

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	△ 94
<hr/>	
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	BNY
		(US\$1,000)
(1) Civil materials	3	3
(2) Construction labor	457	669
(3) Construction equipment	2,383	3,171
Total	2,843	3,843

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

	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

(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. Facilities Direct Cost							
(a) Equipment & Materials	0	0	45	38.2	53.0	38.2	53.0
Locomotive & Covered Cars							
Rails, Signal, etc.	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

第VII編 財務分析

第Ⅶ編 財務分析

第1章 総論

本編では、本計画の2つの利益センター、岩塩鉱山およびソーダ灰工場の財務分析とこの2つの利益センターを総合した全体計画の財務分析を行う。

本報告書で財務分析を行う目的は、2つある。

1. 工場候補地およびアンモニア供給先よりなる各代替案の相対的評価
2. 財務面からみた本計画の絶対的評価

上記目的のうち、工場候補地 (Ban Mab Chalood または Ban Nong Yai) については、本報告書で技術的、経済的な評価データをタイ政府に提出し、この評価データに基づいてタイ政府が総合的に判断することになっている。従って、本報告書では、相対的評価を中心に記述し、絶対的評価は、概論にとどめる。

ここに示す財務計画は、本計画の本格操業開始時期を1985年7月と仮定し、かつ、本計画の経済耐久年限 (Economic Life Span) を本格操業開始後15年として算定したものである。なお、各コスト要素は、1985年価格を基準として本プロジェクトの期間中不変であるとした。

第2章 財務分析

2-1 概 論

前回評価報告書と今回の調査の相違点は次のとおり。

1. 岩塩鉱山およびソーダ灰工場の社宅設備が計画内容より除外された。この事実は、とくに岩塩鉱山にとっては約6%の総投資額の減少をもたらす。
2. ソーダ灰工場の工場用地がLaem ChabangよりBan Mab Chalood, またはBan Nong Yai の2つの候補地になった。この事実は、岩塩鉱山にとっては岩塩の鉄道運賃が若干変る。(BMCで平均US \$ 10.3/T、BNYで平均US \$ 10.1/T、Laem Chabang ではUS \$ 10.1/T)
3. 工場立地の変更にもなつて、ソーダ灰工場の設備内容が変更され結果的に、ソーダ灰工場の総所要資金が変る。(第VI編参照)
4. 変動費要因には大きな変更はないが、燃料源が重油より天然ガスに変わり、鉄道運賃および電気料が改正されたので調整した。

上記の相違点にもかかわらず、前回報告書のコスト分析の結果は正当である。

1. 岩塩のコスト競争力は、大きく鉄道運賃の料率の如何に依存する。
2. ソーダ灰製造コストに与える変動費の影響の大きさはアンモニア価格、燃料(天然ガス)価格、岩塩価格の順に大きい。

2-2 財務分析のための基礎データおよび前提条件

上記、概論のとおり前回報告書と同様なので、下記のように表で示すにとどめる。

財務分析用 基礎データ

1. 販売価格：	ソーダ灰	US\$ 225/T	(タイ向)
(出荷価格)	塩 安	US\$ 150/T	(タイ向)
(1985年価格)		US\$ 120/T	(輸出向)
	岩 塩	US\$ 26/T	(ソーダ灰向)

2. 原料・用役価格

	1980年価格	1985年価格
アンモニア	—	US\$ 235/T
炭酸ガス	—	0
生石灰	US\$ 20/T	US\$ 28/T
ソーダ灰	—	US\$ 225/T
電力	US\$ 0.076/KWH	US\$ 0.092/KWH
用水	US\$ 0.08/m ³	US\$ 0.108/m ³
天然ガス	—	US\$ 4.6/MMBTU (重油換算US\$ 181.6/m ³)

3. 鉄道運賃

	1981年運賃	1985年運賃
岩 塩		
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
ソーダ灰		
BMC-Sattahip	US\$ 0.7/T	US\$ 0.85/T
BNY-Sattahip		

4. 前提条件

法人 税：8年免税後課税所得の40%

輸入税・事業税：免除される

減 価 償 却：残存簿価を0とし15年間の定額償却

融 資 条 件：据置き3年その後15年均等返済

金利は4%、5%、6%

ローヤリティ：岩塩鉱山出口販売価格の4%

5. 販売計画

表Ⅶ-1 から表Ⅶ-4 に示した。

〔注〕

販売先別販売価格 (US\$/T、1985年価格)。

1. ソーダ灰

<u>販売先</u>	<u>C I F 価格</u>	<u>海上運賃</u>
タイ	225	—
シンガポール	229	15
マレーシア	230	17
インドネシア	229	19
フィリピン	225	23

上記C I F 価格を各年毎に荷重平均し、海上運賃を差し引いて、各年毎、各販売先毎の出荷価格を決めた。

従って出荷価格は毎年異なる。

2. 岩 塩

<u>販売先</u>	<u>価 格</u>	<u>仕切り条件</u>
ソーダ灰工場	26	ソーダ灰工場着
タイ国内	30	需要地着
輸 出		FOB Sattahip
—マレーシア	29	
—シンガポール	24	
—その他(台湾)*	17	

* 想定ベース

Table VII-1 PROJECTED SALES OF ROCK SALT
(Rated Capacity: 1,200,000 t/y)

(Unit: tons)

(Year)	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th
Capacity Utilization (%)	(68)	(70)	(79.4)	(85.5)	(86.7)	(88.5)	(89.8)	(91.3)	(92.7)	(94.1)	(95.5)	(97)	(98.4)	(99.8)	(100.0)
Production	816,000	840,000	952,800	1,026,000	1,040,400	1,062,000	1,077,600	1,095,600	1,112,400	1,129,200	1,146,000	1,164,000	1,180,800	1,197,600	1,200,000
Inventory Increase	136,000	4,000	18,800	12,200	2,400	3,600	2,600	3,000	2,800	2,800	2,800	3,000	2,800	2,800	400
Sales Volume	680,000	836,000	934,000	1,013,800	1,038,000	1,058,400	1,075,000	1,092,600	1,109,600	1,126,400	1,43,200	1,161,000	1,178,000	1,194,800	1,199,600
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	193,350	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 Other Countries	37,210	97,540	99,420	99,250	99,800	99,840	99,320	99,800	99,680	99,360	99,040	99,720	99,600	99,280	86,960

Table VII-2 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-3 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-4 PROJECTED SALES OF AMMONIUM CHLORIDE
(Ammonium Chloride: 400,000 t/y)

	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	-	-	-	-	-	-	-	-

(Unit: tons)

2-3 財務分析

2-3-1 序

本計画の利益センターを次の3つに分け各々の財務分析を行った。

1. 岩塩鉱山
2. ソーダ灰工場
3. 全体計画

各々の利益センターについて変動し得る要素についての感度分析も行った。以下にはその結果を示すとともに、その評価を行った。

2-3-2 岩塩鉱山

計算結果を表Ⅶ-5 および図Ⅶ-1 に示した。なお、岩塩鉱山については、年間生産量を1,200,000 T を Base Case とするが、Alternative Caseとして1,800,000 T/年 の場合も併せ検討した。

結果は、下記のとおり。()内は税引前。

プラント・ IRR / サイト	Ban Mab Chalood	Ban Nong Yai
Base Case	13.30% (14.58%)	13.59% (14.88%)
Alternative Case	14.08% (15.37%)	14.56% (15.85%)

上記のように、プラント・サイトにより若干の差が出たが、これは、岩塩の仕切り条件を需要地および Sattahip 港 F O B としたためで、プラント・サイトによる差は鉄道運賃の差によるものであってサイトの優劣を意味するものではない。

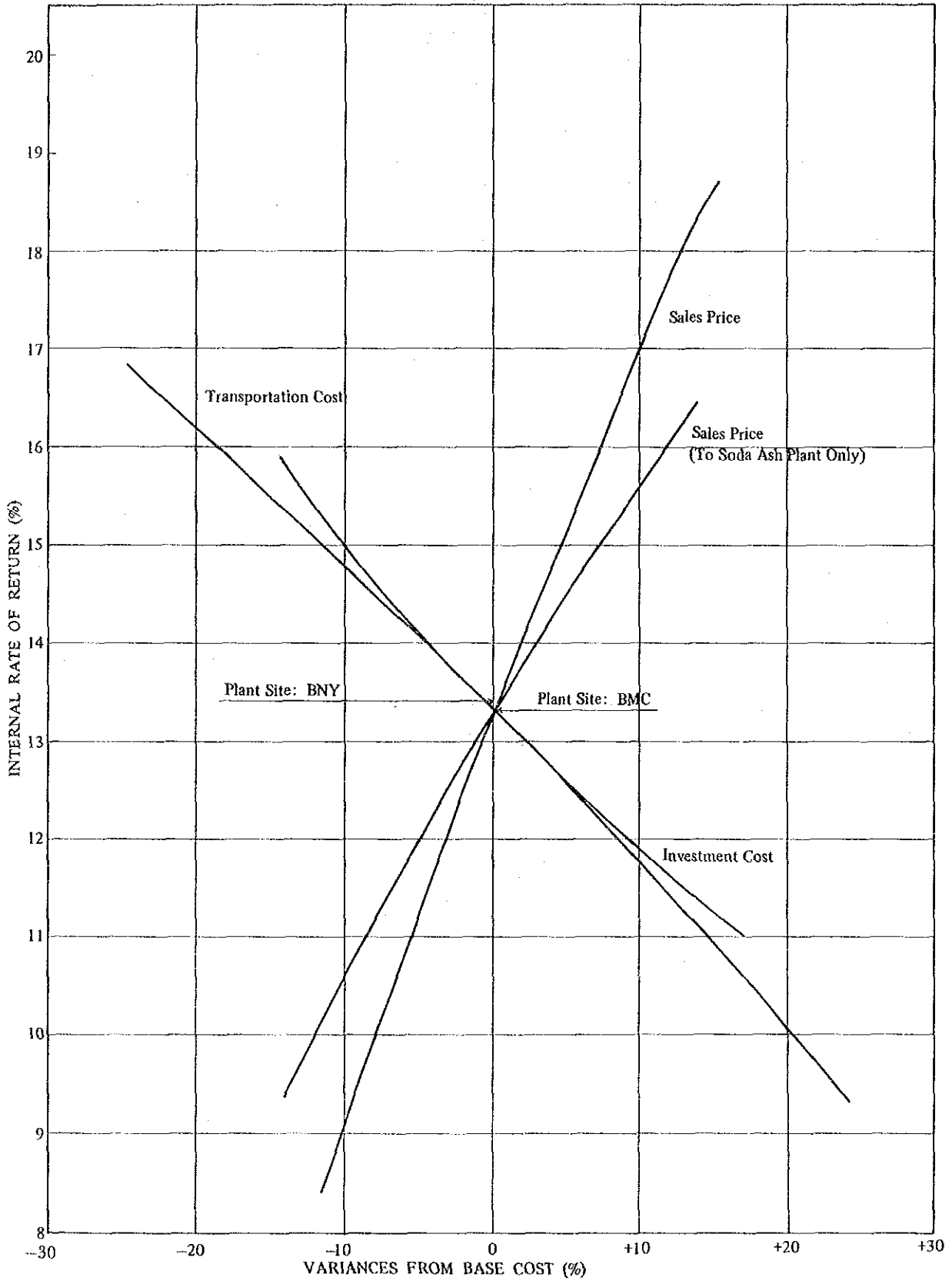
岩塩鉱山の収益性については、次のことがいえる。

1. ソーダ灰工場向けの供給価格を比較的高いレベルに設定したので、輸送費が大きいかもかわらず岩塩鉱山の収益性は比較的高い。
2. 感度分析の結果から明らかなように、収益に大きく影響する要素は、販売価格と鉄道輸送費である。ソーダ灰工場向け供給価格は、ソーダ灰工場側の収益性率とのかね合いを見て決める必要がある。この観点から岩塩の輸送運賃がいくらになるかが本計画全体の収益性にとって重要な要素となる。

**Table VII-5 SENSITIVITY OF INTERNAL RATE OF RETURN
ROCK SALT MINE**

Variances	IRR (%)	
	Before Tax	After Tax
1. Production Rate : 1,200,000 t/y		
1.1 Plant Site : Ban Mab Chalood		
Base Case	14.58	13.30
Investment Cost +10%	13.13	11.88
-10%	16.26	14.95
Sales Price +10%	18.28	16.97
-10%	10.28	9.13
Sales Price +10%	16.87	15.58
to Soda Ash Plant -10%	12.10	10.85
Transportation Cost +20%	11.29	10.09
-20%	17.51	16.20
1.2 Plant Site : Ban Nong Yai		
Base Case	14.88	13.59
2. Production Rate : 1,800,000 t/y		
2.1 Plant Site : Ban Mab Chalood		
Base Case	15.37	14.08
2.2 Plant Site : Ban Nong Yai		
Base Case	15.85	14.56

Fig. VII-1 SENSITIVITY OF IRR (AFTER TAX)
ROCK SALT MINE



2-3-3 ソーダ灰工場

ソーダ灰工場の投資利益率（IRRで求めた）は、表Ⅶ-6、Ⅶ-7に、感度分析の図は図Ⅶ-2およびⅦ-3に示した。また、基本ケースの計算結果は下記のとおり。

ケース	IRR%		サイト	アンモニア
	税引前	税引後		
BMCD	9.31	8.31	Ban Mab Chalood	国産
BMCI	8.21	7.29	Ban Mab Chalood	輸入
BNYD	8.56	7.61	Ban Nong Yai	国産
BNYI	8.34	7.42	Ban Nong Yai	輸入

総所要資金の差が、内部収益率の差になって出ており、総所要資金の結論と同様、アンモニア国産の場合はBan Mab Chaloodが、アンモニア輸入の場合はBan Nong Yaiが有利である。

ただし、いずれのアンモニア供給源でも1985年の国際価格US\$235/Tでアンモニアを購入できるものとした。

プラントサイトによる差が出たが、これは仕切り条件、すなわち、鉄道運賃のプラントサイトによる差が原因であっていずれの優位性を示すものではない。

2-3-4 プロジェクト全体

岩塩鉱山とソーダ灰工場を総合した本計画全体の収益性を計算すると下記のとおり。

本計画全体の内部収益率（IRR：%）

Case	税引前	税引後
BMCD	9.57	8.51
BMCI	8.64	7.64
BNYD	8.94	7.91
BNYI	8.75	7.75

ソーダ灰工場のIRRと同じ序列になり、理由もまったく同じである。

Table VII-6 SENSITIVITY OF INTERNAL RATE OF RETURN
SODA ASH PLANT

Plant Site	Ban Mab Chalood (BMC)				Ban Nong Yai (BNI)			
	Domestic (BMCD)		Import (BMCI)		Domestic (BNYD)		Import (BNI)	
Ammonia Source (Case)	Before	After	Before	After	Before	After	Before	After
Base Case	9.31	8.31	8.21	7.29	8.56	7.61	8.34	7.42
Sales Price (Soda Ash)	12.89	11.73	11.71	10.60	12.07	10.94	11.85	10.72
	3.62	3.12	2.16	1.88	2.69	2.33	2.39	2.07
Rock Salt Price	8.41	7.48	7.32	6.47	7.68	6.80	7.46	6.60
	10.17	9.12	9.05	8.08	9.40	8.41	9.19	8.20
Ammonia Price	7.43	6.57	6.33	5.57	6.69	5.89	6.47	5.69
	11.04	9.96	9.91	8.88	10.26	9.22	10.04	9.01
Natural Gas Price	8.39	7.45	7.30	6.45	7.65	6.78	7.44	6.58
	10.19	9.15	9.08	8.10	9.43	8.43	9.21	8.22
Investment Cost	7.81	6.93	6.74	5.94	7.09	6.26	6.88	6.07
	11.01	9.93	9.88	8.85	10.24	9.19	10.02	8.98

**Table VII-7 SENSITIVITY OF INTERNAL RATE OF RETURN (ROE)
SODA ASH PLANT**

Plant Site Ammonia Source (Case)		Ban Mab Chalood (BMC)		Ban Nong Yai (BNY)	
		Domestic (BMCD)	Import (BMCI)	Domestic (BNYD)	Import (BNYI)
Base Case		11.48	9.04	9.82	9.34
Sales Price	+10%	19.45	16.94	17.72	17.23
	-10%	0.0	0.0	0.0	0.0
Rock Salt Price	+20%	9.42	6.96	7.77	7.28
	-20%	13.44	10.98	11.76	11.28
Ammonia Price	+20%	7.13	4.58	5.42	4.93
	-20%	15.40	12.93	13.71	13.22
Natural Gas Price	+20%	9.37	6.90	7.71	7.23
	-20%	13.49	11.03	11.82	11.34
Investment Cost	+10%	8.04	5.58	6.39	5.91
	-10%	15.31	12.85	13.63	13.15

Fig. VII-2 SENSITIVITY OF IRR (AFTER TAX) - SODA ASH PLANT
(Plant Site : BAN MAB CHALOOD)

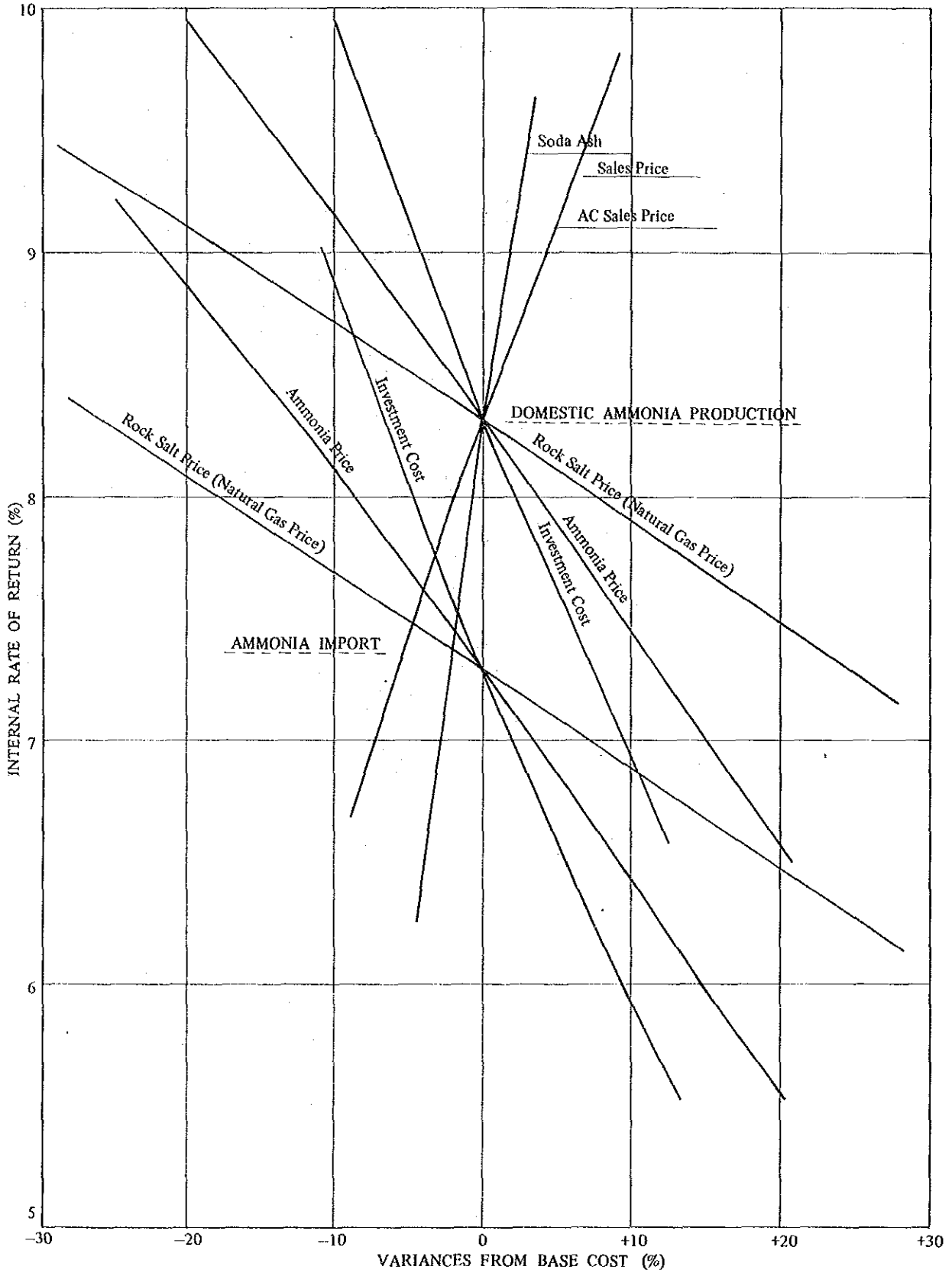
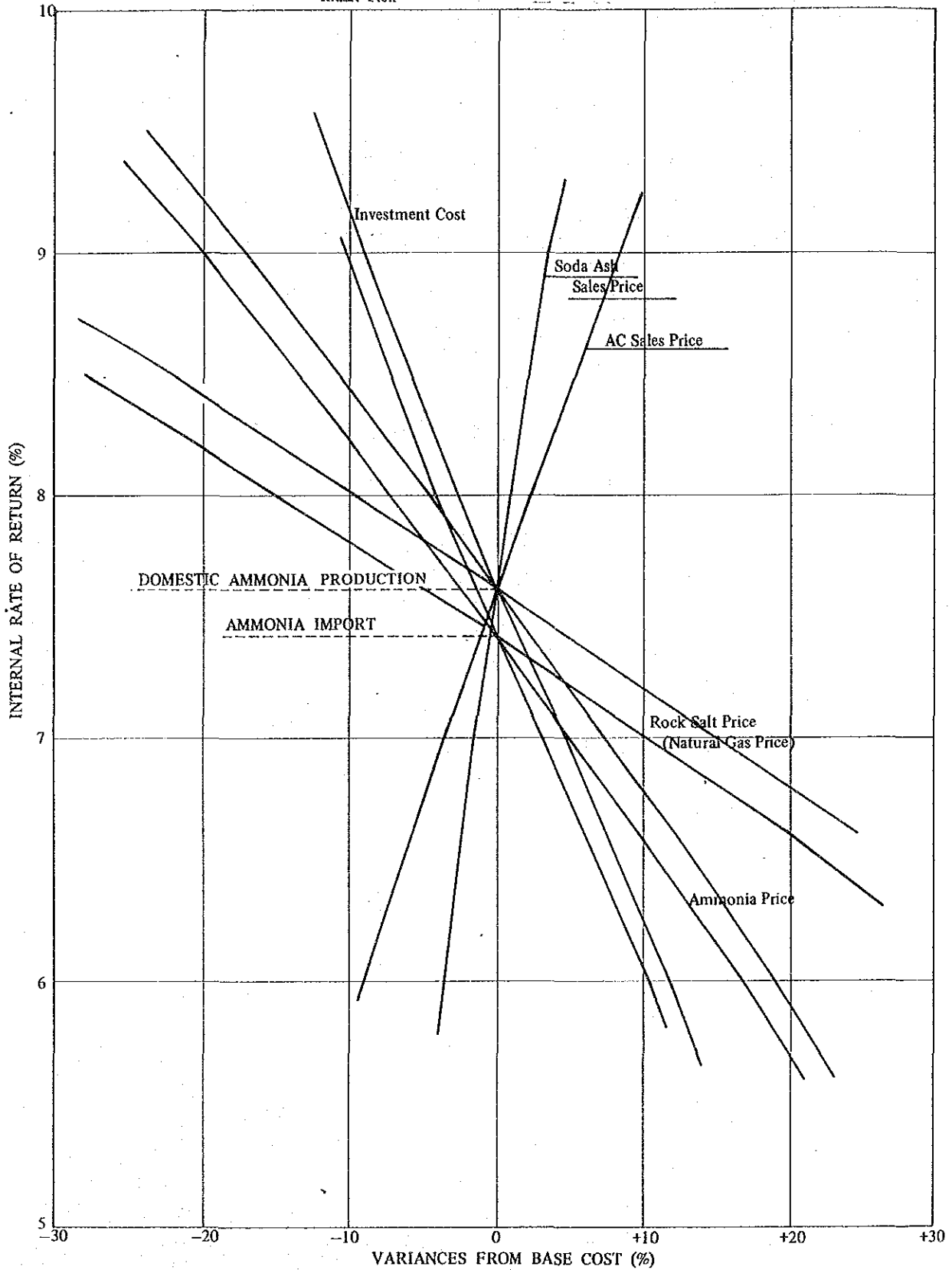


Fig. VII-3 SENSITIVITY OF IRR (AFTER TAX) - SODA ASH PLANT
(Plant Site: BAN NONG YAI)



ちなみに、岩塩鉱山の生産能力を1,800,000T/年にしたAlternative Caseでは、プラントサイト Ban Mab Chalood で考えると下記のとおりとなる。

内 部 収 益 率 (%)

<u>C a s e</u>	<u>税 引 前</u>	<u>税 引 後</u>
ABMCD	9.72	8.65
ABMCI	8.78	7.78

第3章 評価

3-1 各代替案の比較

(1) 総所要資金（除建中金利）と内部収益率の順位

順位	Case	総所要資金 (US\$1000)	税引後 内部収益率 (%)
1.	BMCD	355,546	8.51
2.	BNYD	370,001	7.91
3.	BNYI	374,166	7.75
4.	BMCI	376,366	7.64

アンモニアをタイ国内肥料工場計画より供給を受けた方が、アンモニア輸送・貯蔵設備が小規模となり、結果的に総所要資金および内部収益率が良くなる。

また、候補地による差は、アンモニア供給源に左右されアンモニア輸入の場合は、Ban Nong Yai が、アンモニア国産の場合は、Ban Mab Chalood が有利となる。

(2) アンモニアが国産され、本計画がそのアンモニアを国際価格（1985年価格US\$235/T）で受入れられれば、ASEAN各国間で合意された最低利益率（IRR8%）を、工場用地をBan Mab Chaloodの肥料計画予定地に隣接させることによって達成可能である。

(3) 本計画の経済性、利益率を左右する大きな要因は、

1. 計画中の肥料工場からのアンモニア価格
2. 岩塩の鉄道運賃
3. 天然ガス価格

であって、これらはいずれもタイ国政府が、政策的な介入が可能でもあり、低減策は採り得ると考えられる。

したがって、これらの低減策が施策されれば、本計画のいずれの候補地でも妥当な利益率は確保できる。

(4) もし、Sattahip Deep Sea Port が開発されても、本計画用の貯蔵庫が港務施設内に確保でき得ない場合は、工場用地より岩塩およびソーダ灰をベルトコンベア2本を設置し、Sattahip港の船舶に工場用地から直接積み込むことになる。この場合BMCからのこの操作は不可能であって、工場用地はBNYに限られてしまう。このベルトコンベア等の建設費は、1985年価格で次のとおりである。

(US\$ 1,000)

外貨部分	48,327
現地貨部分	10,020
合計	58,347

この金額は、各Caseに対して(利率5%を仮定して)

Case BNYD	17.3%
Case BNYI	17.1%

これらの建設費増大は、結果的にIRRを下記のように減少させる。税引後のみ。

	Base Case	本ケース
Case BNYD	7.91%	5.2%
Case BNYI	7.75%	5.1%

上記数値より、本計画のSattahip港の開発および、港湾施設内に貯蔵庫を持つことの重要さがわかる。

- (5) 用水、電力、天然ガスはタイ国政府が本計画のソーダ灰工場候補地境界まで輸送することになっているが、これらの輸送距離の差をみると下記のとおり。

タイ国政府負担による設備の候補地による差

	Ban Mab Chalood	Ban Nong Yai
用水パイプライン (m)	3,000	3,000
電力ケーブル (m)	2,000	24,000
天然ガスパイプライン (m)	1,000	24,000

3-2 本計画の評価

下記の諸問題が解決されれば、本計画は、技術的にフィージブルであるとともに財務面でも投資を正当化しうる収益性をもちうる。

1. 本計画の完成までにSattahip Deep Sea Portが完成すること。
2. IEATの用水・電力供給計画が本計画と並行して推進されること。
3. 岩塩およびソーダ灰の鉄道輸送に必要な諸施設(機関車、ホッパー車等)について、その所要資金が本計画の負担から除外されるとともに、特別運賃の適用等により本計画としての輸送費の軽減策が講じられること。

4. PTTよりの炭酸ガス供給が保証されること。
5. タイ国内肥料計画または、インドネシア等輸出国との交渉で国際価格または、それ以下でアンモニア供給源が確保されること。
6. PTTよりの天然ガス供給が低価格で保証されること。

第4章 経済評価

2つの候補地間の国家経済的評価を行うのは、次の理由で意味がないと考える。

すなわち、行政区画はBan Mab ChaloodはRayong Provinceに、Ban Nong YaiはChonburi Provinceに属するが、タイ国政府としては東部開発の名のもとに両Provinceとも同経済地域として扱っている。実際上も互間の距離は、約23kmと近く両地域は同一経済圏に属しているといえる。

付録一 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 shortend 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 base 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.

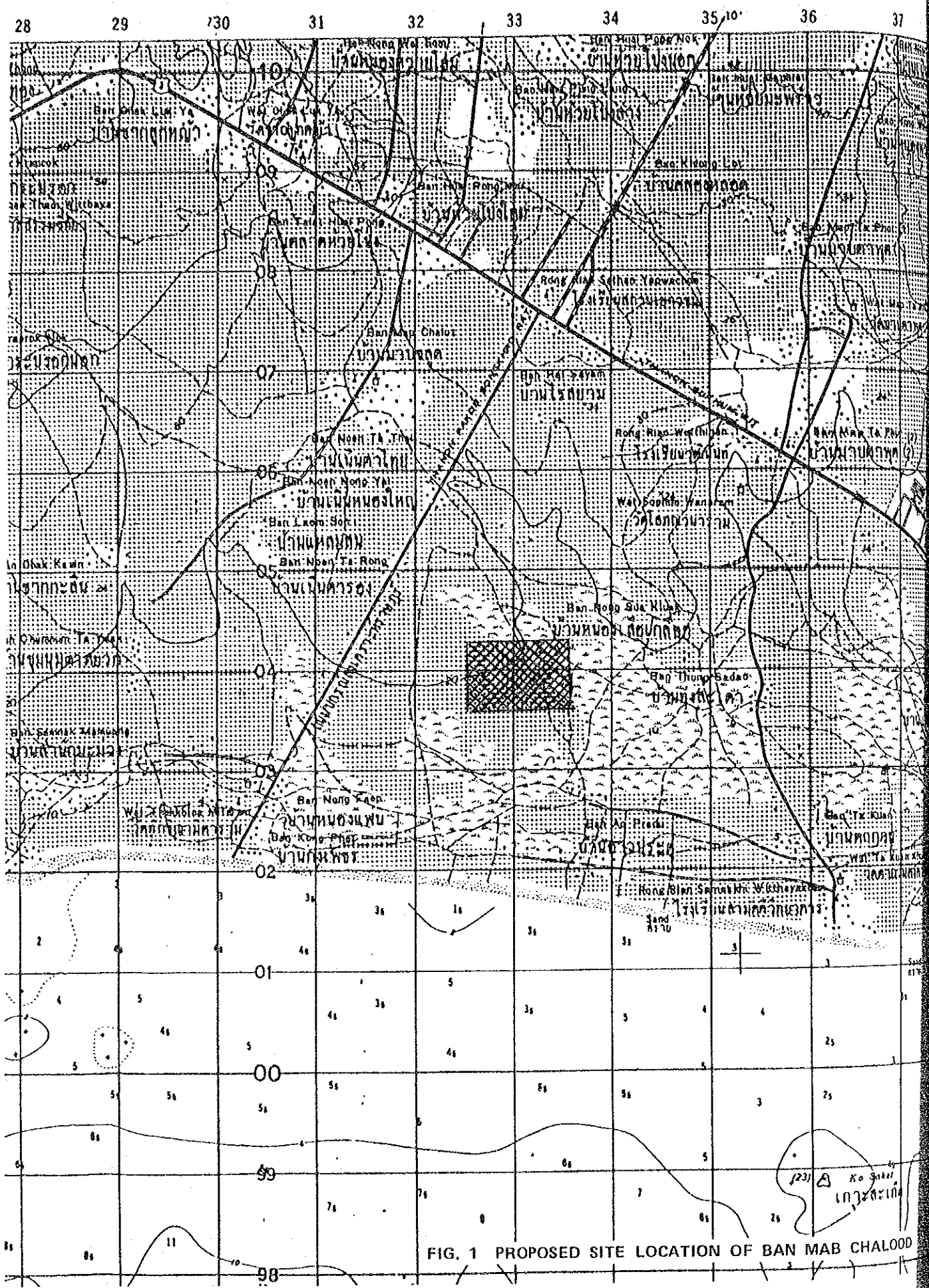


FIG. 1 PROPOSED SITE LOCATION OF BAN MAB CHALOOD

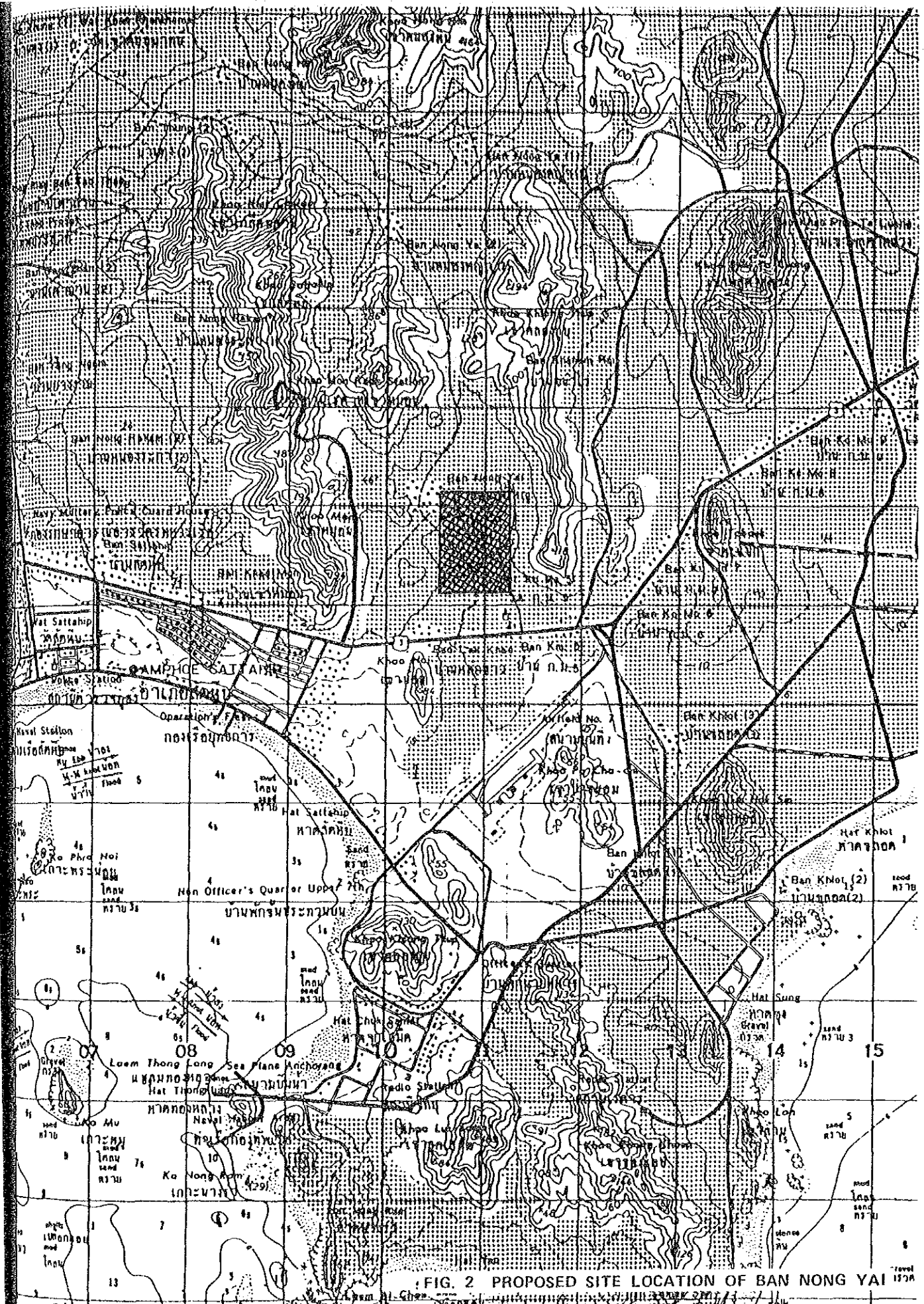


FIG. 2 PROPOSED SITE LOCATION OF BAN NONG YAI

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 Banmet 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.

c) 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 Sattahip 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 Karn 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. Satchee 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. Prateeb Chuntaketta	Director, Technical Dpt.

11. National Committee on Fertilizer Industry Development

Mr. Trakarn Chairat	Director
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付録－II

ソーダ灰製造プロセス工程説明

付録Ⅱ ソーダ灰製造プロセス工程説明

完全塩安併産法によるソーダ灰製造プロセスの主たる工程は次のように大別することができる。(図V-5参照)

1. 原塩精製工程
2. 塩化アンモニア析出工程
3. 炭化工程
4. か焼重灰化工程
5. 塩安乾燥工程
6. アンモニア回収工程

以下、各工程についてその概略を述べる。

(1) 原塩精製工程

本計画に使用する原料岩塩は、そこに含まれる SO_4 が一般に使用されている原塩に比して多いので SO_4 を除去しないと製品の純度を低下するおそれがある。従って本工程においてまず SO_4 を除去する。

受入れた原料塩は、粉砕機で粉砕されたのちスラリー槽に投入される。スラリー槽では投入された岩塩中の SO_4 を飽和塩水によって洗浄する。その後遠心分離機にて精製された岩塩と SO_4 を含む塩水溶液を分離する。かくて精製された原料塩は塩化アンモニア析出工程に送られる。一方分離された塩水は、生石灰および炭酸ガスによって精製を行い、ブライン槽中で清澄させる。かくて清澄された飽和塩水は循環使用する。沈殿スラリーはフィルタープレスで沝過し、沝液はブライン槽に返送する。また、残差は廃棄物処理施設に送る。

(2) 塩安析出工程

上記(1)の工程で精製された原料塩は、サルトスラリータンクに投入し、そこで1st Ammonia Absorberからの母液と、一方塩安分離機からの母液とともに混合する。この混合液は1st AC Crystalizer, 2nd AC Crystalizerを通過してAC Thicknerに送られる。注入された上記混合スラリー液は、1st AC Crystalizerおよび2nd AC Crystalizerでアンモニアの気化熱によって逐次冷却される。次に、AC Thicknerでは、スラリー液中に懸濁された塩化アンモニアを沈澱させる。AC Crystalizerにおいて気化したアンモニアの大半は、1st Ammonia Absorber, 2nd Ammonia Absorberに送られるが、一部のアンモニアはアンモニア冷凍機によって液化され、補給液化アンモニアとともに循環使用される。

AC Thickner において沈澱した塩化アンモニアは、AC Centrifuge に送り結晶塩化アンモニアとして分離する。かくて分離された結晶塩化アンモニアはAC 乾燥機に送る。分離母液およびAC Thickner の上澄み液の一部はサルトスラリータンクに送る。その他の液は2nd Ammonia Absorber にてアンモニアを吸収したのち次の炭化工程に送る。

(3) 炭化工程

2nd Ammonia Absorber から出た溶液はReacting Tank にて生石灰を加え液中の不純物と反応させ、その後Ammoniated Brine Thickner にて不純物を沈降させる。

Ammonia Brine Thickner 中の上澄み液は洗浄塔およびメイキング塔を経る過程で炭酸ガスと反応させる。上記両塔から出る未反応オフガスはCarbonator Scrubber 中で純水に吸収させ炭酸ガスを回収する。

メイキング塔より出た溶液は重曹分離機に送り、そこで遠心分離機により結晶粗重曹として分離する。重曹分離機から出た母液の大半は塩安析出工程に送り、一方、残さ母液はアンモニア回収塔に送る。

(4) か焼重灰化工程

前工程で得られた粗重曹は、水分および重炭酸アンモニアを含んでいる。粗重曹をそのままか焼炉にてか焼を行うとスケーリングによりか焼が不十分になり品質の低下をきたすので予めか焼炉からの転灰（もどし灰と称する）を適量添加してからか焼炉に投入し蒸気にて加熱して重曹を分解しLight ash とする。か焼炉の分解ガスは主としてアンモニアを一部含んだ炭酸ガスである。この分解ガスはCalciner Gas Washer で洗浄したあと炭化塔に送られる。一方Calciner Gas Washer の洗浄残液は重曹分離機の洗浄水として使用される。

か焼炉で得られたLight ash は粉じんが立ち易い微粉であるため使用に不便なので重灰（Dense ash ）とする。Light ash はMonohydrate Crystallizer にて約20重曹%の水を加えて良く混合したあとにDense ash dryer において蒸気によって加熱し水分を蒸発して製品とする。

Dryer からの蒸発分はDryer gas washer で洗浄を行う。洗浄後の残留水はMonohydrate Crystallizer で使用する。

(5) 塩安乾燥工程

塩安析出工程で得られた粗塩安は、塩安乾燥器から出たoff specの粒度の塩安とAC Mixerにて混合したあとにAC Granulator にて造粒し、AC Dryer にて

熱風で乾燥したうえ、篩分けして製品とする。off spec 品は再び AC Mixer に送られる

(6) アンモニア回収工程

本プロセスにおいては、原塩中の不純物が循環液中に蓄積されるので定時的に液を抜き出す必要がある。この抜き出した液と Ammoniated Brine Thickner にて発生した沈澱物とを混合したあとアルカリを加え、Ammonia Distiller において蒸気により加熱しアンモニアを分離させる。生成したアンモニアは Ammonia recover tower No 2 にて重曹分離母液を使用して吸収せしめ、Destiller scrubber において洗浄し、一方炭酸ガスは炭化塔に返送する。

Ammonia Distiller の塔底物は、Filter Press で汙過し、固型物は廃棄し、汙液の一部は系内において循環使用する。

付録一Ⅲ

FINANCIAL PROJECTIONS

FINANCIAL PROJECTIONS

(1) ROCK SALT MINE

ASEAN RS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 CASE BMC - RCKK SALT MINE: BASE CASE (1200000T/Y) - (US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION AND SALES											
CAPACITY	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.
CAPACITY UTILIZATION	0.660	0.700	0.794	0.855	0.867	0.885	0.898	0.913	0.927	0.941	0.955
PRODUCTION	816000.	840000.	952800.	1026000.	1040400.	1062000.	1077600.	1095600.	1112400.	1129200.	1146000.
INCREASE IN INVENTORIES	136000.	4000.	18800.	122000.	2400.	3600.	2600.	3000.	2800.	2800.	2800.
SALES VOLUME	680000.	836000.	934000.	1013800.	1038000.	1058400.	1075000.	1092600.	1109600.	1126400.	1143200.
SALES REVENUE	18135.	21794.	24473.	26632.	27334.	27943.	28444.	28961.	29469.	29972.	30476.
COST OF SALES	13907.	16950.	18337.	19552.	19941.	20226.	20463.	20710.	20950.	21186.	21422.
VARIABLE COST	12230.	12590.	14281.	15378.	15594.	15918.	16151.	16421.	16673.	16925.	17177.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.	3380.
OTHER FIXEC COST	1077.	1081.	1043.	1029.	1013.	997.	981.	965.	949.	933.	917.
(INC) IN PRODUCT INVENTORIES	-2781.	-81.	-369.	-235.	-46.	-69.	-49.	-57.	-53.	-53.	-52.
GROSS PROFIT OR (LOSS) ON SALES	4229.	4844.	6136.	7080.	7398.	7717.	7980.	8251.	8519.	8787.	9054.
LESS. SALES EXPENSES	445.	527.	594.	648.	660.	682.	655.	708.	722.	735.	748.
OPERATING PROFIT OR (LOSS)	3783.	4316.	5542.	6432.	6732.	7035.	7285.	7543.	7797.	8052.	8306.
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	1913.	2570.	3920.	4935.	5360.	5786.	6163.	6545.	6924.	7303.	7683.
LESS. INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	2770.	2921.	3073.
NET PROFIT OR (LOSS) AFTER TAX	1913.	2570.	3920.	4935.	5360.	5786.	6163.	6545.	4154.	4382.	4610.

ASEAN PS/SA PROJECT IN THAILAND
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 CASE BMC - KCKK SALT MINE: BASE CASE (120000T/Y) - (US\$ 1000)

	1996	1997	1998	1999
PRODUCTION AND SALES				
CAPACITY	1200000.	1200000.	1200000.	1200000.
CAPACITY UTILIZATION	0.570	0.584	0.998	1.000
PRODUCTION	1164000.	1180800.	1197600.	1200000.
INCREASE IN INVENTORIES	3000.	2800.	2800.	400.
SALES VOLUME	1161000.	1178000.	1194800.	1199600.
SALES REVENUE	30957.	31505.	32009.	32309.
CCST CF SALES	21672.	21912.	22148.	22212.
VARIABLE CCST	17446.	17698.	17950.	17986.
DEPRECIATION & AMORTIZATION	3380.	3380.	3380.	3380.
OTHER FIXED COST	901.	885.	869.	853.
(INC) IN PRODUCT INVENTORIES	-56.	-52.	-52.	-7.
GROSS PROFIT CR (LOSS) CN SALES	9325.	9593.	9861.	10096.
LESS. SALES EXPENSES	762.	775.	788.	798.
OPERATING PROFIT OR (LOSS)	8564.	8818.	9073.	9298.
LESS. INTEREST				
ON LONG TERM DEBT	459.	374.	249.	125.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT OR (LOSS) BEFORE TAX	8065.	8444.	8823.	9173.
LESS. INCOME TAX	3226.	3378.	3529.	3665.
NET PROFIT CR (LOSS) AFTER TAX	4839.	5066.	5294.	5504.

ASEAN RS/SA PROJECT IN THAILAND
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
 CASE BMC - ROCK SALT MINE: BASE CASE (1200000T/Y) - (US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS											
CASH GENERATED FROM OPERATION	27260.	14966.	11225.	8183.	7727.	9063.	5904.	10131.	10442.	10685.	10946.
PROFIT BEFORE TAX, INTEREST	0.	0.	0.	3783.	4316.	5542.	6432.	6732.	7035.	7285.	7543.
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.	1019.	30.	141.	91.	18.	27.	19.	22.
USES OF FUNDS											
INVESTMENT IN FIXED ASSET	16485.	20283.	15430.	5413.	4785.	4850.	4516.	4005.	3892.	3733.	3618.
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.	218.	5048.	545.	734.	525.	138.	150.	116.	126.
OTHER THAN CASH	0.	0.	0.	2267.	457.	335.	270.	88.	75.	63.	65.
INCREASE/ACC'T RECEIVABLE	0.	0.	0.	2781.	81.	369.	235.	46.	69.	49.	57.
INCREASE/DECR IN INVENTORIES	0.	0.	218.	0.	6.	30.	20.	4.	6.	4.	5.
PRODUCTS	0.	0.	0.	4365.	4240.	4116.	3951.	3866.	3742.	3617.	3492.
MATERIALS	0.	0.	0.	2494.	2494.	2494.	2494.	2494.	2494.	2494.	2494.
DEBT SERVICES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	1871.	1746.	1621.	1497.	1372.	1247.	1122.	998.
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 INCREASE OR (DECREASE)	10777.	-5317.	-4206.	-1231.	2942.	4213.	5388.	6126.	6551.	6552.	7327.
BEGINNING CASH BALANCE	0.	10777.	5460.	1255.	24.	2966.	7179.	12567.	18693.	25244.	32196.
ENDING CASH BALANCE	10777.	5460.	1255.	24.	2966.	7179.	12567.	18693.	25244.	32196.	39523.

ASEAN MS/SA PROJECT IN THAILAND
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
 CASE BMC - RECK SALT MINE: BASE CASE (1200000T/Y) - (US\$ 1000)

	1993	1994	1995	1996	1997	1996	1999
SOURCES OF FUNDS							
CASH GENERATED FROM OPERATION	11159.	11453.	11708.	11967.	12219.	12474.	12682.
PROFIT BEFORE TAX, INTEREST	7757.	8052.	8306.	8564.	8818.	9073.	9253.
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	21.	21.	21.	22.	21.	21.	3.
USES OF FUNDS	3488.	6132.	6159.	6192.	6214.	6241.	6194.
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.
PKE-INVEST. & START-UP EXP	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	121.	120.	120.	126.	120.	119.	46.
OTHER THAN CASH	63.	63.	63.	65.	63.	63.	38.
INCR(DECR) ACC T RECEIVABLE	53.	53.	52.	56.	54.	52.	7.
INCR(DECR) IN INVENTORIES	4.	4.	4.	5.	4.	4.	1.
PRODCUTS	3367.	3243.	3118.	2953.	2869.	2744.	2619.
MATERIALS							
DEBT SERVICES	2494.	2494.	2494.	2494.	2494.	2494.	2494.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
REPAYMENT OF SHORT TERM DEBT	873.	748.	624.	499.	374.	249.	125.
INTEREST ON LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON SHORT TERM DEBT	0.	2770.	2921.	3073.	3226.	3378.	3529.
INCOME TAX PAYMENT	0.	0.	0.	0.	0.	0.	0.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.
CASH INCREASE CR (DECREASE)	7710.	5321.	5549.	5774.	6005.	6233.	6488.
BEGINNING CASH BALANCE	39523.	47234.	52554.	58103.	63877.	69882.	76115.
ENDING CASH BALANCE	47234.	52554.	58103.	63877.	69882.	76115.	82603.

ASEAN RS/SA PROJECT IN THAILAND
 BALANCE SHEET (FOR YEARS ENDING JUNE 30)
 CASE BMC - ROCK SALT MINE: BASE CASE (120000T/Y) - (US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS											
CURRENT ASSETS	10777.	5460.	1473.	5291.	8777.	13724.	19637.	25901.	32602.	39671.	47124.
CASH	10777.	5460.	1255.	24.	2966.	7179.	12567.	18693.	25244.	32156.	39523.
ACCOUNTS RECEIVABLE	0.	0.	0.	2267.	2724.	3059.	3329.	3417.	3493.	3555.	3620.
INVENTORIES	0.	0.	0.	2781.	2862.	3232.	3467.	3513.	3582.	3631.	3688.
PRODUCTS	0.	0.	218.	218.	225.	255.	274.	278.	284.	288.	293.
MATERIALS											
NET FIXEC 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 CONSTRUCTIN	842.	1984.	2806.	2806.	2806.	2806.	2806.	2806.	2806.	2806.	2806.
LESS-DEPRECIATN & AMORTIZTN	0.	0.	0.	3380.	6761.	10141.	13522.	16902.	20283.	23663.	27044.
LIABILITIES											
CURRENT LIABILITIES	11225.	26191.	37416.	35940.	3476.	31122.	28719.	26243.	23775.	21300.	18829.
ACCOUNTS PAYABLE	0.	0.	2494.	3513.	3543.	3684.	3775.	3793.	3820.	3840.	3862.
INCOME TAX PAYABLE	0.	0.	0.	1015.	1049.	1150.	1281.	1299.	1326.	1345.	1368.
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.	17948.	20518.	24438.	29374.	34734.	40522.	46685.	53230.
SHARE CAPITAL	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.	16035.
RETAINED EARNINGS	0.	0.	0.	1913.	4483.	8403.	13339.	18659.	24487.	30650.	37195.

ASEAN RS/SA PROJECT IN THAILAND
 BALANCE SHEET (FOR YEARS ENDING JUNE 30)
 CASE BMC - ROCK SALT MINE: BASE CASE (1200000/Y) - (US\$ 1000)

	1993	1994	1995	1996	1997	1998	1999
ASSETS							
CURRENT ASSETS	54955.	60396.	66065.	71965.	78090.	84443.	90576.
CASH	47234.	52554.	58103.	63877.	65882.	76115.	82603.
ACCOUNTS RECEIVABLE	3684.	3747.	3810.	3875.	3938.	4001.	4039.
INVENTORIES	3741.	3794.	3846.	3902.	3954.	4006.	4013.
PRODUCTS	297.	302.	306.	311.	316.	320.	321.
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 & AMORTIZATION	30424.	33805.	37185.	40566.	43946.	47327.	50707.
LIABILITIES	19125.	16803.	14481.	12162.	9841.	7519.	5168.
CURRENT LIABILITIES	6053.	6826.	6998.	7174.	7346.	7519.	5168.
ACCOUNTS PAYABLE	1389.	1410.	1431.	1453.	1474.	1452.	1458.
INCOME TAX PAYABLE	2770.	2921.	3073.	3226.	3378.	3529.	3669.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT	2454.	2454.	2494.	2494.	2494.	2494.	0.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT							
FIXED LIABILITIES	12472.	9976.	7483.	4989.	2494.	-0.	-0.
LONG TERM DEBT BALANCE	12472.	9976.	7483.	4989.	2494.	-0.	-0.
STOCK HOLDERS EQUITY	57384.	61767.	66376.	71215.	76281.	81575.	87079.
SHARE CAPITAL	16035.	16035.	16035.	16035.	16035.	16035.	16035.
RETAINED EARNINGS	41349.	45731.	50341.	55180.	60246.	65540.	71044.

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION AND SALES PLAN
 CASE BMC - ROCK SALT MINE: BASE CASE (1200000T/Y) - (US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CAPACITY UTILIZATION	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.	1200000.
PRODUCTION (S/A PLANT)	0.680	0.700	0.794	0.855	0.867	0.865	0.898	0.913	0.927	0.941	0.955
INCREASE IN INVENTORY	816000.	840000.	952800.	1026000.	1040400.	1062000.	1077600.	1095600.	1112400.	1129200.	1146000.
SALES VOLUME (S/A PLANT)	136000.	4000.	18800.	12200.	2400.	5600.	2600.	3000.	2800.	2800.	2800.
UNIT PRICE (S/A PLANT)	680000.	836000.	934000.	1013800.	1038000.	1058400.	1075000.	1092600.	1109600.	1126400.	1143200.
SALES REVENUE	0.0267	0.0261	0.0262	0.0263	0.0263	0.0264	0.0265	0.0265	0.0266	0.0266	0.0267
*** TOTAL SALES REVENUE ***	18135.	21794.	24473.	26632.	27339.	27943.	28444.	28961.	29469.	29972.	30476.
*** TOTAL SALES VOLUME ***	18135.	21794.	24473.	26632.	27339.	27943.	28444.	28961.	29469.	29972.	30476.
*** AVERAGE SALES PRICE ***	680000.	836000.	934000.	1013800.	1038000.	1058400.	1075000.	1092600.	1109600.	1126400.	1143200.
*** AVERAGE SALES PRICE ***	0.0267	0.0261	0.0262	0.0263	0.0263	0.0264	0.0265	0.0265	0.0266	0.0266	0.0267

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION AND SALES PLAN
 CASE BMC - RCKK SALT MINE: BASE CASE (1200000T/Y) - (US\$ 1000)

	1956	1957	1958	1959
CAPACITY	1200000.	1200000.	1200000.	1200000.
CAPACITY UTILIZATION	0.570	0.984	0.998	1.000
PRODUCTION (S/A PLANT)	1164000.	1180800.	1197600.	1200000.
INCREASE IN INVENTORY	3000.	2800.	2800.	400.
SALES VOLUME (S/A PLANT)	1161000.	1178000.	1194800.	1199600.
UNIT PRICE (S/A PLANT)	0.0267	0.0267	0.0268	0.0269
SALES REVENUE	30957.	31505.	32009.	32305.
*** TOTAL SALES REVENUE ***	30957.	31505.	32009.	32305.
*** TOTAL SALES VOLUME ***	1161000.	1178000.	1194800.	1199600.
*** AVERAGE SALES PRICE ***	0.0267	0.0267	0.0268	0.0269

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 CASE BMC - ROCK SALT MINE: BASE CASE (L200000T/Y) -
 (US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION (S/A PLANT)	816000.	840000.	952800.	1026000.	1040400.	1062000.	1077600.	1095600.	1112400.	1129200.	1146000.
DIRECT LABOUR	906.	932.	1058.	1139.	1155.	1179.	1196.	1216.	1235.	1253.	1272.
MATERIALS	2615.	2696.	3058.	3293.	3340.	3409.	3459.	3517.	3571.	3625.	3679.
POWER	301.	305.	351.	378.	383.	391.	357.	404.	410.	416.	422.
DIRECT OP. COST	3826.	3938.	4467.	4810.	4878.	4979.	5052.	5137.	5215.	5294.	5373.
TRANSPORTATION COST	8405.	8652.	9814.	10568.	10716.	10939.	11099.	11285.	11458.	11631.	11804.
VARIABLE CCST	12230.	12590.	14281.	15378.	15594.	15918.	16151.	16421.	16673.	16925.	17177.
DEPRECIATION	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.	3193.
AMORTIZATION(INTEREST CUR.)	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 COST	1077.	1061.	1045.	1029.	1013.	997.	981.	965.	949.	933.	917.
EX-FACTORY PRODUCTION CCST	16688.	17032.	18706.	19787.	19987.	20295.	20513.	20767.	21003.	21238.	21474.
UNIT DIRECT OPERATING COST	0.0205	0.0203	0.0196	0.0193	0.0192	0.0191	0.0190	0.0190	0.0189	0.0188	0.0187
ROYALTY	445.	527.	554.	648.	666.	682.	695.	708.	722.	735.	748.
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	19004.	19305.	20922.	21932.	22025.	22224.	22330.	22473.	22597.	22722.	22846.
UNIT PRODUCTION COST	0.0233	0.0230	0.0220	0.0214	0.0212	0.0209	0.0207	0.0205	0.0203	0.0201	0.0199

ASEAN RS/SA PROJECT IN THAILAND
 PRODUCTION COST STATEMENTS
 CASE BMC - RCCK SALT MINE: BASE CASE (1200000/Y) - (US\$ 1000)

	1996	1997	1998	1999
PRODUCTION (S/A PLANT)	1164000.	1180800.	1197600.	1200000.
DIRECT LABOUR	1252.	1311.	1329.	1332.
MATERIALS	3736.	3790.	3644.	3652.
POWER	429.	435.	441.	442.
DIRECT CP. COST	5457.	5536.	5615.	5626.
TRANSPORTATION COST	11989.	12162.	12335.	12360.
VARIABLE CCST	17446.	17698.	17950.	17986.
DEPRECIATION	3193.	3193.	3193.	3193.
AMORTIZATION (INTEREST CUR.)	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	21728.	21964.	22200.	22220.
UNIT DIRECT OPERATING CCST	0.0187	0.0186	0.0185	0.0185
ROYALTY	762.	775.	788.	758.
INTEREST ON LONG-TERM DEBT	459.	374.	249.	125.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	22989.	23113.	23237.	23143.
UNIT PRODUCTION COST	0.0197	0.0196	0.0194	0.0193

ASEAN RS/SA PROJECT IN THAILAND
 IRR CALCULATION ON TOTAL INVESTMENT (US\$ 1000)
 CASE BMC - ROCK SALT MINE: BASE CASE (1200000/Y) -

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	RETURN BEFORE TAX	(BEFORE TAX)		DISCOUNT FACTOR	(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
						PRESENT VALUE INVEST.	RETURN					PRESENT VALUE INVEST.	RETURN
1982	15641.	0.	0.	0.	0.	15641.	0.	1.0000	0.	0.	1.0000	15641.	0.
1983	19160.	0.	0.	0.	0.	16722.	0.	0.8727	0.	0.	0.8826	16911.	0.
1984	15843.	0.	0.	0.	0.	12067.	0.	0.7616	0.	0.	0.7790	12342.	0.
1985	0.	1513.	3380.	1871.	7164.	0.	4762.	0.6647	0.	7164.	0.6876	0.	4926.
1986	0.	2570.	3380.	1746.	7697.	0.	4465.	0.5801	0.	7697.	0.6069	0.	4671.
1987	0.	3520.	3380.	1621.	8922.	0.	4517.	0.5063	0.	8922.	0.5357	0.	4779.
1988	0.	4935.	3380.	1497.	9813.	0.	4335.	0.4418	0.	9813.	0.4728	0.	4639.
1989	0.	5360.	3380.	1372.	10113.	0.	3899.	0.3856	0.	10113.	0.4173	0.	4220.
1990	0.	5788.	3380.	1247.	10416.	0.	3505.	0.3365	0.	10416.	0.3683	0.	3836.
1991	0.	6163.	3380.	1122.	10666.	0.	3132.	0.2937	0.	10666.	0.3251	0.	3467.
1992	0.	6545.	3380.	996.	10923.	0.	2800.	0.2563	0.	10923.	0.2869	0.	3134.
1993	0.	6924.	3380.	873.	11178.	0.	2500.	0.2237	2770.	8408.	0.2532	0.	2129.
1994	0.	7303.	3380.	748.	11432.	0.	2232.	0.1952	2921.	8511.	0.2235	0.	1902.
1995	0.	7683.	3380.	624.	11687.	0.	1991.	0.1704	3073.	8614.	0.1973	0.	1659.
1996	0.	8065.	3380.	499.	11944.	0.	1776.	0.1487	3226.	8718.	0.1741	0.	1518.
1997	0.	8444.	3380.	374.	12198.	0.	1583.	0.1297	3378.	8821.	0.1537	0.	1356.
1998	0.	8823.	3380.	249.	12453.	0.	1410.	0.1132	3529.	8924.	0.1357	0.	1211.
1999	-2744.	5173.	3380.	125.	12679.	-271.	1253.	0.0988	3669.	9009.	0.1197	-329.	1079.
TOTAL	47901.				159283.	44159.	44159.			136717.		44567.	44567.

***** INTERNAL RATE OF RETURN ***** 14.58 PER CENT (BEFORE TAX) 13.30 PER CENT (AFTER TAX)
 ***** PAY-OFF PERIOD ***** 5.94 YEAR (BEFORE TAX) 5.94 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

LAND & SITE IMPROVEMENT	1271.
PLANT DIRECTS (HARD)	30927.
FREIGHT & INSURANCE	1415.
SERVICES & MNGMNT	12116.
RAILWAY SPUR	3443.
CONSTRUCTED FACILITIES	47901.
PRE-INVEST AND START-UP EXP	0.
INTEREST DURING CONSTRUCTION	2806.
TOTAL FIXED CAPITAL	51978.
INITIAL WORKING CAPITAL	1473.
TOTAL CAPITAL COST	53451.

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	16035.
LONG TERM DEBT	37416.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	53451.

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 CASE BMC - ROCK SALT MINE: BASE CASE (1200000T/Y) -
 (US\$ 1000)

YEAR	(1) AFT TAX PROFIT -10-	(2) AFT TAX PROFIT -10- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -10- INVESTMENT (PCT)	(4) AFT TAX PROFIT -10- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -10- 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	10.5	10.7	3.6	11.9	1.51	0.65	1.64	64./ 36.0	47.4	26.6	40.7
1986	11.8	12.5	4.8	16.0	2.48	1.61	1.82	59./ 41.	49.3	22.0	42.3
1987	16.0	16.0	7.3	24.4	3.73	2.78	2.17	53./ 47.	47.6	21.5	40.6
1988	18.5	16.8	9.2	30.8	5.20	4.21	2.46	46./ 54.	46.2	20.8	39.3
1989	19.6	15.4	10.0	33.4	6.83	5.83	2.62	39./ 61.	44.9	20.4	38.0
1990	20.7	14.3	10.8	36.1	8.53	7.52	2.78	33./ 67.	42.5	20.2	36.7
1991	21.7	13.2	11.5	38.4	10.33	9.31	2.95	27./ 73.	42.2	19.9	35.4
1992	22.6	12.3	12.2	40.8	12.20	11.17	3.13	22./ 78.	41.0	19.8	34.2
1993	14.1	7.2	13.0	25.9	8.26	7.65	2.50	18./ 82.	39.7	19.6	32.9
1994	14.6	7.1	13.7	27.3	8.85	8.25	2.62	14./ 86.	38.5	19.4	31.7
1995	15.1	6.9	14.4	28.7	9.44	8.65	2.76	10./ 90.	37.2	15.2	30.5
1996	15.6	6.8	15.1	30.2	10.03	9.44	2.91	7./ 93.	36.0	19.0	29.4
1997	16.1	6.6	15.8	31.6	10.63	10.05	3.08	3./ 97.	34.8	18.9	28.2
1998	16.5	6.5	16.5	33.0	11.23	10.66	3.25	-0./100.	33.6	18.7	27.0
1999	17.0	6.3	17.2	34.3	17.61	16.77	3.44	-0./100.	32.2	18.6	25.7
AVERAGE1	16.7	10.6	11.7	29.5	8.46	7.65	2.67	26./ 74.	40.9	20.3	34.2
AVERAGE2	16.9	9.2	11.7	29.5	9.03	8.27	2.61	23./ 77.			

(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 BMC - ROCK SALT MINE: BASE CASE (1000000/Y) -

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	15641.	0.	0.	0.	0.	15641.	0.	0.	0.	1.0000	15641.	0.
1983	15160.	0.	0.	0.	0.	16608.	0.	0.	0.	0.8766	16796.	0.
1984	15843.	0.	0.	0.	0.	11904.	0.	0.	0.	0.7684	12174.	0.
1985	0.	2263.	3380.	1871.	7514.	0.	4894.	0.	7514.	0.6735	0.	5061.
1986	0.	2989.	3380.	1746.	8116.	0.	4582.	0.	8116.	0.5904	0.	4792.
1987	0.	4430.	3380.	1621.	9431.	0.	4615.	0.	9431.	0.5175	0.	4881.
1988	0.	5550.	3380.	1497.	10427.	0.	4423.	0.	10427.	0.4537	0.	4730.
1989	0.	5948.	3380.	1372.	10700.	0.	3934.	0.	10700.	0.3977	0.	4255.
1990	0.	6354.	3380.	1247.	10982.	0.	3500.	0.	10982.	0.3486	0.	3828.
1991	0.	6721.	3380.	1122.	11224.	0.	3101.	0.	11224.	0.3056	0.	3430.
1992	0.	7088.	3380.	998.	11466.	0.	2746.	0.	11466.	0.2679	0.	3071.
1993	0.	7455.	3380.	873.	11708.	0.	2430.	2982.	8726.	0.2348	0.	2049.
1994	0.	7821.	3380.	748.	11950.	0.	2150.	3129.	8822.	0.2058	0.	1816.
1995	0.	8188.	3380.	624.	12192.	0.	1901.	3275.	8917.	0.1804	0.	1609.
1996	0.	8555.	3380.	499.	12434.	0.	1681.	3422.	9012.	0.1581	0.	1425.
1997	0.	8921.	3380.	374.	12676.	0.	1485.	3569.	9108.	0.1386	0.	1263.
1998	0.	9288.	3380.	249.	12918.	0.	1312.	3715.	9203.	0.1215	0.	1118.
1999	-2744.	5655.	3380.	125.	13160.	0.0880	-242.	3862.	9298.	0.1065	-252.	990.
TOTAL	47901.				166899.	43912.	43912.		142945.		44318.	44318.

***** INTERNAL RATE OF RETURN ***** 15.37 PER CENT (BEFORE TAX) 14.08 PER CENT (AFTER TAX)
 ***** PAY-OFF PERIOD ***** 5.66 YEAR (BEFORE TAX) 5.66 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

LAND & SITE IMPROVEMENT	1271.
PLANT DIRECTS (HARD)	30927.
FREIGHT & INSURANCE	1415.
SERVICES & MGMT	12116.
RAILWAY SPUR	3443.
UNSTRUCTURED FACILITIES	47901.
PRE-INVEST AND START-UP EXP	0.
INTEREST DURING CONSTRUCTION	2806.
TOTAL FIXED CAPITAL	51978.
INITIAL WORKING CAPITAL	1473.
TOTAL CAPITAL COST	53451.

SOURCE OF FUNDS

PAID-UP SHARE CAPITAL	16035.
LONG TERM DEBT	37416.
SHORT TERM DEBT	0.
FINANCIAL RESOURCES	53451.

ASEAN RS/SA PROJECT IN THAILAND
 PROFITABILITY AND FINANCIAL INDICATORS
 CASE BMC - ROCK SALT MINE: BASE CASE (180000T/Y) - (US\$ 1000)

YEAR	(1) AFT TAX PROFIT -TJ-	(2) AFT TAX PROFIT -TC-	(3) BFR TAX PROFIT -TC-	(4) AFT TAX PROFIT -TU-	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TC- S/H EQUITY	(9)* PROFIT B.E.P. CAPACITY UTILIZE (PCT)	(10)* CASH B.E.P. SALES PRICE (PRICE)	(11)* CASH B.E.P. CAPACITY UTILIZE (PCT)
1985	9.4	12.4	4.2	14.1	1.42	0.59	1.72	64./ 36.	46.5	23.7	40.0
1986	9.6	14.0	5.6	18.6	2.40	1.28	1.91	58./ 42.	53.6	19.6	46.0
1987	12.7	17.2	8.3	27.6	3.51	2.31	2.29	52./ 48.	51.3	19.0	43.8
1988	14.3	17.8	10.4	34.6	4.74	3.49	2.61	44./ 56.	51.0	18.5	43.3
1989	15.0	18.0	11.1	37.1	6.19	4.93	2.77	38./ 62.	49.2	18.2	41.7
1990	16.0	14.6	11.9	39.6	7.71	6.45	2.94	31./ 69.	47.0	18.1	39.6
1991	16.8	13.4	12.6	41.9	9.32	8.06	3.10	26./ 74.	44.9	18.0	37.7
1992	17.6	12.4	13.3	44.2	11.00	9.74	3.28	21./ 79.	43.0	17.9	35.9
1993	11.0	7.2	13.5	27.9	7.83	4.06	2.59	17./ 83.	41.1	17.9	34.1
1994	11.5	7.1	14.6	29.3	8.41	7.66	2.72	13./ 87.	39.3	17.8	32.4
1995	12.0	6.5	15.3	30.6	9.00	8.26	2.86	9./ 91.	37.5	17.7	30.8
1996	12.5	6.7	16.0	32.0	9.55	8.86	3.01	6./ 94.	35.8	17.7	29.2
1997	12.9	6.5	16.7	33.4	10.15	9.48	3.17	3./ 97.	34.2	17.6	27.7
1998	13.4	6.4	17.4	34.8	10.80	10.09	3.35	-0./100.	32.6	17.5	26.2
1999	13.8	6.2	18.1	36.1	16.06	15.09	3.55	-0./100.	31.1	17.4	24.8
AVERAGE1	13.2	11.0	12.6	32.1	7.88	6.89	2.79	25./ 75.	42.5	18.4	35.5
AVERAGE2	13.4	9.4	12.6	32.1	8.34	7.41	2.73	22./ 78.			

(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 FJK (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 KS/SA PROJECT IN THAILAND ***
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 - BASE CASE (SCDA ASH PLANT) - (US\$ 1000)

CASE BMCC

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
SALES REVENUE	53962.	115006.	130108.	144006.	145999.	140165.	146346.	146510.	146678.	146846.	147014.
COST OF SALES	87886.	103205.	111665.	120115.	121037.	120949.	120862.	120774.	120686.	120598.	120511.
VARIABLE COST	59530.	68034.	76539.	85043.	85043.	85043.	85043.	85043.	85043.	85043.	85043.
DEPRECIATION & AMORTIZATION	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.
OTHER FIXED COST	16955.	16871.	16783.	16095.	16608.	16520.	16432.	16344.	16257.	16169.	16081.
(INCL) IN PRODUCT INVENTORIES	-7989.	-1086.	-1044.	-1005.	0.	0.	0.	0.	0.	0.	0.
GRSS PROFIT OR (LOSS) CV SALES	6076.	12400.	18443.	24491.	24962.	25216.	25484.	25736.	25992.	26248.	26503.
LESS. SALES EXPENSES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
OPERATING PROFIT OR (LOSS)	6076.	12400.	18443.	24491.	24962.	25216.	25484.	25736.	25992.	26248.	26503.
LESS. INTEREST	11265.	10512.	9761.	9010.	8259.	7509.	6758.	6007.	5256.	4505.	3754.
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	-5187.	1888.	8682.	15480.	16703.	17708.	18727.	19729.	20736.	21743.	22749.
LESS. INCOME TAX	0.	0.	0.	0.	0.	0.	0.	0.	8294.	8697.	9100.
NET PROFIT OR (LOSS) AFTER TAX	-5187.	1888.	8682.	15480.	16703.	17708.	18727.	19729.	12442.	13046.	13650.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 INCOME STATEMENTS (FOR YEARS ENDING JUNE 30)
 - BASE CASE (SCDA ASH PLANT) -
 (US\$ 1000)

CASE BMCC

1996 1997 1998 1995

SALES REVENUE	147178.	147346.	147514.	147678.
CCST CH SALES	120423.	120355.	120247.	120160.
VARIABLE CCST	85043.	85043.	85043.	85043.
DEPRECIATION & AMORTIZATION	19386.	19386.	19386.	19386.
OTHER FIXED CCST	15553.	15906.	15818.	15730.
(INV) IN PRODUCT INVENTORIES	0.	0.	0.	0.
GROSS PROFIT CR (LOSS) IN SALES	26755.	27011.	27267.	27518.
LESS. SALES EXPENSES	0.	0.	0.	0.
OPERATING PROFIT CR (LOSS)	26755.	27011.	27267.	27518.
LESS. INTEREST				
ON LONG TERM DEBT	3005.	2253.	1502.	751.
ON SHORT TERM DEBT	0.	0.	0.	0.
NET PROFIT CR (LOSS) BEFORE TAX	23752.	24758.	25765.	26767.
LESS. INCOME TAX	901.	903.	10306.	10707.
NET PROFIT CR (LOSS) AFTER TAX	14251.	14855.	15459.	16060.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30)
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
SOURCES OF FUNDS											
CASH GENERATED FROM OPERATION	46538.	128718.	96538.	30421.	32495.	38538.	44586.	44349.	44603.	44871.	45123.
PROFIT BEFORE TAX, INTEREST DEPRECIATION & AMORTIZATION	0.	0.	0.	6076.	12400.	18443.	24451.	24962.	25216.	25484.	25736.
FINANCIAL RESOURCES	96538.	128718.	96538.	0.	0.	0.	19386.	19386.	19386.	19386.	19386.
SHARE CAPITAL	28961.	38615.	28961.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	67577.	90102.	67577.	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.	4959.	708.	708.	708.	0.	0.	0.	0.
USES OF FUNDS											
INVESTMENT IN FIXED ASSET	89457.	112044.	100635.	46014.	30166.	28480.	27694.	23451.	22546.	21757.	21044.
LAND AND SITE IMPROVEMENT	5424.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	78964.	105286.	78964.	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	5068.	6758.	5068.	0.	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET OTHER THAN CASH	0.	0.	5915.	15734.	4637.	3701.	3667.	174.	21.	23.	21.
INCR(DECR) ACCT RECEIVABLE	0.	0.	0.	11745.	2706.	1813.	1812.	174.	21.	23.	21.
INCR(DECR) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PURCHASES OF MATERIALS	0.	0.	5915.	7989.	1086.	1044.	1009.	0.	0.	0.	0.
DEBT SERVICES	0.	0.	0.	26280.	25529.	24778.	24027.	23276.	22526.	21775.	21024.
REPAYMENT OF LONG TERM DEBT	0.	0.	0.	15017.	15017.	15017.	15017.	15017.	15017.	15017.	15017.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	0.	0.	0.	11269.	10512.	9761.	9010.	8259.	7509.	6758.	6007.
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)	7082.	16674.	-4097.	-15593.	2329.	10059.	16892.	20898.	22056.	23074.	24078.
BEGINNING CASH BALANCE	0.	7082.	23756.	15659.	4066.	6395.	16454.	33345.	54244.	76300.	99374.
ENDING CASH BALANCE	7082.	23756.	19659.	4066.	6395.	16454.	33345.	54244.	76300.	99374.	123452.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 FUNDS FLOW STATEMENTS (FOR YEARS ENDING JUNE 30) (US\$ 1000)
 - BASE CASE (SODA ASH PLANT) -

CASE 8MCD

1993 1994 1995 1996 1997 1998 1999

SOURCES OF FUNDS	1993	1994	1995	1996	1997	1998	1999
CASH GENERATED FROM OPERATION	45376.	45634.	45890.	46142.	46397.	46653.	46905.
PROFIT BEFORE TAX, INTEREST DEPRECIATION & AMORTIZATION	25942.	26248.	26503.	26755.	27011.	27267.	27518.
FINANCIAL RESOURCES	15386.	19386.	19386.	19386.	19386.	19386.	19386.
SPARE 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	20294.	27836.	27489.	27141.	26791.	26443.	26094.
INVESTMENT IN FIXED ASSET	0.	0.	0.	0.	0.	0.	0.
LAND AND SITE IMPROVEMENT	0.	0.	0.	0.	0.	0.	0.
CONSTRUCTED FACILITIES	0.	0.	0.	0.	0.	0.	0.
PRE-INVEST. & START-UP EXP.	0.	0.	0.	0.	0.	0.	0.
INTEREST DURING CONSTRUCTN	0.	0.	0.	0.	0.	0.	0.
INCREASE IN CURRENT ASSET	21.	21.	21.	20.	21.	21.	20.
OTHER THAN CASH	21.	21.	21.	20.	21.	21.	20.
INCR(DECR) ACCT RECEIVABLE	21.	21.	21.	20.	21.	21.	20.
INCR(DECR) IN INVENTORIES	0.	0.	0.	0.	0.	0.	0.
PRELUCTS	0.	0.	0.	0.	0.	0.	0.
MATERIALS	0.	0.	0.	0.	0.	0.	0.
DEBT SERVICES	20273.	19522.	18771.	18020.	17270.	16519.	15768.
REPAYMENT OF LONG TERM DEBT	15017.	15017.	15017.	15017.	15017.	15017.	15017.
REPAYMENT OF SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG TERM DEBT	5256.	4505.	3754.	3003.	2253.	1502.	751.
INTEREST ON SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.
INCOME TAX PAYMENT	0.	8294.	8697.	9100.	9501.	9903.	10306.
DIVIDENDS PAYMENT	0.	0.	0.	0.	0.	0.	0.

20294. 27836. 27489. 27141. 26791. 26443. 26094.

CASH INCREASE LR (DECREASE)	25084.	17797.	18401.	15001.	19606.	20210.	20810.
BEGINNING CASH BALANCE	123452.	148536.	166333.	184733.	203734.	223340.	243550.
ENDING CASH BALANCE	148536.	166333.	184733.	203734.	223340.	243550.	264360.

*** ASEAN RS/SA PROJECT IN THAILAND ***

BALANCE SHEET (FOR YEARS ENDING JUNE 30)
- BASE CASE (SCDA ASH PLANT) -

CASE EMCC

(US\$ 1000)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
ASSETS	96538.	225256.	321794.	306549.	294129.	288502.	289674.	291360.	294051.	297761.	302473.
CURRENT ASSETS	7082.	23756.	25574.	29715.	36882.	50442.	71000.	92072.	114149.	137245.	161344.
CASH	7082.	23756.	19659.	4066.	6395.	16454.	33345.	54244.	76300.	99374.	123452.
ACCOUNTS RECEIVABLE	0.	0.	0.	11745.	14451.	18264.	18076.	18250.	18271.	18293.	18314.
INVENTORIES	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
PRODUCTS	0.	0.	0.	7565.	9076.	10119.	11128.	11128.	11128.	11128.	11128.
MATERIALS	0.	0.	5915.	5915.	6760.	7605.	8450.	8450.	8450.	8450.	8450.
NET FIXED ASSETS	89457.	201500.	296220.	276834.	257447.	238061.	218674.	199288.	179802.	160115.	141125.
INVESTMENT	89457.	201500.	296220.	296220.	296220.	296220.	296220.	296220.	296220.	296220.	296220.
LAND & SITE IMPROVEMENT	5424.	5424.	5424.	5424.	5424.	5424.	5424.	5424.	5424.	5424.	5424.
CONSTRUCTED FACILITIES	78964.	184250.	263215.	263215.	263215.	263215.	263215.	263215.	263215.	263215.	263215.
PRE-INVEST. & START-UP EXP	0.	0.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCTN	5068.	11826.	16894.	16894.	16894.	16894.	16894.	16894.	16894.	16894.	16894.
LESS DEPRECIATION & AMORTIZTN	0.	0.	0.	19386.	38773.	58159.	77546.	96932.	116318.	135705.	155051.
LIABILITIES	67577.	157679.	225256.	215198.	200889.	186580.	172272.	157255.	142238.	127221.	112203.
CURRENT LIABILITIES	0.	0.	15017.	19976.	20684.	21593.	22101.	22101.	22101.	22101.	22101.
ACCOUNTS PAYABLE	0.	0.	0.	4959.	5667.	6376.	7084.	7084.	7084.	7084.	7084.
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 CBST	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
LONG TERM DEBT	0.	0.	15017.	15017.	15017.	15017.	15017.	15017.	15017.	15017.	15017.
SHORT TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
FIXED LIABILITIES	67577.	157679.	210239.	195222.	180205.	165188.	150171.	135153.	120136.	105119.	90102.
LONG TERM DEBT BALANCE	67577.	157679.	210239.	195222.	180205.	165188.	150171.	135153.	120136.	105119.	90102.
STOCK HOLDERS EQUITY	28961.	67577.	96538.	91351.	93240.	101922.	117402.	134106.	151813.	170540.	190269.
SHARE CAPITAL	28961.	67577.	96538.	96538.	96538.	96538.	96538.	96538.	96538.	96538.	96538.
RETAINED EARNINGS	0.	0.	0.	-5187.	-3298.	5384.	20864.	37567.	55275.	74002.	93731.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 BALANCE SHEET (FOR YEARS ENDING JUNE 30)
 CASE BMCC - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

	1993	1994	1995	1996	1997	1998	1999
ASSETS	308192.	306623.	305656.	305293.	305534.	306378.	307823.
CURRENT ASSETS	186446.	204267.	222689.	241710.	261337.	281568.	302399.
CASH	146330.	166333.	184733.	203734.	223340.	243550.	264360.
ACCOUNTS RECEIVABLE	18335.	18356.	18377.	18397.	18418.	18439.	18460.
INVENTORIES	11128.	11128.	11128.	11128.	11128.	11128.	11128.
PREPAYS	8450.	8450.	8450.	8450.	8450.	8450.	8450.
MATERIALS							
NET FIXED ASSETS	121742.	102356.	82970.	63583.	44197.	24810.	5424.
INVESTMENT	296220.	296220.	296220.	296220.	296220.	296220.	296220.
LAND & SITE IMPROVEMENT	5424.	5424.	5424.	5424.	5424.	5424.	5424.
CONSTRUCTED FACILITIES	263215.	263215.	263215.	263215.	263215.	263215.	263215.
PRE-INVEST. & START-UP EXP	10687.	10687.	10687.	10687.	10687.	10687.	10687.
INTEREST DURING CONSTRUCTN	16894.	16894.	16894.	16894.	16894.	16894.	16894.
LESS DEPRECIATION & AMORTIZTN	174478.	193864.	213250.	232637.	252023.	271410.	290796.
LIABILITIES	105481.	90866.	76232.	61636.	47022.	32407.	17751.
CURRENT LIABILITIES	30356.	30798.	31201.	31602.	32004.	32407.	17791.
ACCOUNTS PAYABLE	704.	7084.	7084.	7084.	7084.	7084.	7084.
INCOME TAX PAYABLE	8294.	8697.	9100.	9501.	9903.	10306.	10707.
DIVIDENDS PAYABLE	0.	0.	0.	0.	0.	0.	0.
CURRENT PORTION OF DEBT	15017.	15017.	15017.	15017.	15017.	15017.	0.
LONG TERM DEBT	0.	0.	0.	0.	0.	0.	0.
SHORT TERM DEBT							
FIXED LIABILITIES	75065.	60068.	45051.	30034.	15017.	-0.	-0.
LONG TERM DEBT BALANCE	75065.	60068.	45051.	30034.	15017.	-0.	-0.
STOCK HOLDERS EQUITY	202711.	215757.	229406.	243657.	258512.	273971.	290032.
SHARE CAPITAL	96538.	96538.	96538.	96538.	96538.	96538.	96538.
RETAINED EARNINGS	106173.	119218.	132868.	147119.	161974.	177433.	193493.

*** ASEAN RS/SA PROJECT IN THAILAND ***

PRODUCTION AND SALES PLAN

(US\$ 1000)

- BASE CASE (SOCA ASH PLANT) -

CASE 0MCD

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CAPACITY (SOCA 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	124600.	135200.	146350.	157650.	169350.	180100.	189700.	199300.	208900.	218500.	228100.
UNIT PRICE	0.2263	0.2265	0.2266	0.2266	0.2265	0.2264	0.2264	0.2263	0.2263	0.2262	0.2261
SALES REVENUE	28203.	30624.	33157.	35722.	38361.	40775.	42944.	45104.	47264.	49423.	51580.
CAPACITY	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.125	0.172	0.201	0.230	0.221	0.208	0.200	0.191	0.182	0.172	0.163
PRODUCTION (INDONESIA)	49925.	68952.	80508.	91911.	88273.	83220.	79510.	76270.	72620.	68970.	65320.
INCREASE IN INVENTORY	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME (INDONESIA)	49925.	68952.	80508.	91911.	88273.	83220.	79510.	76270.	72620.	68970.	65320.
UNIT PRICE	0.2074	0.2075	0.2076	0.2076	0.2075	0.2074	0.2074	0.2073	0.2073	0.2072	0.2071
SALES REVENUE	10352.	14308.	16710.	19080.	18318.	17260.	16572.	15812.	15050.	14250.	13530.
CAPACITY	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.128	0.175	0.202	0.230	0.223	0.214	0.205	0.196	0.186	0.177	0.168
PRODUCTION (PHILIPPINE)	51061.	70154.	80948.	92147.	89270.	85410.	82020.	78270.	74530.	70750.	67040.
INCREASE IN INVENTORY	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME (PHILIPPINE)	51061.	70154.	80948.	92147.	89270.	85410.	82020.	78270.	74530.	70750.	67040.
UNIT PRICE	0.2034	0.2035	0.2036	0.2036	0.2035	0.2034	0.2034	0.2033	0.2033	0.2032	0.2031
SALES REVENUE	10363.	14277.	16478.	18760.	18168.	17372.	16681.	15913.	15148.	14384.	13618.
CAPACITY	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.057	0.079	0.093	0.106	0.102	0.100	0.095	0.090	0.086	0.082	0.077
PRODUCTION (MALAYSIA)	22872.	31670.	37067.	42221.	40791.	39320.	37850.	36130.	34400.	32670.	30940.
INCREASE IN INVENTORY	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME (MALAYSIA)	22872.	31670.	37067.	42221.	40791.	39320.	37850.	36130.	34400.	32670.	30940.
UNIT PRICE	0.2093	0.2095	0.2096	0.2096	0.2095	0.2094	0.2094	0.2093	0.2093	0.2092	0.2091
SALES REVENUE	4788.	6635.	7768.	8845.	8547.	8359.	7925.	7562.	7198.	6834.	6470.
CAPACITY	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.021	0.027	0.029	0.032	0.031	0.028	0.026	0.025	0.024	0.023	0.021
PRODUCTION (SINGAPORE)	8205.	10690.	11794.	12737.	12316.	11350.	10520.	10030.	9550.	9070.	8600.
INCREASE IN INVENTORY	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
SALES VOLUME (SINGAPORE)	8205.	10690.	11794.	12737.	12316.	11350.	10520.	10030.	9550.	9070.	8600.
UNIT PRICE	0.2113	0.2115	0.2116	0.2116	0.2115	0.2114	0.2114	0.2113	0.2112	0.2112	0.2111
SALES REVENUE	1735.	2261.	2495.	2695.	2605.	2355.	2224.	2119.	2017.	1915.	1816.

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PRODUCTION AND SALES PLAN
 - BASE CASE (SCCA ASH PLANT) - (US\$ 1000)

CASE 0MCO

	1956	1957	1958	1959
CAPACITY (SCCA 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	237700.	247300.	256900.	266500.
UNIT PRICE	0.2261	0.2260	0.2259	0.2259
SALES REVENUE	53734.	55890.	58044.	60194.
CAPACITY	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.154	0.145	0.136	0.127
PRODUCTION (INDONESIA)	61670.	58030.	54380.	50730.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME (INDONESIA)	61670.	58030.	54380.	50730.
UNIT PRICE	0.2071	0.2070	0.2069	0.2069
SALES REVENUE	12765.	12012.	11253.	10495.
CAPACITY	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.150	0.149	0.140	0.130
PRODUCTION (PHILIPPINE)	63300.	59550.	55810.	52070.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME (PHILIPPINE)	63300.	59550.	55810.	52070.
UNIT PRICE	0.2031	0.2030	0.2029	0.2029
SALES REVENUE	12854.	12089.	11320.	10562.
CAPACITY	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.075	0.069	0.064	0.060
PRODUCTION (MALAYSIA)	29210.	27490.	25760.	24030.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME (MALAYSIA)	29210.	27490.	25760.	24030.
UNIT PRICE	0.2091	0.2090	0.2089	0.2089
SALES REVENUE	6107.	5745.	5382.	5019.
CAPACITY	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	0.020	0.019	0.018	0.017
PRODUCTION (SINGAPORE)	8120.	7630.	7150.	6670.
INCREASE IN INVENTORY	0.	0.	0.	0.
SALES VOLUME (SINGAPORE)	8120.	7630.	7150.	6670.
UNIT PRICE	0.2111	0.2110	0.2109	0.2109
SALES REVENUE	1714.	1610.	1508.	1407.

CAPACITY (AMC-CHL.)	400000.	400000.	400000.	400000.	400000.
CAPACITY UTILIZATION	1.000	1.000	1.000	1.000	1.000
PRODUCTION	400000.	400000.	400000.	400000.	400000.
INCREASE IN INVENTORY	0.	0.	0.	0.	0.
SALES VOLUME	400000.	400000.	400000.	400000.	400000.
UNIT PRICE	0.1500	0.1500	0.1500	0.1500	0.1500
SALES REVENUE	60000.	60000.	60000.	60000.	60000.
*** TOTAL SALES REVENUE ***	147178.	147346.	147514.	147678.	
*** TOTAL SALES VOLUME ***	800000.	800000.	800000.	800000.	800000.
*** AVERAGE SALES PRICE ***	0.1840	0.1842	0.1844	0.1846	

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PRODUCTION COST STATEMENTS
 -- BASE CASE (SCCA ASH PLANT) --

LASE BMCD

(US\$ 1000)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	280000.	520000.	360000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.	400000.
ROCK SALT	10286.	11756.	13225.	14695.	14695.	14695.	14695.	14695.	14695.	14695.	14695.
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	35484.	40553.	45622.	50691.	50691.	50691.	50691.	50691.	50691.	50691.	50691.
FUEL OIL	10577.	12088.	13599.	15110.	15110.	15110.	15110.	15110.	15110.	15110.	15110.
WATER	732.	837.	941.	1046.	1046.	1046.	1046.	1046.	1046.	1046.	1046.
POWER	12495.	14285.	16070.	17856.	17856.	17856.	17856.	17856.	17856.	17856.	17856.
UTILITIES COST	23808.	27210.	30611.	34012.	34012.	34012.	34012.	34012.	34012.	34012.	34012.
TRANSPORTATION	258.	272.	306.	340.	340.	340.	340.	340.	340.	340.	340.
VARIABLE CCSI	59530.	68034.	76539.	85043.	85043.	85043.	85043.	85043.	85043.	85043.	85043.
DEPRECIATION	17548.	17548.	17548.	17548.	17548.	17548.	17548.	17548.	17548.	17548.	17548.
AMORTIZATION(PRE-INVEST)	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.	712.
AMORTIZATION(INTEREST CER.)	1126.	1126.	1126.	1126.	1126.	1126.	1126.	1126.	1126.	1126.	1126.
AMORTIZATION	1839.	1839.	1839.	1839.	1839.	1839.	1839.	1839.	1839.	1839.	1839.
DEPRECIATION & AMORTIZATION	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.	19386.
LABOUR COST	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.	2527.
OVER HEAD	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.	5054.
EMPLOYMENT COST	7581.	7581.	7581.	7581.	7581.	7581.	7581.	7581.	7581.	7581.	7581.
MAINTENANCE COST	7896.	7896.	7896.	7896.	7896.	7896.	7896.	7896.	7896.	7896.	7896.
TAX & INSURANCE	1481.	1393.	1306.	1218.	1130.	1042.	955.	867.	779.	691.	604.
DIRECT FIXED COST	16959.	16871.	16783.	16695.	16608.	16520.	16432.	16344.	16257.	16169.	16081.
EX-FACTORY PRODUCTION CCSI	95875.	104292.	112708.	121125.	121037.	120949.	120862.	120774.	120686.	120598.	120511.
UNIT DIRECT OPERATING COST	0.3424	0.3259	0.3131	0.3028	0.3026	0.3024	0.3022	0.3019	0.3017	0.3015	0.3013
ADMINISTRATIVE & SALES EXP.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INTEREST ON LONG-TERM DEBT	11263.	10512.	9761.	9010.	8259.	7509.	6758.	6007.	5256.	4505.	3754.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
TOTAL PRODUCTION COST	107138.	114804.	122469.	130135.	129296.	128458.	127619.	126781.	125942.	125103.	124265.
UNIT PRODUCTION COST	0.3826	0.3588	0.3402	0.3253	0.3232	0.3211	0.3190	0.3170	0.3149	0.3128	0.3107

*** ASEAN RS/SA PROJECT IN THAILAND ***
 PRODUCTION COST STATEMENTS
 - BASE CASE (SODA ASH PLANT) - (US\$ 1000)

CASE BMCD

	1996	1997	1998	1999
PRODUCTION	400000.	400000.	400000.	400000.
ROCK SALT	14655.	14695.	14695.	14695.
AMMONIA	30080.	30080.	30080.	30080.
QUICK LIME	516.	516.	516.	516.
SODA ASH	5400.	5400.	5400.	5400.
RAW MATERIAL	50691.	50691.	50691.	50691.
FUEL OIL	15110.	15110.	15110.	15110.
WATER	1046.	1046.	1046.	1046.
POWER	17856.	17856.	17856.	17856.
UTILITIES COST	34012.	34012.	34012.	34012.
TRANSPORTATION	340.	340.	340.	340.
VARIABLE CCST	85043.	85043.	85043.	85043.
DEPRECIATION	17548.	17548.	17548.	17548.
AMORTIZATION(PRE-INVEST)	712.	712.	712.	712.
AMORTIZATION(INTEREST DER.)	1126.	1126.	1126.	1126.
AMORTIZATION	1839.	1839.	1839.	1839.
DEPRECIATION & AMORTIZATION	19386.	19386.	19386.	19386.
LABOUR CCST	2527.	2527.	2527.	2527.
OVER HEAD	5054.	5054.	5054.	5054.
EMPLOYMENT COST	7581.	7581.	7581.	7581.
MAINTENANCE CCST	7896.	7896.	7896.	7896.
TAX & INSURANCE	516.	428.	341.	253.
DIRECT FIXED COST	15993.	15906.	15818.	15730.
EX-FACTORY PRODUCTION CCST	120423.	120335.	120247.	120160.
UNIT DIRECT OPERATING CCST	0.3011	0.3008	0.3006	0.3004
ADMINISTRATIVE & SALES EXP.	0.	0.	0.	0.
INTEREST ON LONG-TERM DEBT	3003.	2253.	1502.	751.
INTEREST ON SHORT-TERM DEBT	0.	0.	0.	0.
TOTAL PRODUCTION COST	123426.	122588.	121749.	120910.
UNIT PRODUCTION COST	0.3086	0.3065	0.3044	0.3023

*** ASEAN HS/SA PROJECT IN THAILAND ***
 IRR CALCULATION ON TOTAL INVESTMENT
 - BASE CASE (SOCA ASH PLANT) -

(US\$ 1000)

CASE BMLD

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON L-T DEBT	RETURN BEFORE TAX	(BEFORE TAX)			RETURN AFTER TAX	(LESS) INCOME TAX	DISCOUNT FACTOR	(AFTER TAX)	
						INVEST.	PRESENT VALUE	RETURN				INVEST.	PRESENT VALUE
1982	84388.	0.	0.	0.	0.	1.0000	84388.	0.	0.	0.	1.0000	84388.	0.
1983	105286.	0.	0.	0.	0.	0.9149	96322.	0.	0.	0.	0.9233	97207.	0.
1984	115225.	0.	0.	0.	0.	0.8370	96441.	0.	0.	0.	0.8524	98220.	0.
1985	0.	-5187.	15386.	11263.	25462.	0.7657	19457.	0.	25462.	0.	0.7870	0.	20039.
1986	0.	1485.	15386.	10512.	31767.	0.7005	22266.	0.	31787.	0.	0.7266	0.	23097.
1987	0.	8682.	15386.	9761.	37630.	0.6405	24245.	0.	37830.	0.	0.6709	0.	25378.
1988	0.	15480.	15386.	9010.	43877.	0.5863	25726.	0.	43877.	0.	0.6194	0.	27177.
1989	0.	16703.	15386.	8259.	44349.	0.5364	23789.	0.	44349.	0.	0.5718	0.	25361.
1990	0.	17706.	15386.	7504.	44603.	0.4907	21888.	0.	44603.	0.	0.5280	0.	23549.
1991	0.	18727.	15386.	6758.	44871.	0.4490	20145.	0.	44871.	0.	0.4875	0.	21872.
1992	0.	19749.	15386.	6007.	45123.	0.4107	18533.	0.	45123.	0.	0.4500	0.	20307.
1993	0.	20730.	15386.	5256.	45378.	0.3758	17052.	0.	37084.	0.	0.4155	0.	15405.
1994	0.	21743.	15386.	4505.	45634.	0.3438	15688.	0.	36937.	0.	0.3836	0.	14170.
1995	0.	22749.	15386.	3754.	45890.	0.3145	14433.	0.	36790.	0.	0.3542	0.	13031.
1996	0.	23752.	15386.	3003.	46142.	0.2877	13276.	0.	36641.	0.	0.3270	0.	11982.
1997	0.	24758.	15386.	2253.	46397.	0.2632	12213.	0.	36494.	0.	0.3019	0.	11018.
1998	0.	25765.	15386.	1502.	46653.	0.2408	11235.	0.	36347.	0.	0.2788	0.	10132.
1999	-30958.	26767.	15386.	751.	46905.	0.2203	10334.	0.	36198.	0.	0.2574	-7976.	9316.
TOTAL	273902.				40900.		270322.	270322.	574392.			271838.	271837.

***** INTERNAL RATE OF RETURN ***** 5.31 PER CENT (BEFORE TAX) 8.31 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** (BEFORE TAX) 8.10 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	5424.	PAID-UP SHARE CAPITAL	96538.
CONSTRUCTED FACILITIES	261468.	LONG TERM DEBT	225256.
RAILWAY SPLR	1747.	SHORT TERM DEBT	0.
CONSTRUCTED FACILITIES	263215.	FINANCIAL RESOURCES	321754.
PRE-INVEST AND START-UP EXP	10667.		
INTEREST DURING CONSTRUCTION	16894.		
TOTAL FIXED CAPITAL	296220.		
INITIAL WORKING CAPITAL	25574.		
TOTAL CAPITAL COST	321754.		

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

CASE BMCD

(US\$ 1000)

YEAR	(1) AFT TAX PROFIT -IC-	(2) AFT TAX PROFIT -IC-	(3) BFX TAX PROFIT -IC-	(4) AFT TAX PROFIT -IC-	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/Y 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	-5.5	-5.7	-1.6	-5.4	1.49	0.79	0.97	68./ 32.	22.0	824.8	20.0
1980	1.6	2.0	0.6	2.0	1.77	1.01	1.25	66./ 34.	18.2	816.8	16.5
1987	6.7	8.5	2.7	9.0	2.36	1.53	1.53	62./ 38.	17.0	807.0	15.4
1988	10.7	13.2	4.8	16.0	3.21	2.33	1.83	56./ 44.	16.0	797.8	14.4
1989	11.4	12.5	5.2	17.3	4.17	3.28	1.91	50./ 50.	17.0	737.7	15.4
1990	12.1	11.7	5.5	18.3	5.16	4.28	1.98	44./ 56.	18.1	689.0	16.3
1991	12.8	11.0	5.8	19.4	6.21	5.32	2.06	38./ 62.	19.0	649.7	17.1
1992	13.5	10.4	6.1	20.4	7.30	6.41	2.15	32./ 68.	20.0	614.2	17.9
1993	8.5	6.1	6.4	12.9	6.13	5.49	1.83	27./ 73.	20.9	582.0	18.7
1994	8.9	6.0	6.8	13.5	6.63	6.00	1.89	22./ 78.	21.8	552.6	19.4
1995	9.3	5.5	7.1	14.1	7.14	6.51	1.96	16./ 84.	22.7	525.6	20.2
1996	9.7	5.8	7.4	14.8	7.65	7.03	2.03	11./ 89.	23.6	500.9	20.9
1997	10.1	5.7	7.7	15.4	8.17	7.55	2.11	5./ 95.	24.5	478.0	21.6
1998	10.5	5.6	8.0	16.0	8.69	8.08	2.20	-0./100.	25.4	456.9	22.4
1999	10.9	5.5	8.3	16.6	17.00	15.90	2.30	-0./100.	26.3	437.3	23.1
AVERAGE1	8.7	7.0	5.4	13.4	6.21	5.43	1.87	33./ 67.	20.8	631.3	18.6
AVERAGE2	9.2	7.0	5.4	13.4	6.32	5.57	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 ITC 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 BML1

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON DEBT	(BEFORE TAX)			RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX) PRESENT VALUE
					INVEST.	PRESENT VALUE	INCOME TAX			
1982	50634.	0.	0.	0.	1.0000	50634.	0.	1.0000	90634.	0.
1983	113614.	0.	0.	0.	0.9241	104995.	0.	0.9320	105892.	0.
1984	121471.	0.	0.	0.	0.8540	103740.	0.	0.8687	105521.	0.
1985	0.	-7972.	20851.	12032.	0.7892	0.	19661.	0.8096	0.	20169.
1986	0.	-555.	20851.	11230.	0.7294	0.	22670.	0.7546	0.	23455.
1987	0.	5850.	20851.	10428.	0.6740	0.	25026.	0.7033	0.	26114.
1988	0.	12705.	20851.	5626.	0.6225	0.	26897.	0.6555	0.	28307.
1989	0.	13967.	20851.	8823.	0.5756	0.	25122.	0.6110	0.	26664.
1990	0.	15030.	20851.	8021.	0.5320	0.	23355.	0.5695	0.	25001.
1991	0.	16108.	20851.	7219.	0.4916	0.	21718.	0.5307	0.	23447.
1992	0.	17168.	20851.	6417.	0.4543	0.	20188.	0.4947	0.	21982.
1993	0.	18233.	20851.	5615.	0.4198	0.	18767.	0.4611	0.	17246.
1994	0.	19258.	20851.	4813.	0.3880	0.	17445.	0.4297	0.	16004.
1995	0.	20323.	20851.	4011.	0.3586	0.	16216.	0.4005	0.	14851.
1996	0.	21424.	20851.	3209.	0.3314	0.	15071.	0.3733	0.	13780.
1997	0.	22488.	20851.	2406.	0.3062	0.	14008.	0.3479	0.	12786.
1998	0.	23553.	20851.	1604.	0.2830	0.	13020.	0.3243	0.	11864.
1999	-30938.	24614.	20851.	802.	0.2615	-8106.	12100.	0.3022	-9369.	11008.
TOTAL	294722.			630856.		291262.	291262.		570867.	292679.

**** INTERNAL RATE OF RETURN ***** 8.21 PER CENT (BEFORE TAX) 7.29 PER CENT (AFTER TAX)

**** PAY-OFF PERIOD ***** 8.70 YEAR (BEFORE TAX) 8.84 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	5424.	PAID-UP SHARE CAPITAL	103130.
UNCONSTRUCTED FACILITIES	282288.	LONG TERM DEBT	240638.
RAILWAY SPUR	1747.	SHORT TERM DEBT	0.
UNCONSTRUCTED FACILITIES	284035.	FINANCIAL RESOURCES	343768.
PRE-INVEST AND START-UP EXP	10687.		
INTEREST DURING CONSTRUCTION	18048.		
TOTAL FIXED CAPITAL	318194.		
INITIAL WORKING CAPITAL	25574.		
TOTAL CAPITAL COST	343768.		

CASE BMCI

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

YEAR	(1) AFT TAX PROFIT -I/- SALES REV S/H EQUITY (PCT)	(2) AFT TAX PROFIT -I/- S/H EQUITY (PCT)	(3) BFR TAX PROFIT -I/- INVESTMENT (PCT)	(4) AFT TAX PROFIT -I/- S/CAPITAL (PCT)	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -I/- 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	-8.5	-8.4	-2.3	-7.7	1.30	0.63	0.89	69. / 31.	23.4	845.1	21.1
1986	-0.5	-1.1	-0.3	-1.0	1.47	0.73	1.14	87. / 33.	19.3	835.1	17.5
1987	4.5	5.8	1.7	5.7	1.93	1.13	1.40	64. / 36.	18.0	823.5	16.3
1988	8.0	11.3	3.7	12.3	2.66	1.80	1.68	59. / 41.	17.0	812.7	15.3
1989	9.6	11.0	4.1	13.5	3.47	2.61	1.76	53. / 47.	18.1	751.2	16.2
1990	10.3	10.6	4.4	14.8	4.33	3.47	1.82	48. / 52.	19.2	701.4	17.2
1991	11.0	10.2	4.7	15.6	5.23	4.38	1.90	42. / 58.	20.2	661.2	18.1
1992	11.7	9.8	5.0	16.8	6.18	5.33	1.98	35. / 65.	21.2	624.9	18.9
1993	7.5	5.9	5.3	10.6	5.46	4.81	1.73	30. / 70.	22.2	591.8	19.7
1994	7.9	5.5	5.6	11.2	5.93	5.28	1.79	25. / 75.	23.1	561.7	20.5
1995	8.3	5.8	5.5	11.8	6.40	5.77	1.85	19. / 81.	24.1	534.2	21.3
1996	8.7	5.8	6.2	12.5	6.85	6.26	1.92	13. / 87.	25.0	508.8	22.1
1997	9.2	5.7	6.5	13.1	7.38	6.76	1.99	6. / 94.	26.0	485.4	22.8
1998	9.6	5.8	6.9	13.7	7.88	7.27	2.07	-0. / 100.	26.9	463.8	23.6
1999	10.0	5.6	7.2	14.3	16.33	15.16	2.16	-0. / 100.	27.8	443.7	24.3
AVERAGE1	7.2	6.0	4.3	10.5	5.52	4.76	1.74	35. / 65.	22.1	643.0	19.7
AVERAGE2	7.7	6.3	4.3	10.5	5.55	4.81	1.69	36. / 64.			

(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) -

CASE BNYO

(US\$ 1000)

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST ON DEBT	(BEFORE TAX)			RETURN AFTER TAX	(LESS) INCOME TAX	DISCOUNT FACTOR	(AFTER TAX)	
					RETURN BEFORE TAX	PRESENT VALUE INVEST.	PRESENT VALUE RETURN				INVEST.	RETURN
1982	89710.	0.	0.	0.	0.	1.0000	89710.	0.	1.0000	89710.	0.	
1983	110505.	0.	0.	0.	0.	0.9212	101794.	0.	0.9292	102687.	0.	
1984	115140.	0.	0.	0.	0.	0.8486	101057.	0.	0.8635	102877.	0.	
1985	0.	-6956.	20310.	11797.	25110.	0.7817	0.	19628.	0.8024	0.	20145.	
1986	0.	16.	20310.	11010.	31338.	0.7200	0.	22565.	0.7456	0.	23266.	
1987	0.	6850.	20310.	10224.	37384.	0.6633	0.	24796.	0.6529	0.	25902.	
1988	0.	13687.	20310.	5437.	43434.	0.6110	0.	26538.	0.6435	0.	27965.	
1989	0.	14938.	20310.	6651.	43898.	0.5628	0.	24707.	0.5983	0.	26264.	
1990	0.	15983.	20310.	7864.	44157.	0.5185	0.	22894.	0.5560	0.	24550.	
1991	0.	17042.	20310.	7078.	44429.	0.4776	0.	21219.	0.5166	0.	22953.	
1992	0.	18084.	20310.	6292.	44685.	0.4399	0.	19659.	0.4801	0.	21452.	
1993	0.	19131.	20310.	5505.	44945.	0.4053	0.	18215.	0.4461	0.	16637.	
1994	0.	20177.	20310.	4719.	45205.	0.3733	0.	16876.	0.4145	0.	15394.	
1995	0.	21224.	20310.	3932.	45466.	0.3439	0.	15635.	0.3852	0.	14244.	
1996	0.	22260.	20310.	3146.	45722.	0.3168	0.	14484.	0.3580	0.	13178.	
1997	0.	23315.	20310.	2359.	45982.	0.2918	0.	13418.	0.3326	0.	12193.	
1998	0.	24355.	20310.	1573.	46242.	0.2688	0.	12430.	0.3091	0.	11281.	
1999	-32405.	25402.	20310.	786.	46498.	0.2476	-8024.	11514.	0.2872	-9308.	10437.	
TOTAL	286950.			634495.			284577.	284576.		572147.	285966.	

***** INTERNAL RATE OF RETURN ***** 8.56 PER CENT (BEFORE TAX) 7.61 PER CENT (AFTER TAX)

***** PAY-OUT PERIOD ***** (BEFORE TAX) 8.61 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	6831.	PAID-UP SHARE CAPITAL	101115.
CONSTRUCTED FACILITIES	273110.	LONG TERM DEBT	235935.
RAILWAY SPUR	3153.	SHORT TERM DEBT	0.
CONSTRUCTED FACILITIES	276263.	FINANCIAL RESOURCES	337050.
PRE-INVEST AND START-UP EXP	10667.		
INTEREST DURING CONSTRUCTION	17695.		
TOTAL FIXED CAPITAL	311476.		
INITIAL WORKING CAPITAL	25574.		
TOTAL CAPITAL CCSY	337050.		

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

CASE BNYC

YEAR	(1) AFT TAX PROFIT -TC-	(2) AFT TAX PROFIT -TC-	(3) BFR TAX PROFIT -TC-	(4) AFT TAX PROFIT -TC-	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -TC- S/P 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	-7.4	-7.4	-2.1	-0.9	1.36	0.68	0.91	08./32.	22.9	838.5	20.8
1986	0.0	0.0	0.0	0.0	1.56	0.82	1.17	67./33.	18.9	829.2	17.2
1987	5.3	6.8	2.0	6.8	2.06	1.25	1.44	63./37.	17.7	818.1	16.0
1988	9.5	11.5	4.1	13.5	2.83	1.96	1.73	58./42.	16.6	807.9	15.0
1989	10.2	11.5	4.4	14.8	3.68	2.82	1.80	52./48.	17.7	746.9	15.5
1990	10.5	11.0	4.7	15.8	4.55	3.72	1.87	46./54.	18.8	697.4	16.5
1991	11.6	10.5	5.1	16.9	5.53	4.67	1.95	40./50.	19.8	657.5	17.8
1992	12.3	10.0	5.4	17.9	6.53	5.66	2.03	34./60.	20.8	621.4	18.6
1993	7.8	6.0	5.7	11.4	5.67	5.02	1.76	29./71.	21.7	588.6	19.4
1994	8.2	5.5	6.0	12.0	6.14	5.50	1.82	24./76.	22.6	558.8	20.2
1995	8.7	5.9	6.3	12.6	6.63	6.00	1.88	18./82.	23.6	531.4	20.9
1996	9.1	5.8	6.6	13.2	7.12	6.50	1.95	12./88.	24.5	506.2	21.7
1997	9.5	5.7	6.9	13.8	7.62	7.00	2.03	6./94.	25.4	483.0	22.4
1998	9.5	5.6	7.2	14.5	8.12	7.52	2.11	-0./100.	26.3	461.6	23.2
1999	10.3	5.6	7.5	15.1	10.51	15.36	2.20	-0./100.	27.3	441.6	23.9
AVERAGE1	7.7	6.3	4.7	11.4	5.73	4.97	1.78	35./65.	21.6	639.2.	19.3
AVERAGE2	8.2	6.5	4.7	11.4	5.79	5.05	1.73	35./65.			

(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 INC 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 8NY1 (US\$ 1000)

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

YEAR	TOTAL INVESTMENT	PROFIT BEFORE TAX	DEPRECIATION	INTEREST BEFORE TAX	(BEFORE TAX)		(LESS) INCOME TAX	RETURN AFTER TAX	DISCOUNT FACTOR	(AFTER TAX)	
					INVEST.	RETURN				INVEST.	RETURN
1982	50959.	0.	0.	0.	50959.	0.	0.	0.	1.0000	50959.	0.
1983	112171.	0.	0.	0.	103532.	0.	0.	0.	0.9230	104427.	0.
1984	120385.	0.	0.	0.	102560.	0.	0.	0.	0.8519	104339.	0.
1985	0.	-7553.	20603.	11951.	25000.	19657.	0.	25000.	0.8068	0.	20171.
1986	0.	-560.	20603.	11154.	31197.	22841.	0.	31197.	0.7511	0.	23833.
1987	0.	6284.	20603.	10357.	37243.	24947.	0.	37243.	0.6993	0.	26043.
1988	0.	13132.	20603.	5560.	43295.	26787.	0.	43295.	0.6510	0.	28185.
1989	0.	14591.	20603.	8764.	43757.	24970.	0.	43757.	0.6060	0.	26519.
1990	0.	15447.	20603.	7567.	44017.	23183.	0.	44017.	0.5642	0.	24834.
1991	0.	16518.	20603.	7170.	44291.	21531.	0.	44291.	0.5252	0.	23264.
1992	0.	17572.	20603.	6374.	44548.	19988.	0.	44548.	0.4890	0.	21783.
1993	0.	18630.	20603.	5577.	44810.	18527.	7452.	37558.	0.4552	0.	17006.
1994	0.	19688.	20603.	4780.	45071.	17228.	7875.	37196.	0.4238	0.	15783.
1995	0.	20746.	20603.	3984.	45333.	15993.	8259.	37034.	0.3945	0.	14611.
1996	0.	21800.	20603.	3187.	45590.	14846.	8720.	36870.	0.3673	0.	13542.
1997	0.	22855.	20603.	2390.	45852.	13781.	9143.	36708.	0.3419	0.	12552.
1998	0.	23917.	20603.	1593.	46113.	12792.	9567.	36546.	0.3183	0.	11634.
1999	-32405.	24971.	20603.	757.	46370.	11873.	9988.	36382.	0.2963	-9603.	10732.
TOTAL	25115.				288755.	288754.		571442.		290122.	290121.

**** INTERNAL RATE OF RETURN ***** 8.34 PER CENT (BEFORE TAX) 7.42 PER CENT (AFTER TAX)

**** PAY-CUT PERIOD ***** 8.63 YEAR (BEFORE TAX) 8.75 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	6831.	PAID-UP SHARE CAPITAL
CONSTRUCTED FACILITIES	277275.	LONG TERM DEBT
RAILWAY SPUR	3153.	SHORT TERM DEBT
CONSTRUCTED FACILITIES	280428.	FINANCIAL RESOURCES
PRE-INVEST AND START-UP EXP	10687.	
INTEREST DURING CONSTRUCTION	17926.	
TOTAL FIXED CAPITAL	315872.	
INITIAL WORKING CAPITAL	25574.	
TOTAL CAPITAL COST	341446.	

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

CASE BNYI

YEAR	(1) AFT TAX PROFIT -TJ-	(2) AFT TAX PROFIT -TC-	(3) BFR TAX PROFIT -TC-	(4) AFT TAX PROFIT -TC-	(5) CURRENT RATIO	(6) QUICK RATIO	(7) DEBT SERVICE RATIO	(8) L/T DEBT -IG- 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	-8.0	-6.0	-2.2	-7.4	1.32	0.65	0.90	89. / 31.	23.1	842.6	21.0
1986	-0.5	-0.6	-0.2	-0.5	1.50	0.76	1.15	67. / 33.	19.2	832.9	17.3
1987	4.6	6.2	1.8	6.1	1.98	1.17	1.42	64. / 36.	17.9	821.4	16.1
1988	9.1	11.5	3.8	12.8	2.72	1.86	1.70	58. / 42.	16.8	810.8	15.2
1989	9.9	11.2	4.2	14.0	3.55	2.69	1.77	53. / 47.	17.9	749.6	16.1
1990	10.6	10.8	4.5	15.1	4.42	3.56	1.84	47. / 53.	19.1	699.9	17.1
1991	11.3	10.3	4.8	16.1	5.34	4.48	1.92	41. / 59.	20.0	659.8	17.9
1992	12.0	9.9	5.1	17.2	6.31	5.45	2.00	35. / 65.	21.0	623.5	18.8
1993	7.6	5.9	5.5	10.9	5.53	4.88	1.74	30. / 70.	22.0	590.6	19.6
1994	8.0	5.5	5.8	11.5	6.00	5.36	1.80	24. / 76.	22.9	560.6	20.4
1995	8.5	5.8	6.1	12.2	6.48	5.85	1.86	18. / 82.	23.9	533.1	21.2
1996	8.9	5.8	6.4	12.8	6.97	6.34	1.93	12. / 88.	24.8	507.8	21.9
1997	9.3	5.7	6.7	13.4	7.46	6.85	2.00	6. / 94.	25.7	484.5	22.7
1998	9.7	5.6	7.0	14.0	7.96	7.35	2.09	-0. / 100.	26.7	462.9	23.4
1999	10.1	5.6	7.3	14.6	16.57	15.21	2.17	-0. / 100.	27.6	442.9	24.2
AVERAGE1	7.4	6.1	4.4	10.9	5.59	4.83	1.75	35. / 65.	21.9	641.5	19.5
AVERAGE2	7.5	6.4	4.4	10.9	5.63	4.90	1.71	36. / 64.			

(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.

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