ALASKA ASIAN GAS SYSTEM

AAGS

PRE-FEASIBILITY STUDY
SUMMARY REPORT

MAY 1987

Alaska Asian Gas System

Pre-Feasibility Study

Introduction

On April 26, 1985, a Study Agreement was executed between ARCO, serving as the U.S. Sponsor Group Representative, and The Committee for Energy Policy Promotion, serving as the Japan Sponsor Group Representative, to undertake a joint pre-feasibility study program regarding a liquefied natural gas (LNG) project for natural gas produced from the North Slope of Alaska, U.S.A.

The LNG Project assumed delivery of natural gas existing in the North Slope area of Alaska through a 1,300 km (800 miles) pipeline system to South Alaska and liquefaction of the gas there for sale in Japan. The Pre-Feasibility Study Program was divided into three distinct studies as follows:

- Alaskan North Slope Natural Gas Reserves Study (conducted by the U.S. Operator)

- Delivery System Studies (further divided into "Alaskan Facilities Study" conducted by the U.S. Operator and "Other Facilities Study" conducted by the Japan Sponsor Group)

- Japan LNG Market Study (conducted by the Japan Operator)

The purpose of the Study Program was solely to conduct a pre-feasibility study to develop initial, conceptual evaluations of the Project. This pre-feasibility study did not encompass the actual construction or operation of an LNG facility or pipeline, nor the filing of an environmental impact statement. Participation in the study did not imply a commitment for the purchase or sale of LNG nor for conducting a feasibility study of the Project.

The work as defined in the Study Agreement has been completed. This Study Program Final Report integrates the separate studies for submission to the Sponsors.

The final report is organized in six sections:

Section I	Summary Report including: - Executive Summary - Discussion - Tables and Figures
Section II	North Slope Gas Reserves
Section III	Alaskan Facilities Overview
Section IV	Other Facilities Overview
Section V	Market Forecast
Section VI	Ecoromic Analysis

On May 15, 1987, conclusions of this pre-feasibility study were presented to the executive Committee in Tokyo, Japan. The material discussed in this meeting has been included in Section I of this report.

The Executive Committee approved this report and the followinq key conclusions:

. Available market in Japan at project completion is insufficient for this large scale project and additional market outside Japan is needed for project success.

. Bridging supply is needed before 1998 to preserve the available market for AAGS.

Based on the above conclusions, the Executive Committee agreed that the current environmental factors do not warrant a formal Bridqing I (the next step as defined in the project schedule). However, both sides will maintain informal contacts to continually re-evaluate a need for the formal Bridging I.

I. EXECUTIVE SUMMARY

1. CONCLUSION

. THE CONCEPTUAL DESIGN AND COST ESTIMATES ARE BASED ON DELIVERING 14 MILLION TONS A YEAR OF LNG AND THE MARKET DEMAND FORECAST HAS BEEN LIMITED TO JAPAN ONLY.

. THE PROJECT COST FOR THE FACILITIES IN ALASKA WHICH INCLUDE A GAS CONDITIONING PLANT, PIPELINE SYSTEM AND LIQUEFACTION - STORAGE - LOADING TERMINAL IS ESTIMATED AT $8.64 BILLION IN 1986 CONSTANT DOLLARS.

. NEEDED LNG CARRIERS ARE ESTIMATED TO COST $2.37 BILLION.

. THE PROJECT REQUIRES ELEVEN YEARS IN THE STANDARD CASE TO COMPLETE INCLUDING TWO BRINGING PERIODS FOR CONSENSUS BUILDING AMONG THE CONCERNED PARTIES.

. THE STUDY SHOWS:

- AVAILABLE MARKET IN JAPAN AT PROJECT COMPLETION IS INSUFFICIENT FOR THIS LARGE SCALE PROJECT AND ADDITIONAL MARKET OUTSIDE JAPAN IS NEEDED FOR PROJECT SUCCESS.
- BRIDGING SUPPLY IS NEEDED BEFORE 1998 TO PRESERVE THE AVAILABLE MARKET FOR AAGS.

2. PROJECT OUTLINE

%	MM$	%
15.5	GAS CONDITIONING 1,340	12.1
63.0	PIPELINE & COMPRESSOR STATIONS 5,440	49.4
21.5	LIQUEFACTION STORAGE & MARINE TERMINAL 1,860	17.0
TOTAL= 8,640	LNG CARRIERS 2,370	21.5
TOTAL=11,010		

2 TRAINS AT 9.2 MILLION TONS/YEAR
(1,160 MM SCFD)

TOTAL LENGTH = 1300KM
(800 MILES)
DIAMETER = 36 INCHES
PRESSURE = 156KG/CM^2
(2220 PSIG)

LIQUEFACTION
= 4 TRAINS AT 4.2 MM TONS/YEAR
(530 MM SCFD)

STORAGE
= 4 TANKS AT 127,200KL
(800,000 BBLS)
LOADING = 2 BERTHS

LNG CARRIERS
= 15 VESSELS OF 125,000KL
CARGO SPACE

PROJECT OUTLINE

. THE PROJECT CAPACITY IS PLANNED AT 14,000,000 TONS ANNUALLY IN TERMS OF LNG.

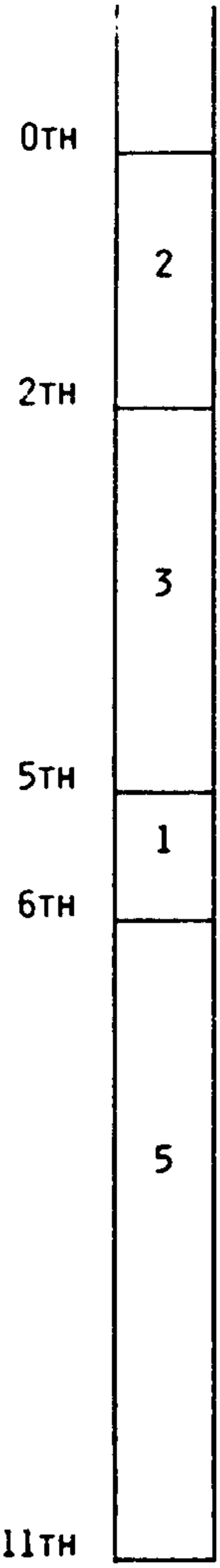
. HEATING VALUE OF GAS WILL BE TAILORED TO 10,430 KCAL/NM^3(1,110BTU/CF) TO MEET JAPANESE SPECIFICATION.

. OPERATING RESERVOIRS COULD PROVIDE UP TO 26 TCF OF GAS, SUFFICIENT FOR 35 YEAR SUPPLY AT PROJECT CAPACITY. POTENTIAL RESERVES COULD EXTEND THE PROJECT LIFE SIGNIFICANTLY.

. MOST OF THE INFRA-STRUCTURE FOR PRODUCING AND GATHERING FEED GAS FROM OPERATING RESERVOIRS IS IN PLACE. COSTS ASSOCIATED WITH THIS INFRA-STRUCTURE ARE OUTSIDE THE SCOPE OF THIS STUDY.

. GAS CONDITIONING PLANT IS LOCATED ON THE NORTH SLOPE. THE GAS PIPELINE IS RUN PARALLEL WITH TAPS FOR MORE THAN 80 PERCENT OF THE TOTAL DISTANCE AND LNG FACILITIES ARE LOCATED AT ANDERSON BAY NEAR TAPS VALDEZ TERMINAL.

3. TIME SCHEDULE



PHASE I - PRELIMINARY FEASIBILITY STUDY
NOW COMPLETE

BRIDGING I - COORDINATION FOR ENTRY INTO PHASE II

PHASE II - BASIC DESIGN & ENGINEERING

BRIDGING II - COORDINATION FOR ENTRY INTO PHASE III

PHASE III - DETAIL DESIGN & CONSTRUCTION

PROJECT COMES ON LINE

TIME SCHEDULE

. IT WILL TAKE 11 YEARS TO COMPLETE THE PROJECT AFTER COMPLETION OF THE PRELIMINARY FEASIBILITY STUDY NOW COMPLETE. THIS PERIOD COULD BE LONGER OR SHORTER DEPENDING ON STUDIES AND COORDINATIONS REQUIRED FOR DECISION MAKING.

. IN THE PERIOD OF BRIDGING I,

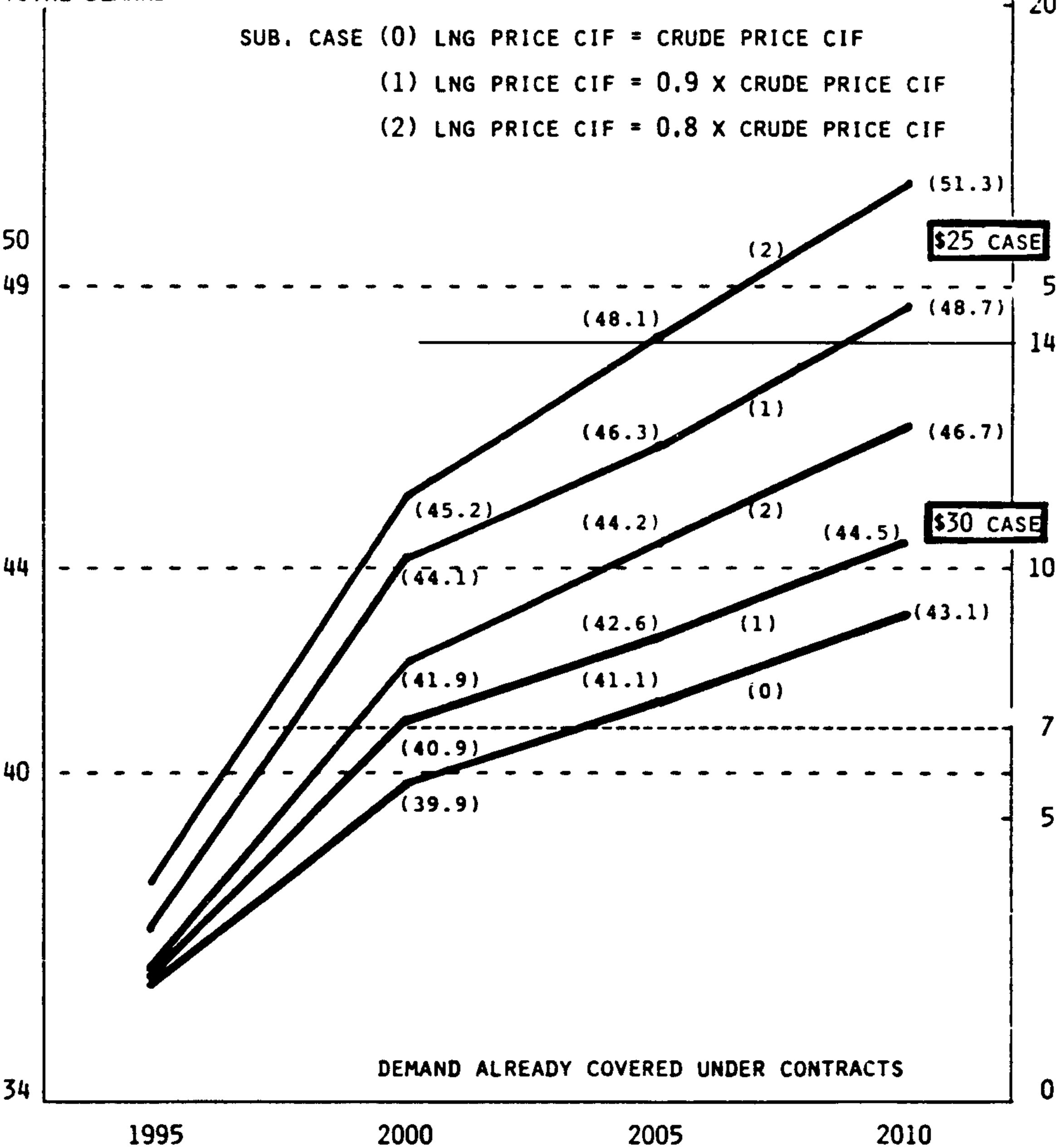
A) JAPAN TO ESTABLISH A CONSENSUS FOR WHETHER OR NOT TO PURCHASE LNG IF CONDITIONS ARE SATISFIED IN THE FUTURE.
B) U.S. TO ESTABLISH A CONSENSUS FOR WHETHER OR NOT TO EXPORT LNG IF CONDITIONS ARE SATISFIED IN THE FUTURE.
C) CONSENSUS MAKING FOR HOW TO FORM RESPONSIBLE ORGANIZATIONS.
D) ASSESSMENT AND DECISION ON EXPENDITURES REQUIRED FOR PHASE II. (JAPAN, U.S.)

. IN THE PERIOD OF BRIDGING II,

A) THE U.S. AND JAPANESE PARTIES TO ENTER INTO A SELL/PURCHASE CONTRACT.
B) THE U.S. AND JAPANESE PARTIES TO FORM RESPONSIBLE COMPANIES.
C) THE U.S. AND JAPANESE PARTIES TO MAKE DECISION ON THE TOTAL INVESTMENTS.

4. LNG DEMAND IN JAPAN

(MILLION TONS ANNUALLY)



LNG DEMAND IN JAPAN

. MAJOR ASSUMPTIONS

(1) ECONOMIC GROWTH - 3.1% ANNUALLY FOR 1985-2000
2.5% ANNUALLY FOR 2000-2010

(2) INDUSTRIAL STRUCTURE - CHANGING

(3) CRUDE OIL PRICE (REAL PRICE, FOB)

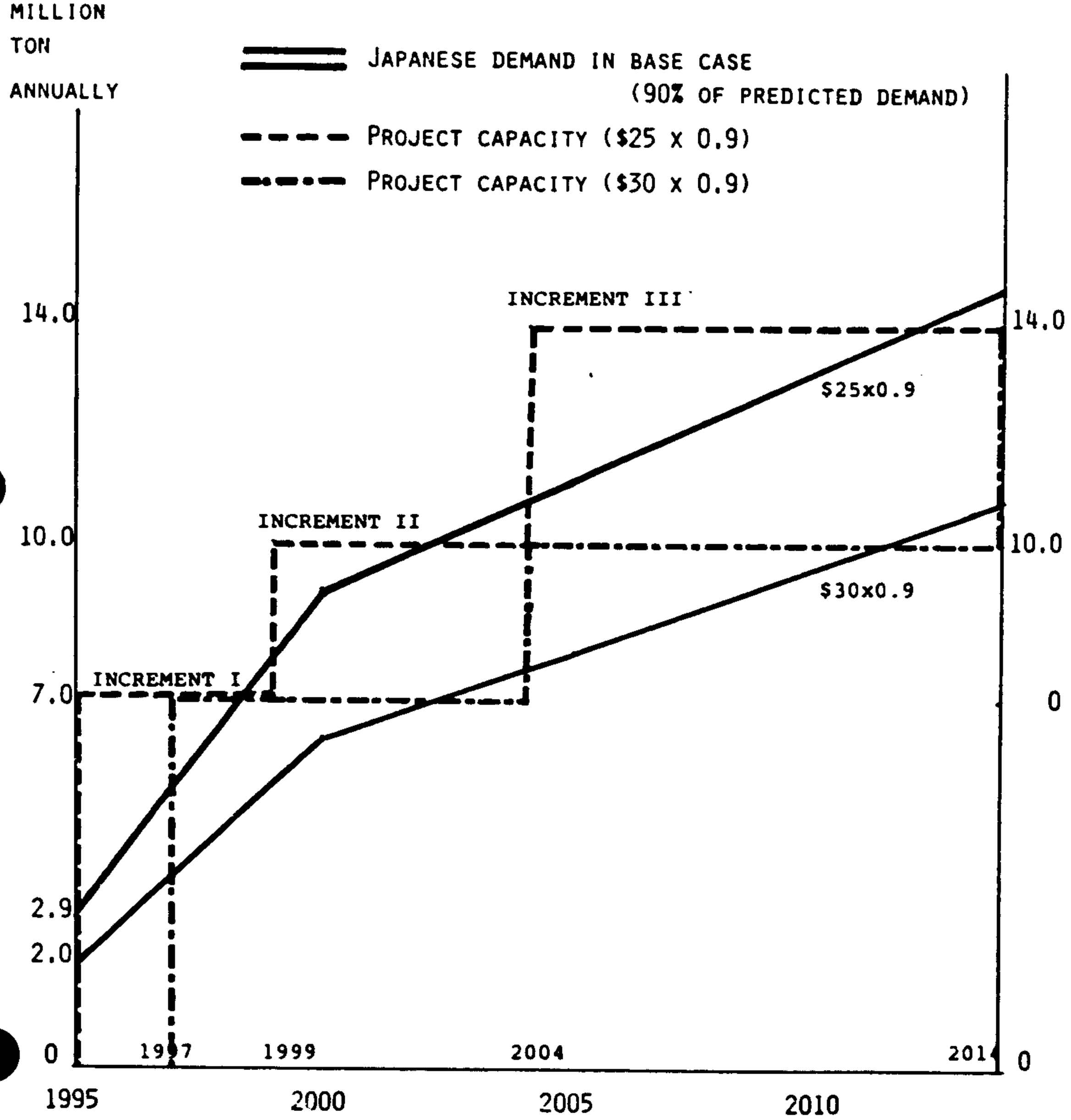
	1986	2000	2010
$25 CASE	15	25	30
$30 CASE	17	30	40

(4) NUCLEAR POWER GENERATION CAPACITY IN 2000
51 GW IN $25 CRUDE OIL PRICE CASE
53 GW IN $30 CRUDE OIL PRICE CASE

. LNG DEMAND HAS BEEN PREDICTED USING IEE ECONOMETRIC MODEL THROUGH 2010 AND EXTENDED THROUGH 2030 BY A SCENARIO STUDY. DEMAND PREDICTED THEREABOVE HAS BEEN FURTHER ADJUSTED EXPECTING ADDITIONAL DEMAND OF CITY GAS IN NEW GEOGRAPHICAL AREAS.

. IN $30 CASE, LNG DEMAND REMAINING UNCOVERED WILL NOT REACH THE PROJECT CAPACITY OF 14 MILLION TONS ANNUALLY WITHIN 20 YEARS AFTER COMMENCEMENT OF OPERATION, IN EACH SUB-CASE OF LNG PRICE. EVEN IN $25 CASE, IT WILL TAKE 8-10 YEARS FOR THE UNCOVERED DEMAND TO REACH THE PROJECT CAPACITY.

5. PROJECT CONSTRUCTION SCHEDULE



PROJECT CONSTRUCTION SCHEDULE

. FUTURE DEMAND IN JAPAN WILL GRADUALLY INCREASE AS BRIEFED. IN AN ATTEMPT TO MATCH THIS GRADUAL BUILD-UP OF DEMAND, STEP-UP SCHEDULE OF THE PROJECT CAPACITY HAS BEEN CONSIDERED FOR ECONOMIC EVALUATION.

. IT HAS BEEN ASSUMED HEREIN THE AAGS SYSTEM COMES ON LINE WHEN THE OUTLET OF 3.5 MILLION TONS ANNUALLY IS SECURED, ALTHOUGH CONSTRUCTION PERIOD HAS BEEN ASSURED AT 11 YEARS IN "TIME SCHEDULE" SECTION.

. THE INITIAL CAPACITY HAS BEEN ASSUMED AT 7 MILLION TONS ANNUALLY (INCREMENT I CAPACITY) THEN EXPANDED TO 10.5 MILLION (INCREMENT II CAPACITY) AND 14.0 MILLION (INCREMENT III CAPACITY)

. THE INVESTMENT COST IN THE U.S. FACILITIES WILL INCREASE TO $9,000 MILLION FROM $8,640 MILLION ESTIMATED FOR ONE PACKAGE CASE.

INCREMENT I	$7,300 MILLION
INCREMENT II	$1,000 MILLION
INCREMENT III	$700 MILLION
TOTAL	$9,000 MILLION

. LARGE REDUCTION IN THE INITIAL INVESTMENT IS NOT POSSIBLE BECAUSE FULL SCALE INVESTMENT IN THE PIPELINE IS REQUIRED IN INCREMENT I.

6. PROJECT ECONOMICS

	ACCEPTABLE LEVELS	LNG PRICE = $30 X 90%		LNG PRICE = $25 X 90%	
		BASE	POSITIVE	BASE	POSITIVE
* FROM THE COMMENCEMENT OF OPERATION					
FIRST YEAR TO RECORD PROFIT BEFORE TAX	6TH YEAR	11TH	9TH	11TH	9TH
FIRST YEAR TO WIPE OFF ACCUMULATED LOSS	10TH YEAR	18TH	16TH	19TH	16TH
NECESSITY OF CASH-DEFICIENCY FUND	UNNECESSARY	NECESSARY		NECESSARY	
* 20 YEARS FROM THE COMMENCEMENT OF OPERATION					
IRR ON TOTAL INVESTMENT COSTS (BEFORE TAX)	9.5%	8.3%	9.3%	8.0%	9.1%
IRR ON EQUITY (BEFORE TAX)	14%	5.5%	8.3%	3.7%	7.1%
* 20 YEARS FROM PLATEAU					
IRR ON TOTAL INVESTMENT COSTS (BEFORE TAX)	9.5%	10.6%	11.1%	9.7%	10.1%
IRR ON EQUITY	14%	11.2%	12.1%	9.3%	10.1%

PROJECT ECONOMICS

. PROJECT ECONOMICS HAS BEEN EVALUATED FOR THE CASES OF LNG DEMAND PREDICTED UNDER DIFFERENT LNG PRICES ASSUMED AT 90 AND 80 PERCENT CRUDE PARITY (FOR BOTH $30 AND $25 CASES). FEED GAS COST IS HEREIN ASSUMED AT 10-20 PERCENT OF LNG PRICE, CIF.

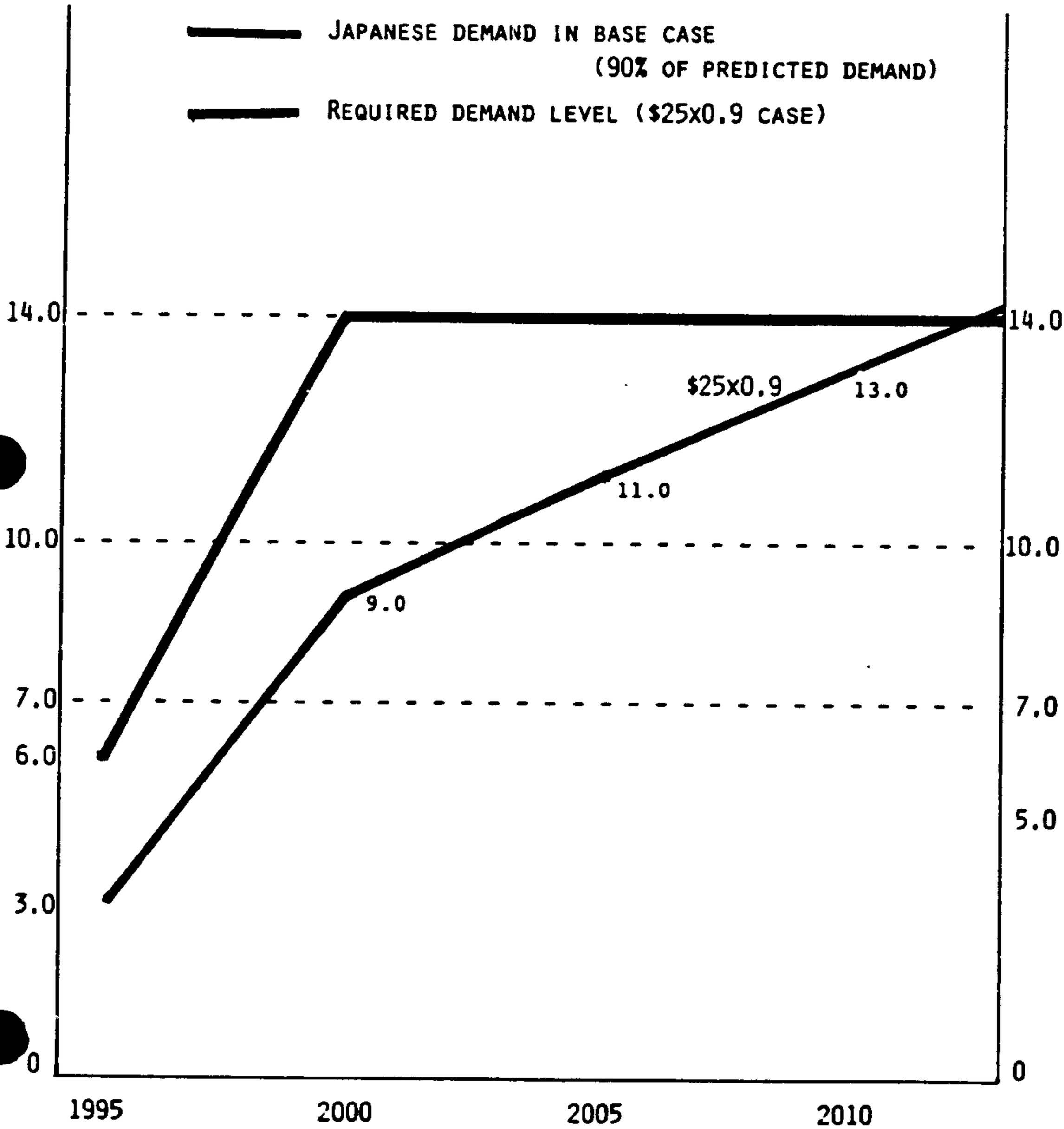
. THE OUTLET FOR THIS PROJECT HAS BEEN ASSUMED AT 90 PERCENT OF THE PREDICTED LNG DEMAND IN THE BASE CASES, AND 110 PERCENT IN THE POSITIVE CASES RUN FOR REFERENCE.

. THE METHODOLOGY USED HEREIN FOR ECONOMIC EVALUATION IS "WITHOUT ESCALATION". INTEREST RATE HAS BEEN ASSUMED AT 9.5 PERCENT ANNUALLY AS THE REAL RATE.

. AS SHOWN IN THE TABLE, THE HURDLES FOR PROJECT ECONOMICS EVALUATION HAVE NOT BEEN CLEARED IN EVERY RESPECT IN EVERY CASE, AS FAR AS THE LNG OUTLET IS SOUGHT FOR ONLY IN THE JAPANESE MARKET.

. LARGER DEMAND CREATED BY FURTHER PRICE DISCOUNT DOES NOT MAKE UP RESULTANT REDUCTION OF SALES REVENUE. SOME IMPROVEMENTS ARE SHOWN IN THE POSITIVE CASES BUT STILL UNDER THE ACCEPTABLE LEVELS.

7. LNG DEMAND REQUIRED TO JUSTIFY PROJECT ECONOMICS (IN MILLION TON ANNUALLY)



LNG DEMAND REQUIRED TO JUSTIFY PROJECT ECONOMICS

- MAGNITUDE OF INCREMENTAL LNG DEMAND IN JAPAN AND SLOW GROWTH THEREOF DO NOT JUSTIFY INVESTMENT IN A LARGE SCALE PROJECT SUCH AS THIS ONE.

- IN ORDER FOR THIS PROJECT TO BE ECONOMICALLY VIABLE INCREMENTAL DEMAND OUTSIDE JAPAN IS NEEDED IN ADDITION TO THE DEMAND LEVELS PREDICTED HEREIN FOR JAPAN, TOGETHER WITH BRIDGING SUPPLY TO PRESERVE LNG DEMAND BEFORE THE PROJECT COMES ON LINE.

- TRIAL CALCULATIONS INDICATE THAT SUCH INCREMENTS ARE IN AN ORDER OF THREE MILLION TONS AT THE TIME OF THE PROJECT COMPLETION INCREASING TO FIVE MILLION TONS WITHIN SIX YEARS.

- THE INCREMENTAL DEMAND, IF SECURED, MAKES THE PROJECT ECONOMICALLY FEASIBLE IN THE BASE CASE AT $25 x 0.9 PRICE, SATISFYING ALL THE YARDSTICKS FOR ECONOMIC EVALUATION ESTABLISHED FOR THIS STUDY, THOUGH MARGINALLY. THE PROJECT ECONOMICS SHOULD LOOK BETTER IN THE $30 x 0.9 PRICE CASE.

II DISCUSSION

1. The Basic Nature of This Study

1.1 The AAGS Project has been planned assuming delivery of natural gas existing in the North Slope area in the State of Alaska through a 1,300 km (800miles) pipeline system to South Alaska and liquefaction of the natural gas there for sale in Japan and other Far Eastern markets.

1.2 This study has been conducted on the basis of the STUDY AGREEMENT concluded between the U.S. and Japanese parties which provides, among all, the following understanding;

1.2.1 The purpose is solely to conduct a pre-feasibility study to develop initial, conceptual evaluations of the project.

1.2.2 Participation in the study by either party will not imply a commitment by either party for the purchase or sale of LNG or for conducting a feasibility study of the Project.

1.2.3 LNG demand predicted in this study covers only that of domestic demand in Japan.

1.3 LNG demand in Korea and Taiwan has been simultaneously surveyed on a preliminary basis by the U.S. side and the results of the U.S. survey will be integrated with LNG demand predicted in this study for Japan.

1.4 The U.S. side will be responsible for coordinating the review of this study as appropriate and seek input from natural gas suppliers during the consensus building period.

2. Progress Made

Meeting	Date	Achievements
a) Kick-Off	July'85	Time schedule, staffing and organization for study.
b) 2nd M.S.	Sep.'85	Direction of facility study; Basis of LNG demand forecast and economic analysis.
c) 3rd M.S.	Jan.'86	Interim report on Demand Forecast; Method of economic analysis, presumptions for test-run of computer models; Presumptions for conceptual designs of Alaskan & Japanese facilities.
d) 4th M.S.	Apr.'86	Interim report on Demand forecast and discussions on a success scenario; Interim report on the conceptual design of Alaskan facilities and discussions thereof; Discussions on the conceptual design of the Japanese facilities.
e) Facility Group Meeting	July'86	Presentation/discussion of Bechtel study; Report on gas reserve; Screening of presumptions for a success scenario.
f) 5th M.S.	Sep.'86	Presentation/discussion of demand forecast; Screening of cases for further analysis; Integration of demand forecast and economic analysis.
g) 6th M.S.	Feb.'87	Integration of the study results and discussion on the outline of the draft report.
h) Executive Committee Meeting	May '87	Final joint report (draft)

3. Outcome of Technical Study

3.1 Basis of the Project

a) LNG Supply - 14 million tons annually as the base case (maximum capacity - Technically Achievable)

b) Gas Reserve

Producing Reservoirs - 26 TCF

Potential - 70 TCF approx.

c) Heating Value of the LNG product - 10,430 Kcal/Nm^3 (1,110 BTU/CF)

3.2 Planned Facilities

a) Gathering - Existing

b) Conditioning - 2 trans at 9.2 million tons/year (1160 MM SCFD)

c) Pipeline - 1 X 36 inches for 1,300 KM,(800 miles) all buried, 156 KG/cm^2g (2220 psig)

d) Liquefaction - 4 trans at 4.2 million tons/year (530 MM SCFD)

e) Storage - 4 tanks at 127,200 kl (800,000Bbl), 5.3 days supply, with site secured for additional 4 tanks.

f) Loading - 2 berths

g) LNG carriers - 15 vessels of 125,000 Kl cargo space.

3.3 Investment Cost Estimated (in January 1986 U.S. dollar)

a)	Additional well development/gas gathering	- (outside the scope of this study
b)	Conditioning	- $1,340 MM
c)	Pipeline	- $5,440 MM
d)	Liquefaction	
e)	Storage/Loading	- $1,860 MM
	Sub. Total	$8,640 MM
f)	LNG carriers	- $2,370
	(Freight cost	- ¢64.77/MMBTU or $33.28/T)
	Total	$11,010 MM

g) Receiving Terminal

Power generation plant type (2000MW)	- $530MM
Town Gas Type (1MM T/Y)	- $410MM

3.4 Construction Period (the standard case)

Following are the probable time lengths required for each phase and bridging, after completion of phase I which is the prefeasibility study now complete.

a) Coordination for entry into Phase II*(1)	-- 2 years (assumed)
b) Phase II (Basic Design & F/S)	-- 3 years
c) Cocrdination for entry into Phase III*(2)	-- 1 year (assumed)
d) Phase III (Detail Design & Construction)	-- 5 years

(Total: 11 years is the standard case. The period could be longer or shorter depending on studies and coordinations required for decision making.)

*(1) a) Japan to establish a consensus for whether or not to purchase LNG if conditions are satisfied in the future.

b) U.S. to establish a consensus for whether or not to export LNG if conditions are satisfied in the future.

c) Consensus making for how to form responsible organizations

d) Assessment and decision on expenditures required for Phase II. (Japan, U.S.)

*(2) a) To enter into a sell/purchase contract. (Japan, U.S.)

b) Formation of responsible companies. (Japan, U.S.)

c) Decision on the total investments. (Japan, U.S.)

4. LNG Demand Forecast

4.1 Objective

To predict LNG demand in Japan for the concerned period and to assess conditions on which the Alaskan LNG can penetrate into the Japanese market.

4.2 Methods for demand forecast

a) Econometric Model (consisting of macro economic model, industry relation model and energy demand-supply model) developed by IEE for 1985-2010.

b) Scenario study using a simplified model for 2010-2030.

c) Potential LNG demand that has been created by new technologies and new consuming areas has been studied independently from the economic model study.

4.3 Results from the econometric model study for 1985-2010

4.3.1 Presumptions for demand forecast

The presumptions include IEE's view on, among all, changes in economic-industrial structures and living mode that will be caused by external elements such as appreciation of the Japanese currency, trade frictions and devaluated oil price. Also included therein are IEE's view on energy sources for power generation, new mode of power generation, new energy sources and broader application of co-generation system. The main presumptions are summarized below.

i) Real economic growth

3.1% annually for 2000/1985

2.5% annually for 2010/2000

Yen will keep its appreciation supported by continuing trade surplus. Export will level off due to trade frictions and yen appreciation; and economic growth will be supported by domestic demand that will not be sufficient for higher growth.

ii) Industrial Structure - Substantially changing

Japan's fundamental industry producing base materials will be scaled down to the level of its domestic demand because of increased import and decreased export. Crude steel production, for example, will decrease to 75 million tons in 2000 and 43 million tons in 2010 from 100 million tons in 1985.

iii) Other presumptions

Cases for screening are produced by combinations of the assumptions set below. Since it is considered that sufficient LNG demand will not exist in Japan if price is assumed at the crude oil parity, potential expansion of LNG demand is examined herein by discounting LNG price.

. LNG price (Real price, CIF)

100% crude price
90% "
80% "

. Oil price (Real price, FOB), $/BBL

	1986	2000	2010
$25 CASE	15	25	30
$30 CASE	17	30	40

. Coal price (Real price, CIF), $/Ton

1986 - 42

1990 - 46

2000 - 54

. Nuclear power generation capacity in 2000

51 GW in $25 crude oil price case

53 GW in $30 crude oil price case

4.3.2 Demand predicted through IEE Econometric Model

	$30 CASE			$25 CASE		
LNG Price	100%	90%	80%	100%	90%	80%
1995	35.9	35.9	36.0	36.7	36.8	37.6
2000	39.5	40.3	41.1	41.8	43.3	44.1
2005	40.8	41.8	43.3	43.5	45.3	46.9
2010	42.3	43.6	45.6	45.3	47.6	50.0

(LNG Demand in MMT/Y)

Please refer the attachments for details.

4.4 Results from 2030 scenario study

Three scenarios, conventional scenario, oil boom scenario and gas boom scenario, have been drawn on the basis of predictions obtained from the computer study for 2000. All these scenarios indicate that LNG demand in 2030 will exceed that in 2010.

4.5 Potential demand of LNG in new geographical areas

Potential demand of LNG for supply of city gas in new geographical areas has been predicted through competitiveness analysis. Japan is divided into 11 blocks in the model which has 4 sub. models classifying the potential markets by population in the city areas,

gas (LPG) demand, access to gas pipeline system. LNG is picked up where it is competitive at given LNG price and demand elasticity to the price of gas. Demand predicted herein as summarized below is the potential demand in addition to the demand predicted in 4.3.

	$30 CASE			$25 CASE	
	100%	90%	80%	90%	80%
1995	280	330	390	460	510
2000	400	600	790	880	1,050
2005	610	780	940	1,030	1,150
2010	820	930	1,040	1,190	1,270

(in 1,000 tons annually)

4.6 Estimated total LNG demand in Japan

	$30 CASE			$25 CASE	
	100%	90%	80%	90%	80%
1995	36.2	36.3	36.4	37.2	38.1
2000	39.9	40.9	41.9	44.1	45.2
2005	41.4	42.6	44.2	46.3	48.1
2010	43.1	44.6	46.7	48.7	51.3

(LNG Demand in MM/T/Y)

LNG demand & nuclear capacity predicted for 2000 by the others

	LNG, MM T/Y	Nuclear, GW
MITI*	41.5	62
E. P. Association	25.0-30.0	54-59
	(for power generation only)	
	(36.0-41.0)**	
Gas Association	42.3	59
P.A.J.	34.6	53

* Per 1983 Long Range Plan and changes in economic environment thereafter not reflected.

** Added by 1,100MT/Y predicted by IEE for city gas demand.

Note: It is estimated that LNG price is assumed at the crude oil parity in those predictions.

5. A screening study for economic feasibility

A screening study for economic feasibility was conducted for 72 cases based on combinations of assumptions. The assumptions were (1) LNG price herein assumed at 100%, 90% and 80% of crude oil energy parity, (2) feed gas cost herein assumed at 0% to 20% of LNG price CIF Japan, (3) LNG supply assumed herein at full capacity supply from the commencement of operation and (4) the capital cost for the four cases as shown below.

Annual Capacity in Million Tons	Capacity Cost in Billion Dollars
14.0	8.6
10.5	7.5
7.0	6.0
7.0 then 14.0	8.9

Based on these screening studies, cases for integrated analysis were narrowed as follows:

1) LNG price at 90% and 80% of crude oil energy parity
2) Feed gas cost at 10% of LNG price CIF Japan
3) LNG supply to match the forecast in section 4
4) Design concept to be:

   a) Full scale 14 mm tons/yr capacity
   b) Phased build up design

The case of 10.5 million ton annual capacity is economically feasible, depending on LNG price assumed, if the outlet is secured facilitating full capacity operation right after the project completion. This case, however, was not included in the cases for integrated analysis because the Japanese LNG demand surveyed does not facilitate full capacity operation from the beginning.

The basic financial criteria used in the screening study and the integrated analysis described in section 6 are:

1) Interest rate on debt 9.5%

2) Debt Equity Ratio 75%/25%

3) Project Contract Life 20 years after commencement of operation

4) Internal Rate of Return on Total Investment
   9.5% -- Profitability yardstick

5) Internal Rate of Return on Equity
   14% -- Profitability yardstick

6) First year to record profit (before tax)
   within 6 years from the commencement of operation
   -- Bankability yardstick

7) First year to wipe off accumulated deficit within 10 years from the commencement of operation
   -- Bankability yardstick

8) All evaluations are performed without escalation

6. Integration Study

The studies made in the foregoing sections of 3 through 5 are integrated herein to predict the outlet for Alaskan LNG and to optimize the capacity of the project and the time of the project coming on line in light of the sales tonnage expected for each year.

6.1 Incremental LNG demand in Japan

6.1.1 LNG demand predicted through IEE's Econometric Model reflects (1) changes expected in the industrial structure, (2) growth in GNP and power demand and (3) nuclear capacity expansion, predicted in a manner and at levels generally accepted. Therefore, this forecast should be understood to be a reasonable prediction for use in this preliminary feasibility study of AAGS Project.

6.1.2 The IEE Econometric Model does not contain possible LNG demand expansion into local cities. This section has been examined separately as already briefed. Therefore, the total expected demand is a sum of demand forecast through the econometric model and this potential demand studied separately.

LNG Demand in 1995-2010
(in 1,000 tons annually)

Case	1995	2000	2010
$30x100%	36,200	39,900	43,100
90%	36,300	40,900	44,600
80%	36,400	41,900	46,700
$25x 90%	37,200	44,100	48,700
80%	38,100	45,200	51,300

(Ref. Table 1)

6.1.3 Incremental demand is the total expected demand minus supply under existing contracts. (Refer Table 1 attached)

6.2 Expected demand (outlet) of AAGS Project

6.2.1 The LNG demand has been predicted based on the assumptions that the price of LNG will fall down to 80-90% level of crude oil price. However, at the present time, the electric industry has a basic view that LNG price is high relative to the other energy sources for power generation and that "take or pay" clauses cause difficulty to cope with changing demand. Because of such basic view, the industry considers that the LNG share in the total energy package consumed for power generation has been already too high (21 percent at present). This basic view may not change until they have reasonable prospects for price reduction and improvement of the delivery clause.

6.2.2 Electric Power Development Plan has been considered firmed up through 1995. This plan includes 40GW LNG-fired plants operating in 1995. The industry's 21st Century Vision, recently published, does not specify power generation capacity of each energy source, but it is generally considered that LNG-fired capacity will level off after 1995..

IEE's forecast includes 38GW LNG-fired capacity in 1995, 2GW lower than the industry's plan, and 45GW in 2000, assuming that the total demand of LNG including that for city gas sector will grow at an average annual rate of 3.3 percent during 1995-2000, expecting improvement in price competitiveness of LNG.

In view of the lead time required to convert energy source in the existing plants (5 years) and to build grass-root LNG power plants (10 years),

IEE's view could be optimistic unless the industry establishes a consensus at an early stage that LNG will become economically competitive as IEE presently considers. They will change their present plan or firm up new power development program after they had reasonable prospects for improvement in LNG competitiveness. The city gas industry also needs lead time to firm up expanded sales program.

6.2.3 In view of observations as briefed in 6.2.1 and 6.2.2 herein, LNG-fired capacity expansion may not be realized as IEE expects even if LNG price become competitive and the delivery terms are improved, at some stage in the future. Therefore, economic evaluation of AAGS Project should include some allowance for contingent delay in LNG off-take.

6.2.4 Potential LNG projects (such as Sakhalin project expected to supply 3 million tons annually) and potential LNG markets outside Japan (such as Korean market expected to consume 3.5 million tons annually) have not been covered in this study. Since such potential demand and supply contains so many elements unknown to us at this stage, these demand and supply have not been considered in this study.

6.2.5 LNG demand forecast herein, on the other side, could increase because of (1) potential delay in nuclear power construction due to difficulty in securing the future plant sites, (2) possible inability to extend the existing contracts due to gas reserve limitation, (3) fuel conversion at a faster pace from oil to LNG at the existing

oil-fired power plants and (4) faster growth in LNG demand in the markets outside Japan such as Korea and Taiwan.

6.2.6 In view of elements discussed herein, two cases are considered in evaluating economics of the AAGS Project. One is the BASE CASE which is 90% of the LNG incremental demand forecast by IEE. The other case is the POSITIVE CASE that includes larger outlet, 110% of the incremental demand forecast by IEE. Outlet for the AAGS Project will be predicted for eight cases, therefore, with each demand case having two sub. cases.

Case	1	2	3	4
Oil price	30	30	25	25
LNG price	90%	80%	90%	80%

6.2.7 In 2030 scenario study, it is predicted that LNG demand in 2030 will not be less than that in 2010 in each scenario. In prediction of outlet for the AAGS project in 2030, it is assumed that LNG demand will grow for a period of 2010-2030 at the same average annual growth rate estimated for 2005-2010.

6.2.8 Expected outlet of AAGS Project in Japan is shown on Table 1 attached.

6.3 Features of LNG Demand Growth in Japan.

6.3.1 LNG demand above contracted supply is considered to be sensitive to the price as shown below.

Breakdown of
Incremental LNG Demand
(during 15 years of 1995/2010)
- in 1,000 tons -

	Electric Sector	City Gas Sector	Total
$30 x 1.0	1,700	5,250	6,950
x 0.9	2,750	5,540	8,290
x 0.8	4,460	5,810	10,270
$25 x 0.9	5,590	5,940	11,530
x 0.8	7,100	6,070	13,170

6.3.2 LNG demand in the city gas sector will increase linearily at an average annual pace of 350-400 thousand tons. Therefore, supply arrangement should be built up meeting such gradual demand growth.

6.3.3 LNG demand in the electric power sector will increase step-wise by 500-1,000 thousand tons annually, since incremental demand is created by new plants to be constructed and fuel conversion at the existing plants. Supply arrangement should be completed in time for the plant completion or modification.

6.3.4 In view of 6.3.2 and 6.3.3 herein above, it can not be expected that large demand for LNG will incrementally arise in time for the project completion. We consider it more reasonable to assume that LNG supply under this project will

start with about 3.5 million tons annually and gradually increase at an annual pace of 1.0-1.5 million tons thereafter.

6.4 Capacity Step-up Schedule

Based on the magnitude of the outlet expected for the AAGS Project, timing of the first LNG delivery, annual tonnage delivered and system capacity required to meet demand have been defined. The schedule defined herein reflects estimated capital investment in each capacity case, results of the financial analysis so far obtained in the screening study and the experience accumulated in typical LNG projects.

There are critical relations between the LNG outlet expected at the time of the system completion, optimum initial capacity and construction schedule. Herein in this study, the initial capacity is set at 7 million tons annually. However, the AAGS system will come on line by the time of around 3.5 million tons of the outlet expected because Japan's LNG market allows stepwise increase of LNG supply within around 3.5 million tons.

6.4.1 LNG price - $30 x 0.9

a) Base Case

Capacity	MT/Y	7,000	10,500	14,000
Completion		1997	2004	2014
Outlet(at the time of completion)	MT/Y	3,600	7,400	10,900
Years required to reach capacity		6	10	8

b) Positive Case

Capacity	MT/Y	7,000	10,500	14,000
Completion		1996	2000	2008
Outlet(at the time of completion)	MT/Y	3,460	7,600	10,700
Years required to reach capacity		4	8	8

6.4.2 LNG price - $25 x 0.8

a) Base Case

Capacity	MT/Y	7,000	10,500	14,000
Completion		1995	1998	2002
Outlet(at the time of completion)	MT/Y	3,700	7,400	11,100
Years required to reach capacity		3	3	6

b) Positive Case

Capacity	MT/Y	7,000	10,500	14,000
Completion		1995	1997	2000
Outlet(at the time of completion)	MT/Y	4,500	7,500	12,300
Years required to reach capacity		2	2	4

It should be noted that the completion of the AAGS system in 1995-1997 is difficult if the 11 years of the probable construction period of the AAGS system is considered. Refer to figures 1-5 attached.

6.4.3 Capital cost for the 3-phased construction schedule is estimated as shown below:

Phase I	(7 million ton p.a.):	US$7.3 billion
Phase II	(10.5 million ton p.a.):	US$1.0 billion
Phase III	(14.0 million ton p.a.):	US$0.7 billion
Total		US$9.0 billion

6.5 The Result of Economic Feasibility Study

a) Based on Japan's demand for ANS LNG, each of eight cases of three-phased construction is judged to be economically infeasible by both profitability and bankability yardstick. Why? The investment for each phase is always made in advance to its demand which is gradually building up. Therefore its supply capacity always exceeds its demand for each phase. (i.e. it takes a relatively long lead time for the demand to fill in the surplus capacity or to catch up the capacity for each phase.)

b) Although the price discount can create more sales volume in Japan than no discount (crude oil energy parity price), it makes the project less profitable because the augmented sales volume can not make up reduction of sales revenue resulting from the price discount. Namely, price is more decisive for profitability than volume. (N.B. Please compare IRR of 80% case with that of 90% case in the same price bracket.)

Without Escalation - Cases of 4 Phased Capacity (Feed Gas Cost: 10%)

	Acceptable Levels	$30 X 90%		$30 X 80%		$25 X 90%		$25 X 80%	
		Base	Positive	Base	Positive	Base	Positive	Base	Positive
From the commencement of operation									
First year to record profit before Tax	6th year	11th year	9th year	11th year	10th year	11th year	9th year	12th year	9th year
First year to wipe off accumulated loss	10th year	18th year	16th year	21th year	17th year	19th year	16th year	24th year	19th year
Necessity of cash-dificiency fund	unnecessary	necessary	necessary	necessary	necessary	necessary	necessary	necessary	necessary
20 years from the commencement of operation									
IRR on total investment costs (before tax)	9.5%	8.3%	9.3%	7.1%	8.6%	8.0%	9.1%	6.7%	7.8%
IRR on Equity (before tax)	14%	5.5%	8.3%	-	6.6%	3.7%	7.8%	-	3.6%
20 years from plateau									
IRR on total investment costs (before tax)	9.5%	10.6%	11.1%	9.5%	10.1%	9.7%	10.1%	8.3%	8.9%
IRR on Equity	14%	11.2%	12.1%	9.0%	10.2%	9.3%	10.1%	5.2%	7.4%

7. Summary & Preliminary Conclusions

7.1 Gas Reserve

7.1.1 Vast natural gas reserve exists in the North Slope area that is sufficient to supply LNG for 35 years at an annual pace of 14 million tons out of operating reservoirs. When inferred reserve is included, the total reserve is considered to be sufficient to supply LNG at the same annual pace for approximately 100 years.

7.1.2 Wells and gathering system of natural gas have been already constructed for the operating reservoirs. Therefore, additional investment cost for delivery of natural gas to the transfer point should be low.

Note: Price of natural gas to the transfer point has been assumed in a range of 5-20% of LNG CIF price in this pre. feasibility study, because the U.S. side was not in a position to quote the price at this stage. This should be quoted in an early stage of the coordination period for phase II.

7.2 LNG demand forecast

7.2.1 LNG demand is considered to be sensitive to the price as shown in section 6.3.1.

7.2.2 It can not be expected that large demand of LNG will stepwise arise in time for the project completion. We consider it more reasonable to assume that Japanese LNG demand under this project will start with about 3.5 million tons annually and gradually increase at an annual pace of 1.0-1.5 million tons thereafter.

7.2.3 As reviewed, the city gas sector is expected to create substantial part of the incremental LNG demand. If it is assumed that such incremental LNG demand by the city gas sector is fully covered by supply from the AAGS Project, the North Slope gas will have about 30 percent share of the total feed gas supply to the city gas sector. They can not replace LNG for alternative feedstock in case where supply is interrupted due to troubles caused to the system. The electric sector is also concerned about such contingency. In order to eliminate such concern and as a mean to improve supply security, further study during the consensus building period will be required in the following aspects;

a) The upper limit of Alaskan LNG share that will be acceptable to the consumers in light of supply security and LNG demand size in Japan (predicted at 40-45 million tons annually in 2000).
b) General review of the technical reliability of LNG deliverability through the AAGS project.

7.3 Technical feasibility

7.3.1 It is technically feasible to construct a system capable to supply 14 million tons of LNG annually.

7.3.2 The total length of period required to complete the project will be 11 years in the standard case.

7.4 Revision of the project concept

7.4.1 It is considered that it will be in 1995 ($25x0.8 case) - 1997($30x1.0 case) when potential demand in Japan for the Alaskan LNG reaches to 3.5

million tons annually as shown in Fig. 1-5 attached herewith. In view of the construction period required (11 years in the standard case as already discussed), it is not practical to expect the project will become ready to meet such demand in time.

7.4.2 The project concept assuming the initial capacity at 7 million tons annually and the ultimate capacity at 14 million tons annually does not meet the Japan's LNG market requirement in the following aspects, unless LNG demand in the other markets is taken into consideration;

a) It is not practical to expect an outlet in Japan to accommodate 7 million tons from the first year since demand will grow just gradually.

b) The project based on Japanese demand does not look economically viable since it takes many years to reach the full capacity supply at 14 million tons annually.

c) Reliance on one pipeline system for large share of LNG supply does not resolve the consumers concern on supply security even if contingency of supply interruption could be reduced technically.

7.4.3 In view of 7.4.1 and 7.4.2 herein, time schedule of the project (the initial capacity and step-up expansion to the ultimate capacity) may not be reasonably programmed, if the scope of the market is limited to that in Japan. The other potential markets in the Far East including Korea and Taiwan need to be integrated.

7.5 Analysis of the project economics

The final analysis of the project economics will be conducted on the basis of the project schedule made in consideraticn of the total LNG demand in the Far East and on the basis of assumptions fine-tuned for financial analysis.

Supply/Demand Forecasts for LNG in Japan (1,000ton)

Table 1 (1/3)

Crude Oil Price in 2000 : $30
LNG Price Parity : 100%

YEAR	DEMAND * Power Generation	City Gas	Others	Total 2000 Model	Potential Demand in Local Cities	Estimated Total Demand in Japan (A)	Supply Contracted (B)	Estimated New Demand (C=A-B)	Expected New LNG Demand in Japan	
									Base Case (D=Cx0.9)	Positive Case (E=Cx1.1)
1995	26,393	9,147	350	35,890	280	36,170	34,000	2,170	1,953	2,387
1996	26,769	9,453	350	36,572	300	36,872	34,000	2,872	2,585	3,159
1997	27,150	9,769	350	37,269	330	37,599	34,000	3,599	3,239	3,959
1998	27,536	10,096	350	37,982	350	38,332	34,000	4,332	3,899	4,765
1999	27,928	10,433	350	38,711	380	39,091	34,000	5,091	4,582	5,600
2000	28,326	10,782	350	39,458	400	39,858	34,000	5,858	5,272	6,444
2001	28,302	11,056	350	39,708	440	40,148	34,000	6,148	5,533	6,763
2002	28,278	11,337	350	39,965	480	40,445	34,000	6,445	5,801	7,090
2003	28,255	11,626	350	40,231	530	40,761	34,000	6,761	6,085	7,437
2004	28,231	11,921	350	40,502	570	41,072	34,000	7,072	6,365	7,779
2005	28,207	12,225	350	40,782	610	41,392	34,000	7,392	6,653	8,131
2006	28,184	12,535	350	41,069	650	41,719	34,000	7,719	6,947	8,491
2007	28,160	12,854	350	41,364	690	42,054	34,000	8,054	7,249	8,859
2008	28,136	13,181	350	41,667	740	42,407	34,000	8,407	7,566	9,249
2009	28,113	13,516	350	41,979	780	42,759	34,000	8,759	7,883	9,635
2010	28,089	13,860	350	42,299	820	43,119	34,000	9,119	8,207	10,031

Supply and Demand Forecasts for LNG in Japan (1,000ton)

Table 1 (2/3)

Crude Oil Price in 2000 : $30
LNG Price Parity : 90%

YEAR	DEMAND * Power Generation	City Gas	Others	Total 2000 Model	Potential Demand in Local Cities	Estimated Total Demand in Japan (A)	Supply Contracted (B)	Estimated New Demand (C=A-B)	Expected New LNG Demand in Japan	
									Base Case (D=Cx0.9)	Positive Case (E=Cx1.1)
1995	26,393	9,198	350	35,941	330	36,271	34,000	2,271	2,044	2,498
1996	26,891	9,523	350	36,764	380	37,144	34,000	3,144	2,830	3,458
1997	27,398	9,859	350	37,607	430	38,037	34,000	4,037	3,633	4,441
1998	27,916	10,208	350	38,474	480	38,954	34,000	4,954	4,459	5,449
1999	28,442	10,569	350	39,361	540	39,901	34,000	5,901	5,311	6,491
2000	28,979	10,942	350	40,271	600	40,871	34,000	6,871	6,184	7,558
2001	28,995	11,226	350	40,571	640	41,211	34,000	7,211	6,490	7,932
2002	29,011	11,517	350	40,878	670	41,548	34,000	7,548	6,793	8,303
2003	29,027	11,816	350	41,193	710	41,903	34,000	7,903	7,113	8,693
2004	29,043	12,123	350	41,516	750	42,266	34,000	8,266	7,439	9,093
2005	29,059	12,437	350	41,846	780	42,626	34,000	8,626	7,763	9,489
2006	29,075	12,760	350	42,185	810	42,995	34,000	8,995	8,096	9,895
2007	29,091	13,091	350	42,532	840	43,372	34,000	9,372	8,435	10,309
2008	29,107	13,431	350	42,888	870	43,758	34,000	9,758	8,782	10,734
2009	29,123	13,779	350	43,252	900	44,152	34,000	10,152	9,137	11,167
2010	29,139	14,137	350	43,626	930	44,556	34,000	10,556	9,500	11,612

Crude Oil Price in 2000 : $30
LNG Price Parity : 80%

1995	26,393	9,270	350	36,013	390	36,403	34,000	2,403	2,163	2,643
1996	27,001	9,613	350	36,964	470	37,434	34,000	3,434	3,091	3,777
1997	27,643	9,969	350	37,962	550	38,512	34,000	4,512	4,061	4,963
1998	28,291	10,338	350	38,979	630	39,609	34,000	5,609	5,048	6,170
1999	28,953	10,720	350	40,023	710	40,733	34,000	6,733	6,060	7,406
2000	29,631	11,117	350	41,098	790	41,888	34,000	7,888	7,099	8,677
2001	29,751	11,410	350	41,511	820	42,331	34,000	8,331	7,498	9,164
2002	29,871	11,712	350	41,933	850	42,783	34,000	8,783	7,905	9,661
2003	29,992	12,021	350	42,363	880	43,243	34,000	9,243	8,319	10,167
2004	30,114	12,338	350	42,802	910	43,712	34,000	9,712	8,741	10,683
2005	30,236	12,664	350	43,250	940	44,190	34,000	10,190	9,171	11,209
2006	30,358	12,998	350	43,706	960	44,666	34,000	10,666	9,599	11,733
2007	30,481	13,341	350	44,172	980	45,152	34,000	11,152	10,037	12,267
2008	30,605	13,693	350	44,648	1,000	45,648	34,000	11,648	10,483	12,813
2009	30,729	14,055	350	45,134	1,020	46,154	34,000	12,154	10,939	13,369
2010	30,853	14,426	350	45,629	1,040	46,669	34,000	12,669	11,402	13,936

* : Include LNG demand for Fuel Cells (1995 : 473, 2000 : 924, 2010 : 1,932)

Supply/[redacted]d Forecasts for LNG in Japan (1,000ton)

Table (3/3)

Crude Oil Price in 2000 : $25
LNG Price Parity : 90%

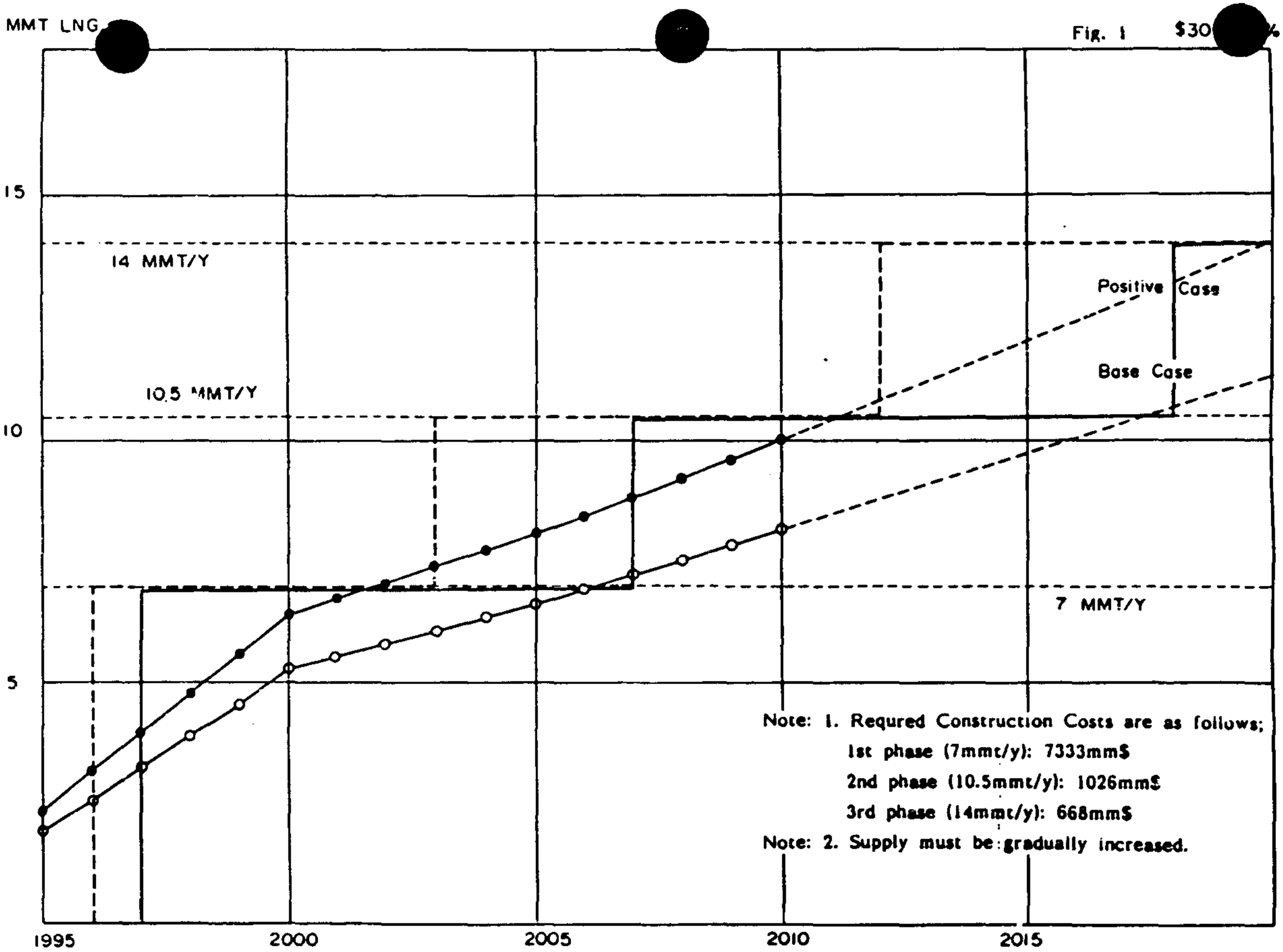
YEAR	DEMAND * Power Generation	City Gas	Others	Total 2000 Model	Potential Demand in Local Cities	Estimated Total Demand in Japan (A)	Supply Contracted (B)	Estimated New Demand (C=A-B)	Expected New LNG Demand in Japan	
									Base Case (D=Cx0.9)	Positive Case (E=Cx1.1)
1995	26,957	9,444	350	36,751	460	37,211	34,000	3,211	2,890	3,532
1996	27,831	9,787	350	37,968	540	38,508	34,000	4,508	4,057	4,959
1997	28,733	10,143	350	39,226	620	39,846	34,000	5,846	5,261	6,431
1998	29,665	10,512	350	40,527	700	41,227	34,000	7,227	6,504	7,950
1999	30,626	10,895	350	41,871	790	42,661	34,000	8,661	7,795	9,527
2000	31,619	11,291	350	43,260	880	44,140	34,000	10,140	9,126	11,154
2001	31,711	11,589	350	43,650	910	44,560	34,000	10,560	9,504	11,616
2002	31,803	11,895	350	44,048	940	44,988	34,000	10,988	9,889	12,086
2003	31,895	12,209	350	44,454	970	45,424	34,000	11,424	10,281	12,566
2004	31,987	12,531	350	44,868	1,000	45,868	34,000	11,868	10,682	13,055
2005	32,080	12,862	350	45,292	1,030	46,322	34,000	12,322	11,090	13,554
2006	32,173	13,202	350	45,725	1,060	46,785	34,000	12,785	11,507	14,064
2007	32,266	13,550	350	46,166	1,100	47,266	34,000	13,266	11,940	14,593
2008	32,360	13,908	350	46,618	1,130	47,748	34,000	13,748	12,373	15,123
2009	32,454	14,275	350	47,079	1,160	48,239	34,000	14,239	12,815	15,663
2010	32,548	14,652	350	47,550	1,190	48,740	34,000	14,740	13,266	16,214

Crude Oil Price in 2000 : $25
LNG Price Parity : 80%

1995	27,653	9,596	350	37,599	510	38,109	34,000	4,109	3,698	4,520
1996	28,526	9,946	350	38,822	620	39,442	34,000	5,442	4,898	5,986
1997	29,426	10,309	350	40,085	730	40,815	34,000	6,815	6,134	7,497
1998	30,355	10,685	350	41,390	840	42,230	34,000	8,230	7,407	9,053
1999	31,314	11,074	350	42,738	950	43,688	34,000	9,688	8,719	10,657
2000	32,302	11,478	350	44,130	1,050	45,180	34,000	11,180	10,062	12,298
2001	32,539	11,782	350	44,671	1,070	45,741	34,000	11,741	10,567	12,915
2002	32,778	12,094	350	45,222	1,090	46,312	34,000	12,312	11,081	13,543
2003	33,019	12,414	350	45,783	1,110	46,893	34,000	12,893	11,604	14,182
2004	33,261	12,742	350	46,353	1,130	47,483	34,000	13,483	12,135	14,831
2005	33,506	13,080	350	46,936	1,150	48,086	34,000	14,086	12,677	15,495
2006	33,751	13,426	350	47,527	1,170	48,697	34,000	14,697	13,227	16,167
2007	33,999	13,781	350	48,130	1,200	49,330	34,000	15,330	13,797	16,863
2008	34,248	14,146	350	48,744	1,220	49,964	34,000	15,964	14,368	17,560
2009	34,500	14,521	350	49,371	1,240	50,611	34,000	16,611	14,950	18,272
2010	34,753	14,905	350	50,008	1,270	51,278	34,000	17,278	15,550	19,006

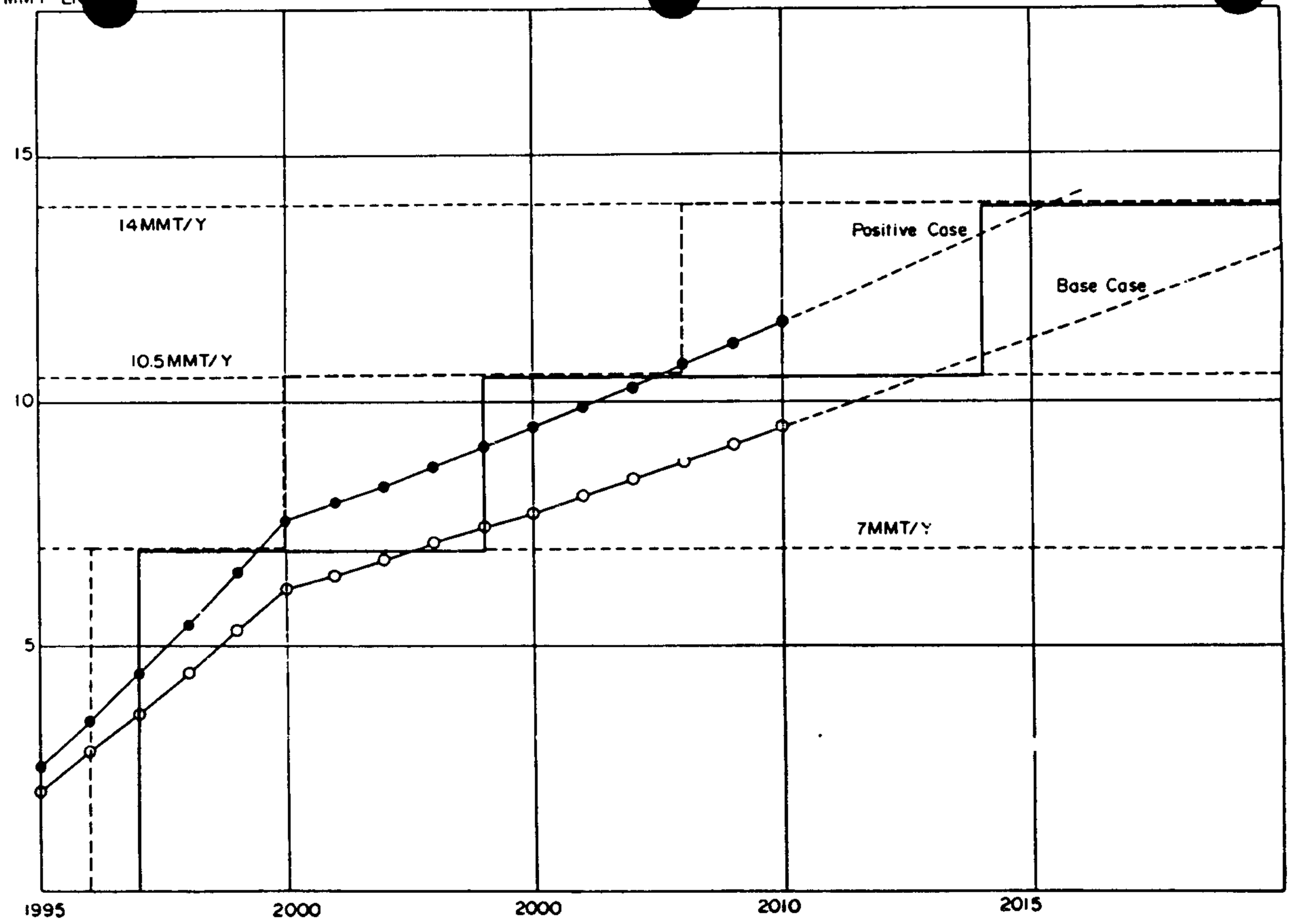
* : Include LNG demand for Fuel Cells (1995 ; 473, 2000 ; 924, 2010 ; 1,932)

Fig. 1



Note: 1. Requred Construction Costs are as follows;
1st phase (7mmt/y): 7333mm$
2nd phase (10.5mmt/y): 1026mm$
3rd phase (14mmt/y): 668mm$
Note: 2. Supply must be gradually increased.

Fig. 2 $30 90%



00147

Fig. 3 $30 80%

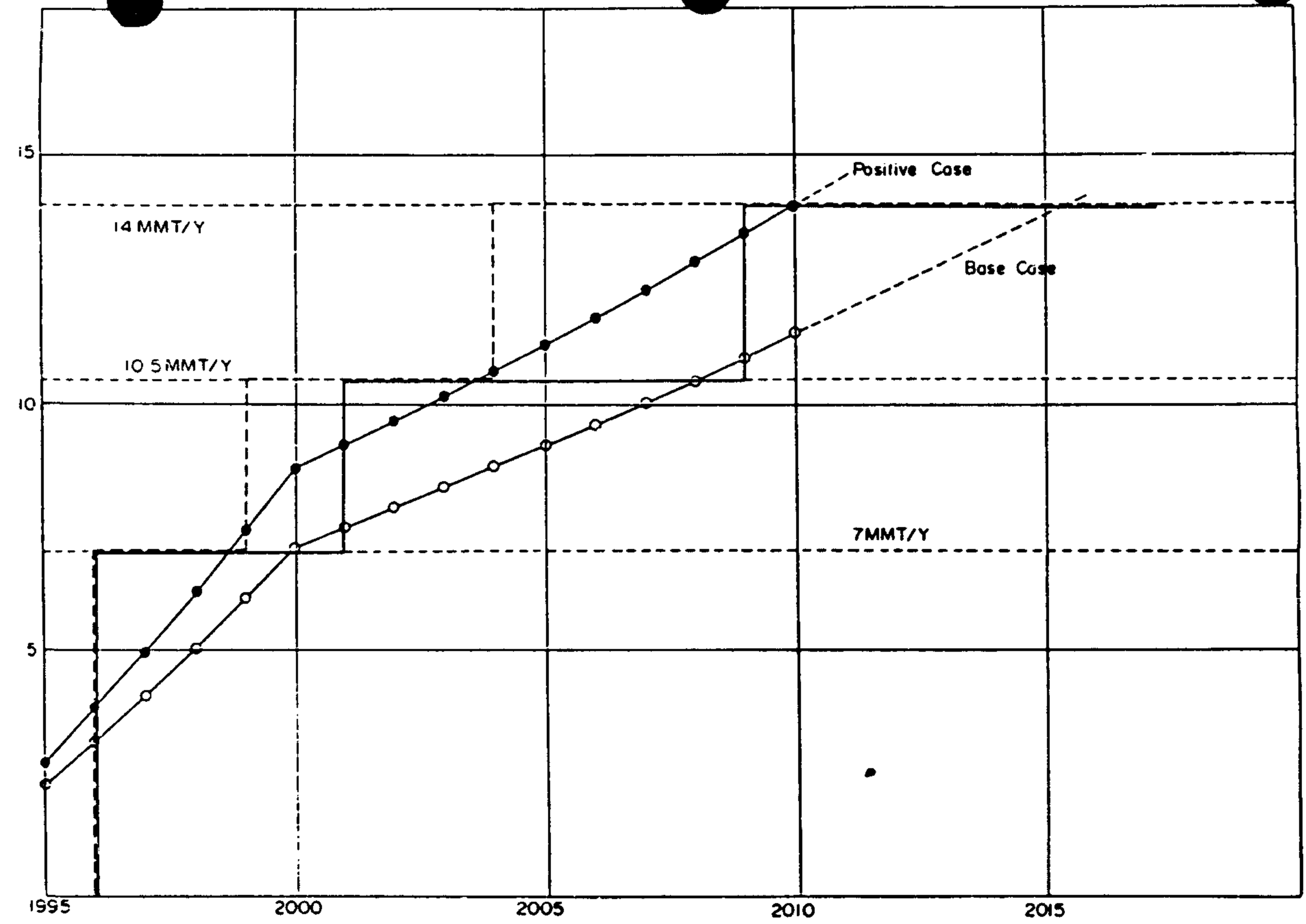


Fig. 4 $25 90%

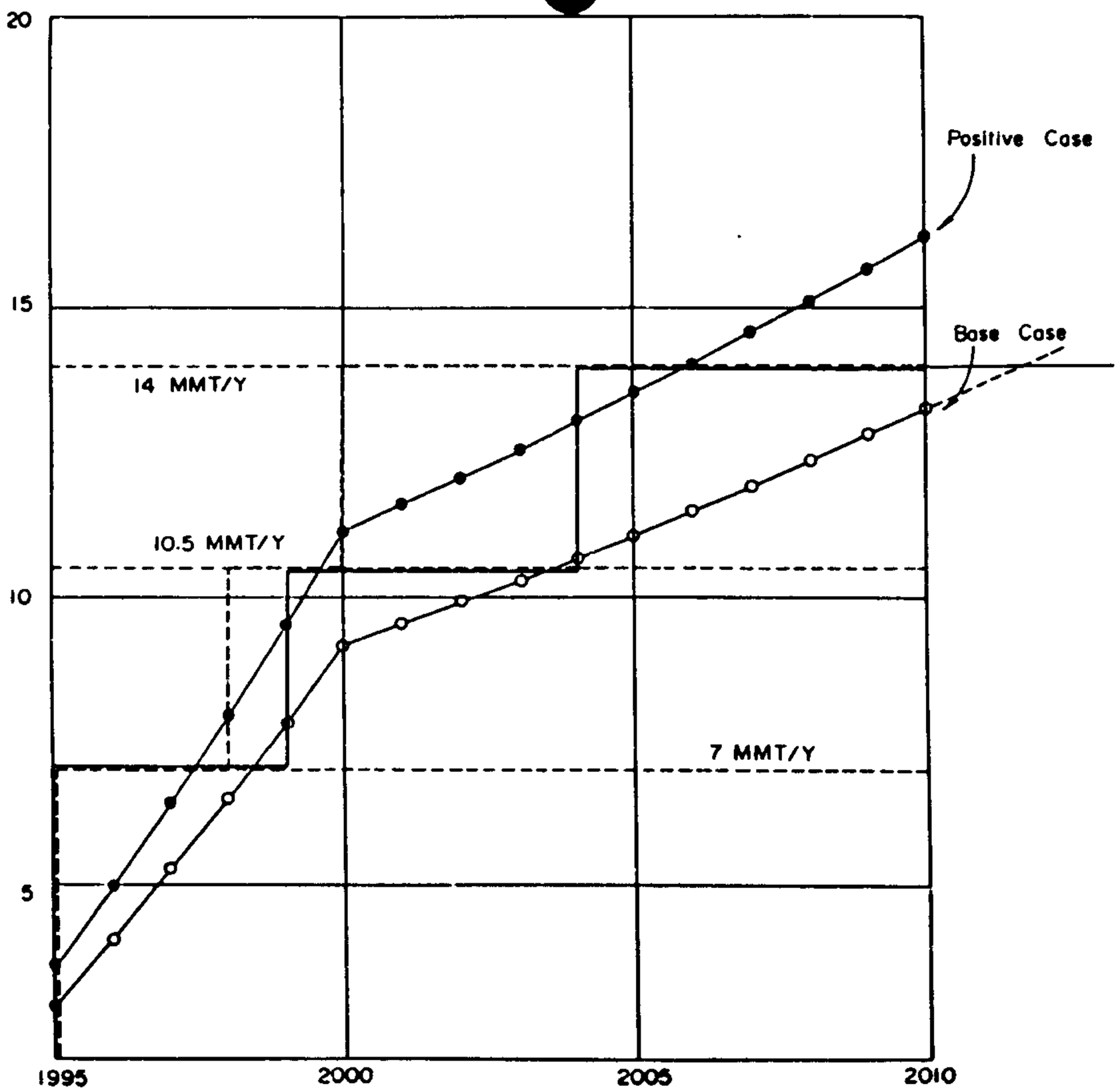

MMT LNG
20
15
10
5
Positive Case
Base Case
14 MMT/Y
10.5 MMT/Y
7 MMT/Y
1995
2000
2005
2010

Fig. 5 $25 80%