/A)	340.	340.	340.	340.
TRANSPORTATION COST	6195.	6195.	6195.	6195.
VARIABLE COST	84642.	84642.	84642.	84642.
DEPRECIATION	20741.	20741.	20741.	20741.
AMORTIZATION(PRE-INVEST)	712.	712.	712.	712.
AMORTIZATION(INTEREST CUR.)	1313.	1313.	1313.	1313.
AMORTIZATION	2026.	2026.	2026.	2026.
DEPRECIATION & AMORTIZATION	22767.	22767.	22767.	22767.
LABOUR (S/A)	2527.	2527.	2527.	2527.
LABOUR (M/S)	482.	482.	482.	482.
OVER HEAD	5054.	5054.	5054.	5054.
EMPLOYMENT COST	8063.	8063.	8063.	8063.
MAINTENANCE COST	9333.	9333.	9333.	9333.
TAX & INSURANCE	448.	345.	241.	137.
MATERIALS	335.	335.	335.	335.
DIRECT FIXED COST	18180.	18076.	17972.	17869.
EX-FACTORY PRODUCTION COST	125589.	125485.	125382.	125278.
UNIT DIRECT OPERATING COST	0.3140	0.3137	0.3135	0.3132
ROYALTY	822.	822.	822.	822.
INTEREST ON LONG-TERM DEBT	2802.	2101.	1401.	700.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	129213.	128409.	127605.	126800.
UNIT PRODUCTION COST	0.3230	0.3210	0.3190	0.3170

ASEAN KS/SA PROJECT IN THAILAND
IRR CALCULATION ON TOTAL INVESTMENT
OVERALL PROJECT (US\$ 1000)

CASE BMCD

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-1 DEBT TAX	INTEREST RETURN BEFORE TAX	(BEFORE TAX)		(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
						PRESENT VALUE INVEST.	RETURN				PRESENT VALUE INVEST.	RETURN
1982	100030	0	0	0	0	100030	0	0	0	1.0000	100030	0
1983	124446	0	0	0	0	113112	0	0	0	0.9180	114239	0
1984	131069	0	0	0	0	108281	0	0	0	0.8427	110449	0
1985	0	-1326	22767	10507	31947	0	23989	0	31947	0.7736	0	24713
1986	0	7830	22767	9806	40264	0	27480	0	40264	0.7101	0	28592
1987	0	8079	22767	5106	39952	0	24784	0	39952	0.6515	0	26043
1988	0	2315	22767	8405	54388	0	30666	0	54388	0.5984	0	32545
1989	0	25059	22767	7705	55531	0	28459	0	55531	0.5493	0	30504
1990	0	26229	22767	7005	56000	0	26085	0	56000	0.5043	0	28238
1991	0	27214	22767	6304	56285	0	23830	0	56285	0.4629	0	26054
1992	0	28182	22767	5604	56552	0	21762	0	56552	0.4249	0	24030
1993	0	29154	22767	4903	56824	0	19875	0	56824	0.3901	0	21616
1994	0	30126	22767	4203	57096	0	18151	0	45045	0.3581	0	16129
1995	0	31088	22767	3502	57367	0	16577	0	44928	0.3287	0	14788
1996	0	32048	22767	2802	57635	0	15137	0	44809	0.3017	0	13520
1997	0	33039	22767	2101	57907	0	13823	0	44691	0.2770	0	12379
1998	0	34011	22767	1401	58179	0	12623	0	44574	0.2543	0	11334
1999	-33742	34979	22767	700	58446	0	11526	0	44455	0.2334	-7876	10376
TOTAL	321503			794373		314768	314768		704584		316841	316841

**** INTERNAL RATE OF RETURN ***** 10.02 PER CENT (BEFORE TAX) 8.94 PER CENT (AFTER TAX)

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

CAPITAL REQUIREMENTS

LAND & SITE IMPROVEMENT	6695.
PLANT COST	292395.
FREIGHT & INSURANCE	1415.
SERVICES & MANAGEMENT	12116.
RAILWAY SPUR	5190.
CONSTRUCTED FACILITIES	311116.
PRE-INVEST AND STAT-UP EXP	10687.
INTEREST DURING CONSTRUCTION	19700.
TOTAL FIXED CAPITAL	348198.
INITIAL WORKING CAPITAL	27047.
TOTAL CAPITAL COST	375245.

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	112574.
LONG TERM DEBT	262671.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	375245.

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 OVERALL PROJECT

CASE BMCD

(US\$ 1000)

YEAR	(1) AFT TAX PROFIT -TC- SALES REV S/H EQUITY (PCT)	(2) AFT TAX PROFIT -TC- (PCT)	(3) BFR TAX PRCPT -IC- INVESTMT S/ (PCT)	(4) AFT TAX PROFIT -TC- S/ (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -IC- 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	-1.5	-1.2	-0.4	-1.2	1.60	0.99	1.14	87. / 33.	72.3	417.1	65.1
1986	6.1	6.2	2.0	6.6	2.14	1.46	1.47	64. / 36.	69.6	362.8	62.5
1987	6.0	6.4	2.2	7.2	2.67	1.93	1.50	60. / 40.	77.7	343.8	69.7
1988	14.7	15.5	6.2	20.6	3.78	2.99	2.10	54. / 46.	88.2	328.7	61.1
1989	19.7	14.3	6.7	22.3	5.01	4.23	2.20	47. / 53.	66.3	324.0	59.3
1990	16.4	13.0	7.0	23.3	6.29	5.51	2.28	41. / 59.	64.9	322.0	57.9
1991	17.0	11.9	7.3	24.2	7.62	6.83	2.36	35. / 65.	63.7	319.9	56.7
1992	17.9	11.0	7.5	25.0	8.98	8.19	2.45	29. / 71.	62.5	317.9	55.5
1993	13.9	6.4	7.6	15.5	7.04	6.50	2.01	24. / 76.	61.3	315.9	54.3
1994	11.2	6.2	6.0	10.1	7.61	7.08	2.07	19. / 81.	60.1	313.9	53.1
1995	11.6	6.0	6.3	16.6	8.15	7.67	2.14	14. / 86.	58.9	311.9	51.9
1996	11.5	5.3	8.5	17.1	8.77	8.25	2.21	10. / 90.	57.7	309.9	50.8
1997	12.3	5.7	8.8	17.6	9.35	8.84	2.26	5. / 95.	56.5	307.9	49.6
1998	12.8	5.3	9.1	18.1	9.94	9.43	2.36	-0. / 100.	55.3	305.9	48.4
1999	13.0	5.4	5.3	18.6	19.25	18.38	2.44	-0. / 100.	54.2	303.9	47.3
AVERAGE1	11.7	7.9	6.9	16.5	7.22	6.55	2.07	31. / 69.	63.3	327.0	56.2
AVERAGE2	12.4	7.9	6.6	16.5	7.40	6.76	2.03	30. / 70.			

(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 (7)(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.

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 OVERALL PROJECT (US\$ 1000)

CASE BMCI

YEAR	(1) AFT PROFIT -TO- SALES REV (PCT)	(2) AFT TAX PROFIT -TO- S/H EQUITY (PCT)	(3) BER TAX PROFIT -TO- INVESTMENT (PCT)	(4) AFT TAX PROFIT -TO- 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	-3.9	-5.4	-1.0	-5.3	1.44	0.84	1.06	68./ 32.	76.2	426.4	68.3
1986	3.7	4.2	1.2	4.2	1.87	1.21	1.37	65./ 35.	73.3	370.2	65.7
1987	4.0	4.3	1.4	4.5	2.25	1.57	1.39	62./ 38.	81.8	350.2	73.1
1988	15.0	14.1	5.2	17.3	3.28	2.51	1.96	56./ 44.	71.9	334.3	64.1
1989	17.0	13.3	5.6	18.6	4.38	3.61	2.05	50./ 50.	69.9	329.4	62.2
1990	14.8	12.3	6.0	19.9	5.52	4.76	2.15	44./ 56.	68.4	327.3	60.8
1991	15.4	11.4	6.2	20.7	6.71	5.95	2.21	37./ 63.	67.1	325.1	59.5
1992	19.0	10.6	6.5	21.6	7.94	7.17	2.28	31./ 69.	65.8	323.0	58.2
1993	10.0	6.2	6.7	13.5	6.49	5.95	1.92	26./ 74.	64.5	320.9	56.9
1994	10.3	6.0	7.0	14.0	7.04	6.51	1.97	21./ 79.	63.2	318.8	55.7
1995	10.7	5.9	7.2	14.5	7.59	7.07	2.03	16./ 84.	62.0	316.6	54.4
1996	11.1	5.8	7.5	15.0	8.15	7.83	2.10	11./ 89.	60.7	314.5	53.2
1997	11.4	5.6	7.8	15.5	8.71	8.20	2.16	5./ 95.	59.5	312.4	52.0
1998	11.5	5.5	8.0	16.0	9.26	8.77	2.24	-0./ 100.	58.2	310.2	50.7
1999	12.2	5.4	8.3	16.5	16.89	17.92	2.32	-0./ 100.	57.0	308.1	49.5
AVERAGE1	10.3	7.1	5.6	13.9	6.64	5.98	1.95	33./ 67.	66.6	332.5	59.0
AVERAGE2	10.9	7.1	5.6	13.9	6.74	6.11	1.91	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.

ASEAN RS/SA PROJECT IN THAILAND
IRR CALCULATION ON TOTAL INVESTMENT (US\$ 1000)
OVERALL PROJECT

CASE BMCI

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON DEBT	RETURN BEFORE TAX	(BEFORE TAX)		DISCOUNT FACTOR	RETURN AFTER TAX	(LESS) INCOME TAX	DISCOUNT FACTOR	(AFTER TAX)	
						PRESENT VALUE	INVEST.					PRESENT VALUE	INVEST.
1982	106276.	0.	0.	0.	0.	106276.	0.	1.0000	0.	0.	1.0000	106276.	0.
1983	152774.	0.	0.	0.	0.	121731.	0.	0.9168	0.	0.	0.9256	122890.	0.
1984	137215.	0.	0.	0.	0.	115423.	0.	0.8406	0.	0.	0.8566	117631.	0.
1985	0.	-3928.	24232.	11122.	31426.	0.	24218.	0.7707	31426.	0.	0.7929	0.	24917.
1986	0.	4555.	24232.	10381.	39568.	0.	27957.	0.7066	39568.	0.	0.7338	0.	25037.
1987	0.	5389.	24232.	9639.	39260.	0.	25432.	0.6478	39260.	0.	0.6792	0.	26686.
1988	0.	20571.	24232.	8898.	53700.	0.	31893.	0.5939	53700.	0.	0.6286	0.	33759.
1989	0.	22442.	24232.	8156.	54830.	0.	29856.	0.5445	54830.	0.	0.5818	0.	31903.
1990	0.	23660.	24232.	7415.	55306.	0.	27610.	0.4992	55306.	0.	0.5385	0.	29784.
1991	0.	24682.	24232.	6673.	55598.	0.	25447.	0.4577	55598.	0.	0.4984	0.	27712.
1992	0.	25709.	24232.	5932.	55872.	0.	23446.	0.4196	55872.	0.	0.4613	0.	25776.
1993	0.	26725.	24232.	5190.	56151.	0.	21603.	0.3847	56151.	10691.	0.4270	0.	19411.
1994	0.	27749.	24232.	4449.	56430.	0.	19905.	0.3527	56430.	11100.	0.3952	0.	17914.
1995	0.	28785.	24232.	3707.	56708.	0.	18339.	0.3234	56708.	11508.	0.3658	0.	16533.
1996	0.	29785.	24232.	2966.	56983.	0.	16895.	0.2965	56983.	11914.	0.3385	0.	15258.
1997	0.	30805.	24232.	2224.	57261.	0.	15566.	0.2718	57261.	12322.	0.3133	0.	14081.
1998	0.	31825.	24232.	1483.	57540.	0.	14341.	0.2482	57540.	12730.	0.2900	0.	12986.
1999	-33742.	32841.	24232.	741.	57815.	-7710.	13211.	0.2285	44678.	13137.	0.2684	-9057.	11983.
TOTAL	542625.				784448.	335720.	335719.		701046.			337739.	337738.

***** INTERNAL RATE OF RETURN ***** 5.07 PER CENT (BEFORE TAX) 8.04 PER CENT (AFTER TAX)

***** PAY-OFF PERIOD ***** (THE YEAR WHEN THE TOTAL CAPITAL COST WILL BE PAID OUT BY ACCUMULATED TOTAL RETURN, FROM THE BEG. OF OPERATION) 8-21 YEAR (BEFORE TAX) 8-26 YEAR (AFTER TAX)

CAPITAL REQUIREMENTS

	6695.	315215.	1415.	12116.	5190.	341536.	10687.	20854.	370172.	27047.	397219.
LAND & SITE IMPROVEMENT	6695.										
PLANT COST		315215.									
FREIGHT & INSURANCE		1415.									
SERVICES & MANAGEMENT		12116.									
RAILWAY SPUR		5190.									
CONSTRUCTED FACILITIES		341536.									
PRE-INVEST AND START-UP EXP		10687.									
INTEREST DURING CONSTRUCTION		20854.									
TOTAL FIXED CAPITAL		370172.									
INITIAL WORKING CAPITAL		27047.									
TOTAL CAPITAL COST		397219.									

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	119166.
LONG TERM DEBT	278053.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	397219.

ASEAN RS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 OVERALL PROJECT
 (US\$ 1000)

CASE BNYI

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
SALES REVENUE	101435.	126545.	134731.	157656.	159901.	160267.	160447.	160611.	160779.	160947.	161115.
COST OF SALES	93299.	110041.	118434.	126816.	127914.	127805.	127696.	127586.	127477.	127367.	127258.
VARIABLE COST	59107.	67551.	75995.	84439.	84439.	84439.	84439.	84439.	84439.	84439.	84439.
DEPRECIATION & AMORTIZATION	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.
OTHER FIXED COST	19930.	19821.	19711.	19602.	19492.	19383.	19273.	19164.	19054.	18945.	18836.
(INCL) IN PRODUCT INVENTORIES	-9722.	-1314.	-1255.	-1208.	0.	0.	0.	0.	0.	0.	0.
LESS: SALES EXPENSES	480.	644.	726.	805.	822.	822.	822.	822.	822.	822.	822.
OPERATING PROFIT OR (LOSS)	7656.	15859.	15571.	30031.	31105.	31640.	31930.	32203.	32481.	32758.	33036.
LESS: INTEREST	11057.	10320.	9583.	8846.	8109.	7371.	6634.	5897.	5160.	4423.	3686.
ON LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	-3401.	5539.	5986.	21185.	23056.	24268.	25296.	26306.	27321.	28335.	29350.
LESS: INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	10928.	11334.	11740.
NET PROFIT OR (LOSS) AFTER TAX	-3401.	5539.	5986.	21185.	23056.	24268.	25296.	26306.	16392.	17001.	17610.

ASEAN RS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 OVERALL PROJECT
 (US\$ 1000)

CASE BNYI

1996 1997 1998 1999

	1996	1997	1998	1999
SALES REVENUE	161279.	161447.	161615.	161779.
COST OF SALES	127148.	127039.	126929.	126820.
VARIABLE COST	64439.	64439.	84439.	84435.
DEPRECIATION & AMORTIZATION	23983.	23983.	23983.	23983.
OTHER FIXED COST	18726.	18617.	18507.	18398.
(INC) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GRUSS PROFIT CR (LOSS) ON SALES	34131.	34409.	34686.	34959.
LESS. SALES EXPENSES	822.	822.	822.	822.
OPERATING PROFIT CR (LOSS)	33309.	33587.	33864.	34137.
LESS. INTEREST				
ON LONG TERM DEBT	2949.	2211.	1474.	737.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT CR (LOSS) BEFORE TAX	30360.	31375.	32390.	33400.
LESS. INCOME TAX	12144.	12550.	12956.	13360.
NET PROFIT CR (LOSS) AFTER TAX	18216.	18825.	19434.	20040.

ASEAN RS/SA PROJECT IN THAILAND
FUND FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
OVERALL PROJECT

CASE BNYI

(US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS											
CASH GENERATED FROM OPERATION	118465.	157959.	118469.	36563.	40546.	40258.	54718.	55148.	55623.	55913.	56186.
PROFIT BEFORE TAX, INTEREST DEPRECIATION & AMORTIZATION	0.	0.	0.	7656.	15859.	15571.	30031.	31165.	31640.	31930.	32203.
FINANCIAL RESOURCES	118465.	157959.	118469.	0.	23983.	23983.	23983.	23983.	23983.	23983.	23983.
SHARE CAPITAL	35541.	47388.	35541.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	82928.	110571.	82928.	0.	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN ACCU. PAYABLE	0.	0.	0.	4924.	703.	703.	703.	0.	0.	0.	0.
USES OF FUNDS											
INVESTMENT IN FIXED ASSET	112620.	139624.	115605.	0.	33801.	30890.	31948.	26818.	25846.	25085.	24366.
LAND AND SITE IMPROVEMENT	6104.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	98499.	131332.	98499.	0.	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP	0.	0.	10987.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	6220.	8293.	6220.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	0.	0.	4200.	22401.	5052.	2878.	4674.	281.	46.	23.	20.
OTHER THAN CASH	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCR(DOCR) ACC I RECEIVABLE	0.	0.	0.	12679.	3139.	1023.	2866.	281.	46.	23.	20.
INCR(DECR) IN INVENTORIES	0.	0.	0.	5722.	1314.	1255.	1208.	0.	0.	0.	0.
PRODUCTS	0.	0.	4200.	0.	600.	600.	600.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	29486.	28749.	28011.	27274.	26537.	25800.	25063.	24326.
DEBT SERVICES	0.	0.	0.	18429.	18429.	18429.	18429.	18429.	18429.	18429.	18429.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	11057.	10320.	9583.	8846.	8109.	7371.	6634.	5897.
INTEREST ON LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
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 INC/LASL ON (DECREASE)	5049.	18334.	-1137.	-15324.	6745.	5368.	22770.	28330.	29777.	30828.	31840.
BEGINNING CASH BALANCE	0.	5649.	23983.	22847.	7523.	14268.	23635.	46405.	74735.	104513.	135340.
ENDING CASH BALANCE	5049.	23983.	22847.	7523.	14268.	23635.	46405.	74735.	104513.	135340.	167181.

ASEAN RS/SA PROJECT IN THAILAND
FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30) (US\$ 1000)

CASE BAYI

	1993	1994	1995	1996	1997	1998	1999
SOURCES OF FUNDS							
CASH GENERATED FROM OPERATION	56464.	56741.	57019.	57292.	57570.	57847.	58121.
PROFIT BEFORE TAX, INTEREST	32481.	32758.	33036.	33305.	33587.	33864.	34137.
DEPRECIATION & AMORTIZATION	23983.	23983.	23983.	23983.	23983.	23983.	23983.
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 ACCY PAYABLE	0.	0.	0.	0.	0.	0.	0.
USES OF FUNDS							
INVESTMENT IN FIXED ASSET	23610.	33801.	33469.	33138.	32805.	32474.	32142.
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 CONSTRUCT	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	21.	21.	21.	20.	21.	21.	21.
OTHER THAN CASH	21.	21.	21.	20.	21.	21.	21.
INCR(DUCK) ACCY RECEIVABLE	21.	21.	21.	20.	21.	21.	21.
INCR(DUCK) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	23589.	22851.	22114.	21377.	20640.	19903.	19166.
REPAYMENT OF LONG TERM DEBT	18429.	18429.	18429.	18429.	18429.	18429.	18429.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	5160.	4423.	3686.	2949.	2211.	1474.	737.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	10928.	11334.	11740.	12144.	12550.	12956.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE OR (DECREASE)	32854.	22941.	23549.	24155.	24765.	25373.	25979.
BEGINNING CASH BALANCE	167181.	200035.	222976.	246525.	270680.	295444.	320818.
ENDING CASH BALANCE	200035.	222976.	246525.	270680.	295444.	320818.	346796.

ASEAN RS/SA PROJECT IN THAILAND
BALANCE SHEET (FOR YEARS ENDING JUNE 30)
OVERALL PROJECT

CASE ENVI

(US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS											
CURRENT ASSETS											
CASH	5649.	23983.	27047.	34124.	45921.	58168.	85611.	114222.	144045.	174895.	206756.
ACCOUNTS RECEIVABLE	5049.	23983.	22847.	7523.	14268.	23635.	46405.	74735.	104513.	135340.	167181.
INVENTORIES	0.	0.	0.	12679.	15818.	16841.	19107.	19988.	20033.	20056.	20076.
PRODUCTS	0.	0.	0.	9722.	11035.	12290.	13498.	13498.	13498.	13498.	13498.
MATERIALS	0.	0.	4200.	4200.	4800.	5400.	6001.	6001.	6001.	6001.	6001.
NET FIXED ASSETS	112820.	252445.	367850.	343867.	319884.	295900.	271917.	247934.	223951.	199968.	175984.
INVESTMENT	112820.	252445.	367850.	367850.	367850.	367850.	367850.	367850.	367850.	367850.	367850.
LAND & SITE IMPROVEMENT	8102.	8102.	8102.	8102.	8102.	8102.	8102.	8102.	8102.	8102.	8102.
CONSTRUCTED FACILITIES	98459.	229830.	328329.	328329.	328329.	328329.	328329.	328329.	328329.	328329.	328329.
PRE-INVEST. & START-UP EXP	0.	0.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCTN	6220.	14512.	20732.	20732.	20732.	20732.	20732.	20732.	20732.	20732.	20732.
LESS DEPRECIATION & AMORTIZTN	0.	0.	0.	23983.	47966.	71950.	95933.	119916.	143899.	167882.	191866.
LIABILITIES											
CURRENT LIABILITIES											
ACCOUNTS PAYABLE	0.	0.	18429.	23352.	24056.	24759.	25462.	25462.	25462.	25462.	25462.
INCOME TAX PAYABLE	0.	0.	0.	4524.	5627.	6330.	7034.	7034.	7034.	7034.	7034.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	18429.	18429.	18429.	18429.	18429.	18429.	18429.	18429.	18429.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	82928.	193500.	257999.	239571.	221142.	202714.	184285.	165857.	147428.	129000.	110571.
LONG TERM DEBT BALANCE	82928.	193500.	257999.	239571.	221142.	202714.	184285.	165857.	147428.	129000.	110571.
STOCK HOLDERS EQUITY	35541.	82928.	118469.	115068.	120607.	126595.	147780.	170837.	195105.	220401.	246707.
SHARE CAPITAL	35541.	82928.	118469.	118469.	118469.	118469.	118469.	118469.	118469.	118469.	118469.
RETAINED EARNINGS	0.	0.	0.	-3401.	2138.	8126.	29311.	52368.	76636.	101932.	128238.

ASEAN RS/SA PROJECT IN THAILAND
BALANCE SHEET (FOR YEARS ENDING JUNE 30)
OVERALL PROJECT

(US\$ 1000)

CASE BNYI

	1993	1994	1995	1996	1997	1998	1999
ASSETS							
CURRENT ASSETS	391633.	390611.	390198.	390390.	391193.	392604.	394620.
CASH	239631.	262593.	286163.	310339.	335124.	360519.	386518.
ACCOUNTS RECEIVABLE	200035.	222976.	246525.	270680.	295444.	320818.	346796.
INVENTORIES	20097.	20118.	20139.	20160.	20161.	20202.	20222.
PRODUCTS	13458.	13498.	13498.	13498.	13498.	13498.	13498.
MATERIALS	6001.	6001.	6001.	6001.	6001.	6001.	6001.
NET FIXED ASSETS	132001.	128018.	104035.	80052.	56068.	32085.	8102.
INVESTMENT	367850.	367850.	367850.	367850.	367850.	367850.	367850.
LAND & SITE IMPROVEMENT	8102.	8102.	8102.	8102.	8102.	8102.	8102.
CONSTRUCTED FACILITIES	328329.	328329.	328329.	328329.	328329.	328329.	328329.
PRE-INVEST. & START-UP EXP	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCTN	20732.	20732.	20732.	20732.	20732.	20732.	20732.
LESS DEPRECIATION & AMORTIZTN	215849.	239832.	263815.	287798.	311782.	335765.	355748.
LIABILITIES							
CURRENT LIABILITIES	128535.	110511.	92486.	74464.	56441.	38416.	20354.
ACCOUNTS PAYABLE	36391.	36796.	37202.	37606.	38012.	38418.	20354.
INCOME TAX PAYABLE	7034.	7034.	7034.	7034.	7034.	7034.	7034.
DIVIDENDS PAYABLE	10928.	11334.	11740.	12144.	12550.	12956.	13360.
CURRENT PORTION OF DEBT	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	16429.	18429.	18429.	18429.	18429.	18429.	0.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	92143.	73714.	55286.	36857.	18429.	-0.	-0.
LONG TERM DEBT BALANCE	92143.	73714.	55286.	36857.	18429.	-0.	-0.
STOCK HOLDERS EQUITY	263059.	260100.	297710.	315927.	334752.	354185.	374226.
SHARE CAPITAL	118469.	118469.	118469.	118469.	118469.	118469.	118469.
RETAINED EARNINGS	144630.	161631.	179241.	197458.	216283.	235716.	255757.

ASEAN R/S/SA PROJECT IN THAILAND
 PRODUCTION AND SALES PLAN
 OVERALL PROJECT

(US\$ 1000)

CASE BNYI

	1985	1986	1987	1988	1985	1990	1991	1992	1993	1994	1995
CAPACITY (SODA ASH)	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	280000.	320000.	360000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	23332.	3333.	3333.	3333.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	256667.	316666.	356667.	396667.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
UNIT PRICE	0.2161	0.2151	0.1931	0.2128	0.2145	0.2154	0.2159	0.2163	0.2167	0.2171	0.2175
SALES REVENUE	55462.	68106.	68883.	84397.	85900.	86165.	86346.	86510.	86678.	86846.	87014.
CAPACITY (R/S PLANT)	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	1260000.	1440000.	1620000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.	1800000.
INCREASE IN INVENTORY	210000.	30000.	50000.	30000.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	654360.	957840.	1061320.	1204800.	1234800.	1234800.	1234800.	1234800.	1234800.	1234800.	1234800.
UNIT PRICE	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114	0.9114
SALES REVENUE	7475.	10939.	12349.	13759.	14101.	14101.	14101.	14101.	14101.	14101.	14101.
CAPACITY (AMMO. UHL.)	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.700	0.800	0.900	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PRODUCTION	280000.	320000.	360000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	23332.	3333.	3333.	3333.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME	256667.	316667.	356667.	396667.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
UNIT PRICE	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500	0.1500
SALES REVENUE	38500.	47500.	53500.	59500.	60000.	60000.	60000.	60000.	60000.	60000.	60000.
*** TOTAL SALES REVENUE ***	101435.	126545.	134731.	157656.	159901.	160267.	160447.	160611.	160779.	160947.	161115.
*** TOTAL SALES VOLUME ***	1167654.	1591173.	1794654.	1998134.	2034800.	2034800.	2034800.	2034800.	2034800.	2034800.	2034800.
*** AVERAGE SALES PRICE ***	0.0869	0.0795	0.0751	0.0789	0.0786	0.0788	0.0789	0.0789	0.0790	0.0791	0.0792

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION AND SALES PLAN
 OVERALL PROJECT

(US\$ 1000)

CASE ENYI

	1996	1997	1998	1999
CAPACITY (SOBA ASH)	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	400000.	400000.	400000.	400000.
UNIT PRICE	0.2175	0.2184	0.2188	0.2192
SALES REVENUE	87178.	87346.	87514.	87678.
CAPACITY (R/S PLANT)	1800000.	1800000.	1800000.	1800000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	1800000.	1800000.	1800000.	1800000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	1234800.	1234800.	1234800.	1234800.
UNIT PRICE	0.0114	0.0114	0.0114	0.0114
SALES REVENUE	14101.	14101.	14101.	14101.
CAPACITY (AMPO. CHL.)	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000
PRODUCTION	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME	400000.	400000.	400000.	400000.
UNIT PRICE	0.1500	0.1500	0.1500	0.1500
SALES REVENUE	60000.	60000.	60000.	60000.
*** TOTAL SALES REVENUE ***	161279.	161447.	161615.	161779.
*** TOTAL SALES VOLUME ***	2034800.	2034800.	2034800.	2034800.
*** AVERAGE SALES PRICE ***	0.0753	0.0753	0.0794	0.0795

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 OVERALL PROJECT

CASE BNYI

(US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	230000.	320000.	363000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
AMMONIA	21056.	24064.	27072.	30080.	30080.	30080.	30080.	30080.	30080.	30080.	30080.
QUICK LIME	361.	413.	464.	516.	516.	516.	516.	516.	516.	516.	516.
SODA ASH	3780.	4320.	4860.	5400.	5400.	5400.	5400.	5400.	5400.	5400.	5400.
RAW MATERIAL	25157.	28797.	32356.	35996.	35996.	35996.	35996.	35996.	35996.	35996.	35996.
UTILITIES	23808.	27210.	30611.	34012.	34012.	34012.	34012.	34012.	34012.	34012.	34012.
DIRECT CP. CCST	5907.	6751.	7595.	8439.	8439.	8439.	8439.	8439.	8439.	8439.	8439.
TRANSPORTATION (K/S)	5956.	4522.	5087.	5652.	5652.	5652.	5652.	5652.	5652.	5652.	5652.
TRANSPORTATION (S/A)	238.	272.	306.	340.	340.	340.	340.	340.	340.	340.	340.
TRANSPORTATION COST	4154.	4794.	5393.	5992.	5992.	5992.	5992.	5992.	5992.	5992.	5992.
VARIABLE COST	59107.	67351.	75995.	84439.	84439.	84439.	84439.	84439.	84439.	84439.	84439.
DEPRECIATION	21889.	21889.	21889.	21889.	21889.	21889.	21889.	21889.	21889.	21889.	21889.
AMORTIZATION(PRE-INVEST)	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.
AMORTIZATION(INTEREST CUR.)	1382.	1382.	1382.	1382.	1382.	1382.	1382.	1382.	1382.	1382.	1382.
AMORTIZATION	2095.	2095.	2095.	2095.	2095.	2095.	2095.	2095.	2095.	2095.	2095.
DEPRECIATION & AMORTIZATION	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.	23983.
LABOUR (S/A)	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.
LABOUR (K/S)	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.	482.
OVLR HEAD	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.
EMPLOYMENT COST	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.	8063.
MAINTENANCE COST	9850.	9850.	9850.	9850.	9850.	9850.	9850.	9850.	9850.	9850.	9850.
TAX & INSURANCE	1682.	1573.	1463.	1354.	1244.	1135.	1025.	916.	807.	697.	588.
MATERIALS	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.	335.
DIRECT FIXED COST	15930.	19821.	19711.	19602.	19492.	19383.	19273.	19164.	19054.	18945.	18836.
FACTORY PRODUCTION COST	105021.	111355.	119689.	128024.	127914.	127805.	127696.	127586.	127477.	127367.	127258.
UNIT DIRECT OPERATING COST	0.3679	0.3480	0.3325	0.3201	0.3198	0.3195	0.3192	0.3190	0.3187	0.3184	0.3181
ROYALTY	450.	644.	726.	809.	822.	822.	822.	822.	822.	822.	822.
INTEREST ON LONG-TERM DEBT	11057.	10320.	9583.	8846.	8109.	7371.	6634.	5897.	5160.	4423.	3686.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	114556.	122319.	129998.	137679.	136845.	135998.	135152.	134305.	133459.	132612.	131766.
UNIT PRODUCTION COST	0.4091	0.3822	0.3611	0.3442	0.3421	0.3400	0.3379	0.3358	0.3336	0.3315	0.3294

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 OVERALL PROJECT

(US\$ 1000)

CASE ENYI

	1986	1987	1988	1989
PRODUCTION	400000.	400000.	400000.	400000.
AMMONIA	30080.	30080.	30080.	30080.
QUICK LIME	516.	516.	516.	516.
SODA ASH	5400.	5400.	5400.	5400.
RAW MATERIAL	35986.	35986.	35986.	35986.
UTILITIES	34012.	34012.	34012.	34012.
DIRECT CP. COST	8439.	8439.	8439.	8439.
TRANSPORTATION (R/S)	5652.	5652.	5652.	5652.
TRANSPORTATION (S/A)	340.	340.	340.	340.
TRANSPORTATION COST	5992.	5992.	5992.	5992.
VARIABLE COST	84439.	84439.	84439.	84439.
DEPRECIATION	21889.	21889.	21889.	21889.
AMORTIZATION (PRE-INVEST)	712.	712.	712.	712.
AMORTIZATION (INTEREST CLG.)	1382.	1382.	1382.	1382.
AMORTIZATION	2095.	2095.	2095.	2095.
DEPRECIATION & AMORTIZATION	23983.	23983.	23983.	23983.
LABOUR (S/A)	2527.	2527.	2527.	2527.
LABOUR (R/S)	482.	482.	482.	482.
OVER HEAD	5054.	5054.	5054.	5054.
EMPLOYMENT COST	8063.	8063.	8063.	8063.
MAINTENANCE COST	9850.	9850.	9850.	9850.
TAX & INSURANCE	478.	369.	259.	150.
MATERIALS	335.	335.	335.	335.
DIRECT FIXED COST	18726.	18617.	18507.	18396.
EX-FACTORY PRODUCTION COST	127148.	127039.	126929.	126820.
UNIT DIRECT OPERATING COST	0.3179	0.3176	0.3173	0.3171
ROYALTY	822.	822.	822.	822.
INTEREST ON LONG-TERM DEBT	2949.	2211.	1474.	737.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	130919.	130072.	129226.	128379.
UNIT PRODUCTION COST	0.3273	0.3252	0.3231	0.3205

ASEAN RS/SA PROJECT IN THAILAND
IRR CALCULATION ON TOTAL INVESTMENT
OVERALL PROJECT (US\$ 1000)

CASE BNY1

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON DEBT	DISCOUNT FACTOR	(BEFORE TAX) PRESENT VALUE INVEST.	RETURN AFTER TAX	(LESS) INCOME TAX	DISCOUNT FACTOR	(AFTER TAX) PRESENT VALUE INVEST.	RETURN
1982	106601.	0.	0.	0.	1.0000	106601.	0.	0.	1.0000	106601.	0.
1983	131352.	0.	0.	0.	0.9155	120228.	0.	0.	0.9242	121382.	0.
1984	136233.	0.	0.	0.	0.8381	114170.	0.	0.	0.8542	116373.	0.
1985	0.	-3401.	23483.	11057.	0.7672	0.	24273.	0.	0.7895	0.	24979.
1986	0.	5335.	23583.	10320.	0.7023	0.	27982.	0.	0.7297	0.	29073.
1987	0.	5988.	23583.	9583.	0.6425	0.	25431.	0.	0.6744	0.	26676.
1988	0.	21185.	23583.	8845.	0.5886	0.	31792.	0.	0.6233	0.	33668.
1989	0.	23050.	23983.	8109.	0.5388	0.	29715.	0.	0.5761	0.	31771.
1990	0.	24268.	23583.	7371.	0.4933	0.	27437.	0.	0.5325	0.	29616.
1991	0.	25250.	23883.	6634.	0.4516	0.	25248.	0.	0.4921	0.	27516.
1992	0.	26306.	23983.	5897.	0.4134	0.	23226.	0.	0.4548	0.	25555.
1993	0.	27421.	23583.	5160.	0.3784	0.	21368.	10928.	0.4204	0.	19142.
1994	0.	28335.	23983.	4423.	0.3464	0.	19657.	11334.	0.3885	0.	16259.
1995	0.	29350.	23983.	3680.	0.3171	0.	18063.	11740.	0.3591	0.	14259.
1996	0.	30360.	23983.	2949.	0.2903	0.	16634.	12144.	0.3319	0.	14984.
1997	0.	31375.	23983.	2211.	0.2658	0.	15301.	12550.	0.3067	0.	13809.
1998	0.	32390.	23983.	1474.	0.2433	0.	14075.	12956.	0.2835	0.	12727.
1999	-35145.	33400.	23583.	737.	0.2227	-7829.	12946.	13360.	0.2620	-9210.	11728.
TOTAL	359016.			780974.		333169.	333169.			335145.	335145.

**** INTERNAL RATE OF RETURN *****

703962.

8.20 PER CENT (BEFORE TAX)

8.20 PER CENT (AFTER TAX)

**** PAY-CUT PERIOD *****

8.12 YEAR

(BEFORE TAX)

(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 & SITE IMPROVEMENT	8102.	PAID-UP SHARE CAPITAL	118469.
PLANT COST	308202.	LONG TERM DEBT	276428.
FREIGHT & INSURANCE	1415.	SHORT TERM DEBT	0.
SERVICES & MANAGEMENT	12116.	FINANCIAL RESOURCES	394897.
RAILWAY SPUR	6596.		
UNSTRUCTURED FACILITIES	328329.		
PRE-INVEST AND START-UP EXP	10687.		
INTEREST DURING CONSTRUCTION	20732.		
TOTAL FIXED CAPITAL	367850.		
INITIAL WORKING CAPITAL	27047.		
TOTAL CAPITAL COST	394897.		

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 OVERALL PROJECT

CASE BNYI

(US\$ 1000)

YEAR	(1) AFT TAX PROFIT -10- SALES REV S/H (PCT)	(2) AFT TAX PROFIT -10- EQUITY INVESTMNT (PCT)	(3) B/P TAX PROFIT -10- INVESTMNT (PCT)	(4) AFT TAX PROFIT -10- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT RATIO	(8) L/T DEBT -10- S/F 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	-3.4	-3.0	-0.5	-2.9	1.46	0.87	1.07	68./ 32.	75.3	424.7	67.7
1986	4.4	4.5	1.4	4.7	1.91	1.25	1.39	65./ 35.	72.5	368.7	65.1
1987	4.4	4.7	1.5	5.1	2.35	1.63	1.41	62./ 38.	80.9	348.9	72.5
1988	13.4	14.3	5.4	17.9	3.36	2.60	1.98	55./ 45.	71.1	333.1	63.6
1989	14.4	13.5	5.8	15.5	4.45	3.72	2.08	49./ 51.	69.1	328.2	61.7
1990	15.1	12.4	6.1	20.5	5.66	4.89	2.16	43./ 57.	67.6	326.1	60.2
1991	15.0	11.5	6.4	21.4	6.87	6.10	2.23	37./ 63.	66.4	324.0	59.0
1992	10.4	10.7	6.7	22.2	8.12	7.35	2.31	31./ 69.	65.1	321.9	57.7
1993	10.2	8.2	6.5	13.8	6.58	6.05	1.93	26./ 74.	63.8	319.8	56.5
1994	10.6	9.1	7.2	14.4	7.14	6.61	1.95	21./ 79.	62.6	317.6	55.2
1995	10.5	5.5	7.4	14.5	7.65	7.17	2.05	16./ 84.	61.3	315.5	54.0
1996	11.3	5.8	7.7	15.4	8.25	7.73	2.11	10./ 90.	60.1	313.4	52.8
1997	11.7	5.6	7.5	15.9	8.82	8.30	2.18	5./ 95.	58.8	311.3	51.5
1998	12.0	5.5	8.2	16.4	9.38	8.88	2.26	-0./ 100.	57.6	309.2	50.3
1999	12.4	5.4	8.5	16.9	18.55	18.00	2.34	-0./ 100.	56.4	307.1	49.1
AVERAGE1	10.6	7.3	5.8	14.4	6.74	6.08	1.97	33./ 67.	65.9	331.3	58.5
AVERAGE2	11.2	7.2	5.6	14.4	6.85	6.22	1.93	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.

ASEAN RS/SA PROJECT IN THAILAND
IRR CALCULATION ON TOTAL INVESTMENT (US\$ 1000)
CASE BNYC OVERALL PROJECT

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	RETURN BEFORE TAX	(BEFORE TAX)		(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
						PRESENT VALUE INVEST.	RETURN				PRESENT VALUE INVEST.	RETURN
1982	105351.	0.	0.	0.	0.	1.0000	105351.	0.	0.	1.0000	105351.	0.
1983	125066.	0.	0.	0.	0.	0.9139	118501.	0.	0.	0.9228	119650.	0.
1984	134983.	0.	0.	0.	0.	0.8352	112739.	0.	0.	0.8515	114935.	0.
1985	0.	-2881.	23650.	10934.	31743.	0.7633	0.	24230.	0.	0.7857	0.	24941.
1986	0.	6086.	23650.	10205.	39982.	0.6976	0.	27890.	0.	0.7250	0.	28987.
1987	0.	6526.	23650.	5476.	39693.	0.6375	0.	25305.	0.	0.6690	0.	26555.
1988	0.	21714.	23650.	8747.	54152.	0.5826	0.	31550.	0.	0.6173	0.	33430.
1989	0.	23580.	23650.	8018.	55288.	0.5325	0.	26439.	0.	0.5697	0.	31455.
1990	0.	24782.	23650.	7289.	55762.	0.4866	0.	27134.	0.	0.5256	0.	29311.
1991	0.	25200.	23650.	6560.	56050.	0.4447	0.	24926.	0.	0.4850	0.	27187.
1992	0.	26801.	23650.	5831.	56323.	0.4064	0.	22891.	0.	0.4476	0.	25209.
1993	0.	27803.	23650.	5103.	56599.	0.3714	0.	21022.	0.	0.4130	0.	18782.
1994	0.	28311.	23650.	4374.	56875.	0.3354	0.	19306.	0.	0.3811	0.	17283.
1995	0.	28816.	23650.	3645.	57151.	0.3102	0.	17729.	0.	0.3517	0.	15904.
1996	0.	30817.	23650.	2916.	57423.	0.2835	0.	16280.	0.	0.3245	0.	14634.
1997	0.	31822.	23650.	2187.	57699.	0.2591	0.	14950.	0.	0.2994	0.	13466.
1998	0.	32827.	23650.	1458.	57975.	0.2368	0.	13728.	0.	0.2763	0.	12351.
1999	-35149.	33828.	23650.	729.	58247.	0.2164	-7606.	12605.	0.	0.2550	-8662.	14401.
TOTAL	334851.			790960.		328985.	328985.		704669.		330974.	330974.

**** INTERNAL RATE OF RETURN ***** 9.42 PER CENT (BEFORE TAX) 8.37 PER CENT (AFTER TAX)

**** PAY-OUT PERIOD ***** 8.03 YEAR (BEFORE TAX) 8.03 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

	8102.	8.03 YEAR	8.03 YEAR
LAND & SITE IMPROVEMENT	8102.		
PLANT COST	304037.		
FREIGHT & INSURANCE	1415.		
SERVICES & MANAGEMENT	12116.		
RAILWAY SPUR	6596.		
UNSTRUCTURED FACILITIES	324164.		
PRE-INVEST AND START-UP EXP	10687.		
INTEREST DURING CONSTRUCTION	20501.		
TOTAL FIXED CAPITAL	363454.		
INITIAL WORKING CAPITAL	27047.		
TOTAL CAPITAL COST	390501.		

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	117150.
LONG TERM DEBT	273351.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	390501.

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 OVERALL PROJECT

(US\$ 1000)

CASE 84ND

YEAR	(1) AFT TAX PROFIT -TC- SALES REV S/H EQUITY (PCT)	(2) AFT TAX PROFIT -TC- (PCT)	(3) BFR TAX PROFIT -TC- (PCT)	(4) AFT TAX PROFIT -TC- (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)
1982	-2.5	-2.5	-0.7	-2.5	1.49	0.89	1.09	67. / 33.	74.6	422.8	67.1
1983	4.8	5.1	1.0	5.2	1.96	1.30	1.41	65. / 35.	71.8	367.3	64.5
1987	4.0	5.1	1.7	5.6	2.42	1.71	1.43	61. / 39.	80.1	347.6	71.8
1988	13.8	14.6	5.6	18.5	3.46	2.09	2.01	55. / 45.	70.4	332.0	63.0
1989	14.7	13.7	6.0	20.1	4.61	3.84	2.11	49. / 51.	68.4	327.1	61.1
1990	15.5	12.5	6.3	21.2	5.81	5.04	2.19	43. / 57.	67.0	325.0	59.7
1991	10.1	11.6	6.6	22.0	7.05	6.28	2.26	36. / 64.	65.7	323.0	58.4
1992	10.7	10.7	6.9	22.9	8.32	7.55	2.34	30. / 70.	64.4	320.9	57.2
1993	10.4	6.3	7.1	14.2	6.69	6.16	1.95	25. / 75.	63.2	318.8	55.9
1994	10.7	9.1	7.4	14.8	7.25	6.72	2.01	20. / 80.	61.9	316.7	54.7
1995	11.1	5.9	7.6	15.3	7.81	7.29	2.07	15. / 85.	60.7	314.6	53.5
1996	11.5	5.8	7.9	15.8	8.38	7.86	2.13	10. / 90.	59.5	312.5	52.3
1997	11.3	5.0	8.1	16.3	8.94	8.43	2.20	5. / 95.	58.2	310.4	51.1
1998	12.2	5.5	8.4	16.8	9.52	9.01	2.28	-0. / 100.	57.0	308.3	49.8
1999	12.5	5.4	8.7	17.3	19.04	18.09	2.36	-0. / 100.	55.8	306.2	48.6
AVERAGE1	10.9	7.4	5.9	14.9	6.85	6.19	1.99	32. / 68.	65.2	330.2	57.9
AVERAGE2	11.4	7.3	5.9	14.9	6.98	6.35	1.95	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.

JICA