TRANSPORTATION STUDY ON THE LIQUID BULK MARKET SEGMENT AND THE PANAMA CANAL

Prepared for the Panama Canal Authority

by

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OVERVIEW

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Appendix Section..... (see separate list of contents on page 183)

EXECUTIVE SUMMARY

Executive Summary

Principal Methods

In executing the liquid bulk study we have attempted to draw on the Fearnley Group's profound knowledge of and experience in the liquid bulk market. We have applied this knowledge and experience to the task of creating a study where more classic macroeconomic methods are necessarily required in the production of 25-year forecasts of trading volumes by commodity and by area of origin and destination. Our knowledge and experience informed all phases of the project, and were essential to making judgements regarding the effects of such diverse elements as port restrictions, customs of the trade, characteristic behaviour of major players in the various markets, etc. We believe that our familiarity with the liquid bulk business lends a quality and depth to our work, which would be absent in a purely economic analysis.

Main Findings for Each Deliverable

All of the work which we have done on the deliverables listed below was predicated upon the premise that there would not be any lessening of the present Panama Canal's capacity caused either by physical restrictions unforeseen today or any other factor which may reduce the present capacity of the existing Canal, such as problems obtaining sufficient volumes of water to operate the lock systems, etc. Further, we have assumed that traffic will not be so voluminous as to prevent efficient operation and turnaround procedures. In creating our forecasts we have not made any assumptions of capacity or traffic limitations, which may result from the actual transit limitations posed by virtue of the Canal's capacity for traffic. Our findings indicate potential only and the value of this potential in the three cases imposed upon us by the terms of reference.

Further, we point out that all dollar figures in our value forecasts are based upon the toll structure, which went into effect in October of 2002. Even though we have used the tolls announced in October 2002 we have to point out that the pricing of Canal tolls in the future is subject to change, which is unknown to us, and these could alter the results provided by this study.

Determination of Canal's Potential Market

Our reference case sees total Canal transit cargo volumes for the existing Canal increasing over the period by approximately 35 % from 36.7 million tonnes to 49.6 mmt, whereof crude oil, oil products, LPG, LNG and Orimulsion account for the increase in volumes, whilst chemical traffic is expected to decrease slightly during the period.

When broken down by direction, it is expected that total volumes from the Atlantic to the Pacific will increase by about 12 % from 28.2 mmt to 31.7 mmt, whilst volumes in the other direction will more than double during the same interval, from 8.5 mmt to 17.9 mmt.

Our best case shows total transit cargo volumes in both directions for the unexpanded Canal increasing 67 % to 61.3 mmt, whilst in a worst case scenario we see total transit cargo volumes decreasing somewhat before recovering to a level down 3% to 35.5 mmt in 2025. For the expanded Canal we see an increase in transit cargo volumes of all liquid bulk commodities of 64% to 60.2 mmt in the most probable case, up 111% to 77.6 mmt in the best case, and up only 10% to 40.4 mmt in the worst case.

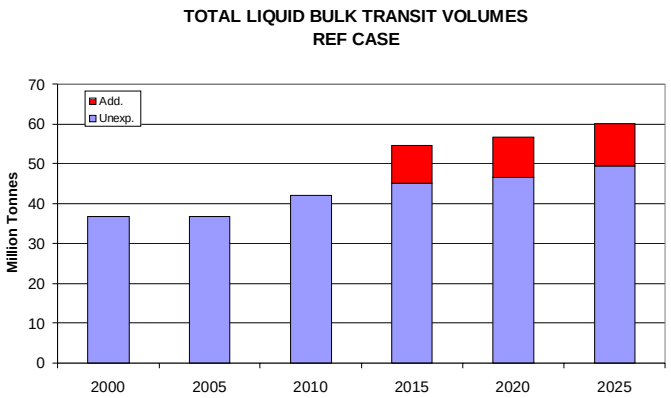
In the reference case for the unexpanded Canal, total transit cargo volumes of the various liquid bulk commodities will develop as follows over the 25-year period: crude oil from 7.2 mmt to 9.4 mmt, oil products from 15.5 mmt to 20.8 mmt, chemicals and vegoil from 12.5 mmt to 12.0 mmt, LPG from 1.2 mmt to 2.5 mmt, LNG from nil to 3.6 mmt, and Orimulsion from 0.2 mmt to 1.4 mmt.

Additional volumes in 2025 from an expanded Canal in the reference case totalling 10.6 mmt will be distributed as follows: crude oil about 1.4 mmt, oil products 3.8 mmt, chemicals nil, LPG 0.3 mmt, LNG 1.9 mmt, and Orimulsion 3.2 mmt.

In examining the Canal's potential market we have also made forecasts of numbers of transits through the Canal both in the case of the present Canal and in the case of an expanded Canal. During the forecast period we estimate that unexpanded Canal laden transits of liquid bulk carriers will increase by 53% from 1620 in the base year to 2475 in 2025. We note that in the reference case for an expanded Canal the number of total laden transits expected in 2025 is not much greater than in the case of the unexpanded Canal (2528). This is because it is expected that larger vessels will place a greater demand on Canal capacity, and even though volumes are expected to increase significantly, this will not be reflected in the number of transits in our reference case. However, in our best case scenario the number of laden transits in an expanded Canal

are expected to increase by 92% to 3105. In the best case scenario 3105 transits corresponds to 8.5 transits per day as compared to 4.5 transits per day in the base year.

Details for the three scenarios (unexpanded and expanded) are given in the Appendix section.



Summary Graphs.xls/Total Volumes

TOTAL LIQUID BULK TRANSIT VOLUMES

Million Tonnes

Year	Ref. Case Unexp.	Ref. Case Exp.	Best Case Unexp.	Best Case Exp.	Worst Case Unexp.	Worst Case Exp.
2000	36.7	-	36.7	-	36.7	-
2005	36.8	-	37.9	-	30.5	-
2010	42.0	41.2	45.6	44.6	32.4	32.5
2015	45.1	54.6	52.2	67.0	33.8	38.2
2020	46.6	56.6	55.9	71.5	34.8	39.6
2025	49.6	60.2	61.3	77.6	35.5	40.4

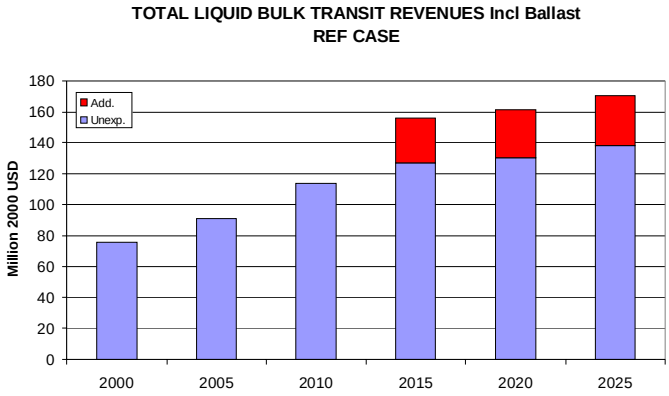
Summary Graphs.xls/Volumes 3Cases

Determination of Economic Values

The general volume trends seen in the Canal's potential market are borne out by the figures contained in our determination of the value of Canal routes. In the most probable, or reference, case, calculations of future values of Canal transits based on the tariff structure of October 2002 show that the total value of liquid bulk routes in both directions, including ballast revenue, will increase from about usd 79.5 million to usd 138.1 million during the forecast period for the unexpanded Canal and to usd 170.8 million for the expanded Canal. This means additional income from the Canal expansion of usd 32.7 million in 2025. We observe that the value of routes by commodity increases in every category although only slightly in the case of chemicals. The value of the Atlantic/Pacific direction increases by 47 % from usd 45.4 million to usd 66.7 million for the unexpanded Canal and by 84% to usd 83.4 million for the expanded Canal, whilst the value of Pacific/Atlantic more than doubles from usd 15.8 million to usd 37.9 million for the unexpanded Canal and usd 45.5 million for the expanded Canal. Estimated revenues from tankers in ballast show an increase from usd 18.3 million to usd 33.5 million in the reference case for the unexpanded Canal and to usd 42 million for the expanded Canal.

In the best case, the total value of routes in both directions plus ballast increases by 119% to usd 174.4 million for the unexpanded Canal and by 184% to usd 226.1 million for the expanded Canal. In the worst case, total revenues from liquid bulk cargo transits plus tankers in ballast will increase by 19% to usd 94.6 million for the unexpanded Canal and by 40% to usd 111 million for the expanded Canal in 2025.

Detailed forecast volumes and value figures by direction of trade and routes for the three scenarios in the case of an unexpanded and an expanded Canal are provided in the Appendix section.



Summary Graphs.xls//Total Revenues

TOTAL LIQUID BULK TRANSIT REVENUES Incl. Ballast

Year	Ref. Case Unexp.	Ref. Case Exp.	Best Case Unexp.	Best Case Exp.	Worst Case Unexp.	Worst Case Exp.
2000	79.5	-	79.5	-	79.5	-
2005	91.4	-	94.1	-	75.1	-
2010	113.8	108.8	127.1	121.5	81.5	82.4
2015	127.0	156.2	151.2	197.8	89.0	103.2
2020	130.3	161.1	161.6	210.9	93.4	109.6
2025	138.1	170.8	174.4	226.1	94.6	111.0

Summary Graphs.xls/Revenues 3Cases

Proposed Marketing Strategy

Our marketing strategy is informed by the provisions of the Neutrality Treaty, which in our opinion, gives the ACP ample opportunity to make changes in its pricing like those already implemented in October 2001, which will make transit fees paid by those who now pay least for transit more like those paid by those who now pay most. Our strategy proposes dividing the liquid bulk segment into sub segments each of which has particular needs and characteristics, which can be exploited by the ACP in order to maximize earnings. Specifically, with regard to crude oil and oil products, we point out that the Canal becomes particularly valuable in a good tanker market but is not very attractive to owners and shippers in a poor tanker market. We, therefore, consider the merits of a pricing system for these tankers, which follows the fluctuations of the tanker market. For Orimulsion, we see that price is all important and suggest providing a discount for guaranteed volumes over a prolonged period in exchange for lower prices. Each of the other market sub segments is treated in a similar manner whereby its particular characteristics are identified and exploited by the strategy.

Traffic, Transit Revenue Flows Forecasts

In our view these items are fully covered in our studies of the Canal's potential market and of the economic value, which provide a full reckoning of the Canal's potential market and of the value of routes through the Panama Canal. This reckoning covers the key Canal variables required by this deliverable.

Risk Analysis

Our risk analysis takes into consideration the three cases set out in the terms of reference, namely, most probable, best and worst cases. In all cases we have taken into consideration what we believe are unique elements of the tanker market, such as economic differences between shipbuilding and shipbuying nations, oil prices, pipeline competition, etc. We believe that these factors will have a strong influence on how events will unfold in the various markets and we use them as an important adjunct to many other, perhaps more standard, economic and political factors, which will influence liquid bulk scenarios. We have also given a number of concrete examples of how scenarios will play out in the various commodity markets.

Analytical Tools

Analytical tools and models are presented with reference to the tasks for which they were used in developing the study. A full description of analytical tools employed in the creation of the study, specifically for forecasting and calculation purposes is to be found in the 'Methodology' section of the chapter entitled 'Trading Volumes/Canal's Potential Market'. There is also a brief chapter in the study entitled 'Analytical Tools' in which the use of these as well as their purpose in the development of the study is explained.

Principal Conclusions

- **The world energy mix is changing, and oil, even though expected to increase in volume, is expected to lose market share to other means of energy generation.**
- **Both oil intensity and energy intensity are declining, the former due to increasing competition from either non-fossil alternatives or because of a greater interest in cleaner burning gas, and the latter due to more efficient use of energy supplies.**
- **Changes in the energy market may not necessarily mean a decrease in volumes through the Canal, but they could mean a change in commodities shipped, i.e. more methanol for fuel cells instead of gasoline for the internal combustion engine.**
- **Due to the size of the present Panama Canal much of the crude oil trade and some of the product trade have developed logistics which avoid the use of the Canal. These logistics, or 'customs of the trade' may be hard to break, even in the case of an expanded Canal.**
- **An expanded Canal will have a strong potential product trade, largely because U.S. refining capacity is expected to flatten out whilst demand for product imports will increase.**
- **An expanded Canal has a strong potential upside for Orimulsion volumes which are aggressively marketed towards the Asian**

market. The downside is that Orimulsion is a very cheap commodity, and even though it is a liquid, it competes with coal in the power generation market. Therefore, in order to be competitive, transportation costs for Orimulsion must look to freight rates in the bulk carrier market. In periods with a strong tanker market and a weak bulk carrier market, this can make the Canal an unattractive alternative in the Orimulsion trade.

- **An expanded Canal will have little impact on the volume of chemical trade.**
- **A strong shift is expected in the direction of the chemical trade through the Canal, with the current dominance of the Atlantic/ Pacific trade declining as trade Pacific/ Atlantic increases. It is expected that the current ratio of approximately 25 percent Pacific/Atlantic and 75 percent Atlantic/ Pacific will even out to about a 50/50 ratio during the period covered by this study. This is largely due to the strong growth in chemical plants expected in the Middle East and Asia and the slowing of growth in this sector in the West.**
- **LNG projects in Bolivia, Peru and Venezuela could have an important potential for the Panama Canal.**
- **Liquid bulk volumes through the Panama Canal face a serious threat from the re-activation of the already existing pipeline facility in Panama. This threat will become particularly acute should the pipeline company exercise its option to build an additional pipeline alongside the existing one, which could, for instance, be used to take oil products from the Atlantic to the Pacific side.**
- **Any Canal marketing strategy must seek to increase the tariffs paid by those vessels which now pay least but which still exploit the same facilities as their larger and higher revenue-producing counterparts.**
- **Further, a marketing strategy should seek out the different needs and characteristics of each sub sector of the liquid bulk market and seek to exploit these to maximize income.**
- **Providing a well-managed and relatively competitive bunkering service as well as other carefully selected, correctly priced, and well-run ancillary services will be a factor in attracting more business to the Panama Canal because these enroute services will accentuate the time saving character of the Canal and the 'one-stop-shopping' concept.**

Summary Matrix for Case Scenarios

Item	Best Case	Most Probable Case	Worst Case
Economic Assumptions	DRI-WEFA / Fearnley Consultants GDP Base Case adjusted for: OECD + 0.2% pa Non–OECD +0.4%	DRI-WEFA / FCons GDP Base case	DRI-WEFA / FCons GDP Base case adjusted for: OECD -0.4% p.a. Non-OECD -0.8% p.a.
Total Oil See General comments p.75 Economic growth Conservation Alternative energy Lat. Am. Investment climate	 High Low Low High	 Neutral Neutral Neutral Neutral	 Low High High Low
Crude oil US oil production Lat. Am oil production US refinery capacity Lat Am. refinery capacity Pipeline use	 Low High High Low None	 Neutral Neutral Neutral Neutral None / Low	 High Low Low High High
Oil Products US refinery capacity Lat Am. refinery capacity Pipeline use	 Low High None	 Neutral Neutral None / Low	 High Low High
LNG - Production	The LNG projects in Bolivia, Peru and Venezuela will be developed and according to current schedule and production is expanded during the period	Venezuela starts up as scheduled, but either Peru or Bolivia face delays in both start-up and expansion of the project.	Venezuela, Peru and Bolivia are developed, but with several years of delays. Limited expansions during the period. Large natural gas reservoirs found near consuming regions (US, Canada and Mexico) and Alaska gas piped to the US
LNG - Consumption	Strong interest in LNG from the U.S.A and Mexico in addition to several Carribean Islands.	Strong interest in LNG from the U.S.A. and Mexico	Interest in LNG from U.S.A. and some interest from Mexico's Pacific Coast.
LNG - Trade	High degree of LNG trading and projects capable of securing long term agreements on both sides of the Panama Canal. Diversification/security of supply is an important element	A mixture of long term contracts and some trading from Pacific to Atlantic or vice versa.	Balanced markets on both sides of the Americas – limiting long term contract use of the Canal. Limited focus on diversification/ security of supply.
LNG - Cost	Reduced cost of producing and transporting LNG, Increased natural gas prices in consuming areas	Reduced cost of producing LNG, Increased natural gas prices in consuming areas	Falling natural gas prices in consuming areas. Stable production costs. New transport methods for natural gas (CNG/PNG)

Item	Best Case	Most Probable Case	Worst Case
LNG - Competition	High energy prices in general, but LNG still competitive as fuel for power production. Reduction in use of Nuclear power and coal fired power plants	Situation as is today	More use of nuclear fuel and coal, reducing demand for LNG as fuel for power plants
LPG - Production	High production growth from several areas, including Venezuela and Trinidad	Production growth from most areas inline with consumption growth	Production growth on both the Atl & Pacific Side of the Americas creating a balanced market. Limited new LPG production due to delays in LNG projects (LPG being a bi-product of LNG production)
LPG - Consumption	LPG consumption higher than GDP/Industrial production growth figures indicate – Strong demand for LPG from Asia/ Pacific side of the Americas	LPG consumption in line with GDP/Industrial production figures indicate	LPG consumption growth lower than GDP/Industrial production growth, but still positive. Consumption growth stronger in the US Gulf /Mexico region, reducing available cargoes for Canal traffic.
LPG - Trade	Trade increases more than consumption. More ballast transits due to more activity in the region	Trade growth in line with consumption. More ballast transits	More balanced markets in Atl and Pacific, limiting/reducing use of the Canal. Strong demand growth from Brazil/US Gulf. Ballast transit levels at present rate of laden
LPG - Cost	Competitive pricing of LPG.	LPG priced against other energy commodities	“Premium” LPG pricing and LPG losing market shares to LNG and other energy commodities
Ammonia	High level of regional trade as Venezuela and Trinidad increases production with the Pacific side of the Americas increasing their imports	Increases in production and trade, but demand from Pacific side competing with demand from US Gulf	More balanced supply/demand picture on both sides of the Americas, but with more import requirements to the US Gulf, reducing volumes for other markets. Limited ballast trade
Pet.chem	Strong economic growth in Asia and Pacific side of the Americas– increasing the US Gulf – west trade	Pet.chem trade follows general economic development	Increased regional production of pet.chem in Asia, reducing current trade from US Gulf – Asia trade. No ballast trade

Item	Best Case	Most Probable Case	Worst Case
Vegoil	Strongly improved life expectancy	Continued increased life expectancy, especially in the underdeveloped countries	Stagnating life expectancy
	Favourable economic growth	Reference scenario for economic growth	Adverse economic conditions
	Declining real term commodity prices	Stable real term development in commodity prices	Rising real term commodity prices
	No limitations in available land resources	Land resources growing at a pace in line with increasing demand	Reduced available land resources
	Favourable climate development	"Normal climate"	World climate becoming gradually adverse
	Trade barriers reduced and incentives for the agricultural sector in major producing areas	No major changes in agricultural policies	Agricultural policies restricting land use and trade barriers
	Great advances in biotechnology and widespread acceptance of genetically modified species.	Continued advances in biotechnology	No major advances in biotechnology, and possibly bans on genetically modified species
	The growth rate in trade is set at 110% of the reference case.		The growth rate in trade is set at 70% of the reference case
Organic/Inorganic Chemicals	Fuel cell scenario – major boost in demand for methanol following a successful introduction of fuel cells early in the forecast period	Business as usual scenario.	Strong expansion in East Asian and Middle East petrochemical industries.
	The preferred fuel is methanol	Relative stability of financial markets.	Adverse economic conditions.
	Limited expansion of Middle East and East Asian petrochemical capacity	Limited growth in Asian output of petrochemicals.	Troubled financial markets.
	Fairly strong increase in European and U.S. output of petrochemicals	Continued, but levelled, growth in European and U.S. output of petrochemicals.	Increased environmental awareness in the U.S.A. and Europe, limiting future expansion of the petrochemical industry.
	Favourable economic conditions.	Increased imbalance in North American / Latin American product mix.	Increased domestic demand in the U.S.A. and Europe limiting export potential of chemicals.
	Strong growth in financial markets	MTBE remains and holds its present position in the fuel market	War & unrest.
	Generally, world peace with little local/regional unrest		The use of MTBE will decline following the ban in California. Fuel cells are not developed, or Fuels cells will not run on methanol.

Item	Best Case	Most Probable Case	Worst Case
Methanol	(The Fuel Cell Scenario) Fuel cells are successfully introduced in the market by 2004 The preferred fuel is methanol Initially these ”zero-emission” vehicles are introduced in the U.S.A. and Europe Future demand for methanol will increase drastically	(The Business-As-Usual Scenario) The use of chemicals continues to grow at GDP rates MTBE remains and holds its present position in the fuel market A ”Probable case” GDP growth scenario (see economic development section)	(The MTBE Crash Scenario) The use of MTBE will decline following the ban in California Fuel cells are not being developed or will not run on methanol Worst case economic scenario
Orimulsion	Prolonged periods of a weak tanker market and a strong dry cargo market. Increased interest in Orimulsion if transport cheaper than coal, thus extending the limits of market saturation. Environmental improvements in the product or facilities for burning it allowing entry into the U.S. West Coast and other sensitive markets.	Continuing customer base in the Far East. Few customers in the U.S. market due environmental concerns. Differences between rates in the dry and wet markets will affect Orimulsion transportation because coal is its main competitor. Some Aframax and Suezmax movements through an expanded Canal.	Prolonged periods with a strong tanker market and a weak dry cargo market. Decreased interest due to consistently higher transport costs than coal, thus reducing limit of market saturation.
Other Liquid Bulk Commodities	Limited/No use of the Panama Canal	Limited/No use of the Panama Canal	Limited/No use of the Panama Canal

HISTORICAL PART

Executive Summary

Scope and Focus

This study focuses on developments and structure in global trade and trade volumes through the Panama Canal as well as ballasting through the Panama Canal.

Trends in global and regional oil and energy consumption as well as economic developments are analysed to form part of the platform for the subsequent forecast to be made for global and Panama Canal trade up to 2025.

A comprehensive calculation model for comparison of costs on different representative trade routes through the Panama Canal and other critical passing points like Cape Horn, Cape of Good Hope, and the Suez Canal has been established. This allows comparisons of effects of variations in key parameters such as Canal tariffs, timecharter costs (costs of ship ready to sail, covering capital costs and daily operating costs), and bunker costs. Port expenses are excluded since they will be the same regardless of the route chosen.

The "Panama Canal's Universe" will pulsate as a function of variations in these parameters. ACP can only influence the tariffs and focus will later on be set on how much potential cargo volume and general traffic will be attracted by lowering tariffs and how much could be lost by tariff increases, and in the end what will be the optimal tariff levels to maximize Panama Canal income based on given assumptions.

Consideration must also be given to the development of tariffs over the forecast period. Should, for instance, initial rate levels be set at sub optimal short-term levels in order to attract more traffic and later on be increased gradually after trading patterns and logistics have accommodated to the new physical opportunities created by increased Panama Canal dimensions and capacity?

Main Findings

- **Liquid bulk cargoes shipped by tankers and gas carriers through the Panama Canal in Fiscal 2001 accounted for almost 38 million metric tons, or 19.3% of the total cargo volume through the Canal.**

- **Liquid bulk cargo shipped by such vessels through the Canal from Atlantic to Pacific in Fiscal 2001 amounted to 26.2 mmt , or 23.6% of total Canal shipments in this direction. The volume from Pacific to Atlantic was 11.7 mmt, or 13.7% of the total Canal volume.**

- **The Panama Canal's share of total world sea-borne trade for all types of commodities in Calendar 2001 was about 3.6%.**

- **For Calendar 2001, the Canal's share of the world total seaborne crude oil trade was only about 0.6%, for oil products 3.6%, for Orimulsion nil, for LPG 2.9%, and for chemicals as much as 9.8%.**

- **The nature of the trade through the Panama Canal is very local for crude oil and oil products, with trades within the Caribbean and North and Central America accounting for 75% and 71%, respectively, of the total volumes shipped through the Canal. This is very much in contrast to shares of 23% only for both chemicals and liquefied gases, where Asia plays a much more prominent role.**

- **The volume of world seaborne trade in crude oil has shown low growth in recent years and lately some decline. The trading pattern is seeing large changes with substantial reduction in exports from Middle East OPEC countries.**

- **The trade in oil products in general shows stronger growth, due to changing patterns in regional consumption by product types and modest expansion of refining capacity in most industrial countries. However, it should be observed that the oil products trade is sometimes more vulnerable than the crude oil trade, when oil demand shows a negative development.**

- **Seaborne trade in liquid bulk chemicals has more than doubled during the period 1980-2000. During the same period, chemical trade through the Canal has increased in line with global seaborne trade. The share of global trade passing the Canal has remained fairly stable at around 11%-12%.**

- **Global seaborne trade in Liquefied Petroleum Gases was below 50 million mt in 2000. Only 2%-3% of this volume passed through the Panama Canal**

- **Global seaborne trade in Liquefied Natural Gas was more than 100 million mt in 2000. LNG has never passed through the Panama Canal.**

A Brief Note on the Making of the Historical Study

In writing our historical study we have made every attempt to maintain a narrative style while, at the same time, incorporating sufficient data to maintain a high degree of substantiation of the ideas, postulations, and conclusions contained in the text. During the production of the study, it quickly became apparent that including all, or even most, of the data we collected in the body of the text would be unwieldy and would detract from the readability of the report. We have, therefore, used tables and graphs for the sole purpose of illustrating important points which are often best illuminated by a quick glance at some figures. All principal data which is not included in the text is organized in an appendix. In cases where items included in the appendix can further illuminate what is already provided in the text, we refer the reader to these supplementary materials which are available by consulting the appendix. We hope that our choice of format will provide a document which is readable and understandable to a far greater extent than documents incorporating large blocks of data and statistics in the body of the text.

Data Availability and Quality

Market analysts face several challenges in trying to build global seaborne trade matrices for different commodities. Among liquid bulk commodities, crude oil statistics are by far easier to cover in a fairly complete way than oil products and chemicals; this is due to a multitude of different product types and a lack of adequate statistics for most countries.

In the oil market, IEA provides solid (but not totally detailed) statistics for trade to and from OECD countries based on compulsory reporting from member countries. In addition, OPEC provides total crude oil and oil products export and import statistics by countries and areas, as well as crude oil (from all member countries) and oil products (from main products exporting member countries) export statistics. This means that data for trade between non-OECD member countries are quite incomplete.

One problem is that some sources quote oil statistics in weight (tonnes), whereas others use volume (barrels, barrels per day, or kilolitres). Consolidation of different types of data into the same survey will always give room for some slight discrepancies whether weight or volume are chosen due to differences in specific gravity for different crude oil qualities and for different oil product types.

Another source of a certain degree of discrepancy arises when trying to combine export and import data in the same trade matrix. This has to do with availability of the two types of data in general, and hence often a need for combination, as well as different timing of export and import data, often with a time lag of approximately one month for reporting of the same physical trade volumes.

Fearnleys has compiled data for total seaborne trade for crude oil on a matrix-basis for about 40 years, whereas global estimates without detailed breakdown are made for the oil products trade. All oil trade surveys are based on certain assumptions. Figures from different data sources include or exclude to different degrees certain short-sea or coastal trades and it is also difficult to assess the share of total trade volumes transported by pipeline or overland.

Several of the available oil products statistics do not exclude petcoke and LPG, which require dry bulk carriers and LPG carriers, and are thereby, not tailor-made for analyses for oil product tankers. The oil products market is much more diversified than the crude oil market both geographically and with regard to product range. Intertanko's Market Research Group, where Fearnresearch's chief economist is a member, recently agreed that oil products statistics have always been a stepchild in the field of shipping statistics – and understandably so.

To illustrate long term developments, we have had to use some global time series which include all types of oil products. We have put a lot of effort into preparing trade matrices, excluding LPG and petcoke, for different years (with 5-year intervals) for OECD trade and supplemented with OPEC data and various estimates for various trade routes between non- OECD countries.

When it comes to shipment data for oil tankers, Fearnresearch has tracked the movements of all individual vessels above certain sizes since the early 1960's. From 1988 onwards data for vessels over 50,000 dwt are available in electronic form. These data cannot distinguish between crude oil and oil products. Also, statistics derived from these data are not directly comparable with our data for total seaborne trade, since some cargo volumes are counted twice, into pipeline starting point and out from ending point.

From a vessel employment point of view, trade volumes on all shipment legs are important, whereas they cannot be found directly from foreign trade statistics. We have prepared rather detailed global trade matrices for the years 1988-1990-1995-2000-2001 for total shipments by vessels over 50,000 dwt showing total volumes on trade routes and the volumes shipped through the Panama Canal.

Trade data for individual chemicals is often elusive because it is not possible to cover every country and so it is necessary to look at both imports and exports in order to construct a logical picture. In the case of certain organic and inorganic chemicals e.g. phosphoric acid, information is not readily available, and therefore, a degree of estimation has to be made. There are over 50 organics - consequently this is not like collecting trade data for single commodities, like crude oil or LNG etc - it is significantly more fragmented and complicated.

The information on chemicals that we have collected has necessarily had to rely on a fair degree of estimation. Most of our figures will be based on import/export data for key chemical importers/exporters such as the U.S.A., Japan, South Korea, Taiwan, Singapore, Canada, Hong Kong, and China. In addition, some data will reflect trade data

for Saudi Arabia, New Zealand, Venezuela, Chile, Brazil, Trinidad, Mexico, Indonesia, Thailand, India, Philippines and Argentina. To do the job properly, it has also been necessary to try to collect missing data, where appropriate, which has made the process time consuming.

Crude Oil

Global Trade

Since the 1970's, world seaborne trade in crude oil has seen dramatic changes in volume and even more in tonne-miles due to changes in regional production and consumption patterns, the impact of new pipelines, generally improved oil and energy efficiency, as well as changes in the energy mix (oil, gas, coal, nuclear energy, hydropower and other renewables).

An analysis of world energy consumption shows how uncertain long-term projections could become. It turns out that world energy consumption in 2000 was actually as much as 63% lower than what the OECD experts back in 1973 told us it should become in 2000. Instead of an annual average global growth in energy consumption of 5.5% over the period, it turned out to be only 1.7%. Average annual global oil consumption growth over the same period was only 0.9%, which shows that oil has lost market shares to other types of energy.

In the illustration of crude oil seaborne trade development we have to some extent included data also for the first part of the 1970's since that was a rather special epoch in the tanker market. In general, we have concentrated on cargo volumes, which are the most relevant measure for the scope of this study.

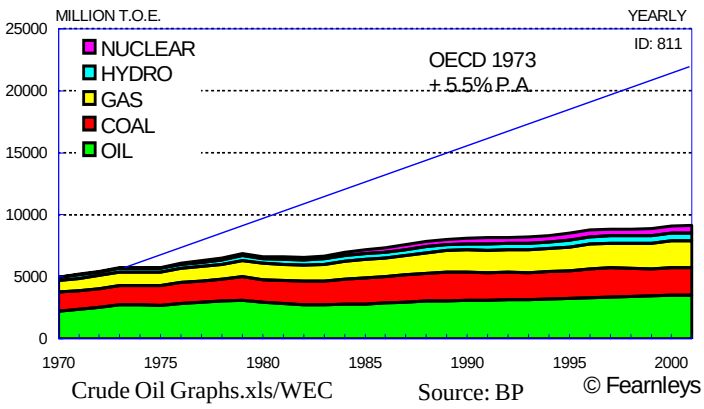
World crude oil seaborne trade (excluding some coastal and short-sea trades) as reported in Fearnresearch publications rose 50% from about 995 million tonnes in 1970 to a peak of 1497 mmt in 1977, before decreasing gradually by 42% to 871 mmt in 1985. Thereafter, there was a continuous volume increase of almost 85% to 1608 mmt in 2000. In 2001, there was an estimated volume decline of about 1.5% to a level about 6% higher than the1977 peak. For comparison, it can be mentioned that crude oil shipments measured in tonne-miles also peaked in 1977 and that the level in 2001 is estimated to be as much as 26% lower than 24 years before.

Oil products shipments have developed more favorably. Nevertheless, crude oil plus oil products tonne-miles in 2001 are estimated to be some 14% lower than 24 years before. It is observed that the current oil tanker fleet is 16% smaller than in early 1978, and it seems highly relevant to ask whether the world shall ever again need such a large oil tanker fleet.

The graphs below show developments in crude oil seaborne export and import volumes by main areas since 1970. Figures for same are given in the appendix section. As will be seen, the fluctuations for individual areas have varied substantially and very differently for various reasons, which are addressed in various parts of this study.

Looking at the geographical structure of the trade in 2000, we find the following market shares on the export and import side:

WORLD ENERGY CONSUMPTION



Crude Oil Graphs.xls/WEC Source: BP

Seaborne Crude Oil Imports 2000

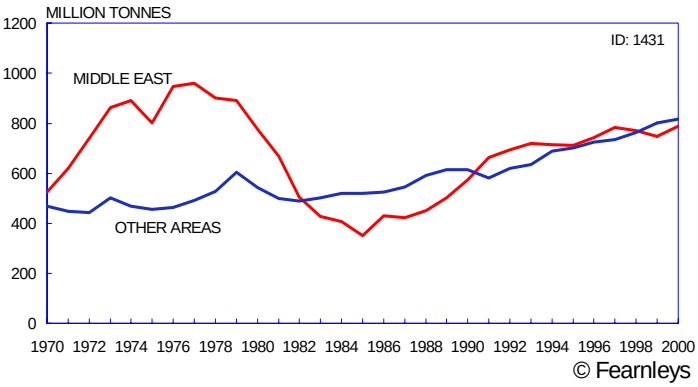
North America	30.0%
South America	3.9%
N/W. Europe	9.1%
Mediterranean	15.0%
Japan	13.1%
Other Asia	25.1%
Others	3.8%
Total	100.0%

Seaborne Crude Oil Exports 2000

Middle East	49.1%
Near East	3.3%
North Africa	5.5%
West Africa	11.0%
Caribbean	14.2%
S.E. Asia	3.9%
North Sea	5.0%
Other areas	8.0%
Total	100.00%

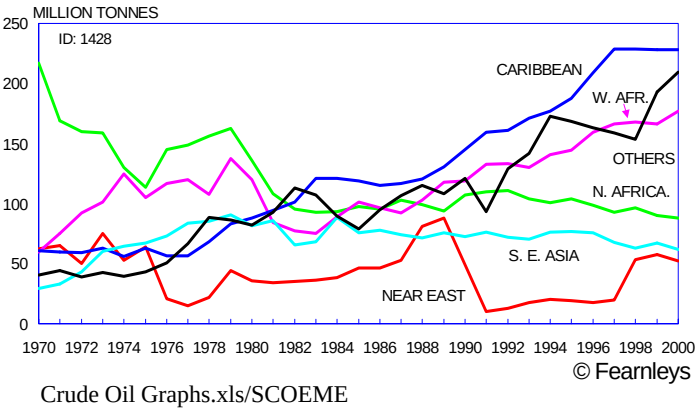
Crude Oil Graphs.xls/STRADE

SEABORNE CRUDE OIL EXPORTS



Crude Oil Graphs.xls/SCOE

SEABORNE CRUDE OIL EXPORTS. Excl. M. East



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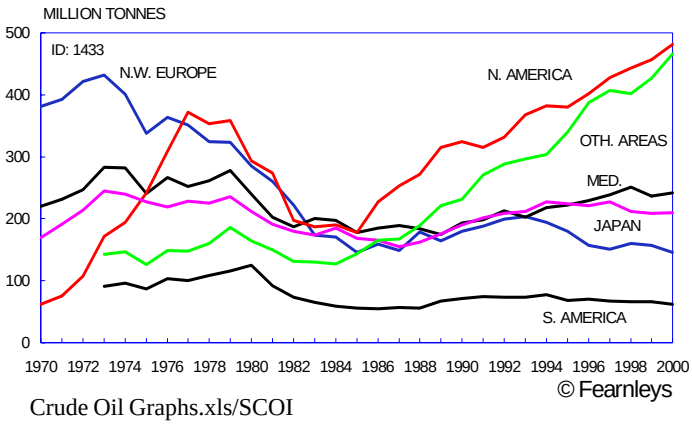
SEABORNE CRUDE OIL IMPORTS



Crude Oil Graphs.xls/SCOI

Vessel Size Distribution

The vessel size distribution of oil shipments by oil tankers over certain lower size limits has been analyzed by Fearnresearch since the early 1960's. This material does not open for separation between crude oil and oil products. Global trends for size groups of vessels employed have been more stable than for individual regions of the world.

As for global trades, it appears that the share of VLCC cargoes (vessels over 200,000 dwt dropped from 52% in 1975 to 34%in 1985, before climbing to 43% in 2000. For smaller vessels similar comparisons over time are not available for the whole period due to different size groupings and lack of data in electronic form for the first years. However, we note with interest that the Panamax size group of 50-80,000 dwt has shrunk from 16% in 1988 to 10% in 2000, whereas the Aframax size group of 80-120,000 dwt has seen its share increase slowly from 27% in 1988 to 30% in 2000.

The size groups' importance for different export and import areas for oil shipments by vessels above 50,000 dwt in 2000 are shown in the graphs below:

From the Panama Canal's point of view, it is interesting to observe that for imports to both North and Central/South America, the share of Panamax and Aframax vessels (50-120,000 dwt) was roughly 55%, significantly higher than 46% for Europe and only 27% into Asia. Panamax and Aframax size accounted for as much as about 88% of the oil exports by vessels above 50,000 dwt, followed by North Africa 54% and North Sea 46%.

Global trade matrices for the corresponding size groups are shown in the Appendix section.

Global Oil Shipments by Vessel Size

Size distribution. Fig. in pct of total global cargo volume each year

1975-1988. Vessels over 60,000 dwt

'000 dwt	1975	1980	1985
60-100	27	26	34
100-200	21	24	32
200+	52	50	34

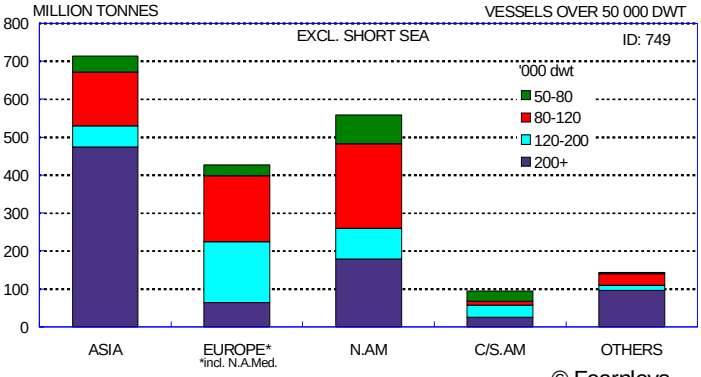
1988-2000. Vessels over 50,000 dwt

'000 dwt	1988	1990	1995	2000
50-80	16	14	11	10
80-120	27	28	29	30
120-200	22	20	18	17
200'+	35	38	42	43

Source: Fearnresearch in "World Bulk Trades"

Crude Oil Graphs.xls/GOSSIZE

OIL IMPORTS BY SIZE 2001



Crude Oil Graphs.xls/OIBS

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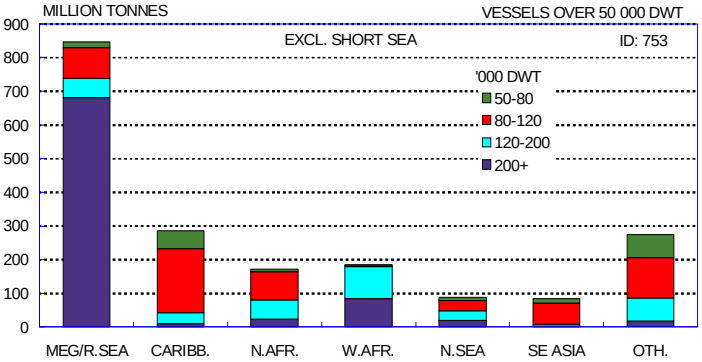
OIL EXPORTS BY SIZE 2001



Crude Oil Graphs.xls/OEBS

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Size distribution of oil shipments in 2000
Vessels over 50,000 dwt

Imports in pct of total

'000 dwt	Asia	Europe*	N.Am.	C/S.Am.	Others
50-80	6.5	7.5	13.5	32.0	1.8
80-120	20.6	38.3	42.0	12.4	21.9
120-200	7.4	36.9	15.5	29.5	9.1
200+	65.5	17.3	29.0	26.1	67.2
	100.0	100.0	100.0	100.0	100.0

*) incl. N.Afr. Med.

Exports in pct of total
'000 dwt

	MEG/R.Sea	Caribs	N. Afr.	W. Afr.	N.Sea	SE Asia	Oth.
50-80	2.2	19.9	5.2	1.8	12.2	23.8	26.8
80-120	11.8	67.7	48.6	2.8	34.2	69.4	43.1
120-200	6.9	11.6	27.1	46.5	34.6	6.2	27.6
200+	79.1	0.8	19.1	48.9	19.0	0.6	2.5
	100	100	100	100	100	100	100

Crude Oil Graphs.xls/SIZE DISTR

Oil Products

World seaborne trade in oil products has shown a much more steady development than the trade in crude oil over the last several decades; it has exhibited an almost continuous upward trend. This has to do with refinery capacity and location. In addition to traditional import refineries in large market areas and so-called depot refineries, somewhere between main oil production and oil consumption areas, like in the Caribbean and in the Singapore area, new export refineries in oil producing countries favour the development of oil products trade at the expense of the crude oil trade.

In North America and Europe there has been very limited new refinery capacity coming on stream in the last few years. A rapid expansion in Asia has led to some surplus capacity and Middle East refineries have increasingly had to look westwards to find new customers.

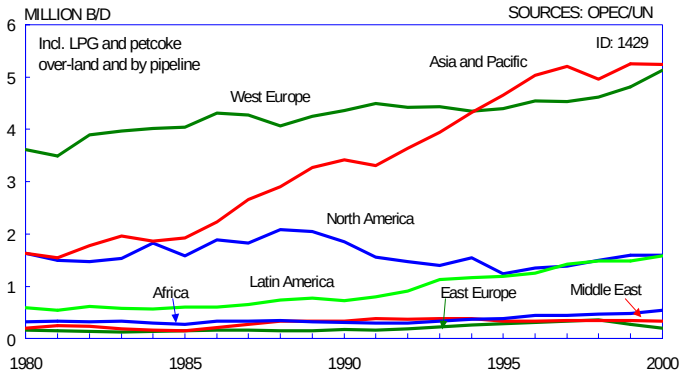
The volume of seaborne oil products trade (excluding petcoke and LPG and disregarding some short-sea and coastal trades) has, according to Fearnresearch's own estimates, increased about 80% from 1975 to 2000. This means an average annual growth of 2.4% through the 25-year period. The volume of oil product shipments at 419 million tonnes in 2000 corresponded to about 26% of the volume of crude oil entering seaborne trade.

Few sources, if any at all, provide detailed trade matrices for oil products. Hence, total trade assessments will necessarily have to be made to various degrees on the basis of incomplete data. Total oil product export and import figures (including petcoke and LPG) are, however, available from several sources. The accompanying graphs illustrate developments in total oil product imports and exports. Most remarkable is the strong growth in oil product imports to Asia. On the other hand, a few Asian countries have also become substantial oil product exporters in addition to the traditional giants in the Singapore area, in particular Korea. The volumes illustrated here, also include substantial overland and short-sea trade within Europe.

On the import side, Asia and the Pacific accounted for 5.24 million barrels per day (Japan 1.24 mbd, Singapore 0.65 mbd, China 0.52 mbd, India 0.45 mbd, Hong Kong 0.41 mbd), W.Europe 5.13 mbd, U.S.A. 1.44 mbd, Latin America 1.58 mbd (Mexico 0.44 mbd, Brazil 0.31 mbd), Africa 0.54 mbd, M.East 0.34 mbd, and only minor volumes to other areas.

On the export side, W.Europe's total oil product exports reached 4.44 mbd in 2000, followed by Middle East 3.07 mbd, Asia and Pacific 3.00 mbd (Singapore 0.96 mbd, China 0.29 mbd), Latin America 2.03 mbd (Venezuela 0.79 mbd, Virgin Isl. 0.39 mbd, Neth. Antilles 0.23 mbd), Africa 1.15 mbd, FSU 1.09 mbd, U.S.A. 0.94 mbd, and Canada 0.42 mbd.

TOTAL OIL PRODUCTS IMPORTS BY AREA



Oil Products Graphs.xls/TOPIBA

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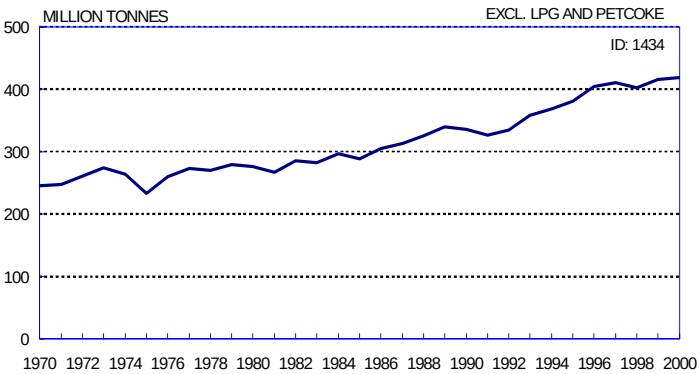
SEABORNE OIL PRODUCTS TRADE



Oil Products Graphs.xls/SOPT

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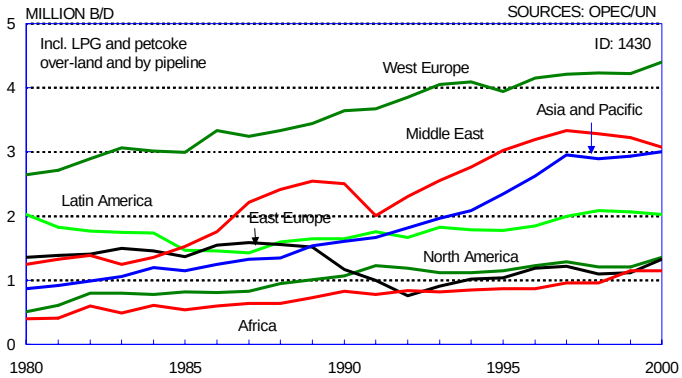
TOTAL OIL PRODUCTS EXPORTS BY AREA



Oil Products Graphs.xls/TOPEBA

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The composition of oil consumption for different areas of the world shows quite different patterns depending on the areas in question. A survey from BP reveals a much higher share of gasolines and a much lower share of fuel oil in North America than in the rest of the world. This is, to a large extent, reflected in high import figures for gasoline and substantial exports of fuel oil from North America to the rest of the world.

We have utilized data from IEA to get a closer grip on the oil product trade into and out of OECD member countries. Key findings are summarized below and details can be found in the Appendix section.

Comparing 2000 volumes with 1975, we find the following developments: naphtha + 265%, gasoline +195%, kerosene +137%, gas/diesel +58%, and fuel oil -55%. In other words, highly different developments for individual product types. The trade structure is also highly individual for different areas. The product profile for imports to different areas within OECD is shown in the next table. The total import volume in 2000 was 364.3 million tonnes. Out of this, 161.7 mmt reportedly came from non-OECD sources, with major sources as follows: FSU 34.8 mmt, M.E.Gulf 29.1 mmt, Other Asia 17.7 mmt, Africa 22.9 mmt, Venezuela 13.6 mmt, other Latin America 10.4 mmt, and, as usual, a rather large volume with unspecified origin at 32.0 mmt. In the Appendix section, there are also detailed tables showing exports by product type from 1975 at 5-year intervals from OECD countries to OECD countries as well as non-OECD countries. From IEA data we have compiled the below total oil products export table. Please observe that out of the total OECD exports of 299.4 mmt in 2000, as much as 148.7 mmt, or close to 50%, was internal trade within OECD Europe.

WORLD OIL DEMAND BY PRODUCT TYPE

Fig. Show pct of total each year Based on BP data

	Gaso-lines	Mid-dest.	Fuel Oil	Others
World ex FSU				
1990	29	34	20	17
1995	29	36	18	18
2000	29	37	16	18
N. America				
1990	41	29	11	20
1995	42	30	8	21
2000	41	31	8	20
S & C. America				
1990	25	34	24	17
1995	26	37	20	17
2000	25	38	20	17
Europe				
1990	26	38	20	17
1995	25	40	17	17
2000	24	43	14	18
Africa				
1990	22	39	24	14
1995	23	40	23	14
2000	22	42	23	14
Asia/Pac.				
1990	24	27	31	18
1995	21	38	24	16
2000	24	39	20	17

energy-demand-tab.xls/WOILDEMAND

OECD Oil Products Imports by Type. Million tonnes
Excl. Petcoke and LPG

	1975	1980	1985	1990	1995	2000
Total	229.6*	226.6*	256.4*	303.2	274.2	364.3
Naphtha	19.1	31.3	37.3	43.4	54.3	69.8
Gasoline	23.3	23	42.5	51.2	45.8	68.8
Kerosene	13	11.4	8.9	21.9	31	30.8
Gas/Diesel	58.9	62.2	81.1	84.7	77.4	93.1
Fuel Oil	115.3	98.7	86.5	83	42.5	74.8
Other prod.	NA	NA	NA	19	23.2	27

*) Excluding Other products

energy-demand-tab.xls/OECDOPIY

OECD Oil Products Imports by Type and Area 2000. Million tonnes
(Excl. Petcoke and LPG)

	USA	Can.	Mex.	OECD Eur.	Japan	Korea	A/NZ
Total	73.7	6.5	12.3	218.1	31.6	18.3	3.9
Naphtha	6.0 *	-		27.8	22.9	13.0 -	
Gasoline	22.7	1.0	5.4	37.1	1.2	0.1	1.3
Kerosene	6.4	1.1		18.2	3.8	1.0	0.2
Gas/Diesel	11.1	0.9 -		77.2	2.3	0.4	1.3
Fuel Oil	18.3	1.8	6.9	41.9	1.3	3.8	0.8
Other prod.	9.1	1.7 -		15.8 *	*		0.3

Due to roundings figures do not always add up exactly to totals

energy-demand-tab.xls/OECDOPI

OECD Europe's exports to third countries amounted to 58.6 mmt. South Korea alone exported as much as 39.4 mmt, USA 27.7 mmt (15.8 mmt to Mexico and Canada), Canada14.3 mmt (almost completely to the U.S.A.), Japan 4.3 mmt, Australia 3.5 mmt, and Mexico 3.0 mmt in 2000

OPEC's Annual Statistical Bulletin provides figures for total volumes of oil product exports from main OPEC member countries. Figures are given in barrels per day.

Total export figures from main OPEC countries to non-OPEC countries in 2000 were as follows: Saudi Arabia 1.13 mbd (incl. Japan), Venezuela 0.31 mbd (almost exclusively to Latin America), Indonesia 0.11 mbd (all to Asia and Pacific), and Algeria 0.04 mbd (split about evenly between Africa and Asia and Pacific). This adds up to almost 1.6 mbd, or close to 80 million tonnes on an annual basis.

A break-down of other OPEC countries' oil product exports by destination for recent years is not readily available from existing data sources. However, Kuwait exported about 0.20 mbd in 1985, of which about 60% to Asia and Pacific. Kuwait's total oil products in 1985 were 0.34 mbd, reached a peak of 0.85 mbd in 1997 and were at 0.67 mbd in 2000. Details are shown in the Appendix section.

OECD Oil Products Exports by Type and Area 2000. Million tonnes
(Excl. Petcoke and LPG). Fig. In brackets show trades within OECD Europe

	USA	Can.	Mex.	OECD Eur.		Japan	. Korea	A/NZ
Total	27.7	14.2	3.1	207.3	(148.7)	4.3	39.4	3.6
Naphtha	-	0.4	-	20.8	(16.9)	0.1	5.7 *	
Gasoline	6.9	4.5	2.2	48.7	(30.5)	0.2	1.7	1.2
Kerosene	1.6	0.3	0.2	10.7	(8.8)	0.7	7.0	0.5
Gas/Diesel	8.6	5.4	0.2	64.5	(53.3)	1.8	13.0	0.9
Fuel Oil	8.1	1.5	-	46.1	(27.6)	0.8	10.9	0.6
Other prod.	2.7	2.2	-	16.6	(11.6)	0.6	1.1	0.5

Due to roundings figures do not always add up exactly to totals

*) Trade within OECD Euruope accounted for some 148.7 mt, or close to 50% of the total OECD Exports.

energy-demand-tab.xls/OECDPE

Orimulsion

Orimulsion is a boiler fuel created by combining natural bitumen and water into an emulsion which is suitable for burning in power plants. The product is a registered trademark belonging to PDVSA (Petroleos de Venezuela S.A.), which is the Venezuelan state oil corporation, and this, in effect, means that virtually all Orimulsion shipments will originate in Venezuela for the foreseeable future. Venezuela has vast reserves of natural bitumen in the Orinoco River belt. These are currently estimated at 42 billion metric tonnes.

The creation of Orimulsion was an effort to commercialize vast quantities of heavy, and in principle, unmarketable material. A subsidiary of PDVSA was created for the purpose of marketing and shipping Orimulsion; this subsidiary is called Bitor S.A. (Bitumenes del Orinoco S.A.). The company has a number of subsidiaries which are involved in local marketing of the product in markets outside of Venezuela. The price of Orimulsion is pegged to the price of coal, thus providing potential users of the product with a reference.

At the present time Orimulsion is being shipped from Venezuela to the following countries: Barbados, Guatemala, Canada, Denmark, Germany, Italy, Lithuania, China, Japan, and Singapore. The product has been sold and shipped since 1988, and since that time it has been developed to increase its environmental friendliness. This has been done by adjusting the composition of the product itself and also by making changes in the technology made available to plants which burn it, such as scrubbers, etc.

The environmental issue has been an important one as far as Orimulsion is concerned, and we have seen that two countries which were potentially very lucrative customers for Bitor decided to reject the product on environmental grounds. These were the United Kingdom and the United States. Even though environmental decisions are taken on a state rather than national level in the United States, the fact that the state government of Florida rejected Orimulsion as a fuel for Florida Power and Light in the early 1990s has had repercussions for the balance of the American market, and no other states have given serious consideration to burning Orimulsion in their power plants. Given the present highly-charged atmosphere in the U.S.A. caused by public controversies about the burning of fossil fuels, we do not think that Orimulsion will be politically viable because it will be too difficult for power companies to convince legislators and the general public that this new product is an environmentally friendly alternative for power production.

Please see the table of world Orimulsion shipments since 1988 in the Appendix.

Chemicals

Seaborne trade in chemicals, whether organic or inorganic, has shown a strong and sustained growth during the past 20 years. With one exception, trade growth was positive for every year since 1980. The compound average growth rate (CAGR) for the period 1980-2000 was 6.1% p.a., but individual years show growth rates as high as 9.9%.

Seaborne trade in organic chemicals showed an even stronger growth, CAGR=9.2%, however inorganic chemicals showed a lower rate of 2.3% p.a.

Classification of Chemical Products

Normally, chemical substances are classified into 4 distinctive groups. These are:

- **Organic chemicals**
- **Inorganic chemicals**
- **Vegetable/animal oil and Fats ("Vegoils")**
- **Others**

Organic chemicals are normally defined as substances that contain the element carbon, however with the exception of carbon oxides and various carbonates.

Organic chemicals include, amongst others, petrochemicals like methanol, phenol, styrene, toluene, xylene and various acids. The various organic compounds may be highly toxic and/or corrosive, or they might be non-hazardous or harmless.

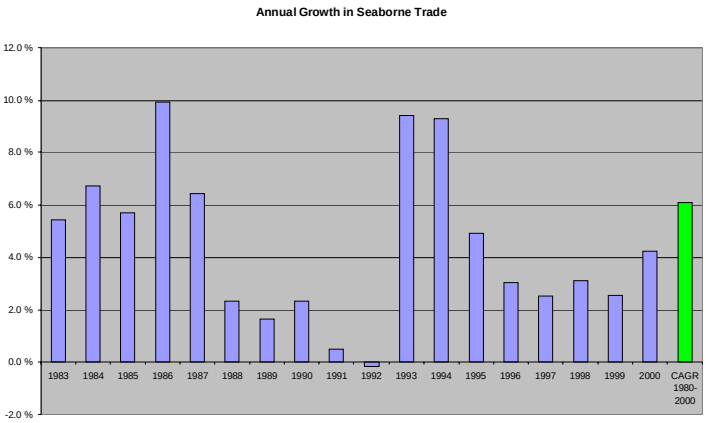
Inorganic chemicals cover chemical compounds that do not contain the element carbon. The main chemicals are phosphoric acid, sulphuric acid, and caustic soda. These substances are used as raw materials for the fertilizer, rubber, and plastics industries.

The third main group covers vegetable oils and fats, as well as animal oils and fats. Normally they are divided into "edible" and "soap" categories reflecting end use. The former includes oils and fats that are used for cooking, whereas the latter indicates oils and fats used for soap and detergents. Vegetable/animal oil and fats also have a wide number of industrial applications.

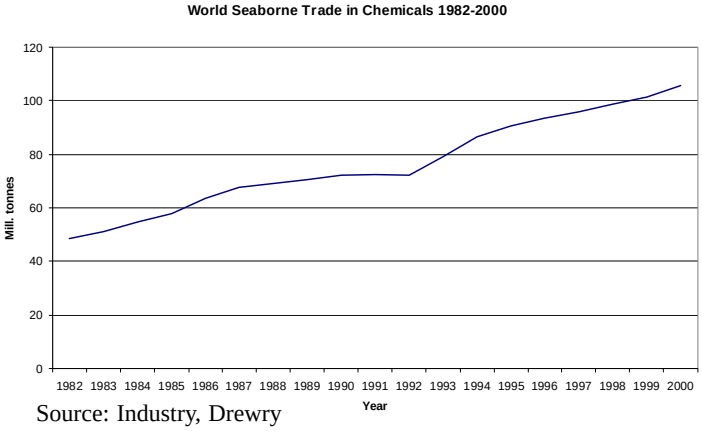
The residual group "Others" includes a wide range of chemical substances that are not included in the former three main groups. This group also includes molasses, which is a thick liquid substance left after sucrose has been removed from the mother liquid in sugar manufacture. The main end use is as animal feed. Another major use is for distillation into alcohol.

World Seaborne Trade

Total seaborne trade in chemicals has increased from 32.8 mmt in 1980 to 105.7 mmt in 2000. This represents an increase of more than 220% over the period, or a compound annual growth of 6.1%. Growth has varied considerably from year to year, as shown in the chart below.

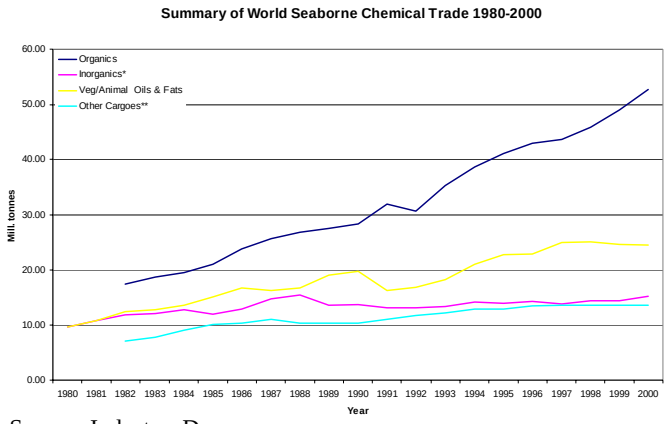


Chemicals summary.xls/Growth
Source: Industry, Drewry



Source: Industry, Drewry

Broken down by the different groups, trade and trade growth varies considerably. Trade in organic chemicals comprises about 50% of all trade, vegoil and fats about 25%, whereas inorganic chemicals and "Others" make up for about 12%-13% each.



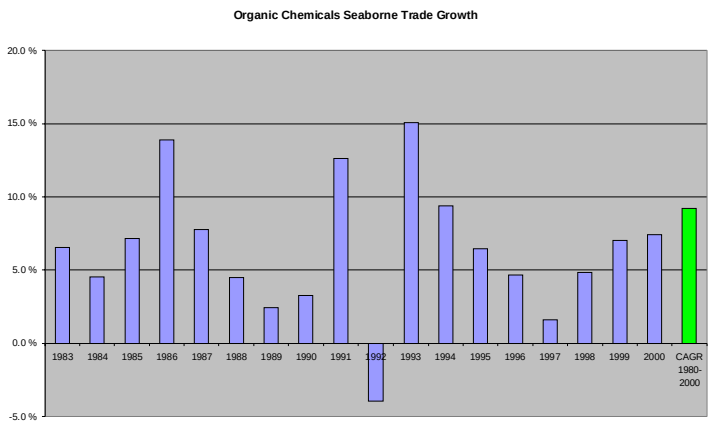
Source: Industry, Drewry

Since 1980, seaborne trade in inorganic chemicals has grown from 9.6 mmt to 15.1 mmt, or 57%. Veg/animal oils & fats have increased from a similar level, but in 2000 trade was about 24.4 mmt. This represents a growth of 154%. Trade in others has risen from 4.6 mmt in 1980 to 13.5 mmt in 2000; in other words, up 193%.

With the exception of container shipping, few, if any, other bulk commodities have shown similar growth rates during this period. To a large extent, trade has been driven by a global imbalance in production capabilities.

Trade in Organic Chemicals

Global seaborne trade in organic chemicals has grown 9.2% (CAGR) p.a. over the past 20 years. However, growth rates have varied strongly. Several years show double digit growth rates, however, contractions in trade have also been observed.



Chemicals summary.xls/Organicgrowth
Source: Industry, Drewry

In 2000, seaborne trade reached 52.6 mmt and the geographical distribution of trade has been fairly static over the past decade. Trade involving North America (U.S.A., Canada, Mexico) accounts for 29.8% of all trade. This includes both imports to, and exports from this area. The percentage has been fairly stable over the period, however, after a trough in 1996 of 26.3%, the share of seaborne trade has increased since then. Since 1995, exports have been quite static at a level of 8-9 mmt per year, however imports have increased substantially from 3.1 mmt in 1995 to 7.0 mmt in 2000.

Another important area is Western Europe. Shipments from Europe have, over the past 10 years, had a declining share of the total market. Data is partly estimated, however in the late 1980s, exports from Europe amounted to about 11-12 mmt per year. Reporting in the 1990s was of poor quality, however, volumes are indirectly estimated to be of the same magnitude. Most of the trade involving Western Europe is intra-regional trade inasmuch as imports to the area have amounted to about three quarters of the exports.

The third important area is the Middle East. Exports from this area increased from 2.9 mmt in 1989 to 7.5 mmt in 2000. Imports are negligible. About two thirds of the exports end up in the Far East, and the remainder is divided between Western Europe and North America.

In the following sections we will describe trade development in some major organic chemicals.

Methanol

Seaborne trade in methanol has developed strongly since the mid-1980s. From a total volume of 2.5 mmt in 1985 to 12.9 mmt in 2000. This is a total increase of 424%, or 11.7% p.a. (CAGR). In the mid-1980s Western Europe was the principal importing area and the Middle East was the principal exporting area. Methanol production from natural gas thereafter increased strongly in natural gas rich areas, and as such, we observe that production, and subsequently exports, from Latin America increased strongly: from 0.11 mmt in 1985 to 5.6 mmt in 2000. Most of these exports end up in North America. This area, and SE Asia, are the principal importing areas, SE Asia being supplied mostly from the Middle East

Benzene

Seaborne trade in benzene showed a much more modest growth compared to methanol, from 0.58 mmt in 1980 to 2.0 mmt in 2000. Again, the Americas play a dominant

role in this market with 0.3 mmt exported from Latin America to North America. Total imports to North America reached 0.8 mmt, or 39.5% of seaborne trade in 2000. In recent years, intra-SE Asia trade has become more important with a volume reaching 0.6 mmt. Otherwise trade is scattered and in small volumes.

Xylene

Seaborne trade in xylenes (para-, orto- etc.) has shown a brisk development: from 0.9 mmt in 1980 to 5.5 mmt in 2000. Seaborne trade in xylene has in recent years, to a large extent, been an Asian trade. SE Asia is the main importer taking about 76% of total imports. These countries source most of their xylene in the region, from Japan, or North America. Imports from North America declined considerably during the past five years, from 1.0 mmt in 1996 to 0.5 mmt in 2000. A similar amount is exported from Latin America to North America, although this trade showed an increasing trend during the second half of the 1990s.

Styrene

Reaching 3.6 mmt in 2000, seaborne trade in styrene increased 505% since 1980. Volumes increased strongly during the 1990s, up from 1.55 mmt in 1989 to 3.6 mmt in 2000. Again, North America plays a dominant role with about one third of total exports, but following significant developments in SE Asian chemical industries, this region also emerged as a major exporter. During 1996-2000, exports rose from 0.68 mmt to 1.29 mmt. Most of these volumes are intra-regional trade. Combined with exports from other Asian nations, imports to SE Asia account for about 68.5% of total imports.

There is a significant trade from North America to Latin America as well. Latin American imports doubled from 1996 to 2000 and ended at 0.5 mmt.

Ethylene Glycol

Since 1980, seaborne trade in ethylene glycol increased from 0.26 mmt to 3.78 mmt (2000). Volumes have not increased as strongly during the past five years.

Again, SE Asia is a very important region, accounting for 83.2% of total imports, which is an increase of 13 percentage-points since 1996. North America and the Middle East have traditionally been the main sources of this commodity, and over the past five years their share of the SE Asian market decreased from 78% in 1996 to 71% in 2000. Nominal volumes have, however, increased. The main reason for the reduced market share was increased regional output of ethylene glycol in SE Asia. Intra-regional trade increased from 0.15 mmt in 1996 to 0.52 mmt in 2000.

The trade between the Americas increased, however the trade flows have been reversed. North American exports to Latin America increased from 0.06 mmt in 1996 to 0.14 mmt in 2000, whereas exports in the opposite direction decreased from 0.13 mmt in 1996 to 0.06 mmt in 2000.

Ethylene Dichloride

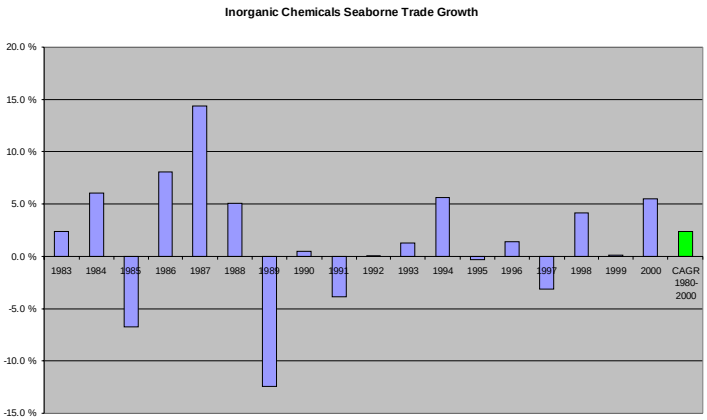
Trade in another ethylene derivative, ethylene dichloride, also increased, however not as strongly as ethylene glycol. In 1980 global seaborne trade amounted to 0.38 mmt which increased to 2.65 mmt in 2000.
Trade expanded only 7.7% in the five-year period from 1996 to 2000. 50% of all exports end up in SE Asia. This is up from 44.5% in 1996. The major exporting area is North America, accounting for more than 60% of all exports, and SE Asia accounts for 54%, or 0.87 mmt, of these exports. Volumes in this trade lane decreased over the past five years.

Another major trade route is from North America to Japan. Volumes in this trade have shown an opposite trend with an increase from 1996 to 2000.

Trade in this commodity between the Americas is, and has been, insignificant.

Trade in Inorganic Chemicals

Global seaborne trade in inorganic chemicals grew 2.4% (CAGR) p.a. over the past 20 years. However, growth rates have varied strongly, varying from double-digit growth to double-digit contraction indicating a highly volatile and



Chemicals summary.xls/inorganicgrowth
Source: Industry, Drewry

market sensitive commodity group:

In 2000, seaborne trade reached 15.1 mmt which was 61% higher than in 1980, but only 11.1% higher than in 1990.

North America used to be the dominant exporter with a share of total exports of 33.5% in 1987, or 5.0 mmt. This share diminished strongly during the period to 1997 when North American exports reached 1.7 mmt only, or 12.2%. The volumes later picked up and ended at 2.6 mmt in 2000. The lion's share of North American exports end up in Latin America: in 1987 1.7 mmt, declining to around 1.4 mmt in the middle of last decade, but increasing again in 2000 to 2.0 mmt, or 77.0% of North American exports.

As is the case for organic chemicals, Western Europe is a major exporter as well as an importer of inorganics. Again, there is a huge intra-regional trade. We estimate that volumes have remained rather stable at around 4.0 mmt.

African exports of inorganics, at 25.3% in 1987, have declined since then. In 2000 exports were 2.8 mmt with most going east to Asia and Oceania. In previous years there was a significant trade to Western Europe and occasional trades into Latin America.

During the period 1987-2000, a significant industry for producing inorganic chemicals developed in the Far East. Subsequently, exports increased and were 2.8 mmt in 2000 compared to 0.8 mmt in 1987. Almost all of the exports end up in Asia or Oceania.

In the following sections we will describe trade development in some major inorganic chemicals.

Sulphuric Acid

Sulphuric acid contributed little to growth in seaborne trade in inorganic chemicals. Trade increased from 1.45 mmt in 1980 to 1.5 mmt in 2000. Trade in 2000 declined from 2.6 mmt in the preceding year. It should be noted, though, that trade in sulphuric acid is minimal compared to global production and consumption, indicating that this is a commodity produced and consumed locally. Trade occurs only if individual countries/regions have a production surplus.

Studying trade matrices for the period 1985-2000, one striking observation is the volatility in volumes. One example is Western European exports: in 1985 exports were 0.15 mmt, but two years later (1987) volumes had grown to 0.92 mmt, and continued to increase for another two years. In 1999, however, exports were down to 0.29 mmt. A similar pattern can be observed for exports from North America. In Asia, we observe increased trade within the region: from 0.3 mmt in 1985 to 0.93 mmt in 2000.

Phosphoric Acid

Trade in phosphoric acid increased from 4.3 mmt in 1980 to 7.78 mmt in 1999. Unlike sulphuric acid, phosphoric acid has shown steady growth during the period.

Caustic Soda (Aqueous Solution)

In 1980 seaborne trade amounted to 3.65 mmt. This increased steadily to 5.8 mmt in 1986, but thereafter a continuous decline to 3.7 mmt in 1996. Since then, volumes have grown to 4.15 mmt in 2000.

Western Europe used to be the principal exporter in the 1980s, but exports declined during the 1990s. Volumes peaked at 2.3 mmt in 1987 and were only 0.85 mmt in 2000. During the same period, Latin America emerged as a major exporter. From zero exports as late as 1989, volumes grew to 1.5 mmt in 2000 with almost all going to the U.S.A.

Trade in Veg/Animal Oils and Fats

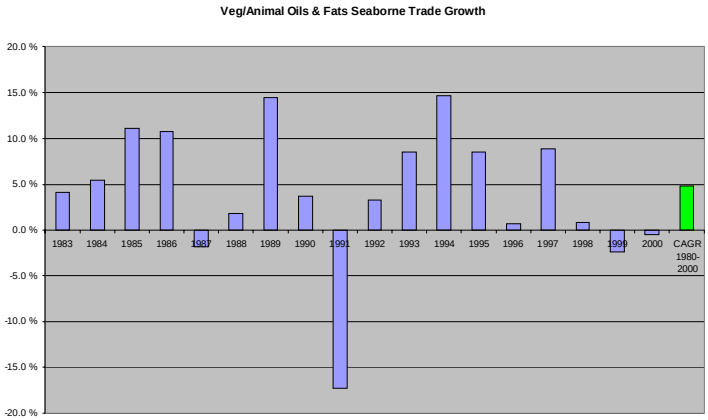
Global seaborne trade in vegoils grew 4.8% (CAGR) p.a. over the past 20 years. Again, growth rates have varied strongly, varying from double-digit growth to double-digit contraction indicating a highly volatile and market sensitive commodity group:

In 2000, seaborne trade reached 24.4 mmt which was 154% higher than in 1980, but only 11.1% higher than in 1990. The principal oil trade is palm oil which accounted for about 43% of all exports. The second largest commodity is soybean oil and in third place sunflower seed oil. For the latter two, as well as other seed oils, the issue of where the crushing takes place is of vital importance. If crushing is cheaper in the importing country, taking sea transportation costs into account, the seed may be traded instead of the finished oil. Thus, the shipping market may influence trade strongly.

Palm Oil

Production of palm oil is, by and large, controlled in Indonesia and Malaysia. In 2000, 82% of all production took place in these two countries. As a result, most of the exports were from Malaysia and Indonesia, and most of it went to other Asian destinations (India and China). The

third major importing area is Western Europe. In terms of volume, these countries and regions imported 3.7 mmt, 1.7 mmt and 2.4 mmt in 2000 respectively. In 1980 the corresponding figures were 0.5 mmt, 0.05 mmt, and 0.74 mmt. Trade within the Americas has, for the whole period, been insignificant.



Chemicals summary.xls/Vegoilgrowth
Source: ISTA Mielke

Soybean Oil

The soybean oil trade developed quite differently. In this sector, the Americas, both North and Latin America, are the dominant producers and consumers.

In 2000, the U.S.A., Argentina, and Mexico produced about 60% of world output. With the addition of China, the group of four attained a 71% share.

Imports of soybean oil are much more scattered than those for palm oil. No country plays a dominant role, and the largest importer is India at 0.8 mmt in 2000. Commensurate with increasing production, Chinese imports declined from a peak of 2.4 mmt in 1997 to 0.35 mmt in 2000.

In line with production, the U.S.A., Argentina, and Brazil are the principal exporters, however U.S. exports declined strongly during the past few years and in 2000 were 0.6 mmt, on par with volumes in the 1980s. Argentinean exports steadily increased over a 20 year period and Argentina is currently, at 3.0 mmt, the major exporter. Brazil's exports were reasonably stable during the 1990s, on average 1.0-1.3 mmt.

Sunflower seed oil

The principal producers of sunflower seed oil are Western Europe, the FSU, and Argentina. Together, they account for about 69% of global output. The FSU has historically been a major producer, but output in Argentina and Europe has increased substantially.

In terms of trade, India appears as a major player with 0.63 mmt of imports in 2000, corresponding to 22.7% of world imports in that year. This trade was virtually non-existent until the mid 1990s. Historically, imports of sunflower seed oil have been scattered with small volumes moving globally.

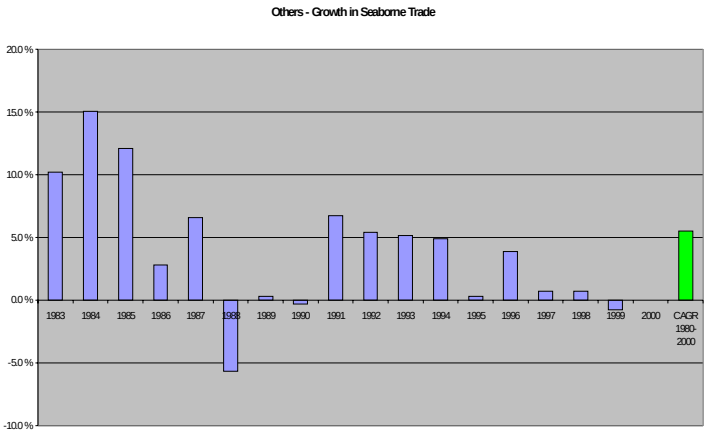
The principal exporters are the FSU and Argentina at 0.57 mmt and 1.59 mmt respectively in 2000. FSU exports have traditionally been much lower, whereas Argentinean exports have increased strongly since 1980.

Others

This residual group includes a range of different commodities including, amongst others, lube oils, lye, potable alcohols, and molasses. Volume growth has been strong during the period 1980-2000 with a growth of 5.5% (CAGR). Annual growth rates have varied, as can be seen in the chart below, substantially over the years.

The dominant commodity in this group is molasses, which accounts for about 53% of the total. Exports of molasses were 13.2% higher in 2000 compared to 1980, however volumes were at their highest in the second half of the 1990s, and peaked in 1996 at 8.5 mmt. Historically, Brazil was one of the dominant exporters (1980: 0.8 mmt), however exports completely dried up, whereas Pakistan increased from 0.21 mmt in 1980 to 1.24 mmt in 2000. Other traditional sugar-producing countries like Cuba, the Dominican Republic, and the Philippines also declined substantially during the period 1980-2000.

Like Pakistan, Thailand has shown an opposite trend by increasing exports from 0.25 mmt in 1980 to 1.0 mmt in 2000.



Chemicals summary.xls/Othersgrowth
Source: Industry, Drewry, ISTA Mielke

On the importing side, the scene is almost entirely dominated by the industrialized part of the world. The USA was the largest importer in 2000 with 1.16 mmt. Imports to the US have varied over the years, ranging from 0.75 mmt in 1993 to 2.3 mmt in 1976.

China is the country showing the strongest growth: from 0.1 mmt in 1980 to 0.9 mmt in 2000. 1999 saw an exceptionally high volume of 1.8 mmt. Interestingly, Japan showed the opposite trend: from 0.79 mmt in 1980 to 0.18 mmt in 2000.

LPG

Seaborne LPG trades started in the mid 1950's. The main trades are from the Middle East Gulf (MEG) to Japan/ Korea/Far East, and cross Mediterranean trade as well as cross UK-Continent trade.

In 2000, total world seaborne LPG trade was below 50 mmt. Only 2-3% of this volume passes through the Panama Canal.

Both the LPG Fleet and LPG trades have seen solid growth figures over the last decades.

What is LPG?

Liquid petroleum gas (LPG) is the term used to describe odorless, non-toxic hydrocarbons, which exists as a gas at normal temperatures. Propane or Butane are the most common LPG's. LPG can be stored as a liquid in tanks by applying pressure alone or by cooling down the gas.

LPG is often confused with LNG and vice versa. They are not the same and the differences are significant. To be Liquid, Propane needs temperatures around –49 °C, I-Butane needs only –11.7°C and n-butane only –0.5°C while LNG (mainly methane) needs -165°C. LNG ships are therefore significantly different than LPG ships. LPG is also more energy rich and have a higher value per volume unit.

Propane is a light product with a specific gravity of 0.583, n-Butane have 0.585, but I-butane have 0.602.

Ethane is often included in LPG statistics, but for shipping purposes, it requires dedicated ethylene tankers since cooling down to -89°C is necessary to keep it liquid.

We have included both Ethane volumes and Pet.chem volumes in our LPG data and forecasts.

Usage: LPG is mainly used for industrial and chemical purposes, but LPG also the "bottled gas" often found under BBQ grills, etc. LPG has been used as fuel in light duty vehicles, taxis, busses and cars for many years. When used in vehicles, it has a significant lower pollution rate than gasoline for instance. Many petrol stations in Europe and Asia have LPG pumps as well.*

How is LPG stored?

LPG tanks are insulated and the LPG is most often stored at low temperatures. LPG must be maintained cold (at least below -49°C) to remain a liquid, independent of pressure. Reliquefaction plants are often used in connection with LPG storage to cool down vapor from the storage tanks.

Transportation of LPG

There are 3 LPG vessel types, pressurized, semi-ref and fully ref vessels.

- **Pressurized vessels carry LPG under pressure and do not have any capacity to cool down the cargo. Pressure therefore builds up in the cargo tanks.**
- **Semi-ref vessels have some cargo cooling capacity and tanks can take some pressure build up**
- **Fully ref vessels have large cooling capacity and cargo tanks can only take limited pressure build up.**

LPG vessels carry cargoes ranging from Ammonia to LPG (including Butadiene and Propylene) to Ethane (requires tanks capable of handling temperatures down to -89°C) and VCM (vinyl chloride Monomer). LPG vessels are subject to limited stress and corrosion. LPG vessels can therefore have a long trading life.

LPG vessels are subject to limited stress and corrosion. LPG vessels can, therefore, have a long trading life.

LPG/Ammonia/Ethane fleet development

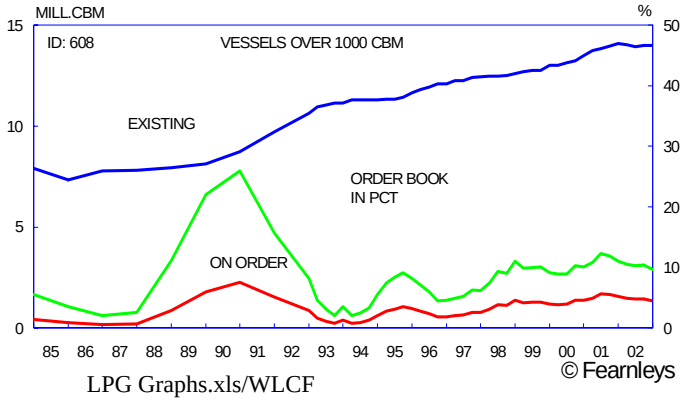
LPG fleet development including the order book in total cbm is shown below:

The total LPG fleet numbers some 104 vessels above 60,000 cbm, some 79 ships between 20,000 and 60,000 cbm, 202 vessels between 5,000-20,000 cbm and 598 ships under 5,000 cbm. With a total of 983 ships, and 800 of them being under 20,000 cbm, the LPG fleet is, in numbers, a typical small ship segment, but it is often the large vessels that receive the most focus due to their size in cbm. The fleet above 20,000 is in total 10,8 million cbm. Below 20,000 cbm the fleet totals around 3,0 million cbm.

It is mainly the smaller vessels which trade through the Panama Canal.

During the last 10 years, measured in total cbm, the LPG fleet has grown on average 4.5% per annum. This is quite strong growth. However, the increase in the number of vessels is lower, indicating larger average ship sizes.

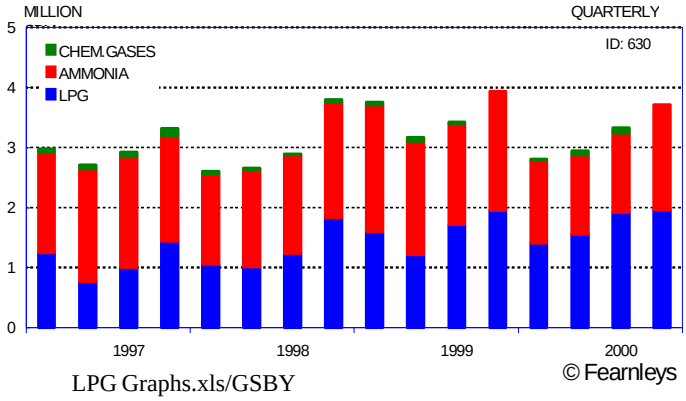
WORLD LPG CARRIER FLEET



LPG Graphs.xls/WLCF

GAS SHIPMENTS BY COMMODITY

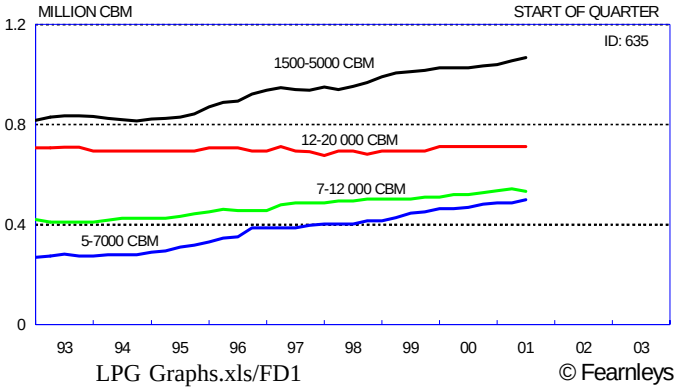
LPG CARRIERS 20 - 32 000 CBM



LPG Graphs.xls/GSBY

FLEET DEVELOPMENT

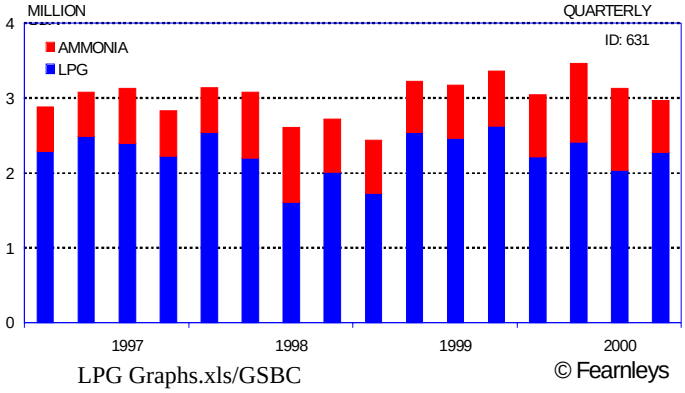
LPG CARRIERS 1500-20 000 CBM



LPG Graphs.xls/FD1

GAS SHIPMENTS BY COMMODITY

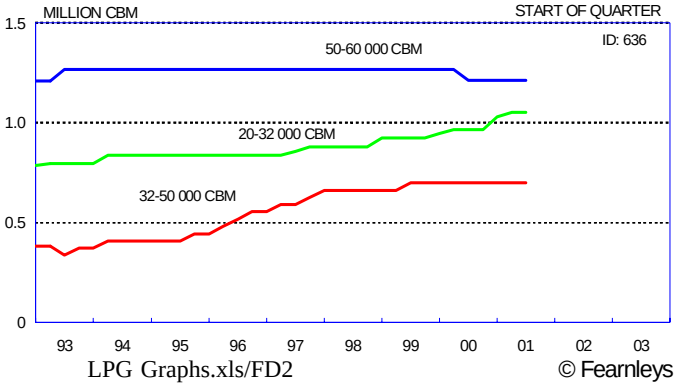
LPG CARRIERS 32 - 50 000 CBM



LPG Graphs.xls/GSBC

FLEET DEVELOPMENT

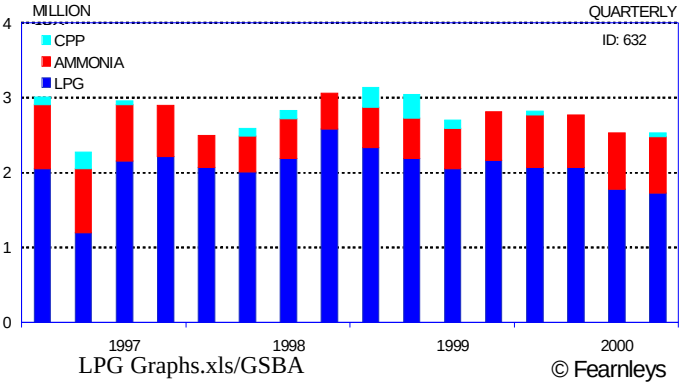
LPG CARRIERS 20-60 000 CBM



LPG Graphs.xls/FD2

GAS SHIPMENTS BY COMMODITY

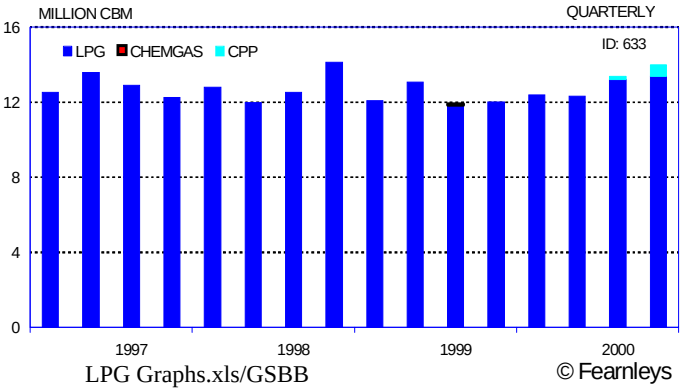
LPG CARRIERS 50 - 60 000 CBM



LPG Graphs.xls/GSBA

GAS SHIPMENTS BY COMMODITY

LPG CARRIERS OVER 60 000 CBM



LPG Graphs.xls/GSBB

LPG Shipments by Vessel Size

The graphs below illustrate the different ship sizes and their typical trades:

As we can see, the importance of LPG as a potential cargo increases as vessel size increases. The smaller ships are more flexible and often take a number of other cargo types.

LPG + Ethane Trade

Seaborne LPG trade started in the 1950's, but was less than 1 mmt in 1960. It reached 17 mmt in 1980 and passed 47 mmt in 2000. This is app. 50% of LNG trades.

Major exporting areas have been the Middle East and Algeria and the North Sea. In addition Venezuela, Australia and Eastern Europe have had significant LPG volumes for export.

Major importing areas have been Japan, China, S Korea, India (mainly supplied by MEG), Western Europe (mainly supplied from N.Sea and Algeria), Brazil and Central America (mainly Mexico).

Japan is also the worlds largest importer of LPG, importing over 14.5 mmt in 2000. OECD Europe imported 14.7 mmt in 2000, but not all of this was seaborne. USA Mexico and Canada together imported only 4.1 mmt in 2000.

Canada is self supplied with LPG and Ethane.

Ammonia

What is Ammonia?

Ammonia is produced by synthesis of gas and a hydrocarbon (such as coal, natural gas, LPG or naphtha). These two components are compressed and superheated and finally pass over a catalyst. The result is a gas, which is liquid around – 27.4°C or under pressure. Liquid ammonia it is a colorless, non-flammable liquid with a characteristic smell.

Natural gas is the feedstock in 80% of current ammonia production. Ammonia demand is closely linked to fertilizer demand (some 85-90% of Ammonia production is used for this purpose). The rest is used for production of nitric acid, nylon fiber acrylic, explosives, urethane plastics, etc. Ammonia is a fairly light cargo with a specific gravity of 0.682. *

Ammonia Production

Total Ammonia production was 105 mmt in 2001, down from 108.5 mmt in 2000. The table below shows the largest Ammonia producers by country. China is by far the largest producer, followed by India, USA and Russia.

Latin America all together produce some 5.9 mmt in 2001, up from 4.98 mmt in 2000.

World Ammonia Production			
Country	**2000**	**2001**	**% change**
China	27649	28011	1.3 %
India	10147	10081	-0.7 %
USA	12532	9728	-22.4 %
Russia	8735	8684	-0.6 %
Ukraine	3577	3699	3.4 %
Indonesia	4011	3536	-11.8 %
Canada	4130	3439	-16.7 %
Trinidad	2686	3042	13.3 %
Germany	2599	2522	-3.0 %
Netherlands	2543	1939	-23.8 %
World	**108475**	**105063**	**-3.1 %**
Source IFIA			

Figures in ('000 MT) Source: IFIA

LPG Tables..xls/LPG Data

Latin America Ammonia Production			
Country	**2000**	**2001**	**% change**
Trinidad	2686	3043	13.3 %
Venezuela	377	807	114.1 %
Brazil	925	769	-16.9 %
Argentina	199	596	199.5 %
Mexico	701	548	-21.8 %
Colombia	93	95	2.2 %
Peru	0.1	5	-
Total	**4981.1**	**5863**	**17.7 %**

Figures in ('000 MT) Source: IFIA

LPG Tables..xls/LPG Data

Trinidad is the main producer and stands for some 50% of this volume. Venezuela and Argentina increased production significantly in 2001 as plants came on stream. Exports from these countries also increased significantly. Total exports were 12.7 mmt in 2000.

Ammonia Exports and Imports and Seaborne Trade

Ammonia export is around 10-12% of worldwide production, which in 2000 was 108.5 mmt. Seaborne export of ammonia is transported in LPG vessels. For LPG vessels, ammonia trade accounts for almost 20% of cargoes carried by gas vessels and is particularly important for the medium size LPG carriers (20-60,000 cbm).

The seaborne trade exports are mainly out from FSU/ Ukraine (especially from Black Sea ports), Trinidad, Algeria, Indonesia and from the Middle East Gulf.

Asia consumed some 50% of world ammonia production and is also a significant producer itself. Indonesia is the

largest exporter in this market. We do not foresee any significant trade from Indonesia to US Gulf in the near future, but Indonesia exported some 81,000 tonnes in 2001 to USA, mainly to west coast ports.

Russian and Ukraine exports tend to go west - to the Mediterranean Sea (typical Spain, Turkey, Morocco and Tunisia) and also to USA and US Gulf. In addition, there is a lot of regional trade in Europe between Ammonia plants and fertilizer plants. However, in Western Europe, plants have been shut down, reducing ammonia production capacity with some 1.4 mmt

Algeria exports move mainly to Mediterranean/ Europe, with some volumes to the US.

MEG exports some 1 mmt and India is their main importer. Several new projects have been announced in the Middle East during the last 2 years. Oman, S. Arabia, Qatar and Iran have projects with capacities of 4.9 mmt under development for start-up in year 2005-2007 range. Exports are directed towards India/ Far East and Mediterranean.

U.S. imported 4.34 mmt in 2001, up almost 14% compared to 2000. Two countries accounted for some 85%, 2.87 mmt was sourced from Trinidad and 0.8 mmt from Canada. Other important sources for US imports were Indonesia, Latvia, Colombia and Venezuela. Some volumes were also sourced from the middle east (Kuwait and Saudi Arabia).

USA is both a major exporter and importer, but mainly importer. The export volumes in 2001 went to Mexico, S. Korea and Taiwan. S.Korea. There is also a fairly large seaborne ammonia trade from the company Agrium Inc.'s plant in Kenai/Alaska/USA to Korea of some 0.5 mmt.

Canadian exports are mainly over land to the US.

In Trinidad, there are three fertilizer complexes on the Point Lisas Industrial Estate comprising eight plants with a total annual capacity of 3.5 mmt per year and a 0.6 mmt per year urea plant.

The first complex comprises the two Tringen plants which are joint ventures between the Government and the Norwegian firm Norsk Hydro; and a third ammonia plant, the oldest in the country, which was formerly owned by W.R. Grace and acquired by Norsk Hydro in 1991.

The second, fertilizer complex which is now owned by Potash Corporation of Saskatchewan (PCS) comprises four ammonia plants.

The third is owned by Farmland Misschem and comprises

Ammonia Exporters

Country	2000	2001	% change
Trinidad	2419	2746	14 %
Russia	2442	2267	-7 %
Ukraine	1210	1428	18 %
Indonesia	785	689	-12 %
USA	661	647	-2 %
Canada	889	518	-42 %
Saudi Arabia	409	429	5 %
Netherlands	587	424	-28 %
Venezuela	92	395	329 %
Qatar	307	389	27 %
World	**12712**	**12618**	**-1 %**

Source IFIA

LPG Tables..xls/LPG Data Figures in ('000 MT)

Ammonia Importers

Country	2000	2001	% change
USA	4215	4436	5 %
India	1105	1195	8 %
South Korea	654	589	-10 %
Turkey	600	532	-11 %
France	513	445	-13 %
Spain	495	410	-17 %
Belgum	396	399	1 %
Morocco	321	362	13 %
Taiwan	411	356	-13 %
Norway	264	287	9 %
World	**12712**	**12618**	**-1 %**

Source IFIA

LPG Tables..xls/LPG Data Figures in ('000 MT)

Exporters in the Americas

Country	2000	2001	% change
Trinidad	2419	2746	14 %
Venezuela	92	395	329 %
Argentina	91	140	54 %
Mexico	204	17	-92 %
L. America	**2806**	**3298**	**18 %**
USA	661	647	-2 %
Canada	889	518	-42 %
Total	**4356**	**4463**	**2 %**

Source IFIA

LPG Tables..xls/LPG Data Figures in ('000 MT)

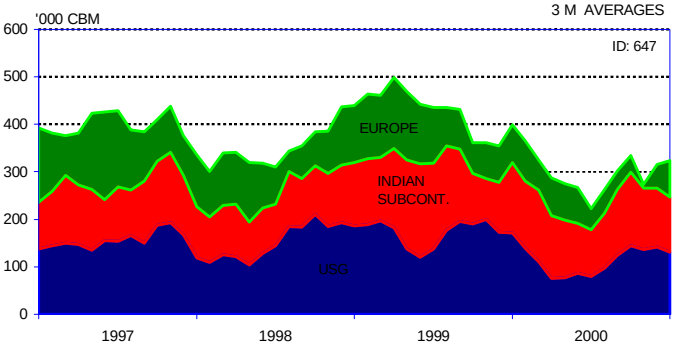
Importers in the Americas

Country	2000	2001	% change
Brazil	186	230	24 %
Chile	106	158	49 %
Mexico	151	78	-48 %
Caribbean	68	70	3 %
Colombia	65	59	-9 %
Costa Rica	13.7	0	-100 %
L. America	**600**	**606**	**1 %**
USA	4215	4436	5 %
Canada	15	39	160 %
Total	**4830**	**5081**	**5 %**

Source IFIA

LPG Tables..xls/LPG Data Figures in ('000 MT)

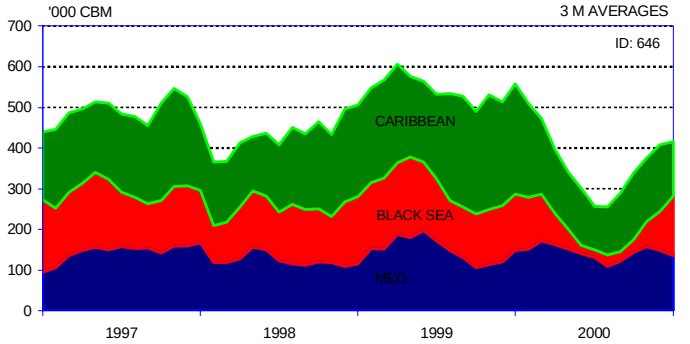
AMMONIA IMPORTS BY AREA
LPG CARRIERS 20-32 000 CBM



LPG Graphs.xls/AE2

© Fearnleys

AMMONIA EXPORTS BY AREA
LPG CARRIERS 20-32 000 CBM



LPG Graphs.xls/AE1

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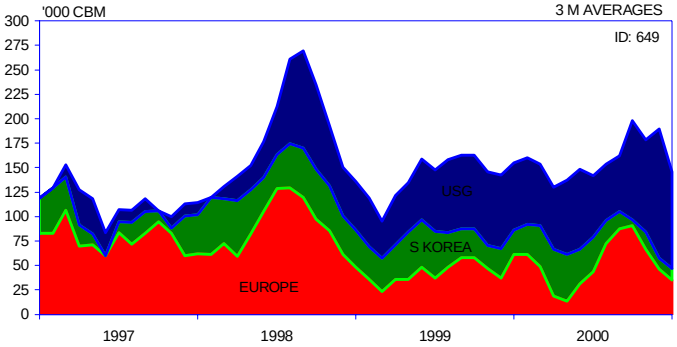
AMMONIA IMPORTS BY AREA
LPG CARRIERS 32-50 000 CBM



LPG Graphs.xls/AE6

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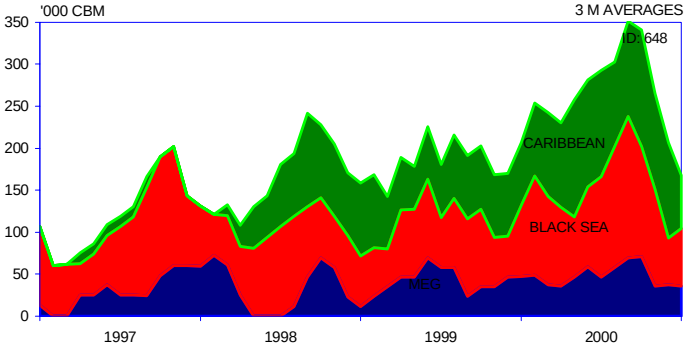
AMMONIA EXPORTS BY AREA
LPG CARRIERS 32-50 000 CBM



LPG Graphs.xls/AE4

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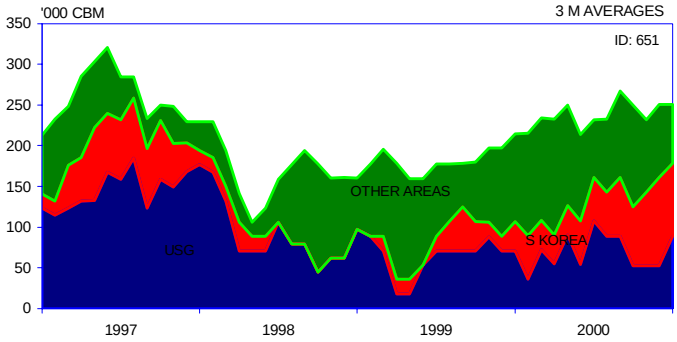
AMMONIA IMPORTS BY AREA
LPG CARRIERS 50-60 000 CBM



LPG Graphs.xls/AE5

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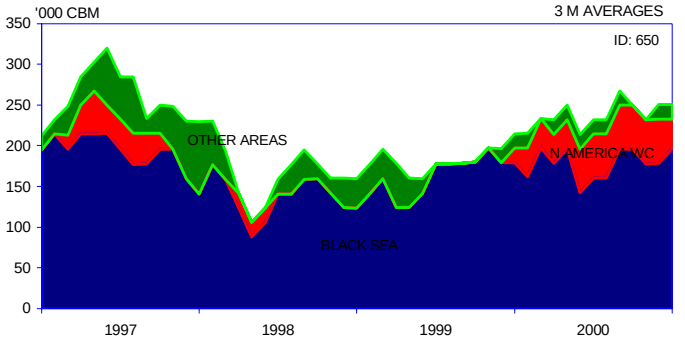
AMMONIA EXPORTS BY AREA
LPG CARRIERS 50-60 000 CBM



LPG Graphs.xls/AE3

© Fearnleys

one plant.

Trinidad exports close to 3 mmt in 2002 and export mainly to the US Gulf. In 2000, over 2 mmt went to the US and only 0.25 mmt to Latin America (mainly Mexico, Caribbean and Colombia). In 2001, over 2.4 mmt went to U.S.A. and only 0.18 mmt to Latin America (Brazil, Caribbean and Colombia), with limit use of the Panama Canal.

In 2001, Venezuela became a larger exporter and did export some 105,000 mt to Chile, together with volumes to Brazil (61,000 mt) and USA (227,000 mt)

Brazil imported some 230,000 mts in 2001, also up by a hefty 24%. Most of the imports came from Trinidad, Venezuela, Argentina and Mexico, with little need for the Panama Canal.

Ammonia do seldom pass the Panama Canal. We have, however, identified several cargo movements from Venezuela to Chile and with increased agricultural developments in Chile, trades from either Venezuela or Trinidad to Chile may increase (it increased with a solid 50% from 2000 to 2001. Venezuela have a current production/export capacity of above 800.000/400.000 mt annually.

Preliminary Ammonia trade Data for 2002 indicate increased production capacities in U.S.A., China, Brazil, Indonesia and Venezuela. The recent strikes in Venezuela stopped them from producing above 1 mmt in 2002, up from 0.8 mmt in 2001. It was especially production at Fertinitro that increased, offsetting declines at El Tablazo. Venezuelan exports in 2002 were also up 18% from 2001 and Chile continues to be an important customer in addition to USA, Brazil and Mexico.

Trinidad's 2002 export data were up 6% compared to 2001, following the commissioning of the new CNC 1 ammonia plant in July 2002 (capacity of some 535,000 mt per year).

Brazil increased production and passed the magic 1 mmt level in 2002.

US production is up by 5.7% compared to 2001, but exports are down 33.5%.

Indonesia production is up, and exports data show significant gains. One new unit (the KPI plant) was commissioned in late 2001 and another unit, the Kaltim 4 ammonia plant, will be commissioned in early 2003, increasing production even further. Lower production was registered in Korea and Japan due to plant closures.

Petrochemical Gases

What is Petrochemical Gases?

Petrochemical gases, often shortened to petchem gases, mainly includes 4 main gases

- **Ethylene**
- **Propylene**
- **Butadiene**
- **Vinyl chloride monomer (VCM)**

The first 3 are olefins and used for production of a large number of intermediate chemicals and finished products. By cracking ethane, propane and butane, ethylene, propylene and butadiene are produced. Olefins are difficult to transport over long distances due to problems with polymerization of the cargo. Inhibitors are therefore used during long haul transports.

Ethylene are used for amongst others plastic packing, bottles, containers, etc.

Propylene is used for amongst others molded components for cars, carpet fiber, cable sheathing, piping, coatings, etc.

Butadiene is used for amongst others to make rubber for tire production, for production of other intermediate chemicals for packaging, car fittings, etc.

VCM is a chlorinated gas, based on ethylene, and is mainly used for plastic production.

Growth in demand for petchem gases is mainly linked to the demand for polymers (plastic). Trade in petchem gases is, therefore, open to the economic activity in the different regions in the world. *

Trade in Petrochemical Gases

Seaborne trade in the main petrochemical gases (petchem) accounts for about 8-10% of LPG volumes (around 5-6 mmt). Seaborne trade in petchem gases have fallen in recent years. Petchem gas trades are, however, very important for the smaller gas carriers market segment.

Of world petchem production, very little is traded/shipped by sea. Most of world production is used locally. Trade in

petchem gases is therefore highly cyclical and trade flows and pattern can vary significantly over a short period of time due to supply problems or "unforeseen events" such as fire, strike or other events haltering domestic production. Opening and closing of petchem plants may for instance, create or destroy trade routes virtually overnight.

Main trade flows are VCM from US Gulf to the Far East/ Asia (Panama Canal trade) and butadiene from NW Europe or Mediterranean to the US Gulf. In recent years, new trades have developed with ethylene imports to India and S. Korea and Japan regional exports and due to an increase in locally produced VCM in the Far East, the trade from the US Gulf to the Far East is reduced. US VCM exports are now moving more locally to Mexico, Columbia and Canada.

Chinese petchem exports have during the last years diminished, while imports have grown rapidly. Imports are mainly from Japan, which have managed to increased exports. South Korea and Europe have had a fairly balance export and import level.

Ethylene Production and Trade

Ethylene capacity have grown significantly over the last years, growing with some 6.6 mmt in 2000 and 6.2 mmt in 2001. In 2002, another 5 mmt of production capacity was added. Yearly production capacity is at end 2002 estimated to be around 112 mmt.

USA have by far the largest production capacity of ethylene with some 26% of world capacity. Japan is second with some 6% and FSU/Germany fighting for the 3rd place. South America have all together only 4% of world capacity.

Total yearly seaborne trades are around 2.5 mmt. Main trade flows are intra European trades. With significant new capacity on stream in resent years, and several new projects in the pipeline, seaborne trade may increase significantly. However, lower prices may limit the ability to pay for transport.

Propylene Production and Trade

There has been a strong demand for propylene for production of polypropylene recently. World wide production is just above 40 mmt. The trade is typically intra-North West Europe and exports from Japan/Korea to Taiwan and Indonesia. 2001 Seaborne trade accounts for some 1.5 mmt.

Butadiene Production and Trade

World production is well below 10 mmt. Butadiene deficit in the U.S. and surplus in Europe have been the reason for the main trade in butadiene from Europe to the U.S.Gulf. Seaborne trade is well below 1 mmt (0.7 mmt in 2001).

VCM Production and Trade

Total world VCM production is some 25 million tonnes per year. The U.S.A. is the world's largest VCM exporter and the source of the key seaborne VCM trade from U.S. Gulf to East/ South East Asia. However Japan has increased export capacity in recent years, pushing U.S. exports into South East Asia and Australia. Total seaborne VCM trade is around 1.3-1.5 mmt. Growth in world demand for gaseous petchems is mainly linked to the consumption of polymers (plastic), ethylene for polyethylene, propylene for polypropylene, etc. The same applies for VCM and its polymer PVC. Trade is therefore linked to the pace of economic activity in the world and the effect of new production capacity coming on stream in importing or exporting areas.

Olefins are notoriously difficult and expensive to transport over long distances. This will limit seaborne trade development.

LPG/Ammonia/Ethane fleet development

The total LPG fleet counts some 104 vessels above 60,000 cbm, some 79 ships between 20 and 60,000 cbm, 202 vessels between 5-20,000 cbm and 598 ships under 5,000 cbm.

With a total of 983 ships, and 800 of them being under 20,000 cbm, the LPG fleet is, in size, a typical small ship segment, but it is often the large vessels that gets the focus due to it's size in cbm. The fleet above 20,000 is in total 10.8 million cbm. Below 20,000 cbm, the fleet totals around 3 million cbm.

During the last 10 years, measured in total cbm, the LPG fleet have grown with an average rate of 4.5% per annum. This is a quite strong growth. However, the increase in number of ships is lower, indicating larger average ship sizes. During 2002, the LPG fleet actually declined, although with only 1.5%, due to a few deletions of very large LPG vessels and limited new deliveries from the yards.

LPG vessels have a tendency to become older than other vessel types. Average vessel age is now at 16 years, compared to 14.4 years for the dry bulk fleet and 13.9 years for the tanker fleet.

CNG

What is CNG?

Compressed natural gas (CNG) is natural gas pressurized and stored in welding bottle-like tanks at pressures up to 3,600 psig/250 bar**. This process requires much less capital intensive equipment and operating and maintenance costs compared to LNG plants. By pressurizing the natural gas, transportation becomes more economical since it is possible to transport more gas per volume cargo space.

CNG, LNG and gas pipelines have typically the same composition as they all are made of natural gas.

Transportation of CNG/CNG Fleet Development

CNG is mainly transported by trucks and mainly used as fuel for vehicles. Today, there are no commercial vessels transporting CNG in a large scale. The are, however, some vessels powered by CNG for propulsion.

There is a strong interest from the gas industry to develop CNG vessels for commercial use. In early 2003, the first design got all class approvals and is now "ready to be built".

There are several different designs on the drawing board. All of them have in common a heavy containment system to hold the pressurized gas. Most of the vessel designs, therefore, have a draft of some 15 meters and a beam of some 45-60 meters to be able to lift quantities around 20-30,000 mt of CNG.

CNG vessels are very costly, but large savings can be made in the gas field development compared to a LNG or pipeline solution. However, due to the costly transportation, CNG is not regarded as a competitive alternative for voyages longer than 2,500 nautical miles.

CNG Trade

The most promising areas for CNG trade are where distances from gas reserves to the markets do not exceed 2,500 nautical miles. Hence, no transatlantic or transpacific trade is foreseen. A potential trade from Venezuela/Trinidad to the U.S. Gulf may, however, be ideal for CNG vessels. With an expanded canal, trade could also be developed from Venezuela/Trinidad/ to West Coast Central America/ Mexico.

Conclusion LPG and LNG Historical Trades

In 2001, total seaborne gas trade was around 150 mmt and only 1.4 mmt of these trades used the Panama Canal.

Most gas trades through the Panama Canal seem to be "opportunistic" trade. We could only identify a few trades with some regularity passing the Panama Canal. These were ammonia exports from Trinidad and VCM exports from the U.S. Gulf, in addition to some LPG trades from Venezuela.

* These passages taken from The Drewry LPG Market Review 2002

** These passages taken from the LNG fact sheet at www.ch-IV.com.

LNG

Seaborne trade of LNG started in the early 1960's, but volumes did not pick up before the mid 1970's. Total yearly volumes have now passed 100 mmt and are growing rapidly. The fleet consists mainly of ships of 120-140,000 cbm, which are too large to pass through the Panama Canal today. So far, not a single LNG carrier has transited the Panama Canal.

Seaborne Gas Transportation

Gas transported by sea include Liquefied Natural gas (LNG, or mainly methane gas), LPG (liquefied petroleum gases, in the form of ethane, propane and butane), ammonia and there is a future potential for CNG (compressed natural gas (compressed methane gas)).

Propane, butane and ammonia is transported by standard LPG ships. LNG and ethane is transported by dedicated purpose built ships. However, ethane ships can also transport propane and butane.

What is Natural Gas ?

Natural gas is composed primarily of methane (typically, at least 90%), but may also contain ethane, propane and heavier hydrocarbons. Small quantities of nitrogen, oxygen, carbon dioxide, sulfur compounds, and water may also be found in "pipeline" natural gas.

The liquefaction process removes the oxygen, carbon dioxide, sulfur compounds, and water. The process can also be designed to purify the LNG to almost 100% methane. **

What is LNG?

When natural gas is cooled to a temperature of approximately -260°F/-165°C at atmospheric pressure it condenses to a liquid called liquefied natural gas (LNG). One volume of this liquid takes up about 1/600th the volume of natural gas, making it more economically to transport by sea.

LNG weighs less than one-half that of water, actually about 45% as much. LNG is odorless, colorless, non-corrosive, and non-toxic. When vaporized it burns only in concentrations of 5% to 15% when mixed with air. Neither LNG, nor its vapor, can explode in an unconfined environment. **

How is LNG stored?

LNG tanks are always of double-wall construction with extremely efficient insulation between the walls. Large tanks are low aspect ratio (height to width) and cylindrical in design with a domed roof. Storage pressures in these tanks are very low, less than 5 psig. Smaller quantities, 70,000 gallons and less, are stored in horizontal or vertical, vacuum-jacketed, pressure vessels. These tanks may be at pressures any where from less than 5 psig to over 250 psig. LNG must be maintained cold (at least below -117°F) to remain a liquid, independent of pressure. **

How is LNG kept cold?

The insulation, as efficient as it is, will not keep the temperature of LNG cold by itself. LNG is stored as a "boiling cryogen," that is, it is a very cold liquid at its boiling point for the pressure it is being stored. Stored LNG is analogous to boiling water, only 470° colder. The temperature of boiling water (212°F) does not change, even with increased heat, as it is cooled by evaporation (steam generation). In much the same way, LNG will stay at near constant temperature if kept at constant pressure. This phenomenon is called "auto refrigeration". As long as the steam (LNG vapor boil off) is allowed to leave the tea kettle (tank), the temperature will remain constant.

If the vapor is not drawn off, then the pressure and temperature inside the vessel will rise. However, even at 100 psig, the LNG temperature will still be only about -200°F. **

Have there been any serious accidents with LNG?

First, one must remember that LNG is a form of energy and must be respected as such. Today LNG is transported and stored as safely as any other liquid fuel and most people in the industry are of the opinion that transportation of LPG involves more risk than transporting LNG since LPG is easier to ignite.

Before the storage of cryogenic liquids was fully understood, however, there was a serious incident involving LNG in Cleveland, Ohio in 1944. This incident virtually stopped all development of the LNG industry for 20 years. The race to the Moon led to a much better understanding of cryogenics and cryogenic storage with the expanded use of liquid hydrogen (-423°F) and liquid oxygen (-296°F). LNG technology grew from NASA's advancement.

In addition to Cleveland, there were two other U.S. incidents sometimes attributed to LNG. A construction

accident on Staten Island in 1973 has been cited by some parties as an "LNG accident" because the construction crew was working inside an (empty, warm) LNG tank. In another case, the failure of an electrical seal on an LNG pump in 1979 permitted gas (not LNG) to enter an enclosed building. A spark of indeterminate origin caused the building to explode. As a result of this incident, the electrical code has been revised for the design of electrical seals used with all flammable fluids under pressure. **

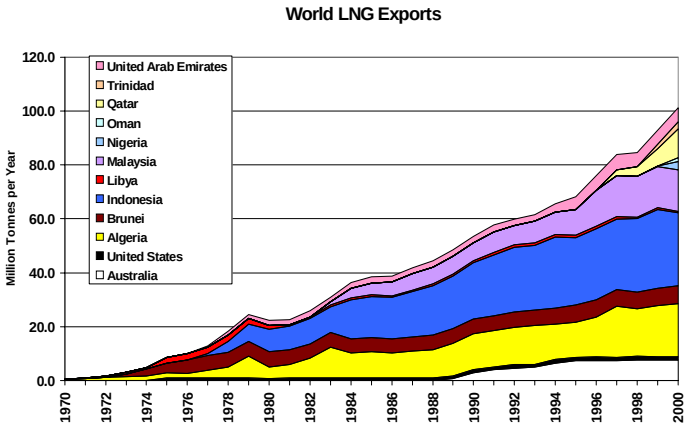
**These passages taken from the LNG fact sheet at www.ch-IV.com

Transportation of LNG

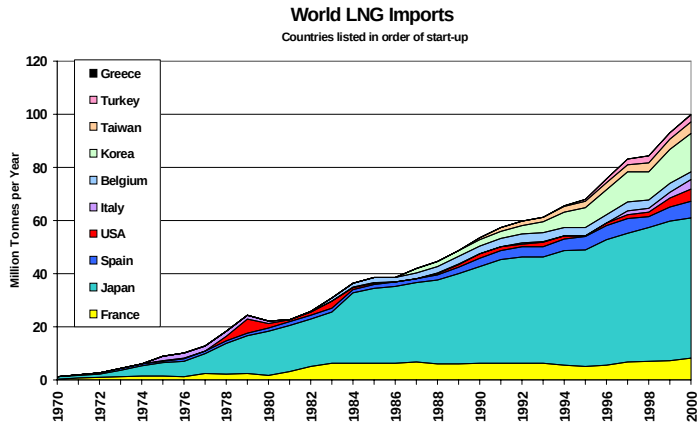
The main reason for liquefying natural gas is to store and transport it. LNG is mainly transported by ships, but may also be distributed by trains, trucks and barges for local distribution.

Seaborne transportation of LNG started in the mid 1960's but did not reach any significant volumes before the mid 1970's. Since then, LNG seaborne transportation have grown significantly and have in recent decade been one of the fastest growing shipping segments in the world. In 2000, seaborne transportation passed the milestone of 100 mmt. A majority part of this volume is between Middle East Gulf/ Malaysia/ Indonesia/ Brunei/Australia to Japan/ Korea. Japan and South Korea count for over 60% of world imports.

The developments for LNG exporters and importers are shown in the graphs below.



LNG Trade Data.xls/World LNG Exports



LNG Trade Data.xls/World LNG Imports

Production and Consumption of LNG

Production

There are three major regional areas that supply LNG. These are first, Southeast Asia, including Australia, Malaysia, Brunei and Indonesia, second the Middle East, including Qatar, Oman and United Arab Emirates with facilities planned in Iran and Yemen, and third, the Atlantic Basin, including Algeria, Libya, Nigeria and Trinidad. There is also an LNG export facility in the United States (Alaska) which primarily supplies Japan. New production facilities are planned in Iran, Egypt, Angola, Nigeria, Venezuela and Norway. Qatar, Oman, Trinidad and Nigeria have all begun large scale LNG production in recent years.

Total exports and imports of LNG were just above 100 mmt in 2000. This amount is projected by CERA to increase to 179 mmt by 2010. According to the Gas Technology Institute, the twelve exporting countries represented above have sixteen liquefaction facilities that, combined, can produce approximately 125 mmt of LNG per year.

The largest exporters are listed below based on data for 2000 contained in the BP Statistical Review of World Energy, June 2001.

- Indonesia 26.1 mmt
- Algeria 19.2 mmt
- Malaysia 15.3 mmt
- Qatar 10.2 mmt
- Australia 7.4 mmt

Other LNG producing countries and areas include Brunei, Oman, Nigeria, United Arab Emirates, Trinidad & Tobago, Libya and Alaska. Based on published reports, a number of existing LNG exporting plants are either being expanded, or are planning expansion. These include plants in Australia, Brunei, Indonesia-Bontang, Malaysia, Nigeria, Oman, Trinidad & Tobago and two LNG projects in Qatar.

Consumption

The two major areas that dominate worldwide consumption of LNG are East Asia, including Japan, South Korea and Taiwan, and Europe, specifically France, Spain, Italy, Belgium and Turkey. East Asia currently accounts for

approximately 71% of the global LNG market while Europe accounts for approximately 23%. The United States presently accounts for only about 5% of the global LNG market, but imports have grown in recent years. Due to a highly developed natural gas infrastructure, the Atlantic Basin presents a wide range of potential markets for increased LNG imports, including several European countries and the United States.

There are currently 11 LNG importing countries with 38 importing terminals. Two of these countries – Greece and Puerto Rico – commenced accepting deliveries in 2000. The largest LNG importers in 2000 were as follows:

- **Japan - 52.9 mmt of LNG or 52.9% of total imports**
- **South Korea - 14.4 mmt of LNG or 14.4% of total imports**
- **France - 8.2 mmt of LNG or 8.2% of total imports**
- **Spain - 6.2 mmt of LNG or 6.2% of total imports**
- **United States - 4.6 mmt of LNG or 4.6% of total imports**

Japan and South Korea are currently the two largest importers of LNG, accounting for approximately 67% of the world total LNG imports in 2000. Almost all natural gas consumption in Japan and South Korea is based on LNG imports. According to published reports, work is in progress to build up to 15 additional LNG import facilities in China, India, the Bahamas, Brazil, Italy, Japan, Mexico, Spain, Portugal, Taiwan and Turkey, among others.

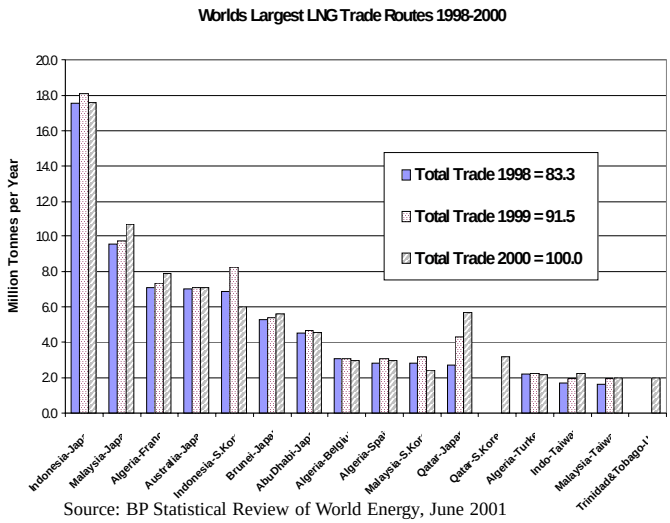
In January 2000, the Chinese government formally approved a plan to import LNG into Guangdong, near Hong Kong, with a targeted start-up date of 2005. In India, an LNG terminal at Dabhol is currently being completed, and in 2000, contracts were entered into for the construction of LNG import terminals in Dahej and Cochin. The Dabhol LNG terminal project has faced some difficulties due to contractual disputes between the project owners and buyers of the electric power arriving from LNG fired power plants.

The cost of constructing LNG import facilities has decreased. This has enabled even small or low volume markets such as Puerto Rico, the Dominican Republic and Greece to receive imports on a cost-effective basis.

Imports of LNG into the United States in 2000 increased 70% from 1999 to around 4.6 mmt. During 2000, two LNG import terminals were operated in the United States, one in Lake Charles, Louisiana, and one in Boston, Massachusetts. Two terminals, one at Elba Island, Georgia and one at Cove Point, Maryland are being reactivated, primarily due to increased LNG import demand in the United States. The Elba Island terminal was reopened at the end of 2001. Cove Point has a scheduled reopening during the 1st half of 2003. This will approximately double U.S. LNG import capacity by the end of 2002. Expansion plans exist for Lake Charles, Elba Island and Cove Point.

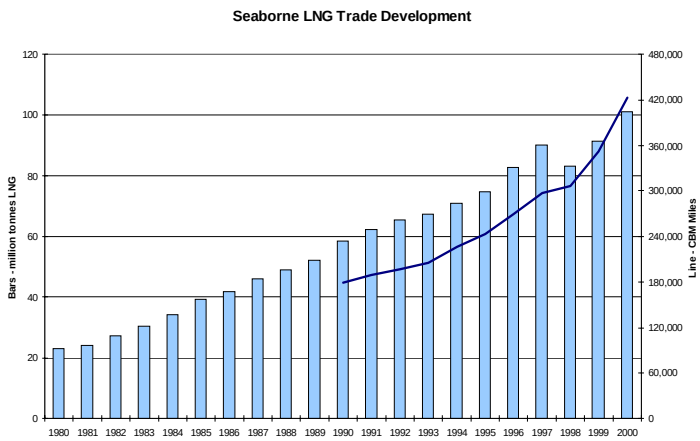
LNG Trades

The largest LNG trade route in recent years has been Indonesia to Japan while the second largest has been Malaysia to Japan. The world's largest seaborne LNG trades and Seaborne LNG trade development are shown in the graph below:



Source: BP Statistical Review of World Energy, June 2001

LNG Trade Data.xls/LNG Trade routes



Source: BP Statistical Review of World Energy, June 2001

LNG Trade Data.xls/Seaborne Trade

Emerging Spot Market and Short-Term Trades.

In 2000, there were 112 LNG trade routes, an increase of 62% from 1995. According to Drewry Shipping Consultants Ltd., the main reason for this rapid increase was the advent of spot and short-term trading activity in LNG. The spot market utilizes surplus export capacity and shipping on routes other than or not necessarily the same as those for which a facility was originally dedicated. Spot activity refers to a single cargo or to a non-project related series of cargoes over a pre-set period generally not exceeding one year. Short-term trading activity refers to contracts of up to four years. During the 1990s, the volume of spot and short-term trading activity rose from virtually zero in 1990 to approximately 8% of total world trade in LNG in 1999, according to Drewry Shipping Consultants Ltd.

A combination of the following key factors may favor the development of a spot market, particularly in the Atlantic Basin:

- **excess LNG production above long-term contracted volumes;**
- **increased receiving capacity by reopening and expansions of U.S. import facilities;**
- **new/increased receiving capacity in Europe**
- **spare LNG shipping capacity; and**
- **deregulation and liberalization of natural gas markets and prices.**
- **liquidity in the market for natural gas derivatives.**

In order to utilize market opportunities, unsold LNG volumes, spare shipping and terminal capacity, industry participants may enter the spot or short-term LNG market to take advantage of arbitrage opportunities between LNG markets and regions; and manage variations in demand due to seasonal fluctuations and increased regasification during peak demand periods.

Future LNG Trade

Most LNG is transported under long term contracts, often of 15-20 years' duration. With current plans for new LNG projects and expansion of existing projects, new terminals planned, etc. we foresee a continued strong growth in world LNG trades. Estimates from different sources indicate that volumes will increase from around 100 million tonnes in 2000 to around 230 million tonnes in 2010.

Due to the long planning horizon for LNG projects, most new projects and expansion of existing production facilities are already decided upon and will be constructed between now and 2006. Potential new projects will, therefore, not be able to start up before late 2006/ early 2007.

Fearnleys do, however, not foresee any volumes of LNG passing the Canal before 2007 at earliest, when plans for 2 new LNG production plants may be implemented, one in Bolivia (exports via Peru or Chile) and one in Venezuela. However, even then, there is only a minor chance that these volumes will use the Panama Canal. The Bolivian volumes are earmarked for terminals along the Mexican Pacific coastline and California, whilst Venezuelan volumes are destined for US Gulf, Brazil and Bahamas import terminals.

There is, however, a potential for some spot or short term contract volumes from Bolivia to transit the Panama Canal eastbound and/or Venezuelan/Trinidad volumes passing westbound in the future.

Bolivia has vast reserves of gas and may try to export it into the U.S. market through the Canal. Standard trading LNG vessels are, however, not able to pass through the Canal with current restrictions. It is especially their beam which restricts passage.

The Suez canal gives a 30% discount to LNG vessels in order to attract long term LNG business. This may also be considered with an expanded canal. Due to the economics of LNG shipment (very expensive), costs must be low to make the economics work on a trade through the Panama Canal. The difficult task for LNG importers is that they, in the US at least, get paid by the natural gas price in the country, but have to pay a fixed price for the gas imported. U.S. natural gas prices are highly volatile.

LNG Fleet development

The LNG fleet have been rather steady through the 1980 and 1990's, but have seen a significant demand in recent years. The LNG fleet order book has therefore increased significantly. The majority of this fleet expansion is ships with at least 40 meter beam and hence not able to pass the panama canal. A standard LNG ship have the following parameters:

Hyundai spherical design 145,000 cbm

LOA 288 m

Beam 48.2 m

Draft (design/scantling) 11.25 / 12.0 m

Deadweight abt. 70 000 tonnes

Daewoo membrane design 138,000 cbm standard LNG ship

LOA 277 m

Beam 43.4 m

Draft (design/scantling) 11.3 / 12.0 m

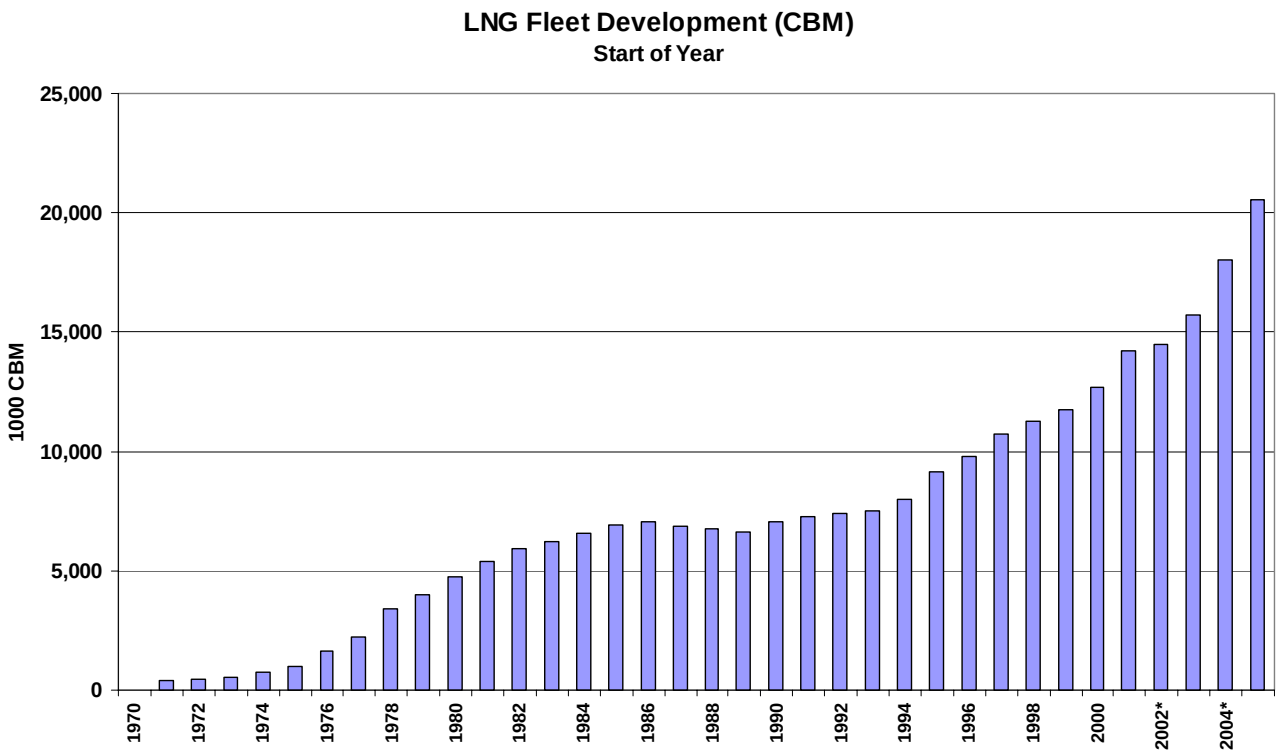
Deadweight 65,000 MT

In the existing fleet, there are only 16 ships + 1 on order that fit the canal restrictions, and all of them are tied up on long term time charters with coastal shipments in the Med and in the Far East/ Japan area.

There are designs of "Panamax LNG vessels" of some 100,000 cbm, but no ships have been ordered. If the Panama Canal is decided not to be expanded, we will most likely se several orders of this type of vessel as the Venezuela, Peru and Bolivian projects are being developed.

Current LNG designs have increased in size, from some 135 in the early 1990's to current 140-145,000 cbm by improving design and maximising cargo capacity. We now see designs of typically 145-150,000 cbm being discussed and foresee this to be the standard design in the next coming decade.

There are also designs being developed for large 230-250,000 cbm vessels for selected long haul trades to cut LNG transport cost. LOA of such vessels are typically 350 meter long with a 56 meter beam and 12 meter draft. The trade for this very large LNG carrier is Middle East Gulf to UK. We do not foresee such vessels passing the Panama Canal during the forecasted period, but they might be discharging in the US Gulf.



LNG Trade Data.xls/Fleet Development

Source: Fearnleys

Alternative Liquid Commodities

Alternative liquid commodities are not at present important for the Panama Canal, but we thought it useful to mention them because they have a potential for the future. These commodities include compressed natural gas (which we discuss more fully in the section on liquefied gases), synthetic crude, and water, both potable and industrial. Both compressed natural gas and synthetic crude are new products which have not yet been shipped by sea, but which bear watching in the future. Synthetic crude oil is being developed by a consortium of oil companies and is made by using a process to convert heavy ends into a light synthetic crude oil. As potable water supplies become increasingly threatened by pollution and changes caused by global warming, drinking water can become an important new commodity.

Pipelines

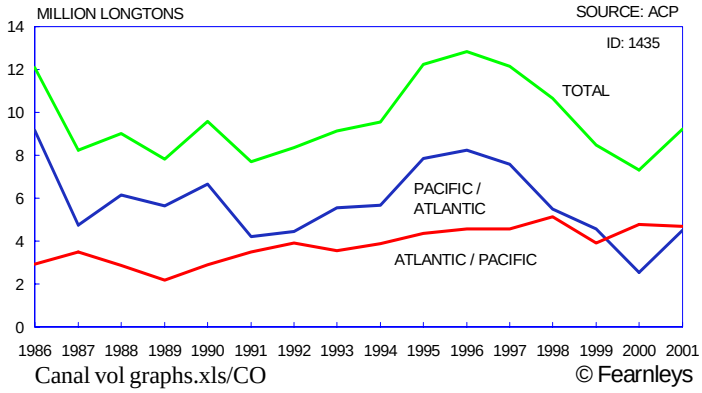
At the present time there are no pipelines in direct competition with the Panama Canal. Nonetheless, a non-functioning pipeline which is maintained in good condition exists across the isthmus of Panama. This Trans-Isthmian Pipeline is owned by Petroterminal de Panama S.A. and was in operation from 1982 to 1996. The pipeline was built for the carriage of Alaskan crude oil, and when it was decided in 1996 to export all Alaskan crude oil to Japan, the pipeline closed. In addition to the pipeline, Petroterminales has two terminals, one at Puerto Armuelles on the Pacific coast of Panama and one at Chiriqui Grande on the Atlantic coast. The Pacific terminal has two berths one of which is capable of handling VLCCs and has storage facilities for some 2.5 million bbls of crude oil as well as 6 conic roof tanks for products with a total capacity of 410,000 bbls. The terminal is able to segregate or blend multiple grades of petroleum products. The Atlantic terminal has similar storage facilities to those available on the Pacific side. Since the closure of the pipeline Petroterminales has been offering the terminals (the Pacific terminal in particular) as trans-shipment/distribution facilities. Petroterminales has secured the right of way for the construction of an additional pipeline next to the existing facility. In addition to this, they own additional land adjacent to their Atlantic and Pacific terminals which can be used to expand their storage capacity. The company has two loading buoys on the Atlantic side which are fed by underwater pipes and which are capable of loading vessels up to 150.000 dwt. They are also considering the construction of SBMs (single buoy moorings). Even though the pipeline has not functioned since 1996, it appears that Petroterminales is eminently prepared to exploit their facilities and location should the opportunity arise.

In addition to the potential competitive threat of the Trans-Isthmian pipeline, we think it important to mention that other pipelines could also pose problems. The creation of pipelines from Alaska or Canada to the west coast of the United States would threaten to reduce those petroleum volumes which pass from the Atlantic to the Pacific to facilities on the United States west coast.

Crude Oil and Oil Products through the Panama Canal

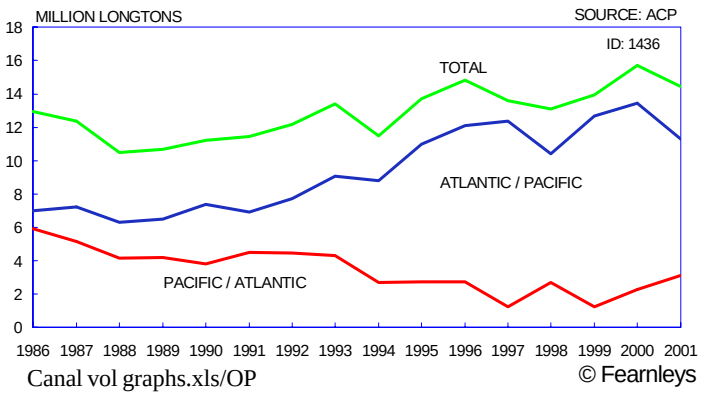
This chapter focuses on the use of the Panama Canal by liquid bulk carriers and illustrates the various liquid bulk cargoes' importance for the Canal and the Canal's importance in the global trade for the same commodities.

CRUDE OIL THROUGH PANAMA CANAL. CY 1986-2001



Volumes of crude oil which pass through the Panama Canal have fluctuated strongly since the mid 1980's . In Calendar 2001, the total volume was about 9.4 mmt, or just about 0.6% of the world seaborne trade in crude oil. The volume Atlantic-Pacific was 4.8 million tonnes, whereas 4.6 mmt went in the opposite direction (See Appendix).

OIL PRODUCTS THROUGH PANAMA CANAL. CY 1986-2025



The volumes of liquid oil products shipped through the Canal have been somewhat more stable and totaled 14.7 mmt in C2001. This corresponded to about 3.6% of the world seaborne trade in liquid oil products. Out of this volume, 11.5 mmt were bound for the Pacific and only 3.2 mmt were bound for the Atlantic (See Appendix).

It appears that the nature of the trade in crude oil and liquid oil products through the Panama Canal is quite local, in the sense that trade volumes within the Caribbean and North and Central America accounted for 75% of the crude oil volume through the Canal and 71% of the liquid oil products volume. These shares stand in sharp contrast to 23% only for liquefied gas and chemicals.

From the **ACP's own statistics** for Fiscal 2001 we find a total transit cargo volume for crude oil of about 9.23 mmt and for oil products (excluding LPG and petcoke) of about 15.93 mmt, i.e. a total of 25.16 mmt of liquid oil bulks. This accounts for about 1.3% of the total international seaborne trade in crude oil and liquid oil products, estimated to be 1585 mmt and 412 mmt, respectively, in 2001 (excluding some coastal and short sea trades).

Of the total trade volume through the Panama Canal, the importance of crude oil and liquid oil products can be seen as follows (fig in '000 long tons):

Oil accounted for about 13% of the total cargo transit volume through the Panama Canal in fiscal 2001, almost 16% on the Atlantic-Pacific route and well above 9% on the Pacific-Atlantic route.

	Atl - Pac		Pac - Atl		Total	
Crude Oil	4,842	(4.4%)	4,398	(5.2%)	9,230	(4.8%)
Liquid Oil	12,560	(11.5%)	3,373	(4.0%)	15,933	(8.2%)
Total trade	109,181	(100%)	83,961	(100%)	193,142	(100%)

We have run selected statistics from **Fearnresearch's data base** for oil tankers over 50,000 dwt. This data base allows us to implement electronic analysis since 1988. It appears that the volumes registered for total shipments and shipments through the Panama Canal have developed as follows:

As can be seen from these figures, Panama Canal traffic is of minor importance for the employment of tankers above 50,000 dwt. Assuming, for simplicity, an average intake of

CYR	Through PC	World Total	PC share
1988	10.4 mdwt	1,317.3 mdwt	0.8%
1990	13.6 mdwt	1,498.4 mdwt	0.9%
1995	18.2 mdwt	1,805.4 mdwt	1.0%
2000	16.7 mdwt	2,177.5 mdwt	0.8%
2001	17.4 mdwt	2,250.6 mdwt	0.8%

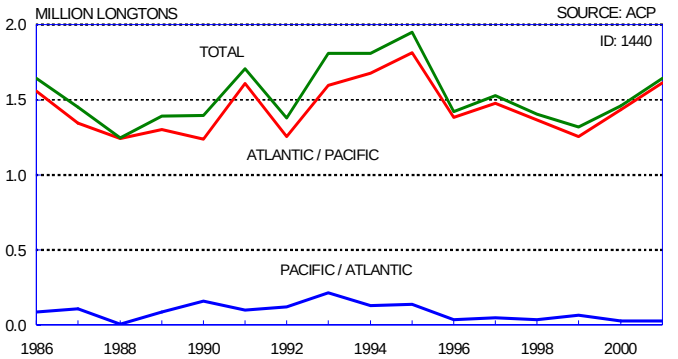
90%, the volume carried by vessels over this size through the Panama Canal in 2001 was about 15.7 million tonnes.

Held up against ACP statistics, this suggests that about 8 million tonnes were shipped through the Panama Canal by oil tankers below 50,000 dwt in 2001, which can be checked against ACP data. The Appendix section provides detailed trade matrices for the respective years, which show Fearnresearch's total dwt shipment volumes by routes as well as shipments through the Panama Canal for same routes.

Liquefied Gas through the Panama Canal

LPG shipments through the Panama Canal in Fiscal 2001 totaled about 1.31 mmt, of which only about 0.03 mmt were from the Pacific to the Atlantic. The volumes from the Atlantic to the Pacific during the period 1986-2001 varied between 1.43 mmt in 1995 and 0.88 in 1998. In the opposite direction, volumes varied between less than 0.01 mmt in 1988 and 0.22 mmt in 1993.There have not yet been any shipments of LNG through the Panama Canal. The volumes of ammonia and petrochemical gases shipped through the Canal have been modest during most of the period, however, ammonium compounds from the Atlantic to the Pacific varied between 0.09 mmt in 1992 and as high as 0.47 mmt in 1998, before reaching 0.33 mmt in Fiscal 2001. In the opposite direction, volumes were negligible and nil in Fiscal 2001.

GAS THROUGH PANAMA CANAL. CY 1986-2001



Canal vol graphs.xls/GAS

© Fearnleys

Ballasting

Ballasting provided about 10.4% of total Panama Canal tariffs in Fiscal 2001. For tankers, ballasting accounted for about 27.6% of total tariffs from tanker transits.

Tankers accounted for about 12.9% of total Panama Canal tariffs (laden and ballast). The tanker share of total laden tariffs was 11.2%, whereas for ballast tariffs, the tanker share was as high as 26.9%. We assume that these shares have been fairly stable in recent years.

Looking at the number of tanker transits in Fiscal 2001, there were 82% more laden transits Atlantic-Pacific than in the opposite direction. It appears that the number of ballast transits from Pacific to Atlantic equaled 44.6% of the laden transits in the opposite direction, whereas ballast transits from Atlantic to Pacific equaled 19.9% of the laden transits in the opposite direction.

The importance of ballasting through the Panama Canal in the future will depend mainly on possible cargo trading combinations and, to some extent, on the chosen tariff levels.

The importance of ballast tariffs

Income in million USD F 2001

		TANK	TOTAL	Tank share
ATL-PAC	Laden	38.1	271.7	14.1 %
PAC-ATL	Laden	20.2	246.8	8.2 %
Total	Laden	58.3	518.4	11.2 %
ATL-PAC	Ballast	2.8	33.4	8.4 %
PAC-ATL	Ballast	13.3	50.2	12.4 %
Total	Ballast	16.1	59.9	26.9 %
Grand Total		74.4	578.4	12.9 %

No. of tanker transits in F 2001

ATL – PAC	Laden	877
PAC – ATL	Laden	482
PAC – ATL	Ballast	391
ATL – PAC	Ballast	96

Ballast.xls/Income in million USD F2001

Chemicals through the Panama Canal

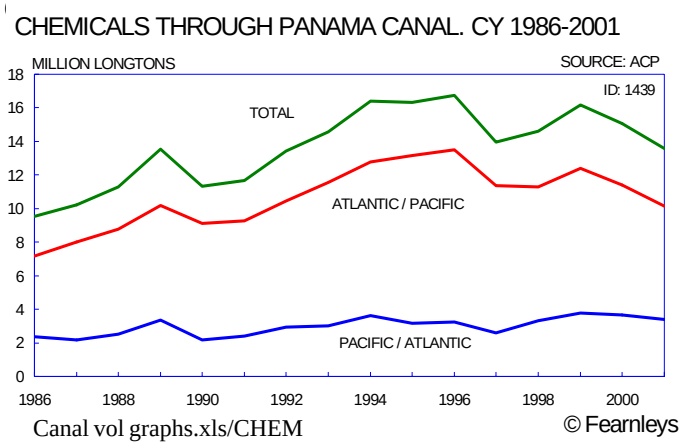
Seaborne trade in chemicals increased about 66% from 1986 to 2000. During the same period, chemical trade through the Panama Canal increased about 56%. However, considering the trend in total shipments, volumes through the Canal have generally followed the same trend.

On average, 11.4% of the world seaborne trade in chemicals has transited the Canal between 1986 and 2000. The lowest was in 1997 at 9.7% and the highest in 1992 at 13.1%

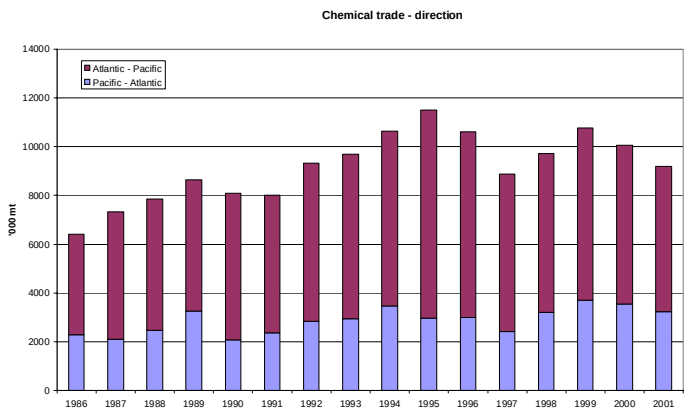
Shipments of chemicals through the Canal amounted to about 10.2 mmt in 2000, up from 6.5 mmt in 1986

Transit structure - Chemicals

From historical data we observe that about two thirds of the chemicals transported through the Canal move from the Atlantic to the Pacific and one third in the other direction. Due to reporting procedures, it is impossible to give a breakdown of commodities transported since 80%-90% are listed as "miscellaneous chemicals" or "Vegoils miscellaneous". We have tried to determine which commodities are contained in these residual groups, however, without success. Based on supporting data and official trade statistics, we have tried to determine what was actually shipped for the years 1996 and 2000. However, we cannot find supporting data among organic chemicals. Furthermore, the volumes for inorganic chemicals do not support any conclusions either. The single



Canal vol graphs.xls/CHEM
Source: ACP



Source: ACP

largest trade in 1996 was misc.chemicals originating in the Caribbean and ending up in Other Far East. This totaled 1.8 mmt. In 2000, this figure had grown to 3.0 mmt. If we include defined chemicals, this trade constituted about 36% of the chemicals moved through the Canal in 2000. In 1996 the corresponding figure was 29%.

There are three commodities we can assume, with a certain degree of confidence, are included in the residual group. Official trade statistics indicate a substantial export of xylene from the U.S.A. to SE Asia of about 1.0 mmt in 1996, declining to 0.51 mmt in 2000. We believe these quantities are included in the residual group. Furthermore, another commodity of some significance is acrylonitrile. Shipments from North America to SE Asia were 0.36 mmt in 1996 and 0.43 mmt in 2000. The third commodity is ethylene dichloride. Exports from the U.S.A. to SE Asia were 0.98 mmt in 1996 and 0.87 mmt in 2000.

Based on transits available, we draw the conclusion that the use of the Canal can be divided into two groups. The first one is regional trade between the Caribbean and the West Coast of North America. This trade amounted to 2.0 mmt in 2000, up from 1.0 mmt in 1996. Most of the commodities moved are unspecified, however we observe a reasonable trade in caustic soda. The other main group of trades are long distance trades originating in Asia and ending up in North America (east coast), or the other way round. Again, we have very little supporting data for drawing any firm conclusions on commodities.

One interesting aspect, though, is that a very high proportion of the chemicals going through the Canal, about 73% in 2000, originated in the vicinity of the Canal (Caribbean and Central America), however a substantial portion of this again was exported to destinations far away in Asia. In this respect we observe that the Panama Canal's universe may be divided into two parts: the first, in which the Canal is the only realistic transit route between the

Atlantic and the Pacific (regional trade), and, the second in which the Canal provides the best commercial alternative for long-haul trades between the Atlantic and Pacific Oceans.

Transit structure - Vegoil

Seaborne trade in vegoils through the Canal constituted in 2000 about 4.7% of total seaborne trade. This is, however, a doubling since 1985 when the share was 2.3%. As opposed to chemicals, about two thirds of the trade is from the Pacific to the Atlantic.

Again, the data for the commodity flows are insufficient, and a sizable share is denominated miscellaneous, or oilseeds.

A sizable share of the trade is fish oil from the West Coast of South America to Western Europe: 0.12 mmt in 1996 and 0.17 mmt in 2000. Another sizable trade is misc. vegoils from SE Asia to North America East Coast which is assumed to be palm oil.

A regional trade in oilseeds is also observed. Normally, oilseeds would be a dry commodity, and we assume that this is used for oil derived from various oilseeds (soybeans, sunflower seeds etc.) Inasmuch as it is a regional trade we assume that this is soybean oil.

The major exporting areas are the Caribbean (including US Gulf) and West Coast of South America. The major importing areas are North America East Coast and North Western Europe. Again, we observe the same division between regional trades and long-haul trades.

Orimulsion through the Panama Canal

Since its inception in 1988, very little Orimulsion has passed through the Panama Canal. Bitor confirms that the only volumes shipped via Panama to Japan were between the years 1991 and 2000. They do not have the exact figures, but they point out that their shippers, who were Sanko Steamship Company had the option to carry up to 50 percent of their contracted volumes in Panamax vessels (the rest being carried in Aframaxes). We note that in fiscal year 2000 217,000 long tons of Orimulsion were shipped to Japan via Panama. After year 2000 Bitor and its Japanese partner, Mitsubishi decided to employ the element of economy of scale, and since then, only Aframax shipments have been sent to Japan, thus eliminating the Panama Canal as a viable alternative.

At the present time Bitor is not sending any shipments via the Panama Canal, and yet there is a great potential for future shipments, especially if the Canal is expanded. The company is now, and has been for some time, engaged in an aggressive marketing and sales campaign which is very strongly focused on countries in the Far East such as China, Thailand and Japan. The goal of these campaigns is to sell Orimulsion to customers who have not previously purchased it and to increase volumes with already established customers. Due to the fact that most of the Orimulsion being sold to the Far East is in lot sizes of 80,000 metric tonnes or more, an expanded Canal will be seen by Bitor as an important saver of time and distance.

With respect to Orimulsion Shipments to the Far East We would like to point out the time/distance savings which could be important for Bitor should the dimensions of the Panama Canal change. In the below table we provide distances from Jose Terminal to various Far Eastern destinations with routing via Panama, Suez and the Cape of Good Hope.

Load : Jose Terminal Venezuela

Discharge:	Singapore	– 10.559 sc
		- 13.597 gh
		- 13.234 pc
	Batangas	- 11.842 sc
		- 12.792 gh
		- 10.325 pc
	Dalian	- 13.200 sc
		- 12.148 gh
		- 9.680 pc
	Tokyo	- 13.459 sc
		- 12.148 gh
		- 8.732 pc
	Ulsan	- 13.074 sc
		- 11.541 gh
		- 9.073 pc

As can be seen from the above example, the Canal provides no savings if one is discharging in Singapore since the Suez route is by far the best alternative. It does, however, prove to have a significant potential advantage over both Suez and Good Hope in the case of Batangas, Dalian, Tokyo, and Ulsan, depending on Panama Canal transit tolls.

Bitor has also recently done a contract with power plants in Guatemala, and even though the volumes will be relatively small, they will eventually be shipping some modest volumes to the Pacific coast of Guatemala.

Oil and Energy Intensity

The use of oil and total energy relative to economic development shows great variations over time and for different regions of the world.

Over the 25 year period 1975-2000, world oil demand rose an average 1.0% per year. Demand growth was rather uneven during the period due to a series of factors. These include business cycles and improved technology with better energy efficiency as well as occasional extremely mild winters in the Northern Hemisphere.

Looking at the reference period and the years immediately before and after, we find the following global developments:

1970- 75	3.6% p.a.
1975- 80	2.1% p.a
1980- 85	-1.4% p.a.
1985- 90	2.1% p.a.
1990- 95	0.6% p.a.
1995-2000	1.6% p.a.
2001	0.2%
2002 F	0.6%

The table below gives corresponding figures for individual countries and areas.

OIL CONSUMPTION GROWTH BY COUNTRIES/AREAS

Yearly average in pct

	Historically: BP 2001							IEA Est. May 0	
	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	1975-2000	2001	2002
World	3.6	2.1	-1.4	2.1	0.6	1.6	1	0.2	0.6
USA	2.0	0.7	-1.9	1.6	0.7	2.1	0.6	-0.3	0.5
Europe	1.8	0.9	-3.0	1.5	0.4	0.8	0.1	1.0	0.3
C/A/NZ*	2.7	0.9	-4.0	2.8	1.0	1.3	0.4	-2.0	1.2
Japan	4.2	-0.5	-3.1	4.0	1.6	-1.1	0.2	-1.5	-2.4
S. Korea	11.4	11.1	0.2	14.9	13.9	1.4	8.1	-0.9	0.9
China	19.4	5.2	-1.5	0.3	7.8	7.1	4.9	1.8	2.6
India	n.a	n.a	n.a	n.a	4.7	6.0	n.a.	-1.0	1.5
FSU	7.4	3.6	-0.2	-4.6	-12.3	-4.4	-3.0	2.0	1.3
Lat Am.	5.4	4.8	-0.2	2.2	2.6	2.7	2.4	-2.2	0.3
Africa	4.1	6.5	3.3	2.7	1.9	2.3	3.3	0.8	1.0
M. East	4.4	8.7	5.3	4.9	2.9	1.0	4.7	3.1	2.1

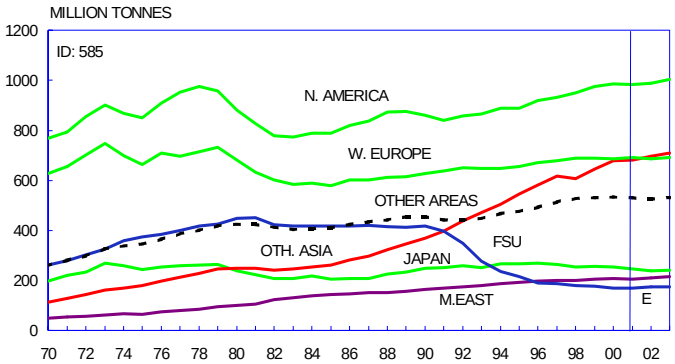
*) Canada, Australia, New Zealand

energy-demand-tab.xls/OC

It appears that advanced industrial countries in North America, Japan and Western Europe all use less oil than in the late 1970's. FSU oil demand has decreased dramatically. Asia outside Japan and the Middle East have seen substantial growth through most of the period, but also here growth in consumption has tapered off in recent years.

World energy demand growth averaged 1.5% per year over 1975-2000. This means that oil has lost market shares over the period. At 2.8% per year, gas has shown a much higher growth than oil over the period. Coal shows the same growth rate as oil over the period, despite a modest decrease during the 1990's.

OIL CONSUMPTION BY AREA



Oil and Energy Inten Graphs.xls/OCB Source: BP © Fearnleys

WORLD ENERGY DEMAND GROWTH

Fig. show annual average changes in pct

	1970-75	1975-80	1980-85	1985-90	1990-95	95-2000	1975-2000
Primary Energy*	2.9	2.9	0.9	1.9	0.8	1.3	1.5
Oil	3.6	2.1	-1.4	2.1	0.6	1.6	1.0
Gas	3.2	3.4	2.6	4.0	1.5	2.5	2.8
Coal	0.9	1.2	2.4	2.1	-0.5	-0.6	1.0
Nuclear	34.5	14.5	15.1	15.8	3.0	2.2	8.5
Hydro	2.7	3.8	3.3	1.2	2.7	1.2	2.5

Note: *) Includes only listed types

Based on annual data from BP adjusted for certain backw ard revisions for hydroelectricity and other adjustmenets of historic data

energy-demand-tab.xls/EG

THE CHANGING GLOBAL ENERGY MIX

	Oil	Gas	Coal	Nuclear	Hydro	Total*
1970	45.9	18.7	32.8	0.4	2.2	100.0
1975	47.5	19.0	29.8	1.5	2.2	100.0
1980	46.9	19.9	28.2	2.7	2.3	100.0
1985	41.2	21.3	29.9	5.1	2.5	100.0
1990	39.8	22.5	28.8	6.5	2.4	100.0
1995	39.3	23.3	27.5	7.3	2.6	100.0
2000	40.0	24.7	25.0	7.7	2.6	100.0

energy-demand-tab.xls/EMIX

In recent years, though, important countries in Asia have shown a remarkable increase in the use of coal at power plants. Nuclear power increased strongly from a modest base and hydropower has shown a rather steady growth albeit at a fairly moderate pace.

Fearnresearch has focused on the relationships between trends in economic development, preferably figures for industrial production when available, oil consumption and energy consumption in general.

For the OECD area, it appears that while industrial output rose about 103% over 1975-2000, energy use was up 41% and oil use up only about 16%.This means that oil and energy intensities decreased significantly over the period. In 2000, OECD's energy intensity, or oil consumption compared to industrial production had dropped by about 43% from 1975. Thus, when setting a ratio of 1.000 in 1975, the OECD's oil intensity was down at 0.571 in 2000. OECD's energy intensity in 2000 was down to 0.695, indicating that oil had lost market shares.

For individual areas of OECD, oil and energy intensities defined in the same way were as follows in 2000:

	Oil	Energy
U.S.A.	0.488	0.545
Japan	0.509	0.776
OECD Europe	0.651	0.803

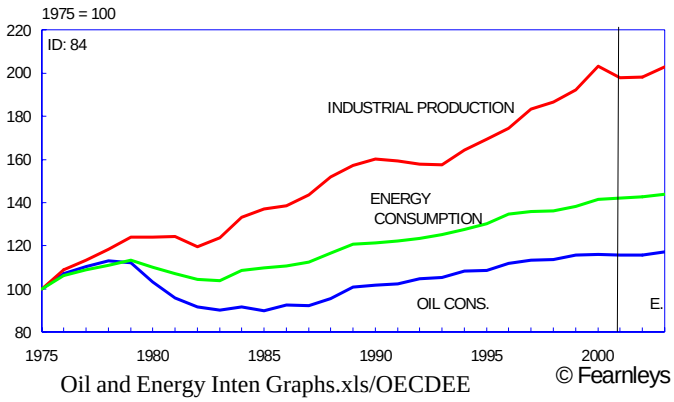
It appears that the U.S.A. is down as much as about 51% in oil intensity over the 25 year period, Japan is down about 49%, and OECD Europe is down about 35%. Total energy consumption intensity shows a more modest contraction in all three areas.

It is not possible to obtain figures for industrial production for all countries in the world. Furthermore, few sources provide any forecasts of industrial production, mostly concentrating on GDP figures.

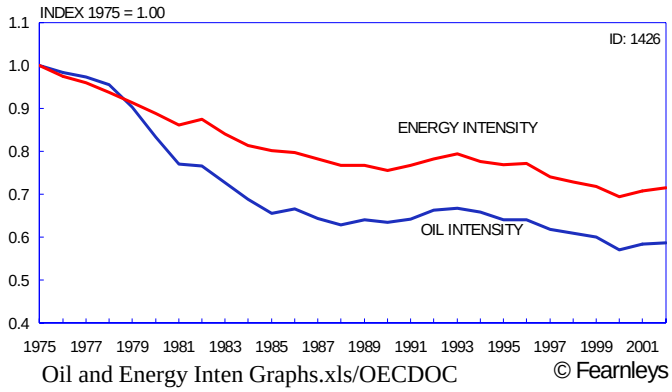
In order to establish an adequate platform for subsequent forecasts up to 2025, we have compiled and calculated GDP growth figures for all major regions of the world, based on data from IMF and OECD. We have then calculated oil intensity developments for the same areas.

Industrializing economies such as those of China and South Korea are currently showing the strongest growth in oil consumption, but it is only to be assumed that as these economies become more advanced and mature, their requirements for petroleum and its products will diminish

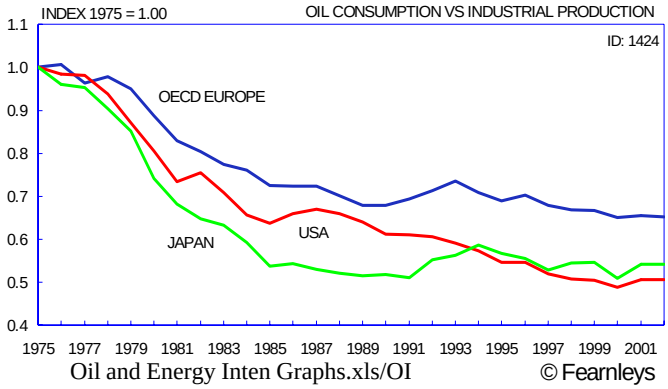
OECD. ECONOMY- ENERGY- OIL CONSUMPTION



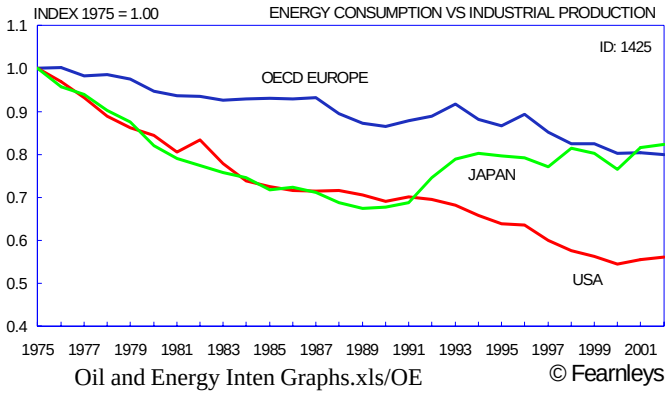
OECD OIL AND ENERGY INTENSITY



OIL INTENSITY



ENERGY INTENSITY



relative to economic growth as they have in the West. This is because the economies of these countries will come to more closely resemble economies as they now are in the U.S.A. and Western Europe.

World oil intensity, defined as oil consumption versus GDP was 0.553 in 2000 when using 1975 =1.000, i.e. a drop of roughly 45%.The accompanying graphs illustrate developments in different parts of the world (See Appendix for figures)

The strongest upside in oil and gas demand in the next few decades appears to be in Asia outside Japan, S.Korea and the Middle East. Latin America is another area where we foresee a significant growth potential. The same goes for FSU, which will be much more than self-supplied in the years ahead and appears as an increasingly uncomfortable rival to OPEC and other oil exporting countries

World energy consumption was on average 1.45 tonnes oil equivalent per head in 2000 based on data from BP. For the U.S.A. the figure was 8.10 toe, for EU 3.82 toe, Japan 4.07 toe, S.Korea 4.03 toe, China 0.59 toe and in India only 0.29 toe. The oil share varied substantially, being 39.4% in the U.S.A., 43.9% in EU, 49.6% in Japan, and 53.0% in S.Korea, but significantly lower at 30.2% in China and 33.1% in India. Whereas every U.S. citizen on average consumed 3.189 tonnes of oil in 2000, China and India showed figures of 0.178 and 0.097 tonnes, respectively.

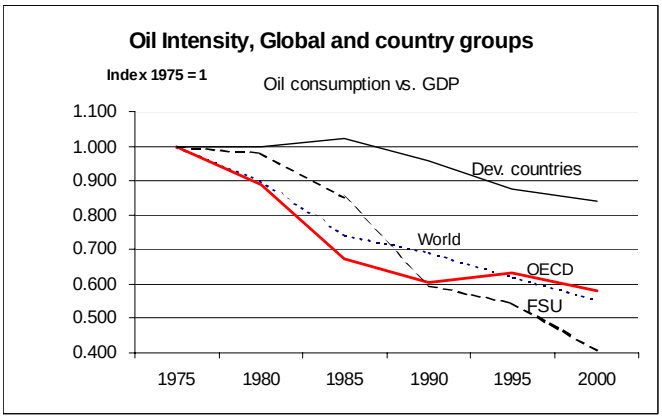
World and Regional GDP Developments

Fig. Show annual change in pct — Sources: IMF and OECD

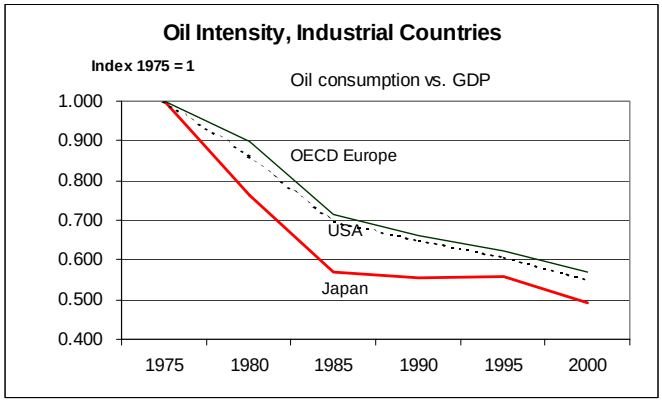
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	1976-2000	2000-2003
World	4.3	2.5	3.6	2.9	3.9	3.4	3.1
Advanced c.	3.6	2.2	3.3	2.1	3.3	2.9	2.0
USA	3.7	2.4	3	2.1	4.1	3.1	2.3
Japan	5.0	3.9	4.5	1.5	1.4	3.2	-0.2
OECD Europe	3.1	1.5	3.1	1.6	2.6	2.4	*)2.0
Developing c.	6.2	2.8	4.8	6.2	5.1	5.0	4.6
Asia	6.9e	6.8	7.0	8.8	6.3	7.0	6.0
M. East (1)	4.3	-0.1	3.6	3.7	4.2	3.1	3.3
Africa	3.0	2.4	2.7	1.6	3.5	2.6	3.8
W. Hemisphere	5.6	0.7	2.1	3.6	3.0	3.0	1.7
C. in transition	4.3	2.9	1.8	-7.5	2.1	0.6	4.4
Russia	4.0e	2.7	2.5	-10.8	1.3	-0.2	4.8

Notes: 1) Incl. Turkey, *) EU

energy-demand-tab.xls/GDP



Oil-consumption.xls/Graphs



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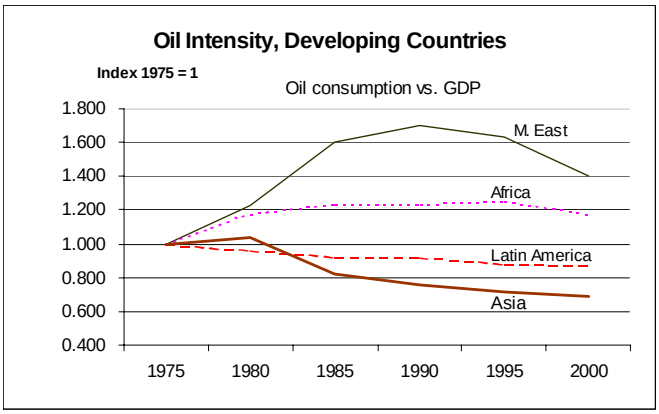
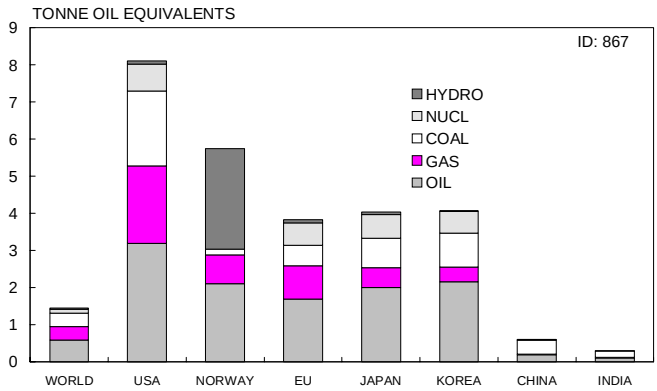


Oil-consumption.xls/Graphs

ENERGY CONSUMPTION PER CAPITA 2000



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Oil and Energy Inten Graphs.xls/ECPC

Source: BP, UN

TRADING VOLUMES / CANAL'S POTENTIAL MARKET

Introduction

In creating our forecasts of oil trading volumes we have studied different independent forecasts with different temporal perspectives, some longer, some shorter, up to the year 2030. In our forecasting we have tried to concentrate on a number of major factors such as, for example, oil consumption, oil production, refining capacity, oil and energy efficiency and intensity, environmental issues, pipelines, logistics, and alternative fuels. We have focused on the factors of oil consumption and oil production on a regional basis with a series of inputs on planned and potential shifts in trading patterns based on economic as well as geopolitical developments.

One of our major sources is the EIA. The EIA provides a three case forecast based on a base case, a high oil price case, and a low oil price case up to 2025. These cases will serve as a backdrop for our own forecasts which will also take into account a number of reservations we have. Compared with the EIA base case we already observe a significantly weaker development than previously assumed in the first part of the forecast period. This will reduce Fearnley Consultants' estimates for the initial five year period. In our view, assumptions in the base case seem somewhat optimistic for oil demand in general.

The view presented in the base case forecast is the result of EIA having, in our view, underestimated improved energy efficiency in the future in line with reduced energy and oil intensities observed in recent decades. We cannot overlook the fact that most professional forecasts have been far too optimistic with regard to energy consumption and the role it will play in the future, precisely because such forecasts tend to downplay the significance of improvements in energy efficiency. World energy consumption today is less than one half of what was predicted in the early 1970s.

In addition to the EIA, we have also used the study done by DRI-Wefa which was provided to us by the ACP. This study, which provides a general view of global macroeconomic and trade scenarios, was used by us as a starting point in creating our forecasts. In our opinion, however, the DRI-Wefa study had to be enhanced for some regions and countries in order to be of use for forecasting volumes through the Panama Canal. We, therefore, had to amplify certain areas of the study in order to give more emphasis to those regions and countries which are of paramount importance for the Panama Canal.

Another issue which has gained in importance and which has played an important role in our forecasts is the issue of the environment which has come more clearly into focus in recent years as a result of climactic disturbances and abnormalities in various parts of the world. As we have already mentioned in the historical part of the study, we believe that climate and other changes attributed to the burning of fossil fuels will play a significant role in future developments in the energy market.

We feel that it is essential to recognize the importance of political events will have upon the logistics of the oil and energy markets in the future. On the oil supply side we believe that the role of Middle East OPEC will continue to be important but that it could become significantly less important than the role expressed by the EIA and other forecasters. There is a great deal more uncertainty about future events in the petroleum market than there have been for many decades.

It is our view that the logistics of the petroleum market are on the brink of substantial changes in the coming years. Middle East OPEC will probably diminish significantly in importance for the U.S. market as concerns about political problems in the Middle East combined with increasing discoveries of large amounts of oil with outlets in the Atlantic Basin, particularly in Russia, have the effect of bringing shorter haul crudes from a relatively secure source of supply to the American market. If this trend continues, Middle East OPEC supply will be largely relegated to the Indian sub-continent and Asia, whilst the U.S.A. and Europe will obtain the lion's share of their oil supplies from sources within the Atlantic. Recent discoveries of oil and gas indicate that there are increasing possibilities for local sourcing for most geographical regions. This could have potential deleterious effects for the Panama Canal which serves basically as an avenue for inter-regional trade.

As will be seen from what follows, our method of forecasting has been to predict export and import volumes for different geographical areas on the basis of best case, worst case and most probable case. Finally, the Panama Canal's potential volumes have been forecast bearing in mind present trade structures, expected pipeline developments and vessel logistics, including economy of scale.

Methodology/Analytical Tools

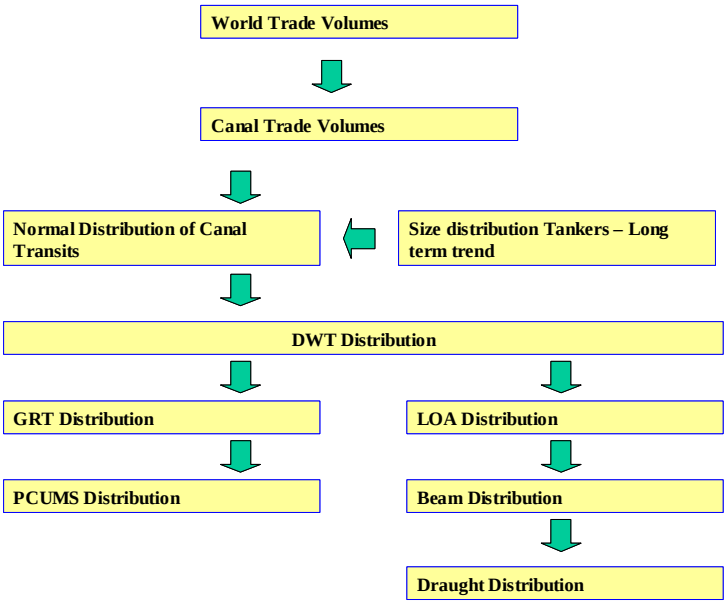
Methodology for Distributing Transits by Size

In accordance with the contract, we have developed a methodology for distribution of transits through the Canal. There are several parameters and phenomena that were considered, and we have based the distribution upon general (technological) ship theory as well as empirical data.

Our approach to this part of the contract can be described as a "top-down" method. From our assessment of world trade in liquid bulk transportation, we have prepared forecasts for Canal traffic. Furthermore, we have studied the size distribution of tankers transiting the Canal, and the number of observations are sufficient to determine a statistical distribution. Although not perfect, we observe that the size distribution of transits follows a normal distribution.

Our methodology is based on an expected trend in fleet development, and the size distribution in the future will follow the normal distribution as observed today. However, due to factors described below, we expect that size distribution in the future will be more polarised around standard ship sizes and that some ship sizes may gradually disappear.

When we have assessed the distribution by deadweight, we are in position to calculate/estimate the distribution in terms of GRT, Beam, LoA, etc. This "trickling" methodology of transits is based on fairly basic ship theory. Whenever a ship is designed, the eventual physical particulars are a compromise between physical boundaries (strength, fatigue strength, hull shape, water resistance, stability, etc.), and the commercial aspects linked to cargo carrying capacity, fuel economy, market suitability, price, etc. Furthermore, the shipyards have preferences on design in order to utilise their fabrication and construction facilities effectively. Thus, vessels of similar size and type are constructed fairly consistently. For standard types of vessels there is a sufficiently strong relationship between the principal parameters. These relationships are used for distributing transits according to the requested parameters and intervals of the same parameters.



Size Distrib.xls/Overview

Fleet Composition

The Panama Canal-suitable tanker fleet consists of about 2,600 vessels between 5,000 dwt and 80,000 dwt. Obviously, the limiting parameter is the beam. A handful of tankers above 80,000 dwt could, theoretically, transit the Canal, but these ships are mostly tied up in own programs and normally do not transit the Canal. There are some exceptions for tankers between 60,000 and 80,000 dwt as well. A number of (about) 70,000 dwt tankers have a beam exceeding 32.2 m, however these are few, and we have decided to neglect this fact. We have studied the developments in the requested size classes for tankers between 5,000 and 80,000 dwt in each class between 1990 and 2002 (start of the year). By doing this, we have a reasonable view on how each segment has developed in terms of number of ships and average size. For the entire fleet segment, the average size decreased 0.3% per year between 1990 and 2002.

However, this figure is flawed by the fact that tankers between 5,000 and 10,000 dwt are included. If we consider the fleet in the 10-80,000 dwt bracket, the development is quite different, and we observe a growth rate of 0.6% per year. Normally, the lower limit of deep-sea trading vessels is 10,000 dwt, and smaller vessels are usually employed in regional and cabotage trades for distribution of petroleum products. We estimate that at least 20% of the fleet between 5,000 and 10,000 dwt is employed in oil company logistical chains, and as such, these vessels never appear in the spot market.

There are, however, big differences between the size segments. These differences are a result of standardization of tankers and polarization of sizes.

Therefore, future developments or trends in average size, and polarization of sizes, are linked to the developments observed in the 10-80,000 dwt group, and not those developments observed in the 5-10,000 dwt group.

Looking back to the 1970s, the typical product tanker, serving the big tradelanes, was about 25-30,000 dwt (usually very close to 30,000 dwt since this was a limit connected with international rules and regulations). In the late 1970s, the Panamax tanker design was in high demand, and a substantial number of such ships were built. During the 1980s, the 40-45,000 dwt tanker became very popular. The main reason was that the additional cost for increasing the size was very little compared to the increased cargo capacity.

During the 1990s, the 45-47,000 dwt tanker was the preferred size, but in the period 2000-2002 we have observed a trend shift. As the 25-30,000 dwt tankers built in the 1970s become obsolete, they are replaced by vessels in the 35-37,000 dwt bracket. The main reason for this substitution is linked with requirements pertaining to hull design, namely double skin hulls. In order to maintain the cubic capacity on par with 1970s built tankers, the main dimensions of the tanker of this size-class increased. Thus, the cubic capacity was maintained whereas the deadweight capacity increased.

Another trend shift was in the Panamax segment. 135 of 294 Panamax tankers were built between 1980 and 1985. Between 1986 and 2001, only 89 ships were built. In other words, the average annual output in the former period was 22.5 vessels, whereas the average for the latter period was 5.5 vessels. In the 1990s it was basically assumed that the Panamax tanker was a ”dormant” market segment, and these vessels in reality traded the Caribbean market rather than being employed for the Panamax function that their name indicates.

This changed fairly quickly in 2001-2002 due to the fact that the global market for petroleum products changed considerably. Following an exceptional expansion of refining capacity in South Korea in 1995-97, in India in 1999-2001, and in Taiwan in 2001, trading patterns which prevailed for years were changed, and refineries, particularly those serving India, had to find new markets. What we see today is that the average sailing distance for petroleum products is increasing at a brisk pace, whereas volumes are growing slowly. This is the main reason behind the substantial interest in Panamax tankers during the past 18-24 months. The order book currently consists of 72 ships (25% of existing fleet) for delivery during the 4Q02-1Q05 period. We believe there will be a continuing interest in Panamax product tankers.

In our analysis of size-composition we have observed that some of the size segments are ”dying”. This applies to the 20-30,000 dwt segment, as well as the 50-60,000 dwt segment. For the size class 5-20,000 dwt we observe a status quo, but the 30-40,000 dwt, 40-50,000 dwt, and 70-80,000 dwt segments are increasing.

During the past 12 years, the average size of the 10-80,000 dwt tankers has increased 0.55% per year. Converting this growth figure to five year intervals, the average size will increase 2.8% every fifth year. But in the short term, we foresee a much stronger growth rate. Additionally, we also expect standardisation and polarisation. Thus, we will see an over-proportional development for tankers in the 30-40,000 dwt segment, 40-50,000 dwt segment, and 70-80,000 dwt segment. This polarisation will, therefore, result in an under-proportional development in the other size segments. We expect both the 20-30,000 dwt and 50-60,000 dwt segments to decline strongly, the 10-20,000 dwt segment will be more or less maintained, and the 60-70,000 dwt segment will decline slightly.

Fleet Composition in Light of an Expanded Canal.

Beyond 2010 the Canal will accommodate much larger vessels than today. Based on the given new dimensions, we observe that ”small” VLCCs are able to transit the Canal, albeit with a restriction on cargo intake. Furthermore, one must expect that a new ”Panamax” size will evolve. We have no trouble in seeing that such ‘new’ ship sizes will evolve within the dry bulk sector, but we are not so sure this will happen within the tanker sector. The main reasons behind our thinking are that tanker sizes in compliance with the restrictions of the expanded Canal already exist, and that there are other considerations than Canal restrictions governing the development of tanker sizes.

The market for seaborne transportation of crude oil is, to a very large extent, linked to the trading of crude oil. Over the years, this market has become standardized in terms of cargo sizes. For the Aframax tanker the cargo size is 80,000 mt (70,000 mt in the Caribbean). This is a universally accepted stem size, even though one may frequently experience somewhat larger cargoes in the day to day chartering market.

The same mechanism applies to the larger sizes: Suezmax cargoes are 1 million barrels (about 130,000 mt) and VLCC cargoes are 2 million barrels (about 270,000 mt).

Since the 1970s there has been a ”capacity creep” in the standard sizes of Suezmax and Aframax tankers. Aframax tankers have grown from 80,000 dwt to 110/115,000 dwt, and Suezmax tankers have grown from 120,000 dwt to 150/165,000 dwt. VLCCs, however, have remained, by and large, at 300,000 dwt. But, there has been considerable standardization of VLCCs. In the 1970s VLCCs ranged from 210,000 dwt and up to 550,000 dwt (ULCCs). During the 1990s and upto today, the lower and upper ends of the VLCC segment have become extinct. Almost without exception, all VLCCs contracted today are about 300,000 dwt.

Since almost all seaborne trade in crude oil excludes Canal transits, we expect that future size development of crude oil tankers will still be governed by other mechanisms than those of adhering to Canal restrictions (since new Canal dimensions will allow both Aframax and Suezmax tankers to transit).

In our findings, we have established that only crude oil and (possibly) methanol will move in sizes larger than the current Panamax size, and we expect shipments to polarize around Aframax and Suezmax sizes.

Normal Distribution of Ship Sizes Transiting the Panama Canal.

In order to distribute volumes for the different ship sizes in the forecast, we analysed the vessels which transited the Canal in fiscal 2000 and ran a normal dwt distribution for these vessels. The results of this analysis provide us with figures of the vessel sizes that shipped the various volumes through the Canal. By changing the average size for vessels in the forecast period, which is input to the normal distribution fomula, we change the standard distribution for vessel size, and together with polarization in fleet as described above, normal distribution will be a very crucial piece in the puzzle which must be solved in order to break forecasted volumes down by vessel size.

In order to calculate normal distribution we need to establish standard deviation and the average for the data range in question. Below is a definition on normal distribution:

Normal Distribution : Also called a *Gaussian distribution*, this is, in practice, one of the most important distributions, since experimental errors are often normally distributed to a good approximation and, further, the normal assumption simplifies many theorems and methods of data analysis (e.g. the method of least squares).

Normal distribution has the following properties:

$$\frac{1}{\sqrt{2\pi\sigma^2}} \quad e^{-(x-\mu)^2/2\sigma^2}$$

Where μ is the mean, σ is the standard deviation. π is the constant 3.14, and e is the base of natural logarithms and equals 2.71

Size Distrib.xls/Normdist

Adjusting Normal Distribution to Factual Distribution

By applying the normal distribution formula to the fleet, we observe that the results are to some extent mathematically flawed. They are flawed due to the fact that the concept of normal distribution does not take potential and, possibly, local minima and maxima into account. Thus, normal distribution may assign values to groups that in reality are very small, or nil. This phenomenon applies to this case in particular. For instance, using normal distribution will assign a substantial volume of trade to the size group 50-60,000 dwt. However, we know that this size segment contains very few vessels (67 as of January 1st 2002). Furthermore, we do not anticipate any growth in this segment. When shipowners contract newbuildings today, they go for either the 45-47,000 dwt type, or the 72-74,000 dwt type (Panamax). This kind of polarization is discussed above, and we do not foresee any change in this. Thus, our distribution must reflect the polarization around the 35-37,000 dwt, 45-47,000 dwt, and 72-74,000 dwt. For chemical carriers we have also had to take into account the fact that there are no chemical carriers above 50,000 dwt.

For the expanded Canal we have also had to take into consideration ship sizes above 80,000 dwt. For the larger ships, we also observe the same kind of polarization around certain sizes. The historical standard size of an Aframax tanker was about 80,000 dwt. The size of tankers normally called Aframax today has increased during the past 15 years. In the late 1980s to early 1990s, this ship was about 95,000 dwt. Thereafter she has grown to between 105,000 dwt and 115,000 dwt. These vessels come into

consideration only after 2010. At that time all the 80,000 dwt vessels are gone due to phase out (OPA' 90 and MARPOL), and the next size group will most probably be close to the end of their commercial lives. Although these ships will be only around 20 years in 2010/11, their design will probably make them unattractive, since they are constructed without a longitudinal bulkhead in the cargo tanks. This feature has become industry standard in recent years, and will be the preferred design if the charterer can choose. Thus, the size distribution for the expanded Canal will reflect this by holding the 80-90,000 dwt and 90-100,000 dwt groups empty (zero).

A similar argument can be provided for Suezmax tankers. This size has grown, and today virtually all newbuildings are above 150,000 dwt. In the late 1990s, a fairly large number of 140-150,000 dwt vessels were built, and we expect they could play a role in the 2010-2015 period. Thereafter, only the 150-200,000 dwt size group will count.

We have had to manually correct the normal distribution to reflect this aspect of polarization around certain shipsizes due to the fact that the map has to fit the terrain, and not the other way round.

Basic Ship Design Theory

Any ship is normally described by the following parameters:

- **Length : The length between the aftmost point of the ship to the foremost point (LOA, Length Overall) or, the length between the rudderstock and the point of the bow where the perpendicular crosses the design waterline with the ship immersed to the design draught (LBP, Length between Perpendiculars).**

- **Beam: The extreme transverse length measured at the midship section.**

- **Depth: The length (height) from the outer bottom shell to the weatherdeck, measured at the midship section and the centreline.**

- **Draught: The distance from the waterline to the outer bottom shell, or keel.**

- **Dwt: Deadweight tonnage, the cargo carrying capacity of a ship, including the weight of freshwater, lube oil, fuel oil, sundries, etc.**

- **GRT: The volume of a ship measured in accordance with the International Tonnage Convention of 1969.**

In general, all shipowners and shipyards want to optimise their ship with respect to maximising the cargo intake capacity and minimizing fuel oil consumption. Naturally, this optimisation has to take place within certain boundaries: boundaries set by physical limitations and boundaries set by classification societies, national and international rules and regulations. This results in fairly narrow limits as to how a ship's hull can be designed. For example, the fullness of the hull. The cargo-carrying capacity of a hull can be increased by increasing the fullness of the hull. Keeping main dimensions (LoA, B, D/T) constant, the capacity can be increased by making the aft-, and fore-bodies more voluminous (cube-shaped). However, this will reduce the hydrodynamic properties of the hull and, thus, increase the hull resistance through water resulting in increased fuel consumption. Likewise, the main dimensions may be changed in order to increase cargo-carrying capacity. But this has to take place within certain limits. If the hull becomes too long or too wide, again the hull resistance through water will become excessive and subsequently fuel oil consumption will become too high. Therefore, within size groups of 5-10,000 of any ship type, the relationship between the main characteristics of a ship are fairly constant.

It is these relationships that form the basis of our methodology for distributing Canal cargo flows into the requested size groups.

For the tanker fleet between 10 and 80,000 dwt, we have calculated several parameters for individual size segments. We have measured minimum values, maximum values, arithmetic average, and median. The minimum and maximum values were calculated in order to uncover ships that deviate substantially from the average. We observe that most of the ships deviating substantially from the average are old ships. This result was expected due to the fact that tanker design in particular has become more standardized during the past 20 years. This is true in the case of both design and size. The median was calculated in order to see whether the distribution of data was skewed. We have carefully considered the data and elected to base our distribution on the arithmetic average of the observations.

For some of the data, the distribution is quite homogenous. For instance, the relationship between the LoA and Beam of the ships in the 10-80,000 dwt bracket averages 6.55. There are 9 sizegroups and the individual group with the lowest L/B ratio (30-40,000 dwt) was only 3% lower than the overall average, and the highest L/B ratio (60-70,000 dwt) was 6% higher. We feel assured that this methodology has provided the best results possible.

For other ratios, e.g. DWT/L, the distribution of observations is much larger. However, the trend is linear and the average of deviations is less than 10% for all size groups, and the standard deviation is also less than 10% for all size groups. We have, therefore, elected to base the ratio on the arithmetic average. One could argue that the size distribution could follow the distribution of ratios, however one could end up with a discussion on whether a ship falls into one or the other of two adjacent categories based on studying centimetres instead of meters.

The results of our analyses are presented in the table below, and the ratios listed are those we will use in the distribution of transits by size.

DWT-group	L/B	DWT/L	GRT/DWT	B/T
10-15	6.45	94.58	0.62	2.44
15-20	6.65	114.97	0.66	2.65
20-25	6.92	137.10	0.63	2.49
25-30	6.71	165.37	0.62	2.47
30-40	6.34	196.19	0.61	2.62
40-50	5.80	244.10	0.60	2.66
50-60	6.48	262.64	0.57	2.63
60-70	6.97	285.45	0.59	2.57
70-80	6.67	318.41	0.56	2.68

Source: Fearnleys

Methodology for Analysing Transportation Costs

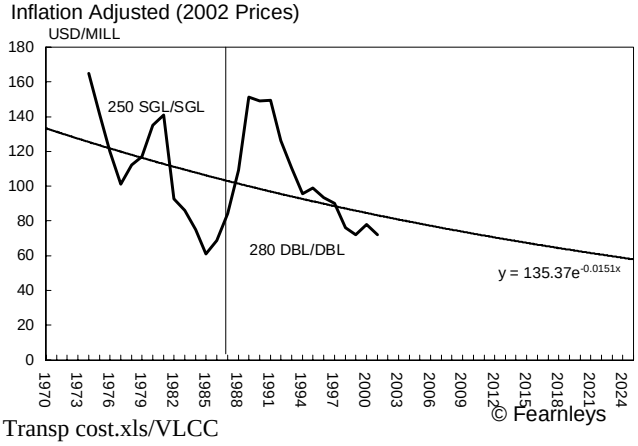
Charter Hire Calculation

It is essentially impossible to forecast vessel charter hire over a 25 year period by using historical time charter returns as a yardstick. Since vessel charter hire is closely related to the price of the vessel and to its running costs, we believe a far more reliable method is to use newbuilding prices and operating costs as a tool to evaluate charter hire. We use standard sizes of liquid bulk carriers as a reference in calculating future charter hire for the segments involved.

As we can see from the accompanying illustrations of standard ship sizes, newbuilding costs exhibit a downward trend. Newbuilding prices are mainly influenced by the supply/demand situation in the segment, which are, in turn, influenced by other factors such as economic cycles, labour costs, steel prices, etc. Events which had enormous impact on newbuilding prices were the two oil price shocks which occurred in 1973 and 1979. On both occasions, industrial output and seaborne trade suddenly declined, setting off a shipping depression. This is clearly illustrated in the graphs accompanying this section. We believe future newbuilding price trends can be calculated on the basis of historical developments; these can also be supported on the basis of the premise that over a 25 year period the newbuilding industry will become more efficient.

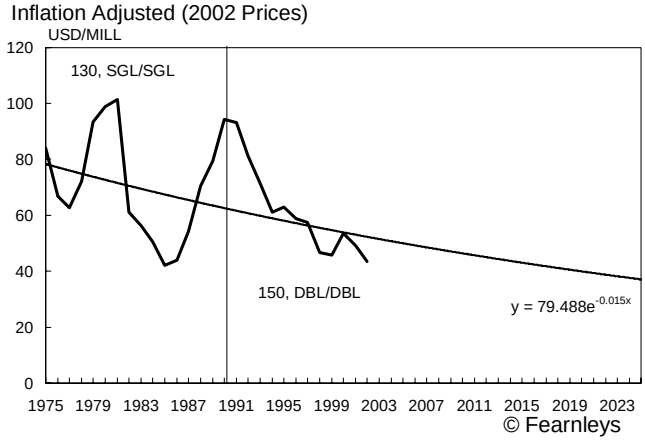
The basic methodology employed when calculating break-even income is the ship's price, operating costs, rate of return on the investments, interest rate, the rate of inflation, estimated lifetime and residual value. This approach has many pitfalls as many of these factors depend on unpredictable market cycles. Therefore, we have established historical newbuilding prices and adjusted them for inflation in order to create future price scenarios based on exponential trendlines.

VLCC NEWBUILDING PRICES WITH FORECAST
Inflation Adjusted (2002 Prices)



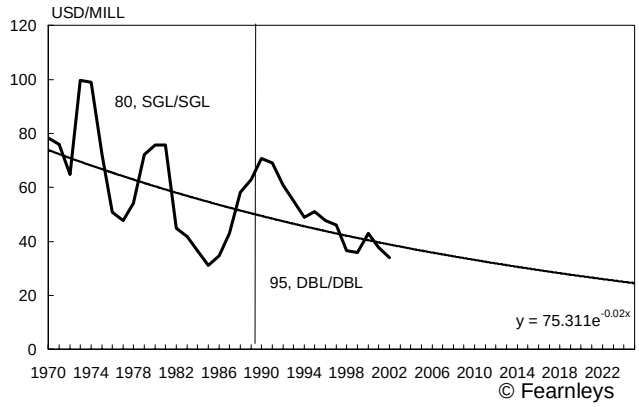
Transp cost.xls/VLCC

SUEZMAX NEWBUILDING PRICES WITH FORECAST
Inflation Adjusted (2002 Prices)



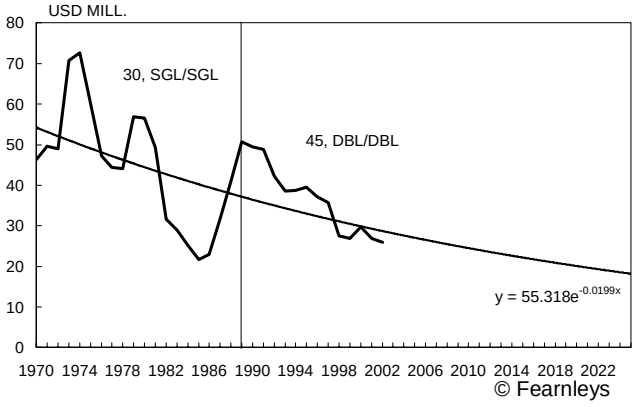
Transp cost.xls/SUEZMAX

AFRAMAX NEWBUILDING PRICES WITH FORECAST
Inflation Adjusted (2002 Prices)

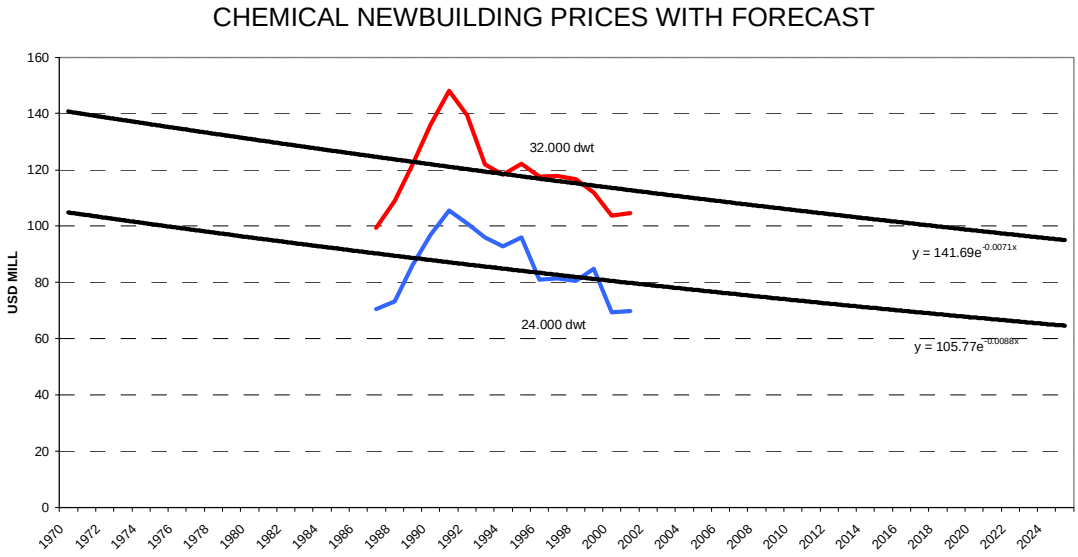


Transp cost.xls/AFRAMAX

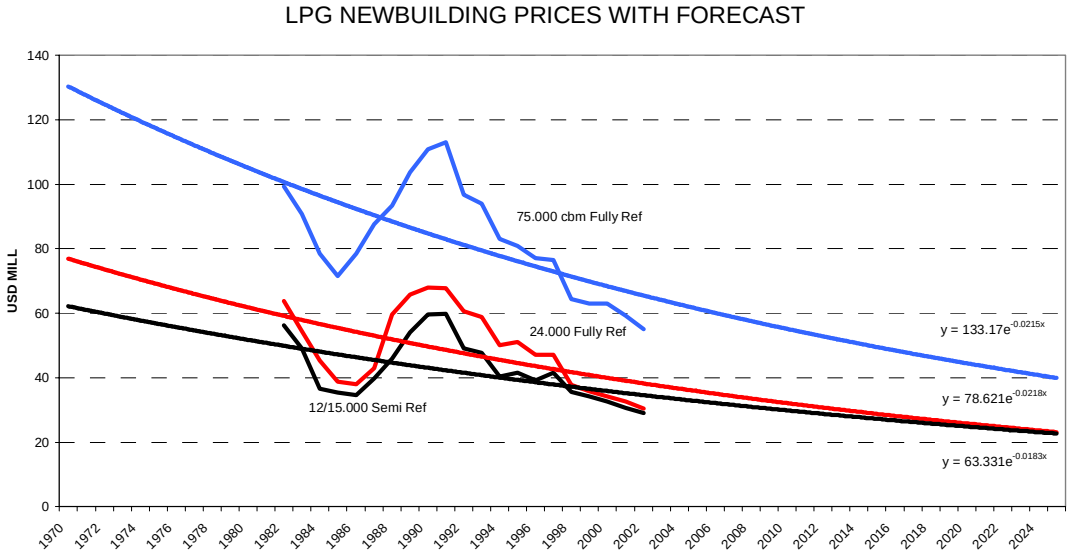
PRODUCT NEWBUILDING PRICES WITH FORECAST
INFLATION ADJUSTED (2002 PRICES)



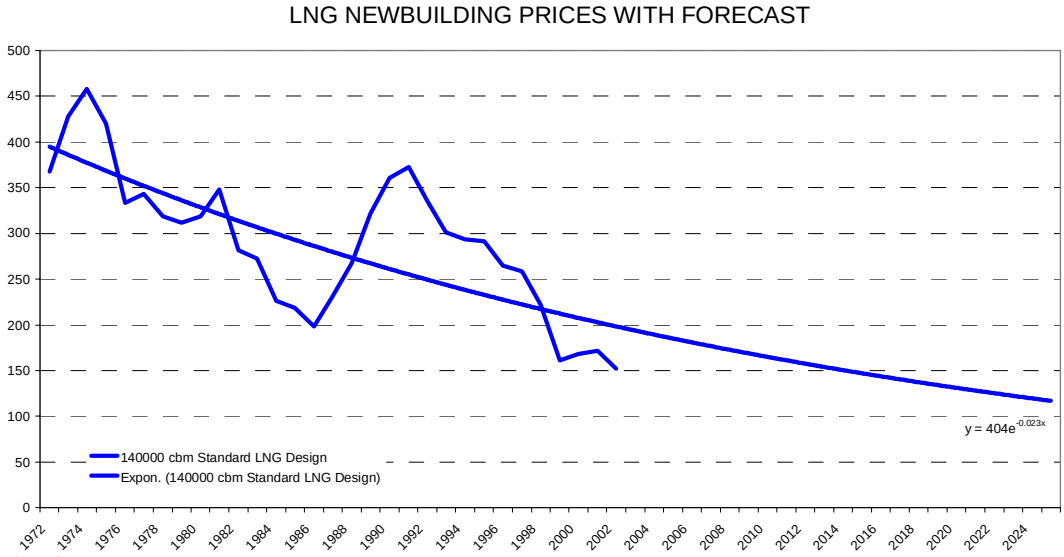
Transp cost.xls/PRODUCT



Transp cost.xls/CHEM



Transp cost.xls/LPG



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Charter Hire Forecast

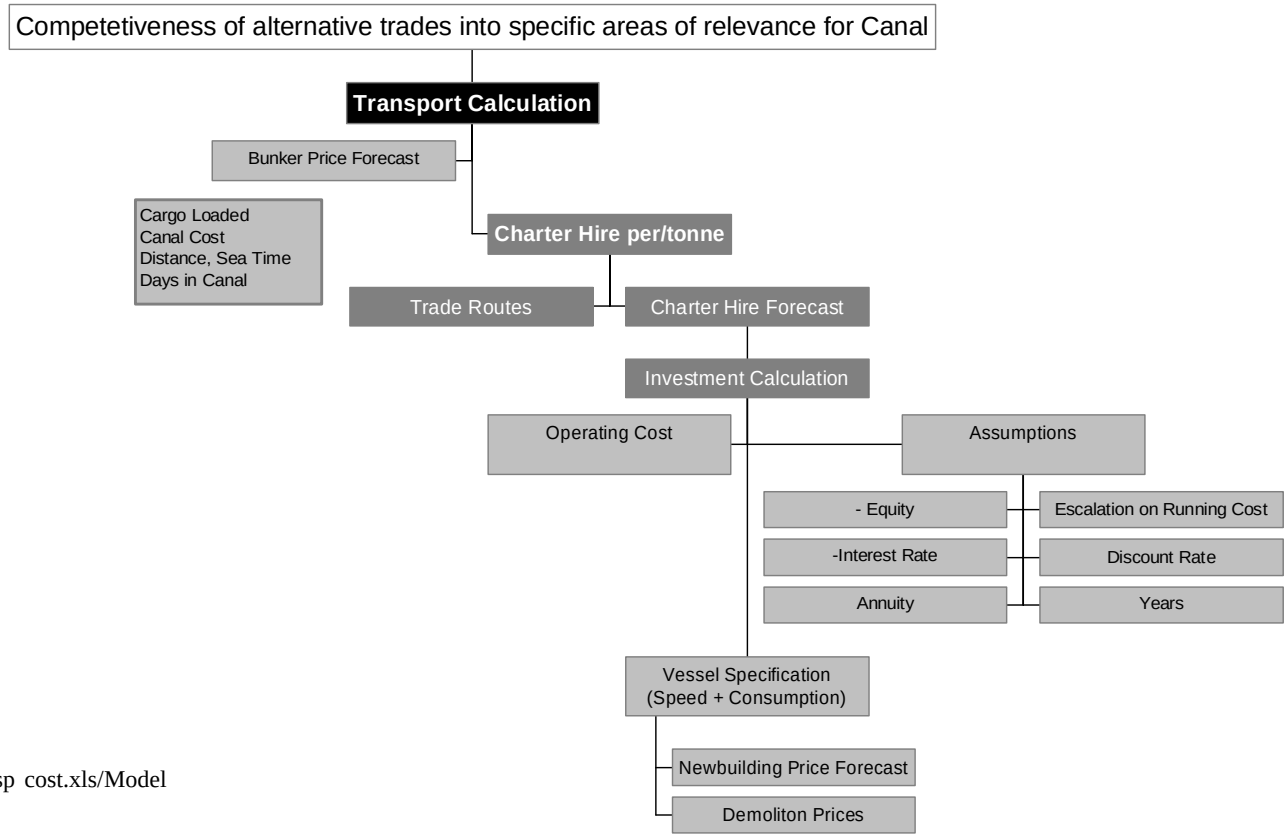
We use a simple model for calculating break-even rates for different newbuilding costs. The model is based on net present calculation, which is a common tool used to make investment decisions on assets like ships.

The lifetime of a vessel is normally about 25 years and the new IMO regulations also ensure that the trading time for double-hull vessels will be limited to a maximum of 25 years. The interest rate is set to 8% per annum; this is quite high compared to the current Libor, but today's rate level is likely to rise in the future. We also employ the standard assumption that the owner invests 20% in the ship (equity), and that the balloon or rest value of the ship is equal to the scrap value. Operating costs are the expenses connected with the day-to-day running of the vessel (excluding fuel, which is included in voyage costs), together with an allowance for day-to-day repairs and maintenance. In summary, the operating cost structure depends on the size and nationality of the crew, maintenance policy, insurance and the administration efficiency of the owner. For a VLCC we use about USD 5,800 per day as running costs with an escalation rate of 2% per annum during the lifetime of the vessel.

Our variable input in the model over the forecast period is based on future ship prices as established by using the exponential trendline. The model allows for calculation of break-even income in USD per day on the various ship prices forecasted. We determine the USD per day income (break even rate) which gives a NPV(net present value) equal to zero. The net present value is equal to the present value of the future cash flow minus the initial investment required. The discount rate used is set at 20% and is defined as the required rate of return; this is what investors expect in return for making an investment now and delaying payment until some time in the future.

The results from the calculations can be seen in a separate table. The break-even rate has a direct link to the cost of the ship, the cheaper the vessel is the lower the break-even rate. We believe this is the most reliable method to analyse and forecast future long-term charter hire trends, and the model should have a high grade of credibility. In the short term, however, there could always be considerable fluctuations around the long-term trend, depending on the usual and unpredictable volatility in the tanker market. It should be noted that other shipping markets are normally much less volatile.

With regard to historical prices for small chemical carriers for the purpose of calculating charter hire, we have observed that the extreme variations in the prices of these has made this task extremely difficult, if not impossible. The reason for these price variations is because of all of the different categories and features available on such



Transp cost.xls/Model

units. In categories prices vary widely between IMO I, II and III. Features such as stainless steel, various coatings special pumping equipment, etc. further complicate the picture in each of the three categories. We have, therefore, been compelled to concentrate on the 24,000 dwt and 32,000 dwt chemical vessels where data is more manageable. We refer you the graph on page 52 which illustrates the basis for our charter hire calculation. We believe that an investigation of these two size categories is sufficient to surmise whether the Canal route is a viable route for chemical tankers and to compare Canal routes with the competition.

The global fleet of chemical carriers consists of about 1,466 vessels from 350 dwt and upwards. The vessels below 5,000 dwt are not deep-sea vessels. Considering the fleet above 5,000 dwt, about 44% are 5-20,000 dwt, and about 41% are 20-40,000 dwt. Most of the ships in the former group are used in regional trades. E.g., in the Mediterranean, UKC trades, East Asia trades etc. However, some also trade transoceanically, but the bulk of relevant ships are found in the latter size segment. As can be seen from our forecasts, most of the trades are long haul between Asia and the US as well as Europe. In these trades larger ships are preferred. This is the reason why the sizes we have chosen are relevant to the task at hand.

Calculating Transportation Cost

The transportation cost calculations are based on a set of representative ships. The representative ship types were selected, after consultation with Fearnsale brokers, to provide a fair indication of the typical vessel being chartered on each route. Speed and consumption were defined when setting vessels specification. Transportation costs expressed in USD/tonne. Cargo loaded is predetermined and based on the capacities of the vessels. Cargo quantity is the same as intake. Port costs have not been included in the calculations to compare voyage routes through the Canal with routes not using the Canal, as they will be the same in both cases. When a voyage involves passage through a canal the costs are added. Canal costs for the Panama Canal are based on today's tariffs.

Ship Type	Builder	Built	TYPE	DWT in '000	GRT in '000	PCUMS in '000	LDT	Laden			Ballast			Pumping		Port Idle	
								Speed	HVF at Sea	MD at Sea	Speed	HVF at Sea	MD at Sea	HVF	MDO	HVF	MDO
VLCC	HYUNDAI	1999	M/T	300	157	150	35	15.0	85	-	15.0	75	-	200	-	4	-
SUEZMAX	HYUNDAI	1999	M/T	150	81	75	23	15.0	67	-	15.0	58	-	100	-	3	-
AFRAMAX	HYUNDAI	1999	M/T	110	58	55	17	15.0	48	-	15.0	45	-	70	-	3	-
PANAMAX	SAMSUNG	2003	M/T	72	40	36	12	15.0	38	-	15.0	35	-	20	10	2	-
VLGC			LPG	49.7	49.5	24.85	20	16.0	57	-	16.0	56	-	10	-	5	-
LGC			LPG	40	40	20	15	15.8	54	-	16.0	53	-	10	-	7.5	-
CHEM 32' dwt			M/T	37	23	18.5	7.5	15.0	37	-	15.0	35	-	13	3	2	-
LNG 100' cbm			LNG	49		66.2	35	18.5	140	-	18.5	140	-	45	-	10	-
LNG 145' cbm			LNG	80		92.5	43	19.0	180	-	19.0	180	-	50	-	10	-

Transp cost.xls/Vessel Spec

Source: Fearnleys

Bunker Forecast

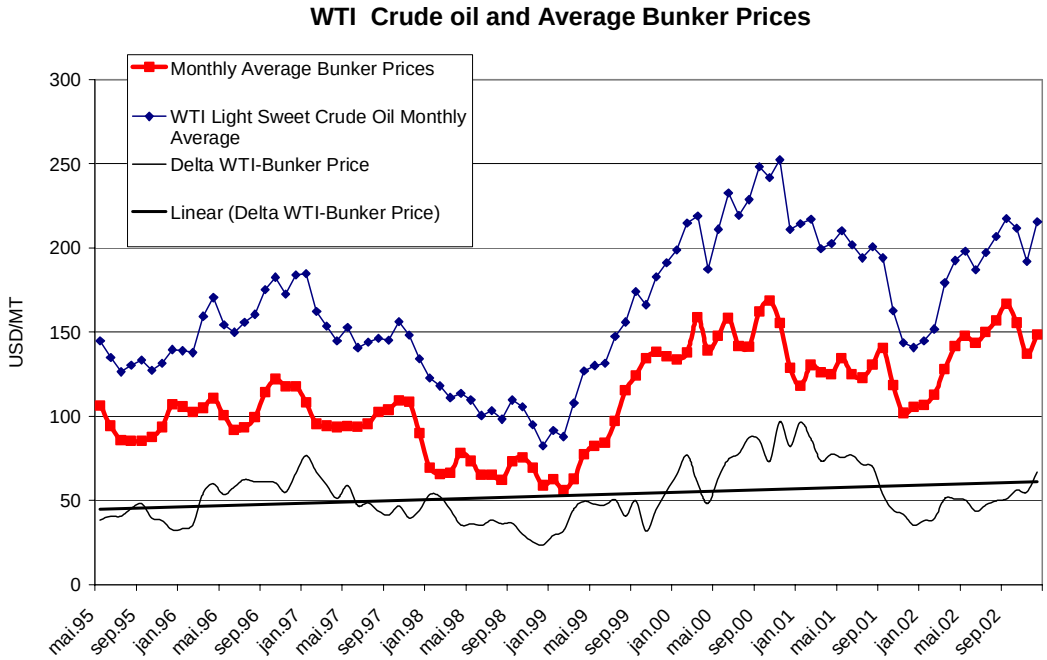
Fearnleys has established a bunker price forecast for the period covered by this study. The forecast is used to calculate vessel operating costs and hence, the value of using the Canal/value of routes. This forecast will, however, also be used in the Bunker study as a reference and to calculate future turnover of this business.

The bunker price forecast is based for the first few years on crude oil future prices at NYMEX, since this gives the best current picture of what all market actors believe will be the future price of crude oil.

Based on the historical relationship between crude oil and fuel oil prices (on average, bunker fuel is some 53 usd/ton cheaper than WTI crude oil and the trend is that fuel oil prices tend downwards compared to WTI (the delta increases)), we arrive at a bunker price forecast for the years to 2005. After that, the liquidity in the crude oil forward market drops too much for it to be a reliable source. The future market does, however, show a falling trend and we have extended this trend until 2007, when we foresee a USD 18 per barrel crude oil market/ USD 100 per ton fuel oil.

This forecast price is also based on our knowledge of oil companies' long term oil price forecasts, and hence, also bunker price forecasts. We do several studies for oil majors and are therefore in the priviledged position to get such information from them.

However, we have fine-tuned and adjusted the ACP forecast to allow for the effects on oil/bunker prices the given economic forecast will have (we have increased bunker prices due to the robust economic growth forecast given, and hence increased trade and demand for fuel oil



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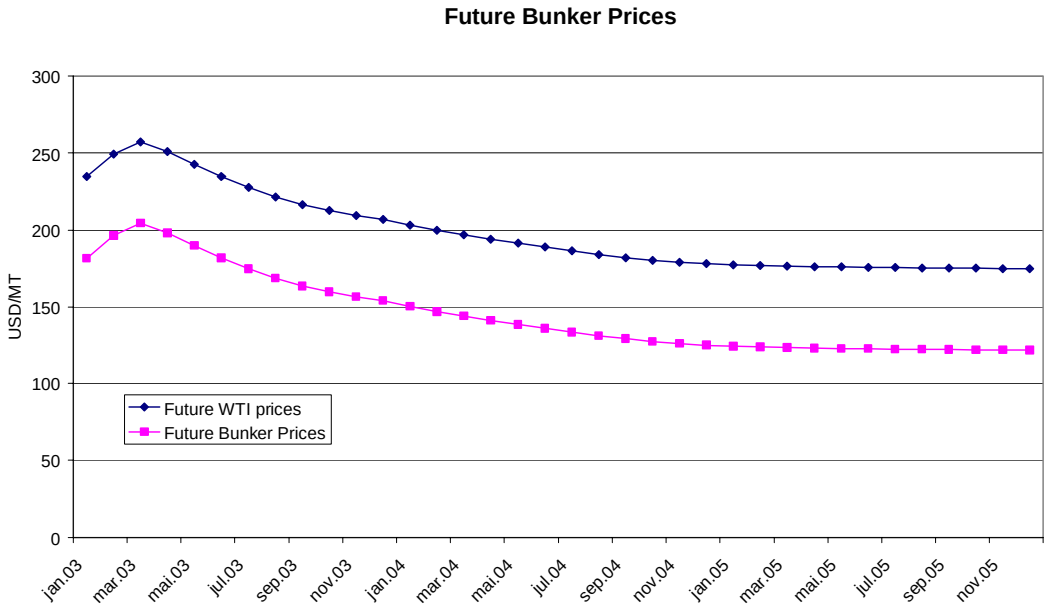


Transp cost.xls/Bunker Prices

Yearly Bunker Price Forecast 2003-2025

Year	2003	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
IFO-380	177	136	123	109	100	103	105	108	110	113	116	119	122	125	128	131	134	138	141	145	148	152	156

Figures in USD/ mt

in the forecasted period; oil company GDP forecast figures seem to be more conservative on economic development).

After 2007, we have increased bunker oil prices with a factor of 2.5% to reflect inflation. This is also in line with oil majors' bunker price forecasts. Below are the price forecasts in real terms.

Forecast Methodology for Crude Oil and Oil Products

Future world oil trade volumes are estimated on the basis of several factors, such as economic development, energy demand and oil demand in particular. This is viewed against local oil reserves and production capacity as well as estimated development in refinery capacity.

Experience has shown decreasing energy and oil intensities in "saturated", advanced industrial countries, whereas industrializing countries in a take-off stage could, in some cases, for a while, show over proportionality in energy consumption.

Future oil demand will depend both on changes in the energy mix (oil-gas-coal-nuclear-hydropower and other types of renewable energy) and conservation efforts (better energy efficiency) and potential new technology (especially over a forecast period of 25 years). Environmental and geopolitical concern will both influence the energy mix and future trading patterns for crude oil and oil products.

We have collected and compared different energy and oil forecasts by main countries and regions of the world for periods of 20 years (EIA) and 30 years (IEA) as well as more narrow forecasts for individual countries and regions for shorter periods.

Fearnley Consultants' own oil demand forecasts are based on a wide range of input data. In general, our estimates for future developments on the demand side are somewhat lower than most other forecasts. Past forecasts for energy and oil demand are often way above what actually turned out to be the case decades later. (See Historical Part of Study).

We have estimated areawise export and import volumes by 5-year intervals and not put efforts in preparing global trade matrices for future years. Instead, we have, as agreed, concentrated on "the Canal's universe" and made volume forecasts for trade routes both ways through the Canal. Subsequently, volume figures for individual years are interpolated on a linear basis. Adjustments from base scenario are then made for best case/worst case and expanded Canal.

In the forecasting, voyage calculations for different vessel sizes under existing and expanded Canal is a vital element. In this context, we have proposed to use assumed vessel cost development and not volatile, unknown voyage rates, both with regard to volatility and timing of fluctuations. We have also had to survey proposed new oil production capacities, pipelines and new export terminals, such as Russian Black Sea, Baltic, Arctic and Pacific. It goes without saying that the scenarios have a rather high degree of uncertainty of an economic, technical and political nature. Nevertheless, in our view they should be suitable and useful for planning purposes.

Once total volumes can be summed up for Westbound and Eastbound, these are spread on size groups based on existing trade structures and certain adjustments for future expansion and economy of scale evaluations.

Finally, these trade-by-size volumes provide the platform for calculation of value of routes when multiplying with the chosen tariffs for vessel type and size.

Methodology for Orimulsion Forecasts

Our methodology in making our Orimulsion forecasts involved two basic elements:

- **Consultations with Bitúmenes del Orinoco, S.A. (Bitor), which is the sole and exclusive producer of Orimulsion.**
- **A S.W.O.T. analysis of the product which, in our opinion, will provide a necessary control case when examining Bitor's ambitions and assumptions.**

In creating our forecasts we have only considered those volumes destined for Asia because they are the only volumes which Bitor produces which have a potential to transit the Panama Canal. As we have mentioned in our description of the product in the historical section of the study, the chances of Orimulsion gaining a foothold in the United States appear microscopic because of environmental considerations, and thus, we do not expect the product to make its way through the Canal to California, for example. Bitor estimated in 2000 that the product had a growth potential of approximately 2 million m/t per year for India and Southeast Asia and 5.2 million m/t per year for China, but this potential is not borne out by the figures of actual volumes shipped or which have been contracted for future shipment. Our most probable case volumes, therefore, are more conservative than what Bitor has seen as a potential for the product and are based on what have been proven to be the product's limitations from a marketing perspective.

Fearnleys has been in close contact with Bitor S.A. since the company commenced commercial operations in 1988. During that time, representatives from Fearnleys have made two to three trips to Venezuela per year to meet with and consult with representatives of Bitor. In addition, Fearnleys personnel have, since 1988, gathered information concerning Orimulsion from further close relationships with Bitor personnel at branch offices in London and Tokyo, as well as receivers of the cargo. These contacts have enabled Fearnleys to follow the progress of the product, both successes and failures, during the course of its presence in the international marketplace. The product has been improved considerably from an environmental standpoint during the course of the years, both in the composition of the product itself and in terms of the equipment which Bitor now require all power plants to install in order to burn it in the most environmentally friendly manner. Nevertheless, the product still struggles with a less than perfect environmental reputation. The fact that it suffered a devastating defeat in the United States and that its British subsidiary (BP Bitor) was forced to discontinue the use of the product because of environmental concerns in the United Kingdom, have made prospective buyers sceptical. We also believe that Orimulsion has a formidable foe in natural gas, which is making far greater gains in the power generation market than Orimulsion. Thus, our forecasts are based on the premise of market saturation because we, unlike Bitor, do not believe that the product has unlimited possibilities. Bitor, of necessity, must be optimistic because Venezuela has the world's largest bitumen reserves, and they must do everything they can to market these in the most positive way.

S.W.O.T. Analysis

Our S.W.O.T. analysis contains the following points:

Strengths

- **Price pegged to the price of coal**
- **Product is a liquid whereas coal is a solid which make coal's handling costs more expensive.**
- **Product does not require particularly sophisticated handling in shipping**

Weaknesses

- **The product is less environmentally friendly than natural gas which is increasingly used in new power plants.**
- **The product is only produced in Venezuela, thus exposing it to potentially high shipping costs in distant markets, whereas competing products are often produced closer to end users.**
- **The product has had some marketing failures in important markets due to environmental concerns**
- **Requires installation of sophisticated and expensive power plant equipment, such as filters, etc.**

Opportunities

- **Periods of high dry cargo freight market/low tanker market, making the product's**

transportation cost favourable compared to coal

Threats

- **Natural gas**
- **Coal (in the case of a high tanker freight market)**
- **Environmental regulations**
- **Accidents which can damage the product's environmental reputation**
- **Further political unrest in Venezuela which could halt extraction for prolonged periods, thus hurting the product's reputation for reliability and making future extraction more difficult, and in some cases impossible due to the extremely heavy and viscous nature of the material.**

Methodology and Analytical Tools for Chemicals

Historically, demand and consumption of chemicals (organic and inorganic chemicals combined) have followed general growth trends in GDP. Naturally, regional differences have occurred, but by and large development in GDP gives a good indication of trade. It must be stressed, however, that this relationship relates to the sum of all traded chemicals and there could be relatively large deviations for individual chemicals. A very good example is methanol. Seaborne trade grew by 11% p.a. between 1996 and 2000, whereas OECD GDP growth was only 3.3% p.a. on average. On the other hand, trade in several other chemicals declined.

Since methanol could possibly be impacted strongly by technical, environmental, and political factors, this chemical is treated separately.

In order to take into consideration regional differences, and the importance of Latin and North America for the Panama Canal, we have used GDP growth forecasts for this region.

Seaborne trade as a share of global trade has followed a similar development pattern, and we have attributed the growth rates to seaborne trade as well.

We have carefully studied more than 20 different organic and inorganic compounds constituting about 38% of total seaborne trade. We have done this in order to examine the individual growth rates for each chemical.

Bottom Up – Top Down

Each chemical is treated individually in order to establish its long-term growth rates. Growth rates are derived from industry sources as well as being considered in relation to GDP growth. Thus, we have established growth rates for each individual chemical.

Based on 2000 volumes we have thereafter calculated volume changes according to the individual growth rates. These volumes are aggregated, and from these figures we have calculated the growth rates for the aggregated volumes. By doing this we have established growth rates for about 38% of the total trade in chemicals.

From this base, of about 38% of total seaborne trade, we have established a growth scenario for all these chemicals combined. We believe this is a sufficient sample of the total chemicals trade in order to apply these growth rates to the total chemicals trade.

Capacity Expansion

The petrochemical industry is set for a substantial expansion in the period towards 2008. The majority of new projects are based in Asia and, more precisely, in East Asia (China, South Korea, Japan), SE Asia (Singapore, Malaysia, Thailand, Indonesia) as well as in the Middle East. A substantial capacity increase in ethylene production is scheduled for start-up between 2003 and 2008. Ethylene itself will not impact the trade in chemicals since this product is a gas and transported at sea by gas carriers in a liquefied state. However, ethylene (as well as propylene) is a major feedstock for several chemicals and downstream involvement in Asia will most likely decrease this region's dependency on imports from the United States (as well as other areas). About 60% of U.S. petrochemical capacity is in the U.S. Gulf states, and as such they form the backbone of chemical carrier transits in the Panama Canal.

This capacity expansion will have a detrimental impact on exports from the U.S. Gulf states to Asia, and we expect to see an increase of flow from Asia to the U.S. East Coast following the expansion of capacity.

The decline in USEC exports to Asia is set to 2% p.a. and the increase from Asia to USEC is set at the same rate.

Panama Canal Trade

In FY 2000, about 12% of global seaborne trade in chemicals transited the Panama Canal. Historically, this share has varied somewhat, but not significantly. Due to the fact that the United States petrochemical industry will face strong competition we expect this share to decline. We have however, gradually reduced this share from the current 12% to 9% in 2025. 9% is the historical low observed since 1986. Based on USEC-Asia trade alone, this share could have been even lower, but we expect an increase in trade between North America and Central/ Latin America making up for part of the loss in exports to Asia. This share may be changed in the model.

The total increase in seaborne chemical trade has been established according to the above, but we anticipate that a substantial share of this growth will be found in intra-Asian trades. This is very well in line with the expectations of the major chemical carrier operators. We have set this share to 60% of the growth in seaborne volumes. This is in line with Asia's share of the growth in chemical production capacity towards 2008. Thus, we assume a correlation of 0.6 between trade and production. This share of trade may be changed in the model

Panama Canal – Direction of Trade

Historically, in excess of 80% of the chemical flow has been from the Atlantic to the Pacific. However, this changed in 1998 due to the devaluation of several Asian currencies. After 1998, the above share declined to about 73%. We have, therefore, as a starting point, used a 73%/ 27% share of chemical flows for the Atlantic-Pacific flow and Pacific-Atlantic flow. These shares, from reasons described above, are decreased/increased by 2% p.a. in the forecast period. These growth/decline rates may be changed in the model.

Panama Canal Trade Routes

The individual trade routes may be varied individually. According to current route structure, we do not foresee any notable changes in volumes. The current geographical distribution of chemical production capacity is not likely to change materially, and the new capacity coming on stream falls within the established areas of production and consumption. A significant problem with chemicals is that the trade, by nature, is very complex. As described elsewhere in this section, one individual parcel tanker may have a multitude of cargoes onboard, cargoes that may have been loaded in several countries, as well as several ports within one country, and discharged in several countries. We have, therefore, chosen to break down the trade into regions. On an individual country basis, one does not take into consideration distribution centers (tank-farms) and that the final port of destination for the chemicals might be another country.

We have assigned growth rates to the individual routes that contain noticeable volumes. That is, trade routes with small annual volumes are discarded. Growth rates may be changed individually in the model.

Expanded Canal

We do not expect any impact on chemical trades through the Canal following a Canal expansion. The main reason is the fact that the current fleet of large chemical carriers are much smaller than the Panamax as it exists today. The largest chemical carriers operated by both Stolt Nielsen and Odfjell are less than 47,000 dwt for the "easy chemicals" types, and generally less than 40,000 dwt for the sophisticated parcel tankers. The main reason is found in the cost structure for this vessel type and the lot-sizes for chemicals. A typical parcel tanker would, at the time of writing, have cost about USD 55-60 million. A similar size product tanker would cost about USD 24 million. In other words, less than half.

The combination of extremely costly assets, complexity of trade, and degree of horizontal integration into value-added service by the majors, make larger ships unattractive. They would be extremely costly and virtually impossible to load to full capacity with a sensible trading route and port rotation.

Methodology & Analytical tools for Forecasting Methanol Volumes

We have chosen to study the future seaborne methanol market separately from the other chemicals as well as vegoil. The main reason for this is associated with technical factors, i.e. factors that will impact the results dramatically, and would otherwise be somewhat lost if methanol was treated alongside other chemicals. This impacts only the best case scenario. We are at the threshold of the successful implementation of the fuel cell vehicle. However, there is still uncertainty as to whether methanol will be the preferred fuel, or not. But it seems most likely that methanol will be utilized. First and foremost due to availability, ease of handling, and, even though it is toxic, it seems that authorities find it acceptable as a fuel.

With respect to methanol trade through the Panama Canal, the United States' demand for methanol will be of pivotal importance. Developments in this country will therefore

be the main issue in this section.

Methanol currently has two uses. It is used as feedstock for the making of several chemical products and as a fuel. The general development in demand for methanol for chemicals follows the general economic trend for other chemicals. For fuel purposes, demand follows technical, environmental, and political trends and developments. It is, therefore, quite difficult to make a mathematical model for this case. We have, to some extent, based ourselves on forecasts for fuel cell vehicle development and their average consumption of methanol. Furthermore, input to the global volumes are derived from Statoil, U.S. Department of Energy as well as the Methanol Institute in the U.S.A. The findings of these three bodies are fairly well-aligned and give us valuable input on future development.

As mentioned above, there are alternatives to methanol, and seen in context with the United States, in general, seeking to minimize dependency on foreign supply of energy, one could argue that methanol would not be a preferred fuel. However, there are several factors impacting American policies in this respect. One is of political nature. Crude oil resources are, to a very large extent, located in countries that have proved throughout history to be quite unstable politically. We are, of course, pointing to the countries in the Middle East, but there are also other countries in South America and West Africa that have fragile regimes, and, as late as in 2002, these have proven to be unstable as evidenced by oil production and export disruptions. At the time of writing, the situation in Nigeria is worsening and we have already seen a reduction of the magnitude of 250,000 b/d there.

The current war in Iraq also illustrates an area of instability, and if we go back in history, we can mention the nationalisation of oil production in Saudi Arabia (first oil price shock in 1973), the revolution in Iran (the second oil price shock in 1979).

We, therefore, consider the policy of the United States' government to have more of a political, rather than a commercial nature.

Foreign dependency on methanol does not contain this "political instability element". Methanol is, or can be made, available from a number of sources within countries having a solid and reliable relationship to the United States. For instance, Canada, the Caribbean, Norway, and Australia. Some of the countries that are, or could be suppliers, are a bit more unstable politically, but using the example of the Middle East, we are considering, for instance, the UAE, which has been quite stable and which is definitely oriented towards the Western democracies. Furthermore, Russia is emerging as a friend to the United States and is going to great lengths in order to get a foothold in this vast market. Russia is also the country in the world which is richest in gas.

Thus, Methanol is much more "friendly" than crude oil.

The commercial aspect is also of significance. Among the alternatives for hydrogen sources, methanol proves to the most cost-efficient compared to gasoline. Future methanol price projections overlap those of gasoline, whereas the high-volume ethanol production and distribution would result in a hydrogen cost of around USD 15-17/GJ (without taxes) – twice as much as gasoline.

Future Capacity

In the building up our forecast we have taken into consideration future new methanol plants, i.e. not only those already under construction, but also planned new capacity. Furthermore, most natural gas rich countries will, upon building LNG plants, try to diversify into natural gas by-products. This usually takes the form of either methanol production and /or gas-to-liquids production. During the forecast period we have assumed one, large-scale (1 mmt+ capacity) methanol plant on the West Coast of South America (Peru).

In addition, there is surplus capacity in the methanol market today. Trinidad&Tobago and Venezuela have, combined, about 2 mmt excess capacity. Thus, a substantial increase in supply should be expected in the short term.

In the United States there is currently a methanol capacity of about 4.0 mmt p.a. we have chosen to maintain this level fixed throughout the period.

U.S. Demand Forecast

The demand forecast for the United States is divided into two parts: one for demand increases for the production of chemicals and other uses (some fuel uses) and the other is demand increases which follow methanol demand for use in fuel cells. The former follows a general GDP-trend, possibly a little above our GDP scenario for the reference case, and somewhat lower in the worst case. We have, nevertheless, chosen to use figures provided by the methanol industry.

For fuel cells no figures for the U.S.A. alone are available, but we have made some assumptions. First of all, it is in the U.S. that we find a strong alternative fuel initiative, and maybe first and foremost in California. California has traditionally been call a "bellweather state" meaning that trends starting here, sooner or later command nationwide attention, interest, and popularity. We therefore believe that the growth in fuel cell vehicles will take place in California/USWC first, thereafter in the U.S.A. in general prior to catching on in other parts of the world. The number of fuel cell vehicles globally is estimated to 2 million in 2010 growing to 53 million in 2025. We have assigned a share of these numbers to the U.S.A. according to a schedule enclosed in the appendix. Furthermore, in the early years of the fuel cell vehicle, almost all growth will occur in California/USWC.

Seaborne Trade

We have established world seaborne trade in 2000 along main routes. And evidently, very small volumes transit the Canal. Following our scenario for the fuel cell vehicle, we foresee a substantial increase in trade from the Caribbean to the USWC. All future demand for methanol has to be met by increased imports. We have calculated freight rates for alternative routes and considering the differential between areas with excess supply, we expect a substantial increase through the Panama Canal. However, not all increased demand will be met by imports from the Atlantic. We have assumed that 50% of future demand growth in California/USWC will be met by sources where transportation will exclude the Panama Canal. We have also taken into consideration increased trading of methanol and potential new producing areas like, e.g., Peru. It is, therefore, likely that we can see future flows in the opposite direction. That is, from the Pacific to the Atlantic. This could be linked to quality issues, market penetration, combination trades offering substantial freight incentives etc. We have therefore included volumes for such trade in the best case scenario.

For the low- and reference cases we do not anticipate any increases in Panama Canal transits due to low demand growth and ample supply from sources which exclude Canal transits. We have, however, notionally increased 2000-volumes by the growth rates for methanol for chemicals.

Methodology & Analytical tools for Forecasting LNG and LPG

Due to the distinct nature of the trades in LNG and LPG, we used a more fundamental analytical approach for LNG, analysing existing and potential new LNG projects based on current and forecasted export/import capacities, whereas for LPG we used a predictive method in combination with fundamental analysis to establish future trade.

LNG

The LNG industry is characterized by long term planning. Today, LNG projects are being planned for start –up in the period 2008-2010. There is also a limited number of LNG plants (some 11 exporting countries) and receiving terminals in the world, limiting potential new trade in the near future.

In our analysis, we have, therefore, used descriptive methods, supported by fundamental analysis of supply and demand for natural gas, to establish the basis for our forecasts. In addition, we have spend a lot of time talking to companies active in this industry, particularly those with projects which can have relevance for the Panama Canal. We have also attended presentations of papers on new LNG supplies, studied EIA and CERA forecasts on future LNG demand for the U.S.A., discussed Panama Canal LNG ship designs with shipyards and shipowners, etc.

There is currently only 2 projects in the Americas, one in Alaska and one in Trinidad. Looking at gas reserves in the region, we have established a few potential new players, Venezuela, Peru and Bolivia. In addition, Brazil, Uruguay and Argentina, may have LNG project in the future, pending new natural gas discoveries. For Argentina and Uruguay we do not foresee any use of the Panama Canal for exports of these volumes as internal South America and U.S. Gulf/ East Coast would be typical markets for such volumes. Brazil will be producing LNG mainly for domestic consumption. Any excess production would most likely be sold to U.S. Gulf/East Coast.

After establishing potential future LNG suppliers, we have used different scenarios and analysis methods to establish potential trades and receivers of the new supplies.

Again, this work was primarily based on fundamental analysis of cost of transportation, receiver's ability to receive and pay for LNG, receivers preferred source of supply and diversification of supply, etc. Three main assumptions were used to establish future trade pattern:

1. There will be no LNG exports without any importers and vice versa. We, therefore, started with location of import terminals based on future expected regional natural gas demand. Then analysed existing, new and potential new LNG export plants based on natural gas reserves by country. Then established trade based on what would be the lowest cost of sourcing gas.

2. Establish trade pattern's that also would give the best net back results for the producers, while also paying attention to diversification of supplies, different project start-up dates, contract length, etc.

3. Assumptions on start-up dates and expansion dates for each project

Locations of terminals in point 1.) are based on current plans and future potential terminals in main consuming areas. Assumptions under point 3.) are based on current plans for start-up and our own assumptions on project expansions and potential new LNG export plants. There is significant risk involved in our forecasted LNG export project start up dates. Scenario analyses were used to establish the different cases for the existing and the expanded Canal.

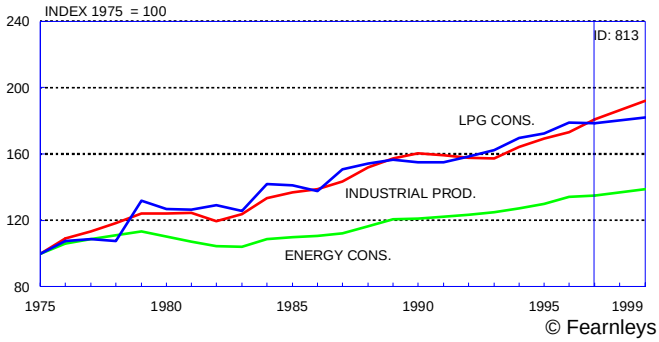
LPG

Liquefied Petroleum Gases in this study also include Ammonia and Petrochemical gases shipped in LPG vessels. Most of the LPG trade is highly dependent on traders and arbitrage opportunities. Local prices may vary significantly over a short period of time, both for exports and imports, creating usual and unusual trades with LPG vessels. This creates challenges for any forecast of LPG trade.

We have, however, a good basis for establishing current and future LPG export capacities, as LPG is mainly a by-product of oil and natural gas production. Ammonia and pet.chem exports are also closely linked to gas exporting countries.

LPG imports are more difficult to predict. However, LPG consumption is in most OECD countries closely linked to industrial production (industrial production is a fixed value measure for production of different commodity groups). The graph below shows this relationship for OECD countries.

OECD. INDUSTRY-ENERGY-LPG



LPG tablest.xls/Figures LPG-CONS

There is a link between industrial production and GDP growth, but GDP also includes value of services and financial transaction, etc. In raw material based economies, industrial production will be closely linked to GDP, but in service-based economies (Panama for instance), there is a limited link between industrial production and GDP growth. We have therefore looked at the different countries and the GDP growth figures given by ACP to establish a basis for the forecasted volumes.

Fearnleys have during the last 15 years tracked LPG shipments above a certain size. Our data on historical tracking of vessels create a good understanding of the nature of this business. We used a descriptive and predictive methodology based on collecting and systematizing information, establishing and creating new time series, historical trade developments, correlations, export/import capacities, new trends, etc. to establish our forecasts.

Ammonia trade forecasts are, however, more based on fundamentals than LPG trade, since ammonia has a more focused end use (for production of fertilizes) and hence, it becomes more obvious who the main end users will be.

We have constantly evaluated our findings and analysed the validity of our results. Scenario analyses were used to establish the different cases for the existing and the expanded Canal.

Analytical Tools

To systemize and present the LNG and LPG markets with forecasts, spreadsheets in excel with its functions and statistical capabilities, have been used as the main analytical tool. In addition, by vessel tracking and data from this work, we have created a solid historical basis for global trade and trends in the LPG market.

With regards to LNG, we have analysed, and made spreadsheets for every existing and potential new LNG project. We have then established most likely export patterns for each project, over the analysed timeframe, taking export and import capacities into consideration for each trade. Panama Canal trade forecasts are based on a summary of the different projects potential canal trades.

For LPG trades, most vessels are much smaller than the Panama Canal's physical capacity. An expanded canal may, therefore, not necessarily attract new trades or increase/give incentives to increase today's trade.

Crude Oil and Oil Products

Scenarios

As we define best, worst, and most probable case scenarios, it is important to concentrate on the role of the liquid bulk market in the world economy and how this role would develop in each of the scenarios. A basic assumption in the creation of all of the scenarios will be that the most important aspect of the liquid bulk sector for the world economy, and also for the Panama Canal, is the energy sector, i.e. oil and gas. The fate of these commodities as defined by each scenario will be of great significance to the Panama Canal since they constitute the lion's share of the liquid bulk market. Another important factor to be taken into consideration in the creation of the scenarios will be to evaluate to what extent the current logistics of the energy market may change during the forecast period. Changes in logistics could have a positive or a negative impact on the role of the Panama Canal.

Best Case

One of the most important elements of the best case scenario is the continued use of fossil fuels at levels equal to or higher than those seen today. We have recently seen an increasingly acrimonious debate about the deleterious effects of fossil fuel consumption on the environment. It may be possible that these effects could be mitigated by the development of technologies which make the consumption of fossil fuels more environmentally friendly by eliminating contaminants which harm the atmosphere or by trapping them prior to their release into the atmosphere. Such technology would eliminate the need of changing the enormous infrastructure geared to the burning of fossil fuels which is already in place.

Given the first element above, an additional element of the best case scenario would be logistical developments in the energy market which could favor more use of the Canal for the shipment of liquid fossil fuels. These developments would principally involve a concentration of large suppliers in the vicinity of the Canal with important customers requiring frequent shipments on the other side of the Canal from the supplier.

Obviously, the Canal faces direct competition from pipelines. Growth in the pipeline sector could be an important threat to Canal revenues and transits. In our vision of a best case scenario limited growth in the pipeline sector occasioned by the lack of flexibility afforded by pipeline transportation is an important factor.

An important factor in any best case scenario will involve a robust world economy which will blossom on the back of globalization, economic convergence and political convergence. In such an economic environment, economic growth in developing countries coupled with increasing democratization and concern for human rights will play an important role in integrating developing nations into the mainstream of the world economy to a greater degree than exists today. This integration should multiply already positive economic trends. Furthermore, globalization will encourage broader trading patterns between nations (as opposed to regionalization), and this will probably provide a positive spinoff effect for the Panama Canal.

Finally, another aspect of any best case scenario would involve a decline in U.S. oil production (including Alaska). This would increase U.S. dependency on imported oil and provide opportunities for an increase in Canal transits in order to service an American market dependent upon oil imports. A fairly modest future availability of Russian oil from the Pacific side compared with the most optimistic plans could also favor more Canal transits from the Caribbean to California.

Worst Case

In our worst case scenario Panama Canal transits with liquid bulk products are sharply reduced. There can be several reasons for this reduction. One important reason can be logistical. This would involve the discovery of oil and gas in local areas which are now served by supply from areas which presently involve Panama Canal transits. This would mean that the importance the Canal as an avenue for the transport of liquid bulk commodities would be substantially reduced.

Another element of the worst case scenario would involve a fairly rapid decline in the importance of oil and gas as a major source of global energy. This could come as a result of the negative effects of global warming and the need to prevent further negative effects or it could come as the result of the development of other sources of energy which do not have the same negative effects on the environment as fossil fuels.

Improvements in pipeline technology as well as expansion of pipeline infrastructure could eliminate some of the logistical limitations associated with pipelines (such as lack of flexibility), and this would provide a cheap and efficient alternative to the Panama Canal for shippers. Pipeline transportation, at least over shorter distances, can be carried out at a fraction of the time and cost of sea

transportation, and should such transportation be widely implemented, this would be a serious threat to coastwise shipping movements and thus, to the Panama Canal.

Long term recessions and other chronic world economic problems as well as political unrest and the high degree of uncertainty this brings could form a negative backdrop to the other elements described above. In such times new investments are placed on hold, consumer confidence is eroded, and manufacturing is reduced in the wake of the caution such a scenario inspires. In such a negative climate, growth in the industrial sectors in Latin America and in Asia, which form part and parcel of a positive scenario for the Panama Canal, will stagnate. This will result in unchanging, or possibly even reduced volumes of chemicals and other liquid products required by industry and manufacturing transitting the Panama Canal. Regionalization (EU, NAFTA, etc.) can also prove negative for the Panama Canal since such regionalization generally tends to place barriers to trade between more distant geographic areas.

Trans-Panama Pipeline

Reopening of this pipeline will be the most obvious direct threat to Canal transit cargo volumes. From the administration of Petroterminal De Panama we have been informed that peak throughput of Alaskan crude oil was about 600,000 b/d but decreased to as low as 60,000 b/d before the closure of this pipeline in 1996. Negotiations are taking place regarding a possible start-up of transportation of crude oil from Ecuador to the Atlantic side. Initially, a volume of 70,000 b/d could be transported from August 2003 with a possible increase later on. A conclusion of the negotiations is reportedly expected in early April. The price for pipeline use might be in the region USD 0.70-0.75 per barrel, which is about the same as in 1996.

We have made some preliminary comparisons of transportation costs (excluding expenses in ports of origin and destination) for different route alternatives for the trade from Esmeraldas to Corpus Christi. These reveal interesting dynamics. It appears that the use of VLCC, if and when facilities to accommodate such size are in place, will cost some usd 7.38 per tonne in 2005 when using the pipeline. For comparison, use of Panamax through the Canal will cost usd 9.31 per tonne. The use of Suezmax in combination with pipeline will cost usd 8.50 per tonne and Aframax/pipeline usd 9.43 per tonne. It also appears that use of Suezmax through the Canal after expansion (after 2010) will cost only usd 6.22. Our calculations on the given assumptions indicate that the expanded Canal could be highly competitive in the future.

In the longer perspective, it has been discussed to reverse the pipeline to take oil, crude or products, from the Atlantic side destined for California or other importing areas. This would involve costly investments in new pumping stations on the eastern side of the pipeline. Besides, there is, so far a lack of electricity in the area and electricity is the most expensive part of the pipeline operation.

One should not disregard a reversed pipeline carrying oil products at a later stage in the project period. This has to do with expectations of limited refinery expansions or additions in the U.S.A. on the one hand, and a general wish of crude oil producers to go downstream in order to get added value out of their exports on the other. Such a scenario is likely to depend on fairly large contractual transport volumes in order to justify the required start-up investments.

Most Probable Case

Our most probable case incorporates an 'enhanced' version of the DRI-Wefa Global Macroeconomic and Trade Scenarios to 2025, and in this scenario we will take into account the normal business cycles of growth, stagnation, and market saturation of advanced economies; this, in our view, is 'business as usual'. The most probable scenario sees the world from three different perspectives:

1. **A general world view for the period to 2025**
2. **A view by different regions of the world, i.e. the Americas, Europe, Asia, etc. for the period to 2025**
3. **A view broken down by time intervals 2000-2005, 2005-2010, 2010-2015, etc. which will establish trends for each period interval and place the role of the Canal into each of these time frames.**

This format would directly reflect the format already established in our historical study on economic development and oil and energy intensity.

Our most probable case during the forecasting period involves a slow but sure decline in the use of oil for the production of energy for industry and transportation. At the same time, we see LNG stepping in to take a large

slice of the share abandoned by oil. Additionally, we see continuing new discoveries of oil and gas reserves on a worldwide basis. In our most probable case scenario for the period to 2025 we see growing implemenation of a number of non-fossil fuel energy sources as inevitable. These could include, wind, wave, tide and solar energy. On the other hand, we see oil remaining as the principal fuel for transportation, i.e. automobile, air and sea. We will probably see oil decline somewhat as a fuel for automobiles in developed countries during the period. We also foresee improvements in technology to more efficiently exploit the energy contained in fossil fuels, and that this more efficient use should lead to lower levels of consumption. During the period we see developed nations becoming ever more involved in the technology and service sectors, whilst manufacturing will be increasingly relegated to the developing world. Under the circumstances, we expect that there will be a growing need for chemicals to service growing industries in Latin America and Asia, and that this will have positive connotations for the Panama Canal. We also see very little chance of any new refinery capacity being constructed in the developed world whilst this is still a possibility in the developing world. This would also be positive for the Panama Canal as it would create exports of petroleum products from Asia and Latin America.

General and Oil Trade Assumptions

Most Probable Case

- **Business as usual, i.e. no major long-lasting armed conflicts in Middle East and other areas. Relative stability in financial markets, more regional economic integration furthering total world economic activity and trade.**
- **New oil trade routes from various parts of Russia at rather moderate rate of escalation.**
- **Rather modest pace in energy efficiency improvements.**
- **Most likely limited additional refinery capacity in North America and Europe. Far East could well become larger exporters of oil products. Generally, increased downstream involvement in oil producing countries, i.e. higher share of oil products in total oil exports.**

Best Case

- **Solid international harmony. Terrorism more subdued. No trade wars. Rapid globalisation and WTO speed up. Positive effects of comprehensive UN enlargements and Asian economic integration.**
- **Limited energy efficiency imports.**
- **In general, OECD GDP +0.2% p.a. Non-OECD GDP +0.4% p.a.**

Worst Case

- **Troubled financial markets and general economic stagnation. More terrorism. Several international conflicts, dampening still very major role of Middle East as supplier of oil. Closer ties U.S.A.-Russia, especially on the energy side, leading to dramatic changes in trade patterns with a significant negative impact on demand for tanker tonnage due to shorter distances than from the Middle East.**
- **Oil spills at sea and at old refineries. Unstable weather, with damaging storms and flooding becoming more normal. Strong pollution in densely populated areas and traffic jams. More public means of transportation. More gas for propulsion. Rapid improvements in energy efficiency.**
- **In general, OECD GDP -0.4%, Non-OECD GDP –0.8% p.a.**

Volume Forecasts for Crude Oil and Oil Products Trades.

When modelling future oil trade estimates, there are several factors to observe, and these we list and define below:

Oil Demand Development

We have chosen a top-down approach for estimating oil demand by regions, where variations can be made for different GDP growth. Oil intensity developments (oil consumption vs. GDP) for the project period are based on historical experience and assumptions of market saturation in different phases for different regions of the world.

Definition of Crude Oil Availability and its Use

Most oil market analyses and forecasts include natural gas liquids (NGL). Hence, this item, which consists of liquid petroleum gases, has to be extracted when analysing the market for oil carriers.

Availability of oil products from refineries depends on direct use of crude oil and NGL and this varies significantly from country to country and over time.

This can be illustrated by the below survey composed from IEA's publication "Oil Information 2001", covering the OECD countries.

From this survey it appears that whereas only 0.4% of available crude oil in OECD countries was consumed directly in 2002, the share of NGL used directly was as high as 71%.

OECD OIL SUPPLY AND USE 2000
Million tonnes

	Indigenous production	Imports	Exports	Direct Use	Stock change	Stat. diff.	Refinery Intake
Crude Oil	868.5	1490.9	413.4	7.8	3.8	1.1	1940.8
NGL	111.4	17.8	22.6	72.2	-0.2	4.1	30.1
Ref. feedstocks	25.2*/51.1**	39.2	10.6 -		-1.1	-2.5	106.3
Oth. Hydrocarbons	35.3	6.4	6.6	5.9	0.2	1.5	28
Total	1015.2	1554.3	453.1	85.9	2.6	4.2	2105.2

*) Backflow, **)Transfers

Oil forecast.xls/Oil Supply

OECD NGL USE

Million tonnes	Direct use 2000	Ref intake 2000	Direct use share 2000	1990	1980
OECD Total	72.2	30.1	71%	72%	68%
USA	47.0	13.3	78%	73%	71%
Canada	7.3	3.3	69%	60%	9%
Mexico	11.2	-	100%	100%	100%
OECD Europe	4	9.7	29%	33%	59%
Japan	1.4	2.2	38%	77%	66%
Korea	-	-	-	-	-

Oil forecast.xls/OECD use

Export Figures versus Import Figures

When establishing a representative platform for the present situation, it is important to bear in mind some discrepancies between reported export volumes and reported import volumes. In addition to uncertainties in local reporting methods, figures for one and the same cargo might be reported as exports and imports in different periods.This is a consequence of the time of transportation from origin to destination. In times of strongly falling or rising markets, the observed difference between exports from A to B and imports to B from A will be significantly larger than in more stable periods.

Balance of Future Global Trade Volumes

We have established three different oil demand scenarios for regions of the world. These are based on the economic base case scenario with upside and downside variations. Future demand for the individual regions is covered by domestic oil production plus net imports of crude oil plus net imports of products.

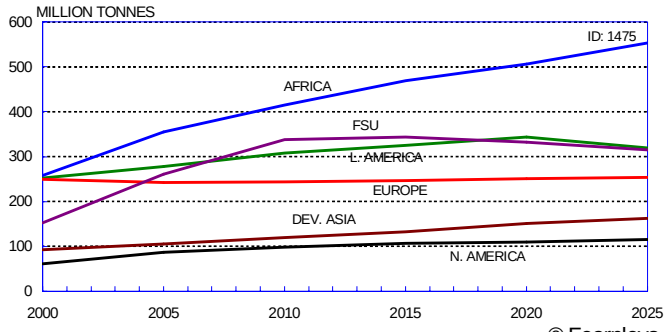
Future oil production will depend on local reserves, exploration and field development, oil price developments, political conditions, technological developments, etc.

The export/import volumes of crude oil will depend on local crude production and local refinery output (throughput plus processing gains). This will again depend on developments in refining capacity and utilization and to some extent on arbitrage business and seasonal variations in demand and surplus/ deficit of different types of products.

Processing gains on a world wide basis are calculated to 2.3% of total refinery output, whereas the U.S. Department of Energy in their statistics present figures indicating a processing gain as high as 5.2% for the U.S.A. In our model this has been modified to 2.3% and the difference is taken care of in the model, treating it in the same way as direct use.

In our model for calculation of global and regional trade volumes, we have had to make certain simplifications. Thus, we disregard stock changes for such a long time horizon. We have also added direct use and statistical differences (historic) to the figures for refinery throughput in order to obtain a complete mode. The reason for this can be exemplified by the fact that BP in their highly respected statistical survey report a global refinery throughput in 2000

CRUDE OIL EXPORTS EX. M.EAST
REF. CASE SCENARIO



Oil forecast.xls/OPI

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of 69.3 million b/d, or 92% of world consumption at 75.3 mbd. Adding global refinery gains of 1.8 mbd, the global imbalance is reduced to 4.2 mbd, representing direct use, stock changes and statistical discrepancies.

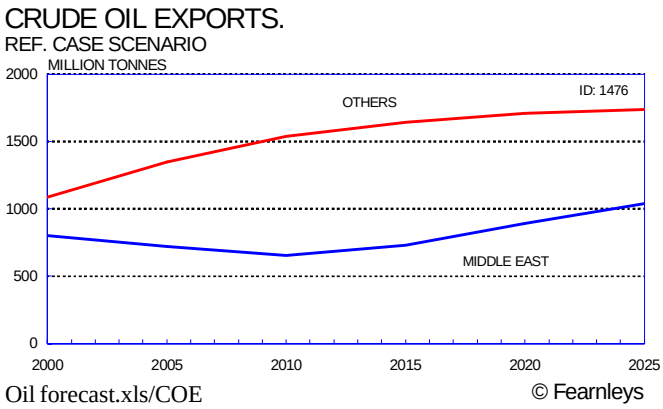
When looking 25 years ahead, it is important to try to balance export capacities with import requirements, and the localization of refining capacity and its utilization plays a most central role. In addition to a mathematical approach based on certain assumptions of the export/import balance of individual areas, we have, in the end also to a modest degree, had to use some manual calculations in order to fine-tune the global market balances. On this basis, we have established regional export and import volumes for crude oil and oil products.

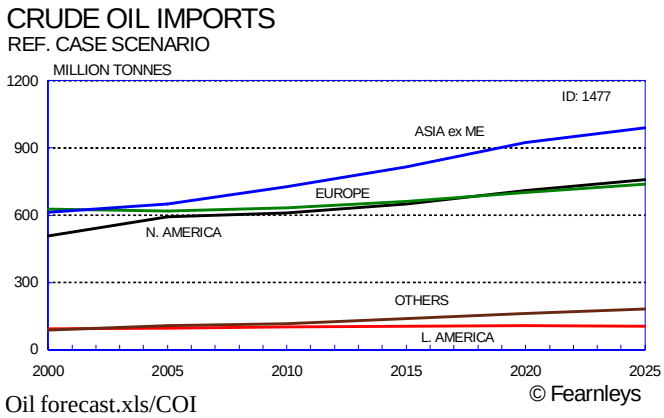
In our global oil market scenarios, world oil demand is estimated to increase from 75.3 mbd in 2000 to about 106 mbd in 2025 in the most probable, or reference, case. That is up 1.4% per annum. In the best case (higher economic growth and low oil prices), world oil demand in 2025 will be 113.9 mbd, up 1.7% per annum. In the worst case (lower economic growth and high oil prices), world oil demand will be only 91.8 mbd, i.e. 0.8% growth per annum.

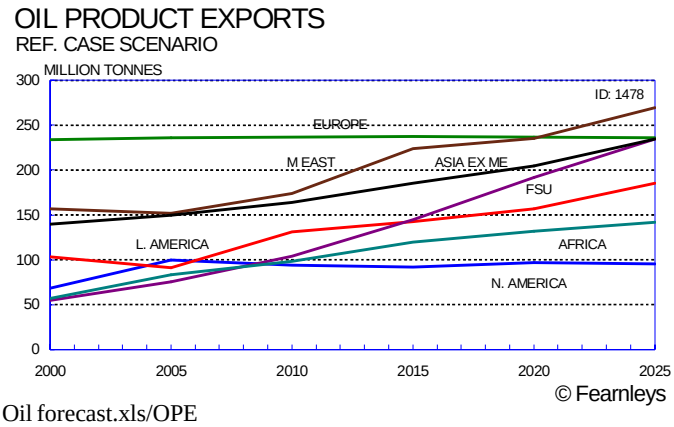
Oil demand growth varies considerably between regions and over the forecast period. Thus, in the reference case, U.S. demand is up 0.6% per annum from 19.7 mbd in 2000 to 22.65 mbd in 2025, whereas Latin America shows a growth of 2.1% per annum from about 6.6 mbd to 11.0 mbd, Japan is up only 0.2% per annum from 5.6 mbd to 5.8 mbd, and developing Asia shows growth of 2.9% per annum, or more than a doubling, from 14.4 mbd to 29.4 mbd.

Trade volumes are basically a function of oil demand, crude oil production, refinery capacity and throughput. However, net crude oil trade and net products trade are composed in different ways for different areas. In the scenarios, the individual areas are defined as predominantly exporters or importers of crude oil and products.

In the reference case, U.S. crude oil production drops from about 7.7 mbd in 2000 to 5.7 mbd in 2025, whereas output in Latin America increases from 10.3 mbd to 16.8 mbd, Africa from 7.8 mbd to 15.9 mbd, FSU from 8.0 mbd to 15.4 mbd, and Middle East from 23.0 mbd to 30.8 mbd, after stagnation and soft decline up to 2010. In the best case, Middle East output will be as high as 39.0 mbd and in the worst case only 24.9 mbd. Variations are smaller for other areas. Thus, Latin America's best case in 2025 shows 19.0 mbd and worst case 14.0 mbd.

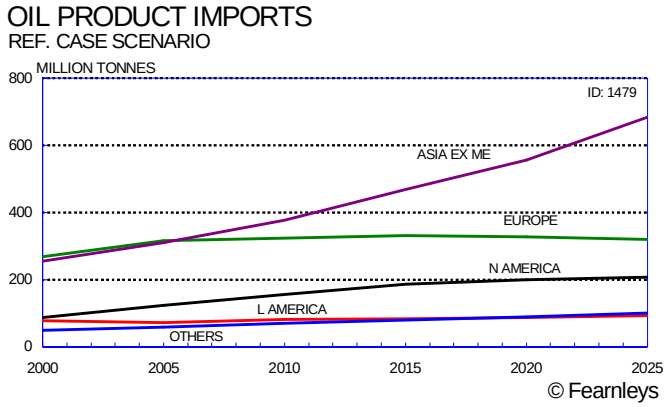






World total trade in oil products is bound to increase faster than the crude oil trade. In the reference case, world crude oil trade will increase from about 37.8 mbd in 2000 to 55.5 mbd in 2025, up 1.5% per annum, whereas oil product trade will increase from about 16.4 mbd in 2000 to 28.1 mbd in 2025, up 2.2% per annum. In the best case, world crude oil trade will increase to 61.1 mbd in 2025 and in the worst case to 46.8 mbd. World oil products trade will increase to 31.6 mbd in 2025 in the best case and to 25.0 mbd in the worst case.

Latin America's crude oil exports will increase from about 5.0 mbd in 2000 to 6.4 mbd in 2025 in the reference case, 7.2 mbd in the best case, and 5.8 mbd in the worst case. Oil products exports from Latin America will increase from about 2.1 mbd in 2000 to 3.7 mbd in 2025 in the reference case, 4.3 mbd in the best case, and 3.2 mbd in the worst case.



These scenarios reflect developments in oil production, refinery throughput and estimated consumption based on given economic scenarios and evaluation of oil intensity developments. Since expected crude oil production is somewhat larger than expected refinery throughput, more crude oil will become available for exports. Similarly, refinery throughput will expectedly grow more than demand and give room for more oil products exports.

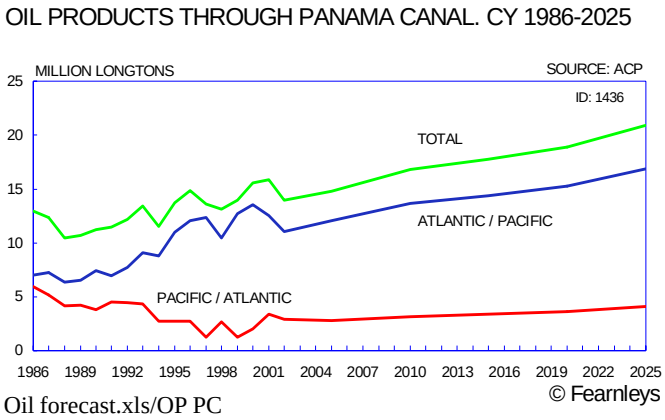
The U.S.A.'s imports of crude oil will increase from about 9.2 mbd in 2000 to 14.2 mbd in 2025 in the reference case, 14.1 mbd in the best case, and 11.6 mbd in the worst case. Imports of oil products to the U.S.A. will increase from about 1.6 mbd in 2000 to 3.9 mbd in 2025 in the reference case, 5.0 mbd in the best case, and 3.6 mbd in the worst case.

Figures showing estimated regional oil production, refinery capacity and refinery throughput plus direct use, etc., are presented in an accompanying table, whereas another set of tables show regional export and import volumes over the forecast period in 5-year intervals.

From Global Trade to Panama Canal Transit cargo volumes

Future volumes through the Canal will, to a substantial extent, reflect the developments in regional trade volumes and the physical limitations of the Canal with regard to vessel dimensions and number of vessels that can actually transit in a single day.

Thus, the liquid bulk trade through the Canal will also depend on the volumes of other types of commodities and ballasting through the Canal. Initially, we have disregarded limitations set by total physical capacity and look at the liquid bulk potential separately. Special attention is paid to reports on conditions and plans in countries close to the Canal.



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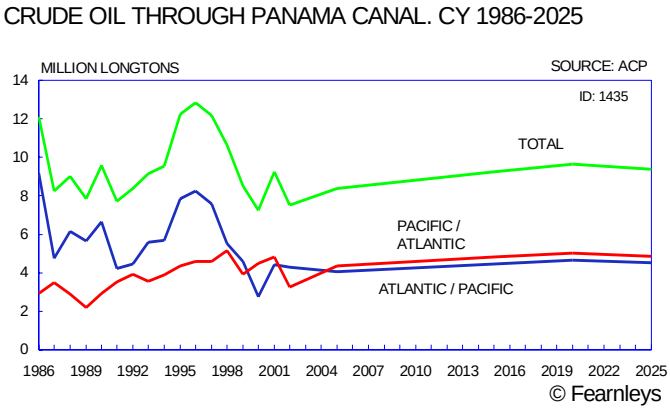


Unexpanded Canal

Total oil transit volumes through the Canal will increase from 22.8 million tonnes in 2000 to 30.2 mt in 2025 in the reference case and 33.5 mt in the best case, but decrease to 21.4 mt in the worst case.

Crude oil transits through the Canal will increase from a 2000 volume of 7.2 million tonnes to 2025 volumes of 9.4 mt in the reference case, 10.2 mt in the best case, and decrease to only 4.1 mt in the worst case, with open Panama pipeline from the Pacific to the Atlantic.

Oil products transits appear to have a much larger upside, with oil products transits going from 15.5 mt in 2000 to 20.8 mt in 2025 in the reference case, 23.3 mt in the best case and 17.3 mt in the worst case.

TOTAL OIL CANAL TRANSIT VOLUMES FOR DIFFERENT SCENARIOS UNEXPANDED

WORST CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	3,920	-	3,920	11,400	1,950	13,350	15,320	1,950	17,270
2010	3,820	-	3,820	13,090	2,270	15,360	16,910	2,270	19,180
2015	3,940	-	3,940	13,650	2,380	16,030	17,590	2,380	19,970
2020	3,940	-	3,940	14,660	2,570	17,230	18,600	2,570	21,170
2025	4,080	-	4,080	14,710	2,580	17,290	18,790	2,580	21,370

REFERENCE CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	4,360	4,040	8,400	12,040	2,630	14,670	16,400	6,670	23,070
2010	4,580	4,250	8,830	13,640	3,020	16,660	18,220	7,270	25,490
2015	4,810	4,450	9,260	14,390	3,230	17,620	19,200	7,680	26,880
2020	5,020	4,640	9,660	15,250	3,500	18,750	20,270	8,140	28,410
2025	4,860	4,520	9,380	16,860	3,940	20,800	21,720	8,460	30,180

BEST CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	4,580	4,280	8,860	12,390	2,620	15,010	16,970	6,900	23,870
2010	4,850	4,410	9,260	14,550	3,240	17,790	19,400	7,650	27,050
2015	5,030	4,540	9,570	16,800	3,790	20,590	21,830	8,330	30,160
2020	5,220	4,750	9,970	17,540	4,050	21,590	22,760	8,800	31,560
2025	5,360	4,850	10,210	18,960	4,350	23,310	24,320	9,200	33,520

Looking at the direction of trade, the sum of crude oil and oil products going west was 18.0 mt, expected to increase to 2025 volumes of 21.7 mt in the reference case, 24.3 mt in the best case, and 18.8 mt in the worst case. Total oil volumes going east will increase from 4.8 mt in 2000 to 8.5 mt in 2025 in the reference case, 9.2 mt in the best case, but decrease to 2.6 mt in 2025 in the worst case.

It appears that inter-American trades account for the lion's share of oil transit volumes, with as much as 90% of the total in 2000. In 2025, inter-American trades will account for 88% in the reference case, 87% in the best case, and 91% in the worst case.

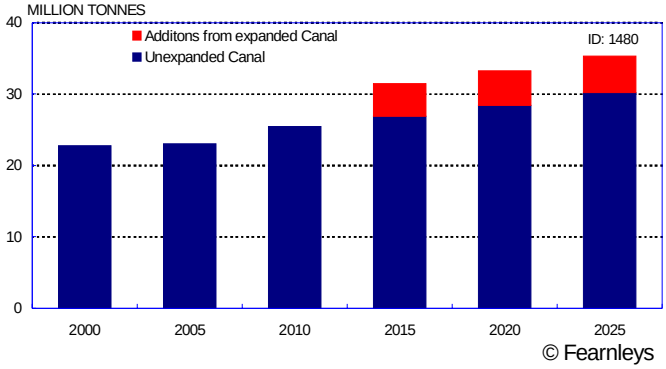
Expanded Canal

In general, the U.S.A. and other countries will not import more oil because of Canal expansion, but trading patterns might, to some, probably rather modest, degree be changed, resulting in more Canal transits.

If the Canal is expanded to accommodate Suezmax vessels, we can make several relevant observations based on round voyage calculations, transporting from A to B and ballasting back. We have excluded port charges since they do not influence cost differences for different routing between the same ports.

Going from Panamax to Suezmax, Puerto la Cruz to Los Angeles through the Canal decreases in 2010 from usd 11.74 per tonne to usd 7.85, i.e. a savings of usd 3.89 per tonne, or about usd 0.53 per barrel of crude oil. For comparison, Esmeraldas to Los Angeles by Suezmax at usd 3.42 is usd 4.43 per tonne lower than for same size from Puerto la Cruz via the Canal. VLCC shipments from Vladivostok to Los Angeles will also cost usd 3.42 in 2010, whereas VLCC shipments from Ras Tanura to Los Angeles cost usd 7.36 per tonne.

TOTAL OIL CANAL TRANSIT VOLUMES
REFERENCE CASE



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Similarly, for Esmeraldas to Corpus Christi via the Canal, the savings per tonne will be usd 2.72 going from Panamax to Suezmax, down from usd 8.83 to usd 6.11. For comparison, shipment costs by Suezmax from Puerto la Cruz to Corpus Christi will be only usd 2.60 and still less if using a VLCC on the same route, Suezmax from Primorsk usd 6.27, Suezmax from Novorossisk usd 7.26, VLCC from RasTanura usd 8.11, VLCC from Bonny usd 4.23 and VLCC from Murmansk to Corpus Christi usd 3.96 per tonne.

From these comparisons it appears that trading within the Atlantic and within the Pacific will basically provide the cheapest route alternatives. Trading volumes, however, also depend on fluctuating trading margins between different areas, quality of oil, and the location of oil companies' downstream involvement.

We do not foresee much long distance oil trade from the Middle East or Eastern Siberia through the Canal from the Pacific to the Atlantic, but VLCC shipments from Eastern Siberia will be very competitive to the U.S. West Coast and will also compete with oil shipments from the Caribbean/U.S. Gulf.

Expansion of the Canal will, in our view, have a rather limited, albeit somewhat positive, impact on short-haul

crude oil transits in both directions (when disregarding the Panama pipeline reopening). Limited crude oil demand growth to the U.S. West Coast will be largely taken care of by Ecuador, Alaska, and gradually by Eastern Siberia, whereas crude oil imports to the U.S. West Coast are likely to decrease.

The largest upside apparently lies in increased oil products trade westwards from the Caribbean, where solid refinery expansions are expected over the forecast period. For more expensive oil products, economies of scale through the use of larger vessels after Canal expansion, with reduced transportation costs per tonne, will have a significantly higher impact than in the crude oil trade. It should also be observed that time savings for key routes through the Canal, in addition to cutting transportation costs, will also reduce the time cost for the cargo itself.

In general, voyage combinations taking cargo, for instance, from the Pacific Coast of South America to the U.S. East Coast or the East Coast of Central America with cargo back, especially to the West Coast of Central America, but also other locations on the Pacific Coast of the Americas, could reduce ballasting considerably. The benefits of better logistics through the use of larger vessels in such trading patterns could be split between cargo owner and shipowner and generally make short-haul trade combinations through the Canal in both directions more competitive.

Our forecasts show that total oil transits through the expanded Canal compared with the unexpanded Canal will in the reference case be 4.6 mt higher in 2015, 4.9 mt higher in 2020, and 5.2 mt higher in 2025, when the total volume will reach 35.4 mt. In the best case, the 2025 total oil transit volume through the expanded Canal will be as high as 42.0 mt (33.5 mt for unexpanded Canal), against only 24.6 mt in the worst case (21.4 mt for unexpanded Canal).

Forecast volumes for individual trade routes under the different scenarios are shown in tables in the Appendix section.

TOTAL OIL CANAL TRANSIT VOLUMES FOR DIFFERENT SCENARIOS

Million tonnes

	Ref. Case		Best Case		Worst Case	
Year	Unexp.	Exp.	Unexp.	Exp.	Unexp.	Exp.
2000	22.8	-	22.8	-	22.8	-
2005	23.1	-	23.9	-	17.3	-
2010	25.5	-	27.1	-	19.2	-
2015	26.9	31.5	30.2	37.8	20.0	23.1
2020	28.4	33.3	31.6	39.5	21.2	24.4
2025	30.2	35.4	33.5	42.0	21.4	24.6

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TOTAL OIL CANAL TRANSIT VOLUMES FOR DIFFERENT SCENARIOS EXPANDED

WORST CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	3,920	-	3,920	11,400	1,950	13,350	15,320	1,950	17,270
2010	3,820	-	3,820	13,090	2,270	15,360	16,910	2,270	19,180
2015	5,516	-	5,516	14,926	2,618	17,544	20,442	2,618	23,060
2020	5,516	-	5,516	16,027	2,827	18,854	21,543	2,827	24,370
2025	5,712	-	5,712	16,082	2,838	18,920	21,794	2,838	24,632

REFERENCE CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	4,360	4,040	8,400	12,040	2,630	14,670	16,400	6,670	23,070
2010	4,580	4,250	8,830	13,640	3,020	16,660	18,220	7,270	25,490
2015	5,510	5,112	10,621	17,059	3,806	20,865	22,569	8,918	31,486
2020	5,745	5,329	11,074	18,078	4,123	22,201	23,823	9,452	33,275
2025	5,556	5,190	10,746	19,991	4,640	24,631	25,547	9,830	35,377

BEST CASE SCENARIO VOLUMES ('000 MT)									
	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	4,483	2,755	7,237	13,530	2,012	15,542	18,013	4,766	22,779
2005	4,580	4,280	8,860	12,390	2,620	15,010	16,970	6,900	23,870
2010	4,850	4,410	9,260	14,550	3,240	17,790	19,400	7,650	27,050
2015	6,009	5,442	11,451	21,497	4,816	26,313	27,506	10,258	37,764
2020	6,226	5,693	11,919	22,430	5,139	27,569	28,656	10,832	39,488
2025	6,389	5,812	12,201	24,243	5,519	29,762	30,632	11,331	41,963

Chemicals & Vegoil

In this chapter we provide some recent history of the chemical trade which serves as a backdrop to illustrate the nature of the trade, and also as a preface to the chapter in which we forecast total trade in chemicals for the main commodities. This chapter is also an indicator of the complex research in which we had to engage in order to produce our forecasts.

Trade data for individual chemicals are always complex because it is not possible to cover every country, and so it is necessary to look at both imports and exports and build up the best picture possible. In the case of certain chemicals, e.g. phosphoric acid, the information is not easily available and therefore may contain some estimates. "Other" cargoes (e.g. potable alcohols) don't really cover any of these. There are over 50 organics - consequently obtaining and organizing data on these is not like collecting trade data for crude oil or LNG, etc., since it is obviously far more complex. To do the job properly, it is necessary to try to collect missing data, where appropriate, which makes the process extremely time consuming and labour intensive.

Inorganic Chemicals

Exports

Export figures for the U.S.A., and Japan are available for 2000. However, trade figures are not available for two of the other major exporters Tunisia and Morocco. It is estimated that U.S. exports expanded for the third consecutive year in 2000 (+17%), after rises of 17% and 14% in 1998 and 1999, respectively. In sharp contrast, it is estimated that Japanese exports contracted for the second consecutive year, with trade down 4% in 2000 following a 1.5% fall in 1999.

Second quarter 2001 data indicate that U.S. exports (-17%) are set to fall significantly in 2001, while Japanese exports (-38%) are set to fall even faster.*

Imports

Few of the importing countries for which trade data are available fared well in 2000. For example, U.S.A. imports are estimated to have contracted 8.9% in 2000, following a fall of 16% in 1999. This reduction was primarily due to the continued fall in the imports of sulphuric acid.

Taiwanese inorganic imports performed even worse in 2000 falling 31% based on

full year data, with both caustic soda and sulphuric acid imports sharply cut back.

In contrast, Australian imports of caustic soda increased for the third consecutive

year (+7.2%, 1.38m tons). The picture is dramatically improved for the U.S.A. (+75%) in 2001, with second quarter data suggesting a significant increase in import volumes, particularly from the Pacific rim. By contrast, Taiwanese imports appear set to fall further in 2001.*

Seaborne Trade

Based on data for key exporters, Japan and the U.S.A., as well a few other participants, such as Australia, South Korea, Singapore, China and Canada, inorganic seaborne trade appeared to sustain its expansion phase in 2000 with growth of 5.5%, following increases of 0.2% (revised down from 1.5%) and 4.1% (revised up from 2.9%) in 1998 and 1999 respectively.

As seen in the organics sector, North America underpinned the inorganics trade last year, with the most important growth trade being U.S.A. to Latin America. The U.S.A. also increased exports to Australasia and South East Asia in 2000. By contrast, the Japanese export trade contracted for the second consecutive year in 2000. This was primarily due to a significant loss of market share on its trade with the U.S.A., although this was partly offset by a modest rise in movements on its primary trade to Australasia.

Latest data for inorganic seaborne movements reveal a -0.6% fall for 2001 (revised down from +0.6%). There appear to be no strong trends in the development of inorganic seaborne trade in 2001, although initial estimates suggest that North American exports to Latin America (so buoyant in 2000) and OECD Europe have started to erode.*

Focus on the Seaborne Trade in Sulphuric Acid, 1995-2001

Sulphuric acid, along with phosphoric acid, is the most important acid carried in chemical tankers. Japan, which is the largest sulphuric acid exporter, saw its trade dwindle from 1.5m tons in 1999 to 1.2m tons in 2000. Indications are that Japanese exports will recovery modestly in 2001, reaching 1.3m tons. South Korea emerged as an exporter only in 1998, but is now a major player. The U.S.A. (0.47m tons) is the largest importer, although several countries

import at least 100,000 tonnes p.a. There are seven sulphuric acid trades with volumes in excess of 100,000 tonnes p.a. Based on 2000 data, the largest trade is Japan to the U.S.A., which is equivalent to 0.24 m tons. The next largest trades in 2000 were South Korea to China (0.23m tons) and Japan to Taiwan (0.22m tons). There was a fair degree of flux in sulphuric acid trades during the period 1993-2000. The emergence of South Korea as a major exporter has undoubtedly contributed to the changing pattern of sulphuric acid movements. For example, Japanese exports to South Korea, which reached 0.3m tons in 1996, virtually dried up. Another trade in decline is Germany to U.S.A., which has been usurped by Japanese exports. China is perhaps the fastest growing import market . *

Organic Chemicals

Main Products Moved by Sea

Historical View

Examination of import and export statistics for the main OECD areas and a number of other important developing countries reveals that 21 products accounted for approximately 70% of all seaborne organical chemical movements in 1990. Moreover, the dominance of the main products appears to be on the increase, as the named chemicals only accounted for 60% of all trade in 1982.

Trade in methanol – the single largest organic chemical transported by sea – jumped from 2.2 million tonnes in 1983 to 5.8 million tonnes in 1989 – an increase of 160%. By any standards this is exceptional growth, and it is the result of increased methanol demand in OECD area and the coming on stream of new plants in places such as Saudi Arabia, Chile, Canada and New Zealand.

Based on data for the U.S.A., South Korea, and Singapore and data for Japan, Taiwan and Canada, organic seaborne trade was expected to show a modest increase of 1% in 2001. This compares with increases of 7.4% in 2000 and 7.0% in 1999. In 2001, it was apparent that North American exports, so important in the last few years, were sharply down – particularly on trade routes to the Pacific region. However, North American imports from Latin America continued to rise sharply, while key Pacific trades (intra South East Asia and Middle East-South East Asia) performed strongly during 1H01.*

Organic Chemical Exports

Full year data for 2000 are now available for the U.S.A., South Korea, Japan, Singapore, Taiwan, China and Australia. This information confirms that exports for U.S.A. (+7.9%), South Korea (+7.9%) and Taiwan (+68%) increased significantly in 2000. It was a particularly important year for South Korea (5.1m tons), which displaced Japan (4.7m tons, -8.5%) as the most important exporter in the Pacific rim region for the first time. Singaporean exports were virtually unchanged in 2000, while neither China nor Australia made a significant impression in the export market. Second quarter 2001 data are available for the U.S.A., South Korea and Singapore. Amongst these three countries, there have been very contrasting fortunes. There was a significant slowdown in U.S.A. exports (-23%), which had been one of the most important growth sectors of the market between 1999-2000. South Korea looks to have had a relatively disappointing year with estimated exports for 2001 little changed from the year before, while Singaporean exports surged in 1H01 with growth of around 25% projected for 2001.

Based on first quarter data, it appears that a revival was underway in Japanese exports (+12%) in 2001. Taking into account South Korea's lacklustre performance, Japan may be set to resume its position as the Pacific rim's leading exporter. However, perhaps the most exciting performer of all in the early part of 2001 was Taiwan. Its exports were up 84% on the previous year and were expected to break through the 1m ton barrier for the first time.

Organic Chemical Imports

Full year data for 2000 confirmed the pivotal importance of U.S. imports (+25%) in underpinning organic trade growth in recent years, with the increase building on earlier expansions of 17% and 13% in 1998 and 1999 respectively. The dynamic performance of the U.S market contrasted with the lacklustre performance of some Pacific rim countries in 2000, e.g. Taiwan (-1%), and Japan (+0.9%). However, there were also some strong performers in the Pacific region. South Korean imports broke through the 4m ton barrier (+4.8%) for the first time, while Chinese imports increased 12% (6.38m tons) in 2000 building on a spectacular 60% jump in imports in 1999. Singaporean imports also jumped sharply (+16%) recovering the losses sustained in 1999 (-11%). Second quarter 2001 data indicate that the U.S import market continues to be an important bulwark underpinning seaborne trade with growth estimates of 20%, which will push annual imports through the 10m ton barrier for the first time. Singapore imports also started the year strongly (+24%). In contrast, Taiwan, which has been building up its chemical industry

and making inroads into the export market, rapidly started to lose its dependence on organic imports with a 20%+ (1m ton+) projected fall in 2001, based on 1Q01 data. Japan (+3.6%) and South Korea (unchanged) have so far been disappointing import markets in 2001.*

The Seaborne Trade in Organic Chemicals

In 2000, organic seaborne trade increased 7.4% This level of growth is somewhat higher than the 7.0% growth recorded in 1999 and also higher than the 4.8% growth recorded in 1998. As discussed, the U.S. market underpinned growth in organics seaborne trade in 2000 with full year data showing exports up 8% and imports up 25%. Both U.S import and export growth were primarily a consequence of strengthening trade with Latin America, although Middle East exports to the U.S.A. and U.S.A. exports to Europe were also up strongly in 2000. Overall, the important intra-South East Asian trade (+3.7%) experienced only moderate growth in 2000. However, this disguises very different levels of performance for the leading Pacific rim importers and exporters. For example, Japanese exports to South East Asia fell an estimated 8% in 2000, while South Korea's impressive export growth in 2000 was almost entirely due to increased trade within the Pacific region as it continued to make inroads with junior trading partners such as Indonesia, Hong Kong, Thailand, Malaysia and the Philippines.

Based on second quarter data for the U.S.A., South Korea, and Singapore and first quarter data for Japan, Taiwan and Canada, organic seaborne trade was expected to show a modest increase of 1% in 2001. In 2001 it was apparent that North American exports, so important in the last few years, were sharply down – particularly on trade routes to the Pacific region. However, North American imports from Latin America continued to rise sharply, while key Pacific trades (intra South East Asia and Middle East-South East Asia) performed strongly during 1H01.*

Vegetable, Animal Oils & Fats

Overview

This sector covers a wide variety of oils produced from animals and plants. They are normally divided into vegetable oils which include, amongst others, palm oil, soya oil, sunflower seed oil, cottonseed oil, rapeseed oil, and olive oil. A common denominator for all of these oils is that they are produced by crushing the seeds of these plants. The seeds contain a high content of natural oils. The oils produced are usually rich in proteins and are primarily used as food for humans as well as for livestock. Certain oils also have industrial uses and can be used as biofuel (e.g. rapeseed oil).

In addition to the pure vegetable oils, molasses is a major internationally produced and traded product. Molasses is a by-product of the sugar milling process and is used for fermentation and for the production of several fine chemicals.

The other main product is animal oils. By and large, this refers to fish oil, which is used both as feedstock for animals and for human consumption.

There are several other products contained under this heading: lard, butter, and grease. Of these, only lard could conceivably be carried as liquid bulk, however international trade (both over land and by sea) is insignificant. Thus, these three products are not included in this study.

An overview of production, imports, and exports of vegetable and animal oils is included in the historical part. As can be observed from the data, global exports are dominated by Malaysia, Indonesia, the Philippines, and Argentina. Combined, these countries have a total share of global exports of vegetable and animal oils amounting to more than 63%. On the importing side, it is notable that China, India, and Pakistan, and the EU have a share of 41% of all imports.

In the following the term "vegoil" is used to cover all vegetable and animal oils and fats as well as molasses, unless otherwise specified.

In contrast to the organic and inorganic markets, seaborne trade in vegoil stagnated in the last few years. Of the three largest trades, Intra South East Asia, South East Asia to Europe and South East Asia to South Asia, only South East Asia to South Asia has experienced uninterrupted growth in the last few years. Information about secondary trades reveals that exports from North America to OECD Europe increased 50% in 1999, while exports from South East Asia to North America increased 8%. In contrast, North American exports to South East Asia fell over 40% in 1999. There have been important shifts in bilateral trades in recent years, which in part reflect seasonally affected harvest yields. For example, in 1998, Chinese imports shifted away from Indonesia (0.16 m tonnes, -65%) and towards the U.S.A. (0.5 m tonnes, +75%). Indonesian exports to the Netherlands were also significantly down in 1998 at 0.6 m tonnes, compared to 1.3 m tonnes in 1997.*

Key drivers in the Vegoil market

The mechanisms in the market for these commodities are somewhat different from those seen in the chemical market. Amongst others, population development is a key parameter. Life expectancy, especially in the underdeveloped parts of the world, has been rising steadily during the past two decades.

Household income is also an important factor. In this connection we have linked this to general economic development expressed as GDP growth. Commodity prices are also important and could be related to household income. The vast markets for vegoils are found in the underdeveloped regions of the world and if commodity prices strengthen substantially, demand is reduced.

Availability of land for cultivating is a main factor for the production of oilseeds. If availability of cultivating areas is restricted this will naturally impact production and prices. If availability is abundant, production might increase and affect prices.

Since these products are entirely derived from agricultural or aquatic activities, the vagaries of climatic conditions impact the output. Drought or floods, heat or cold, El Niño, etc. all affects the output. Thus, climatic development will have a strong impact on output.

The agricultural sector of virtually all countries is strongly regulated in terms of what the individual farmer can cultivate, how much he can produce of each crop, subsidies, aid, import/export incentives, import/export barriers etc. Thus, agricultural policies impact output and trade.

During the last two decades, phenomenal advances in biotechnology have been made. First and foremost, genetic modifications of plants in order to increase yield, enhance resistance to diseases, tailor-making qualities according to local conditions, etc. Such advances increase output, but might also reduce trade since several countries are wary of genetically modified products.

* These passages are taken from The Drewry Annual Chemical Market Review and Forecast Incorporating the Drewry Chemical Quarterly – Fourth Quarter 2001

Vegoil Scenarios

Reference Case

Continued increased life expectancy, especially in the underdeveloped countries

Reference scenario for economic growth

Stable real term development in commodity prices

Land resources growing at a pace in line with increasing demand

"Normal climate"

No major changes in agricultural policies

Continued advances in biotechnology

The reference case is based on data and forecast provided by ISTA-Mielke in their "Oil World 2020", Revised edition 2002.

Best Case

Strongly improved life expectancy

Favourable economic growth

Declining real term commodity prices

No limitations in available land resources

Favourable climate development

Trade barriers reduced and incentives for the agricultural sector in major producing areas

Great advances in biotechnology and widespread acceptance of genetically modified species.

The growth rate in trade is set at 110% of the reference case.

Worst Case

Stagnating life expectancy

Adverse economic conditions

Rising real term commodity prices

Reduced available land resources

World climate becoming gradually adverse

Agricultural policies restricting land use and trade barriers

No major advances in biotechnology, and possibly bans on genetically modified species

The growth rate in trade is set at 70% of the reference case

The Chemical Carrier Market

The market for purpose-built chemical carriers is fairly young, at least compared with the crude- or product carrier markets. The chemical carrier was to a large extent pioneered by the Norwegian shipowner Jacob Stolt-Nielsen in the late 1950s. Since then, the fleet of specialized chemical carriers has grown steadily year-by-year.

The real take-off for this market was in the early 1970s when demand for base- and intermediate chemicals took off in Asia. These chemicals were predominantly produced in Europe and the United States and we saw the advent of the "Round-the-world" services operated with large and sophisticated chemical carriers.

Alongside Stolt-Nielsen, who is the major chemical carrier owner today, several other shipowners joined this market: Odfjell Tankers, JO Tankers, Westfal-Larsen, etc. This market continued to grow throughout the shipping crises of the 1970s and 1980s, but in the 1990s it became apparent that the fleet expansion outpaced the demand for transportation. As a result we saw a number of mergers between different operators and amalgamation of services. Today this market is dominated by two operators, Stolt-Nielsen Tankers and Odfjell Tankers. The former has about 21% market share and the latter about 24%. In addition JO Tankers has a 9% market share and Tokyo Marine about 6%. Altogether, these four companies control 60% of the chemical carrier market.

In the 1980s and into the 1990s the chemical carrier owners expanded their scope of service through the acquisition of tank terminals as well as expansion into tank containers. Both Stolt-Nielsen and Odfjell control several terminals and the former has a fleet of about 12,000 tank containers and Odfjell has about 5,000 tank containers.

In general we feel safe to state that these companies have developed into logistics' companies from a platform of being pure shipowners/operators.

As a preamble to our forecast we would also like to quote from Stolt-Nielsen's annual report in 2001:

"Despite the economic downturn in the late 1990s, much of the growth in chemical transportation has been driven by increasing demand for imports into and within the Asia Pacific region and we expect this to continue. In recent years, with growth in new chemical plants in the developed countries like the US and Europe being rather stagnant and new chemical plant capacity being added in the Asia Pacific and Arabian Gulf regions, we have also seen increased exports out of Asia Pacific and the Arabian Gulf to other parts of the world"

This trend is confirmed by Odfjell, amongst others, on their website and we believe this will have a major impact on future chemical volumes through the Panama Canal.

Scenarios

We have carefully studied those factors which can have positive, detrimental or 'normal' impact on the future trade in chemicals. The factors studied are, to a great extent, applicable regardless of the type of chemical substance in question. This is also true regardless of whether the substance is inorganic or organic.

As we have also observed during the preparation of this study, the demand for chemicals is quite closely linked to developments in global GDP, but must also be considered in light of regional GDP developments.

An example of a factor that will have a positive impact on future seaborne trade volumes will result from the development of new automotive technologies. Should the fuel cell, as a result of these developments, become commercially viable, as well as popular, the trade in methanol alone will increase substantially. The success of the fuel cell is, therefore, of great significance and will impact trade strongly in the "best case" scenario.

Seaborne trade in methanol, and its main derivative MTBE, constitutes a major part of seaborne trade in chemicals (see historical part). Thus, the future fate of both methanol and MTBE will have a major impact on seaborne trade in chemicals. We have therefore included three scenarios pertaining exclusively to methanol/MTBE under our three main scenarios.

Reference Case

Business as usual scenario.

Relative stability of financial markets.

Limited growth in Asian output of petrochemicals.

Continued, but levelled, growth in European and U.S. output of petrochemicals.

Increased imbalance in North American / Latin American product mix.

MTBE remains and holds its present position in the fuel market

Global GDP growth develops along the lines provided by DRI-WEFA (and modified by Fearnley Consultants), and seaborne trade growth develops at the growth rates based on this GDP scenario.

Asian petrochemical companies enter a period of consolidation and the number of new projects come to a halt. At a later stage the pace of building new facilities increases again, but only to a level in line with general demand increases. Thus, there will still be room for imports from the United States and Europe.

In this scenario we foresee a continued, but levelled, increase in European and U.S. output of chemicals.

We also expect a continuation of increasing imbalance in the North America / Latin American product mix. By this we mean that North America will produce commodities for the Latin American market and vice versa.

The phrase "MTBE remains and holds its present position in the fuel market" refers to global demand for MTBE. Although demand in the United States may be cut strongly in the future (see later section "Ethanol"), the impact will be negligible due to the current trade patterns of MTBE.

No major war or tension impacting global trade.

Best Case

Fuel cell scenario – major boost in demand for methanol following a successful introduction of fuel cells early in the forecast period

The preferred fuel is methanol

Limited expansion of Middle East and East Asian petrochemical capacity

Fairly strong increase in European and U.S. output of petrochemicals

Favourable economic conditions.

Strong growth in financial markets

Generally, world peace with little local/regional unrest

In this scenario the fuel cell has become technically, as well as commercially, viable as the major source of power in automobiles. Methanol is the key substance, but not the only, for providing hydrogen to power vehicles, and demand for methanol soars.

Production of methanol is often considered in conjunction with LNG plants and we could expect to see substantial volumes of methanol being produced in the gas-rich countries in Latin America. Under this scenario we would see a tremendous increase in imports of methanol to the United States.

For other types of chemicals, the development of new petrochemical complexes in both the Middle East and East Asia comes to a halt. Future demand in these areas will have to be sourced in Europe and the United States. Seaborne trade in chemicals will grow substantially as a result.

The economic conditions in this scenario follows those provided by DRI-WEFA and modified by ourselves. Seaborne trade is estimated to grow over proportionally at a rate of 110% of GDP growth.

Under this scenario, the world enters a period of peace and a reduction of trade barriers.

Worst Case

Strong expansion in East Asian and Middle East petrochemical industries.

Adverse economical conditions.

Troubled financial markets.

Increased environmental awareness in the U.S.A. and Europe, limiting future expansion of the petrochemical industry.

Increased domestic demand in the U.S.A. and Europe limiting export potential of chemicals.

War & unrest.

The use of MTBE will decline following the ban in California.

Fuel cells are not developed, or Fuels cells will not run on methanol.

Over the past few years we have observed a tremendous development in investments in petrochemical plants, especially in the Middle East area (Saudi Arabia and Iran) and in China. In addition, South Korea, Taiwan, and the Southeast Asian countries have invested substantially in such facilities. According to available information, this trend seems to have maintained a certain momentum and we will see substantial increases in output of petrochemicals

all over Asia in the coming decade.

An acceleration of this trend could displace even larger chemical volumes that currently are imported from the United States and Europe.

We have established growth rates for trade in several chemical substances, and both historical data as well as forecasts are closely linked to GDP growth rates. In our Worst Case Scenario, we have established a growth rate for chemicals at 70% of worst case GDP growth rates as given by DRI-WEFA and modified by ourselves.

We could also see increased regional demand in Europe and the United States limiting export. We do not find this to be very likely, but we find it natural to include this as a part of the worst case scenario. Increased terrorism, tension and war, or war-like, situations have a generally negative impact on trade, and seaborne trade in particular. An escalation of the conflict between PRC China and Chinese Taipei (Taiwan) would have a very negative impact on the whole Asian region. Outbreak of a full-scale war in the Middle East would have a similar negative impact.

California have introduced a ban on the use of MTBE (Methyl-Tertiary-Buthyl-Ether). The reason for introducing a ban was the detection of MTBE in fresh-water sources and concern about health hazards ensued. This ban was supposed to enter into force primo 2003, but in 2002 a postponement was agreed upon, and now the date for enforcing this ban is set to primo 2004. However, according to media coverage, it seems that this date could yet again be postponed. We must, however, take into consideration that such ban is introduced.

The fuel cell technology is more than 100 years old, but due to several reasons, use of fuel cells have never been commercialised and gained popular use. One of the reasons is that such engines run on hydrogen and oxygen. The availability of the latter is not a problem (taken from air) whereas safe and economical sources for hydrogen has been the main technical obstacle. One way of overcoming this problem is to use methanol which is chemically rich in hydrogen. There are other techniques as well. One solution is to store hydrogen physically and chemically to metal (alloys). This technology has developed radically during the past five years, and it seems that current available solutions are technically acceptable, but commercially not very viable. This could change, and methanol is therefore only one alternative source for hydrogen in fuel cell technology.

Forecast Inorganics

Phosphoric Acid

The important ingredient is P_2O_5 which is a nutrient for the fertilizer industry.

May be shipped in basically three different forms:

As phosphate rock (Phosrock).

As DAP (di-ammonium phosphate) – a readymade fertilizer.

As phosphoric acid.

Merchant grade phosphoric acid (MGA) has a P_2O_5 content of 54%.

As can be observed in the historical part, seaborne trade has increased steadily from 4.3 mmt in 1980 to almost 8 mmt in 2000.

Outlook to 2010 indicates a trade of 10.6 mmt, or cagr = 1.6%.

Production

Traditionally, phosphoric acid has been produced as a value-added product in countries with substantial phosrock resources. The primary producer (and consumer) is the U.S.A., at 21.5 mmt, however exports are minimal at about 0.6 mmt in later years. Largest exporter today is the North African region. Morocco is the largest exporter with about 3.3 mmt. Tunisia exports 1.4 mmt.

Northwest Europe

Since 1990, 13 phosphoric acid plants in Europe have closed, and only 4 remain in operation. A total of 2.9 mmt capacity has been shut down, however only 0.9 mmt has been replaced by imports, mainly from North Africa. The Netherlands are the main importer with 2.2 mmt. One third of these imports comes from Europe, one third from Morocco and the balance from Israel, Tunisia, and South Africa.

Asia

India accounts for 50% of world trade in MGA phosphoric acid (about 3.9 mmt). These volumes are heavily subsidized, and do not include any Canal transits.

China is a major importer of P_2O_5, however, DAP is cheaper and acid imports are so small as to be insignificant.

Latin America

Only major importer is Brazil with about 140,000 mmt in 2000. However, due to interchanging between DAP/

phosrock/phosphoric acid, volumes are expected to be volatile. Other South/Latin American countries have minimal, or zero, imports.

Outlook
Trade depends entirely on India, which accounts for 48% of world trade today. Countries/companies exporting to India have plans for close to 1 mmta capacity aimed at the Indian market.

It is expected that trade will increase to 10.6 mmt in 2010 and two thirds of this is projected to come from India (and Pakistan)

Sulphuric Acid

Description:
Colourless, odourless, extremely corrosive, oily liquid.

Main Forms
Liquid form

Main Uses
Manufacture of fertilizers (nutrient), intermediary in other chemical processes, electrolyte, and drying agent.

Major Producers/Exporters
The United States is the major producer of sulphuric acid at about 40 mmt/year. Furthermore, South Korea, Japan and the PRC are major producers.

South Korea and Japan are the main exporters, however, volumewise the quantities are small.

Major Consumers/Importers
Both Europe and the United States are major consumers, as well as importers. Approximately 60% of global imports end up in these two regions.

Global Production Volumes
Global output in 2000 was about 150 mmt and in excess of 25% of this output was produced in the United States. During 2001, substantial production capacity came on stream - about 6.5 mmt on a global basis.

Current capacity expansion plans indicate that another 10.5 mmt will come on stream during 2002-2004.

Seaborne Trade Volumes
International trade in sulphuric acid reached about 5% of global output in 1997, however it fell back somewhat towards 2000 (due to the Asian financial crisis), and currently stands at about 7.5 mmt. Seaborne trade is substantially lower at 4.2 mmt. Seaborne trade increased 4.0% per year in the latter half of the 1990s. The major importer is the United States with about 1.0 mmt in 2000.

Other Comments
Sulphuric acid is the largest chemical in terms of volume, however trade is almost insignificant. Seaborne trade constitutes only 2.6% of global output. Commodity prices for both elemental sulphur and sulphuric acid were under heavy pressure during the 1990s and as such, the commodity does not stand much freight.

Going 20 years back or more, the principal source for sulphur was brimstone mined in the United States. Currently, very few brimstone mines operate and sulphur is extracted from petroleum refining activities. This is a result of legislation introduced, not only in the United States, globally reducing emissions of sulphuric compounds (SOx). Furthermore, the increased usage of natural gas, and transportation of LNG, have increased the demand for ”cleaning” the gas and thereby increased sulphur output. Thus, sulphur for, amongst others, producing sulphuric acid has become available wherever one finds oil refineries or gas treatment plants. Therefore, even though sulphuric capacity is increasing, we foresee a limited potential for seaborne trade and notionally set the growth rate to 0.2% per year.

Scenarios
Although capacity will increase during the coming two year period, we do not expect increased trade.

Forecast Organics

Acetic Acid

Description
Colourless, strong odour (vinegar)

Main forms
Solid with melting point 16.6 deg. C Usually in liquid form

Main uses
Adhesives, PET bottles, (acrylic) fibres, surface coating. Intermediate chemical for pharmaceuticals (acetyls, painkillers)

Major producers/exporters
Europe and the United States. BP and Hoechst Chemie. BP produces about 2.05 mmt per year and Hoechst about 1.95 mmt per year. Major exporter is the United States.

Major Consumers/importers
North America and European nations. SE Asia a major importer.

Global production volumes
Global output in 2000 was about 8.5 mmt. European and U.S. production account for about 50% of global output.

According to our sources, limited new capacity is planned for startup by 2005.

Seaborne trade volumes
Seaborne trade reached 0.9 mmt in 2000. This was an increase of 0.35 mmt compared to 1996, or 10.3% CAGR.

Other comments
None

Scenarios
An important use of acetic acid is in production of PET-bottles, thus future demand of acetic acid is closely linked to the development in usage of PET bottles. Global demand for PET stood at 6.5 mmt in 2000, and had grown at 14% p.a. since 1996. Usage of PET bottles increased from 134 bill bottles in 1990 to 212 bill bottles in 1998. It is estimated that global PET bottle usage will increase by about 6% p.a. towards 2005. During the same period, recycling rates are estimated to increase from 24% to 30%. Thus, demand for new resin will grow at a pace lower than 6%. In addition, we observe that the penetration of PET bottles in the soft-drink market is strongest in Eastern Europe and demand in this area will form a large portion of the added demand. We, therefore, expect demand, and subsequently, seaborne trade in acetic acid to grow at a much lower pace. Also, with limited new capacity coming on stream towards 2005, we expect trade to increase at a pace of average GDP growth in North America and Europe combined, about 2.7% p.a. towards 2005. Thereafter at a rate of 75% of the same average growth rate due to saturation of the PET bottle market and increased recycling.

Acetone

Description
Highly flammable, colourless liquid. Strong aromatic odour

Made through oxidation of cumene (see below)

Main Forms
Liquid

Main Uses
As solvent, plastics, cleaning agent, lacquers

Major Producers/Exporters
United States, Dow Chemical, Sunoco, Shell Chemical

Major Consumers/Importers
SE Asia

Global Production Volumes
N/A, however cumene production is estimated to increase 24% by 2005. Acetone is a byproduct together with phenol, and global output cannot exceed cumene output.

Seaborne Trade Volumes
Seaborne trade in 2000 was close to 0.5 mmt. Growth 1996-2000 was only 0.6% CAGR.

Other Comments
None

Scenarios
Acetone output is closely linked to cumene output. During 1996-2000, seaborne cumene trade increased 4.1% CAGR, whereas acetone trade expanded only 0.6%, or one seventh. Based on the forecast for cumene trade, we expect acetone trade to increase only marginally in the years to come. Furthermore, close to 70% of global cumene production is either in the U.S.A. or Europe, and the U.S.A. currently has an acetone deficit, thus we see limited export potential. CAGR is set at 0.5%

Acrylonitrile

Description
Colourless liquid, strong ”onion-like” odour, toxic, can cause death.

Main Forms
Liquid

Main Uses
Acrylonitrile (AN) is used as a raw material in acrylic fibres, ABS resin, AS resin, synthetic rubber (NBR), acrylamide and other materials. Approximately 60% of global production is used in the manufacture of acrylic fibres.

Major Producers/Exporters
BP is the largest producer with plants in Germany and the United States, followed by DuPont, Dow Chemical, Cytec, and Bayer. Japan is also a substantial producer/exporter followed by SE Asian countries.

Major Consumers/Importers
SE Asia is also a major importing area, constituting about 70% of all imports.

Global Production Volumes
About 4.7 mmt in 2000. Capacity has remained stable for some time.

Seaborne Trade Volumes
About 1.1 mmt in 2000. North America accounts for about 70% of exports, whereas SE Asia accounts for about 63% of all imports.

Other Comments
Nearly all AN is manufactured using what is called the Sohio process, whereby an ammoxidation reaction is

applied from inexpensive propylene and ammonia.

Scenarios
Seaborne trade in AN increased only marginally between 1996 and 2000. CAGR was 1.5% p.a. According to our sources, we cannot see any substantial changes in global production capacity, nor consumption patterns. We, therefore, choose to follow a growth rate of about 1.5% p.a. for the base case scenario.

Benzene

Description
Colourless to light-yellow liquid with an aromatic odour. Flammable and toxic.

Main Forms
Liquid

Main Uses
Major component of gasoline. Used as an intermediate to produce other chemicals such as styrene, phenol, cyclohexane etc.

Major Producers/Exporters
United States, Europe, the Middle East, SE Asia.

Major Consumers/Importers
United States, SE Asia.

Global Production Volumes
Direct production in 1998 stood at 21.7 mmt, however a significant portion of the benzene supply comes as a result of reducing benzene in gasoline, and as such, these volumes do not appear as ”production”. Global demand in 2000 was estimated at about 30 mmt, and forecasts to 2005 indicate further growth to 39.4 mmt (Source: CMAI).

Seaborne Trade Volumes
Seaborne trade in 2000 is estimated at 2.0 mmt, or approximately 6%-7% of global demand. During the period 1996-2000, sebaorne trade increased 11.2% p.a. (CAGR). However, in 2001, U.S. demand for benzene dropped about 24% (Source: ACC). North America constitutes about 40% of seaborne benzene trade, thus there is considerable volatility in this segment

Other Comments
Motor gasoline regulations in various countries may have an impact on the supply of benzene. In 2000, European and Japanese refineries had to comply with a requirement that gasoline sold in local markets would contain less than 1.0%(vol) benzene. A 1/1000 reduction results in a supply increase of about 0.19 mmt.

Scenarios
World demand for benzene was significantly weaker than the development in seaborne trade during the period 1996-2001. Demand increased about 3.5% per year whereas seaborne trade increased more than 11% per year. In the period 2001-2006, CMAI estimates a 4.6% per year demand increase, however limited, if any, new plant capacity is scheduled for the period. Demand growth in North America is estimated at 3.9% for the period upto 2006. One should expect that seaborne trade in benzene will grow at a slower pace than demand. The reserves as a result of the benzene reduction in gasoline are almost exhausted.

In the longer term, one could expect supply to increase in increments of 0.5 mmt (similar to the Chevron complex opened in Saudi Arabia in 2000), but it is expected that such plants will be established in the Middle East.

As a base case scenario we anticipate demand to increase according to CMAI upto 2006, and, thereafter at GDP-growth levels for the industrialized world. Seaborne trade is expected to lag behind and grow at a rate of 75% of GDP growth rates for the industrialized world.

Butanols

Description
Transparent, colourless liquid with a characteristic odour.

Main Forms
Liquid

Main Uses
Used for the production of softening agents, plastics, and other chemicals.

Major Producers/Exporters
The United States is the principal producer with close to two thirds of global output. The second largest producer is Indonesia with about 18%, and thereafter Europe with about 9%. The United States is the major exporter with about 50% of total exports.

Major Consumers/Importers
North America is the major consumer at about 59% of global output. The largest import area is SE Asia.

Global Production Volumes
Global production stands at about 3.36 mmt per year.

We have no information on planned new capacity in the near future.

Seaborne Trade Volumes
Seaborne trade in butanol increased from 0.34 mmt in 1996 to 0.36 mmt in 2000. Compund average growth rate was 0.6%. The major trade was from North America to SE Asia, constituting 36% of total seaborne trade.

Other Comments
Butanol is a marginal chemical substance and it is virtually impossible to find any information on this commodity.

Scenarios
The outlook for butanol trade is limited with weak underlying demand. We expect trade to remain sluggish and expect a continuation of the lacklustre growth observed in recent years.

Cumene

Description
Colourless liquid with a sharp, penetrating aromatic odour. Toxic.

Main Forms
Liquid

Main Uses
Cumene is an intermediate chemical used for the production of phenol

Major Producers/Exporters
About 68% of global capacity is found in Europe (28%) and the United States (40%)

Major Consumers/Importers
SE Asia is the major importing area.

Global Production Volumes
Global production reached about 10.0 mmt in 2000. Global output is expected to reach 12.4 mmt in 2005. Basically, it is phenol demand that sets the pace of development in cumene production. The world continues to move in the direction of integrated cumene/phenol units, either through partnerships or through new integrated units.

Seaborne Trade Volumes
Seaborne trade in cumene is insignificant in relation to global output. In 2000, volumes wound up at 349,000 mmt.

Other Comments
None

Scenarios
Global demand for cumene is set to grow at 4.4% per year in the coming five year period. This is about the same growth rate we have observed historically (1996-2000) for seaborne trade. However, in the 1996-2000 period, global capacity increased at a pace of more than 9% per year (Source: CMAI, Cumene.org). We, therefore, set the growth rate for seaborne trade at 50% of the demand growth, i.e., 2.2% p.a. in the short term - thereafter on par with GDP growth rates for OECD Europe/U.S.A.

Cyclohexane

Description
Cyclohexane is a colourless liquid with a mild, sweet odour resembling that of chloroform or benzene.

Main Forms
Liquid

Main Uses
Almost 90% of all cyclohexane production is used in the manufacture of nylon. The balance is used as a solvent in paints.

Major Producers/Exporters
The Middle East (Saudi Arabia), Singapore, Malaysia

Major Consumers/Importers
SE Asia, Europe

Global Production Volumes
Not available, however, global demand estimated at about 4.7 mmt in 2000.

Seaborne Trade Volumes
Seaborne trade amounted to 0.48 mmt in 2000. North America SE Asia, and Japan are the major exporters, accounting for almost 90% of seaborne trade. Europe and SE Asia are major importers accounting for 77% of imports.

Other Comments
Demand for cyclohexane is very dependent on the future demand for nylon. Nylon is, as celluloid, amongst the oldest artificial fibres and reached maturity long ago. However, it is still expected that we will see growth in demand due to demand for nylon demand for carpet making. Future demand for cyclohexane may be impacted by new production technology for end-products made from cyclohexane. Demand in Japan has been reduced significantly as a result of such technology and it is expected that this will continue to reduce the demand for cyclohexane.

Some capacity has been added during the past few years, however no new capacity is planned in the period towards 2005 apart from an expansion at Al Jubail in Saudi Arabia. As with other chemicals, we observe a continued expansion in the petrochemical industry in the Middle East,

which will have an adverse effect on Canal traffic.

Scenarios
Seaborne trade grew 5.5% (CAGR) per year 1996-2000. Global demand is estimated at 2.2% per year towards 2005, however it is expected that seaborne trade will grow at a pace of less than this rate, probably not higher than about 1.0% per year.

Ethyl Benzene

Description
Colourless liquid, gasoline-like odour.

Main Forms
Liquid or vapour

Main Uses
Paint, insecticides, anti-knock agent in gasoline

Major Producers/Exporters
N/a

Major Consumers/Importers
N/a

Global Production Volumes
N/a

Seaborne Trade Volumes
Seaborne trade fell from 0.13 mmt in 1996 to 0.04 mmt in 2000

Other Comments
None

Scenarios
Trade expected to be legible.

Ethyl Dichloride (EDC)

Description
Colourless liquid with a pleasant, chloroform-like odour.

Main Forms
Liquid

Main Uses
The primary end use is polyvinyl chloride (PVC, a plastic). PVC production consumes about 95% of global EDC output.

EDC is also the primary product used for the disposal of chlorine.

Major Producers/Exporters
United States and the Middle East countries. The U.S.A. is the largest exporter.

Major Consumers/Importers
SE Asia, Japan, and the United States

Global Production Volumes
Consumption reached about 32 mmt in 1999. Only two projects are scheduled for startup by 2005. Pemex has a 0.2 mmt project in Pajaritos (2002), and Petkim has one under construction in Turkey for startup in 2003 with a capacity of 0.136 mmt per year. European output in 2000 was about 9.7 mmt, however capacity was 13.1 mmt, thus a utilisation rate of about 75%.

Seaborne Trade Volumes
About 2.65 mmt in 2000. This was about 8% of global consumption and seaborne trade grew 1.5% per year (CAGR) between 1996 and 2000. The major exporter was North America with about 1.6 mmt (60% of exports) and the major importer was SE Asia with about 1.3 mmt (about 50% of all imports).

Other Comments
There are serious concerns about PVC on a global basis. The primary concern is about the content of dioxin and other toxic and cancer-causing substances. This may reduce the use of PVC in the future.

Scenarios
Global demand for EDC is expected to grow at a rate of 1.6% per year in Europe, 3.5% in the US, and has the potentially 9% per year in the Far East (excluding Japan) towards 2005. Japanese demand is expected to remain static. The production of EDC is closely linked to the production of ethylene. Although substantial ethylene cracking capacity is expected to come on stream in the coming years, more than 90% is being consumed in downstream processes locally, leaving only small volumes available for international trade.

Global ethylene projects with startup in the period 2002-2006 amount to about 25 mmt, however most of them are linked to downstream investments in ethylene derivatives as raw materials for production of plastics (E.g. polyethylene). 63% of the new capacity is based in countries that will not use the Panama canal for exports, such as the MEG, India, and China. The latter two will probably not result in any international trade at all, and produce exclusively for the domestic market (unless there is an open arbitrage for trading).

Following this trend we expect minimal seaborne trade in EDC and will as base case use the historic growth rate of 1.5% per year.

Ethylene Glycol

Description
Ethylene glycol is a clear, colourless, odourless, viscous liquid with a sweet taste, that can be very toxic.

Main Forms
Liquid

Main Uses
It is found most commonly in antifreeze, automotive cooling systems, and hydraulic brake fluids. In an industrial setting it is used as a solvent or as the raw material for a variety of processes.

Major Producers/Exporters
The Middle East countries and North America are the major producers as well as exporters. China is expected to increase production significantly in the years to come (towards 2005). The Middle East countries exported about 1.5 mmt in 2000, or 45% of total seaborne exports, whereas the U.S.A. exported about 1.1 mmt, or 33% of total seaborne exports

Major Consumers/Importers
The SE Asian countries are the dominant importers. In 2002 SE Asian imports stood at 2.35 mmt, or 70% of all imports.

Global Production Volumes
N/a

Seaborne Trade Volumes
Ethylene glycol is a major seaborne chemical, and trade increased steadily in the period 1996-2000 at 2.5% per year (CAGR).

Other Comments
None

Scenarios
A similar pattern as for other ethylene derivatives should be expected (see ethylene dichloride above) and any strong growth should not be expected. Furthermore, most of the trade growth, due to geographical advantages, is expected to occur as inter-Asian trade. We expect a growth of about 2.0% per year.

Perchloroethylene

Description
Clear, colourless liquid with a mild ether-like odour. Non-flammable.

Main Forms
Liquid

Main Uses
Drycleaning and as chemical intermediate.

Major Producers/Exporters
Minor volumes both produced and exported. U.S. production about 0.15 mmt.

Major Consumers/Importers
Very small quantities imported.

Global Production Volumes
N/a

Seaborne Trade Volumes
About 77,000 mmt. Shrinking trade. The U.S.A. imports about 13,000 mmt and exports about 18,000 mmt

Other Comments
None

Scenarios
No scenario has been developed for this commodity due to the very small quantities involved.

Phenol

Description
Colourless liquid with a sweet, acrid odour.

Main Forms
Solid (colourless or white), Liquid (solution which is the commercially traded product).

Main Uses
Intermediate for the production of phenolic resins which are used in the plywood adhesive, construction, automotive, and appliance industries.

Major Producers/Exporters
The United States with about 2.7 mmt in 2000 (34%). Japan is a major exporter along with the SE Asian countries.

Major Consumers/Importers
SE Asia is the major importing region with about 0.34 mmt in 2000.

Global Production Volumes
About 8.0 mmt in 2000. Expected to increase almost 2 mmt in 2005 to 8.92 mmt.

U.S. output about 2.8 mmt and European about 2.1 mmt.

Seaborne Trade Volumes
Seaborne trade declined from 1996 to 2000 at a rate of –1.1%. U.S. consumption is estimated to increase by about 0.5 mmt towards 2005 and these volumes are largely to be met by increased imports as U.S. capacity is expected

to be maintained at current levels.

Other Comments
None.

Scenarios
Based on outlook for both production and (U.S.) demand, we expect an upswing in seaborne trade in phenol. New capacity will come on stream in Asia (Taiwan) in 2003, and we expect a large portion of these volumes destined for the US market. Based on our findings of phenol development, we estimate a growth rate of 1.5%.

Propanol

Description
Common name for a group of propane derivatives.

Colourless liquid, rubbing alcohol odour.

Main Forms
Liquid.

Main Uses
Used instead of ethanol in industrial processes.

Major Producers/Exporters
North America is the major exporter with exports of about 0.18 mmt, however this figure is 50% lower than in 1996.

Major Consumers/Importers
The major importing area is SE Asia at 0.21 mmt in 2000.

Global Production Volumes
N/a

Seaborne Trade Volumes
0.38 mmt in 2000, down from 0.48 mmt in 1996.

Other Comments
None

Scenarios
We expect a continued decline of about 2.0% in the short term future (towards 2005), thereafter basically stable demand.

Propylene Glycol

Description
Colourless liquid, odourless.

Main Forms
Liquid.

Main Uses
De-icing and antifreeze liquids.

Major Producers/Exporters
Major exporter is North America.

Major Consumers/Importers
Major importer is the SE Asian region

Global Production Volumes
N/A

Seaborne Trade Volumes
Totally 0.24 mmt in 2000, down from 0.26 mmt in 1996. Major tradelane is from North America to SE Asia accounting for 43% of total seaborne trade.

Other Comments
None.

Scenarios
World seaborne trade is expected to remain static at around current levels.

Styrenes

Description
Colourless liquid, sweet odour. Can cause damage to central nerve system and cancer.

Main Forms
Liquid, but evaporates easily

Main Uses
Principal component in polystyrene, a widely used plastic in virtually all areas from coffee-cups to toys, furniture, cars etc.

Major Producers/Exporters
Styrene is produced in virtually every country and more than 15,000 plants operate worldwide. Europe is a major producer with about 25% of global output, whereas North America and SE Asia are the largest exporters with about 33% and 36% market share respectively.

Major Consumers/Importers
SE Asia is the dominant importer with close to 70% of seaborne imports. Latin America is the second largest with about 14%.

Global Production Volumes
Global output in 2000 was about 20 mmt.

Seaborne Trade Volumes
Seaborne trade volumes increased marginally between 1996 and 2000. Up from 3.5 mmt in 1996 to 3.6 mmt in 2000. This implies a growth of 0.6% per year CAGR.

Other Comments
Global styrene demand grew at an average rate of 5.3% during the period 1995-99 (Source:CMAI) and at about 4.5% from 1999 to 2000. Thus, seaborne trade grew at a rate of about one ninth of the demand growth. Thus, future demand increases will have little impact on trade.

Scenarios
Historically, demand for polystyrene has grown at a pace of 1.8 times GDP. However, this resin has reached maturity and faces challenges from other, cheaper materials. It is expected that world demand will increase at a pace of 1.3 times GDP towards 2005, and thereafter at GDP.

There is very little capacity coming on stream before the end of 2003, however thereafter, substantial capacity will commence operations. But most of this capacity expansion will take place in East Asia (China) and trade will be limited. We expect seaborne trade will continue to grow at a rate of about one ninth of global demand.

Toluene

Description
Clear, colourless liquid with a distinctive odour. Affects the nervous system.

Main Forms
Liquid

Main Uses
As solvent in paints, cosmetics, adhesives

Major Producers/Exporters
The U.S.A., Japan, South Korea and Germany are the major producers of toluene, whereas the SE Asian countries are the largest exporters.

Major Consumers/Importers
Toluene is principally consumed in the producing countries, thus the above are also the major consumers. SE Asia is the principal importer.

Global Production Volumes
Toluene output reached about 8.1 mmt in 2000. Growth (CAGR) during1989-2000 was about 1%, however there have been regional differences. In the U.S., demand increased 3.5% p.a. in 1994-1999, whereas European demand increase has been around 1.5%.

Seaborne Trade Volumes
In 2000, seaborne trade ended at 1.44 mmt, about 18% of global output. Seaborne trade grew at a rate of 4.1% per year between 1996 and 2000

Other Comments
Toluene output may be impacted by future legislation on aromatics content in gasoline and restriction in Volatile Organic Compounds (VOC) emissions in the industry. However, with the recent changes in Europe, Japan, and the United States, no new legislation is expected in the near future due to the fact that new restrictions were imposed recently.

Scenarios
Global demand is expected to increase in the period upto 2005, however at a slower pace than observed during the second half of the 1990s. Growth in the U.S. demand is expected to slow to 2.7% per year, and European demand to about 1.0% per year. Japanese demand is expected to decline about 0.3% per year towards 2005.

This will negatively impact the seaborne trade in toluene, and the strong growth rate observed upto 2000 is expected to decline more than the decline in global demand growth which is estimated to be about 2%.

Xylenes

Description
Colourless, flammable liquid with a sweet odour.

Main Forms
Liquid.

”Xylene” is a common name used for several forms of xylenes, namely meta-xylene, ortho-xylene, and para-xylene. ”Xylene” refers to all three isomers of xylene.

Main Uses
Solvent in the printing-, leather-, and rubber-industries. Also used as a solvent for paint and varnishes. Xylene is also a important ingredient in several types of plastics.

Major Producers/Exporters
47% of global capacity is in Asia and 29% in North America. The United States and SE Asia are the largest exporters.

Major Consumers/Importers
SE Asia is the largest importer and consumer of xylenes.

Global Production Volumes
Global production capacity is approximately 55 mmt, however utilisation rates are fairly low. Demand for mixed xylenes was about 25.5 mmt in 2000, for o-xylene about 2.8 mmt, and p-xylene about 15.9 mmt .Global demand for mixed xylenes is expected to grow 6.2% per year, o-xylene 4.8% per year, and p-xylene 5.9% per year towards 2005.

Global production expansion is likely to take place entirely in Asia, and it is expected that Asia's share of global output will increase from the current 47% to 52% by 2005.

Organic chemicals seaborne trade growth rates 2001-25					
	2001-2005	2006-2010	2011-2015	2016-2020	2021-2025
Acetic Acid	2.7 %	2.1 %	1.8 %	2.3 %	2.1 %
Acetone	0.5 %	0.5 %	0.5 %	0.5 %	0.5 %
Acrylonitrile	1.5 %	2.3 %	1.8 %	2.3 %	2.1 %
Benzene	4.6 %	2.3 %	1.8 %	2.3 %	2.1 %
Butanols	0.6 %	0.6 %	0.6 %	0.6 %	0.6 %
Cumene	2.2 %	2.7 %	3.0 %	3.1 %	2.8 %
Cyclohexane	1.0 %	1.0 %	1.0 %	1.0 %	1.0 %
Ethyl Dichloride	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %
Ethyl Glycol	2.0 %	2.0 %	2.0 %	2.0 %	2.0 %
Methanol	2.7 %	3.0 %	2.4 %	3.0 %	2.8 %
Perchlero Ethylene	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Phenol	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %
Propanol	2.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Propyl Glycol	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Styrenes	0.4 %	0.3 %	0.3 %	0.3 %	0.3 %
Toluene	2.0 %	2.0 %	2.0 %	2.0 %	2.0 %
Xylenes	1.0 %	1.0 %	1.0 %	1.0 %	1.0 %

Chemical Trade Forecast.xls/Changes

Seaborne Trade Volumes

Seaborne trade increased from 5.26 mmt in 1996 to 5.53 mmt in 2000, or about 12% of global demand. The annual growth in trade was about 1.0% (CAGR). Over the period, great changes took place. North American exports declined 37% to 1.2 mmt, Japanese exports showed an opposite development by increasing almost 60% to 2.0 mmt. Trading within SE Asia increased 20% and imports to this area increased 15%.

Other Comments

Asia has moved from being a net importer to being self-sufficient in xylenes. Furthermore, Middle East capacity is increasing, following increases in LPG production.

Scenarios

Demand growth towards 2005 is expected to be brisk and one would expect increased trade. However, due to the build-up of new capacity, we fear that imports to Asia from the United States will subside. Inter-regional trade will be kept up, but we foresee limited growth and will maintain the annual growth rate at 1.0%

Methanol

World seaborne trade in 2000 about 12.9 mmt.

World production capacity about 35 mmt.

Utilisation about 75%, or 26.3 mmt

U.S.A. major importer, 4.1 mmt in 2000

Latin America major exporter, about 5.6 mmt, the Middle East about 3.7 mmt, and Australia about 2.3 mmt.

Methanol has historically had three major uses as a raw material: Making Formaldehyde, and making Acetic Acid.

Formaldehyde is further processed into glues, paints, and other chemicals.

MTBE is used as a gasoline additive making Reformulated Gasoline and for adhering to the clean air act in the U.S. (see "California – a Special Case)

Acetic Acid is the raw material for adhesives, paints, textiles, and PET bottles.

Growth in demand for chemical purposes is closely related to GDP growth, whereas growth in demand for fuel/ additive purposes may follow different scenarios depending on future development. The high case scenario depends on the development of the fuel cell, whereas the low case scenario is linked to a potential MTBE crash in the United States.

Methanol is principally made from natural gas and one could expect increased production in countries with substantial natural gas resources. Through exploitation of such resources, companies may chose to diversify into production of natural gas liquids alongside the principal aim which is producing natural gas. This could take the form of either methanol production, or gas to liquids production (GTL).

Current known projects cover 10 new plants with a combined capacity of 13.3 mmt. According to the scheduled start-up dates, this expansion should be completed by 2007 (see projects list in the appendix)

California – a Special Case.

Quite recently, the state of California introduce a ban on MTBE following detection of this substance in (drinking) water reservoirs. It was claimed that MTBE has negative

Case	Scenario	Ann.Demand (mill US Gal.)	Ann. Demand ('000 MT)	Bbls/Day
Low Case	Federal Subsidy eliminated in 2008	347	1,050	22,600
Base Case	Federal Subsidy extended to 2020	850	2,560	55,500
High Case	High Tech. scenario	2,800	8,450	182,600

health effects and it was subsequently decided to ban the use of MTBE from January 1st 2003. This cutoff-date was postponed for one year in the autumn of 2002, i.e. to 1/1/2004.

MTBE, or Methyl Tertiary Buthyl Ether, is used as a gasoline additive in order to reduce pollution and enhance the combustion qualities of gasoline. In 1998, the state of California consumed about 91 kb/d of MTBE. Supply was about 102 kb/d (thus, a surplus) which was met by 10 kb/d production, 17 kb/d imports from the U.S. Gulf states, and 75 kb/d of foreign imports. The ban will force gasoline producers/sellers to replace MTBE with other additives. These may be ethanol or iso-octane. The content of MTBE in Californian gasoline is about 11%, whereas ethanol-content would be only about 5.7%. If ethanol fully replaces MTBE, volumes will be halved.

According to "MTBE phase out in California" report (March 2002 edition), imports that must have transited the Panama Canal amounted to 17,000 b/d. Unfortunately, these figures are not mirrored in ACP statistics as we have not one single cargo identified as MTBE. Thus, we must assume that these volumes are included in "Chemicals, misc." Converted, this amount equals about 700,000 tonnes per calendar year.

The availability and concerns about large scale ethanol production (see elsewhere in this section) lead us to believe that ethanol is not the first choice in the near future. On the other hand, iso-octanes seem to be fairly well positioned to fill the gap caused by the ban on MTBE. There are currently a handful of projects underway. The Irving Oil refinery in New Brunswick will be able to supply gasoline meeting future specifications with about 18,000 b/d. Envirofuels of Alberta will convert one MTBE plant to produce iso-octane. Current MTBE output is about 18,500 b/d, whereas iso-octane output is set to 11,000 b/d. All these volumes are destined for California. Thirdly, a refinery in Dubai, already producing 19,000 b/d of iso-octane, will increase capacity to 25,000 b/d.

The interesting side of this is the conversion of MTBE capacity to iso-octane production. We have been advised by Iver Ships, the major transporter of MTBE (and methanol) that the cost for this conversion is not very big and that several producers are considering this move. As a result of this, MTBE trade to California will vanish, but volumes will be replaced by iso-octane. We also know that Methanex (the world's largest Methanol producer) is contemplating producing iso-octane at their Kitimat plant in Alaska. However, for the short term, we assume a change in products supplied from the current sources to California. This will not impact the forecast of Canal trades, and, according to recent reports on the MTBE ban in California, we expect further postponements since the cost to the population for doing so will be suicidal (at least in political terms…)

Methanol and the Panama Canal

ACP data does not provide any information on transits of ships carrying methanol. This trade is very small, and from industry sources we have learnt that annual volumes fluctuate between 30,000 and 60,000 mt from Trinidad & Tobago to the U.S. West Coast. A volume of 60,000 mt represents less than one percent of total chemical transits from the Atlantic to the Pacific. In the other direction there is no flow. The main reason for this tiny volume is abundant supply of methanol from Canada and Alaska. Infrequently, Chile also supplies methanol. Thus, the current added cost for transiting the Panama Canal makes exports from, for example, Trinidad, uninteresting.

In future trade flows of methanol, the Unted States is of pivotal importance. There is an underlying demand growth for methanol for chemical purposes which is estimated to 2.7%-3.0% p.a. in the period towards 2025. In addition, the successful introduction of the fuel cell will have an enormous impact on methanol demand in the United States.

U.S. Methanol Demand Structure

In 2000, total U.S. demand for methanol stood at about 9.4 mmt. About 4.0 mmt was produced domestically, and the balance, 5.4 mmt, was imported. Of the latter quantity, about 4.1 mmt were seaborne imports. The chemical industry, using methanol as a feedstock, consumed about 4 mmt. In other words, the domestic output equalled about the demand for chemicals.

Assuming a 2.7% annual growth, demand for methanol for chemicals will increase to about 7.8 mmt in 2025. Thus, there will be a deficit of about 3.8 mmt unless new methanol production facilities come on stream. According to current known projects, no new methanol plants will be built in the U.S.A. within the next 5 years. Although the project period for a plant is about 2-2.5 years, we do not foresee any new projects. The main reason is that the demand for natural gas for electricity generation is strong, and prices are high. The price trend for natural gas is a rising one, and this applies even during the non-heating season. Thus, it seems that using indigenous gas for methanol production is prohibitive. We have also observed the opposite taking place. Methanol plants have been shut down over the past

few years due to uneconomical plants and high gas prices. Thus, any increased demand will have to be met by imports.

California/USWC

Demand for methanol for chemical purposes on the USWC (primarily California) is less than 10% of the total U.S. demand. Traditionally, this demand has been met by local production as well as by imports from Canada and supplies from Alaska and occasionally from Chile as well. We assume that growth in demand for chemical purposes will follow a similar trend as the nation at large in this area. In 2025 one expect a demand of around 0.78 mmt for chemical purposes. Current supplies from Canada and Alaska are already exhausted (unless Alaska exports are diverted from Asia to the U.S. West Coast) and future imports would then have to be met by either Trinidad/ Venezuela or Chile. We could also foresee a large scale methanol plant being built in Peru (e.g. Callao) in conjunction with LNG activities there. In our base case scenario we have assumed a start-up of an LNG train there in 2008. We have put in a notional volume through the Panama Canal from 2010 onwards in the best case scenario.

It is expected that by 2010, 2 million vehicles will run on methanol. The lion's share of these vehicles will be found in California/USWC. However, we believe that the methanol fuelled car will gain widespread popularity in the United States and that California's share of the growth in the number of such vehicles will decline. However, we have estimated that by 2025 about 4.6 million cars will run on methanol in this area. The volume growth is derived from an annual average consumption of 441 gallons per vehicle.

Methanol Supply

Current methanol production is found in countries rich in natural gas sources. In the vicinity of the United States these are Venezuela, Trinidad&Tobago and Canada (as well as Alaska). Moving a bit further away, Chile is also a major producer.

In accordance with known projects scheduled for development, we see that these areas are set for growth in the future. Another 4 mmt of capacity is scheduled to come on stream by 2006 (see project list in the appendix). Furthermore, we observe an excess capacity today of about 2.2 mmt in Latin America. Thus, by 2006, capacity in the vicinity of the United States can increase by as much as 6.3 mmt. In the best case scenario, this added volume seems ample in meeting U.S. import demand. For the worst and reference cases, we expect a substantial overcapacity.

Expanded Canal

For chemical trades through the Panama Canal, it is only methanol that will benefit from an expanded Canal. In an unexpanded Canal we observe that, freightwise, a Panamax from Venezuela to Los Angeles may compete with a similar vessel from Punta Arenas to Los Angeles. However, compared to Alaska or Canada, none of these alternatives can compete. But, if one increases the size from Punta Arenas, this alternative source may become viable. This is also the case for Venezuela or Trinidad.

Furthermore, no expansion of methanol production capacity is planned for the Kitimat plant in Alaska, thus all future volumes have to be met by imports from Latin America. We have considered Australia as well, but this alternative seems to be uncompetitive irrespective of size.

Thus, the size structure might change in the future, however, this will not impact volumes.

Methanol Scenarios

The different scenarios for future seaborne methanol trade are probably, more than any other liquid bulk commodity, linked to both technical and political factors. The worst case, "MTBE Crash scenario" has a regionally fairly high probability inasmuch as the state of California has already imposed a ban on future MTBE use as a gasoline additive. However, other parts of the world have come to a completely different conclusion and consider MTBE as a fuel additive for the future. The best case scenario is linked to the successful development, implementation and marketing of the fuel cell vehicle (as well as other motors

Size distribution for Chemicals through the Panama Canal FY 2001

	Volume Transported	Number of Parcels	Average Parcel Size	Number of vessels	Average Cargo Size
Parcels Tankers	8,085,017	1,737	4,655	481	16,809
Prod/Chem Tankers	2,938,923	236	12,453	102	28,813
Total	11,023,940	1,973	5,587	583	18,909

Source: ACP

for other uses). The uncertainty of methanol in this respect is whether this substance will be the preferred carrier of hydrogen (which is the fuel in fuel cells). There are other modes of storing hydrogen, but we have assumed that methanol will be the preferred.

We foresee three different scenarios:

Reference case

(The Business-As-Usual Scenario)

The use of chemicals continue to grow at GDP rates

MTBE remains and holds its present position in the fuel market

A "Probable case" GDP growth scenario (see economic development section)

Best Case

(The Fuel Cell Scenario)

Fuel cells are successfully introduced in the market by 2004

The preferred fuel is methanol

Initially these "zero-emission" vehicles are introduced in the U.S.A. and Europe

Future demand for methanol will increase drastically

Worst Case

(The MTBE Crash Scenario)

The use of MTBE will decline following the ban in California

Fuel cells are not being developed or will not run on methanol

Worst case economic scenario

Under the fuel cell scenario we expect to see the use of methanol for chemicals continue to grow in line with GDP growth. The production of methanol will increase almost exponentially due to an explosion in demand. It is estimated by AMI that by 2010, about 2-3 million cars will run on methanol consuming 3-5 mmt per year.

Following the ban on MTBE in California we foresee that the political pressure for MTBE use in the U.S.A. (the principal consumer) will subside, and may even decrease. Following the recent, and expected, changes in European gasoline quality requirements, one could expect a small increase in Europe; in other regions growth is slow. We have, therefore, based our forecast on a zero-growth scenario for MTBE.

Our Best case scenario for world trade looks as follows:

By 2010 fuel cells will require the equivalent of five world scale plants (i.e. 5 x 0.5 mmta)

However, we see a trend towards ultra-large plants like the one in Australia planned by Methanex. Capacity, as planned, seems to outstrip demand up to 2010, but thereafter new capacity has to be built.

The new capacity, as we see it, will be built adjacent to new LNG plants as a means to diversify and to meet increased demand from fuel cells. (See LNG Chapter)

Ethanol

Indirectly, Ethanol may be considered a substitute for methanol. The reason for establishing an indirect link is that by-products from these two substances may be competing gasoline additives (oxygenates) for reformulated gasolines.

The tremendous growth in methanol demand in the U.S.A. over the past decade was partially driven by the demand for MTBE (Methyl Tertiary Buthyl Ether), a substance used in gasoline as a source of oxygen and octane. In recent years, traces of MTBE have been detected in drinking water sources and concern about health hazards ensued. Therefore, California introduced a total ban on MTBE in 1999 to become effective January 1st 2002. This ban was later postponed to 1st January 2004, and there is reason to believe that this may be postponed even further. The principal reason for the postponement was a potential shortfall in adequate gasoline supplies (5%-10%) and a price hike of 50%-100% on gasoline following this anticipated shortfall.

An alternative to MTBE is ETBE (Ethyl Tertiary Butyl Ether). However, this substance has health hazards similar to MTBE and might not do anything to improve the situation with respect to groundwater pollution.

Nevertheless, even with a substitution, no additional demand will be added and the total (MTBE+ETBE) will remain at

a level on par with only MTBE demand.

Most of the MTBE supplied to California is sourced in the Middle East (Saudi Arabia) and as such the tankers carrying the MTBE do not transit the Panama Canal. About 15% of California's MTBE consumption is sourced in the US Gulf area (Source: California Energy Commission) This represents about 0.73 mmt, or less than 6% of chemical volumes through the Canal. This volume will probably decrease in the future, however, MTBE is, with the exception of the U.S.A., considered an acceptable gasoline additive globally. Thus, we expect that at least parts of the decrease in MTBE volumes to California may be replaced by volumes to the East Coast of South America. In total, we do not expect this to impact the Panama Canal very much.

Ethanol has also been launched as an alternative fuel to gasoline. To a large extent, use of ethanol will have a positive impact on the environment, U.S. trade balance, and job creation in the U.S.A.. However, current production of fuel ethanol is heavily subsidized (USD 0.54 per gallon) and it is assumed that traditional production of ethanol from corn has reached technical maturity. Thus, it seems difficult to lower production costs and, hence, increase the appeal of the product in the market.

However, new technology holds the promise of great advances in production economy as well as greatly improved energy returns by producing "cellulosic ethanol". This is a process in which biomass, forestry waste, grasses, and certain types of municipal waste could be put to use, thus greatly reducing costs. There are technical obstacles that have to be overcome in order to make ethanol competitive. Amongst these is the need to genetically engineer yeasts which are hardy enough to withstand the production process, and the mechanical difficulties associated with processing large amounts of wet solids. Furthermore, the genetically modified organisms (yeasts) need to be strictly contained.

The EIA has proposed three forecasts for biomass ethanol production towards 2020 which can be summarised as follows:

In connection with seaborne trade in liquid bulk commodities, even the high case scenario is fairly small. California, which is the state with highest expectations for ethanol use, has substantial biomass resources for ethanol production and can meet local demand through local supplies. Even if this should prove to be less than demand, rail costs from the midwest are sufficiently low to allow ethanol from this area to compete favourably in California.

The official document "Costs and Benefits of a Biomass-to-Ethanol Production Industry in California" (California Energy Commission, March 2001) clearly heralds the establishment of such an industry in California in order to meet future demand for ethanol. In its scenarios the commission indicates that the maximum import demand for ethanol is about 300 million gallons per year (0.9 mmt), but it could be as low as 100 million gallons (0.3 mmt). It should be noted, however, that the term "imports" includes ethanol sourced in other U.S. states in this context. The center of gravity of the U.S. ethanol industry is based in the Midwest, and as can be seen above, their production can be competitively marketed in California.

According to this report, there may be an interim period during which almost all ethanol has to be imported. However, it is assumed that this demand may be met by domestic production, although this might push utilisation close to capacity constraints. The only hint towards foreign supply is connected to Brazil. Sporadic shortfalls in supply might be met by imports from Brazil.

Due to the great uncertainties linked to future ethanol use (both technical and commercial) and the relatively small volumes forecast towards 2020, we conclude that very little, if any, ethanol will transit the Panama Canal and ethanol is excluded from the forecasts for seaborne trade in organic chemicals.

Trade Structure, Future Capacity Expansions, and the Panama Canal's Role in Seaborne Trading Patterns.

In this section we will seek to clarify the various factors impacting future trade in chemicals. We will establish the platform upon which we have developed our forecasts under the different scenarios. Thus, the factors (like chemical production capacity development)are based on available information and analysis of changes in the market for the seaborne trade in chemicals.

We have also included some comments on the nature of transporting chemical commodities since these may have an impact on future size distribution of chemical carriers transiting the Panama Canal.

Quality of Data on Chemical Trade Flows through the Panama Canal

We have been provided with statistical information on transits of chemicals through the Panama Canal from fiscal year 1986 through 2001 (both inclusive). During this period we observe that the total volumes, in general, have shown

an upward trend, but there are also individual years in which volumes have declined. This must partly be attributed to economic trends, both globally as well as regionally.

But we also observe that the classification of commodities is somewhat erratic. First of all, we observe that vegetable and animal oils and fats are generally classified as chemicals, which is not exactly correct. Secondly, we also observe that certain dry cargo commodities are classified as chemicals as well. This relates to oilseeds and resins. But the biggest challenge has been the limited information on the different types of "true" chemicals that have transited the Panama Canal, e.g., in 2001, a total of 9.36 mmt of chemicals transited, and 73% (or 6.8 mmt) was classified as "Chemicals, misc.". This was not an exceptional year and in all years included, the lion's share of chemical transits were classified in this residual post. Thus, we have little information on what kind of chemicals that have actually been transported through the Panama Canal.

To put it another way: some information is provided for specific commodities such as, for instance, benzene, toluene, and molasses. However, we do not know if any volumes of these commodities have been included in the residual post "chemicals, misc." on other occasions. Thus, the specified commodity volumes are definitely wrong, but we have no means for establishing the real volumes.

Inasmuch as the ACP does not know themselves what kind of chemicals that have transited, we have in our forecasts had to base our analyses on total volumes and transit direction.

Cargo Composition in Chemical Carriers

As described earlier, the purpose-built chemical carrier is a fairly young ship-design. But few other shiptypes have undergone such, almost dramatic, changes in concept. In the early days, the chemical carrier, to a large extent, was a modified oil products tanker, whereas today one more often refers to these vessels as "chemical parcel tankers". This concept refers to the versatility of the ship in carrying a multitude of different cargoes simultaneously. It is not unusual for a modern chemical tanker to carry upto 40 different grades of chemicals. If one takes into consideration that these ships normally are less than 45,000 dwt, each parcel is, of necessity, rather small.

One of the major operators, Odfjell in Norway, provides statistics on this phenomenon on their web-page. In 2001, the company carried about 19.9 mmt and a total of about 7,900 parcels. In other words, the average size of each parcel was about 2,500 mmt. In addition, they had about 5,800 port-calls.

We have no similar information for the Stolt-Nielsen group, however due to similarity in operations we assume that their average parcel size does not deviate much from Odfjell's.

We also observe from the transit-information received that a large portion of the chemical carriers that transited the Panama Canal in, e.g. 2001, operated in a multi-port mode. That is, they loaded and discharged in several ports. These ports were not necessarily within the same countries, and, we have had to consider regions rather than individual countries.

Chemical Carrier Composition

In the above we have referred to the parcel tanker, however chemicals are transported in ships that we normally name "product/chemical tankers". These ships are simpler than the parcel tanker and normally cannot carry more than 4-6 different grades of chemicals. These ships are often also referred to as "swing tonnage". By this concept we mean ships that will carry "easy chemicals" when the market for chemical tankers is strong and oil products when this market is strong. Considering the Panama Canal data for this type of ship, we see great differences from the parcel tankers.

Based on data for fiscal 2001, we observe the following:

The average size of the cargo intake for a parcel tanker and a product/chemical tanker are 16,800 and 28,800 mmt, respectively. In terms of parcel size, the parcel tanker carried on average 3.6 parcels of 4,700 mmt and the product/chemical tanker carried on average 2.3 parcels of 12,500 mmt. These figures indicate the different manner of commercial operation of the two shiptypes, although both operate in the chemical market. We also note that chemical carriers may carry vegoils together with chemicals.

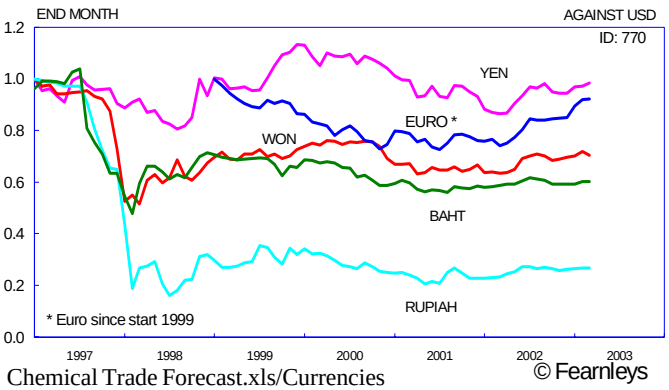
Chemical Trade Flows through the Panama Canal

In fiscal year 2001 a total of about 12.6 mmt chemicals transited the Panama Canal, and marked a new peak in volumes. This was almost a doubling since 1986 (calendar year). We have studied the development in direction of transits as well as the total transit cargo volumes in relation to world seaborne trade. The most striking result of this study is the (relative) stability of volumes in relation to direction as well as in relation to world seaborne trade (see Table "Panama Canal Chemical Cargo Volumes in

Appendix).

During the 16 years considered, the cargo-flow from the Atlantic to the Pacific (excl. vegoils etc.) has varied between 71% and 83% of total liquid bulk transit cargo volumes. Flows in the opposite direction have obviously varied between 17% and 29%. The average share in each direction has been 78% and 22%. During the period 1998-2001 the flows in each direction have stabilised at a level somewhat lower and higher than in the preceding period, and even below/above the average shares. We believe it was not coincidental that we saw this change in 1998. This was at the height of the Asian crisis and several of the Asian countries saw their currencies devaluate strongly against the U.S. dollar. Thus, their purchasing power for imports declined, and at the same time, their exports could be sold at highly depreciated prices. Thus, exports increased and imports decreased – at least in this context, where the U.S.A. was the dominant trading partner. During the past few years we have seen a stabilization of Asian currencies against the U.S. dollar, and even after the weakening of the U.S. currency during the past 12 months, we observe that the Asian currencies, to a large extent, have maintained their strength relative to the U.S. dollar.

CURRENCIES vs. START OF 1997



Thus, we will base our direction of flows on the flow-ratio for FY 2000 rather than the historic average. These figures do not deviate much from the historic averages and were 73% Atlantic-Pacific and 27% Pacific-Atlantic.

The Panama Canal volumes' share of world seaborne trade also varied little. Between 9% and 13% of world seaborne trade (including vegetable & animal oils and fats) if one includes all cargoes denominated "Chemicals" in ACP statistics (which include vegetable & animal oils and fats). If one takes out all commodities in the ACP statistics that are not, by definition, chemicals, the Panama Canal's share is between 10% and 13%. On average the Panama Canal share is 11.2% in the former approach and 11.7% in the latter. Due to uncertainties in the data material, but apparent stability in the derived figures, we have chosen to use 11.5% as the Panama Canal share of global seaborne trade, and a starting point for our forecasts. For the direction of trade flows we have based our forecasts on the ratio from FY 2000 as given above.

The Global Market for Seaborne Trade in Chemicals

Since 1982 (which is the earliest year for which we have complete information) global seaborne trade in chemicals (organic, inorganic, as well as lube oil and potable alcohols, etc.) has increased by almost 125%. In real terms, trade has expanded from 36.3 mmt in 1982 to 81.3 mmt in 2000. This is a growth of 4.3% p.a. (CAGR). Although statistics are scarce, the appendix table "Intra-regional organic and inorganic trade 1995-2001" gives an indication of the changes in trade flows.

In FY 2000, more than 80% of the chemical cargoes transiting the Panama Canal either originated on the U.S. Atlantic coast or ended up in this area. However, if we place this into the context of world seaborne trade in chemicals we see that the growth in chemical trade has taken place in areas which do not include the Panama Canal.

Intra-SE Asia trade in organic chemicals increased by 62%, or 4.6 mmt from 1995 to 2000 and similarly, exports from the Middle East to SE Asia increased 53%, or 1.8 mmt during the same period. Considering trades to, or from, North America, we see that exports to SE Asia declined 23%, or 1.3 mmt, but exports to Latin America increased almost 66% (up 1.1 mmt) and from Latin America to North America exports increased by 180%, or 3.4 mmt. The latter figures include trade in methanol which was almost exclusively exported from Trinidad & Tobago to the US East Coast. In total, seaborne trade in inorganic chemicals increased 11.3 mmt, or 47%.

For inorganic chemicals, the picture is quite similar, although total volumes are much more moderate: intra Asian trade increased and North-Latin American trade increased.

Using a finer mesh, data for 1996 and 2000 excluding methanol, confirms the trend observed in the above (see table "Global Seaborne trade in inorganic chemicals excl. Methanol. In appendix)" In 1996, global seaborne trade in organic chemicals amounted to 21.5 mmt, and in 2000 the volume was 24.0 mmt. Total exports from North America declined during this period, from 8.3 mmt in 1996 to 8.0

mmt in 2000, a decline which, in itself, is not dramatic. But during the same period exports to Latin America increased by 0.65 mmt which indicates that long-haul exports (to e.g. Asia) declined by about 1 mmt. North American exports to SE Asia alone declined by about 0.8 mmt, whereas intra-Asian trade increased by 2.6 mmt, or 35%. Japan to SE Asia trade increased by 0.77 mmt, or 28%, and intra SE Asia trade increased by 1.5 mmt, or 46%. Thus, it is quite obvious that the trading pattern prevailing for years was changing, and in certain areas very rapidly, and the dependence on North America as a source for chemicals is declining. This is at least true for trades from the Atlantic to the Pacific. We also see an opposite trend towards increased trade between North and South America.

Global Build-up of Chemical Production Capacity

As we have written several times above, there are a multitude of different chemicals and a multitude of different feedstock's from which these are derived. However, there are two particularly important feedstocks for producing a multitude of intermediate chemicals which are proceed further downstream into fine chemicals and, perhaps the most important end-product, plastics. These are ethylene and propylene. Thus, in order to forecast anything about future chemical trades it is of vital importance to investigate future capacity increases for both ethylene and propylene. Both commodities are in gaseous form at normal pressure, but are made liquid by means of refrigeration, and as such, they are covered elsewhere in this study.

Ethylene is the key product obtained by steam cracking of naphtha. Key chemical ethylene derivatives include polyethylene, ethylene dichloride, ethylene oxide, ethyl benzene and various alcohols. Propylene is derived from crude oil through, primarily, the FCC process (Fluid Cathalytic Cracking) or through cracking of ethane. Principal derivatives are cumene, oxo-alcohols,propylene oxide, and acrylic acid.

Global production capacity for ethylene was about 107 mmt on January 1st 2002. During 2002 another 5 mmt of new capacity was implemented. Interestingly, 4.2 mmt, or 83%, of the added capacity was in Asia. The most recent project lists indicate that another 23.7 mmt will be added by 2008. About 16.5 mmt, or 70%, of this capacity will be located in Asia. Thus, a major shift in geographical distribution of ethylene capacity will occur which, we expect, will impact the geographical distribution of production of ethylene derivatives. This will have a negative effect on the trade between the Atlantic and Pacific, but might contribute positively to the opposite trade flow in such chemicals. Currently, about 64% of global ethylene capacity is situated in the Western hemisphere. In 2008, assuming no closures or new projects, this share will decline to 58%. A result of this change is build-up and increased self-sufficiency in chemicals derived from ethylene and decreased inter-oceanic trade.

A similar picture can be drawn for propylene and propylene derivatives. Global propylene output from refineries is expected to increase by 12 mmt by 2011 (SRI Consulting, Houston). This growth is shared almost equally between North America and Asia, however other sources for propylene will add to this capacity increase. In Asia, this is estimated to be about 4 mmt. The global usage of propylene from refineries for chemicals is currently about 60%. In Asia, however, this share is 90%. Most of the new capacity will be for chemical uses and it is expected that the high Asian share will be maintained. Thus, another 8-9 mmt of propylene will be used for making chemicals in Asia towards 2011.

In addition to propylene and ethylene and the production of their chemical derivatives, current known projects will add about 10.3 mmt capacity of various organic chemicals. About 6.3 mmt, or 61%, of this capacity will be installed in Asia by 2006.

Project lists are included in the Appendix under "Chemical Plant Projects"

Summing up, most of the new chemical capacity coming on stream by 2011, will be in Asia. All historical data available indicate that the Western Hemisphere, and especially the U.S.A., has been the main source for chemicals Asia. In the coming period, this will change, and one must expect declining volumes from the Atlantic to Asia (Pacific)

Panama Canal Potential Market

Altogether, global seaborne trade in chemicals and vegoil is forecast to increase from 107 mmt in 2000 to 172 mmt, 177 mmt, and 158 mmt for the reference, best, and low case scenarios respectively. In percent, the annual average growth is 1.9%, 2.0%, and 1.6% for reference, best, and low cases respectively.

The Panama Canal's share of this trade varies by commodity, and the impact from technological advances may have a tremendous impact on future volumes. This relates principally to the best case scenario for Methanol.

We do not foresee any major changes in the major tradelanes involving the Panama Canal. However, we do see a major shift in the direction of flows. The United States East and Gulf coast areas will become important importing areas for the new chemical capacity coming on stream in Asia. As a result, U.S. chemical producers have to turn to other markets. We believe that we will see increased volumes flowing through the Panama Canal and into the west coasts of Central and Latin America.

Vegoil, although a large seaborne commodity, has little importance for the Panama Canal. We foresee very little growth, and the Panama Canals share of global trade is expected to remain static. Furthermore, history has shown us that these volumes are highly volatile.

Summing up, the tables below show the potential volume and direction for the forecast period.

Organic chemicals seaborne trade growth 2000-25 ('000 mt)					
	2005	2010	2015	2020	2025
Acetic Acid	1047	1161	1270	1423	1579
Acetone	470	482	494	507	520
Acrylonitrile	1171	1308	1431	1599	1774
Benzene	2514	2810	3073	3434	3810
Butanols	366	377	388	400	412
Cumene	390	446	515	600	689
Cyclohexane	508	534	561	589	620
Ethyl Dichloride	2856	3077	3314	3571	3846
Ethyl Glycol	4173	4607	5087	5616	6201
Methanol	14715	17059	19206	22265	25562
Perchlero Ethylene	77	77	77	77	77
Phenol	537	578	623	671	723
Propanol	418	418	418	418	418
Propyl Glycol	236	236	236	236	236
Styrenes	3677	3733	3780	3837	3895
Toluene	1591	1756	1939	2141	2364
Xylenes	5814	6110	6422	6749	7094
Excl Methanol	25845	27712	29629	31869	34258
Incl Methanol	40560	44771	48835	54135	59820

Organic chemicals seaborne trade changes 1996-2000			
	1996	2000	CAGR
Acetic Acid	562.3	916.3	10.3 %
Acetone	438.5	458.7	0.9 %
Acrylonitrile	1010.7	1086.7	1.5 %
Benzene	1183.6	2008.1	11.2 %
Butanols	344.3	355.1	0.6 %
Cumene	286.9	349.9	4.1 %
Cyclohexane	369.2	483.1	5.5 %
Ethyl Dichloride	2461.8	2651	1.5 %
Ethyl Glycol	3343.9	3779.5	2.5 %
Methanol	8347.4	12879.7	9.1 %
Perchlero Ethylene	88.7	77.4	-2.7 %
Phenol	527	498.4	-1.1 %
Propanol	476.8	378.9	-4.5 %
Propyl Glycol	255.8	236.1	-1.6 %
Styrenes	3493.4	3604.6	0.6 %
Toluene	1177.5	1440.7	4.1 %
Xylenes	5264.6	5531.5	1.0 %
Excl Methanol	21285	23856	2.3 %
Incl Methanol	29632.4	36735.7	4.4 %

Chemical Trade Forecast.xls/Changes

Figures in: ('000 mt)

Total Organic chemicals seaborne trade growth rates 2000-25					
	2001-2005	2006-2010	2011-2015	2016-2020	2021-2025
CAGR excl methanol	1.61 %	1.40 %	1.35 %	1.47 %	1.46 %
CAGR incl methanol	2.00 %	2.00 %	1.75 %	2.08 %	2.02 %

Chemical Trade Forecast.xls/Changes

Source: Fearnleys

Orimulsion

Scenarios

Orimulsion is a boiler fuel with a patented trademark produced exclusively by PDVSA of Venezuela from the vast bitumen reserves in the Orinoco River Belt. The product is marketed as a competitor to coal, and even though it is a liquid, made from petroleum, it does not compete with crude oil or other petroleum products. This situation creates a special set of economic circumstances for Orimulsion. In the case of crude oil or petroleum products, freight costs are not significant to the extent that most shippers of crude or products are only preoccupied with having the same, or at least very similar, costs as other shippers of the same product. Therefore, a shipper can always justify the high delivered price to a receiver by explaining that the use of another shipper would involve similar costs. Orimulsion cannot offer this explanation. As a product it is in the unique position of being shipped on tankers and having to abide the unique fluctuations of the tanker market, but at the same time, it competes as a product with coal which is shipped by bulk carriers which have an existence which is mostly separate from the tanker market. Orimulsion must, therefore, always seek out those windows of opportunity in the tanker market which will allow the transportation of the product to cost the same or less than the transportation costs of coal. The fact that Orimulsion has only a single producer and no liquid competitor which is similarly priced, means that the product will be perpetually condemned to constantly examine the relationship between the tanker market and the dry bulk market. The relationship between the tanker market and the dry bulk market can, therefore, be an important factor in determining best, worst and most probable cases for Orimulsion.

Bitor, the PDVSA subsidiary responsible for the production, marketing and transportation of Orimulsion has a profound understanding of the unique factors affecting the transportation of their product. The principal method which the company employs to minimize the dangers occasioned by fluctuations of the tanker and dry bulk markets is to secure long-term transportation contracts at very cheap rates. One of the methods the company has exploited in this regard is by emphasizing many of the destinations for their product are close to tanker load areas; they have thus been able to obtain what are known in the tanker trade as 'backhaul rates' which are usually quite discounted because they place the vessel in or near a loading area at the end of the voyage. We have seen a recent example of this in the transportation contract Bitor has done to supply Power Seraya in Singapore. Under this contract the product is exported in VLCCs from Venezuela to Singapore. Presumably, the VLCCs used under the contract would be vessels which had taken a crude oil cargo from the Middle East Gulf to the U.S.Gulf. They would then ballast down to Venezuela, pick up an Orimulsion cargo and carry it to Singapore, which is only ten days away from the Middle East Gulf, which is the main loading area for VLCCs. The main alternative to carrying such a cargo would be, at best, an 18 day ballast to West Africa, or, worse yet, a 40 day ballast back to the Middle East.

Another factor to be considered is that Orimulsion is a very 'dirty' product. Even though Bitor has gone to great efforts to market its environmental friendliness, there are limits to how much cleanliness one can attribute to bitumen, which is, after all, one of the main precursors of coal. The fact that Orimulsion is a liquid, similar in appearance to oil, is important because, as a relatively new product, any incident underlining the dirty quality of the product, such as an oil spill or plant pollution as a result of burning it, could be potentially disastrous to the future of the product. Such an incident could loosen the foothold the product has gained in world markets. We have already seen that Orimulsion was rejected by the United States and Great Britain on environmental grounds. The case of Britain was especially important because Bitor had already formed a joint venture with British Petroleum called BP Bitor, but once it was determined that the product did not satisfy British environmental standards, the joint venture had to be dissolved. There is always the danger that similar situations could arise even in countries where Orimulsion is already established.

Without any present possibility to market Orimulsion in the United States in the foreseeable future, and with many European countries being reluctant to give serious consideration to the product, Bitor has turned to markets in Asia. The markets in East Asia can be of real potential interest to the Panama Canal because the Canal route provides significant timesavings compared to other routes. Bitor's Asian portfolio is considerable. At the present time the company is shipping 800.000 m/t per annum to Kashima Kita in Japan and 1.5 million m/t per annum to China National United Oil Company. In addition, the company has sold between 1 and 2 million m/t per annum to China

Oil on an f.o.b. basis. Bitor's forward book in the Far East is as follows:

- China National Petroleum: 6 million m/t by 2005

- Samsung Fine Chemicals: 250.000 m/t by 2003

- Korea Electric Power (KEPCO): undisclosed volumes to commence in 2003

- Korea South East Power Corp.: 1 million m/t by 2005

- Mitsubishi: 1 million m/t per annum probably commencing in 2003

- Power Seraya Singapore: 1.5 million m/t by 2004 (since 2000 about 120.000 m/t shipped)

Most Probable Case

The most probable case for Orimulsion will have the following elements:

- Continuing concentration on customers in the Far East
- Probably little change in the position of U.S. receivers on Orimulsion
- Continuing fluctuations in the tanker and dry bulk markets making shipments of the product advantageous at some times and disadvantageous at others.
- Some Suezmax and Aframax movements via an expanded Panama Canal depending on the state of the tanker and dry bulk markets.
- Given the current logistics of Orimulsion and its competitors in power generation, we expect a 'saturation' point in the market during the period which will involve a total production for worldwide distribution of some 30 million m/t per annum.

Best Case

The best case for Orimulsion will have the following elements:

- Prolonged periods with a weak tanker market and a strong dry cargo market.
- Increased viability of the product because of its cheap transportation cost as compared to coal, and thus, a possible extension of the limits of market saturation.
- Environmental improvements in the product or in facilities for burning it which would allow its entry into the U.S. West Coast market and other markets where it is not now viewed positively.

Worst Case

The worst case for Orimulsion will have the following elements:

- Prolonged period with a strong tanker market and a weak dry cargo market.
- Decreased interest in the product because of its consistently higher transportation cost compared to coal, and thus, a lower limit to market saturation.

Environmental incidents which damage the reputation of the product, thus limiting its market.

Forecasts

Our forecasts for Orimulsion through the Panama Canal are based upon our estimates of the proliferation of this unique product during the course of the forecast period as well as the extent to which this proliferation will depend upon the Panama Canal. As can be noted from the forecasts, prospects for the Canal are relatively limited under all scenarios. There are several basic reasons for this which we would like to outline here. First of all, Orimulsion is a relatively cheap commodity with its price pegged to coal, and as such, it lends itself to economies of scale in its transportation. Movements of Orimulsion from Venezuela to the Far East, which would be the main Canal route, are already showing clear tendencies to be handled by VLCCs rather than smaller sizes, and the vast majority of VLCC shipments have been of about 300,000 m/t. This means that even the expanded Canal will have limited significance as far as Orimulsion is concerned.

We would also like to point out that the market for Orimulsion as a whole is limited, and we think that during the period of our forecasts the product will attain market saturation. There are several reasons for this. First of all, Orimulsion has a questionable environmental reputation, and it is relatively new to the market. In many quarters it

has been met with scepticism largely because it is difficult to introduce a new product which has an environmental downside into a market in which there are a number of other, better known alternatives. The alternatives which have environmental downsides similar to Orimulsion have a better opportunity in the power generation market because they are already well known, and because power plants are already equipped to burn them. Production of electricity with Orimulsion requires a certain amount of plant retooling and the installation of equipment such as filters, etc., and such expenses are not always seen as justifiable in a competitive power generation market. Secondly, Orimulsion competes in the electrical power generation market with gas, coal, and fuel oil, and the well-established niches which these commodities have secured over a long period further limit its possibilities. Bitor has spent millions of dollars during the last fifteen years to examine every potential market for the product and to promote its properties. After fifteen years of market investigations and promotion, we suspect that further prospects of significant market share increases are limited.

We have not taken the general strike in Venezuela into account in our forecasts because we feel that its effects will be limited during the rather long period we are covering. Nonetheless, it cannot be ignored that the strike has dealt a severe blow to the impression of Venezuela as a reliable supplier. As far as Venezuela is concerned, all possibilities are open at the time of writing of this report. Should the political situation stabilize, then we can look confidently to our base case or best case scenarios. Should political unrest continue, however, this could signify an even more ominous worst case scenario than our figures indicate. We mention this possibility particularly in the case of Orimulsion because Venezuela is the only producer of this commodity, and a doomsday scenario there would have serious ramifications. Disruptions in Venezuelan supplies of crude oil and oil products will also have serious consequences for the Panama Canal, as cargoes originating in Venezuela are one of the largest potential sources of liquid bulk transits.

LPG

Future LPG Trade Development with a Focus on The Panama Canal

There are few long term market forecasts for LPG production/ consumption/ trade since LPG is a typical arbitrage trade comodity which competes with other energy sources in several markets. LPG production is probably the easiest figure to forecast. Consumption will vary with markets in other energy carriers and price differentials. Seaborne trade will depend on consumption patterns, but since most new LPG production is forecast to come from West Africa, Middle East Gulf and Venezuela, Fearnleys foresee seaborne trade volumes growing more rapidly than production/consumption.

LPG Production

Drewry/Purvin & Gertz have a forecast upto 2005 and expect LPG demand to increase with some 3.65% per year from about 196 mmt in 2000 to some 235 mmt in 2005. Fearnleys have a long-term production growth forecast higher than 3.5% due to expected strong growth in LNG production (LPG is often a by-product from cleaning up natural gas before it is liquified).

LPG Exporters

The largest LPG exporters are listed below. Together the 12 countries account for about 75% of world exports. Canada exports mainly over- land to the U.S. The rest are mainly seaborne exports.

Forecasts of LPG exports are quite promising for the Panama Canal. Increases are particulary expected in Latin America (Venezuela and Trinidad), but also in West Africa. This may lead to more activity and arbitrage opportunities in the region, creating more trade. We, therefore, expect strong increases in trades from Venezuela/Trinidad to the U.S. and Latin American Pacific coast. We do not, however, see any new base trade developing through the Canal during the forecasted period, except some potential increases in trades from West Africa to the same destinations.

LPG Exporters			
Country	1999	2000	% change
Saudi A.	13.57	12.44	-8.3 %
Algeria	6.7	7.37	10.0 %
Canada	5.93	6.02	1.5 %
UAE	5.6	5.81	3.8 %
UK	3.58	3.46	-3.4 %
Norway	3.32	3.4	2.4 %
Kuwait	2.95	2.83	-4.1 %
USA	1.7	2.45	44.1 %
Venezuela	1.83	1.68	-8.2 %
Netherland	1.59	1.48	-6.9 %
Australia	1.65	1.47	-10.9 %
Source MCH			

LPG tables.xls/LPG Data Figures in: (mmt)

LPG Consumption

The main OECD consuming countries are shown below:

LPG Consumption			
Country	2000	2001	% change
USA	68.31	63.17	-7.5 %
Canada	8.92	6.78	-24.0 %
Mexico	13.29	12.95	-2.6 %
Japan	18.28	18.42	0.8 %
S. Korea	7.14	7.12	-0.3 %
Turkey	3.36	4.49	33.6 %
France	3.62	3.56	-1.7 %
Germany	2.68	2.77	3.4 %
Italy	3.37	3.71	10.1 %
Spain	2.49	2.33	-6.4 %
UK	3.55	3.55	0.0 %
Source OECD			

LPG tables.xls/LPG Data Figures in: (mmt)

Brazil is also an important LPG consumer and LPG demand just passed 7 mmt in 2000. India is also an significant consumer with close to 6.5 mmt in 2000.

LPG Importers

Below we list the largest LPG importers in the world. Together they control approximately 75% of world imports.

LPG Importers			
Country	1999	2000	% change
Japan	14.67	14.75	0.5 %
USA	6.59	6.25	-5.2 %
S. Korea	4.85	4.86	0.2 %
China	5.54	4.82	-13.0 %
Mexico	2.94	3.84	30.6 %
Turkey	2.54	3.82	50.4 %
Brazil	2.96	2.81	-5.1 %
Italy	2	1.9	-5.0 %
France	1.95	1.78	-8.7 %
Netherlands	1.87	1.71	-8.6 %
Spain	1.26	1.22	-3.2 %
Source MCH			

LPG tables.xls/LPG Data Figures in: (mmt)

The U.S.A. imports mainly overland from Canada. Most of the other countries import by sea. Interestingly, countries like the Netherlands and the U.S.A. are large exporters and importers. This has to do with their role as pricing, trading and storage centres for LPG and their large refinery capacities.

During the forecasted period, we expect U.S. imports to increase as their own production is expected to be rather steady to falling. Mexico and most of the Central and South American markets are expected to increase their LPG consumption quite rapidly following the forecasted economic development in that region.

China is also expected to become a very important LPG consumer in the years to come and imports are growing rapidly. Chinese import requirements may attract cargos from Venezuela/Trinidad/U.S. Gulf in the future. It can be of interest for the Canal to secure these volumes. It will, however, be in strong competition with Middle East Gulf and South East Asia export volumes, which are also expected to increase quite rapidly in the forecasted period.

LPG Trade

World LPG trade is dominated by the major Middle East Gulf – Japan/Far East trade which is the main trade for all very large LPG vessels (vessels above 60.000 cbm). Far East imports (China, Japan, Korea and Taiwan) account for over 43% of world trade.

China imports are expected to grow rapidly in the future. From the Panama Canal's perspective, it is interesting to note that some volumes from the U.S. and Nigeria have been sold to the Far East. This could be an interesting trend in the future. U.S. exports may come from Alaska/ California, but we have also seen cargoes from the U.S. Gulf moving to Far East.

Other main trades are from North Africa (mainly Algeria) to U.S./Brazil and Europe/Turkey, North Sea/FSU to Western Europe and Venezuela to Mexico/ U.S. Gulf/ Carribean. Europe is actually the second largest importing region, but is mainly importing from countries within the region and North Africa.

The U.S. imports a lot of LPG, but mainly over- land from Canada. The U.S. is, however an important temporary home for unsold LPG with its vast storage caverns in Mont Belvieu. Mexico is a major seaborne LPG importer and is also an important client for the LPG trade through the Canal.

Latin America accounts for some 10% of global seaborne imports, but has seen rapid growth in recent years.

World LPG trade is expected to grow in the next 2 decades. Our estimates indicate growth figures of about 3% annually based on volumes. Tonne miles might be rather steady as expected increased LPG production will mainly come from the Middle East Gulf (Iran and Qatar in particular plan for increased export), but also from close-to-market areas such as Trinidad, Venezuela and West Africa.

As several new LNG export plants are under construction, new LPG exports will also be established. This is especially true for Nigeria, where LPG exports will increase by more than 2.4 mmt by 2005, just because of LPG extraction from the LNG plant (current LPG production from Nigeria is around 1.2 mmt). Australia will increase LPG production by 0.5 mmt due to expected increased LNG production in mid 2004. The same goes for Norway in 2006.

For the Panama Canal's interest, the same situation has been observed in today's Trinidad LNG project and will most likely be seen in future LNG projects in Venezuela and Peru/Bolivia, which may increase trade through the Panama Canal.

There are also several LPG projects planned. The following are the current planned importing projects of potential interest to the Panama Canal:

- PetroEquador plans to build a terminal with a capacity of 30,000 tonnes and a jetty for 40,000 cbm vessels. The new terminal will link to Pascuales via a pipeline.

Matching local export capacity with import capacity seems not to be an issue. Most of the "locally" produced volumes will most likely be consumed within the region. Extra import requirements are expected, but mainly from West Africa, covering U.S. Gulf/U.S. East Coast import requirements.

In todays LPG fleet, only a handful of the large LPG vessels can pass through the Panama Canal. However, most of the vessels below 60,000 cbm are "Panamax" vessels.

Ammonia

In the short term, Ammonia trade is expected to grow from levels around 14 mmt in 2000 to 16.5 mmt in 2005. Growth is particulary foreseen in the Carribean due to new export capacity becoming operational in Trinidad during this period.

Some U.S. domestic production is also expected to shut

down due to the high price of natural gas (feedstock) in that country, increasing import requirements.

Looking beyond 2005, we foresee world Ammonia trade development increasing with or slightly higher than world GDP/economic development. This due to higher natural gas price assumptions and hence increased difference in production prices and more volatility and trade in ammonia (natural gas is vital for producing ammonia). In 2002, China entered into WTO (world Trade organisation). China is an important market for ammonia and this event may increase chinese imports. For the Panama Canal, trade development may be rather flat from 2007-2010 as Peru and Bolivia may start up their own ammonia production based on their vast gas reserves, reducing/limiting growth in the ammonia trade from the Atlantic to the Pasific side of the Americas, which is the most important trade using the Canal today.

On the positive side, Koch Nitrogen have expressed renewed interest in building a new ammonia plant at Point Lisas/Trinidad with a capacity of some 535,000 tonnes per year and start up in 2005.

In the Middle East, there are several projects under development, with a combined capacity of some 6 mmt per year from 2006.

We do not foresee any difference in trade volumes for an existing and an expanded Canal and expect some 70% of the vessels ballasting back.

Petrochemical gases

Due to the small shipment volumes in petrochemicals, we do not foresee any trade difference in the expanded and non-expanded canal scenario.

Petchem trade has been rather slow during the last 5 years and seaborne trade is estimated to have fallen from volumes around 6 mmt in 1995 to levels around 4.7 mmt in 2000, but volumes have increased since 1998 and we expect volumes to continue this positive trend.

Trade in petchem gases is difficult to forecast due to its limitations for seaborne transportation and the highly irregular nature of this trade. However, with more plants in operation and consumption growing rapidly, seaborne trade should also benefit as small interruptions in supply or seasonal increases in demand, may create more seaborne trade demand.

We have based our long term view on seaborne trade growth on the economic assumptions and GDP growth assumptions given by the ACP. Based on these figures, and the close link betweeen economic development and the use of plastic/polymers, we foresee a steady and solid growth in petchem trade using the Panama Canal over the forecasted period.

Scenarios

Best Case

In this scenario, we have assumed that growth in LPG trade and consumption will be similar to or higher than expected GDP growth in the Latin American region. This have been the case for several of the emerging countries in Asia and hence should be acheivable in this region as well.

The best case scenario also includes a rapid production increase in both Trinidad and Venezuela, increasing the short haul supply volumes for the region, but also volumes for export to the fast growing Chinese/Far East market.

Although positive for LPG trades, reduced LPG production in the U.S. was excluded in this scenario, since this may not benefit Panama Canal trades.

For the Canal, it is somewhat difficult to estimate the consequences of Bolivia and Peru LPG exports. We have concluded that this may be a worst case senario as it may replace current trade from U.S. Gulf to Latin America's Pacific Coast.

The best case also includes a strong agricultural demand for ammonia in Baja California and Chile, combined with increased export volumes from Trinidad.

Best case also includes a high U.S. natural gas price scenario. This will potentially reduce U.S. domestic production and increase imports.

The best case also includes more petchem volumes to the Far East due to economic growth in China and an unbalanced regional market there.

In the best case scenario, ballasting vessels will increase as a function of the higher activity level in the region.

Most Probable Case

- LPG trades increase with world trade/GDP development.
- Increased regional volumes with increased

Trinidad and Venezuela production.

- Panama Canal market share somewhat higher than today's levels, both for world and regional trade (expected GDP growth is higher and more local LPG production).
- Steady ammonia development with increased trade as Trinidad increases production.
- Pet.chem trade follows general economic development and US will continue to export volumes to the Far East/Asia.

Worst Case

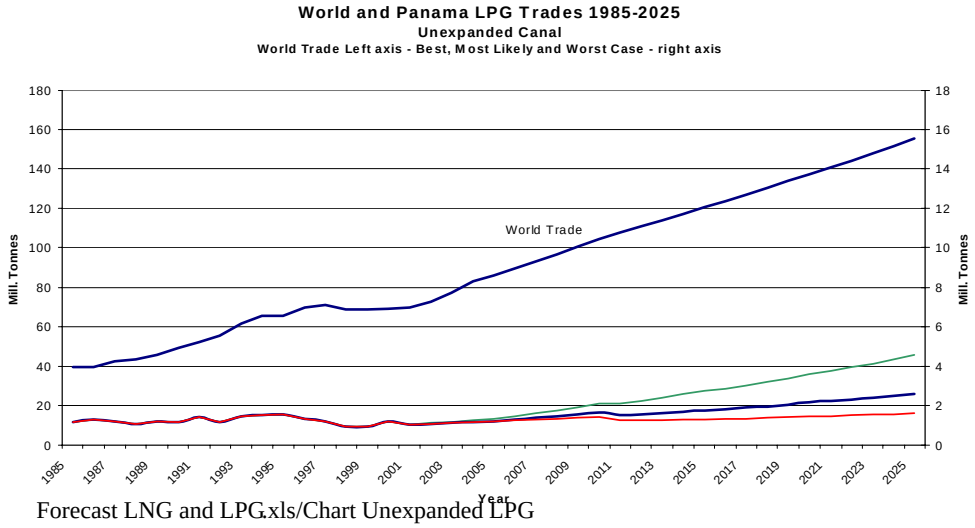
In this scenario, we have, in general terms, a view that LPG will lose market share to LNG and other fuel sources, resulting in less interest to produce and export this product. Hence, increased Venezuela LPG production is delayed in time. In addition, the worst case scenario includes delays in Venezuelan LNG projects and delays in oil and gas field development in the country. Trinidad production and exports are directed to Brazilian/U.S. markets due to increased demand and a higher willingness to pay for the product there, reducing volumes for exports via the Canal.

Peru and Bolivia become LPG exporters due to their new LNG projects and supply most of the Pacific Coast of Latin America, thus reducing LPG trade from exporters on the other side of the Panama Canal.

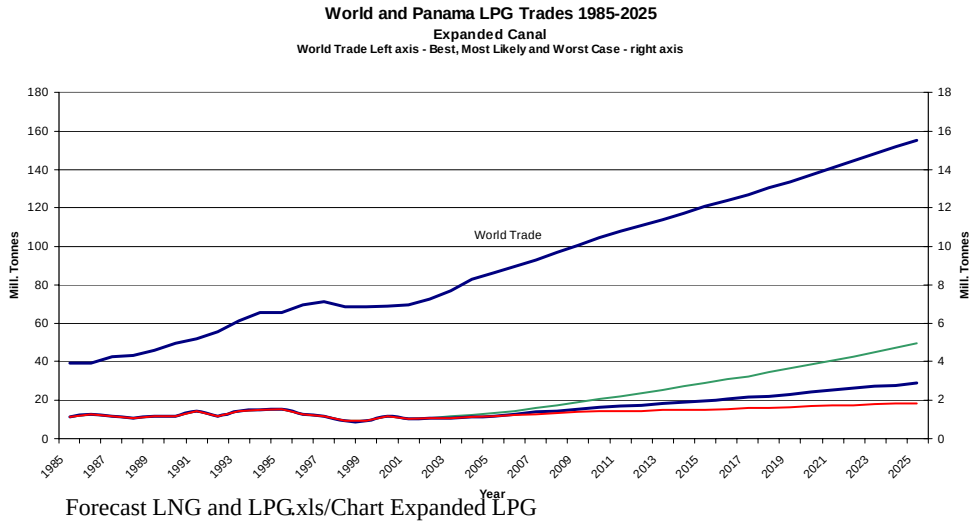
Trinidad Ammonia production is mainly sent to the U.S. Gulf as U.S. producers shut down their own production due to high natural gas prices.

Petchem trades from the U.S. Gulf to Far East become marginalized due to increased regional petchem production within the Far East and increased competition from the Middle East (there are some new LPG-based petchem plant projects due to start up in the Middle East).

The number of vessels ballasting through the Canal will be reduced in this scenario.



Forecast LNG and LPG.xls/Chart Unexpanded LPG



Forecast LNG and LPG.xls/Chart Expanded LPG

LNG

Future LNG Trade Development with a Focus on The Panama Canal

World LNG trade is expected to grow rapidly in the next 2 decades. Our estimates indicate growth figures of some 6% annually based on volumes. LNG Tonne miles might see a slightly lower average growth figure as new production areas (Trinidad, Norway, Egypt and Venezuela) are located closer to the expected consumer areas than today.

Most research results and market forecasts made by both oil/energy companies (such as BP, Shell and BG) and research consultants (such as Drewry and Poten&Partners) indicate significant worldwide LNG trade increases in the years to come. In Drewry's 2001 annual LNG report, they indicate that LNG trade is set to double in the next decade.

Fearnleys expect LNG trade to grow from 101 mmt in 2000 to levels around 260 mmt already in 2010. Shell and BP have indicated figures up to 300 mmt and Poten&Partners are indicating trade volumes around 235 mmt.

The volume projections come as no surprise to the industry because of the long lead time for LNG projects. The LNG industry today is planning projects with start up in 2007-2010. Also, due to the limited infrastructure in and around the Panama Canal, we do not foresee any LNG trades using the Canal before 2007.

The following export projects, which could be of interest to the Panama Canal, are planned:

- Expansion of Atlantic LNG in Trinidad. Expected export volumes should reach 10 mmt in 2003, 15 mmt in 2007 and 20 mmt in 2008/09
- 2 New grassroot export projects in Venezuela with planned export volumes of some 8 mmt in 2007/08. Forecasts indicate a 5 mmt expansion in 2013 and another 5 mmt in 2015. There is a potential for yet another 5 mmt in 2018.
- New grassroot export project in Peru with planned export volumes of some 4.8 mmt in 2007 and another 4.8 mmt in 2008
- New grassroot export project in Bolivia, with exports through either Peru or Chile, with planned export volumes of some 4 mmt in 2009 and another 4 mmt in 2010.
- At Sakhalin in Russia, there are plans to start LNG export from 2008. Spot volumes may find their way through the Canal.
- In the longer term, there is also potential for another LNG Export project in Alaska with potential spot volumes passing through the Canal.

There is strong competition between Peru and Bolivia for the same customers. Depending upon which project secures a sales contract; the other project will most likely be delayed by some 2-3 years, at least. We have assumed Peru will be the first project, but it could just as well be Bolivia.

In Brazil, Petrobras have plans for a LNG plant near Belem. However, we do not foresee any Canal trade resulting from this project, as they will be supplied by West Africa and Venezuela/Trinidad.

Fearnleys do not foresee any LNG trades from other regions in the world passing through the Panama Canal.

There are several LNG import projects planned in the close vicinity of the Canal/ of importance to potential Canal trade. The following are the current planned importing projects:

- **4 New importing terminals on Mexico's west coast are planned. These will most likely be built around Baja California for start up in 2006-07. The next terminal located further south on Mexico's west coast may come into operation in 2007-08.**
- **Several importing projects are proposed for California, especially in the San Diego and San Fransisco area.**
- **El Paso and Shell are developing an import terminal in Altamira on Mexico's East Coast. There may be potential for more terminals here and in Honduras/Costa Rica**
- **There is an importing terminal in the Dominican Republic**
- **There is an importing terminal in Puerto Rico.**
- **There is an existing importing terminal in**

Lake Charles in the U.S. Gulf.

- **BP plans an importing terminal at Tampa in Florida.**
- **Both El Paso and Tractebel plan an importing terminal in the Bahamas with a pipeline connection to Florida.**
- **El Paso has plans for several LNG importing terminals along the U.S. east coast.**
- **Cheniere Energy plans two importing terminals in Texas.**
- **Dynegy/Sempra plans an importing terminal at Hackebury in the U.S. Gulf.**
- **ChevronTexaco plan to build a floating receiving terminal outside Louisiana.**
- **There are plans for LNG imports to Jamaica.**
- **There are 3 existing LNG importing terminals on the U.S. east coast (Elba Island/ Savannah, Cove Point/Baltimore, Everett/ Boston). Elba Island has recently received approvals for expanding terminal capacity.**
- **There are plans for an LNG importing terminal at Recife in Brazil.**

U.S. Energy Information Administration (EIA) has made forecasts for U.S. LNG imports up to 2030. In their reference case, U.S. LNG imports are estimated at 50 mmt per year in 2025. High case is at 70 mmt and low case at 46 mmt per year, depending upon the cost of domestic production and success rates in new discoveries, level of piped imports from Alaska/Canada. EIA have in their reference case, piped imports from Alaska starting in 2021.

Matching export capacity with import capacity seems not to be an issue. Most of the ”locally” produced LNG volumes (Trinidad, Venezuela, Peru, Bolivia, etc.) will most likely be consumed within the region. Extra import requirements are expected, but mainly from West Africa, covering U.S. Gulf/U.S. East Coast import requirements and imports from Sakhalin/South East Asia covering U.S./ Mexican West Coast requirements.

In today’s market only a handful of LNG vessels can pass through the Panama Canal and due to their construction, the largest vessel capable of transiting the Canal is the ”Descartes” a 50,000 cbm vessel built 1971. However, Fearnleys has increasingly received interest for Panamax LNG vessels lately and this trend is not only something Fearnleys has observed. We have interviewed different shipyards about it and they also report a strong interest from energy companies/shipowners for Panamax LNG tankers. Current designs could carry up to 100,000 cbm of LNG through the Canal, compared to the current typical LNG design of some 140-145,000 cbm, this size difference is not prohibitive for supplying competitively priced LNG. However, no vessels are ordered and we do not foresee any orders in the coming 6-12 month period.

LNG Trade - Current versus Expanded Canal

LNG vessels are expensive and sail at fairly high speed (some 20 knots). Vessels are often linked to a dedicated trade, fulfilling obligations in a long-term gas sales contract. Most vessels are built for specific trade. Vessels would therefore most likely be purpose built for a Panama Canal trade with existing canal infrastructure. We have, therefore, for the existing canal, only used one ship size for all trades. For an expanded Canal, current standard sized LNG carriers of 140,000 cbm are used for most of the trade, with a small proportion (less than 20%) done by vessels in the 75-85,000 cbm range.

A quick SWOT analysis of the Panama Canal and LNG trade, resulted in the following:

Strength: Location. LNG transport cost is very high; reducing transport time is therefore valuable.

Weakness: limitations in today’s physical canal. Waiting time and slow transit time is very costly.

LNG vessels “always” have some cargo in their tanks, to keep them cold and to use it for propulsion. Hence, in Canal terms, no ballast transits will occur and transit fees will therefore be high, both for loaded and ballast legs.

Opportunities: With new LNG production facilities located in Peru and Venezuela/ Trinidad, a trade through the Canal may open new exiting market opportunities for the exporter. Securing LNG trades via the Canal will give ACP a steady level of business for a long term, as vessels will do roundtrip voyages.

An expanded Canal will provide LNG exporters the opportunity to use current standard vessel sizes in this trade

and result in large savings due to economies of scale and a larger selection of “panama suitable” tonnage.

Threats: There are no LNG vessels that can transport LNG in a very competitive manner through the Canal today. New, specially designed vessels must be built to secure competitive solutions for the exporters/importers.

With balanced LNG producers on both sides of the Canal, the Canal trades can be at risk. Excess waiting and high transit fees may therefore be a commercial limit for the exporters/importers.

The existing Canal will limit the commercial attractiveness of sending LNG through the Canal and LNG price premiums required to do so, increases.

From the analysis above, we have concluded that an expanded Canal will have a significantly higher potential than the existing Canal. However, with new Panamax designed LNG carriers, the cost difference could be minimized.

This is showed in our economic evaluation of the expanded Canal alternative.

We have in our forecasts for the expanded Canal, lower trade figures in the period up to 2010 than for the unexpanded Canal scenarios. This is due to the fact that we foresee very few new “Panamax” LNG vessels being built if the Canal is going to be expanded in a few years time. There will therefore be few suitable vessels to trade via the Canal before the expansion is finished. After expansion, the trade growth will be substantial and pass the trade volumes foreseen in the unexpanded Canal scenario already in it’s first year of operation.

LNG Trade Forecast Scenarios

An important assumption for all our forecasts are that at least one LNG project is West Coast South America become a reality and that Venezuela also will build an LNG export facility. In best, worst and most probable, we have different start-up dates for the projects to reflect potential delays and changes in project developments.

Best Case

Fearnleys have used considerable time to analyse and estimate trades through the Panama Canal, which is difficult since there are no trade there today and potential trade will depend on several major factors such as project execution of existing plans for LNG export in Bolivia, Peru and Venezuela.

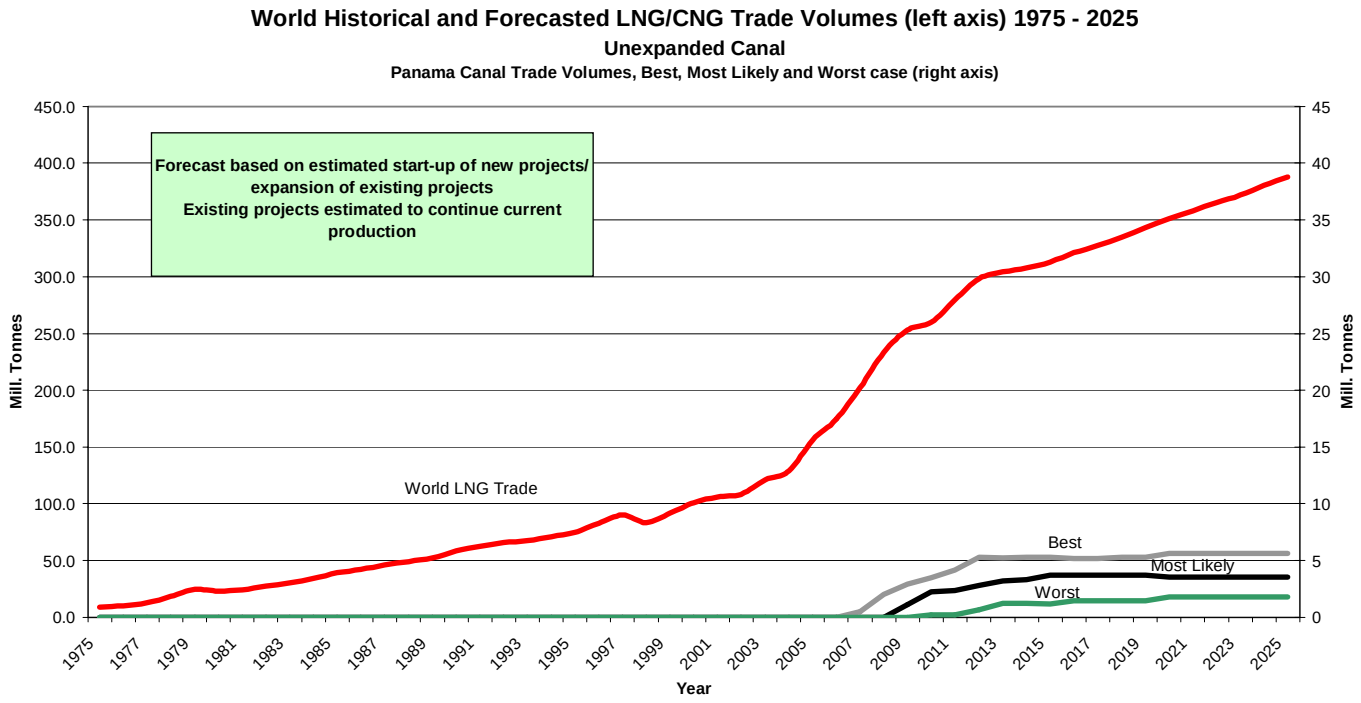
For the Canal, the potential for significant LNG volume growth is strong. A typical ”best case” would be that several import requirements from the Americas West Coast were covered by producers in the Caribbean area (Trinidad & Venezuela) and that Peru/Bolivia exported their volumes through the Canal to U.S. Gulf/East Coast users, but this cross trade does not make sense in the long run and we would in such a case, most likely see a lot of cargo swaps to reduce transport costs/optimize trade/ logistics as export projects are developed.

Nevertheless, in our best (and most probable) case, several projects will try to secure sales volumes from different producers to diversify sources of supply for ”security of supply” reasons. Exporters would also prefer to have more than one customer and hence, market their volumes to all potential importers, regardless of distance and transport cost. Fearnleys, therefore, forecast, even on in the worst case, volumes crossing the Canal both northward and southward.

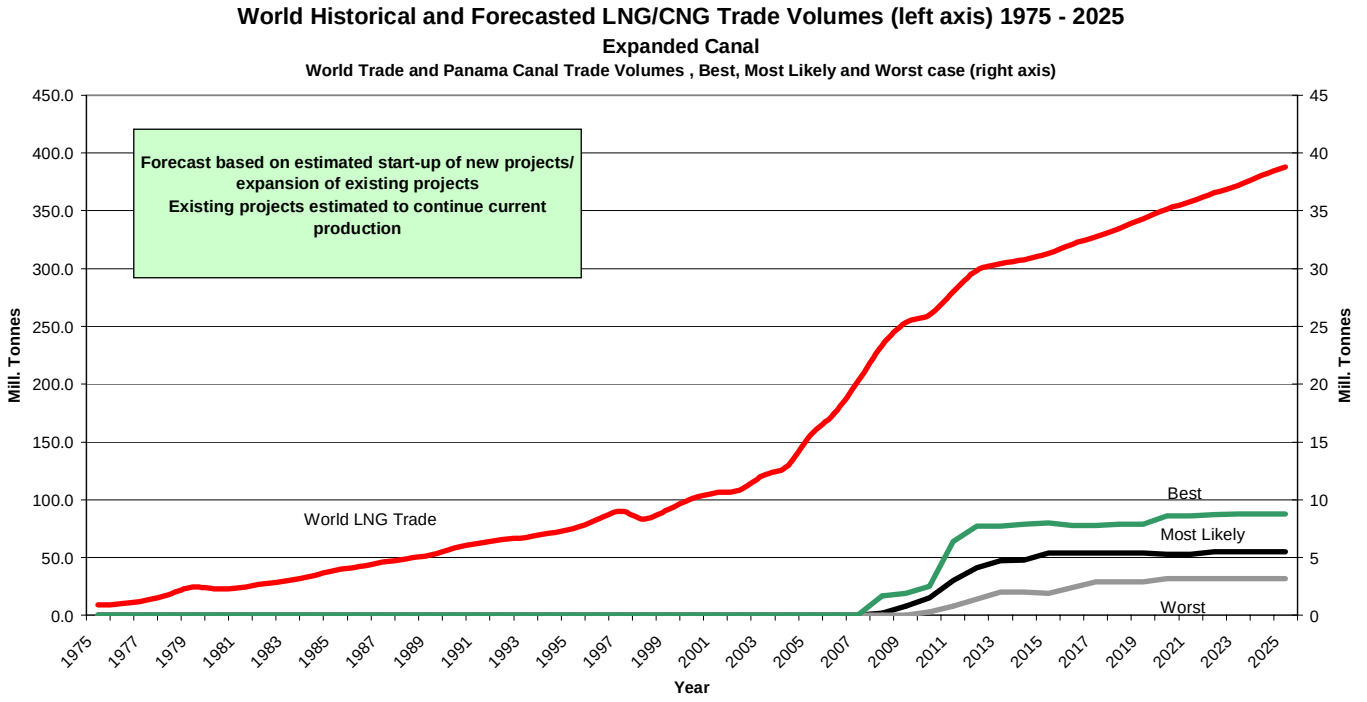
Most Probable Case

Fearnleys’ most probable case is that both LNG projects in Peru and Bolivia will be developed, but with some time lag between them, some delays to current start up dates (we have put Peru some 3-4 years before Bolivia) and that these projects will mainly supply volumes to Mexico’s West Coast and to California/Canada. However, both projects are, in this scenario, sending volumes via the Panama Canal to Mexico East Coast/ Carribbean and U.S. Gulf. Compared to the best case, this scenario leaves only limited volumes passing through the Canal for a sustained period. However, due to security of supplies, bilateral agreements, different start-up periods, maintenance of plants, demand seasonality’s, vessel availability, etc., we would see cargo demand being met by shipments passing through the Canal both ways and that these volumes could be quite significant for the Canal to attract. We, therefore, foresee a fairly substantial trade with movements going both ways in the years starting from 2006-07 to balance the markets.

In the U.S. Gulf, Venezuela and Trinidad LNG projects will develop as projected today. These export projects will, assisted by volumes from West Africa, supply gas to the importing terminals in that region, but some volumes will find their way through the Canal to customers in Mexico/ California. In addition, we will see LNG demand from Brazil, which will source gas volumes from West Africa.



Forecast LNG and LPG.xls/Chart LNG Unexpanded



Forecast LNG and LPG.xls/Chart LNG Eexpanded

If and when volumes from Alaska arrive, these may be squeezed into California/Canada, resulting in more volumes from Peru/Bolivia finding their way to new customers further south or in the U.S. Gulf, or as far south as Chile. However, due to different start-up dates, seasonality, diversification of supplies, competition, etc. we foresee a steady trade through the Canal in this scenario, based on our transport calculations and with current Canal dues in mind.

For all our cases, arbitrage trade would be a significant player in this region in the years to come, even for LNG. Our basic view on LNG is that it will slowly become a traded commodity as we have seen it happen with LPG. The industry will move from ultra-long sales contracts of 20 years plus to a more flexible ”short term” sales structure of 3-5-7 year deals with option periods and with some volumes being shipped ”spot” or in short term contracts of 10 cargoes/1 year duration.

Worst Case Scenario

Our worst case scenario includes a quite balanced market in the Pacific, with Peru, Bolivia, and potentially Alaska (by piped gas or by LNG), supplying the needs of California/ Canada/ Mexico and Caribbean/ U.S. Gulf area being supplied by Venezuela/ Trinidad and West Africa, leaving limited base load trade volumes to pass through the Canal, but we have included arbitrage volumes in this case as well.

In addition, for the worst-case scenario we have anticipated delays in the current project time schedules and more natural gas reservoirs being found and developed in the U.S.A. and Canada.

In the worst case scenario for LNG volumes through an unexpanded Canal, new methods to transport gas become a reality and are more efficient and a better/ cheaper solution than LNG. One example is current technology for transport of gas in its compressed form, as CNG, instead of in its liquid form as LNG.

Although, CNG may also create trades utilizing the Canal, most CNG vessel designs we have looked at have quite substantial draft and beam requirements of some 15 and 50 meters respectively; this is due to heavy cargo containment systems.

Fearnleys do not foresee any pipeline developments on the natural gas side that will compete with the Canal and seaborne shipments with current known and expected new gas reserves.

Safety Aspects of LNG

With regard to safety, transits by LPG-carriers are more dangerous than LNG transits. We would, therefore, propose similar safety procedures for LNG as for LPG. Today’s LNG vessels do, however, have limited manoeuvrability due to their hull form and limited thrusters capacity. LNG vessels are exposed to wind due to a large wind projected area (similar to a car carrier). Procedures for car carriers with regard to tugs, etc. should, therefore, also be applied to LNG vessels.

CNG

Although there is a potential for CNG vessel trade with an expanded Canal, with exports mainly from the Atlantic to the Pacific, we do not foresee any CNG vessels transiting the Canal during the forecasted period.

ECONOMIC VALUE

Economic Value

Total Transit Value Forecast

In the most probable, or reference, case, calculations of future values of Canal transits based on the present tariff structure show that the total value of liquid bulk routes in both directions, including ballast revenue, will increase from about usd 79.5 million to usd 138.1 million during the forecast period for the unexpanded Canal and to usd 170.8 million for the expanded Canal. This means additional income from the Canal expansion of about usd 32.7 million in 2025.

Here it should be noted that all future values are expressed in present usd.

We observe that the value of routes by commodity increases in every category except chemicals, where there is a rather stable income forecast. The value of the Atlantic/ Pacific direction increases by 47 % from usd 45.4 million to usd 66.7 million for the unexpanded Canal and by 84% to usd 83.4 million for the expanded Canal, whilst the value of Pacific/Atlantic more than doubles from usd 15.8 million to usd 37.9 million for the unexpanded Canal and almost triples to usd 45.4 million for the expanded Canal. Estimated revenues from tankers in ballast show an increase from usd 18.3 million to usd 33.5 million in the reference case for the unexpanded Canal and to usd 42.0 million for the expanded Canal.

In the best case, the total value of routes in both directions plus ballast increases by 119% to usd 174.4 million for the unexpanded Canal and by 184% to usd 226.1 million for the expanded Canal. In the worst case, total revenues from liquid bulk cargo transits plus tankers in ballast will increase by modest 19% to usd 94.6 million for the unexpanded Canal and by 40% to usd 111.0 million in 2025.

Detailed forecast volumes and value figures by direction of trade and routes for the three scenarios in the case of an unexpanded and an expanded Canal are provided in the Appendix section.

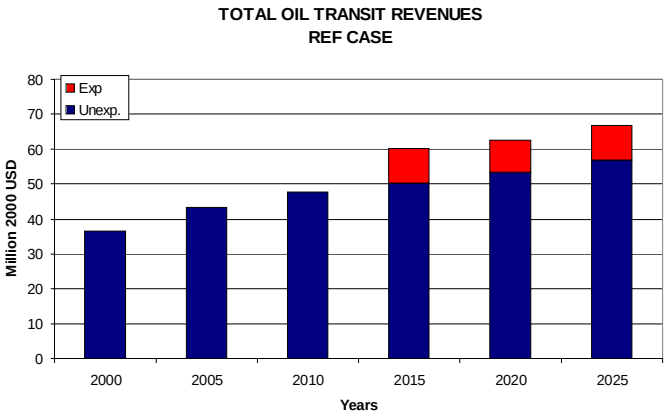
Oil Transit Value Forecasts

The consequences of our trade volume forecasts based on the present tariff structure can briefly be summarized as follows: (see also below tables)

Total income from laden transits through the Canal of crude oil and oil products amounted to usd 36.6 million in 2000. In the reference case, this will increase to usd 56.9 million in 2025 for the unexpanded Canal and usd 66.8 million (2000 value) for the expanded Canal. In the best case, laden oil transits will provide usd 63.2 million for the unexpended Canal and usd 79.4 million in case of planned expansion. For the worst case, the 2025 incomes will be usd 40.9 million for the unexpanded and usd 47.0 million for the expanded Canal.

Additional income from the Canal expansion will be about usd 9.9 million in the reference case, usd 16.2 million in the best case, and usd 6.1 million in the worst case.

Detailed income figures for crude oil and oil products transits by individual routes are shown in a separate appendix.



Oil Forecast.xls/TOCTR

TOTAL OIL CANAL TRANSIT REVENUES FOR DIFFERENT SCENARIOS

Million 2000 USD

	Ref. Case		Best Case		Worst Case	
Year	Unexp.	Exp.	Unexp.	Exp.	Unexp.	Exp.
2000	36.6	-	36.6	-	36.6	-
2005	43.2	-	44.6	-	32.9	-
2010	47.8	-	50.8	-	36.7	-
2015	50.4	59.2	56.8	71.4	38.2	43.9
2020	53.3	62.6	59.4	74.7	40.6	46.5
2025	56.9	66.7	63.2	79.5	40.9	47.0

Oil Forecast.xls/Canal Transits

From the summary on next page of income by direction through the Canal with split-up for crude oil and oil products, we observe that in the reference case, unexpanded Canal, Atlantic-Pacific will increase from usd 28.3 million in 2000 to usd 41.4 million in 2025, whereas Pacific-Atlantic will increase from usd 8.4 million to usd 15.5 million over the same period. Unexpanded Canal revenues from crude oil transits in both directions will

increase from usd 10.8 million to usd 16.6 million, whereas revenues from oil products transits will increase from usd 25.8 million to usd 40.9 million.

Oil products Atlantic-Pacific is apparently providing the largest upside. In 2000, this trade accounted for almost 59% of the total income from oil transit cargo volumes. In the reference case, the corresponding share in 2025 for the unexpanded Canal will be 58% and 59% for the expanded Canal. In 2025, westbound oil products will in the best case account for 59% for the unexpanded Canal and 60% for the expanded Canal, whereas the corresponding shares for the worst case, without crude oil Pacific-Atlantic, will be 71% and 67%, respectively.

Ballast Income from Oil Tankers

ACP statistics show total tanker ballast income of usd 18.1 million in 2000. This figure does not split between oil tankers and chemical tankers, but the overwhelming part will relate to oil tankers due to the liner-like trade of most chemical tankers. If, for simplicity, the whole amount is assumed to come from oil tankers, this corresponds to almost 50% of the income from laden transits of oil tankers.

Assuming a general trend towards improved logistics, with more combination trades between areas on the Atlantic and the Pacific side, ballast income compared to income from laden transits are likely to decrease towards 45%. This would mean some usd 26 million in the reference case for the unexpanded Canal and as much as usd 36 million in the best case for the expanded Canal.

Summing up and in order to illustrate the spread in the various scenarios, the reference case for the unexpanded Canal on the above assumptions, indicate a total revenue in 2025 from oil tanker transit, laden and in ballast, of usd 82 million, whereas the best case for the expanded Canal gives usd 115 million and the worst case for the unexpanded Canal usd 59 million.

TOTAL OIL CANAL TRANSIT REVENUES FOR DIFFERENT SCENARIOS UNEXPANDED

WORST CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	6,689	-	6,689	22,397	3,831	26,228	29,087	3,831	32,918
2010	6,519	-	6,519	25,718	4,460	30,177	32,236	4,460	36,696
2015	6,724	-	6,724	26,818	4,676	31,494	33,541	4,676	38,217
2020	6,724	-	6,724	28,802	5,049	33,851	35,526	5,049	40,575
2025	6,962	-	6,962	28,900	5,069	33,969	35,863	5,069	40,932

REFERENCE CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	7,440	6,894	14,334	23,655	5,167	28,822	31,095	12,061	43,156
2010	7,816	7,253	15,068	26,798	5,933	32,732	34,614	13,186	47,800
2015	8,208	7,594	15,802	28,272	6,346	34,618	36,480	13,940	50,420
2020	8,567	7,918	16,485	29,961	6,876	36,838	38,528	14,794	53,322
2025	8,294	7,713	16,007	33,125	7,741	40,865	41,418	15,454	56,872

BEST CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	7,816	7,304	15,119	24,342	5,147	29,490	32,158	12,451	44,609
2010	8,276	7,526	15,802	28,586	6,366	34,952	36,863	13,891	50,754
2015	8,584	7,747	16,331	33,007	7,446	40,453	41,590	15,194	56,784
2020	8,908	8,106	17,014	34,460	7,957	42,417	43,368	16,063	59,431
2025	9,147	8,276	17,423	37,250	8,546	45,797	46,397	16,823	63,220

TOTAL OIL CANAL TRANSIT REVENUES FOR DIFFERENT SCENARIOS EXPANDED

WORST CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	6,744	-	6,744	22,391	3,830	26,221	29,135	3,830	32,965
2010	6,572	-	6,572	25,710	4,458	30,168	32,282	4,458	36,740
2015	9,490	-	9,490	29,316	5,142	34,458	38,806	5,142	43,948
2020	9,490	-	9,490	31,477	5,552	37,030	40,967	5,552	46,520
2025	9,827	-	9,827	31,585	5,574	37,159	41,413	5,574	46,987

REFERENCE CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	7,440	6,894	14,334	23,655	5,167	28,822	31,095	12,061	43,156
2010	7,816	7,253	15,068	26,798	5,933	32,732	34,614	13,186	47,800
2015	9,402	8,723	18,125	33,515	7,478	40,993	42,917	16,200	59,118
2020	9,804	9,094	18,898	35,517	8,100	43,618	45,321	17,194	62,515
2025	9,481	8,857	18,338	39,276	9,116	48,392	48,757	17,973	66,730

BEST CASE SCENARIO VALUES ('000 USD)	CRUDE OIL			OIL PRODUCTS			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	6,730	4,085	10,815	21,542	4,286	25,827	28,271	8,371	36,642
2005	7,880	7,364	15,243	24,342	5,147	29,490	32,222	12,511	44,733
2010	8,344	7,587	15,931	28,586	6,366	34,952	36,930	13,953	50,883
2015	10,338	9,363	19,701	42,234	9,462	51,696	52,572	18,825	71,397
2020	10,712	9,795	20,506	44,068	10,096	54,164	54,779	19,891	74,670
2025	10,992	9,999	20,991	47,630	10,842	58,472	58,622	20,841	79,463

Oil-Summary-Table-Forecast.xls/VALUES

Sensitivity Analysis

It appears from our estimates of future canal transit cargo volumes and values that in 2025, with given vessel structure in the trading patterns, the value of addition or reduction of 1 mmt oil cargo through the Canal will be as follows:

Crude oil: usd 1.706 million

Oil products: usd 1.965 million

Changes in Canal cargo transit volumes may be the result on developments on the importing side as well on the exporting side in the key parameters oil demand, crude oil production and refinery throughput, as well as transportation costs on different trade routes.

With regard to competition from the existing Trans-Panama pipeline, reference is made to comments on comparisons on transportation costs given on page 79 under volume forecasts and to transportation cost surveys in the appendix section.

For the trade Esmeraldas to Corpus Christi in particular, we make the following observations for estimated costs (excluding port expenses) for use of the Canal versus use of the Trans-Panama pipeline. Cost of upgrading to accommodate the largest vessel sizes in Esmeraldas have not been included in this comparison.

OIL TRANSPORTATION COSTS ESMERALDAS - CORPUS CHRISTI

Figures in USD/Tonne (Excl. Port expences)

	TOTAL		Canal	Pipeline
	2005	2010	transit	transit
Panama Canal				
Panamax	9.31	8.94	3.99	-
Aframax	7.80	7.52	3.72	-
Suezmax	6.44	6.22	3.22	-
VLCC	5.00	4.84	2.86	-
Petroline				
Aframax	9.43	9.15	-	5.13
Suezmax	8.50	8.28	-	5.13
VLCC	7.38	7.22	-	5.13

Orimulsion Transit Value Forecasts

In examining the value of Orimulsion routes through the Panama Canal versus their alternatives, we are presented with an interesting example occasioned by the peculiar nature of the Orimulsion trade. As we have already mentioned, Orimulsion is a very inexpensive product whose most natural competitor is coal. Orimulsion is only produced in Venezuela, whilst coal may be sourced from a number of locations. In the case of the Panama Canal, the only interesting routes for Orimulsion are those from Venezuela to the Far East, or possibly, from Venezuela to the West Coast of South or Central America. At the present time, and also probably in the future, the potential for Orimulsion in the South American market is minimal, so our comparison of the value of routes must, of necessity, concentrate on destinations for Orimulsion in Asia. Orimulsion in its competition for market share in Asia faces competition from coal sourced from either Russia, Indonesia, China or Australia. This means that Bitor must maintain an unceasing effort to keep freight costs as low as possible in order to meet the challenge posed by these competitors.

As we observe with the spot tanker market, the Panama Canal is at its most attractive when freight rates are high and is least attractive when low market levels prevail. Looking back over the history of tanker rates, we can observe that these have historically been low for prolonged periods with intermittent spikes of high rate levels. Bitor has explained to us that they exploit the periods of low freight rates in the market to secure long term contracts at reasonable levels. This has caused us to take a very conservative view of the value of Orimulsion transits compared to the value of alternative routes. As can be seen from the Orimulsion chapter in the historical part of the study, the time/distance savings afforded by the Panama Canal applies to Far Eastern destinations such as China, Japan and Korea, but does not apply in the case of Singapore where the Suez route gives the shortest alternative and where Panama and Good Hope are approximately equal. It should be noted that with the exception of Japan, Bitor is moving almost all of its volumes to China and Korea in VLCC units. For Bitor the important goal is to keep the per tonne price of the product as low as possible so as to maintain a competitive position. This has resulted in Bitor choosing, wherever possible, the VLCC alternative because the economies of scale afforded by VLCCs achieve the goal of a cheaper transportation price per tonne. We believe that as long as the competitive factors in the market place these demands upon Orimulsion, VLCCs will be the preferred mode of transport for the product. Upto now VLCC shipments have consisted of approximately 290,000/300,000 m/t lots, and because of both draft and beam restrictions, these lots will never transit the Panama Canal. Consequently, we have had to take Bitor's reasoning into account when making our forecasts of Orimulsion volumes and values.

The volumes which we have estimated through the Panama Canal allow for shipments to restricted ports in Asia, and in the case of an expanded Canal, take into consideration the possibility that Bitor may allow a Suezmax alternative. Even though we predict a solid growth in Orimulsion transits during the forecast period in comparison to what was seen in 2000, it should be noted that volumes, even in the best case are quite modest. This clearly reflects the views expressed above.

Chemical and Vegoil Transit Value Forecasts

The consequences of our trade volume forecasts based on the present tariff structure can briefly be summarized as follows:

Total income from laden transits through the Canal of chemicals and vegoil amounted to usd 21.8 million in 2000. In the reference case, this will decrease slightly to usd 20.3 million in 2025. In the best case, laden chemical and vegoil transits will provide usd 27.9 million, and for the worst case, the 2025 income will be usd 18.6 million. An expansion of the Panama Canal will not impact these figures materially. No income from ballast voyages is expected.

Detailed income figures for chemicals and vegoil transits by individual routes are shown in the appendix, but a summary is included in the tables below.

TOTAL CHEMICAL CANAL TRANSIT REVENUES FOR DIFFERENT SCENARIOS

WORST CASE SCENARIO VALUE ('000 USD)												
	CHEMICALS			VEGOIL			METHANOL			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	14464	4280	18744	616	2323	2939	103	0	103	15183	6603	21786
2005	11473	5073	16546	696	2655	3351	112	0	112	12281	7728	20009
2010	9747	5797	15544	785	2992	3777	122	0	122	10654	8789	19443
2015	8175	6258	14433	862	3286	4148	132	0	132	9169	9544	18713
2020	6800	6492	13292	935	3563	4498	144	0	144	7879	10055	17934
2025	6284	7318	13602	1002	3819	4821	157	0	157	7443	11137	18580

REFERENCE CASE SCENARIO VALUE ('000 USD)												
	CHEMICALS			VEGOIL			METHANOL			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	14464	4280	18744	616	2323	2939	103	0	103	15183	6603	21786
2005	11583	5124	16707	719	2740	3459	117	0	117	12419	7864	20283
2010	9930	5911	15841	851	3245	4096	134	0	134	10915	9156	20071
2015	8408	6444	14852	972	3707	4679	153	0	153	9533	10151	19684
2020	7072	6762	13834	1091	4161	5252	175	0	175	8338	10923	19261
2025	6614	7715	14329	1205	4594	5799	200	0	200	8019	12309	20328

BEST CASE SCENARIO VALUE ('000 USD)												
	CHEMICALS			VEGOIL			METHANOL			TOTAL		
	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL	A-P	P-A	TTL
2000	14464	4280	18744	616	2323	2939	103	0	103	15183	6603	21786
2005	11620	5141	16761	727	2770	3497	171	0	171	12518	7911	20429
2010	9994	4951	14945	875	3336	4211	430	171	601	11299	8458	19757
2015	8489	6509	14998	1013	3863	4876	1756	514	2270	11258	10886	22144
2020	7170	6858	14028	1151	4388	5539	3511	856	4367	11832	12102	23934
2025	6734	7860	14594	1284	4894	6178	5824	1285	7109	13842	14039	27881

Chemicals Trade Forecast.xls/VALUE

We observe that in the reference case Atlantic-Pacific revenues will decrease from usd 15.2 million in 2000 to usd 8.0 million in 2025, whereas Pacific-Atlantic revenues will increase from usd 6.6 million to usd 12.3 million over the same period.

Chemicals and vegoil Pacific-Atlantic are obviously providing the largest upside. In 2000, this trade accounted for 30% of the total income from such transits. In the reference case, the corresponding share in 2025 will double to 60%. In the best case, the share is only 50% due to the expected massive increase in methanol trade from the Atlantic to the Pacific.

Ballast Income from Chemical and Vegoil Tankers

ACP statistics show total tanker ballast income of usd 18.1 million in 2000. This figure does not split between oil tankers and chemical tankers, but the overwhelming part will relate to oil tankers due to the liner-like trade of most chemical tankers.

Economic Value of Panama Canal Routes versus Alternatives for Chemical Carriers.

Chemicals

Chemical carriers can be very expensive vessels, at least when we consider sophisticated parcel tankers with stainless steel tanks. These vessels are also the main chemical carrier type which transit the Panama Canal (ref. Stolt Nielsen and Odfjell). We have also described elsewhere in this report that these vessels trade in liner, or liner-like, services. This is why they also are called parcel tankers. Their loading programme is complex, and involves a multitude of loading as well as discharging ports. Furthermore, it is not uncommon that they carry more than 20 different commodities onboard at the same time. As an example, we could mention that a chemical parcel tanker may start its voyage in Europe, loading in Rotterdam, Bremerhaven, and Dunkirk, before crossing the Atlantic and discharge in New York, Philadelphia, and Houston. It should be noted, however, that the same ship might also load cargo in all the above ports, or at ports in between. Sailing from Houston, through the Panama Canal, the ship ends up in Asia and the operation is repeated before the ship proceeds towards Europe via the Middle East Gulf, before she ends up in Rotterdam. During this voyage, the ship has performed a multitude of loading- and discharging operations and it is extremely difficult to assess the alternative routes.

Using the Panama Canal may not be the obvious and most economic route considering a ship that will carry one cargo directly to Asia. For the sake of the argument, if a major petrochemical plant was constructed in West or South Africa, one could possibly see that the ships turned around in the U.S. Gulf and sailed in the direction of Africa instead of going through the Panama Canal. Thus, their sailing pattern would be reversed.

In order to make an assessment of Panama Canal routes versus competing routes we have had to simplify somewhat. We have assumed that all cargo is loaded in Houston, and that the same cargo is discharged in one port in Asia or South America.

The calculation is based on a modern, 37,500 dwt parcel tanker, and the table below shows the results.

Load	Discharge	Route	Distance (nm)	USD/MT
Houston	Hong Kong	GH	14394	38.15
	Hong Kong	PC	10763	31.87
	Valparaiso	CH	9092	25.22
	Valparaiso	PC	4182	15.82
M/E Gulf	Houston	GH	12502	33.54
M/E Gulf	Houston	PC	11006	32.46

Chemicals Trade Forecast.xls/ROUTE

As can be observed from the table, the Panama Canal route for voyages to Hong Kong and Valparaiso is considerably cheaper than the alternative. However, considering the freight from the Middle East it doesn't really matter which route one choses. In such a case it is obviously up to the operator to choose the route suiting other transportation commitments.

Vegoil

The main exporting area for vegoils is South East Asia. More specifically, Malaysia and Indonesia. If one considers, as an average between these countries, the distance from Singapore to the USG or USEC, we observe that the distances are fairly equal whether one goes via Good Hope or the Panama Canal. In the best case, the time saving for going through the Panama Canal is about three days. However, one must include one day for waiting and Canal water time resulting in a net saving of about two days. Even in a strong market, two days saved (including time cost and bunkers costs) does not defend the cost of transiting the Panama Canal.

In the other major vegoil trade, from West Coast Central America to the U.S. Gulf/East Coast, it is quite obvious that transiting the Panama Canal is the only alternative. As an example, the distance from Lázaro Cárdenas to New Orleans via the Panama Canal is 3,167 nm, whereas the alternative via Cape Horn is 12,076 nm. The time saving is in region of 26 days.

Methanol

The current trade in methanol through the Panama Canal is virtually non-existent. In the reference and worst case scenarios the expected volume growth will be minimal and route comparison is not really relevant. For the expanded Canal, we expect substantial increases and comparison with competing routes is highly relevant.

As can be observed in the table below, the Panama Canal route is competitive with alternative voyages for all sizes. The reason why this route is not used currently is due to the fact that methanol demand on the U.S. West Coast is limited and there are ample supplies from Canada and Alaska. However, if the best case scenario occurs, we believe supplies to California and the U.S. West Coast will prove to be highly competitive freightwise.

Suezmax Size				
Loadport	Disch. Port	Route	Distance(nm)	USD/MT
PUNTA ARENAS	HOUSTON		7496	8.25
PUNTA ARENAS	HOUSTON	PC	5504	9.44
PUNTA ARENAS	LOS ANGELES		5865	6.59
DAMPIER	HOUSTON	GH	12662	13.52
DAMPIER	HOUSTON	PC	11741	15.80
CALLAO	HOUSTON	PC	2907	6.79
KITIMAT	HOUSTON	PC	5847	9.79
TRINIDAD	LOS ANGELES	PC	4091	8.00
PUERTO LA CRUZ	LOS ANGELES	PC	3923	7.83

Aframax Size				
Loadport	Disch. Port	Route	Distance(nm)	USD/MT
PUNTA ARENAS	HOUSTON		7496	9.88
PUNTA ARENAS	HOUSTON	PC	5504	10.97
PUNTA ARENAS	LOS ANGELES		5865	7.89
DAMPIER	HOUSTON	GH	12662	16.19
DAMPIER	HOUSTON	PC	11741	18.58
CALLAO	HOUSTON	PC	2907	7.80
KITIMAT	HOUSTON	PC	5847	11.39
TRINIDAD	LOS ANGELES	PC	4091	9.25
PUERTO LA CRUZ	LOS ANGELES	PC	3923	9.04

Panamax Size				
Loadport	Disch. Port	Route	Distance(nm)	USD/MT
PUNTA ARENAS	HOUSTON		7496	12.56
PUNTA ARENAS	HOUSTON	PC	5504	13.12
PUNTA ARENAS	LOS ANGELES		5865	10.02
DAMPIER	HOUSTON	GH	12662	20.58
DAMPIER	HOUSTON	PC	11741	22.80
CALLAO	HOUSTON	PC	2907	9.09
KITIMAT	HOUSTON	PC	5847	13.65
TRINIDAD	LOS ANGELES	PC	4091	10.93
PUERTO LA CRUZ	LOS ANGELES	PC	3923	10.67

Chemicals Trade Forecast.xls/methroutes

LNG and LPG Transit Value Forecast

The consequences of our trade volume forecasts based on the present tariff structure can briefly be summarized as follows:

Total income from laden transits through the Canal of LPG (no LNG) amounted to usd 3.18 million in 2000. In the reference case, this will increase to usd 6.7 million for LPG and usd 9.4 million for LNG in 2025 for the unexpanded Canal and usd 7.5 million for LPG and usd 14.4 million (2000 value) for LNG for the expanded Canal.

In the best case, laden gas transits will provide usd 25.5 million for the unexpended Canal and usd 34.4 million in case of planned expansion in year 2025. For the worst case, the 2025 incomes will be usd 8.8 million for the unexpanded and usd 13.1 million for the expanded Canal in year 2025. The difference between best and worst case is mainly related to the uncertainty in LNG income.

Additional income from the Canal expansion will be about usd 5.7 million in the reference case, usd 8.9 million in the best case, and usd 4.3 million in the worst case. It is mainly LNG trades that will benefit from an expanded Canal. Additional income from LPG from the Canal expansion is forecasted to be only 0.75 million only, in 2025.

Detailed income figures for LNG and LPG transits by individual routes are shown in a separate appendix.

We observe that in the reference case, unexpanded Canal, Atlantic-Pacific LPG income will increase from usd 3 million in 2000 to usd 5.2 million in 2025, whereas Pacific-Atlantic will increase from usd 0.08 million to usd 1.5 million over the same period. Corresponding figures for expanded Canal will be usd 3 million in 2000 to usd 5.8 million in 2025, whereas Pacific-Atlantic will increase from usd 0.08 million to usd 1.7 million.

Revenues from LPG transits in the expanded Canal in both directions will increase from usd 3.18 million to usd 7.5 million, whereas revenues from LNG transits will increase from zero to usd 14.4 million.

LNG shipments in both directions provide the largest upside.

For LPG, income from trade in 2000 was mainly based on Atlantic – Pacific (97% of total LPG income).

With expected growth in the Pacific – Atlantic trade for the expanded Canal scenario, this figure will be reduced to 78%.

Reference case unexpanded Canal, Atlantic-Pacific LNG trades in 2025 are expected to be 54% of total trades. For an expanded Canal, this figure is reduced to 49%, indicating a shift in trade flows between the two cases.

LNG

LNG ships and LNG shipment costs are expensive. LNG vessels are also part of a logistical system, providing an outlet for the exporting plant and supplies for the importing plant. Deviations are, therefore, seldom an opportunity for LNG vessels. Time is money and there is “always” another cargo waiting to be shipped at the producer end. Also, there is not a functioning spot market as can be seen in the tanker and dry bulk markets. However, cargo and vessel swaps occur from time to time to optimise vessel trading pattern and to account for unforeseen events.

There are no LNG trades through the Panama Canal today. In the future, we foresee the following major LNG trades:

Venezuela/Trinidad to West Coast South America and West Coast U.S.Peru/Bolivia to U.S. Gulf.

Trade 1. and 2. will “cross” each other in the Panama Canal. Through cargo and ship swaps, these “cross” trades could be minimized. However, based on how this industry works and gas sales contracts are fulfilled, we have more confidence in the concept of vessels trading in a system where ships sail from Peru/Bolivia to the U.S. Gulf, ballasting to Trinidad/Venezuela, picking up a cargo to West Coast Central America and then ballasting back to Peru/Bolivia.

Normally ballast legs would have accounted for some 50% of Panama LNG trade. However, we have estimated that the above mentioned trade pattern will reduce ballast legs through the Canal, reducing ballast legs to some 35% of total passages.

Total transportation cost of main Panama Canal routes is as follows (basis our long term T/C rate for LNG vessels and average bunker price for the forecasted period):

The total transport costs of Canal routes show that Alaska/Kenai exports are, in general, not very competitive vis-à-vis the U.S. Gulf.

The difference in transport cost from Trinidad/Venezuela and Peru/Bolivia to Mexico and to the Atlantic side of Panama are limited and we, therefore, regard both export areas as competitive with respect to this market.

The relative margin of each route, for each shipment, due to the expansion of the Canal, is the difference between

the two sets of transport cost data shown in the table above. The lowest transport cost is based on using a 145,000 cbm vessel on the expanded Canal. The highest costs are based on using a smaller 100,000 cbm vessel on the existing Canal.

The reason to cool down natural gas is to transport it in an economical manner. Alternative transportation methods could be to transport it in a pressurized form as they do for very small LPG carriers. Another alternative is to transport it via pipelines. We may see new trades in the region with gas shipped in vessels in its compressed form, but do not foresee it passing the Canal or competing with or substituting LNG trades in our forecast. Pipelines could play a role if Venezuela decides to export some of its vast reserves in this way. Our study concludes that this is not an economical path, except for exports to its immediate neighbours (Columbia, Panama and Guyana) and we have, therefore, not considered this as a probable alternative to LNG flows.

With regard to new sources of production, we have looked at the different regions with current proven gas reserves. If significant new discoveries of gas are found in the U.S., this will reduce American LNG import requirements. Similarly, if significant gas volumes are found in Canada, and it is piped economically to consuming regions in the U.S., this may also reduce U.S. LNG import requirements, thus reducing potential trade through the Canal.

Gas is mainly used to produce energy (heat and/or power/ electricity). There are several commodities which can substitute for gas in energy production: nuclear power, coal, oil, hydropower and different alternative energy sources, for instance. We have however, considered these alternative energy sources and concluded that gas will gain market share rather than lose out to other energy sources.

A typical Panama Canal LNG trade is expected to be in vessels earning some 50,000 per day for a 100,000 cbm vessel and 65,000 per day for a 145,000 cbm vessel. Cost savings by reducing waiting time in the Panama Canal would hence be some USD 2,000 per hour per vessel for an unexpanded and 2,700 per hour per vessel transit for an expanded canal.

Ballast voyages will be a major income from LNG trades since most vessels will ballast back to pick up another cargo.

LPG

The main LPG trade routes through the Panama Canal are with LPG, and petrochemical gases from the U.S.Gulf to West Coast Central America/ West Coast South America and Asia and with LPG and ammonia from Trinidad/Venezuela to West Coast Central America/ West Coast South America. LPG trade is also mainly from the Atlantic to the Pacific. There is also some trade from Africa to West Coast South America. Panama Canal LPG cargo movements are predominantly from the Atlantic to the Pacific.

The shipping alternatives to these routes are to sail around Cape Horn, but that is not really an economic alternative (except for the Africa to WCSAM trade) since transport costs become “astronomical” and the trade would quickly disappear and be replaced by alternatives. The Africa to WCSAM trade may potentially be rerouted if Panama Canal costs become too high.

LPG Pipelines for some of these trades are not economical due to the small quantities.

Since most of the traded volumes through the Canal today are in vessels smaller than the Panamax design, we do not foresee any significant cost savings for current trades, as these will probably continue to be transported in vessels smaller than the Panamax size (although cargo lots will increase over time, it will take some years before today’s shipments of 5,000 cbm polypropylene will increase to above 60,000 cbm of polypropylene).

We have identified a few potential new trades, or trades which are small today, but which have potential, that may benefit from an expanded Canal (we have calculated a few representative routes for comparison in the above table). In the future, we believe Venezuela will become a large LPG exporter as a consequence of increased natural gas production. These extra export volumes could find their way to Japan/Korea and our calculations show that there is significant cost savings in using large vessels through an expanded Canal. This trade is, however, dependent on a large price differential between U.S. and Japan/Korea with higher LPG prices in Asia.

In the future, we also foresee Peru becoming an LPG exporter (LPG being a by- product to the LNG project). These volumes may be sent north, either transiting the Canal to the U.S. Gulf or going to the Mexico/U.S. West Coast. At both destinations, they will compete with Venezuelan volumes. Our findings are that the differences in transport cost are limited and hence, both will probably send cargos to these destinations now and then. Most of new Peru exports are, however, expected to find buyers in Chile and Ecuador.

Below is an overview of total transportation cost for some main and potential new routes. In addition, we have looked

at some alternative routes and the competitive situation between exporters:

Some few VLGC's can transit the canal today, but for most vessels, the beam exceeds the Canals limits. An expanded Canal will therefore be capable of handling all LPG vessels, but not necessarily reducing transport costs.

From the table above, one can see that Venezuela would prefer using the Panama Canal for exports to Japan/Korea range as it is has lower transport cost, even with a LGC vessel, compared to using a VLGC around Cape of Good Hope.

Future Nigeria LPG exports to Asia will, however, use the Good Hope alternative.

Future Peru LPG exports (here represented by Ilo) have to compete quite aggressively with potential Venezuelan LPG exports to California/Mexico Pacific range. The cost difference in transport is only usd 4 per ton. For shipments to the US Gulf (Corpus Christi), Peru will save some usd 2.7 by using a VLGC compared to a LGC.

For an importer in U.S. Gulf, sourcing LPG from Peru will be quite expensive compared to Venezuela/Trinidad area, but with differences in export price, this trade may be viable.

Panama Canal transit fees are typically 10% of total transport cost for the long haul voyages (Venezuela – Japan) and up to 15% for the short voyages (Venezuela – California).

LPG is used for several purposes, but in essence, it is an energy carrier and will compete with other energy carriers (oil, natural gas, etc.) for its market share. We do not foresee any full substitution, but more a pressure on price premiums from its alternatives (natural gas, oil, oil products, etc.).

Ammonia trades may diminish/be replaced by other trades if current ammonia producers prefer to use these volumes itself for production of UREA, etc. The risk for this is limited for current trade movements since current customers already have invested in production facilities using Ammonia as feedstock. Expected increases in these trades may however be effected.

An average Panama Canal LPG trade is in vessels earning between USD 8-25,000 per day with an estimated average around 12,000 per day. Cost savings by reducing waiting time in the Panama Canal would hence be some USD 500 per hour per vessel transit.

VOYAGE COST COMPARISON. LNG & LPG

Load - Discharge	Passing	Distance Laden	Distance Ballast	Total Transport Cost (USD/tonne)		
100.000 CBM				**2010**	**2015**	**2025**
PERU / PISCO - SAN DIEGO		3718	3718	31.34	31.45	31.79
PERU / PISCO - SAN FRANSISCO		4125	4125	34.21	34.35	34.73
PERU / PISCO - VANCOUVER		4920	4920	39.82	40.01	40.48
PERU / PISCO - LAZARO CARDENAS		2449	2449	22.38	22.42	22.61
VENEZUELA & TRINIDAD - LAKE C		2208	2208	20.67	20.70	20.87
VENEZUELA & TRINIDAD - COVE POINT		1850	1850	18.15	18.15	18.28
VENEZUELA & TRINIDAD - ALTAMIRA		2296	2296	21.30	21.33	21.51
VENEZUELA & TRINIDAD - BAHAMAS		1390	1390	14.90	14.88	14.96
ALASKA / KENAI - VANCOUVER		1278	1278	14.11	14.08	14.15
ALASKA / KENAI - SAN FRANSISCO		1821	1821	17.94	17.95	18.07
ALASKA / KENAI - SAN DIEGO		2247	2247	20.95	20.98	21.15
ALASKA / KENAI - LAZARO CARDENAS		3478	3478	29.64	29.74	30.06
PERU / PISCO - LAKE C*	PC	3006	3006	38.99	39.09	39.40
PERU / PISCO - ALTAMIRA*	PC	3080	3080	39.51	39.61	39.93
VENEZUELA & TRINIDAD - LAZARO CARDENAS*	PC	2789	2789	37.45	37.54	37.83
VENEZUELA & TRINIDAD - SAN DIEGO*	PC	4061	4061	46.44	46.60	47.02
VENEZUELA & TRINIDAD - VANCOUVER*	PC	5262	5262	54.91	55.15	55.71
VENEZUELA & TRINIDAD - SAN FRANSISCO*	PC	4469	4469	49.32	49.50	49.97
ALASKA / KENAI - LAKE C*	PC	6594	6594	64.32	64.63	65.34
ALASKA / KENAI - ALTAMIRA*	PC	6668	6668	64.84	65.16	65.87
145.000 cbm				**2010**	**2015**	**2025**
PERU / PISCO - VANCOUVER		4920	4920	25.05	25.55	26.28
PERU / PISCO - SAN DIEGO		3718	3718	19.66	20.03	20.58
PERU / PISCO - SAN FRANSISCO		4125	4125	21.48	21.90	22.51
PERU / PISCO - LAZARO CARDENAS		2449	2449	13.97	14.21	14.56
VENEZUELA & TRINIDAD - LAKE C		2208	2208	12.89	13.10	13.41
VENEZUELA & TRINIDAD - BAHAMAS		1390	1390	9.23	9.34	9.53
VENEZUELA & TRINIDAD - COVE POINT		1850	1850	11.29	11.46	11.72
VENEZUELA & TRINIDAD - ALTAMIRA		2296	2296	13.29	13.50	13.83
ALASKA / KENAI - VANCOUVER		1278	1278	8.73	8.83	9.00
ALASKA / KENAI - SAN FRANSISCO		1821	1821	11.16	11.32	11.58
ALASKA / KENAI - SAN DIEGO		2247	2247	13.07	13.28	13.60
ALASKA / KENAI - LAZARO CARDENAS		3478	3478	18.58	18.93	19.44
PERU / PISCO - LAKE C*	PC	3006	3006	27.48	27.83	28.33
PERU / PISCO - ALTAMIRA*	PC	3080	3080	27.81	28.17	28.68
VENEZUELA & TRINIDAD - LAZARO CARDENAS*	PC	2789	2789	26.51	26.83	27.30
VENEZUELA & TRINIDAD - SAN DIEGO*	PC	4061	4061	32.21	32.67	33.34
VENEZUELA & TRINIDAD - VANCOUVER*	PC	5262	5262	37.59	38.18	39.03
VENEZUELA & TRINIDAD - SAN FRANSISCO*	PC	4469	4469	34.04	34.54	35.27
ALASKA / KENAI - ALTAMIRA*	PC	6668	6668	43.89	44.64	45.70
ALASKA / KENAI - LAKE C*	PC	6594	6594	43.56	44.30	45.35
LPG - VLGC				**2010**	**2015**	**2025**
PUERTO LA CRUZ - YOKOHAMA	No	13786	13786	52.84	52.20	51.83
BONNY - YOKOHAMA	No	10710	10710	41.55	41.02	40.72
ILO - LOS ANGELES	No	4153	4153	17.47	17.20	17.02
PUERTO LA CRUZ - YOKOHAMA	Yes	8721	8721	39.02	38.56	38.28
BONNY - YOKOHAMA	Yes	13020	13020	54.81	54.18	53.82
PUERTO LA CRUZ - LOS ANGELES	Yes	3950	3950	21.50	21.22	21.04
ILO - CORPUS CHRISTI	Yes	3468	3468	19.73	19.47	19.30
LPG - LGC				**2010**	**2015**	**2025**
PUERTO LA CRUZ - CORPUS CHRISTI	No	1850	1278	11.65	11.49	11.36
PUERTO LA CRUZ - YOKOHAMA	Yes	8721	8721	42.34	42.01	41.81
PUERTO LA CRUZ - LOS ANGELES	Yes	3950	3950	24.45	24.24	24.09
ILO - CORPUS CHRISTI	Yes	3468	3468	22.42	22.22	22.07

Transp Cost.xls/LNG Data

RISK ANALYSIS

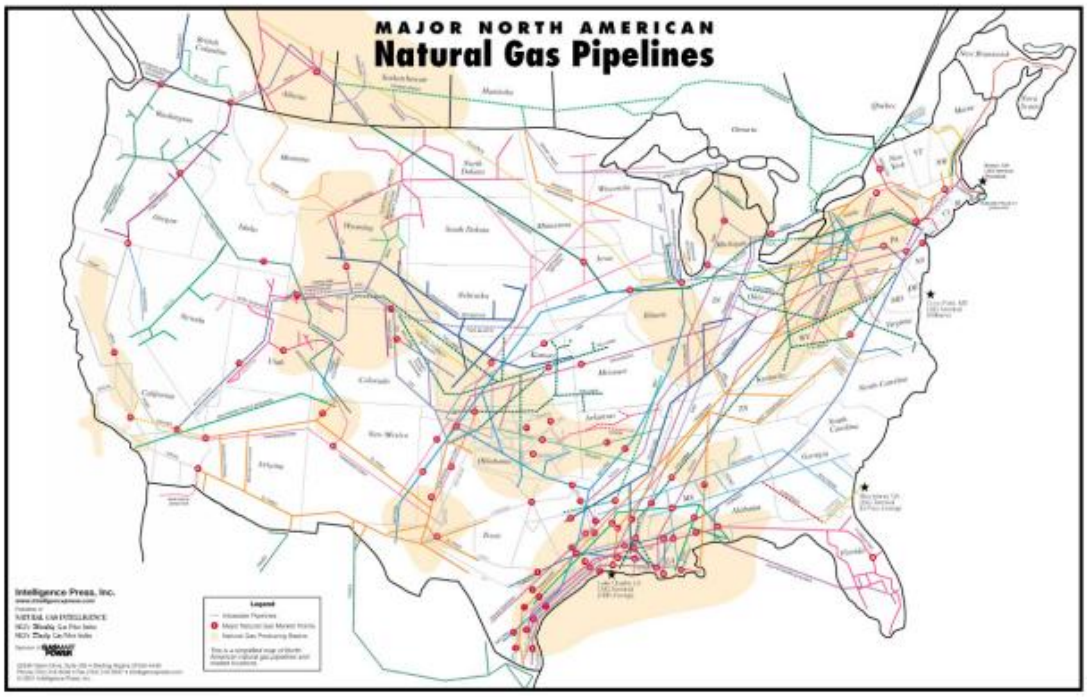
Risk Analysis

For our forecasts we have prepared best case, worst case and most probable case scenarios. These scenarios have been prepared to cover the broad spectre of the liquid bulk segment and individually for each of the categories of liquid bulk commodities which are covered by this study. In examining these scenarios, it quickly becomes apparent that the best case, worst case and most probable case scenarios are not ubiquitous, and that what may necessarily be a best case scenario for one commodity will be quite the opposite for another.

Determining how these scenarios will play out in conjunction with one another forms the basic thrust of our risk analysis. As we have mentioned in our rendition of scenarios for the liquid bulk market in general, one of the most important factors in viewing risks in all three scenarios is the disposition of the energy market during the forecast period. The world is in a period of exponential growth in knowledge and technology, and this growth has the potential to change the way energy is produced and manufactured. This in turn, could have far reaching effects on the seaborne trade of energy producing materials and their by-products, either by strongly reducing trade routes in some commodities or by changing the logistics of seaborne trade as new energy solutions are developed and new areas of production emerge which may involve different seaborne trading patterns or perhaps very limited seaborne trade. The trade in chemicals, particularly those which are petroleum based, will also be profoundly effected by the way these changes occur.

As we seek to examine the complex interplay of the individual scenarios for each of the commodities covered by this study, it will be important to stipulate the principle elements which will allow us to describe what will be main trends and which will prevent us from becoming mired in what are sure to be confusing and conflicting developments as the broader picture unfolds. We think, therefore, that it will be important to give priority in our risk analysis to those elements which will have the greatest impact on the Canal and to eliminate those elements whose influence will be of a more marginal nature. In other parts of this study we have talked about the Panama Canal's universe, and we have defined this as the markets and routes which have the greatest significance for the Canal. For the most part, this universe is dominated by countries and markets which are in the immediate vicinity of the Republic of Panama.

Of all of these, the United States has the greatest significance by virtue of the size and potential of the market which it represents. In addition, the United States constitutes one of the major markets, if not the major market, for other countries in the hemisphere, and thus, trade between these countries and the United States has played and will, in all likelihood, continue to play a key role in any examination of risks with respect to the key variables in this study. The United States is also at the forefront of



Risk.xls/Pipelines Source: Intelligence Press, Inc.

a worldwide debate on the subject of energy, particularly with regard to potential environmental damage as a result of the use of fossil fuels, as well as the geo-political consequences resulting from a dependence on petroleum. It, therefore, becomes necessary to take into account the role of politics, both global and local, in any risk analysis, since many of the basic issues involved in our examination have become highly political in nature, with substantial political forces arrayed on all sides of the issues.

As the market having by far the largest significance for the future of the Panama Canal, we must also give consideration to the unique characteristics of the United States with respect to the liquid bulk market. At the present time the United States does not have sufficient refining capacity to produce all of the petroleum products necessary to run its economy, and, as we have already seen in other parts of this study, it is unlikely to expand its current refining capacity to any significant degree. This means that the market for the import of refined petroleum products into the United States during the forecast period has a considerable upside potential. As we will discuss later, this potential could change if alternative energy sources gain a foothold in the American market. Natural gas plays an ever greater role in the United States and other countries as the cleanest burning fossil fuel, a kind of acceptable transition between fossil fuels and their alternatives. Even though we mention LNG projects in the vicinity of the Canal as potential sources of transit cargo volumes, it remains to be seen if all or perhaps just one of these projects will be developed. Natural gas is available in most geographic areas including the continental United States, and the fact that the United States has a substantial network of natural gas pipelines does not bode well prospective transits of this commodity through the Canal (see the Natural Gas Pipelines map included in this section).

In general, natural gas appears to have its principle future role in the production of electricity, and virtually all new power plants are designed with natural gas in mind.

There are a number of other ways of producing energy which have been viewed as possible alternatives to the petroleum based sources of energy upon which we rely today. These are briefly outlined as follows:

- **Fuel Cells – Fuel cells are an electrochemical device in which the energy of the chemical reaction in which hydrogen is combined with oxygen is converted into electricity. The by-product of this reaction is water. In most of the fuel cell technology used so far, hydrogen is extracted from methanol and combined with oxygen in the air. At the present state of development fuel cell technology is cost prohibitive.**
- **Hydrogen (liquid or compressed) – Hydrogen may be used in internal combustion engines in the much the same manner as gasoline is used today. Hydrogen is a clean burning fuel which has a minimum environmental downside. Nonetheless, it contains less energy than gasoline.**
- **Compressed Natural Gas (CNG) – Compressed natural gas is similar to LPG, but it is liquefied through pressure rather than by using low temperature. It has so far been used to a limited degree in vehicles, and its use is increasing very slowly.**
- **Biofuels – Biofuels are produced from organic matter. They are more expensive to produce and less efficient than regular diesel oil. The source of supply of biofuels is, however, completely renewable.**
- **Alcohol – Alcohol, and in particular, methanol has a higher octane rating than gasoline but only about half the energy. Alcohol is also corrosive when used in vehicle engines. At the present time it is used in a blend with gasoline.**

At present, none of the above alternatives pose a serious threat to the fossil fuel- based energy markets of the United States and other countries. Nonetheless, research continues into alternative automotive technology with a particularly strong emphasis on hybrid cars and fuel cells. Advances in this research will, in our opinion, play a strong role in the degree to which the gasoline powered internal combustion engine is phased out as a major source of automotive propulsion during the forecast period. As we have discussed elsewhere in this study, the adoption of fuel cell technology could have a deleterious effect on gasoline (and crude oil, which is used for gasoline production) transits of the Panama Canal, but these could be replaced by a sharp increase in methanol transits.

The Three Case Scenarios

Below we outline the elements of each of the three case scenarios required in this study. Each of the elements in each of the scenarios is identified by type. Since many of the elements in each scenario fall into several type categories, each of these categories is named. Further, after each of the elements the effect of the element in question is identified in parenthesis in the following manner:

Type of Impact/Probability of Occurrence/Degree of Impact

The type of impact is abbreviated as either 'P' for positive or 'N' for negative. The probability of occurrence is indicated by the following abbreviations:

NS = not significant (highly unlikely)

L=low (low importance, but occasionally possible)

M=moderate (possible)

H= high (probable)

The degree of impact uses the same abbreviations as the probability of occurrence but with the following meanings:

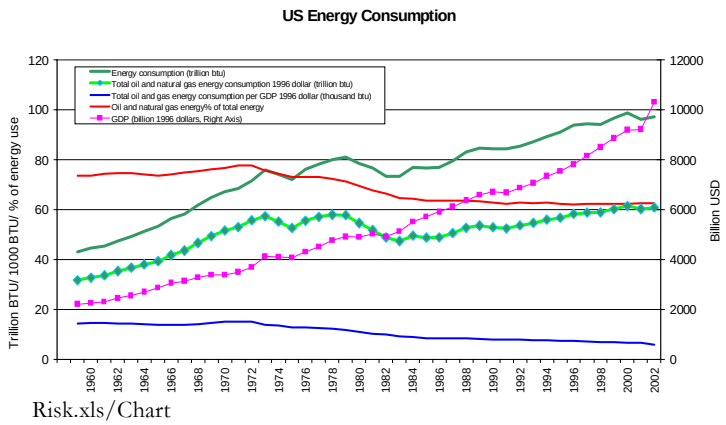
NS=not significant (very little or no impact)

L=low (smaller impact)

M=moderate (medium impact)

H= high (high impact)

In addition, we use the abbreviation 'NA' for those elements of the description where there is no apparent answer for the type of impact, probability of occurrence or impact of the occurrence.



Most Probable Case

Our historical study as well as our forecasts indicate a gradual but steady decrease of the role of oil in the world economy. Energy intensity is also falling as efficiency in the use of energy sources continues to improve. We must, however, point out that the declining role of oil and the decline in energy intensity does not mean that the volumes of oil used will necessarily decrease; it only means that oil will lose market share as the world develops and the energy market becomes larger. We fully expect that, for example, volumes of product imports into the United States will increase during the forecast period, even though the percentage of the energy market which these volumes will cover will become gradually smaller. A decrease in the role of oil will not necessarily mean that other liquid bulk commodities will replace oil in Panama Canal shipments. As we examine the most probable case scenario, we must also make a careful evaluation of the shipping logistics of the commodities involved in this scenario and how this will affect the Panama Canal for the liquid bulk sector.

On the purely economic side, we expect that we will have a fluctuating oil price during the entire period with periods of high and low prices and periods of higher and relatively lower oil consumption as a result of seasonal variations, high or low oil stocks in consuming countries, etc. Also, we expect that periods of relative prosperity will be interspersed with periods of recession in the world economy. This, in our opinion, is a description of 'business as usual'.

Another factor which has kept the cost of tanker transportation at a fairly reasonable level during the last twenty years or so has been the fact that tankers are now largely built in countries with a high level of productivity, a high scale of operations and generally cheap labor (except for Japan). This helps to keep ship prices at reasonable levels, and as long as these characteristics are maintained in shipbuilding nations, prices will continue to be reasonable. In spite of the very tense global political situation at the time of writing this report, we believe that if we take into account the relatively long 25 year perspective required, then the basic elements of the most probable case scenario are as follows:

Economic

Business as usual with no major conflicts, wars of long duration, etc.(P/H/H)

Economic

'Normal' fluctuations or business cycles in the world economy. (P/H/H)

Technical/Environmental

Continuing decline in oil and energy intensity.(N/H/H)

Political/Environmental

Increasing volumes of product movements to the United States as existing U.S. refineries are unable to cope with volumes required by the market. (P/M/M)

Technical/Environmental

Slow but steady improvements in the viability of fuel cell and other alternative automotive technology.(N/M/L)

Political/Technical/Environmental

Gradual acceptance of the notion that fossil fuels are harmful to the environment and that viable alternatives must be found. (N/H/M)

Political/Environmental/Technical/ Economic

Gradual implementation of alternatives as they develop. (N/H/L)

Technical/Economic/Environmental

Increased use of natural gas for electric power generation. (P/H/M)

Environmental/Political

Little new refining capacity developed in major receiving markets, mostly because of pollution concerns.(P/H/H)

Economic

Refining capacity growth in oil producing countries as a strategy for adding value to oil exports.(P/H/H)

Technical

Continuing discoveries of oil and gas reserves. (NA/H/NA)

Economic

Shift from manufacturing economies to service economies in the developed world.(N/H/M)

Economic

Increase in manufacturing in the developing world. (P/H/M)

Technical/Political/Environmental

New transport solutions for population centers involving more efficient public transportation as a measure to reduce pollution and to avert heavy metropolitan traffic and all of the logistical problems this creates. (N/M/M)

Perhaps the most salient feature of our most probable case scenario is the gradual nature of change. Given the above elements of the most probable case scenario, we can expect that oil product volumes through the Canal should increase throughout the period. The only factor which could hinder this development would be a rapid development in the area of fuel cell technology, and this would slow the increase in gasoline shipments. These volumes would be, to some degree replaced with methanol, which will be a primary component in fuel cell technology. An expanded Canal would permit the passage of the largest product carriers, and this would allow the industry to create economies of scale for both gasoline and methanol.

Best Case

We see a best case scenario as having the following characteristics:

Economic

Prolonged periods of relatively low oil prices/high oil consumption.(P/L/H)

Economic

Prolonged periods with a relatively good tanker market as seen from a shipowner's perspective.(P/L/M)

Economic

Long periods of economic prosperity.(P/L/H)

Economic/Political

High degree of globalization.(P/M/H)

Economic/Political

A strengthening of regional economic cooperation for the Americas which will provide strong trade incentives for commerce between the United States and Central and South American nations.(P/M/H)

Political

No major wars or large scale global conflicts.(P/L/L)

Economic

Continuing exchange rate, wage, scale of operation and productivity discrepancies between shipbuilding nations and ship purchasing nations, thus keeping the price of tankers relatively low.(P/M/M)

Technical/Political

Continued high oil production and development of natural gas resources in Latin America. (P/M/H)

In our evaluation the above elements would come together to create a maximum degree of interest and incentives for shippers to use the Panama Canal. Obviously, long periods with a relatively low oil price and a high level of oil consumption will contribute to a greater volume of oil movements, and will inhibit conservation as well as putting a damper on other fuels which may be competitors to petroleum. A good tanker market will give fixed Panama Canal transit costs a relatively smaller place in the debit column of voyage calculations. It should also be noted that in a good tanker market, most owners or shippers give priority to the quickest possible turnaround on voyages in order to continue to earn money as quickly as possible on further employment. Thus, from a shipowner's or a shipper's standpoint, speed becomes a part of strategy, and the use of the Canal as a time saving device becomes much more important than it would be in a poor tanker market. Our best case scenario also assumes a general climate of world economic prosperity with no wars or major conflicts. Prosperity is always good for the tanker business because, to a large degree, the increase in transportation of goods and services is fuelled by oil which is carried in tankers. A high degree of globalization will also favor intra-regional trade, which in turn will benefit the Canal. An improvement in intra-regional trading incentives for the Americas would have a most direct positive effect on the Canal because it would encourage trade within the 'universe of the Panama Canal'. Finally, continuing differences in labor costs, productivity levels, and levels of operations between shipbuilding and shipbuying nations will continue to maintain a relatively affordable level of newbuilding prices, which will maintain a solid upside potential on shipping investments.

Worst Case

In our view, a worst case scenario would contain the following elements:

Economic

Prolonged periods with a high oil price.(N/L/M)

Economic/Technical/Political/Environmental

Prolonged periods of low oil consumption(N/M/H)

Economic/Political

Economic uncertainty/recession.(N/M/H)

Political

Wars and regional conflicts which disrupt trade and create an uncertain economic environment. (N/L/M)

Economic

Long periods with a low tanker market.(N/M/M)

Economic

A narrowing of the differences between shipbuying and shipbuilding nations.(N/M/L)

Economic/Political

Increased construction and use of pipelines which detract from Panama Canal volumes.(N/L/M)

Technical/Political

Development of petroleum alternatives which can be manufactured locally, eliminating the need for shipping.(N/M/H)

Environmental

Major tanker accidents which accelerate the search for alternatives to reduce tanker transportation, particularly through critical waters which have either high traffic volumes or which are environmentally sensitive.(N/L/L)

Technical/Political

Decrease in Latin American oil and gas production and exploration.(N/L/H)

Environmental/Political

Strong and general acceptance of the harmful nature of fossil fuels to the environment accompanied by the implementation of viable alternatives. (N/L/H)

High oil prices generally discourage consumption of oil and encourage the use of alternatives, where possible. Economic uncertainty and recession also tend to decrease the consumption of oil as production of goods declines, and transportation of goods by sea also declines. Long periods with a low tanker market can have a negative effect on the Panama Canal vis-à-vis the liquid bulk segment because low profits or operation at a loss for shippers make Panama Canal transit fees a liability to be avoided when possible and tend to blunt the time-saving advantages of the Canal.

Pipelines are a real threat to the Panama Canal, and we think that the development of pipelines which directly transport volumes of crude, products or gas which would have normally found their way through the Canal. As we have mentioned elsewhere in this report, Petroterminales de Panamá, S.A. have the option to build another pipeline alongside the present pipeline. We further understand that there are plans to reactivate the pipeline owned by Petroterminales. We also know that they have the option to build further storage facilities on either side of the isthmus. The fact that the reactivation of the pipeline and the possible construction of another pipeline appear to be of a speculative nature indicates that the primary goal of the venture is to take market share from the Panama Canal.

Another element of a worst case scenario would be a lessening of the differences between shipbuilding countries and shipbuying countries. This would mean that tanker costs would increase to levels which would make tanker owning a far riskier business from an economic viewpoint than it is today; this would result in a much lower upside potential for those who invest in tankers.

Finally, we believe that, as we have said in our most probable case scenario, the notion that fossil fuels are harmful to the environment and that their use should be limited and eventually terminated will gain wider acceptance on a worldwide basis over time. Any major accidents involving tankers, any increase in pollution, and any increase in negative effects on climate will only serve to accelerate the process of acceptance and to further the process of implementing alternatives. Although the use of alternatives, such as methanol, could benefit the Canal by, for example, replacing gasoline transits with methanol transits, a worst case scenario could be manifested by the development of alternatives which can be readily manufactured locally and which, therefore, do not require transportation by sea.

Main Observations

In the case of oil, we observe a strongly increasing role of refined product imports in the United States during the period as well as the gradual flattening out of crude imports as refinery capacity stagnates. We observe that Asia will experience strong growth in crude oil imports during the period, which will be a period of strong economic development in that area of the world. We also note that product imports in North America are expected to double during the period, whilst product exports from Latin America are expected to grow by about 80 percent. A large share of these exports should be destined for the U.S. market, and this has the potential to benefit the Panama Canal.

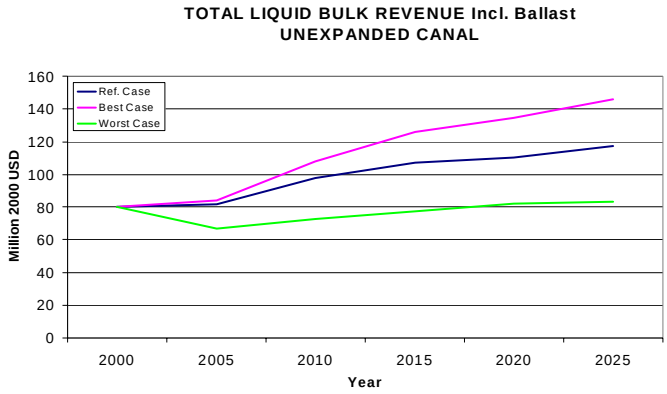
For the purpose of more clearly illustrating these scenarios with specific figures for the major areas of the world, we refer to the tables called Global Oil Production and Refining Scenarios in the appendix, which are taken from our forecasts. The tables show volumes for all three cases and cover crude oil production, refinery capacity, refinery throughput and direct use, crude oil exports, crude oil imports, oil product exports and oil product imports. We would like to draw particular attention to the figures in the tables which cover Latin America and the United States because these figures will have the most relevance for the Panama Canal. As can be seen from the first set of tables, crude oil production in Latin America is expected to grow strongly in all three cases, whilst U.S. crude oil production is expected to decline significantly, even in the best case. Refinery capacity in the U.S. will see only modest gains during the period, whilst Latin American refinery capacity, even in the worst case, is expect to increase by 50 percent. This leaves little doubt about where the major source of U.S. product volumes lies. It is quite clear, however, that the Middle East will also experience strong growth in both crude oil production and refinery capacity during the period. We do, nonetheless, expect that Middle Eastern refiners will be at a significant disadvantage compared to their Latin American

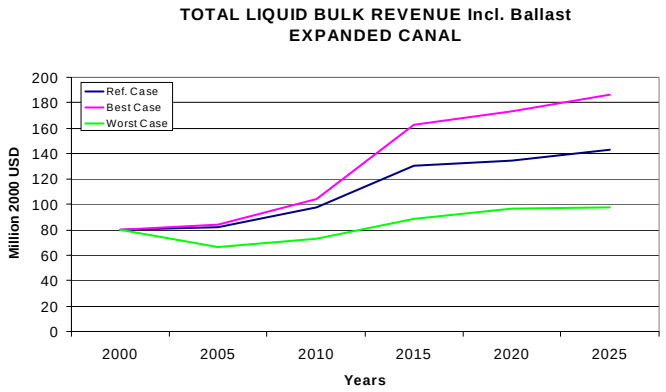
counterparts vis-à-vis the North American market due to the extra transportation costs occasioned by the greater distance from their refineries to this important market. As can be observed from the tables covering product imports, it is clear that these will increase significantly in the U.S., growing by over 200 percent in the worst case and over 300 percent in the best case.

In the case of chemicals, our forecasts indicate that the strongest chemical market with the highest growth potential for the Panama Canal is the market from Asia to the Atlantic and Gulf coasts of the United States. As can be seen from the chemical tables located in the appendix which depict the three case scenarios in each direction, chemical exports from Asia to the U.S. Atlantic and Gulf coasts accounted for 70 percent of total Asian chemical exports. Asian chemical exports in 2000 accounted for almost 50 percent of imports to this area. Further, it can be observed from the tables that Asian exports to the U.S. Atlantic and Gulf coasts are forecast to be the centrepiece of chemical trade through the Panama Canal during the entire period. It is expected that during the forecast period these will increase by almost 250 percent, whilst other chemical movements from the Pacific to the Atlantic are marginal by comparison. Our figures are based on the forecast increases in chemical plants being built in Asia and the Middle East. Our figures for Pacific/Atlantic trade all indicate the same growth trend in all three scenarios, ranging from 12 percent growth in the worst case to 20 percent in the best.

In the case of the Atlantic to Pacific trade we forecast a gradual decline in chemical movements through the Panama Canal throughout the forecast period. As explained above, this is largely due to the expected shift in chemical manufacturing to the Middle East and Asia. This coincides with our reference scenario in which manufacturing shifts from developed economies to developing economies. As we can see from the tables, the U.S. Atlantic and Gulf coast areas account for the largest slice of the export market throughout the period with strong variations over time in other exporting areas. Trade in chemicals through the Panama Canal from the Atlantic to the Pacific is expected to decline between 55 percent in the projected worst case scenario and 52 percent in the best case.

In the case of seaborne trade in LNG, the main risk elements in our forecast are the possibility of delays with respect to start up dates of new projects and expansion of existing projects and the risk that new projects may be shelved. The worst case could, therefore, be reduced to figures close to zero.





We have also assumed that US will be a large scale LNG importer and that gas prices will be high enough to fund LNG imports. U.S. natural gas forward price go to 2008 and during that period, prices indicate that the U.S. market will attract LNG imports during that period.

In addition, for the existing canal, new purpose built LNG vessels is a necessity to commercially develop LNG trades passing the Canal. Without long term gas sale agreements, the building of such vessels may be difficult. If the expanded Canal can accommodate current LNG vessel designs, even short term/spot gas sales agreements can be developed through the Canal.

Another risk element in our LNG forecast is a close cooperation between the exporters, to optimize trade pattern for all the exporting projects, limiting ballast voyages through the Canal. We have estimated a degree of optimization, reducing ballast voyages from 50% to 35% of total Canal transits. However, due to the competition in this market, different gas qualities and contractual obligations, a close cooperation on vessel logistics have historically been difficult to organize. In the best case scenario, we have assumed limited optimization of logistics. In the worst case scenario, there is a high degree of trade optimization.

In the case of LPG, the main downside risk, but also giving some long term upside potential, is that countries like Peru/ Bolivia start developing their natural gas reserves. This may lead to LPG exports to countries along the pacific coastline of the Americas, reducing current volumes of LPG through the Panama Canal from the Atlantic to these markets. Worst case scenario reflects this development with steady to falling volumes during a period from 2010 to 2015, before slowly improving again.

LPG exports are expected to grow significantly from Venezuela and Trinidad in 2005-2010 as a result of increased natural gas field development and increased refinery capacities in the region. Our reference case have a growth rate of a solid 6.5%, also supported by expected high economic development in this timeframe (4.5% in Latin America, 3.4% in U.S.A. and 2.8% in Canada).

The upside potential is if Bolivia/Peru are able to develop large scale export facilities, more than compensating a potential reduction in LPG shipments from the Atlantic. Nevertheless, new exports from Peru/Bolivia may reduce "ballast transits" with gas vessels, reducing overall transport cost elements in the region, improving the commercial attraction of exporting/importing LPG.

Another upside risk for Canal trade is a positive development in the agricultural markets along the Pacific side of the Americas, with a resulting upside potential for increased Ammonia trade from large exporters such as Trinidad and Venezuela. We have included significant volumes on this trade in our best, but also most likely case.

For petrochemical gases, there is a substantial trade from the US Gulf to Asia. Substantial new petrochemical capacity is however, being built in the Middle East Gulf and locally in Asia. These new developments may reduce the US gulf exports, and the risk element is included in our worst case scenario. In our best case, we have estimated that demand grows faster than new supply and the US Gulf exports will continue at volumes around today's levels.

Fiscal year 2000 is the base year for our forecasts. Figures for 2001 and 2002 are now published and show a weak trend. Several countries in Latin/South America are struggling with their economies. It may take more time than expected to reach our assumptions for economic growth and industrial production.

Summary

Risks and upsides are reflected in our worst case and best case scenarios.

Total Canal revenues from liquid bulk transits and tankers in ballast under the different scenarios for the unexpanded and the expanded Canal vary significantly.

Thus, in the reference case for the unexpanded Canal in 2025, total tanker revenues will be usd 138.1 million, whereas revenues in the best case for the expanded Canal will be as high as usd 226 million, as against only usd 94.6 million in the worst case for the unexpanded Canal.

In 2025, the upside from an expanded Canal when compared against the unexpanded Canal will be usd 32.7 million in the reference case, usd 51.6 million in the best case, and usd 16.4 million in the worst case.

MARKETING STRATEGY

Marketing Strategy

Introduction

The purpose of the marketing strategy section of our study is to determine, propose, and justify a marketing strategy for the liquid bulk segment for the present and expanded Canal. Furthermore, we will examine the many issues involved in this task. An important part of our work will be to specify how we think shippers in the tanker market will react to various elements of a marketing strategy; we undertake this specification on the basis of our knowledge of and familiarity with the tanker market, in particular with regard to needs and requirements of shipowners and tanker charterers. We place emphasis on the fact that our efforts focus only on the liquid bulk sector, even though we discuss discrimination by vessel type in the course of our examination of the neutrality treaty. We can only assume that our concentration on only one of the sectors transiting the Canal will mean that it is up to the Panama Canal Authority itself to assign a value to our evaluations based upon the evaluations it receives from the other studies and on its own priorities. Any considerations we have given to the capacity limits of the present Canal or the expanded Canal concentrate only on the liquid bulk carrier segment, and do not examine the mix of priority of segments, which the Canal Authority must eventually determine. The primary objectives of our marketing strategy for the liquid bulk segment shall be to:

1. Maximize the Canal's earnings.

2. Maximize the Canal's market share for the liquid bulk segment.

3. Be non-discriminatory within the liquid bulk segment in compliance with the Panama Canal's Neutrality Treaty.

S.W.O.T. Analysis

A Brief S.W.O.T. (Strengths, Weaknesses, Opportunities, Threats) Analysis of the Panama Canal in Present Market Conditions.

We undertake the following brief S.W.O.T. analysis in order to define the starting point for the deliberations in the rest of our study concerning the different elements which come to bear on the development of a marketing strategy for the Panama Canal.

Strengths

The Panama Canal is well-organized, well-run, and it has an established client base as well as a unique position as one of the world's major canals. Further, the Panama Canal is in the perpetual process of evaluating its position in the world transportation market, and it appears that the Panama Canal Authority is willing to make necessary changes and upgrades on the basis of these evaluations.

Weaknesses

The Panama Canal is limited by its size. The size of the waterway restricts the number of transits which can safely be performed. The size of the waterway also excludes a substantial portion of the world's fleet of sea-going vessels. This is particularly apparent in the case of crude oil, the logistics of which appear to have bypassed the Panama Canal as a result of the large sizes of vessels in which crude oil is traditionally shipped.

The Panama Canal is further limited by the Neutrality Treaty of 1977 with the United States; the treaty potentially places the interests of neutrality above what may be the commercial interests of the Panama Canal or of the Republic of Panama.

Another weakness is that the Canal has neglected to see the liquid bulk market (and probably a number of other markets) as compartmentalized, with different segments of the market exhibiting different needs and requirements. This weakness is evidenced by the simplicity of the present toll structure.

Opportunities

Most of the opportunities available to the Panama Canal lie within the realm of its strengths. That is to say, as an efficient, well-run organization perpetually in the process of evaluating its role and strategy, the ACP is in a position to take action on the basis of information and intelligence about the market. This is information which the Canal actively seeks. Given the trends outlined in other parts of this study, it is logical to assume that the growth of petroleum products through the Canal as a result in the perceived limits in growth of U.S. refining capacity along with the expected growth in the requirements for such products in the U.S. and the expected growth in Latin American refining capacity, will be opportunities which the Canal can be expected to exploit. In the liquid bulk sector the Canal has the opportunity to focus its efforts on different areas of the sector; the purpose of this individual focus will be to gain the maximum revenue from that area by concentrating on the special needs and characteristics of the area in question.

As we mention in the section on threats, the Trans-Isthmian Pipeline is a major one of these. We think, however, that an investment in the pipeline could blunt the effect of this threat, since any revenues gained by the investment would, at least in part, fall to the Panama Canal. One cannot stop the pipeline from using whatever means at its disposal for the purpose of attracting volumes which otherwise may have transited the Panama Canal, but one can lessen the deleterious effect by receiving revenues from this competitor. It is clearly up to the ACP to determine if it wishes to diversify its activities in this manner, and we mention this only for the purpose of illustrating a strategy which could take the sting out of the competition.

Threats

The two largest threats to the Panama Canal today in the liquid bulk sector are pipelines and the containerization of chemicals. In particular, we see the Trans-Isthmian Pipeline as a threat to crude oil volumes through the Canal, since it could be used by shippers in a way that will limit Canal transits by crude carriers; this would largely occur by using the storage facilities on either side of the pipeline as distribution centers for volumes which have transited the pipeline. This would mean that vessels would come to Panama to load or discharge cargo but would not transit.

The Present Toll Structure

The present toll structure of the Panama Canal is a graduated structure which provides discounts to vessels with a PC/UMS exceeding 10,000 tons for the portion of this tonnage which is over 10.000 tons and a further discount for the tonnage in excess of 20,000 tons. In the announcement of the present toll structure the tolls are indicated on the basis of vessel type, such as general cargo, refrigerated cargo, dry bulk, tankers, etc. Even though the tolls are organized according to vessel type, the toll structure for all vessel types is, in fact, identical, eliciting the question as to why the vessel types are mentioned when there is no difference in the tolls. This type differentiation is clearly indicative of the fact that the Canal is putting into place the groundwork for subsequent price differentiation on the basis of vessel type. The first phase of the present toll structure took effect on 01.10.02, and prior to this time the toll structure consisted of a flat fee per ton of PC/UMS and did not differentiate in any way with regard to PC/UMS or type of vessel or any other concept.

Another element of the present toll structure is a reservation system whereby vessels are able to book delay-free passage beforehand by submitting a reservation form and paying a fee. Transit reservations are awarded on the basis of available slots as pre-determined by the rules set out by the ACP. Allocation of slots is effected on what amounts to a first-come-first-served basis as set out in the ACP's MR Notice to Shipping No. N-7-2003 dated 1st January 2003. Booking fees for the reservation system are levied on the basis of PCUMS and on a graduated scale depending upon the number of vessels waiting.

In addition to the above, vessels are charged separately for line handlers, locomotives, tugboats, etc. on the basis of the extent to which such services are required.

The clear advantage of the present toll structure is that it provides an incentive for larger and, for the Canal Authority, more lucrative vessels to transit the Canal. The current toll structure also addresses the fact that certain vessels cannot run the risk of delays occasioned by heavy traffic through the Canal during certain periods. The toll structure which took effect in October of 2002 also paves the way for further adjustments in the structure of tolls as the Canal Authority gathers experience as to the effects of the new toll structures.

The Neutrality Treaty and Alternatives to the Present Pricing Strategy

Size and Type Pricing

A Panama Canal marketing strategy for the liquid bulk segment of the market can have many effects depending upon how it is implemented and what motivations lie behind it. As far as we can see*, the neutrality treaty agreed between Panama and the United States in 1977 is quite general and non-specific with regard to the pricing of the Panama Canal and its services. The treaty primarily stipulates that the Panama Canal Authority is obliged to treat the vessels of every nation using the Canal equally. The equal treatment stipulation gives the Panama Canal Authority a wide degree of latitude and leaves open many possibilities to differentiate between vessels either by size or type or both. The treaty does not prevent the Canal Authority, for example, from pricing its services differently by type of vessel. In fact, we would venture to say that, under the treaty, as long as each category of vessel (tanker, bulk carrier, container vessel, etc.) is subject to a fair and equitable pricing regime, it does not make any difference if the pricing regime for each category is different. The treaty also does not appear to prevent the Panama Canal authority from discriminating on the basis of vessel size as long as it does so across the board. This enables the Canal

to favor larger vessels by making the tariff per ton of Panama Net Tonnage decrease as the tonnage increases. As long as such a practice is applied equally to all vessels regardless of flag, there should be no conflict with the treaty. This is borne out by the revised toll structure which went into effect on 01.10.02 and its second phase which will take effect on 01.07.03. These new pricing regimes indicate that the advantage given to larger vessels is not seen by the ACP to violate the provisions of the treaty since it is applied equitably.

Discounts for 'Quantity'

As far as we are able to see from a careful reading of the treaty, the wide latitude offered in pricing may not only apply in the case of size and type differentiation. Pricing by vessel size or type can serve the commercial interests of the Canal without violating the treaty. If the Canal chooses to give larger vessels a discount for 'quantity' by charging less per ton the higher the PC/UMS, or if the Canal feels there is more to be gained by attracting container vessels rather than tankers, we think it is free to do so as long as the same tariffs are applied on the basis of size or in the case of type discrimination as long as all tanker owners are subject to the same price regime as all other tanker owners. Just as the treaty opens up for giving a differentiated toll structure for different levels of PC/UMS, it could also open for providing discounts for the Canal's biggest customers according to the same principal of discount for quantity applied to the largest vessels individually. This policy could function in such a way that those customers moving a certain minimum number of PC/UMS through the Canal in the course of a calendar year would receive a discount once this level had been achieved. There could be several levels leading to ever greater discounts as each level is achieved. This practice could not be seen as discriminatory as long as all customers begin the calendar year on an equal footing where all are free to use the Canal as much or as little as they choose.

Another area in which quantity could be rewarded might be by giving preference to large users of the Canal if there is heavy traffic. This preference would be in addition to the Transit Reservation System and would only involve a possibility for such owners to be placed first in the queue without any guarantee of a firm transit slot. We have, however, some reservations concerning whether or not this might be viewed by some as too discriminatory vis-à-vis the neutrality treaty, and think that the ACP should take legal consul before putting such a practice into effect.

Market Pricing

Market pricing of the Canal's services would involve adjusting transit fees to the level of the tanker market. This could be best exploited in the case of crude and product carriers, and its purpose would be to increase the attractiveness of the Panama Canal to tanker traffic by effectively eliminating the changes in attitude regarding the use of the Canal which occur as a result of fluctuations in the tanker market which either heighten or reduce the importance of fixed voyage costs for the final voyage result. As far as we can see, market pricing of transit fees is not in conflict with the provisions of the treaty because all vessels in any given category would be treated in a similar manner.

Route Pricing

Another possibility which the Canal may seek to explore is route pricing. This concept could be used where Canal routes are in clear and direct competition with other routes such as those via the Cape of Good Hope or Cape Horn. The concept may be easier to employ in the case of container vessels than it would be in the case of tankers, for example. This is because container vessels operate on a fixed route whereas tankers are often chartered with many load and discharge options and these create a great deal of uncertainty about the nature of the voyage to be performed. In the case of route pricing the Canal would have to publicly name routes where the Canal and cape routes are in close competition, such as, for example, loading in Brazil, Porto Alegre-Rio de Janeiro range for discharge west coast South America Valparaiso-Callao range. For vessels plying this route or others like it, the Canal could offer a discount to attract this traffic which otherwise may have gone via Cape Horn. The discount could further apply only to certain types or sizes of vessels. Nonetheless, the Canal should exercise great caution in considering the option of route pricing as this, because of its geographical nature, could be seen as discriminating under the provision of the treaty in Article II which states that there shall be 'no discrimination against any nation, or its citizens or subjects'.

'Just, Reasonable and Equitable'

The main wording in the treaty which sounds a cautionary note is to be found in article iii, 1.(c) which states 'Tolls and other charges for transit and ancillary services shall be just, reasonable, equitable and consistent with the principles of international law.' The main emphasis to be found in this provision is contained in the words 'just, reasonable, and equitable'. Should the Canal be seen

through its pricing to, for example, favor larger vessels, then the pricing offered to smaller vessels would have to be evaluated in the context of this portion of the treaty. One would have to examine the meaning especially of the words 'just' and 'reasonable' in this context. Certainly, 'equitable' can favor a much more aggressive pricing policy toward smaller vessels. If one assumes that all vessels transiting the Canal are paying for the use of its facilities, the cost of these facilities is the same for all vessels in the sense that a lock occupied by a small vessel or a large vessel is still occupied. This can be likened to the rental of a commercial property. The rental fee is based upon the size of the property and not on the size of the tenant. The extra costs in connection with large vessel transits, such as additional line handlers, locomotives, etc., are paid in addition to the tolls levied on a vessel on the basis of PCUMS. Larger vessels are, however, paying a disproportionately higher amount for the use of the same commercial property as smaller vessels. Price adjustments which bring smaller vessels more into line with what larger vessels are paying for the use of the same facilities would not, in our opinion, violate the treaty provision of equitability. The question then remains as to whether such a price increase would be just and reasonable. We see no basic conflict between the concepts of justice and equitability. There are, however, certain laws in every country which are designed to protect the individual against the greater power of large groups or corporations, and the underlying principle behind such laws is always a concept of justice. Finally, we come to the word 'reasonable'. We believe that convincing arguments both pro and con can be put forward on the subject of what is reasonable. It could, for example, be contended that it is not reasonable to charge a 5,000 dwt vessel the same for a transit of the Panama Canal as one would charge a 78.000 dwt vessel. But it could also be argued that it is unreasonable that larger vessels are penalized by paying a much greater fee for transit even though they are receiving exactly the same service and the identical facilities, especially considering that they already pay all extra costs occasioned by their size as a separate item. We note that these arguments have probably occurred to the ACP as evidenced by the fact that the announced toll increases for 1st July, 2003 are of the order of 5.7% for the first 10.000 tons of PCUMS, 4.3 % for the second and 3.6% for the third.

Conclusions about the Commercial Consequences of the Treaty

In conclusion, we believe that the neutrality treaty gives the Panama Canal ample opportunity to price its services in a way that more truly reflects its costs and to achieve the objectives set out by Foreign Minister Jorge Ritter in a press conference with foreign correspondents in 1999. These objectives were:

Canal operating and maintenance costs (including write-offs

Protection of water resources

Working capital and required reserves

Payments to the treasury stipulated by the constitution and the law governing the Canal Authority

Funds for expansion, upgrading and modernizing the Canal

Interest on the Canal's value based on interest rate approved by the Canal Authority

Losses from previous years

The above objectives were described by Foreign Minister Ritter as necessary for making the Canal both competitive and profitable whereas before it had been competitive but not profitable.**

Determining Factors to Maximise Earnings and Market Share

First of all, we would like to state that taking measures to maximize earnings will not necessarily result in a maximization of market share, just as having the largest possible market share will not necessarily produce the greatest earnings. Regardless of what conclusions we may come to as consultants, it is important to point out that there is no substitute for carefully considered trials of what appears on paper to be the best strategy to see if the strategy works in practice. In our view, the ideal way to maximize market share would be by providing the cheapest possible price for transiting the Panama Canal. Nonetheless, with the physical limitations of the Canal, the benefits of maximum market share may not necessarily be as lucrative as seeking to maximize income. We think, therefore, that it will be far more profitable for the ACP to concentrate on exploring the ways which can lead to maximum income. Ideally, maximum income would result from assuring that the Canal is continuously transited by those vessels paying the highest tolls. Thus, the ACP must look for ways to make the Canal particularly attractive to those vessels which contribute the most to Canal revenues.

Additionally, the Canal should continue its policy of gradually

increasing tolls for those who contribute the least at a faster rate than those increases undertaken for the largest contributors. The watchword in such procedures is 'gradual'.

One of the most important factors to be considered in developing a marketing strategy is the relative costs to shippers of different vessel types. The Canal's time saving nature comes into particularly sharp focus when the cost of transportation is relatively high, and delays occasioned either by waiting time or longer distances cause transportation costs to multiply. On the other hand, low cost vessels do not necessarily benefit to a significant degree from the Canal's saving of time and distance, especially when these are offset by the cost of transit. So, a different strategy must be employed if one wishes to attract low cost vessels.

The Transit Reservation System

In the case of oil tankers, the Panama Canal Transit Reservation System could be revised to more accurately address the fluctuations of the tanker market by charging lower fees for the service when rates are low and higher fees when rates are high. We mention this because when rates are low, tankers have less incentive to exploit the Canal's most salient features, namely time and distance savings. When rates are high, however, time and distance become all important, and tankers are willing to pay almost whatever is required to save on these two important elements in a voyage. We, therefore, think that the Canal should explore ways of incorporating the state of the tanker market into the transit reservation system because this will make the Canal attractive regardless of the state of the market. One way to do this would be to use a tanker index. One of the most widely published and circulated tanker indices is the one produced by the Baltic Exchange in London. The Baltic Index is published daily for both clean and dirty tankers. A good indicator of the state of the market would be the Caribbean rates published for both crude carriers and product vessels. In order for this procedure to provide the proper incentive for tanker owners to use the Canal, the date of fee assessment must be the date of transit or the date of publication closest to the date of transit. Either the present system of booking fees assessed on the basis of PCUMS could be adjusted to the level of the Baltic Index by a pre-determined conversion factor, or the present system would remain the same with a market surcharge which would be adjusted according to the index on the date of transit. If the latter were used, then there would have to be some discount to the present fixed booking fees in the case of a very poor market. The key for the ACP would be to set the level at which the present booking fees are reduced low enough so that the probability of reductions would be small. We would, however, recommend that if such a pricing system is to be considered, it should be commenced on an individual subscription basis to interested parties rather than as a matter of general policy. We say this because the concept is complex, and the costs which implementing the system would incur could be partially offset by subscription fees. Considering the high cost and the relative degree of knowledge (which is also costly) of the tanker market required for implementation, it may be wiser to offer such a service on a subscription basis to the tanker market in order to determine the level of interest prior to full implementation. Such a strategy would have an additional benefit: it would allow the ACP to compare over time the revenues obtained from more conventional fixed-price strategies with such a market-based scheme. Finally, another possibility which could be explored in adjusting the pricing of the Transit Reservation System would be adjusting the price of the service according to the volume of business provided to the Canal by the individual owner.

Market Pricing

We think that pricing the cost of Canal transit for tankers in line with rate levels in the tanker market could be an important way to attract tanker traffic at times when the Canal is not such an attractive alternative and to earn the highest revenues from tankers when tankers themselves are earning the highest revenues in the market. As we have said elsewhere in this report, when tanker rates are low, almost any additional expense, such as Canal expenses, become a liability. When rates are high, speed and shortness of distance become important, and price becomes less important. By adjusting prices to the rates in the tanker market the Canal can assure optimal attractiveness to tanker traffic. As we have already explained in the section on the Transit Reservation System above, market pricing could be based on tanker indices and could be offered first on a subscription basis to test its appeal and to cover what we think will be the relatively high costs of initial implementation.

This strategy would mainly be applicable to the crude oil and products markets, because these are the only markets that are subject to a great deal of fluctuation, whilst other liquid bulk markets are more stable and tend to be governed by long term contracts which usually eliminate day-to-day fluctuations. One of the main reasons why the crude and product markets are so volatile is because they are trading markets. By this we mean that the cargoes placed aboard

crude and product carriers are commodities which are traded. This trading often occurs even when a cargo is already aboard a vessel. It is, in fact, not uncommon for a crude cargo loaded in West Africa to be bought and sold 20 times or more during the time it is on board the vessel. In this kind of trading atmosphere, it is common, and even essential, for shippers to seek as many load and discharge options as possible. The reason for this is that having a wide variety of options will give them the best chance of selling the cargo with the maximum profit. This profit depends upon price and conditions of sale. In executing such a cargo deal, traders, buyers and sellers consider a wide number of options and factors in determining the conditions which would allow them to strike an agreement. Obviously, the cost of the Panama Canal as a means to transport a cargo to a purchaser is one of these factors, but it is only one. Many, many other factors enter into the equation. This is the reason why we have suggested market pricing of the Canal. We believe that by pricing its services according to the state of the tanker market at any given time, the Canal will be in a more favorable position to attract business. Nonetheless, given the complexity of oil trading and the vast number of factors which enter into each individual cargo trade, the Canal can only hope to price itself in the most attractive way possible, but even this pricing can be no guarantee that the players in the market will choose the Canal because other factors in a particular trade may wipe out the interest created by the proper pricing of Canal routes. Estimating the effectiveness of the market pricing strategy will, therefore, be subject to trial and error in order to determine how such a strategy would play out in the realities of the various trading markets.

Long-term contracts

Another strategy to which the ACP should give serious consideration is to determine which of its regular customers have long-term contracts which involve transiting the Canal. If, by virtue of those contracts, such customers are able to guarantee a certain minimum of transits or a certain minimum of PCUMS per year over a prolonged period, say, five or ten years, then the ACP could consider offering preferential prices to such customers. The justification for this practice would be to attract long-term regular use of the Canal and to assure that such use continues unabated backed by the penalty of loss of special privileges. This policy would be particularly attractive to owners of LNG vessels and chemical carriers. In both of these segments contracts are of especially long duration. In LNG this can be for periods of 20 years. For both LNG and chemicals an agreed price for the entire period is a very important element of any deal because it allows the customer to budget costs over an entire contract period.

VOYAGE CALCULATION BONNY/TALARA/BONNY VIA PC

VOYAGE CALCULATION						
INTAKE:	130000 MT	PORTS:		BONNY-TALARA-BONNY VIA PC		
WS RATE	100	DISTANCE		12230 NM		
COMM:	3.75 %	WS 100		11.82 USD		
IFO PRICE:	165 USD/MT					
MDO PRICE:	250 USD/MT					
PORT COSTS:	100000 USD					
SPEED:	15 KN					
IFO CONS:	58 MT/DAY					
MDO CONS:	0 MT/DAY				ACT. TIME	
LOAD:	65000 MT/DAY	SHINC?	Y	1		2 DAYS
DISCH:	65000 MT/DAY	SHINC?	Y	1		2 DAYS
CANAL A/O PUMPING	141500 USD					
GROSS FREIGHT:	1536600 USD	AT SEA:		34 DAYS		
COMMISSION:	57622.5 USD	EXTRA:		DAYS		
NET FREIGHT:	1478977.5 USD	IN PORT:		4 DAYS		
FUEL:	325114.17 USD	EXTRA		2 DAYS		
DIESEL:	0 USD					
PORT COSTS:	100000 USD	TOTAL		39 DAYS		
CANAL:	141500 USD					
TOTAL:	912363.33 USD					
T/C EQUIV.	**23114.061 USD/DAY**					

VOYAGE CALCULATION BONNY/TALARA/BONNY VIA CH

INTAKE:	130000 MT	PORTS:		BONNY-TALARA-BONNY VIA CH		
WS RATE	86	DISTANCE		16930 NM		
COMM:	3.75 %	WS 100		13.74 USD		
IFO PRICE:	165 USD/MT					
MDO PRICE:	250 USD/MT					
PORT COSTS:	100000 USD					
SPEED:	15 KN					
IFO CONS:	58 MT/DAY					
MDO CONS:	0 MT/DAY				ACT. TIME	
LOAD:	65000 MT/DAY	SHINC?	Y	1		2 DAYS
DISCH:	65000 MT/DAY	SHINC?	Y	1		2 DAYS
FIXED DIFF.	16500 USD					
GROSS FREIGHT:	1536132 USD	AT SEA:		47 DAYS		
COMMISSION:	57604.95 USD	EXTRA:		2 DAYS		
NET FREIGHT:	1478527.1 USD	IN PORT:		4 DAYS		
FUEL:	450055.83 USD	EXTRA		DAYS		
DIESEL:	0 USD					
PORT COSTS:	100000 USD	TOTAL		53 DAYS		
CANAL:	16500 USD					
TOTAL:	911971.22 USD					
T/C OIL LEG	**17207.004 USD/DAY**					
COMBINED	**19728.5 USD/DAY**					

Ancillary services

By providing ancillary services that are of high quality at competitive prices, the Canal has the potential to attract a great deal of business. Being able to offer bunkering, repairs, crew changes, and spare parts, etc., especially if these can be provided at competitive prices will make the Canal an attractive alternative, particularly in cases where the cape routes are unable to offer these advantages. When choosing how to price such services and which services

to provide, the Canal should make a careful investigation of what services are available along competing routes and how these services are priced. In some cases, the Canal can make up for the disadvantage occasioned by some services being more expensive in Panama by providing these services more quickly or more efficiently than they are offered in other places. In shipping time is money, and this must never be overlooked.

The Present Canal and the Expanded Canal

One of the principal differences between the present Canal and the expanded Canal is that the present Canal is operating at full capacity whilst the expanded Canal will presumably have spare capacity, at least at the time it is opened for business. Some of the strategic policies analysed in the section on the neutrality treaty are more practicable in the case of the expanded Canal. This is particularly true in the case of volume incentives which will appeal most to those users who have the largest fleets and would be in a position to take advantage of the increased capacity of the Panama Canal if it were properly priced. In this regard it should be noted that there are a number of tanker pools operating in the market. These pools are usually composed of vessels of similar size, vintage and type belonging to various owners. Their purpose is to join together smaller shipowning companies into a single unit. By doing so they limit the number of shipowners competing for business, they are often able to negotiate more favorable bunker contracts, and they can also receive rebates on spare parts, etc. Even though such pools consist of vessels controlled by different owners, they operate as a single commercial unit with all chartering activity carried out by a specially created commercial office. If the Canal is to implement a regime whereby owners will receive a discount based on the quantity of PCUMS they move through the Canal during a given period, such pools will have to comply with the provisions for the issuance of customer codes.

One area which we have touched upon in the previous sector which comes sharply into perspective in the case of an expanded Canal is the issue of the time and distance savings afforded by the Canal which will open up a window of opportunity for some shippers as a result of Canal expansion. We use the example of the Spanish oil company Ryttsa, which now owns a refinery in Peru, and which sources this refinery with West African crude oil. As will be seen from the example, the Worldscale flat rate upon which the freight is made is much less via Panama. Even though the Canal would involve an (estimated) fixed cost of about usd 141,500 for transit, Ryttsa would have to convince an owner to accept a 14 Worldscale point rebate to take the longer route via Cape Horn in order to pay an identical freight. It should also be noted that it would take 6.75 days longer before the refinery would receive its cargo. In addition to the obvious disadvantage Ryttsa faces by virtue of the longer distance, our experience of the tanker market indicates that it may be highly unlikely or even impossible to locate an owner of a quality vessel who is willing to accept such a substantial rebate in order to give Ryttsa similar costs. Obviously, the higher the tanker market goes, the more extreme the situation becomes from Ryttsa's perspective. When the market is lower, the situation is mitigated somewhat, although the disadvantage created by the longer distance is never removed.

Another theme which will come into focus in the case of an expanded Canal has to do with various segments of the liquid bulk market. The Canal as it exists now has drawn a great deal of traffic from chemical tankers and product carriers. On the other hand, crude oil and Orimulsion have not proved to be nearly as important. As we have explained elsewhere in this study, the way crude oil and Orimulsion are sold and the attention paid to economies of scale in the crude oil and Orimulsion markets have, for the most part, made lot sizes too big to transit the Panama Canal. This has resulted in a set of logistics in these markets which avoid the Canal. When and if the Canal is expanded, it will be important for the Canal to take measures which will attract these commodities, thus changing logistics of many years' standing. This effort will probably require the ACP to set rates for crude and Orimulsion carriers at very discounted levels to attract traffic, and then raise tolls later on once trading patterns have been established and consolidated. We think, however, that there may be limits to how much crude oil business the Canal will be able to attract. This is because we do not foresee any substantial growth in refining capacity in the U.S. market during the period covered by this study. This means that increased demand for refined products in the U.S. market will most likely be satisfied by increased imports of products rather than by increased refinery runs. With U.S. refining capacity estimated to grow less than 1 million bbls/day between 2000 and 2025 and Latin American refining capacity expected to grow approximately 5 million bbls per day during the period, it would be wise for an expanded Canal to target the large product carrier market which is sure to develop for the carriage of refined products from Latin American refineries

to the U.S. market. Short haul trades from Latin America in large product carriers will have a clear competitive edge over products carried over longer distances to the U.S. market.

We understand from conversations with the ACP that the expanded locks of the Canal will, in the first instance, be reserved for post Panamax vessels, for which the new facilities have been designed. All vessels will, however, use the same waterways. Although there are no official estimates as to how many additional transits an expanded Canal will permit, we understand that these could be anywhere from seven to fifteen additional transits per day which would employ the larger lock system. We mention these facts only in order to voice our reservations and to indicate the inherent limits of a marketing strategy directed at radically capturing a large market share which may be doomed to failure by the limitations of the prospective facilities to accommodate a substantial growth in demand for transit services.

Looking to the Past and to Forecasts of the Future in the Creation of a Viable Marketing Strategy for the Liquid Bulk Segment

It is important to have a realistic view of what is achievable in the implementation of a market strategy for the liquid bulk segment by the Panama Canal. This realistic view is, to a large degree, provided by what has already been observed in our historical study of liquid bulk carriers and the Canal, and our forecasts which show the potential market for the Canal upto the year 2025. Careful emphasis should be placed upon our observations regarding the role of oil and energy intensity. It should also be noted that markets in the countries in the immediate vicinity of the Canal will play the most important role in the future (as they have in the past), and the future availability and use of liquid bulk commodities in these countries should be given particular weight in the elaboration of a marketing strategy. This does not mean that other, more distant markets should be ignored; it only means that the ACP should pay the most attention to what is now and what is likely to be the future 'Universe of the Panama Canal.'

In addition to the above, we cannot emphasize strongly enough that one must take into consideration the nature of the various liquid bulk segments in the course of elaborating any market strategy. As one can see at a glance in our historical study, the two most important segments of the liquid bulk market for the Panama Canal are oil products and chemicals. Our forecasts indicate that this is likely to remain the case, even in the instance of an expanded Canal. If we address, for the moment, only these two major commodities we see clear differences between them. Oil products are moved in what can only be described as a trading market, i.e. they are bought and sold on the basis of where the best price can be obtained for them at any given time. Even though it is possible to establish trading patterns for oil products, it must be noted that such patterns are highly susceptible to the whims and variations of the marketplace. Chemicals, on the other hand are more likely to moved on fixed routes in much the same manner as containers are taken by liners with a fixed itinerary of ports of call. In other words, for the oil products market, costs in connection with a voyage will figure into the profitability of a sale and will be measured against a series of alternative routes where the chances for profits may be higher or lower, whilst in the case of chemicals voyage costs become an element in the price structure of the product, and the nature of the chemicals trade is such that routes are fixed and not as subject to change as they are in the products trade.

In the products trade (as well as in the crude oil trade), the pricing of the Canal can mean the difference between an individual lifting transiting or not. It is precisely in this kind of trading atmosphere that a system of market pricing is most likely to attract the most business. In the chemical trade, products move along fixed routes in much the same way as containers do. For the chemical trade the Panama Canal is seen as an element in a logistical train, and the most important factor for the trade is efficiency, reliability and assistance in helping the carrier in meeting commitments and deadlines. Price, although always important, is secondary to these logistical considerations.

The Marketing Strategy

Targeting the Market Strategy

It will be important for the Canal to precisely determine to whom the marketing strategy should be directed and how this should be accomplished. In the liquid bulk sector there are many players, all of whom have some effect on the choice to use the Canal or not, but some of whom have major powers in routing decisions. It should also be noted that in certain segments of the liquid bulk market the Panama Canal is a more important tool to some users than to others. One should consider the fact that in the liquid bulk market there are essentially two types of users of the Panama Canal: regular users and occasional users. Regular users would be, for example, shipowners who are involved in providing a regular service for the delivery

of chemicals. It is possible that LNG companies, either buyers or sellers, could become regular Canal users, once projects which are now being developed move further along. Bitor has the potential to become a regular user of the Panama Canal given its strong client base in Asia.

Occasional users of the Canal are to be found in the crude and product markets for the most part. This is because these cargoes, as we have mentioned previously, are often traded and have a wide variety of potential destinations which may or may not involve a Canal transit. If we take each of the sub sectors separately, we will be able to highlight those upon whom the ACP should concentrate their efforts:

Regular Users or Potential Regular Users

- Chemicals/Vegoils – Large Integrated Logistical Transport Providers, such as Odfjell, Stolt, etc., and Grain Houses and Government Agencies involved in Vegoil Transportation.
- LNG – Buyers or Sellers of LNG, depending upon whether the product is to be sold FOB or CIF
- Orimulsion – Bitor S.A.
- LPG/Ammonia – Exporting Companies and the Fertilizer Industry

Occasional Users

- Crude Oil – Oil Companies and Oil Trading Companies
- Petroleum Products – Oil Companies and Oil Trading Companies
- LPG/Ammonia – Exporting Companies and the Fertilizer Industry

In targeting the market strategy, it should be noted that the needs of the regular user or the potential regular user are different from the requirements of the occasional user. The Canal's approach to each should, therefore, be different.

In the case of regular or potential regular user, each of these also have different needs. For chemicals, smoothness of operation and the ability to keep deadlines take precedence over price. In the case of Orimulsion, as was observed on our field trip to Venezuela, price is of paramount importance. In the case of LNG, both price and smoothness/efficiency of operation are equally important; this is because in many projects one destination not using the Canal is competing with another which involves Canal use, and because severe penalties are exacted for late delivery of LNG. These penalties can be in the millions of dollars because of the severe consequences often resulting from late delivery.

In the case of occasional users, a marketing strategy will have to address the particular needs occasioned by the nature of the trade in which these users are involved. A short definition of what is required to attract occasional users is 'providing the right price at the right time'. We think that the best strategy for accomplishing this is via the market pricing regime described elsewhere in this report.

Positioning

The Panama Canal should seek to approach each of these customers with a clear message that distinguishes its service and its attitude to regular and potential customers from what is available either from pipelines or alternative routing. The message should emphasize responsiveness to the needs of the customer. Within the limits of the Neutrality Treaty and sound commercial practice the Canal should be willing to tailor make solutions to the individual sub sector of the liquid bulk market based on the needs and characteristics of that sub sector. This approach should serve to place the Canal in a separate category, a superior category vis-à-vis the alternatives to its use.

Product/Service Attributes

As can be observed from our SWOT analysis, the Canal's number one asset in the area of marketing is its well-established position, its substantial client base and its constant evaluation of its position. An organization already prepared to undertake market analysis and flexible enough to make necessary adjustments in order to provide the best service to its customers is uniquely prepared to earn a profit as a result of its efforts.

Marketing Communications

Reaching the Targeted Markets

Those markets identified in the targeting section as regular users, potential regular users and occasional users would all respond best to an initial personal visit by Canal personnel. Such personnel should have already familiarized themselves with the general needs of the sub sector involved and should be prepared to discuss all of the various

aspects of these needs.

Once initial contact has been made with major players representative of each sub sector, then a revision of tolls designed for that particular sub sector and based on the results of dialogue established during such contact should be made. The revision should be based upon two principles: peculiarities of the sector maximizing income from the sector as a totality.

For the sake of better public relations, emphasis should be placed on principle 1 named above in announcements made of the toll revision. After the initial contact is made, regular contacts should be maintained for the purpose of making periodical revisions to and fine-tuning the toll structure as the Canal gains more experience with each sub sector.

The basic strategies applicable on a sector-by-sector basis for the liquid bulk segment which should be discussed with a representative are as follows:

- **Crude oil and products – for these two commodities the best strategy involves market pricing of tolls because this will make the Canal route most attractive regardless of price.**
- **Orimulsion – discounts for high volumes over long periods are the best way to attract more Orimulsion business in the future. As we have already mentioned, this product will only use the Canal if pricing is minimal. The Canal should, therefore, seek to obtain Orimulsion volumes on the basis of the justification that the product is usually only shipped on the largest, and thus, the highest paying, vessels.**
- **Chemicals – The chemical trade can, to a certain degree, tolerate the increases in prices which small vessels will be compelled to pay under the graduated toll structure regime since efficiency is more important than price for chemical carriers. In the case where price increases become too hard to bear for operators, the discount for guaranteed volume could be applied.**
- **LNG – here long-term fixed prices for a guaranteed minimum of regular use over a long period are what will be most attractive to market players and will also provide steady and reliable income for the Canal.**

Conclusions – What is the Best Marketing Strategy for the Liquid Bulk Segment?

Looking back upon our examination of the various elements which bear upon the creation of a prudent marketing strategy for the liquid bulk segment and the Panama Canal. We believe that such a strategy should contain the following elements:

- **Above all, exploit the strengths and opportunities afforded by the Canal's unceasing evaluation of market trends. The Canal should try to exploit in its strategies trends which it views as of long duration. An example of this would be our forecasts which indicate a stagnation of refinery capacity in the U.S.A. which will lead to an increase in product carrier traffic to U.S. ports as demand for petroleum products continues to grow.**
- **Schedule regular evaluations of the marketing strategy and be prepared to make changes and adjustments on the basis of these evaluations.**
- **Continue the system of size differentiation in the tolls structure and gradually increase the burden of costs for those vessels which have paid least.**
- **Implement toll differentiation by cargo or vessel type. Do this after consultations with representative groups from each sub sector of the market to make sure that the strategy is on target and in conjunction with the feedback received from these representative groups. This can become particularly important as windows of opportunity open up as indicated in our rendition of scenarios for the various commodities.**
- **Fully examine the possibility of pricing transits in line with the market at the time of transit, i.e. higher tolls in a high market lower tolls in a low market. This strategy largely eliminates the effects of market**

variations on the attractiveness of the Canal as a viable route. This strategy should only be applied in the case of crude and product carriers which trade in markets with considerable fluctuations.

- **Seek to avoid route pricing, as we believe this will eventually lead to litigation where the Neutrality Treaty of 1999 is brought into play. Instead use market pricing as described above, which has a similar effect without the downside of discrimination.**
- **Give discounts for high traffic volumes. This will attract the largest and most lucrative customers.**
- **Give discounts to those who are able to guarantee the Canal a yearly minimum of business for long periods of time. This will be especially important in attracting, and keeping, LNG and chemical business.**
- **Provide ancillary services which can further enhance the attractiveness of the Canal. Evaluate any ancillary services in terms of available competing services.**

What Revenues Can the Canal Expect to Gain By Implementing the Above Strategy?

The implementation of the above strategy will place the Canal in the position of securing maximum revenues from the liquid bulk sector. This is because the strategy seeks to divide the liquid bulk sector into sub sectors and to then exploit the particular nature and needs of each sub sector for the purpose of producing the maximum income from that sub sector.

In order to provide an insight into what revenues the Canal can expect to gain from implementing a marketing strategy, we provide the following concrete examples.

Example LNG Transport Cost

Being an LNG exporter in Peru or Bolivia, responsible for marketing LNG to new customers for a new project, one has 3 main tasks:

- **Selling the produced volumes**
- **Seeking to maximise revenues**
- **Making sure that revenues from LNG sales create a profit for the project**

The option of using the Panama Canal would increase shipment costs, but it could also improve sales revenues if the LNG price in the U.S. Gulf is better than, for instance, with receivers in the Tijuana/San Diego to California range.

The Panama Canal tariff is estimated to be around usd 500,000 per roundtrip, based on a 145,000 cbm vessel with a PCUMS estimated to be 95,000 tonnes. In addition there is Canal water time, assumed to be about 24 hours per transit (we foresee usage of the booking system and some preferential treatment for LNG transits), totalling 48 hours or 2 extra days (2*65,000 usd/day) per roundtrip. Hence total extra costs in connection with use of the Canal would be approximately usd 630,000 per roundtrip voyage.

With Fearnleys' transportation cost model, using timecharter rates of usd 65,000 per day, and using Canal transport tariffs as of October 2002, we end up with a total transport cost of usd 33.5 per mt (usd 0.65 per mmBtu). A similar voyage to San Diego is approximately 700 nautical miles longer, but would cost only usd 28 per mt (usd 0.55 per mmBtu). The difference is 20% on the transportation cost. This means that from a commercial standpoint, gas prices in U.S. Gulf must be usd 5.5 per mt higher than in San Diego to be attractive for Peru exporters. The difference corresponds to usd 0.11 per mmBtu. Long term United States natural gas price levels at Henry Hub (close to the U.S. Gulf) are around usd 3 per mmBtu (NYMEX forward prices and based on projections by EIA). Using "rule of thumb" LNG development cost (some usd 1 per mmBtu for liquefaction and some usd 0.45 for receiving terminal and regasification) and usd 0.65 per mmBtu for transportation, project delivery cost adds up to about usd 2.10 per mmBtu. The margin of usd 0.9 per mmBtu will then go to develop the gas field and to transport the gas to the liquefaction plant. This is not a high figure for sourcing natural gas to the LNG plant and means a limited profit margin for trades through the Panama Canal. Avoiding the Panama Canal would increase this margin to usd 1.0 per mmBtu, or about 11%.

If we use the difference of usd 5.5 per mt occasioned by using the Panama Canal to increase sailing distance on a non Panama Canal route, we end up with a potential voyage which is 1500 nautical miles longer than the already long voyage from Peru to Lake Charles or 4500 nautical miles

in total. Hence, if Peru could find customers in that distance range who are willing to pay a similar or better price than customers in the U.S. Gulf, then this market could be of strong interest to Peru. Going north, the gas could reach San Francisco and going south it could round Cape Horn reaching far up the Atlantic coast of South America as Paranagua/Brazil. However, natural gas prices are expected to be higher both in Southern California and in the U.S. Gulf than in South America or in Argentina/Brazil.

Running the same calculations on the unexpanded Canal, with a 100,000 cbm vessel gives similar results, but transport cost increases to usd 0.76 per mmBtu. The margin for Peru would hence be reduced from usd 0.9 to 0.79 per mmBtu. Hence, the Canal expansion, making it possible to use large LNG vessels, increases the competitiveness of LNG from Peru to U.S. Gulf by some usd 0.11 per mmBtu due to lower transportation costs.

With respect to LNG we have, therefore, concluded the following:

- **Fearnleys do not see that the Canal cost would ruin the Peru project, but reduces Peru's profit from developing trades using the Canal**
- **There is strong incentives to avoid using the Canal, but difficult to find new markets**
- **Trades are foreseen with both an expanded and unexpanded Canal**

Fearnleys do, therefore, believe that Peru will use the Panama Canal for some of their volumes. However, due to the reduced and probably limited profit margin in doing so, Peru would probably not sign any long term agreements to ship LNG through the Panama Canal before they are sure about the future developments in the Canal tariffs.

An LNG vessel would generate substantially more revenue than a Panamax vessel due to it's high PCUMS, but such a vessel occupies the same Canal capacity . It should, therefore, be considered to give a rebate to LNG vessels to secure more LNG business for the Panama Canal. This is already done in the Suez Canal, where LNG vessels get up to 30% discount on their tariffs.

Giving long term fixed tariff agreements to secure predictability for potential long term users of Canal services who have fixed sales agreements and who assume transport risks (such as LNG and Orimulsion) should also be considered.

If Canal tariffs are increased by 50%, we expect most of the forecasted LNG trade to be reduced by 50%. If Canal tariffs are reduced by 30%, the incentives to use the Canal would be highly improved.

* It is important to point out that although we have consulted with lawyers concerning the Neutrality Treaty, we ourselves are not qualified to give a professional legal opinion about the implications of the treaty and what repercussions it may have with respect to any actions taken by the Panama Canal Authority in implementing a marketing strategy. Our evaluations of marketing strategy in light of the treaty are based purely upon our understanding of the English language in which the Treaty is written and our general experience with commercial operations and cannot be assumed to carry the weight of a professional legal opinion.

** Inter Press Service news report ECONOMY – PANAMA: Canal Tolls to Draw a Profit, Not Cover Costs 02.01.99.

ANALYTICAL TOOLS

Manual for Calculating Charter Hire and Transportation Costs

(See file Transp_cost_model.xls)
For the purpose of comparing the value of Canal routes with their alternatives, we have created a charter hire calculation model which we have used in the development of the study. For our requirements the model had to be detailed enough to provide an accurate picture of costs for Canal routes and their alternatives while maintaining a sufficient degree of flexibility to allow the variation of all of the elements normally involved in a calculation of charter hire. Once a charter hire calculation is established on the basis of the desired input elements, the total cost of Canal routes can be easily compared to the value of their alternatives. Below we explain in simple terms and with detailed instructions how this is accomplished.

Charter Hire Calculation Model

(sheet: Table)
This model is designed to calculate break-even incomes corresponding to different newbuilding costs. Fearnleys have already forecasted newbuilding prices based on historical prices, but the model also allows the user the liberty of inserting his own estimates if this is desired. The model is based on future ship prices as established by using an exponential trendline of historical prices. Fearnleys' estimates on newbuilding prices are to be found under the heading; *Newbuilding Price Forecast FC (mill. usd).* Our estimates may not be changed since these are locked for editing, but a box is available for the user of the model to insert figures other than the ones we provide. Our figures remain in the left-hand column as a reference.

The main criterion employed when calculating break-even incomes is the contracting price of the vessel, but operating costs, residual value and a number of other elements normally used investment calculations are also essential elements in the process, and all of the elements can be varied by the user of the model, thus making the model highly responsive to the input provided by the user.

The model calculates the daily income (break even rate) which gives a NPV (net present value) equal to zero. The net present value is equal to the present value of the future cash flow minus the initial investment required. The discount rate (the required rate of return) used is normally set at 20%, but can be adjusted if desired.

How to Use the Model

Adjustable input cells are marked in light green. After inserting the desired input variables, click on the tab marked 'Calculate Charter Hire', and the entire charter hire forecast will be adjusted in line with the figures inserted by the user.

INPUT ON DEM. PRICES AND OP-COST	Demoliton Prices	Op.Cost
VLCC	175	5,700
SUEZMAX	175	5,600
AFRAMAX	175	5,500
PANAMAX	175	5,700
VLGC	195	8,750
LGC	195	8,500
LPG 24'	195	6,250
LPG 15'	195	6,000
CHEM 32' dwt	195	8,000
CHEM 24' dwt	195	6,500
LNG 145' cbm	220	16,000
LNG 100' cbm	220	13,500

Dem prices in USD per LDT, OP. Cost in USD per day

INPUT VARIABLES ON THE INVESTMENT	
Operating Days	360
Interest Rate on Loan	8.0 %
Years of payment of mortgage	25
Annuity=0, Serie=1	0
Equity	20 %
Discount Rate	20 %
Fixed Initial Cost (Finace Cost)	12 %
Yearly escalation on running cost	2.0 %

CALCULATE CHARTER HIRE

Output

The results obtained from using the model can be observed in a separate table under each ship size. (See illustration below). After changing the input variables click the tab 'Calculate Charter Hire', and the charter hire forecast will be adjusted according to the specifications provided by the user. All input cells are marked in light green, while the cells showing the calculation are colored sky blue.

	VLCC			SUEZMAX			AFRAMAX		
Year	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast
2005	80	80	24,710	47	47	16,952	37	37	14,583
2010	74	74	23,311	43	43	16,158	34	34	13,884
2015	69	69	22,145	40	40	15,421	31	31	13,184
2020	64	64	20,980	37	37	14,738	28	28	12,485
2025	59	59	19,814	35	35	14,025	25	25	11,666

	LPG 75,000 cbm Semi Ref			LPG 58,000 cbm Semi Ref			LPG 24,000 cbm Fully Ref		
Year	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast
2005	63	63	24,138	53	53	21,558	37	37	15,381
2010	56	56	22,647	47	47	20,306	33	33	14,499
2015	51	51	21,308	43	43	19,181	29	29	13,707
2020	45	45	20,105	38	38	18,171	26	26	12,998
2025	41	41	18,941	34	34	17,142	24	24	12,191

	Chem 32,000 dwt			Chem 24,000 dwt			LNG 145,000 cbm		
Year	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast	Newbuilding Price Forecast FC	Newbuilding Price Forecast Input	Charter Hire Forecast
2005	111	111	34,540	78	80	25,781	158	158	54,136
2010	107	107	33,641	74	74	24,472	152	152	52,737
2015	103	103	32,774	71	71	23,726	146	146	51,338
2020	99	99	31,937	68	68	23,011	141	141	50,173
2025	96	96	30,952	65	65	22,328	136	136	49,007

Newbuilding Prices in Mill. USD. Charter Hire Forecast in USD per day

Calculating Transportation Cost

(Sheet: Voyage Cost)

Transportation cost calculations are based on a set of representative ships and their possible trade routes. The representative ship types were selected, after consultation with Fearnsale brokers, to provide a fair indication of the typical vessel being chartered on each route. Speed and consumption were defined when setting specifications for each vessel. But the model allows the user to adjust these variables if this is desired (see vessel specification below).

Below we have described each of the input variables in detail.

Bunker Costs

The bunker price forecast is based for the first few years on crude oil future prices at NYMEX, since this gives the best current picture of what all market players believe will be the future price of crude oil.

Based on the historical relationship between crude oil and fuel oil prices (on average, bunker fuel is some 53 usd/ton cheaper than WTI crude oil and the trend is that fuel oil prices tend downwards compared to WTI (the delta increases)), we arrive at a bunker price forecast for the years to 2005. After that, the liquidity in the crude oil forward market drops too much for it to be a reliable source. The future market does, however, show a falling trend and we have extended this trend until 2007, when we foresee a USD 18 per barrel crude oil market/ USD 100 per ton fuel oil.

BUNKER COST INPUT (USD / tonne)					
YEAR	2005	2010	2015	2020	2025
HVF	123	108	122	138	156
MDO	253	238	250	266	284

Trade Input

Port time tends to vary with vessel size, and may also be influenced by a number of other factors such as weather, congestion, tide, etc. Port time can also be affected by the facilities provided to a vessel for the purpose of pumping off its cargo. If these facilities are restricted or not sufficient to accommodate the vessel's full pumping capacity then port times can be longer. Usually a modern VLCC can pump off a full cargo of crude oil under ideal discharge conditions within 36 hours. Smaller vessels properly equipped can usually comply with a 24 hour warranty. It should, however, be noted that pumping warranties traditionally given in tanker charter parties provide for either pumping a full cargo within 24 hours or maintaining a back pressure of 100 PSI at the vessel's manifold. As long as the back pressure is maintained, the vessel is not limited by the 24 hour warranty.

TRADE INPUT	
Days in Port	4
Days in Canal Laden	1
Days in Canal Ballast	1

Pipeline Cost

The pipeline is one option for crude transportation which bypasses the Canal. The user is at liberty to choose the cost for each barrel to be pumped through the pipeline. Users will also have the opportunity to register the total number of days for the pipeline pumping process to take.

PIPELINE COST	
USD per barrel	0.7
Pumping Days	4

Panama Canal Cost

The user can also insert different tariffs for Laden and Ballast transits in order to determine what effect these variations will have on transportation costs.

TARIFF INPUT			
LADEN		BALLAST	
First 10,000	2.96	First 10,000	2.35
Next 10,000	2.90	Next 10,000	2.30
Above 10,000	2.85	Above 10,00	2.26
Fixed	16280	Fixed	16280

Vessel Specification

(Sheet: Vessel Spec)

The specifications given below are, for the most part, standard specifications obtained from shipbuilders, and they give a sufficiently accurate picture of the characteristics of the various types of vessels used in the creation of our model. It should, however, be noted that the PCUMS figures given for vessels which presently do not transit the Panama Canal and which, therefore, do not have an assigned PCUMS are figures which were estimated by us. If desired, these figures may be altered by the ACP.

VESSELS SPECIFICATION

Ship Type	Builder	Built	TYPE	DWT in '000	GRT in '000	PCUMS in '000	LDT	Laden			Ballast			Pumping		Port Idle	
								Speed	HVF at Sea	MD at Sea	Speed	HVF at Sea	MD at Sea	HVF	MDO	HVF	MDO
VLCC	HYUNDAI	1999	M/T	300	157	150	35	15.0	85	-	15.0	75	-	200	-	4	-
SUEZMAX	HYUNDAI	1999	M/T	150	81	75	23	15.0	67	-	15.0	58	-	100	-	3	-
AFRAMAX	HYUNDAI	1999	M/T	110	58	55	17	15.0	48	-	15.0	45	-	70	-	3	-
PANAMAX	SAMSUNG	2003	M/T	72	40	36	12	15.0	38	-	15.0	35	-	20	10	2	-
VLGC			LPG	49.7	49.5	24.85	20	16.0	57	-	16.0	56	-	10	-	5	-
LGC			LPG	40	40	20	15	15.8	54	-	16.0	53	-	10	-	7.5	-
CHEM 32' dwt			M/T	37	23	18.5	7.5	15.0	37	-	15.0	35	-	13	3	2	-
LNG 100' cbm			LNG	49		66.2	35	18.5	140	-	18.5	140	-	45	-	10	-
LNG 145' cbm			LNG	80		92.5	43	19.0	180	-	19.0	180	-	50	-	10	-

Output

After inserting the various input elements, transportation costs for 2005, 2010, 2015, 2020 and 2025 will come out automatically. The model permits the user to choose which commodity to be transported and how a trade will be routed. By selecting trades from the drop down boxes the user may compare different routes with others in the same size group or with other sizes in the same segment.

			Panama Canal Use	Passing	Total Days	Total Transp. Costs. (Ex. Port Charges) USD/tonne				
						2005	2010	2015	2020	2025
CRUDE OIL TRANSPORTATION:										
VLCC		RAS TANURA - CORPUS CHRISTI	No	GH	73.95	9.08	8.40	8.38	8.41	8.47
VLCC	**Via Canal**	BONNY - LOS ANGELES	Yes	PC	51.82	7.84	7.37	7.36	7.37	7.41
VLCC	**Via Pipeline**	VLADIVOSTOK - CORPUS CHRISTI	No	Petroline	58.66	12.19	11.67	11.64	11.64	11.67
SUEZMAX		NOVOROSSIYSK - CORPUS CHRISTI	No	GIBR	43.44	8.10	7.54	7.57	7.66	7.78
SUEZMAX	**Via Canal**	BONNY - LOS ANGELES	Yes	PC	51.82	12.91	12.24	12.28	12.39	12.53
SUEZMAX	**Via Pipeline**	BONNY - LOS ANGELES	No	Petroline	52.77	17.93	17.02	16.86	16.75	16.68
AFRAMAX		PUERTO LA CRUZ - CORPUS CHRISTI	No		15.99	3.67	3.42	3.40	3.39	3.37
AFRAMAX	**Via Canal**	ESMERALDAS - CORPUS CHRISTI	Yes	PC	17.68	7.80	7.52	7.50	7.49	7.47
AFRAMAX	**Via Pipeline**	PUERTO LA CRUZ - LOS ANGELES	No	Petroline	28.93	15.08	14.42	14.20	14.00	13.83
PANAMAX		PUERTO LA CRUZ - CORPUS CHRISTI	No		15.99	4.79	4.46	4.44	4.38	4.42
PANAMAX	**Via Canal**	PUERTO LA CRUZ - LOS ANGELES	Yes	PC	27.94	12.52	11.92	11.92	11.83	11.93

Oil Trade Model

(See file OilTradeModel.xls)
This model is a tool for determining volumes of crude oil and oil products through the Panama Canal. We have designed a model which calculates world trade volumes for oil, and regional export and import volumes. This serves as a basis for establishing, in a qualitative manner, the forecasted volumes through the Panama Canal.

The Oil Trade Model is built up on a country and regional basis. It is constructed with the following factors in mind: GDP, oil intensity, crude oil production and refinery throughput. In individual countries or regions, several key factors which influence the import data (and, therefore, the results generated by the model) are taken into consideration. The model provides net crude imports and a net product imports, as well as export and import volumes of same.

For the purpose of establishing future volumes of exports and imports for the individual countries and regions we have taken into consideration present structures along with considerations of what is a typical exporter/importer, allowing for growth in seasonal trading, etc.

See example for the USA in the table below:

		Average 99-01	1999	2000	2001	2002	2005	2010	2015	2020	2025
USA											
GDP growth	DRI / FC				1.1	2.4	2.9	3.4	2.8	3.6	3.1
index	FC			100	101.1	103.5	112.8	133.3	153.1	182.7	212.8
Oil intensity	FC			0.551			0.499	0.440	0.398	0.342	0.298
Oil demand	BP/FC			19.70	19.63		20.10	20.98	21.75	22.31	22.65
Crude production	BP			9.08	8.88		7.70	7.70	7.20	6.40	5.70
Ref. capacity	BP/FC		16.51	16.60	16.81		16.60	16.80	17.10	17.30	17.60
Growth					1 %		0.0 %	1.2 %	1.8 %	1.2 %	1.7 %
Net ref. troughput calc.	FC			18.24	18.08		18.40	18.70	18.90	19.20	19.40
Processing gains calc.	FC			0.42	0.42		0.42	0.43	0.43	0.44	0.45
Ref. output calc	FC			18.66	18.50		18.82	19.13	19.33	19.64	19.85
Ref. throughput	BP/FC	17.52	17.40	17.49	17.68	18.11	18.40	18.70	18.90	19.20	19.40
Crude imp	OPEC	9.09	8.84	9.21	9.22		10.93	11.26	12.03	13.24	14.23
Crude exp	OPEC	0.06	0.12	0.05	0.02		0.23	0.26	0.33	0.44	0.53
Prod.imp	OPEC	1.57	1.33	1.59	1.78		2.26	2.89	3.51	3.78	3.93
Prod.exp	OPEC	0.92	0.80	0.99	0.96		0.98	1.04	1.09	1.12	1.13
Net.crude imp. Calc.		9.03	8.72	9.16	9.20		10.70	11.00	11.70	12.80	13.70
Net.product imp. Calc.		0.65	0.53	0.60	0.82		1.28	1.85	2.41	2.67	2.80
Reserves('000 mill. b.)	BP			30.1	30.4						

We have used economic forecasts from DRI / WEFA supplemented with our own forecasts for countries and regions not covered by DRI / WEFA. These forecasts have, together with oil consumption data from EIA, IEA and BP, and historical economic data from OECD and the World Bank, been the basis for estimating future oil intensities. Thereafter, we can modify economic growth rates (GDP) and this will have an impact on oil demand figures.

Crude production and refinery throughput figures in this model are based on BP figures and oil trade data on OPEC figures. By changing the figures for future GDP, oil production and refinery throughput both net product imports and net crude imports will change accordingly, as will import and export volumes. The structure of future imports and exports for crude and products are based on the structure for the 3 year period 1999-2001.

The Model has the Following Spreadsheets

Oil Export-Import Model

Here is the input and the output for the model.

Oil-Key-Fig-REF. CASE

Oil-Key-Fig-BEST. CASE

Oil-Key-Fig-WORST CASE

Here the calculations are done

Oil-Intensity

Estimated on the basis of historic data and future economic developments.

World-cons-REF CASE

World-cons-BEST CASE

World-cons-WORST CASE

This provides support tables for establishing Canal throughput volumes.

Oil-Refinery-throughputs

The figures are set by Fearnley Consultants based on historic data and assumed developments combining input from several of the listed information sources.

Model construction

The model is based on the following general assumptions:

CRUDE PRODUCTION

+ CRUDE IMPORTS

- CRUDE EXPORTS

= REFINERY INTAKE

+ DIRECT USE

+ PROCESSING GAINS

= AVAILABLE OIL PRODUCTS

+ PRODUCT IMPORTS

- PRODUCT EXPORTS

= PRODUCT DEMAND

We have generally disregarded stock changes for the 25-year period.

How to Use the Model

In order not to confuse the user of the model, we have hidden all data sheets, except the input and output sheet. All the sheets in the model can be found in the menu “Format/Sheet/Unhide. This command will show a list of all sheets in the model.

The Model May be Manipulated as Follows:

GDP

GDP growth for 5-year periods for each country / region. This value decides oil demand for all the three cases, because the best and worst scenarios are based on the reference case with the following changes:

Best Case:

- OECD GDP +0.2% p.a. Non-OECD GDP +0.4% p.a.

Worst Case:

- OECD GDP -0.4%, Non-OECD GDP –0.8% p.a.

These variation ranges could, of course, be changed.

GDP growth for Oil Demand

	2000	2005	2010	2015	2020	2025
USA	N/A	2.90	3.40	2.80	3.60	3.10
CANADA	N/A	2.30	2.80	2.40	3.00	2.50
LATIN AMERICA	N/A	3.50	4.50	4.50	4.00	3.50
EUROPE	N/A	2.50	2.50	2.00	2.50	2.50
FSU	N/A	4.50	4.00	3.00	3.50	3.00
AFRICA	N/A	3.50	4.00	4.50	3.50	3.50
MIDDLE EAST	N/A	2.50	3.50	4.00	3.50	3.00
JAPAN	N/A	1.30	2.30	1.70	2.30	2.00
DEV. ASIA	N/A	5.00	6.50	6.50	5.50	5.00
AUSTR/NZ	N/A	0.50	1.00	0.80	0.60	0.40

Figurs in % per annum

Crude Oil Production

The user can alter crude oil production by country / area set by Fearnley Consultants. This can be done for all three cases.

When changing the production figures, the user should be aware that the global and regional total for crude production and the refinery throughput must be changed in a fairly similar way to get a reasonable answer from the model.

CRUDE OIL PRODUCTION
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	7.73	7.70	7.70	7.20	6.40	5.70
CANADA	2.72	3.10	3.40	3.50	3.60	3.60
LATIN AMERICA	10.34	10.90	12.90	14.30	15.80	16.80
EUROPE	6.93	6.70	6.60	6.30	5.90	5.50
FSU	8.01	10.10	12.40	13.60	14.60	15.40
AFRICA	7.80	9.70	11.30	13.00	14.40	15.90
MIDDLE EAST	22.97	21.25	20.89	23.67	27.26	30.84
JAPAN	0.07	0.08	0.08	0.07	0.07	0.07
DEV. ASIA	7.07	7.30	7.80	8.20	8.60	9.00
AUSTR/NZ	0.85	0.77	0.84	0.81	0.79	0.78
TOTAL	74.49	77.60	83.91	90.65	97.42	103.59

Figurs in Million barrels per day

Refinery Throughput and Direct Use, etc.

The model can change the refinery throughput by country / area set by Fearnley Consultants. The table below includes refinery throughput, processing gains and direct use of oil.

REFINERY THROUGPUT AND DIRECT USE, ETC.
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	18.67	18.40	18.70	18.90	19.20	19.40
CANADA	2.46	2.51	2.65	2.65	2.78	2.78
LATIN AMERICA	7.16	7.30	8.80	9.90	11.10	12.50
EUROPE	14.41	14.20	14.40	14.60	14.90	15.20
FSU	4.96	5.10	6.00	7.10	8.30	9.40
AFRICA	3.41	3.70	4.30	5.10	5.90	6.60
MIDDLE EAST	6.36	7.22	8.10	9.45	10.09	11.06
JAPAN	4.26	4.07	4.07	4.15	4.15	4.15
DEV. ASIA	14.00	14.20	16.00	17.80	20.00	21.50
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	76.61	77.60	83.91	90.65	97.42	103.59

Figurs in Million barrels per day

Output

Each case results in 4 output tables:

- Crude Oil Exports
- Crude Oil Imports
- Oil Product Exports
- Oil Product Imports

CRUDE OIL EXPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	0.05	0.23	0.26	0.33	0.44	0.53
CANADA	1.18	1.51	1.69	1.80	1.76	1.76
LATIN AMERICA	5.04	5.54	6.14	6.50	6.86	6.38
EUROPE	4.99	4.85	4.88	4.93	5.00	5.07
FSU	3.06	5.21	6.75	6.86	6.64	6.31
AFRICA	5.17	7.11	8.31	9.39	10.11	11.07
MIDDLE EAST	16.02	14.42	13.06	14.62	17.87	20.74
JAPAN	0.00	0.00	0.00	0.00	0.00	0.00
DEV. ASIA	1.85	2.12	2.38	2.66	3.02	3.24
AUSTR/NZ	0.40	0.34	0.33	0.35	0.35	0.35
TOTAL	37.76	41.33	43.80	47.44	52.06	55.46

CRUDE OIL IMPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	9.21	10.93	11.26	12.03	13.24	14.23
CANADA	0.92	0.92	0.94	0.95	0.94	0.94
LATIN AMERICA	1.86	1.94	2.04	2.10	2.16	2.08
EUROPE	12.53	12.35	12.68	13.23	14.00	14.77
FSU	0.01	0.21	0.35	0.36	0.34	0.31
AFRICA	0.78	1.11	1.31	1.49	1.61	1.77
MIDDLE EAST	0.50	0.39	0.27	0.41	0.70	0.96
JAPAN	4.25	3.99	3.99	4.08	4.08	4.08
DEV. ASIA	8.00	9.02	10.58	12.26	14.42	15.74
AUSTR/NZ	0.47	0.47	0.39	0.54	0.56	0.57
TOTAL	38.53	41.33	43.80	47.44	52.06	55.46

OIL PRODUCT EXPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	0.99	0.98	1.04	1.09	1.12	1.13
CANADA	0.37	0.80	0.84	0.74	0.82	0.77
LATIN AMERICA	2.06	1.82	2.63	2.85	3.14	3.71
EUROPE	4.68	4.72	4.73	4.74	4.74	4.73
FSU	1.09	1.51	2.08	2.90	3.83	4.70
AFRICA	1.14	1.67	1.97	2.39	2.63	2.83
MIDDLE EAST	3.14	3.03	3.48	4.48	4.71	5.39
JAPAN	0.09	0.13	0.14	0.14	0.15	0.14
DEV. ASIA	2.70	2.85	3.14	3.56	3.95	4.55
AUSTR/NZ	0.12	0.13	0.13	0.13	0.13	0.13
TOTAL	16.38	17.64	20.17	23.03	25.21	28.09

OIL PRODUCT IMPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	1.59	2.26	2.89	3.51	3.78	3.93
CANADA	0.16	0.22	0.22	0.21	0.22	0.22
LATIN AMERICA	1.55	1.44	1.63	1.68	1.75	1.88
EUROPE	5.37	6.32	6.46	6.61	6.55	6.40
FSU	0.01	0.05	0.10	0.17	0.26	0.34
AFRICA	0.53	0.60	0.67	0.77	0.83	0.87
MIDDLE EAST	0.35	0.33	0.37	0.47	0.49	0.55
JAPAN	1.24	1.62	1.71	1.74	1.77	1.71
DEV. ASIA	3.86	4.61	5.82	7.65	9.34	11.95
AUSTR/NZ	0.11	0.20	0.26	0.19	0.23	0.25
TOTAL	14.77	17.64	20.15	23.01	25.21	28.09

Figurs in Million barrels per day

Forecast Model for Unexpanded and Expanded Canal

This Excel model has been employed as the principal tool in the elaboration of our trading volume and potential market forecasts. All of the background figures used in the creation of the model were taken from the historical part of the study and these figures were used as a foundation for the purpose of creating our forecasts. The most important products of the model are cargo volumes and the income as a result of those volumes. As will be seen, both volumes and income are elaborated on the basis of each individual commodity and also on the basis of the totality of the commodities. The three reference cases for both the expanded and the unexpanded Canal are taken into account. As will also be seen, the model also divides volumes and incomes by direction, i.e. East/West and West/East.

There follows below a description of the various spreadsheets contained in the files. The spreadsheets will be described by group, and as will be seen, there are often a number of sheets in connection with each commodity group.

CHEMICALS

The spreadsheets listed below are used for calculating the commodity groups Chemical, Veg. Oil and Methanol. Our methodology and the thrust of our approach in employing these sheets are described in the report on pages 68 through 70.

GROWTH RATES-Veg-oil

Contains the growth rates for vegoil volumes. Developed on the basis of information from ISTA-Mielke

RESULTS VegOil

Contains the results for Panama Canal volumes as a result of the growth rates above.

ORG- 96-00 VegOil

Contains background data only.

ORG. CHANGES VegOil

Data sheet.

ORG.96-00

Contains background data only.

ORG-CHANGES

Data sheet.

ROUTES-SHARES-VegOil

Data sheet for establishing route shares.

Chem-RESULTS

Contains the results for Panama Canal volumes as a result of the growth rates above.

ROUTES-SHARES-Chem

Data sheet for establishing route shares.

RULES-Chem

Giving growth/decline rates for volumes in individual routes as a result of global changes in trading patterns.

GROWTH RATES

Growth rates for individual commodities and commodity groups as a result of our analysis.

RULES-VegOil

Provides growth/decline rates for volumes in individual routes as a result of global changes in trading patterns.

METH TRADE

Contains background data only.

Met. RESULTS

Results of our analysis.

LPG

This group of sheets was produced using a different kind of methodology than, for example, chemicals. An explanation of the methodology employed may be found in the methodology section of the report on pages 71 to 72.

LPG Trade Volumes

Contains the forecasted volumes for LPG trade.

LPG-ROUTE-SHARES

Contains the rules for distributing the volumes for area matrices.

LPG RULES

Contains the percentage increases/decreases in selected routes versus the routes established in *LPG-ROUTE-SHARES.*

LPG RESULTS

Results of the figures from LPG Trade Volumes and LPG RULES, and input for the forecast tables.

LNG

This group of sheets is produced on the basis of projected LNG projects. The nature of these projects is described in the methodology section of the report on pages 71 and 72.

LNG work sheet

Establishes trading volumes both to and from areas/countries for LNG.

LNG Project Export and Fleet

This sheet calculates world trading volumes for LNG.

LNG Trade Volumes

Calculates the Panama share of LNG volumes.

ORIMULSION

This sheet is the work sheet for establishing the forecasted volumes for Orimulsion on a worldwide basis and also through the Canal. The methodology used in this sheet is described in page 67 in the report.

Orimulsion

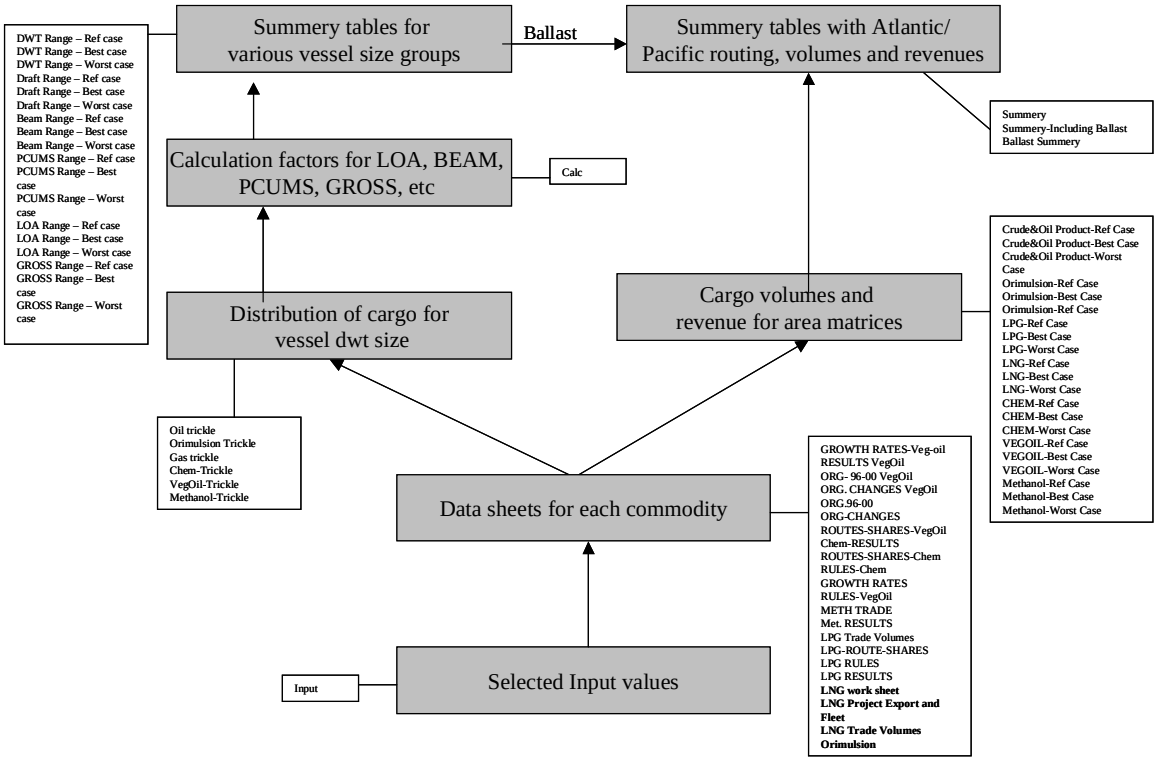
Contains the forecasted volumes for Orimulsion established by each contractor.

OIL

When it comes to this commodity group, we have determined the world trade volumes with our Oil Trade Model, and we have inserted the figures qualitatively right into the area volumes sheets; from there they have been placed into the size-group breakdown, and therefore, there are no work sheets for this commodity group in this model.

The Model

We have include below a graphic picture, which shows the flow in the model. The white boxes are the sheets in the Excel file, and the grey boxes are the steps in the model.



Selected Input Values.

In the process of establishing the forecast volumes, we have set some parameters firm, whilst we have made it possible to manipulate others. In the sheet "Input" we have assembled the parameters, which can be manipulated, and they are organized by commodity group:

Orimulsion:
Project volumes for best, worst and reference case.

Percentage of project volume through the Canal for the three cases.

LPG:
Annual change in World LPG Trade

Percentage of Panama share of world LPG trade for each case

Chemicals:
Change in percentage of Panama share for total trade volume, respectively for inorganic and organic chemicals, and Veg. Oils

Asia share: Indicates the percentage of volume increases that will be intra-Asian trade.

Annual decline / increase: Reduction of trade direction through the Canal as a result of the major built up in the Asian chemical industry.

LNG:
Project volumes for the forecast period.

Data Sheets for Each Commodity

These are the main sources for the study, and are described both in the body of the study, as well as in the above in the rendering of the data sheets.

Distribution of Cargo for Vessel DWT Size

This is where cargo volumes are distributed into dwt-groups. Each cargo / commodity group has its own distribution. The description of this process is to be found in pages 56-58 of the report.

Calculation Factors for LOA, BEAM, PCUMS, GRT, etc.

In this spreadsheet "Calc" the factors needed for proceeding from dwt-groups to all the other groups defined by the ACP are to be found. A description of how this is accomplished can be seen on page 59 of the report.

Summary Tables for Various Vessel Size Groups

These contain the output tables distributed by sizes as listed in the picture above. All these tables are based on the tables DWT Range – Ref Case, DWT Range – Best Case, DWT Range – Worst Case, and the rules for the connections may be found in the sheet "Calc", as described above.

Cargo Volumes and Revenues for Area Matrices

These sheets contain volumes and revenues distributed on area matrices.

These are also the basis for crude and oil product; these have been set qualitatively, based on the output of the Oil Trade Model.

Summary Tables with Atlantic / Pacific Routing, Volumes and Revenues.

These files contain summary tables of values and revenues of area matrices, and are, therefore, by direction, as opposed to the "Summary Tables for Various Vessel Size Groups" which contain the sum of both directions by size groups.

Ballast

Ballast is only calculated in the "Summary Tables for Various Vessel Size Groups" in the following way:

Chemicals:

None

LPG:

None

Orimulsion:

None

LNG:

65 % of the DWT through the Canal will ballast back

Crude:

50 % of the DWT will ballast back, and this percentage will decline down to 45 % during the forecast period.

Oil Products:

50 % of the DWT will ballast back, and this percentage will decline down to 45 % during the forecast period.

Transits

Transits are calculated in the following way in our model. After we establish the volumes through the Canal, we use a loadfactor, based on historical data from ACP, and with this we obtain the total DWT for each of the DWT groups, and then we divide the total DWT by the average DWT size for the individual vessel groups.

The transit tables are to be found at the following locations:

DWT Range – Ref.Case

DWT Range – Best Case

DWT Range – Worst Case

REFERENCES

References

Key Information Sources for Oil Trade Forecasts:

ACP Canal Traffic Statistics

Petroterminal de Panama S.A.

Energy Information Administration, U.S. DOE "Annual Energy Outlook 2003 With Projections to 2025" and other publications

EIA Various publications and Country Surveys

Fearnleys regards EIA as very reliable and professional source for historical data on U.S.A. and other Countries

IEA "World Energy Outlook 2002"

IEA "Oil Market information 2001"

IEA " Oil Market Report"

IEA, or The International Energy Agency, has a very solid analytical staff and backing from all OECD member countries. The most comprehensive and solid provider of oil and energy information in the world.

OPEC "Annual Statistical Bulletin 2001"

The OPEC staff in Vienna collects and compiles information from member countries as well as global and non-member country data from a variety of sources. A highly useful data source on oil production and trade, especially for OPEC and other non-OECD countries.

BP "Statistical Review of World Energy June 2002"

Fearnleys regards BP's statistical review as a solid and reliable source for global and regional data for production, consumption and reserves. Their oil trade statistics are in our view not of the same high standard and have not been used.

Energy Intelligence Group: Oil Market Review and Petroleum Intelligence Weekly

EIG is a well known industry information provider with summaries and extracts of trends and developments in the energy industry.

Petroleum Argus: Global Markets and Petroleum Argus

Petroleum Argus: is a well known industry information provider with summaries and extracts of trends

and developments in the energy industry. Global Markets also provide detailed data on commodity price developments within the energy business

Oil and Gas Journal

A very central information source on the US oil and gas markets

Various National Bureaus of Statistics

Fearnleys "World Bulk Trades"

Fearnleys "Oil and Tanker Market Quarterly"

Fearnleys Annual "Review"

Fearnleys Shiptracking Analyses based on movement data from Lloyd's Fairplay

Key Information Sources for Chemical and Vegoil Trade Forecasts:

Governments and Governmental Agencies, International Bodies

These sources are generally considered highly reliable

ACP Canal Traffic Statistics

Energy Plug, DoE EIA,
April 25 2000

Annual Energy Outlook 2003 with Projections to 2025, DoE EIA, 2003

EIA Country Data

Outlook for biomass ethanol production, DoE EIA, July 30th 2002

Biofuels and the Economy, DoE EIA, 2002

Potential for California Waste-based or other Biomass Ethanol Development
California Energy Board, 2002

Costs and Benefits of a Biomass-to-Ethanol Production industry in California
California Energy Board, 2001

MTBE phase out in California, California Energy Commission, March 2002

Xylenes, Eco-USA, 2002

Ethylene Glycol and Propylene Glycol, Agency for Toxic Substances and Disease Registry, USA, Sept 1997

The production of Benzene, Univeristy of Toronto, 2002

Ethylbenzene, World Health Organisation

Automotive fuels for the future
IEA 1999

Fearnleys consider data and reports provided by the International Energy Agency as highly reliable

International Trade by Commodity Statistics, OECD 2002/03

United Nations

Food and Agriculture Organisation, Statistical Service, www.fao.org

Private Consultancy Companies

These sources are generally considered highly reliable

The Drewry Annual Chemical Market Review and Forecast 4Q 2001, Drewry Shipping Consultants Ltd

The Chemical Carrier Market 1991, Drewry Shipping Consultants Ltd

Oil World 2020, Supply, Demand, and Prices. Revised issue 2002, ISTA Mielke GmbH, 2002

World Petrochemical Investment Trends
SRI, 2001

Toluene Report, SRI, 2001

Mixed Xylenes Report, SRI, 2001

Commodity Update, Globefish, 2002

World Xylenes & Terephtalates Analysis, CMAI, 2002

World Styrene Analysis, CMAI, 2002

World Methanol Analysis, CMAI, 1996

World Methanol Analysis, CMAI, 2002
Cumene/Phenol/Cyclohexane Analysis, CMAI, 2002

Cyclohexane Report, CEH, 2001

EDC Report, CEH, 2001

Sulphuric Acid, Fertecon, 2001

Periodicals

These sources are generally reliable

Sulphur
CRU, #278 Jan/Feb 2002, CRU

CRU is a London based consultancy company in commodities. Highly reliable

The Oil and Gas Journal, various issues

International Oil Daily, Energy Intelligence Group, various issues 2002

Petroleum Intelligence Weekly, Energy Intelligence Group, various issues 2002

Alexander's Gas & Oil Connections, various issues

Corpus Christi Caller Times, Oct. 5 2000

PET Planet, periodical for PET plastics, various issues

Industry Sources

These sources are generally reliable, but might be flawed by a wish by the companies to look good

Methanex Corp, Canada

Chevron Phillips Corp.

LG Caltex

Saudi Chevron Phillips Co.

Exxon Mobil

Shell Petrochemicals

BASF

BP
Chemopetrol

Stolt-Nielsen Tanker Group

Odfjell Tankers ASA

Iver Ships AS

Statoil

Industry Associations

These sources are generally considered highly reliable

Information on the Styrene Industry Worldwide, Styrene Forum 2002

Cumene Organisation, USA

Capacity and production data for petrochemicals in Western Europe 1996-2000, CEFIC 2001

Benzene production, consumption and trade balance, CEFIC 2002

Facts and Figures, CEFIC, 2002

Perchloroethylene – White paper, Halogenated Solvents Industry Alliance

International Fertiliser Association
Caustic Soda Trade, Tecnon, 2002

Encyclopaedia

These sources are generally considered highly reliable

The Columbia Ecyclopaedia, Sixth Edition, 2001

References for Orimulsion Forecasts

Bitumenes del Orinoco, S.A. Caracas, Venezuela
Statistical overview of all Bitor contracts + information on the nature and use of the product. Very reliable source.

Bitumenes del Orinoco (Bitor Europe), London, UK
Assistance with information about Orimulsion and its marketing. Very reliable source.
Fearnleys Tanker Department – working with Bitor on Orimulsion projects on a regular basis. Very reliable source.

Key Information Sources for Gas Trade Forecasts:

ACP Canal Traffic Statistics

Energy Information Administration, U.S. DOE "Annual Energy Outlook 2003 With Projections to 2025" and other publications

EIA Country Data

IEA "World Energy Outlook 2002"

IEA "Oil Market information 2001"

IEA " Oil Market Report"

Fearnleys regards EIA as very reliable and professional source for historical data on U.S.A. and other Countries.

BP "Statistical Review of World Energy June 2002"

Fearnleys regards BP's statistical review as a solid and reliable source for global and regional data for production, consumption and reserves.

International Fertilizer Industry Association (IFA): Annual Ammonia Statistics and Global Fertilizer Supply and Trade

IFA is a industry association and a very reliable source of information on historical ammonia/fertilizer trade and developments.

FERTECON: Monthly

FERTECON produces ammonia market analysis on a regular basis (monthly publications)

The Drewry Annual LPG Market Review and Forecast 2002, Drewry Shipping Consultants Ltd
The Drewry Annual LNG Market Review and Forecast 2002, Drewry Shipping Consultants Ltd

Drewry is a shipping consultants firm mainly publishing reports on the different shipping segments. Reliable data and source for shipping statistics, but mainly used as reference/source for describing trends and developments in the LPG market.

SIGTTO: Society of international Gas Tanker & Terminal Operators:

Sigtto is a non-profit making company, formed to promote high operating standards and best practices in gas tankers and terminals throughout the world. The provide very reliable data on historic world LNG trade and developments

Energy Intelligence Group: Oil Market Review and Petroleum Intelligence Weekly

EIG is a well known industry information provider with summaries and extracts of trends and developments in the energy industry.

Petroleum Argus: 2 publications:

1. Global Markets
2. Petroleum Argus

Petroleum Argus: is a well known industry information provider with summaries and extracts of trends and developments in the energy industry. Global Markets also provide detailed data on commodity price developments within the energy business

Various National Bureaus of Statistics

LNG Journal: *Professional Business Journal for the LNG industry*

Oil and Gas Journal*: Professional Business Journal for the oil and Gas industry. Mainly used as source for information on trends in oil and gas industries pluss updates on project status, etc.*

Fearnleys "World Bulk Trades"

Fearnleys "Gas Markets, Quarterly"

Fearnleys "Monthly report"

Fearnleys Annual "Review"

Fearnleys Shiptracking Analyses based on movement data from Lloyd's Fairplay

Amongst other, we have discussed gas trades in the Americas with the following companies:

Tractebel: Large energy company working with several LNG projects in the Americas.

Statoil: Norwegian oil company with interests in gas in the Americas

BP: energy company with large interests in the gas industry in the Americas

PDVSA: Venezuelan energy company with large interests in the gas industry

Norsk Hydro: energy and fertilizer company with large interests in the Americas/Trinidad.

ConocoPhillips: energy company with large interests in the gas industry in the Americas

Marathon: energy company with large interests in the gas industry in the Americas

Sempra: energy company with large interests in the gas industry in the Americas

El Paso Corp: energy company with large interests in the gas industry in the Americas

Enron: energy company which had large interests in the gas industry in the Americas

Bergesen DY: the worlds largest LPG shipowner.

Daewoo/Samsung Heavy Industry: Shipyards with Panamax LNG vessel designs

GLOSSARY

Aframax	A tanker of 80.000-120.000 DWT. Originally a vessel of 79.999 DWT, but the type has subse quently grown and is today typically of 800.000 barrel capacity. Increasingly these vessels have coated tanks and are capable of carrying clean products.
Ballast	Water carried instead of cargo in order to stabilise an empty vessel. Time spent not carrying cargo is time “in ballast”.
Bareboat charter	An arrangement whereby a vessel is leased for a certain period. Under a bareboat charter, the charterer has to cover crew and operating expenses.
Barrel	159 litres (42 US gallons) of oil. There are about 6.3 barrels in one cubic meter.
Bulk	Unpacked cargoes, such as coal, ore and grain.
Bunkers	Ship’s fuel, either heavy fuel oil for the main propulsion plant, or diesel oil for auxiliary engines.
Charter party	Contract agreement between shipowner and carrier specifying the lease terms for a voyage or hire period.
Class, Class Society	See “Special Survey”
Combination carrier	Ship capable of carrying alternating types of cargo. Often used synonymously with OBO carrier, referring to a ship that can alternate between Oil, Bulk and Ore cargoes.
Demolition	Vessels that are past their useful lives are broken up and the steel and parts are sold. This is dangerous, labour intensive work and mainly takes place in developing economies such as India, Pakistan and Bangladesh.
Double hull, Double Sides, Double bottom	Various construction methods. Starting with OPA-90, international rules and regulations now require that tanker newbuildings have double hulls. This is means that outside the tanks there is a further layer of hull, at least 2 metres away from the cargo. The purpose of this is to contain the cargo, even if the outer hull is breached, and thereby protect the environ ment. Between the introduction of SBT and the compulsory double hull, many vessels had double sides or double bottoms for other reasons, e.g. space for the SBT tanks or protection of hazardous cargoes. However, not all these designs meet the current specifications for double-sides or double-bottoms.
Dry-docking	As part of maintenance the vessel’s outside bottom has to be inspected, cleaned and painted. This is done by placing the vessel “high and dry” in a floating or landlocked dock. Often com bined with class’ inspection. See also “Special Survey”.
DWT (dead-weight tonne)	A measure (normally in metric tons) of a ship’s carrying capacity, including bunker oil, fresh water, crew and provisions.
Freight rate	The agreed freight charge, normally measured by metric ton of cargo, cubic meter of cargo, dead-weight ton per month or days.
IMO	International Maritime Organisation, the UN organisation dealing with maritime matters. I.a. the IMO has passed conventions (Marpol 13G) specifying that tankers more than 25 years old must either be equipped with segregated ballast tanks (SBT), full double hull or employ hydrostatically balanced loading (HBL) to continue trading.
Lay-up	When rates are unprofitable a vessel can be laid-up. That is: She is anchored with a minimum crew (often just a caretaker) and all systems turned off. Both entering and breaking lay-up the owner will incur some costs. During the late 1970s and early 1980s there was significant lay-up of modern tanker-tonnage.
LOOP	Louisiana Offshore Oil Port. Opened in 1981. LOOP is 18 miles off the Louisiana coast, situated in 115 feet of water. Protected by a safety zone, which encircles the facility within a 36-square-mile area. Oil offloaded at LOOP is pumped ashore through a pipeline buried beneath the sea floor. The line feeds into the underground Clovelly Salt Domes.

Majors	Originally the largest Anglo-American oil-companies ("The Seven Sisters"). Today both Vela and Statoil have similar positions in the tanker-market: controlling large fleets of their own and setting the standards of acceptability. E.g. "major's approval" is seen as a mark of quality for an older tanker.
Management company	A company (often a third party) that assumes responsibility for the operation and administration of vessels, viz. crewing, technical operations and maintenance.
Marpol	See "IMO"
MEG	Middle East Gulf. Also Arabian Gulf (AG) or Persian Gulf (PG).
MT	Metric tonnes, whether capitalized or not.
MMT	Million metric tonnes, whether capitalized or not.
OBO carrier	See "Combination carrier".
OPA-90	The Oil Pollution Acts of 1990, an American law that imposes far-reaching requirements on shipping companies, vessels and crews when carrying petroleum products to the United States and within the US economic zone (within 200 nautical miles of the coast). Enacted after the Exxon Valdez accident in Alaska in 1989.
Operating cost	The costs of technical operations of ships, crewing and insurance (excludes capital costs).
Panamax	Ship in the 55,000 to 80,000 DWT range, but narrower in beam than 105 ft (32.2 metres), which is the largest capable of navigating the Panama Canal.
Product tanker	Tanker that carries refined oil products. Tanks are typically coated.
SBT	Segregated ballast tanks. Tanks intended exclusively for ballast water. Enacted by IMO as a requirement for all new tankers since the mid 1980s. Also enacted as an alternative to HBL for tankers more than 25 years of age. It is estimated that retrofitting of SBT on a VLCC built in the 1970's costs some USD 7-10 million.
Scrapping	See "demolition"
Shipbroker	Due to the technologically homogenous and commercially fragmented market there are brokers involved in most transactions in shipping, be it fixing a vessel for a short voyage or ordering a new vessel. In the present context the shipbrokers' valuation of various standard tonnage types is the most relevant.
Shuttle tanker	Tanker specially equipped for loading at sea, from FPSOs or buoys.
Special Survey	In order to create competition in the insurance market, a vessel's condition is not assessed by the insurance company, but by the classification society. As part of the society's programme the vessel is inspected with varying scope and degrees of severity at regular intervals. Every 4-5 years there is a "Special Survey". This survey usually includes a bottom survey and often meas urement of steel-thickness etc.
Speed/consumption	A vessel's fuel consumption is measured by knots/tonnes per day. The main reason for this is that consumption rises faster than speed (almost exponentially) than consumption (linear) and that in many trades it is a question of optimising returns, more voyages vs. higher fuel bills.
Spot	Short-term contracts, normally not longer than three months in duration. Typically spot-contracts are for a single cargo/voyage and the shipowner must cover voyage costs for his own account. See also "WS"
Suezmax	Tanker typically between 120,000 and 160,000 DWT, the largest vessels to pass the Suez Canal fully laden (restricted draft). For modern vessels the capacity is at least 1m barrels.
TCE	Time-charter equivalent rate, i.e. gross freight income less voyage costs (bunker costs, port duties etc.). See also "Time charter"

TT	Turbine tanker. Denotes a tanker equipped with steam turbine propulsion. Most T/Ts were built in the 1970s when oil prices were low. Turbine machinery gives more power for the space occupied, and has fewer moving parts, but are more costly in operation since they consume more fuel than diesel engines. The cost disadvantage depends on bunker prices.
Time charter or TC	An arrangement by which a shipowner places a crewed ship at a charterer's disposal for a certain period. The charterer pays for all costs related to the specific voyage, i.e. bunkers, port duties etc.
Tonne-miles	Metric tonne (1,000 kg = 2,204lb) carried, multiplied by distance measured in nautical miles (1852 metres). A measure for transportation demand. The relevance of the distance element is significant because trading patterns may vary over time.
ULCC	Ultra Large Crude Carrier. Historically a term used to describe tankers larger than 300,000 DWT, but today the typical 2m barrel VLCC is growing and 320.000 DWT is probably a more appropri ate limit. Due to limitations to port facilities, few dedicated cargoes and fewer operators, no ULCCs have been built since the late 1970s.
US Gulf	The US portion of the Gulf of Mexico.
VLCC	Very Large Crude Carrier. A term used to describe tankers between 200,000 and 320,000 DWT (originally 300.000 DWT, cf. ULCC above). A modern VLCC is a vessel of 2m barrel carrying capacity.
WS	Worldscale. An international freight indexing system for tankers, in which freight revenue is expressed as a percentage of a particular USD-based rate. Different voyages can be compared with each other using this system. The WS principle is that a vessel at a given WS level should earn the same amount per day regardless of what ports are included in the voyage. WS indexes are revised yearly.

APPENDIX

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APPENDIX:

HISTORICAL STUDY

CRUDE OIL. TOTAL SEABORNE IMPORTS. 1970-2000

Main Areas

Figures in million tonnes

Importing countries	*N/W Europe*	*Mediter-ranean*	*North America*	*South America*	*Japan*	*Other Asia*	*Others*	*Total*
1970	381.2	219.7	61.9		169.5		162.6	994.9
1971	392.2	231.1	76.0		191.6		175.0	1065.9
1972	421.7	247.2	107.3	na	213.6		194.3	1184.1
1973	431.7	282.8	171.8	91.0	245.2		142.6	1365.1
1974	400.6	281.8	194.8	96.3	239.7		146.7	1359.9
1975	337.2	240.3	241.5	87.2	226.8		125.8	1258.8
1976	363.3	267.0	308.9	103.1	218.7		148.9	1409.9
1977	350.7	252.3	371.5	100.5	228.1		147.6	1450.7
1978	323.9	261.1	353.1	108.5	225.3		159.9	1431.8
1979	323.3	277.6	358.3	116.3	235.2		186.4	1497.1
1980	285.4	240.2	293.2	125.3	211.5		164.7	1320.3
1981	260.7	202.4	273.3	91.9	191.7		150.0	1170.0
1982	222.5	187.5	197.9	73.4	179.5		131.9	992.7
1983	174.1	200.2	187.6	64.9	173.4		130.0	930.2
1984	170.6	197.5	189.7	59.3	185.5		127.3	929.9
1985	145.9	178.3	178.1	56.0	168.8		144.1	871.2
1986	159.3	185.3	227.1	55.5	165.6		165.0	957.8
1987	149.4	188.9	253.5	56.8	154.6		167.0	970.2
1988	178.7	184.4	271.2	55.9	162.5		189.5	1042.2
1989	164.7	175.0	315.3	67.9	175.5		221.2	1119.6
1990	180.0	192.8	324.1	71.3	189.7		231.8	1189.7
1991	188.0	198.0	314.8	74.2	201.2		270.4	1246.6
1992	199.5	212.5	331.8	73.2	208.3		288.0	1313.3
1993	203.1	202.9	367.5	74.0	212.1		296.4	1356.0
1994	194.3	217.9	382.0	78.0	226.8		304.1	1403.1
1995	179.9	221.8	380.1	68.9	224.2		339.7	1414.6
1996	157.1	229.1	402.1	70.4	220.8	n.a	386.8	1466.3
1997	151.5	239.0	427.7	67.0	226.8	347.6	58.9	1518.5
1998	160.5	251.3	442.5	66.5	212.2	340.1	61.4	1534.5
1999	156.7	236.2	456.4	66.0	208.7	361.3	64.9	1550.2
2000	145.9	241.7	481.5	62.8	210.2	404.2	61.2	1607.5

Source: Fearnresearch

CRUDE OIL. TOTAL SEABORNE EXPORTS. 1970-2000
Main Areas

Excluding some coastal and short sea trades

Figures in million tonnes

	Middle East	*Near East*	*North Africa*	*West Africa*	*Caribbean*	*South East Asia*	*North Sea*	*Others*	*Total*
1970	524.5	62.4	217.3	59.6	60.9	29.6		40.6	994.9
1971	620.6	65.3	169.4	75.3	60.1	33.0		44.6	1068.3
1972	739.6	50.5	160.2	92.2	59.4	43.3		38.9	1184.1
1973	862.6	75.5	158.8	101.5	63.3	60.5		42.9	1365.1
1974	890.9	52.8	130.4	125.2	56.2	64.9		39.5	1359.9
1975	802.3	64.2	113.9	105.1	63.1	67.1		43.1	1258.8
1976	946.6	20.8	145.1	116.8	56.6	73.0		51.0	1409.9
1977	959.0	15.1	149.0	120.2	56.7	83.9		66.8	1450.7
1978	902.6	22.0	156.4	107.9	68.6	85.6		88.7	1431.8
1979	891.7	44.3	162.5	137.6	83.5	91.1		86.4	1497.1
1980	775.9	35.8	135.9	120.1	88.4	81.6		82.6	1320.3
1981	669.2	34.4	108.4	84.5	94.7	86.0		92.8	1170.0
1982	504.1	35.1	95.8	77.2	101.5	65.7		113.3	992.7
1983	428.3	36.4	93.1	75.4	121.1	68.6		107.3	930.2
1984	408.9	38.6	93.4	89.3	121.1	88.8		89.8	929.9
1985	351.3	46.6	97.9	101.3	119.2	75.9		79.0	871.2
1986	431.0	46.5	95.4	96.9	115.3	77.8		94.9	957.8
1987	424.3	52.7	103.1	92.5	116.9	74.0		106.7	970.2
1988	450.9	81.0	99.5	103.3	120.5	71.7		115.3	1042.2
1989	503.8	88.2	94.2	118.2	130.7	75.8		108.7	1119.6
1990	574.6	49.2	107.4	119.1	145.2	72.9		121.3	1189.7
1991	663.7	10.2	110.0	133.2	159.7	76.4	n.a	93.4	1246.6
1992	693.9	13.2	111.0	133.3	160.9	72.0	n.a	129.0	1313.3
1993	719.3	18.0	104.0	130.5	171.5	70.6	n.a	142.1	1356.0
1994	714.6	20.4	101.0	140.9	176.9	76.4	n.a	172.9	1403.1
1995	713.2	19.3	104.0	144.9	187.7	77.0	n.a	168.5	1414.6
1996	741.8	17.7	99.0	159.4	209.0	75.9	n.a	163.5	1466.3
1997	782.7	19.9	93.1	166.7	228.8	68.1	65.5	93.7	1518.5
1998	770.9	53.5	96.6	168.2	228.7	63.1	59.4	94.1	1534.5
1999	747.5	57.8	90.1	166.4	228.1	67.2	78.8	114.3	1550.2
2000	789.5	52.6	88.3	177.3	228.3	61.9	81.3	128.3	1607.5

Source: Fearnresearch

OIL SHIPMENTS BY VESSELS 50,000 DWT +. Matrices 1988-2000

Figures in '000 DWT

Period: 1988	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	57,274	27,615	48,877	10,352	14,539	291	124,352	38,515	45,803	17,764	8,936	44,098	438,416
Near East	14,143	44,021	17,554	760	4,662	-	-	-	89	-	306	1,200	82,735
Red Sea	3,551	17,027	11,555	1,504	8,623	64	10,506	4,527	5,990	5,201	1,446	3,015	73,010
N. Africa	37,335	112,726	16,433	-	730	-	1,219	747	154	-	-	1,199	170,542
W. Africa	20,882	23,032	48,283	6,061	3,453	-	948	460	182	-	226	1,657	105,185
Caribbean	23,318	15,343	107,861	3,843	2,589	179	2,165	-	466	-	1,173	2,072	159,008
S.E. Asia	1,107	270	5,337	567	902	9,454	38,527	15,432	4,767	1,203	1,223	6,975	85,763
North Sea	2,656	13,642	38,860	513	51	325	35	97	-	-	-	1,089	57,267
Black Sea	6,644	37,542	4,496	2,868	547	-	64	89	51	51	527	1,324	54,204
China	155	1,285	2,894	-	977	312	14,366	713	5,672	-	-	129	26,504
Others	3,881	4,270	14,848	10,765	773	1,885	12,656	7,972	3,107	217	83	4,189	64,645
Sum	170,946	296,774	316,999	37,233	37,846	12,510	204,838	68,552	66,281	24,435	13,920	66,946	1,317,278

Period: 1990	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	71,939	41,152	76,074	14,527	22,284	731	164,134	58,528	54,756	19,897	5,816	62,445	592,283
Near East	12,913	24,725	15,519	298	955	-	-	159	-	89	-	1,052	55,712
Red Sea	5,493	25,340	5,682	1,339	3,642	185	5,786	1,246	5,901	1,593	425	4,753	61,385
N. Africa	33,728	129,458	17,501	230	1,281	-	508	354	483	-	295	1,037	184,875
W. Africa	26,147	32,182	61,321	4,283	1,282	54	659	392	238	-	-	2,677	129,236
Caribbean	22,771	16,453	122,934	13,873	3,196	1,275	772	113	871	-	116	3,875	186,248
S.E. Asia	305	562	2,520	583	709	7,898	43,807	17,612	6,291	2,192	614	6,122	89,215
North Sea	2,337	13,061	38,962	3,278	216	-	-	128	85	50	-	4,429	62,546
Black Sea	9,707	30,574	3,435	899	270	-	-	-	-	1,147	-	501	46,532
China	41	186	3,182	-	658	912	14,770	1,549	4,951	-	-	230	26,479
Others	4,232	5,879	13,156	7,870	1,009	3,273	11,435	7,884	3,307	680	82	5,100	63,907
Sum	189,614	319,571	360,285	47,181	35,501	14,328	241,871	87,965	76,883	25,649	7,348	92,222	1,498,417

Period: 1995	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	58,690	14,284	64,225	21,429	13,177	3,203	199,460	109,930	91,305	42,039	17,373	92,415	727,529
Near East	2,451	18,521	516	-	-	61	-	-	-	-	-	-	21,548
Red Sea	536	14,137	2,156	229	1,361	-	2,217	15,305	8,510	1,592	1,463	7,305	54,812
N. Africa	49,176	153,968	15,296	1,707	2,168	-	403	1,083	1,128	68	-	1,170	226,168
W. Africa	17,012	33,002	72,638	10,406	4,021	-	961	10,538	1,626	3,794	868	4,606	159,472
Caribbean	21,080	7,951	194,987	9,913	4,901	2,718	870	98	372	-	241	5,183	248,313
S.E. Asia	-	1,408	3,231	-	57	4,677	34,705	23,233	9,797	2,926	361	13,133	93,530
North Sea	6,281	21,626	52,863	3,723	972	-	-	801	720	-	1,503	12,639	101,130
Black Sea	3,363	34,922	1,527	212	243	-	-	85	700	57	-	295	41,404
China	-	80	940	-	-	741	12,425	4,269	3,637	62	-	-	22,154
Others	17,598	5,428	22,416	10,667	7,671	4,879	5,811	12,172	8,235	208	1,522	12,691	109,296
Sum	176,187	305,328	430,795	58,286	34,571	16,278	256,853	177,514	126,028	50,746	23,332	149,436	1,805,354

Period: 2000	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	33,849	11,203	108,306	17,893	7,143	14,242	203,139	189,831	106,330	79,567	18,080	78,426	868,007
Near East	9,295	47,832	2,070	302	-	-	-	-	178	-	-	-	59,678
Red Sea	570	944	939	27	112	1,300	3,370	18,448	11,102	3,676	387	19,444	60,319
N. Africa	59,863	127,405	19,145	82	7,555	61	71	282	294	167	-	27	214,954
W. Africa	14,540	28,740	77,533	14,838	5,814	-	686	31,222	3,738	16,464	2,084	6,661	202,319
Caribbean	16,987	11,435	250,095	24,134	4,701	4,699	588	991	2,178	952	-	5,514	322,275
S.E. Asia	244	-	2,304	51	360	6,532	22,535	28,310	12,589	5,828	61	17,056	95,868
North Sea	5,003	10,195	77,993	2,397	158	794	143	2,986	1,553	1,816	-	5,904	108,940
Black Sea	3,912	67,415	742	86	447	-	-	-	577	-	-	307	73,486
China	-	-	70	-	-	1,456	4,165	2,549	1,458	107	-	193	9,999
Others	27,389	5,344	36,265	6,596	7,128	15,164	8,513	19,588	15,814	754	232	18,880	161,666
Sum	171,652	310,513	575,462	66,406	33,418	44,247	243,209	294,206	155,812	109,329	20,844	152,413	2,177,511

oil-shipments-size-dist.xls/50.000+ DWT

Source: Fearnresearch

OIL SHIPMENTS BY VESSELS 50-80,00D DWT. Matrices 1988-2000

Figures in '000 DWT

Period: 1988	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	1,279	3,450	78	-	116	-	10,385	1,118	1,508	4,627	494	79	23,136
Near East	338	8,093	154	-	-	-	-	-	-	-	-	61	8,645
Red Sea	121	1,164	1,152	-	-	64	886	66	584	467	154	1,193	5,850
N. Africa	5,543	15,217	9,326	-	218	-	841	95	70	-	-	970	32,281
W. Africa	907	279	1,776	330	-	-	-	-	-	-	-	55	3,348
Caribbean	2,031	1,584	36,721	2,175	1,210	179	-	-	-	-	-	1,803	45,703
S.E. Asia	-	-	380	148	-	346	12,731	2,622	410	633	-	457	17,726
North Sea	210	1,524	7,999	57	51	222	35	-	-	-	-	50	10,147
Black Sea	1,330	15,195	2,592	2,459	274	-	64	-	51	51	308	720	23,043
China	-	-	-	-	57	126	9,946	713	2,786	-	-	-	13,627
Others	1,803	1,805	10,602	3,372	331	703	2,420	873	533	-	-	2,433	24,876
Sum	13,563	48,311	70,779	8,541	2,257	1,639	37,307	5,487	5,943	5,777	956	7,821	208,383

Period: 1990	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	897	1,665	226	-	191	-	11,883	2,430	2,274	5,235	381	1,044	26,226
Near East	594	5,138	373	39	-	-	-	-	-	-	-	57	6,201
Red Sea	249	2,823	955	-	50	101	979	79	356	267	80	328	6,266
N. Africa	7,313	16,639	8,989	78	301	-	258	129	156	-	-	147	34,010
W. Africa	-	840	1,447	117	78	54	169	-	-	-	-	115	2,820
Caribbean	3,031	2,041	31,143	5,850	1,624	1,275	-	-	209	-	-	3,361	48,533
S.E. Asia	-	131	-	-	111	243	11,627	2,764	1,053	857	151	875	17,811
North Sea	430	4,262	7,326	64	128	-	-	-	-	50	-	448	12,710
Black Sea	3,254	14,857	2,461	782	-	-	-	-	-	407	-	331	22,092
China	-	-	-	-	-	66	8,248	1,087	2,799	-	-	-	12,200
Others	2,437	3,967	9,067	5,742	663	551	760	1,050	690	364	-	3,563	28,855
Sum	18,204	52,365	61,986	12,673	3,146	2,290	33,925	7,539	7,537	7,180	611	10,270	217,725

Period: 1995	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	169	299	118	-	376	70	5,708	2,921	3,254	8,601	346	930	22,791
Near East	457	1,321	323	-	-	61	-	-	-	-	-	-	2,162
Red Sea	159	661	198	-	446	-	484	362	870	592	202	411	4,386
N. Africa	5,564	8,139	8,341	328	193	-	321	381	198	68	-	61	23,594
W. Africa	727	661	1,433	51	306	-	-	-	-	-	-	231	3,409
Caribbean	3,493	1,494	27,408	5,597	1,695	2,018	693	-	-	-	54	4,951	47,403
S.E. Asia	-	208	463	-	57	191	9,839	7,290	439	1,792	-	1,527	21,808
North Sea	147	4,530	4,176	230	425	-	-	-	157	-	-	431	10,095
Black Sea	265	13,572	117	65	75	-	-	-	151	57	-	295	14,598
China	-	-	80	-	-	-	8,836	2,274	1,554	62	-	-	12,806
Others	3,352	3,203	12,449	5,102	5,043	1,419	1,421	1,623	975	208	364	4,600	39,758
Sum	14,334	34,087	55,107	11,372	8,617	3,758	27,303	14,851	7,598	11,380	967	13,437	202,811

Period: 2000	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	1,748	310	854	65	200	65	2,039	2,370	2,915	8,590	182	532	19,868
Near East	125	1,040	532	-	-	-	-	-	89	-	-	-	1,787
Red Sea	330	58	332	-	-	-	69	321	501	235	-	200	2,043
N. Africa	2,533	4,234	3,230	-	871	61	71	127	-	81	-	27	11,234
W. Africa	114	302	2,443	270	455	-	-	-	60	-	198	-	3,842
Caribbean	1,333	2,830	37,696	8,992	1,194	4,699	396	78	357	52	-	5,514	63,142
S.E. Asia	55	-	562	51	150	887	7,541	8,722	908	3,098	61	380	22,416
North Sea	188	1,577	9,880	726	75	794	-	76	67	-	-	195	13,579
Black Sea	352	12,787	202	-	-	-	-	-	253	-	-	75	13,670
China	-	-	70	-	-	73	2,641	1,573	312	-	-	-	4,668
Others	3,928	2,873	13,618	6,184	4,668	8,770	2,936	5,257	2,634	424	51	10,286	61,629
Sum	10,704	26,012	69,420	16,289	7,613	15,348	15,692	18,524	8,096	12,479	492	17,210	217,878

oil-shipments-size-dist.xls/50-80.000 DWT

Source: Fearnresearch

OIL SHIPMENTS BY VESSELS 80-120,00D DWT. Matraices 1988-2000

Figures in '000 DWT

From: To:

Period: 1988	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others
M E G	1564	5181	424	557	0	291	9508	2838	16221	9015	3956	7250
Near East	1,311	15,031	696	337	-	-	-	-	89	-	-	81
Red Sea	683	9,195	2,273	-	-	-	54	949	1,643	2,695	237	-
N. Africa	13,695	50,737	6,158	-	111	-	378	-	84	-	-	105
W. Africa	4,819	5,255	4,264	1,647	1,459	-	-	190	182	-	87	208
Caribbean	7,228	3,247	57,458	1,513	682	-	639	-	198	-	83	199
S.E. Asia	87	270	839	-	-	5,004	21,256	7,194	2,808	447	331	4,258
North Sea	991	4,468	15,825	138	-	103	-	97	-	-	-	498
Black Sea	2,303	11,114	1,904	108	273	-	-	89	-	-	219	604
China	-	1,158	1,533	-	-	186	4,288	-	2,368	-	-	129
Others	1,449	947	3,040	331	173	1,059	3,053	5,846	2,574	93	83	1,475
Sum	34,130	106,603	94,416	4,631	2,698	6,644	39,176	17,203	26,166	12,251	4,997	14,807

Period: 1990	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others
M E G	994	4144	1058	659	0	269	13416	4986	11852	8707	3462	7966
Near East	1,318	10,933	1,354	-	-	-	-	-	-	89	-	82
Red Sea	948	11,292	2,544	-	-	84	443	299	3,100	264	185	1,903
N. Africa	9,213	71,581	6,075	-	426	-	249	89	192	-	295	734
W. Africa	2,830	4,065	2,468	502	564	-	83	-	108	-	-	-
Caribbean	11,201	2,597	80,104	4,811	1,074	-	357	113	538	-	116	386
S.E. Asia	88	261	861	180	-	6,018	25,287	10,401	4,962	972	-	4,210
North Sea	1,336	2,734	15,642	396	87	-	-	-	85	-	-	2,368
Black Sea	1,929	7,690	974	116	118	-	-	-	-	495	-	170
China	41	41	1,802	-	-	847	5,843	462	1,758	-	-	103
Others	988	1,648	3,826	1,051	87	1,781	3,458	6,049	2,617	181	82	1,269
Sum	30,885	116,986	116,707	7,715	2,356	8,998	49,137	22,399	25,212	10,709	4,141	19,193

Period: 1995	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others
M E G	171	973	1081	0	866	688	11463	7719	12227	16802	2820	7746
Near East	1,867	16,354	192	-	-	-	-	-	-	-	-	-
Red Sea	85	5,046	1,771	-	-	-	418	885	3,155	423	193	1,973
N. Africa	8,480	71,479	4,618	1,155	362	-	81	624	787	-	-	815
W. Africa	1,492	941	505	344	256	-	-	97	-	-	-	302
Caribbean	9,879	2,866	149,932	2,821	541	181	177	98	372	-	187	97
S.E. Asia	-	1,200	1,994	-	-	2,951	24,267	11,798	9,221	845	-	9,801
North Sea	4,360	2,226	12,085	1,213	412	-	-	296	563	-	-	7,175
Black Sea	177	5,724	375	-	167	-	-	85	383	-	-	-
China	-	80	860	-	-	741	3,589	1,994	1,445	-	-	-
Others	13,806	1,547	9,022	450	662	3,156	2,616	8,523	4,762	-	1,158	6,523
Sum	40,315	108,434	182,434	5,983	3,267	7,717	42,612	32,119	32,915	18,070	4,358	34,432

Period: 2000	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others
M E G	2070	1985	1756	324	1499	625	12545	10936	24492	38484	2568	5668
Near East	793	22,823	378	-	-	-	-	-	89	-	-	-
Red Sea	240	595	322	27	112	-	1,680	5,132	5,312	851	-	2,963
N. Africa	14,479	80,589	10,879	82	2,875	-	-	-	171	86	-	-
W. Africa	2,028	1,526	1,012	179	474	-	85	42	202	401	273	-
Caribbean	9,463	3,461	200,532	5,705	568	-	192	-	1,663	-	-	-
S.E. Asia	189	-	1,742	-	83	4,608	14,994	17,781	10,179	2,446	-	15,326
North Sea	4,228	2,933	27,747	621	83	-	-	110	545	-	-	2,973
Black Sea	1,066	23,621	270	86	-	-	-	-	177	-	-	84
China	-	-	-	-	-	1,229	1,524	819	741	107	-	193
Others	19,758	2,184	18,009	124	2,311	4,128	3,892	11,422	11,133	330	180	8,197
Sum	54,315	139,715	262,646	7,148	8,006	10,590	34,911	46,242	54,703	42,705	3,021	35,403

oil-shipments-size-dist.xls/80-120.000 DWT

Source: Fearnresearch

OIL SHIPMENTS BY VESSELS 120-200,00D DWT. Matrices 1988-2000

Figures in '000 DWT

From: To:

Period: 1988	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	1771	12752	2346	316	731	0	4203	4180	2670	2716	668	3667	36020
Near East	4,337	19,281	4,017	156	2,700	-	-	-	-	-	-	1,058	31,548
Red Sea	1,564	6,668	645	-	1,461	-	1,096	1,382	661	377	286	137	14,279
N. Africa	5,371	44,208	680	-	401	-	-	401	-	-	-	123	51,185
W. Africa	13,234	13,910	38,995	4,083	1,720	-	948	270	-	-	138	1,394	74,694
Caribbean	9,423	4,583	8,502	155	470	-	1,003	-	-	-	-	70	24,206
S.E. Asia	-	-	3,618	418	544	4,104	2,549	4,392	1,294	123	892	932	18,868
North Sea	809	3,300	9,540	-	-	-	-	-	-	-	-	541	14,190
Black Sea	3,011	11,233	-	301	-	-	-	-	-	-	-	-	14,545
China	155	127	1,362	-	921	-	132	-	518	-	-	-	3,215
Others	403	563	930	-	-	123	345	494	-	123	-	281	3,262
Sum	40,080	116,624	70,635	5,429	8,948	4,227	10,277	11,120	5,143	3,341	1,984	8,205	286,013

Period: 1990	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	3641	15352	721	258	2441	463	3947	6264	3535	1786	1077	3706	43191
Near East	2,839	7,771	2,581	-	955	-	-	159	-	-	-	913	15,218
Red Sea	2,211	10,673	677	-	1,613	-	-	597	473	515	160	567	17,486
N. Africa	6,954	36,079	2,031	152	555	-	-	136	135	-	-	156	46,199
W. Africa	22,708	22,774	50,260	3,532	640	-	406	124	130	-	-	2,562	103,138
Caribbean	7,400	2,668	7,086	3,213	270	-	414	-	124	-	-	127	21,302
S.E. Asia	-	170	1,425	170	287	1,637	5,250	4,172	276	364	463	1,037	15,251
North Sea	571	5,535	9,831	849	-	-	-	128	-	-	-	1,613	18,527
Black Sea	4,525	7,771	-	-	152	-	-	-	-	244	-	-	12,692
China	-	145	1,380	-	658	-	414	-	395	-	-	128	3,120
Others	263	263	263	-	-	941	128	305	-	135	-	267	2,565
Sum	51,112	109,201	76,254	8,175	7,571	3,040	10,559	11,885	5,070	3,044	1,701	11,076	298,689

Period: 1995	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	278	7059	1947	0	4544	2445	1474	9779	3986	11255	135	7339	50242
Near East	127	846	-	-	-	-	-	-	-	-	-	-	973
Red Sea	292	8,431	187	-	299	-	890	478	1,028	577	-	813	12,994
N. Africa	5,457	62,413	2,039	-	1,613	-	-	78	143	-	-	294	72,038
W. Africa	9,475	23,627	51,793	3,594	2,898	-	284	3,302	1,101	-	271	3,818	100,163
Caribbean	7,302	3,591	11,258	1,361	2,105	-	-	-	-	-	-	136	25,752
S.E. Asia	-	-	547	-	-	1,534	128	3,202	136	289	128	1,805	7,769
North Sea	1,416	6,529	17,782	92	135	-	-	-	-	-	-	5,034	30,988
Black Sea	2,922	15,626	1,034	147	-	-	-	-	165	-	-	-	19,894
China	-	-	-	-	-	-	-	-	-	-	-	-	-
Others	142	411	945	549	268	305	-	1,481	1,682	-	-	1,567	7,349
Sum	27,410	128,533	87,531	5,743	11,861	4,284	2,776	18,320	8,242	12,121	534	20,806	328,162

Period: 2000	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	822	7303	3748	142	654	907	121	16144	7106	15150	871	4587	57555
Near East	4,815	23,404	322	-	-	-	-	-	-	-	-	-	28,541
Red Sea	-	292	-	-	-	597	1,235	2,912	1,389	748	139	124	7,436
N. Africa	9,457	38,965	3,864	-	3,809	-	-	155	124	-	-	-	56,375
W. Africa	11,018	22,586	37,979	8,701	4,043	-	-	2,328	1,728	700	142	6,404	95,628
Caribbean	6,191	4,834	11,561	9,437	2,939	-	-	-	158	-	-	-	35,119
S.E. Asia	-	-	-	-	127	1,036	-	1,806	936	283	-	1,350	5,539
North Sea	587	5,469	26,092	900	-	-	-	-	941	-	-	2,736	36,725
Black Sea	2,494	31,007	270	-	447	-	-	-	147	-	-	148	34,513
China	-	-	-	-	-	155	-	158	406	-	-	-	719
Others	3,703	287	4,638	288	149	2,266	1,165	2,033	1,763	-	-	397	16,690
Sum	39,086	134,148	88,472	19,468	12,168	4,962	2,521	25,537	14,699	16,882	1,152	15,745	374,839

oil-shipments-size-dist.xls/120-200.000 DWT

Source: Fearnresearch

OIL SHIPMENTS BY VESSELS 200,000 DWT +. Matrices 1988-2000

Figures in '000 DWT

From: To:

Period: 1988	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	52660	6232	46029	9479	13692	0	100256	30379	25403	1405	3818	33101	322454
Near East	8,157	1,617	12,687	268	1,962	-	-	-	-	-	306	-	24,997
Red Sea	1,183	-	7,485	1,504	7,162	-	8,470	2,130	3,102	1,662	768	1,685	35,152
N. Africa	12,726	2,564	268	-	-	-	-	250	-	-	-	-	15,808
W. Africa	1,922	3,587	3,249	-	274	-	-	-	-	-	-	-	9,031
Caribbean	4,635	5,930	5,179	-	226	-	523	-	268	-	1,090	-	17,852
S.E. Asia	1,020	-	500	-	358	-	1,990	1,223	255	-	-	1,328	6,674
North Sea	646	4,351	5,496	318	-	-	-	-	-	-	-	-	10,811
Black Sea	-	-	-	-	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	-	-	-	-	-
Others	225	955	275	7,063	269	-	6,837	759	-	-	-	-	16,384
Sum	83,174	25,236	81,169	18,631	23,943	-	118,077	34,741	29,029	3,067	5,983	36,113	459,163

Period: 1990	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	66407	19990	74069	13610	19652	0	134887	44848	37094	4169	896	49728	465352
Near East	8,162	883	11,212	259	-	-	-	-	-	-	-	-	20,517
Red Sea	2,086	552	1,506	1,339	1,979	-	4,365	272	1,971	547	-	1,955	16,570
N. Africa	10,247	5,160	406	-	-	-	-	-	-	-	-	-	15,813
W. Africa	609	4,503	7,146	133	-	-	-	268	-	-	-	-	12,659
Caribbean	1,140	9,147	4,601	-	227	-	-	-	-	-	-	-	15,115
S.E. Asia	217	-	234	232	311	-	1,644	275	-	-	-	-	2,913
North Sea	-	529	6,163	1,968	-	-	-	-	-	-	-	-	8,660
Black Sea	-	255	-	-	-	-	-	-	-	-	-	-	255
China	-	-	-	-	-	-	264	-	-	-	-	-	264
Others	544	-	-	1,076	258	-	7,089	480	-	-	-	-	9,448
Sum	89,412	41,020	105,338	18,618	22,428	-	148,249	46,142	39,065	4,716	896	51,683	567,567

Period: 1995	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	58072	5953	61080	21429	7391	0	180815	89511	71839	5381	14071	76400	591942
Near East	-	-	-	-	-	-	-	-	-	-	-	-	-
Red Sea	-	-	-	229	616	-	425	13,581	3,457	-	1,068	4,107	23,483
N. Africa	29,675	11,938	299	224	-	-	-	-	-	-	-	-	42,137
W. Africa	5,317	7,773	18,908	6,417	561	-	678	7,139	525	3,794	598	254	51,963
Caribbean	406	-	6,388	134	560	519	-	-	-	-	-	-	8,008
S.E. Asia	-	-	227	-	-	-	471	943	-	-	233	-	1,875
North Sea	358	8,342	18,821	2,188	-	-	-	505	-	-	1,503	-	31,717
Black Sea	-	-	-	-	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	638	-	-	-	638
Others	299	268	-	4,565	1,698	-	1,773	546	815	-	-	-	9,964
Sum	94,128	34,274	105,723	35,187	10,825	519	184,162	112,224	77,274	9,175	17,474	80,762	761,726

Period: 2000	NW Eur.	Med.	Am. EC North	Am. EC Centr.	Am. EC South	N. Am. WC	Japan	Oth. F.East	S.E. Asia	S. Asia	S.E. Afr.	Others	Sum
M E G	29210	1604	101949	17362	4790	12644	188434	160381	71816	17343	14460	67640	687633
Near East	3,561	564	839	302	-	-	-	-	-	-	-	-	5,267
Red Sea	-	-	286	-	-	703	387	10,083	3,900	1,842	248	16,158	33,606
N. Africa	33,395	3,618	1,172	-	-	-	-	-	-	-	-	-	38,185
W. Africa	1,381	4,327	36,098	5,688	842	-	601	28,852	1,748	15,362	1,471	257	96,626
Caribbean	-	310	306	-	-	-	-	913	-	900	-	-	2,428
S.E. Asia	-	-	-	-	-	-	-	-	565	-	-	-	565
North Sea	-	215	14,273	150	-	-	143	2,799	-	1,816	-	-	19,396
Black Sea	-	-	-	-	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	520	876	284	-	-	-	1,681
Sum	67,547	10,638	154,923	23,502	5,631	13,347	190,085	203,904	78,314	37,263	16,179	84,054	885,388

oil-shipments-size-dist.xls/200.000+ DWT
Source: Fearnresearch

WORLD OIL SHIPMENTS BY VESSELS OVER 50,000 DWT. Detailed matrices 1988-2000

Figures in '000 DWT

Sum of DWT		TO																	
YR	FROM	Baltic	C Am.East	C Am.West	Japan	Medit.	N Am.East/	N Am.West	N W Eur.	Oth.F. East	Others	R S Africa	R S Asia	S Am.East	S Am.West	S Asia	S E Afr.	S E Asia	W Afr.	Grand Total
1988	Australia/N Z				315		737	556	225	89	172							190		2,284
	Black Sea		2,868		64	37,542	4,496		6,644	89	739	86	399	547		51	527	51	101	54,204
	Caribbean	108	3,843	892	2,165	15,343	107,861	179	23,318					2,589	982		1,173	466	91	159,010
	China				14,366	1,285	2,894	312	155	713	129			977				5,672		26,503
	M E G	297	10,352	268	124,352	27,615	48,877	291	57,274	38,515	9,536	27,507	6,490	14,539		17,764	8,936	45,803		438,416
	Mexico West		61		6,837		61	513		530					183					8,185
	N Africa	60		55	1,219	112,726	16,433		37,335	747		1,023	62	730				154		170,544
	N America West		7,229	331	2,446	189	177	123	92	4,260	733			371	60	93		591		16,695
	Near East	1,058	760			44,021	17,554		14,143				142	4,662			306	89		82,735
	North Sea	1,039	513		35	13,642	38,860	325	2,656	97				51					50	57,268
	Others		656		2,939	3,999	9,279	297	3,564	511	807			218	256	123	83	2,244	70	25,046
	R S Africa				657	9,427	1,528		1,255	1,686		38			137	1,188	1,055	706		17,677
	R S Asia		1,504		9,849	7,600	10,027	64	2,296	2,841	946	1,836	57	8,623		4,013	391	5,284		55,331
	S America West		2,819	173	118	81	4,594	396		2,581				184	1,403			81		12,430
	S E Asia		567		38,527	270	5,337	9,454	1,107	15,432	5,003	1,039	780	902	152	1,203	1,223	4,767		85,763
	W Africa	64	6,061		948	23,032	48,283		20,882	460				3,453	1,412		226	182	181	105,184
1988 Total		2,626	37,233	1,719	204,837	296,772	316,998	12,510	170,946	68,551	18,065	31,529	7,930	37,846	4,585	24,435	13,920	66,280	493	1,317,275
1990	Australia/N Z		454		899	215	409	1,477		237	193							1,852		5,736
	Black Sea	34	899			30,574	3,435		9,707				467	270		1,147				46,533
	Caribbean	128	13,873	2,525	772	16,453	122,934	1,275	22,771	113	344			3,196	585		116	871	292	186,248
	China				14,770	186	3,182	912	41	1,549	230			658				4,951		26,479
	M E G	939	14,527		164,134	41,152	76,074	731	71,939	58,528	11,259	49,017	1,019	22,284	122	19,897	5,816	54,756	88	592,282
	Mexico West		51	52	6,906		284	584		228										8,105
	N Africa		230		508	129,458	17,501		33,728	354	69	968		1,281			295	483		184,875
	N America West		1,193	1,299	2,111		113	388		5,032	708				76	51		399		11,370
	Near East	635	298	57		24,725	15,519		12,913	159	122	82	155	955		89				55,709
	North Sea	4,379	3,278			13,061	38,962		2,337	128				216		50		85	50	62,546
	Others	55	1,208	60	1,520	5,664	8,544	456	4,232	1,890	418	150	68	957	60	630	82	969	302	27,265
	R S Africa				200	13,349	1,472		2,062	1,075	95	51	207	258		443	258	1,589		21,059
	R S Asia		1,339		5,586	11,991	4,210	185	3,431	171	964	1,765	1,354	3,384		1,149	167	4,312	318	40,326
	S America West		4,964	590			3,806	368		498				51	1,069			87		11,433
	S E Asia		583		43,807	562	2,520	7,898	305	17,612	5,211	60	851	709		2,192	614	6,291		89,215
	W Africa	78	4,283		659	32,182	61,321	54	26,147	392			130	1,282	2,354			238	115	129,235
1990 Total		6,248	47,180	4,583	241,872	319,572	360,286	14,328	189,613	87,966	19,613	52,093	4,251	35,501	4,266	25,648	7,348	76,883	1,165	1,498,416

Crude-Product.xls/TOTAL TRADE 50,000DWT+ Source: Fearnresearch

WORLD OIL SHIPMENTS BY VESSELS OVER 50,000 DWT contd.

Figures in '000 DWT

1995	Australia/N Z				1,895		159	386		2,391	768				303			1,164		7,066
	Black Sea		212			34,922	1,527		3,363	85			228	243		57		700	67	41,404
	Caribbean	97	9,913	2,113	870	7,951	194,987	2,718	21,080	98	61			4,901	2,657		241	372	255	248,314
	China				12,425	80	940	741		4,269						62		3,637		22,154
	M E G		21,429		199,460	14,284	64,225	3,203	58,690	109,930	11,556	79,269	1,590	13,177		42,039	17,373	91,305		727,530
	Mexico West		54		1,773			153		169	84							385		2,618
	N Africa	667	1,707		403	153,968	15,296		49,176	1,083	61	288		2,168		68		1,128	154	226,167
	N America West		4,565	504	1,129		133	163		2,929					298			2,235		11,956
	Near East					18,521	516	61	2,451											21,549
	North Sea	12,453	3,723			21,626	52,863		6,281	801	90			972			1,503	720	96	101,128
	Others	1,502	2,713	115	1,013	5,428	15,688	859	17,533	4,640	5,765			7,094	505	208	1,522	4,157	119	68,861
	R S Africa		229		145	2,979	1,702		159	636	194	207	396			748	1,025	2,133		10,553
	R S Asia				2,072	11,159	454		377	14,670	3,500	2,840	168	1,361		843	438	6,377		44,259
	S America West		3,334	612			6,435	3,317	65	2,043				578	2,117			293		18,794
	S E Asia			84	34,705	1,408	3,231	4,677		23,233	12,421	212	249	57	168	2,926	361	9,797		93,529
	W Africa		10,406		961	33,002	72,638		17,012	10,538	302			4,021	1,909	3,794	868	1,626	2,394	159,471
1995 Total		14,719	58,285	3,428	256,851	305,328	430,794	16,278	176,187	177,515	34,802	82,816	2,631	34,572	7,957	50,745	23,331	126,029	3,085	1,805,353
2000	Australia/N Z				2,817		390	1,965		6,968	710			96		26		5,344		18,316
	Black Sea	148	86			67,415	742		3,912					447				577	159	73,486
	Caribbean	68	24,134	2,872	588	11,435	250,095	4,699	16,987	991	131			4,701	2,216	952		2,178	227	322,274
	China				4,165		70	1,456		2,549	193					107		1,458		9,998
	M E G		17,893		203,139	11,203	108,306	14,242	33,849	189,831	8,738	68,273	694	7,143		79,567	18,080	106,330	721	868,009
	Mexico West		214	258	823		361	3,194	55						61					4,966
	N Africa		82		71	127,405	19,145	61	59,863	282	27			7,555		167		294		214,952
	N America West		61	999	2,094	62	163		61	1,925	97				189	51		2,537		8,239
	Near East		302			47,832	2,070		9,295									178		59,677
	North Sea	5,600	2,397		143	10,195	77,993	794	5,003	2,986	169			158		1,816		1,553	135	108,942
	Others	3,766	4,383	1,000	2,582	5,195	32,998	2,891	27,205	8,863	3,889		79	6,782	2,879	676	232	7,933	394	111,747
	R S Africa				999	391			153	4,526	258		427	56		1,994	263	970		10,037
	R S Asia		27		2,370	553	939	1,300	417	13,922	2,069	15,744	300	56		1,682	124	10,132	646	50,281
	S America West		1,938	1,206	197	87	2,353	7,114	68	1,831				250	3,353					18,397
	S E Asia		51		22,535		2,304	6,532	244	28,310	16,992			360		5,828	61	12,589	64	95,870
	W Africa		14,838		686	28,740	77,533		14,540	31,222	146			5,814	2,415	16,464	2,084	3,738	4,100	202,320
2000 Total		9,582	66,406	6,335	243,209	310,513	575,462	44,248	171,652	294,206	33,419	84,017	1,500	33,418	11,113	109,330	20,844	155,811	6,446	2,177,511
2001	Australia/N Z				1,818		468	2,034		7,168	352			136		31		4,179		16,186
	Black Sea		59		105	78,040	830		3,409	177						139		411		83,170
	Caribbean		26,903	2,335	911	11,071	269,943	4,128	17,581	2,378			117	1,922	1,597	4,265	577	2,052	879	346,659
	China				2,932		194	451		2,896						106		1,562	64	8,205
	M E G	84	15,313	148	198,627	9,481	114,580	14,830	36,978	192,498	9,311	62,976	3,284	6,095		94,775	20,514	102,906	385	882,785
	Mexico West		188	67	619		234	5,455						65	185					6,813
	N Africa	96	2,475		168	131,984	19,871	480	42,420	368	96			4,290	223	1,238	52	1,687		205,448
	N America West		229	550	885			447		924	68			62	206			1,842		5,213
	Near East		2,175			42,707	12,482	397	7,380	117				147				883		66,288
	North Sea	4,913	1,638	98	116	10,282	74,372	137	4,481	4,030			168	247		232		2,109	361	103,184
	Others	3,869	3,782	983	2,290	10,156	30,116	3,404	40,484	8,086	3,383			5,997	2,569	1,361	742	9,231	246	126,699
	R S Africa				1,317	926			175	5,698	186		82			2,079		1,836	56	12,355
	R S Asia	155	268		2,160	808	689	715	1,111	10,854	2,025	23,374	177			3,831	168	10,809	197	57,341
	S America West		2,360	1,386	398		3,923	5,325		1,188				67	1,813	55		403		16,918
	S E Asia				20,734	51	1,873	6,441	518	29,591	21,584			167	248	5,627	237	16,269	124	103,464
	W Africa		10,686	148	900	35,080	83,710	659	21,776	20,088				10,016	1,032	14,183	2,805	5,616	3,176	209,875
2001 Total		9,117	66,076	5,715	233,980	330,586	613,285	44,903	176,313	286,061	37,005	86,350	3,828	29,211	7,873	127,922	25,095	161,795	5,488	2,250,603

Crude-Product.xls/TOTAL TRADE 50.000DWT+ Source: Fearnresearch

WORLD OIL SHIPMENTS BY VESSELS OVER 50,000 DWT THROUGH CANAL.

Detailed matrices 1988, 1990

Figures in '000 DWT

Sum of DWT		TO																
YR	FROM	Baltic	C Am.East	C Am.West	Japan	Medit.Am.East/Gulf	N Am.West	N W Eur.	Oth.F.East	Others	R S Afr.	R S Asia	S Am.East	S Am.West	S Asia	S E Afr.	S E Asia	W Afr.	Grand Total
1988	Australia/N Z																		
	Black Sea		55	892		91	117							851					2006
	Caribbean												57						57
	China		61			61													122
	M E G																		
	Mexico West																		
	N Africa					100	177	92					51						420
	N America West																		
	Near East																		
	North Sea						222												222
	Others		103		326		120							60					609
	R S Africa																		
	R S Asia																		
	S America West		2713	55		4017							60						6845
	S E Asia					35	35												70
	W Africa																		
1988 Total			2932	947	326	4381	494	92					168	911					10351
1990	Australia/N Z																		
	Black Sea																		
	Caribbean		65	2217			1096							464					3842
	China																		
	M E G																		
	Mexico West																		
	N Africa																		
	N America West		63			113													176
	Near East																		
	North Sea																		
	Others			60	401	84			264					60			115		984
	R S Africa																		
	R S Asia																		
	S America West		4721	117		3605							51						8494
	S E Asia						54												54
	W Africa																		
1990 Total			4849	2394	401	3802	1150		264				51	524			115		13550

Crude-Product.xls/VIA PANAMA 50.000DWT+

Source: Fearnresearch

WORLD OIL SHIPMENTS BY VESSELS OVER 50,000 DWT THROUGH CANAL contd.

Detailed matrices 1995, 2000, 2001

Figures in '000 DWT

1990 Total		4849	2394	401	3802	1150	264		51	524	115	13550
1995	Australia/N Z				51							51
	Black Sea											
	Caribbean	59	1999	693	125	1810				2114		6800
	China											
	M E G											
	Mexico West	54										54
	N Africa											
	N America West				64							64
	Near East					61						61
	North Sea											
	Others		57	84	941	59	327	51		58		1577
	R S Africa											
	R S Asia											
	S America West	2959			6133		65		251			9408
	S E Asia				170							170
	W Africa											
1995 Total		3072	2056	777	7484	1930	65	327	51	251	2172	18185
2000	Australia/N Z											
	Black Sea											
	Caribbean		2741	396	62	4631		78	62		2030		10000
	China											
	M E G											
	Mexico West	147			361	62	55					625
	N Africa					61						61
	N America West	61					61					122
	Near East											
	North Sea					727						727
	Others		873		194	132				254	113	1566
	R S Africa											
	R S Asia											
	S America West	1619			1745		68					3554
	S E Asia											
	W Africa								122			
2000 Total		1827	3614	396	2362	5613	184	78	62	122	2284	113	16655
2001	Australia/N Z											
	Black Sea											
	Caribbean	33	2335	66	34	3968		185			1597	60	8278
	China				194								194
	M E G											
	Mexico West	124			234					65			423
	N Africa					480							480
	N America West	65								62			127
	Near East											
	North Sea		98			137							235
	Others	125	838			362		113			127	186	1751
	R S Africa											
	R S Asia											
	S America West	1958			3923								5881
	S E Asia											
	W Africa					61							61
2001 Total		2305	3271	66	4385	5008		298		127	1724	246	17430

Crude-Product.xls/VIA PANAMA 50.000DWT+

Source: Fearnresearch

CRUDE OIL EXPORTS FROM OPEC COUNTRIES TO NON-OECD

1980, 1985, 1990, 1995, 2000

Fig. in '000 b/d

Sources: OPEC/UN

From:	Lat. Am.	E. Europe	M. East	Africa	Asia & Pac ex Jpn	Unspec.
Algeria						
1980	14	9	-	6	1	-
1985	16	6	1	-	-	-
1990	6	1	-	6	-	-
1995	4	10	-	3	-	-
2000	15	9	-	-	-	-
Libya					*incl. Jpn	
1980	132	50	69	2	25	-
1985	7	55	15	6	19	-
1990	-	85	-	5	6	-
1995	-	13	-	25	20	-
2000	-	4	-	15	-	-
Nigeria						
1980	455	-	-	40	7	-
1985	215	-	-	44	1	-
1990	25	-	-	75	1	-
1995	90	-	-	140	160	-
2000	106	3	-	130	379	-
Venezuela						
1980	565	2	-	17	-	125
1985	232	-	-	3	-	-
1990	231	-	-	-	12	-
1995	384	-	-	-	13	-
2000	671	-	-	-	-	18
Indonesia						
1980	87	-	-	-	64	-
1985	39	-	-	-	78	-
1990	-	-	-	-	147	-
1995	-	-	-	-	316	-
2000	-	-	2	-	347	30
S. Arabia						
1980	348	-	270	119	1502	-
1985	165	40	156	52	405	-
1990	164	-	212	90	972	-
1995	146	-	221	96	1822	-
2000	62	-	166	218	1993	-
Kuwait						
1980	89	11	15	12	463	-
1985	-	2	21	1	178	9
1990	1	-	2	7	114	-
1995	22	-	-	85	368	11
2000	-	-	-	25	304	52
UAE						
1980	124	17	37	28	99	-
1985	30	-	6	15	77	-
1990	40	-	10	35	701	-
1995	-	-	-	36	672	-
2000	-	-	-	34	712	-
Qatar						
1980	39	-	-	16	61	-
1985	10	-	-	1	20	-
1990	37	-	-	2	52	-
1995	1	-	-	2	34	-
2000	-	-	-	-	151	52
Iran						
1980	57	10	7	4	65	-
1985	20	95	170	25	161	-
1990	110	160	27	40	228	-
1995	40	175	20	120	634	-
2000	60	110	30	200	681	-

OPEC-exports.xls/Exports

OECD CRUDE IMPORTS. 1975, 1980, 1985, 1990, 1995 and 2000

OECD CRUDE IMPORTS 2000. Figures in '000 tonnes.

INCLUDING PIPELINE AND OVER-LAND

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	65,478	-	80	-	-	-	-	65,558
USA	1,216	-	-	-	1,042	684	-	-	2,942
Mex	1,372	66,577	-	9,774	1,975	-	-	-	79,698
OECD Eur	26,138	28,893	-	174,368	288	712	-	77	230,476
Japan	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-
Australia	-	1,895	-	-	2,490	4,620	-	617	9,622
NZ	-	71	-	-	-	867	1,000	-	1,938
Other OECD	-	-	-	160	-	-	-	-	160
Total OECD	28,726	162,914	-	184,382	5,795	6,883	1,000	694	390,234
Argentina	-	3,156	-	131	-	-	-	183	3,470
Brazil	-	257	-	104	-	-	-	-	361
Colombia	-	15,814	-	-	-	-	-	-	15,814
Ecuador	-	6,520	-	-	180	1,865	-	-	8,565
Netherlands Ant.	-	-	-	99	-	-	-	-	99
Peru	-	217	-	-	-	358	-	-	575
Trinidad & Tobago	-	2,793	-	-	-	-	-	-	2,793
Venezuela	4,801	76,326	-	6,980	-	-	-	-	88,107
Other Latin Am.	-	1,064	-	150	-	-	-	52	1,266
Non OECD Eur.	-	-	-	229	-	-	-	-	229
FSU	-	349	-	119,233	-	1,470	-	-	121,052
MEG	5,227	124,761	-	171,166	181,090	92,641	3,969	2,756	581,610
China	-	1,683	-	-	5,137	526	131	-	7,477
Oth.Asia	-	4,926	-	-	15,762	8,416	14,314	672	44,090
Africa	4,498	76,428	-	109,991	2,271	8,476	722	125	202,511
Others	2,295	6,853	-	12,139	-	1,205	-	-	22,492
Total	45,547	484,061	-	604,604	210,235	121,840	20,136	4,482	1,490,745

OECD-Statistics.xls/Imports-2000

OECD CRUDE IMPORTS 1995

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	52,391	-	-	-	-	-	-	52,391
USA	49	-	-	-	-	-	-	-	49
Mex	590	53,384	-	7,246	3,818	-	-	-	65,038
OECD Eur	5,349	31,093	-	151,601	-	-	-	-	188,043
Japan	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-
Australia	-	708	-	-	1,717	670	-	745	3,840
NZ	-	-	-	-	-	466	873	-	1,339
Other OECD	-	-	-	-	-	-	-	-	-
Total OECD	5,988	137,576	-	158,847	5,535	1,136	873	745	310,700
Argentina	28	2,464	-	344	-	-	-	-	2,836
Brazil	-	-	-	-	-	-	-	-	-
Colombia	33	11,215	-	-	-	-	-	-	11,248
Ecuador	-	5,571	-	-	-	2,504	-	-	8,075
Netherlands Ant.	-	-	-	-	-	-	-	-	-
Peru	-	1,077	-	-	-	-	-	-	1,077
Trinidad & Tobago	-	3,100	-	-	-	-	-	-	3,100
Venezuela	663	61,860	-	9,923	84	-	-	-	72,530
Other Latin Am.	-	768	-	120	-	-	-	-	888
Non OECD Eur.	-	-	-	6	-	-	-	-	6
FSU	32	688	-	58,712	9	334	-	-	59,775
MEG	-	80,022	-	179,455	176,635	66,052	5,852	2,040	510,056
China	12	2,659	-	-	11,586	1,867	-	-	16,124
Oth.Asia	-	3,769	-	142	29,119	7,758	6,657	953	48,398
Africa	185	73,436	-	120,843	1,296	5,145	33	-	200,938
Others	180	-	-	26,248	-	-	-	-	26,428
Total	7,121	384,205	-	554,640	224,264	84,796	13,415	3,738	1,272,179

OECD-Statistics.xls/Imports-1995

OECD CRUDE IMPORTS 1990. Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	32,781	N/A	-	67	-	-	-	32,848
USA	923	-	N/A	2	-	-	-	-	925
Mex	637	36,631	N/A	17,211	7,262	-	-	-	61,741
OECD Eur	16,165	15,082	N/A	91,645	-	-	-	-	122,892
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	98	2,200	N/A	105	1,033	-	-	98	3,534
NZ	-	-	N/A	-	-	-	638	-	638
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	17,823	86,694	N/A	108,963	8,362	-	638	98	222,578
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	8,167	N/A	146	-	-	-	-	8,313
Ecuador	-	2,663	N/A	-	-	-	-	-	2,663
Netherlands Ant.	-	-	N/A	-	-	-	-	-	-
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	3,816	N/A	-	-	-	-	-	3,816
Venezuela	1,517	37,492	N/A	9,350	394	-	-	-	48,753
Other Latin Am.	-	794	N/A	156	-	-	-	-	950
Non OECD Eur.	-	-	N/A	-	-	-	-	-	-
FSU	105	40	N/A	55,732	55	-	-	-	55,932
MEG	3,815	98,724	N/A	175,166	135,271	-	3,992	2,448	419,416
China	-	3,887	N/A	-	13,408	-	-	-	17,295
Oth.Asia	-	7,747	N/A	296	31,313	-	1,409	514	41,279
Africa	2,810	64,141	N/A	133,477	881	-	-	-	201,309
Others	440	-	N/A	(55)	-	-	-	92	477
Total	26,510	314,165	N/A	483,231	189,684	-	6,039	3,152	1,022,781

OECD-Statistics.xls/Imports-1990

OECD CRUDE IMPORTS 1985. Figures in '000 tonnes

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	25,238	N/A	52	-	-	-	-	25,290
USA	1,177	-	N/A	-	-	-	-	-	1,177
Mex	1,640	38,060	N/A	19,275	7,033	-	-	-	66,008
OECD Eur	4,923	15,504	N/A	93,717	-	-	-	-	114,144
Japan	-	228	N/A	-	-	-	-	-	228
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	2,159	N/A	-	1,746	-	-	68	3,973
NZ	-	-	N/A	-	-	-	55	-	55
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	7,740	81,189	N/A	113,044	8,779	-	55	68	210,875
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	4,917	N/A	-	86	-	-	-	5,003
Netherlands Ant.	-	-	N/A	234	-	-	-	-	234
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	4,896	N/A	-	-	-	-	-	4,896
Venezuela	3,322	17,469	N/A	11,172	511	-	-	-	32,474
Other Latin Am.	-	1,330	N/A	429	-	-	-	-	1,759
Non OECD Eur.	-	-	N/A	21	-	-	-	-	21
FSU	-	1	N/A	29,430	131	-	-	-	29,562
MEG	811	14,565	N/A	145,437	104,376	-	2,275	426	267,890
China	-	4,104	N/A	923	10,954	-	48	-	16,029
Oth.Asia	-	16,208	N/A	3,840	26,868	-	1,114	377	48,407
Africa	1,981	32,186	N/A	88,587	13,097	-	-	-	135,851
Others	337	-	N/A	112	-	-	-	4	453
Total	14,191	176,865	N/A	393,229	164,802	-	3,492	875	753,454

OECD-Statistics.xls/Imports-1985

OECD CRUDE IMPORTS 1980. Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	10,466	N/A	-	-	-	-	-	10,466
USA	4,434	-	N/A	90	-	-	-	-	4,524
Mex	-	27,207	N/A	7,069	1,256	-	-	-	35,532
OECD Eur	-	-	N/A	-	-	-	-	-	-
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	-	-
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	16,324	N/A	40,803	-	-	-	-	57,127
Total OECD	4,434	53,997	N/A	47,962	1,256	-	-	-	107,649
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	1,055	N/A	39	834	-	-	-	1,928
Netherlands Ant.	-	-	N/A	124	-	-	-	-	124
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	6,125	N/A	-	-	-	-	-	6,125
Venezuela	8,159	10,056	N/A	12,472	1,875	-	-	-	32,562
Other Latin Am.	-	2,369	N/A	1	-	-	-	-	2,370
Non OECD Eur.	-	-	N/A	191	-	-	-	-	191
FSU	-	-	N/A	29,573	89	-	-	-	29,662
MEG	12,774	84,243	N/A	348,500	158,687	-	7,783	1,524	613,511
China	-	-	N/A	155	7,839	-	7	-	8,001
Oth.Asia	-	21,695	N/A	247	41,966	-	1,613	401	65,922
Africa	401	105,712	N/A	120,438	1,964	-	-	-	228,515
Others	1,537	-	N/A	122	1,057	-	-	64	2,780
Total	27,305	285,252	N/A	559,824	215,567	-	9,403	1,989	1,099,340

OECD-Statistics.xls/Imports-1980

OECD CRUDE IMPORTS 1975. Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	29,546	N/A	-	-	-	-	-	29,546
USA	1	-	N/A	-	-	-	-	-	1
Mex	-	3,459	N/A	-	-	-	-	-	3,459
OECD Eur	-	833	N/A	6,729	-	-	-	-	7,562
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	65	-	-	-	65
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1	33,838	N/A	6,729	65	-	-	-	40,633
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	44	2,788	N/A	-	-	-	-	-	2,832
Netherlands Ant.	-	-	N/A	-	-	-	-	-	-
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	80	5,675	N/A	-	-	-	-	-	5,755
Venezuela	13,303	19,442	N/A	9,194	253	-	-	-	42,192
Other Latin Am.	129	262	N/A	-	-	-	-	-	391
Non OECD Eur.	-	-	N/A	16	-	-	-	-	16
FSU	-	-	N/A	17,984	69	-	-	-	18,053
MEG	26,092	55,365	N/A	426,014	175,791	-	7,632	1,897	692,791
China	-	18,902	N/A	-	7,871	-	-	-	26,773
Oth.Asia	-	-	N/A	-	34,165	-	52	67	34,284
Africa	1,514	65,694	N/A	117,230	6,485	-	-	-	190,923
Others	-	-	N/A	1,503	-	-	-	-	1,503
Total	41,163	201,966	N/A	578,670	224,699	-	7,684	1,964	1,056,146

OECD-Statistics.xls/Imports-1975

OECD CRUDE EXPORTS. *Matrices 1985, 1990, 1995, 2000*

OECD does not provide figures for "Crude oil Exports" until 1985. Figures in '000 tonnes

OECD Crude Exports 2000 **INCLUDING PIPELINE AND OVER-LAND**

FROM: TO	OECD Eu	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	178,985	-	#####	134	-	43,040	1,653	163	224	1,893	783	8	251	-	1,291	245,610
Can	-	-	-	-	-	58,200	-	-	-	-	-	-	-	-	-	58,200
USA	-	-	1,027	954	2	-	568	-	-	2	-	-	-	-	-	2,553
Mex	10,120	-	1,181	1,804	-	68,692	-	-	8,136	264	-	-	-	259	-	90,456
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Australia	-	-	-	2,264	-	2,752	3,767	-	83	5,076	1,339	-	-	79	-	15,360
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,175	1,175
Total	189,105	-	#####	5,156	2	172,684	5,988	163	8,443	7,235	2,122	8	251	338	2,466	413,354

OECD Crude Exports 1995

FROM: TO	OECD Eur	Australia	Can	Japan	Mex	USA	Oth. OECD	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	155,510	-	13,298	-	-	31,650	3,170	1,591	208	267	211	2,272	-	626	1,959	210,762
Can	56	-	-	-	-	44,905	-	-	-	-	-	-	-	-	8	44,969
USA	-	-	33	-	-	-	-	-	-	-	-	-	-	-	-	33
Mex	7,330	-	631	3,969	-	56,431	-	-	2,420	-	-	-	-	-	-	70,781
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	167	-	-	2,784	-	1,355	976	-	-	3,303	31	-	-	88	-	8,704
NZ	-	426	-	-	-	136	-	-	-	-	-	-	-	-	394	956
Total	163,063	426	13,962	6,753	-	134,477	4,146	1,591	2,628	3,570	242	2,272	-	714	2,361	336,205

OECD Crude Exports 1990

FROM: TO	OECD Eur	Australia	Can	Japan	Mex	USA	Oth. OECD	Afr.	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	103,306	-	1,088	-	-	20,649	-	-	81	-	-	1,203	-	415	-	126,742
Can	-	-	-	55	-	26,700	-	-	-	29	-	-	-	-	274	27,058
USA	-	-	556	-	-	-	-	-	-	54	-	-	-	-	-	610
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	67	-	-	463	-	2,221	135	-	78	2,346	38	-	-	-	-	5,348
NZ	-	198	-	-	-	-	-	-	-	-	-	-	-	-	682	880
Total	103,373	198	1,644	518	-	49,570	135	-	159	2,429	38	1,203	-	415	956	160,638

OECD Crude Exports 1985

FROM: TO	OECD Eur	Austr.	NZ	Can	Japan	Mex	USA	Oth. OECD	Afr.	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	92,041	-	-	4,618	-	-	15,448	-	151	312	-	-	88	127	838	19	113,642
Can	-	-	-	-	-	-	21,191	-	-	-	-	-	-	-	-	-	21,191
USA	-	-	-	1,017	-	-	-	-	-	-	-	-	-	-	-	-	1,017
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	93	-	703	-	2,611	-	-	-	939	-	-	-	58	-	4,404
NZ	-	238	-	-	-	-	-	-	-	-	-	-	-	-	-	65	303
Total	92,041	238	93	5,635	703	-	39,250	-	151	312	939	-	88	127	896	84	140,557

WORLD IMPORTS OF REFINED OIL PRODUCTS 1980-2000

Fig. in million b/d

Sources: OPEC/UN

	1980	1985	1990	1995	2000
N. AMERICA	1627	1584	1849	1241	1599
USA	1581	1500	1700	1100	1435
Canada	41	81	144	138	160
LAT. AMERICA	591	609	730	1190	1583
Brazil	42	36	71	252	308
Cuba	85	104	93	112	137
Mexico	15	50	109	138	442
Neth. Antilles	39	32	34	33	34
Panama	45	42	4	26	20
Puerto Rico	122	105	78	92	99
Others	244	240	341	538	542
W. EUROPE	3607	4038	4359	4391	5132
E. EUROPE	162	154	181	283	199
M. EAST	198	155	329	335	338
AFRICA	327	272	312	388	541
ASIA & PACIFIC	1631	1925	3413	4654	5242
Japan	669	941	1436	1219	1243
China	3	17	87	364	522
H. Kong	127	101	165	336	413
India	136	90	154	390	449
Singapore	108	195	346	528	646
WORLD	8142	8737	11172	12483	14634

Notes: Fig. include all types of products, including LPG and petcoke, overland and in pipelines.

Refined-Oil-Trade.xls/Imports

WORLD EXPORTS OF REFINED OIL PRODUCTS 1980-2000

Fig. in million b/d

Sources: OPEC/UN

	1980	1985	1990	1995	2000
N.AMERICA	514	818	1072	1147	1358
USA	237	546	712	788	940
Canada	278	272	360	359	418
LAT. AMERICA	2030	1473	1651	1777	2030
Argentina	31	64	91	75	102
Ecuador	22	13	25	31	35
Mexico	47	82	100	116	85
Neth. Antilles	466	130	205	219	233
Trin. & Tobago	183	68	88	94	96
Venezuela	565	531	712	688	785
Virgin Isl.	362	193	230	334	386
Others	356	392	305	221	308
W. EUROPE	2646	1533	2510	3937	4404
E. EUROPE	1360	1372	1170	1045	1330
FSU	1063	1063	975	789	1086
M. EAST	1252	1533	2510	3023	3074
AFRICA	403	539	828	876	1150
ASIA & PACIFIC	873	1152	1608	2348	3001
Singapore	476	534	744	627	958
China	84	103	125	107	292
Indonesia	163	150	240	294	189
Malaysia	6	40	67	85	145
WORLD	9078	9878	12477	14153	16344

Notes: Fig. include all types of products, including LPG and petcoke, overland and in pipelines.

Refined-Oil-Trade.xls/Exports

OIL PRODUCTS EXPORTS FROM OPEC COUNTRIES TO NON-OECD 1980-2000

Fig. in '000 b/d

Sources: OPEC/UN

From:	Lat. Am.	E. Europe	M. East	Africa	Asia & Pac ex Jpn	Unspec.
Algeria						
1980	1.8	-	-	1.9	4.9	6.1
1985	-	-	-	-	8.0	-
1990	19.0	-	-	8.3	10.0	-
1995	-	-	0.9	9.8	33.4	-
2000	-	-	0.4	21.2	19.2	-
Venezuela						
1980	106.5	-	-	2.0	5.8	1.7
1985	97.9	-	-	-	1.2	-
1990	91.2	-	-	3.5	6.4	-
1995	241.9	-	-	-	6.2	-
2000	301.3	-	-	-	5.1	-
Indonesia						
1980	-	-	-	-	55.6	-
1985	-	-	-	-	17.0	-
1990	-	-	-	-	21.1	-
1995	-	-	0.6	-	107.2	-
2000	-	-	-	-	111.0	-
S. Arabia					*incl. Jpn	
1980	6.3	-	5.1	1.1	281.1	-
1985	n.a.	-	n.a.	n.a.	299.8	-
1990	17.6	-	94.9	51.3	782.3	-
1995	47.4	-	145.7	40.8	929.8	-
2000	56.3	-	119.9	108.7	844.0	-
Kuwait						
1980	1.9	-	32.4	6.8	143.4	7.3
1985	-	-	22.2	13.7	126.0	42.8
1990	n.a	-	n.a	n.a	n.a	n.a
1995	n.a	-	n.a	n.a	n.a	n.a
2000	n.a	-	n.a	n.a	n.a	n.a

Note: OPEC Annual Statistical Bulletin does not provide similar figures for other OPEC member countries.

Refined-Oil-Trade.xls/OPEC-Exports

OECD OIL PRODUCTS IMPORTS. Matrices for total and by type 1975-2000

OECD Imports 2000 **Oil products excl. Petcoke and LPG** ***Figures in '000 tonnes***

	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	10,312	-	369	-	-	-	-	10,681
USA	3,796	-	10,466	3,676	644	414	55	2	19,053
Mex	-	2,446	-	19	114	119	24	-	2,722
OECD Eur	1,367	7,473	202	138,237	40	-	2	-	147,321
Japan	50	563	-	15	-	627	54	-	1,309
S.Korea	186	2,174	-	86	11,228	-	245	-	13,919
Australia	-	333	-	-	330	68	-	725	1,456
NZ	-	-	-	-	251	33	57	-	341
Other OECD	162	2,507	-	3,123	-	-	-	-	5,792
Argentina	-	1,166	-	30	-	-	-	29	1,225
Brazil	101	1,119	-	291	-	-	-	-	1,511
Colombia	36	1,125	235	12	-	-	-	-	1,408
Ecuador	-	107	190	-	-	-	-	-	297
Netherlands Ant.	19	2,459	94	176	-	-	-	-	2,748
Peru	-	193	198	9	-	-	-	-	400
Trinidad & Tobago	-	1,060	-	558	-	-	-	-	1,618
Venezuela	31	12,576	-	981	4	-	-	-	13,592
Other Latin Am.	-	165	397	605	-	-	-	-	1,167
Non OECD Eur.	-	53	-	1,247	-	-	-	-	1,300
FSU	68	3,461	-	30,480	221	524	-	-	34,754
MEG	251	1,652	461	6,616	10,392	9,479	91	172	29,114
China	-	444	-	29	560	439	161	-	1,633
Oth.Asia	88	2,062	34	445	5,794	6,109	1,411	107	16,050
Africa	194	8,658	-	13,180	512	362	-	-	22,906
Others	119	11,552	-	17,913	1,518	100	757	-	31,959
Total	6,468	73,660	12,277	218,097	31,608	18,274	2,857	1,035	364,276

OECD Imports 2000 **Naphtha** ***Figures in '000 tonnes***

	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	132	-	15	-	-	-	-	147
USA	5	-	-	453	591	256	-	-	1,305
Mex	-	1,411	-	-	114	119	-	-	1,644
OECD Eur	-	589	-	16,274	38	-	-	-	16,901
Japan	-	4	-	5	-	-	-	-	9
S.Korea	-	28	-	55	6,426	-	-	-	6,509
Australia	-	-	-	-	306	68	-	-	374
NZ	-	-	-	-	251	33	-	-	284
Other OECD	-	-	-	175	-	-	-	-	175
Argentina	-	6	-	13	-	-	-	-	19
Brazil	-	8	-	42	-	-	-	-	50
Colombia	-	88	-	-	-	-	-	-	88
Ecuador	-	19	-	-	-	-	-	-	19
Netherlands Ant.	-	648	-	-	-	-	-	-	648
Peru	-	26	-	-	-	-	-	-	26
Trinidad & Tobago	-	147	-	-	-	-	-	-	147
Venezuela	-	509	-	-	-	-	-	-	509
Other Latin Am.	-	38	-	-	-	-	-	-	38
Non OECD Eur.	-	-	-	125	-	-	-	-	125
FSU	-	110	-	1,569	-	520	-	-	2,199
MEG	-	305	-	1,331	10,236	9,029	-	-	20,901
China	-	-	-	3	559	256	-	-	818
Oth.Asia	-	150	-	83	4,021	2,394	-	-	6,648
Africa	-	580	-	5,610	315	362	-	-	6,867
Others	-	1,250	-	2,121	-	-	-	-	3,371
Total	5	6,048	-	27,874	22,857	13,037	-	-	69,821

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OIL PRODUCTS IMPORTS 2000 contd.

OECD Imports 2000 **Gasoline** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	3,784	-	1	-	-	-	-	3,785
USA	317	-	4,788	90	28	-	-	-	5,223
Mex	-	254	-	-	-	-	-	-	254
OECD Eur	567	5,518	143	29,658	-	-	-	-	35,886
Japan	-	68	-	-	-	44	-	-	112
S.Korea	-	77	-	-	542	-	9	-	628
Australia	-	37	-	-	24	-	-	598	659
NZ	-	-	-	-	-	-	-	-	-
Other OECD	-	308	-	1,112	-	-	-	-	1,420
Argentina	-	1,092	-	-	-	-	-	22	1,114
Brazil	101	495	-	-	-	-	-	-	596
Colombia	-	210	-	-	-	-	-	-	210
Ecuador	-	58	-	-	-	-	-	-	58
Netherlands Ant.	-	65	-	12	-	-	-	-	77
Peru	-	13	-	-	-	-	-	-	13
Trinidad & Tobago	-	212	-	2	-	-	-	-	214
Venezuela	-	3,796	-	-	-	-	-	-	3,796
Other Latin Am.	-	58	-	168	-	-	-	-	226
Non OECD Eur.	-	53	-	169	-	-	-	-	222
FSU	-	1,324	-	1,034	-	-	-	-	2,358
MEG	7	474	461	205	-	-	31	123	1,301
China	-	412	-	-	-	7	152	-	571
Oth.Asia	-	388	34	-	586	34	358	17	1,417
Africa	-	147	-	426	-	-	-	-	573
Others	-	3,862	-	4,211	-	-	-	-	8,073
Total	992	22,705	5,426	37,088	1,180	85	550	760	68,786

OECD Imports 2000 **Kerosene** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	162	-	-	-	-	-	-	162
USA	687	-	-	103	-	79	-	-	869
Mex	-	24	-	-	-	-	-	-	24
OECD Eur	13	-	-	9,133	-	-	-	-	9,146
Japan	50	482	-	-	-	122	-	-	654
S.Korea	186	1,629	-	-	1,598	-	-	-	3,413
Australia	-	18	-	-	-	-	-	80	98
NZ	-	-	-	-	-	-	-	-	-
Other OECD	-	-	-	57	-	-	-	-	57
Argentina	-	-	-	-	-	-	-	-	-
Brazil	-	-	-	-	-	-	-	-	-
Colombia	-	87	-	12	-	-	-	-	99
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	19	499	-	2	-	-	-	-	520
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	28	-	7	-	-	-	-	35
Venezuela	31	1,364	-	384	-	-	-	-	1,779
Other Latin Am.	-	-	-	71	-	-	-	-	71
Non OECD Eur.	-	-	-	40	-	-	-	-	40
FSU	-	-	-	1,047	-	-	-	-	1,047
MEG	-	546	-	3,471	150	450	-	11	4,628
China	-	-	-	-	-	166	-	-	166
Oth.Asia	36	550	-	81	385	182	132	11	1,377
Africa	73	64	-	1,412	197	-	-	-	1,746
Others	-	935	-	2,372	1,515	-	-	-	4,822
Total	1,095	6,388	-	18,192	3,845	999	132	102	30,753

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OIL PRODUCTS IMPORTS 2000 contd.

OECD Imports 2000 **Gas / Diesel** ***Figures in '000 tonnes***

	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	4,332	-	277	-	-	-	-	4,609
USA	725	-	-	595	-	-	-	-	1,320
Mex	-	-	-	-	-	-	-	-	-
OECD Eur	81	462	-	51,449	-	-	-	-	51,992
Japan	-	-	-	-	-	301	54	-	355
S.Korea	-	192	-	20	2,074	-	236	-	2,522
Australia	-	-	-	-	-	-	-	30	30
NZ	-	-	-	-	-	-	1	-	1
Other OECD	-	-	-	1,779	-	-	-	-	1,779
Argentina	-	7	-	-	-	-	-	7	14
Brazil	-	-	-	-	-	-	-	-	-
Colombia	-	-	-	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	397	-	6	-	-	-	-	403
Peru	-	41	-	9	-	-	-	-	50
Trinidad & Tobago	-	28	-	43	-	-	-	-	71
Venezuela	-	3,025	-	1	-	-	-	-	3,026
Other Latin Am.	-	-	-	46	-	-	-	-	46
Non OECD Eur.	-	-	-	669	-	-	-	-	669
FSU	-	1,169	-	14,964	221	4	-	-	16,358
MEG	-	114	-	440	6	-	8	38	606
China	-	-	-	-	-	10	5	-	15
Oth.Asia	52	300	-	177	33	74	834	72	1,542
Africa	-	176	-	2,336	-	-	-	-	2,512
Others	-	834	-	4,385	-	-	1	-	5,220
Total	858	11,077	-	77,196	2,334	389	1,139	147	93,140

OECD Imports 2000 **Fuel Oil** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,053	-	74	-	-	-	-	1,127
USA	1,472	-	5,678	690	10	79	-	-	7,929
Mex	-	490	-	11	-	-	-	-	501
OECD Eur	-	-	59	21,680	-	-	-	-	21,739
Japan	-	-	-	-	-	159	-	-	159
S.Korea	-	-	-	-	569	-	-	-	569
Australia	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-
Other OECD	162	2,199	-	-	-	-	-	-	2,361
Argentina	-	61	-	-	-	-	-	-	61
Brazil	-	522	-	240	-	-	-	-	762
Colombia	36	701	235	-	-	-	-	-	972
Ecuador	-	30	190	-	-	-	-	-	220
Netherlands Ant.	-	597	94	146	-	-	-	-	837
Peru	-	113	198	-	-	-	-	-	311
Trinidad & Tobago	-	501	-	506	-	-	-	-	1,007
Venezuela	-	2,504	-	580	-	-	-	-	3,084
Other Latin Am.	-	69	397	169	-	-	-	-	635
Non OECD Eur.	-	-	-	218	-	-	-	-	218
FSU	64	673	-	10,774	-	-	-	-	11,511
MEG	-	42	-	1,106	-	-	-	-	1,148
China	-	-	-	-	-	-	-	-	-
Oth.Asia	-	550	-	43	765	3,423	-	-	4,781
Africa	76	3,549	-	2,908	-	-	-	-	6,533
Others	-	4,671	-	2,758	-	100	756	-	8,285
Total	1,810	18,325	6,851	41,903	1,344	3,761	756	-	74,750

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OIL PRODUCTS IMPORTS 2000 contd.

OECD Imports 2000 **Other Petroleum Oil Products** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	849	-	2	-	-	-	-	851
USA	590	-	-	1,745	15	-	55	2	2,407
Mex	-	267	-	8	-	-	24	-	299
OECD Eur	706	904	-	10,043	2	-	2	-	11,657
Japan	-	9	-	10	-	1	-	-	20
S.Korea	-	248	-	11	19	-	-	-	278
Australia	-	278	-	-	-	-	-	17	295
NZ	-	-	-	-	-	-	56	-	56
Other OECD	-	-	-	-	-	-	-	-	-
Argentina	-	-	-	17	-	-	-	-	17
Brazil	-	94	-	9	-	-	-	-	103
Colombia	-	39	-	-	-	-	-	-	39
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	253	-	10	-	-	-	-	263
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	144	-	-	-	-	-	-	144
Venezuela	-	1,378	-	16	4	-	-	-	1,398
Other Latin Am.	-	-	-	151	-	-	-	-	151
Non OECD Eur.	-	-	-	26	-	-	-	-	26
FSU	4	185	-	1,092	-	-	-	-	1,281
MEG	244	171	-	63	-	-	52	-	530
China	-	32	-	26	1	-	4	-	63
Oth.Asia	-	124	-	61	4	2	87	7	285
Africa	45	4,142	-	488	-	-	-	-	4,675
Others	119	-	-	2,066	3	-	-	-	2,188
Total	1,708	9,117	-	15,844	48	3	280	26	27,026

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OIL PRODUCTS IMPORTS 1995

OECD Imports 1995 **Oil products excl. Petcoke and LPG**

Figures in '000 tonnes

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	8,119	-	253	-	136	1	-	8,509
USA	3,301	-	4,055	4,464	937	2,549	115	24	15,445
Mex	-	1,352	-	99	149	120	-	-	1,720
OECD Eur	1,337	3,978	-	95,919	37	381	84	52	101,788
Japan	2	15	-	121	-	2,516	6	-	2,660
S.Korea	-	126	-	26	4,897	-	58	-	5,107
Australia	-	-	-	-	420	-	-	545	965
NZ	-	-	-	-	-	-	40	-	40
Other OECD	30	376	-	26,582	1	38	-	-	27,027
Total OECD	4,670	13,966	4,055	127,464	6,441	5,740	304	621	163,261
Argentina	28	65	-	430	-	-	-	-	523
Brazil	-	258	-	174	-	-	-	-	432
Colombia	33	876	96	97	-	-	-	-	1,102
Ecuador	-	56	374	-	-	-	-	-	430
Netherlands Ant.	-	1,243	119	522	13	-	-	-	1,897
Peru	-	103	-	-	-	-	-	-	103
Trinidad & Tobago	-	683	-	10	-	-	-	-	693
Venezuela	663	13,252	169	2,768	30	-	-	-	16,882
Other Latin Am.	-	162	29	1,360	-	-	-	-	1,551
Non OECD Eur.	-	-	-	2,105	-	-	-	-	2,105
FSU	32	233	-	19,163	438	-	-	-	19,866
MEG	-	936	-	3,372	13,442	7,600	167	27	25,544
China	1	-	-	9	48	255	141	-	454
Oth.Asia	-	1,385	-	1,491	9,531	3,601	881	148	17,037
Africa	185	7,788	-	15,693	712	1,897	-	-	26,275
Others	180	-	187	11,124	-	-	903	13	12,407
Total	5,792	41,006	5,029	185,782	30,655	19,093	2,396	809	290,562

OECD Imports 1995 **Naphtha**

Figures in '000 tonnes

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	130	-	45	-	-	-	-	175
USA	10	-	-	296	450	290	-	-	1,046
Mex	-	36	-	34	-	-	-	-	70
OECD Eur	-	134	-	11,626	-	-	-	-	11,760
Japan	-	8	-	33	-	68	-	-	109
S.Korea	-	56	-	25	2,260	-	-	-	2,341
Australia	-	-	-	-	420	-	-	-	420
NZ	-	-	-	-	-	-	-	-	-
Other OECD	-	5	-	119	-	-	-	-	124
Total OECD	10	369	-	12,178	3,130	358	-	-	16,045
Argentina	-	-	-	400	-	-	-	-	400
Brazil	-	4	-	138	-	-	-	-	142
Colombia	-	-	-	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	27	-	2	-	-	-	-	29
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	16	-	10	-	-	-	-	26
Venezuela	-	301	-	156	-	-	-	-	457
Other Latin Am.	-	-	-	-	-	-	-	-	-
Non OECD Eur.	-	-	-	378	-	-	-	-	378
FSU	-	-	-	368	-	-	-	-	368
MEG	-	18	-	1,626	11,852	4,792	-	-	18,288
China	-	-	-	-	-	-	-	-	-
Oth.Asia	-	3	-	440	4,936	2,786	-	-	8,165
Africa	-	26	-	7,587	265	136	-	-	8,014
Others	-	-	-	2,086	-	-	-	-	2,086
Total	10	764	-	25,369	20,183	8,072	-	-	54,398

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OIL PRODUCTS IMPORTS 1995 contd.

OECD Imports 1995 **Gasoline** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	2,849	-	6	-	-	-	-	2,855
USA	155	-	3,044	25	57	-	31	23	3,335
Mex	-	414	-	-	-	-	-	-	414
OECD Eur	768	3,024	-	26,056	27	-	67	52	29,994
Japan	-	-	-	3	-	-	-	-	3
S.Korea	-	-	-	-	32	-	-	-	32
Australia	-	-	-	-	-	-	-	375	375
NZ	-	-	-	-	-	-	-	-	-
Other OECD	30	371	-	404	-	-	-	-	805
Total OECD	953	6,658	3,044	26,494	116	-	98	450	37,813
Argentina	28	-	-	27	-	-	-	-	55
Brazil	-	206	-	2	-	-	-	-	208
Colombia	-	-	-	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	18	22	5	-	-	-	-	45
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	94	-	-	-	-	-	-	94
Venezuela	51	1,867	121	17	-	-	-	-	2,056
Other Latin Am.	-	-	-	-	-	-	-	-	-
Non OECD Eur.	-	-	-	258	-	-	-	-	258
FSU	-	-	-	65	-	-	-	-	65
MEG	-	400	-	53	248	1	37	19	758
China	-	-	-	-	-	-	107	-	107
Oth.Asia	-	199	-	32	646	-	200	87	1,164
Africa	-	144	-	491	68	-	-	-	703
Others	-	-	-	3,267	-	-	-	-	3,267
Total	1,032	9,586	3,187	30,711	1,078	1	442	556	46,593

OECD Imports 1995 **Kerosene** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	63	-	-	-	-	-	-	63
USA	608	-	-	6	265	-	-	-	879
Mex	-	285	-	-	116	31	-	-	432
OECD Eur	29	-	-	7,331	-	-	-	-	7,360
Japan	2	-	-	-	-	346	-	-	348
S.Korea	-	68	-	1	872	-	-	-	941
Australia	-	-	-	-	-	-	-	41	41
NZ	-	-	-	-	-	-	-	-	-
Other OECD	-	-	-	600	-	38	-	-	638
Total OECD	639	416	-	7,938	1,253	415	-	41	10,702
Argentina	-	-	-	-	-	-	-	-	-
Brazil	-	4	-	-	-	-	-	-	4
Colombia	-	3	-	-	-	-	-	-	3
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	476	-	30	13	-	-	-	519
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-	-	-	-	-
Venezuela	-	2,114	-	124	28	-	-	-	2,266
Other Latin Am.	-	-	-	-	-	-	-	-	-
Non OECD Eur.	-	-	-	3	-	-	-	-	3
FSU	-	-	-	526	-	-	-	-	526
MEG	-	205	-	215	1,342	1,897	-	8	3,667
China	-	-	-	-	25	39	-	-	64
Oth.Asia	-	288	-	4	1,457	401	183	17	2,350
Africa	-	-	-	683	-	226	-	-	909
Others	-	-	-	-	-	-	-	-	-
Total	639	3,506	-	10,123	4,118	3,016	183	66	21,013

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OIL PRODUCTS IMPORTS 1995 contd.

OECD Imports 1995 **Gas / Diesel**

Figures in '000 tonnes

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	3,090	-	93	-	64	-	-	3,247
USA	610	-	-	322	41	1,154	35	-	2,162
Mex	-	6	-	-	33	89	-	-	128
OECD Eur	75	148	-	43,416	-	280	-	-	43,919
Japan	-	-	-	-	-	818	-	-	818
S.Korea	-	2	-	-	1,116	-	55	-	1,173
Australia	-	-	-	-	-	-	-	49	49
NZ	-	-	-	-	-	-	32	-	32
Other OECD	-	-	-	536	-	-	-	-	536
Total OECD	685	3,246	-	44,367	1,190	2,405	122	49	52,064
Argentina	-	-	-	-	-	-	-	-	-
Brazil	-	-	-	6	-	-	-	-	6
Colombia	-	-	-	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	10	-	8	-	-	-	-	18
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	59	-	-	-	-	-	-	59
Venezuela	-	3,452	-	25	-	-	-	-	3,477
Other Latin Am.	-	-	-	59	-	-	-	-	59
Non OECD Eur.	-	-	-	1,182	-	-	-	-	1,182
FSU	-	174	-	11,213	416	-	-	-	11,803
MEG	-	110	-	564	-	869	24	-	1,567
China	-	-	-	-	23	216	30	-	269
Oth.Asia	-	355	-	5	71	136	468	35	1,070
Africa	-	425	-	2,163	379	689	-	-	3,656
Others	-	-	-	2,683	-	-	4	-	2,687
Total	685	7,831	-	62,275	2,079	4,315	648	84	77,917

OECD Imports 1995 **Fuel Oil**

Figures in '000 tonnes

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	987	-	60	-	72	-	-	1,119
USA	1,431	-	1,011	1,833	82	1,105	-	-	5,462
Mex	-	114	-	64	-	-	-	-	178
OECD Eur	59	231	-	-	-	101	-	-	391
Japan	-	-	-	78	-	1,284	-	-	1,362
S.Korea	-	-	-	-	612	-	-	-	612
Australia	-	-	-	-	-	-	-	1	1
NZ	-	-	-	-	-	-	-	-	-
Other OECD	-	-	-	24,803	-	-	-	-	24,803
Total OECD	1,490	1,332	1,011	26,838	694	2,562	-	1	33,928
Argentina	-	65	-	1	-	-	-	-	66
Brazil	-	33	-	-	-	-	-	-	33
Colombia	33	873	96	97	-	-	-	-	1,099
Ecuador	-	56	374	-	-	-	-	-	430
Netherlands Ant.	-	326	97	460	-	-	-	-	883
Peru	-	103	-	-	-	-	-	-	103
Trinidad & Tobago	-	514	-	-	-	-	-	-	514
Venezuela	270	4,258	48	2,196	-	-	-	-	6,772
Other Latin Am.	-	162	29	1,301	-	-	-	-	1,492
Non OECD Eur.	-	-	-	233	-	-	-	-	233
FSU	-	-	-	6,532	22	-	-	-	6,554
MEG	-	-	-	908	-	41	-	-	949
China	-	-	-	-	-	-	-	-	-
Oth.Asia	-	536	-	987	2,409	278	-	-	4,210
Africa	-	1,606	-	4,711	-	846	-	-	7,163
Others	-	-	187	1,798	-	-	899	1	2,885
Total	1,793	9,864	1,842	46,062	3,125	3,727	899	2	67,314

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OIL PRODUCTS IMPORTS 1995 contd.

OECD Imports 1995 **Other Petroleum Oil Products** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,000	-	49	-	-	1	-	1,050
USA	487	-	-	1,982	42	-	49	1	2,561
Mex	-	497	-	1	-	-	-	-	498
OECD Eur	406	441	-	7,490	10	-	17	-	8,364
Japan	-	7	-	7	-	-	6	-	20
S.Korea	-	-	-	-	5	-	3	-	8
Australia	-	-	-	-	-	-	-	79	79
NZ	-	-	-	-	-	-	8	-	8
Other OECD	-	-	-	120	1	-	-	-	121
Total OECD	893	1,945	-	9,649	58	-	84	80	12,709
Argentina	-	-	-	2	-	-	-	-	2
Brazil	-	11	-	28	-	-	-	-	39
Colombia	-	-	-	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-	-	-	-
Netherlands Ant.	-	386	-	17	-	-	-	-	403
Peru	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-	-	-	-	-
Venezuela	342	1,260	-	250	2	-	-	-	1,854
Other Latin Am.	-	-	-	-	-	-	-	-	-
Non OECD Eur.	-	-	-	51	-	-	-	-	51
FSU	32	59	-	459	-	-	-	-	550
MEG	-	203	-	6	-	-	106	-	315
China	1	-	-	9	-	-	4	-	14
Oth.Asia	-	4	-	23	12	-	30	9	78
Africa	185	5,587	-	58	-	-	-	-	5,830
Others	180	-	-	1,290	-	-	-	12	1,482
Total	1,633	9,455	-	11,842	72	-	224	101	23,327

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OIL PRODUCTS IMPORTS 1990

OECD Imports 1990 **Oil products excl. Petcoke and LPG** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	7,229	N/A	573	161	-	-	-	7,963
USA	2,742	-	N/A	3,322	2,364	-	81	65	8,574
Mex	-	1,071	N/A	33	46	-	-	-	1,150
OECD Eur	1,575	9,337	N/A	116,703	538	-	264	45	128,462
Japan	-	18	N/A	9	-	-	23	-	50
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	53	N/A	1	79	-	-	221	354
NZ	-	-	N/A	-	16	-	232	-	248
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	4,317	17,708	N/A	120,641	3,204	-	600	331	146,801
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	2,445	N/A	170	5	-	-	-	2,620
Colombia	71	2,437	N/A	74	-	-	-	-	2,582
Ecuador	59	648	N/A	3	-	-	-	-	710
Netherlands Ant.	-	1,707	N/A	137	87	-	2	-	1,933
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	40	1,092	N/A	271	1	-	-	-	1,404
Venezuela	1,754	15,427	N/A	2,638	125	-	-	-	19,944
Other Latin Am.	242	4,259	N/A	2,877	28	-	84	-	7,490
Non OECD Eur.	100	259	N/A	5,900	-	-	43	-	6,302
FSU	212	789	N/A	22,883	854	-	-	-	24,738
MEG	31	3,168	N/A	13,151	19,143	-	695	57	36,245
China	-	59	N/A	-	1,511	-	37	-	1,607
Oth.Asia	-	2,392	N/A	430	17,038	-	998	52	20,910
Africa	64	9,482	N/A	14,271	757	-	58	-	24,632
Others	11	80	N/A	4,201	19	-	1,000	-	5,311
Total	6,891	61,912	N/A	186,176	42,772	-	2,517	440	303,229

OECD Imports 1990 **Naphtha** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	131	N/A	175	6	-	-	-	312
USA	30	-	N/A	594	121	-	-	-	745
Mex	-	-	N/A	-	-	-	-	-	-
OECD Eur	-	408	N/A	10,917	158	-	-	-	11,483
Japan	-	11	N/A	3	-	-	-	-	14
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	1	-	-	-	26	27
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	30	550	N/A	11,690	285	-	-	26	12,581
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	74	-	-	-	-	74
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	-	N/A	9	27	-	-	-	36
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	-	N/A	-	-	-	-	-	-
Venezuela	-	206	N/A	161	-	-	-	-	367
Other Latin Am.	-	2	N/A	451	-	-	-	-	453
Non OECD Eur.	-	-	N/A	553	-	-	-	-	553
FSU	-	39	N/A	3,000	-	-	-	-	3,039
MEG	-	-	N/A	4,117	10,858	-	-	-	14,975
China	-	-	N/A	-	455	-	-	-	455
Oth.Asia	-	643	N/A	296	4,126	-	-	-	5,065
Africa	-	206	N/A	4,415	149	-	-	-	4,770
Others	-	-	N/A	1,057	-	-	-	-	1,057
Total	30	1,646	N/A	25,823	15,900	-	-	26	43,425

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OIL PRODUCTS IMPORTS 1990 contd.

OECD Imports 1990 **Gasoline**

Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	2,393	N/A	73	-	-	-	-	2,466
USA	211	-	N/A	452	53	-	43	65	824
Mex	-	1	N/A	-	-	-	-	-	1
OECD Eur	397	4,186	N/A	28,617	25	-	213	29	33,467
Japan	-	-	N/A	-	-	-	15	-	15
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	118	118
NZ	-	-	N/A	-	-	-	116	-	116
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	608	6,580	N/A	29,142	78	-	387	212	37,007
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	1,130	N/A	164	5	-	-	-	1,299
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	3	-	-	-	-	3
Netherlands Ant.	-	236	N/A	4	33	-	-	-	273
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	29	N/A	26	-	-	-	-	55
Venezuela	19	2,992	N/A	29	-	-	-	-	3,040
Other Latin Am.	-	208	N/A	514	-	-	82	-	804
Non OECD Eur.	100	102	N/A	472	-	-	29	-	703
FSU	-	15	N/A	808	-	-	-	-	823
MEG	8	1,579	N/A	1,039	760	-	316	57	3,759
China	-	36	N/A	-	93	-	35	-	164
Oth.Asia	-	121	N/A	-	901	-	323	29	1,374
Africa	-	22	N/A	986	-	-	-	-	1,008
Others	-	-	N/A	869	-	-	-	-	869
Total	735	13,050	N/A	34,056	1,870	-	1,172	298	51,181

OECD Imports 1990 **Kerosene**

Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	429	N/A	58	25	-	-	-	512
USA	414	-	N/A	88	675	-	-	-	1,177
Mex	-	429	N/A	-	46	-	-	-	475
OECD Eur	316	366	N/A	7,010	304	-	-	-	7,996
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	78	-	-	8	86
NZ	-	-	N/A	-	-	-	19	-	19
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	730	1,224	N/A	7,156	1,128	-	19	8	10,265
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	32	N/A	-	-	-	-	-	32
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	28	N/A	-	-	-	-	-	28
Venezuela	79	1,743	N/A	16	125	-	-	-	1,963
Other Latin Am.	-	-	N/A	2	-	-	-	-	2
Non OECD Eur.	-	24	N/A	153	-	-	-	-	177
FSU	-	21	N/A	293	-	-	-	-	314
MEG	16	648	N/A	662	3,654	-	6	-	4,986
China	-	-	N/A	-	270	-	-	-	270
Oth.Asia	-	212	N/A	30	2,862	-	164	14	3,282
Africa	-	9	N/A	498	36	-	26	-	569
Others	10	-	N/A	27	-	-	-	-	37
Total	835	3,941	N/A	8,837	8,075	-	215	22	21,925

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OIL PRODUCTS IMPORTS 1990 contd.

OECD Imports 1990 **Gas / Diesel**

Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	2,395	N/A	185	130	-	-	-	2,710
USA	446	-	N/A	890	416	-	1	-	1,753
Mex	-	374	N/A	33	-	-	-	-	407
OECD Eur	113	543	N/A	37,914	27	-	27	-	38,624
Japan	-	-	N/A	5	-	-	-	-	5
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	-	-
NZ	-	-	N/A	-	15	-	82	-	97
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	559	3,312	N/A	39,027	588	-	110	-	43,596
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	97	N/A	-	-	-	-	-	97
Ecuador	-	18	N/A	-	-	-	-	-	18
Netherlands Ant.	-	17	N/A	-	27	-	-	-	44
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	108	N/A	-	-	-	-	-	108
Venezuela	10	5,581	N/A	391	-	-	-	-	5,982
Other Latin Am.	70	259	N/A	1,604	28	-	-	-	1,961
Non OECD Eur.	-	132	N/A	2,729	-	-	14	-	2,875
FSU	29	249	N/A	12,616	589	-	-	-	13,483
MEG	7	193	N/A	3,673	3,539	-	289	-	7,701
China	-	-	N/A	-	336	-	-	-	336
Oth.Asia	-	201	N/A	104	1,165	-	427	9	1,906
Africa	-	611	N/A	4,626	456	-	31	-	5,724
Others	1	40	N/A	804	19	-	-	-	864
Total	676	10,818	N/A	65,574	6,747	-	871	9	84,695

OECD Imports 1990 **Fuel Oil**

Figures in '000 tonnes

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,881	N/A	40	-	-	-	-	1,921
USA	1,359	-	N/A	391	1,027	-	-	-	2,777
Mex	-	242	N/A	-	-	-	-	-	242
OECD Eur	480	2,652	N/A	25,204	-	-	-	-	28,336
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	53	N/A	-	-	-	-	-	53
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1,839	4,828	N/A	25,635	1,027	-	-	-	33,329
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	1,308	N/A	-	-	-	-	-	1,308
Colombia	71	2,339	N/A	-	-	-	-	-	2,410
Ecuador	59	630	N/A	-	-	-	-	-	689
Netherlands Ant.	-	1,276	N/A	105	-	-	-	-	1,381
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	40	924	N/A	245	-	-	-	-	1,209
Venezuela	1,608	3,492	N/A	2,015	-	-	-	-	7,115
Other Latin Am.	121	3,766	N/A	296	-	-	-	-	4,183
Non OECD Eur.	-	-	N/A	1,544	-	-	-	-	1,544
FSU	-	465	N/A	5,598	265	-	-	-	6,328
MEG	-	713	N/A	3,619	332	-	-	-	4,664
China	-	-	N/A	-	357	-	-	-	357
Oth.Asia	-	1,215	N/A	-	7,942	-	-	-	9,157
Africa	64	3,408	N/A	3,660	116	-	-	-	7,248
Others	-	40	N/A	1,083	-	-	1,000	-	2,123
Total			N/A						83,045

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OIL PRODUCTS IMPORTS 1990 contd.

OECD Imports 1990 **Other Petroleum Oil Products** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	-	N/A	42	-	-	-	-	42
USA	282	-	N/A	907	72	-	37	-	1,298
Mex	-	25	N/A	-	-	-	-	-	25
OECD Eur	269	1,182	N/A	7,041	24	-	24	16	8,556
Japan	-	7	N/A	1	-	-	8	-	16
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	1	-	-	69	70
NZ	-	-	N/A	-	1	-	15	-	16
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	551	1,214	N/A	7,991	98	-	84	85	10,023
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	7	N/A	6	-	-	-	-	13
Colombia	-	1	N/A	-	-	-	-	-	1
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	146	N/A	19	-	-	2	-	167
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	3	N/A	-	1	-	-	-	4
Venezuela	38	1,413	N/A	26	-	-	-	-	1,477
Other Latin Am.	51	24	N/A	10	-	-	2	-	87
Non OECD Eur.	-	1	N/A	449	-	-	-	-	450
FSU	183	-	N/A	568	-	-	-	-	751
MEG	-	35	N/A	41	-	-	84	-	160
China	-	23	N/A	-	-	-	2	-	25
Oth.Asia	-	-	N/A	-	42	-	84	-	126
Africa	-	5,226	N/A	86	-	-	1	-	5,313
Others	-	-	N/A	361	-	-	-	-	361
Total	823	8,093	N/A	9,557	141	-	259	85	18,958

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OIL PRODUCTS IMPORTS 1985

OECD Imports 1985 **Oil products excl. Petcoke and LPG** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	5,499	N/A	302	-	-	-	31	5,832
USA	1,179	-	N/A	2,787	2,707	-	42	143	6,858
Mex	24	1,914	N/A	161	-	-	-	-	2,099
OECD Eur	736	8,996	N/A	90,354	179	-	102	48	100,415
Japan	-	72	N/A	10	-	-	-	-	82
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	494	N/A	-	57	-	-	670	1,221
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1,939	16,975	N/A	93,614	2,943	-	144	892	116,507
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	61	2,697	N/A	188	-	-	-	-	2,946
Colombia	-	1,293	N/A	248	-	-	-	-	1,541
Ecuador	-	624	N/A	-	-	-	-	-	624
Netherlands Ant.	49	2,606	N/A	1,636	-	-	59	-	4,350
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	18	716	N/A	920	-	-	-	-	1,654
Venezuela	164	12,152	N/A	4,657	152	-	-	30	17,155
Other Latin Am.	67	4,904	N/A	2,179	-	-	-	-	7,150
Non OECD Eur.	-	1,559	N/A	13,065	113	-	35	-	14,772
FSU	-	228	N/A	27,973	673	-	43	-	28,917
MEG	635	1,549	N/A	11,863	5,189	-	660	395	20,291
China	-	932	N/A	30	2,369	-	-	49	3,380
Oth.Asia	-	2,284	N/A	1,618	12,626	-	1,191	730	18,449
Africa	39	5,103	N/A	11,180	120	-	-	-	16,442
Others	10	-	N/A	2,186	-	-	-	19	2,215
Total	2,982	53,622	N/A	171,357	24,185	-	2,132	2,115	256,393

OECD Imports 1985 **Naphtha** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	54	N/A	140	-	-	-	-	194
USA	104	-	N/A	188	13	-	-	-	305
Mex	-	1	N/A	-	-	-	-	-	1
OECD Eur	-	542	N/A	8,648	128	-	-	-	9,318
Japan	-	32	N/A	9	-	-	-	-	41
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	31	-	-	-	31
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	104	629	N/A	8,985	172	-	-	-	9,890
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	14	N/A	98	-	-	-	-	112
Colombia	-	2	N/A	-	-	-	-	-	2
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	84	N/A	-	-	-	-	-	84
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	16	N/A	-	-	-	-	-	16
Venezuela	-	940	N/A	31	-	-	-	-	971
Other Latin Am.	-	67	N/A	228	-	-	-	-	295
Non OECD Eur.	-	69	N/A	1,011	5	-	-	-	1,085
FSU	-	5	N/A	5,269	-	-	-	-	5,274
MEG	-	26	N/A	2,382	4,904	-	-	-	7,312
China	-	-	N/A	2	1,690	-	-	-	1,692
Oth.Asia	-	606	N/A	604	4,151	-	-	-	5,361
Africa	-	98	N/A	4,574	56	-	-	-	4,728
Others	-	-	N/A	517	-	-	-	-	517
Total	104	2,556	N/A	23,701	10,978	-	-	-	37,339

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OIL PRODUCTS IMPORTS 1985 contd.

OECD Imports 1985 **Gasoline** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,833	N/A	4	-	-	-	-	1,837
USA	139	-	N/A	117	-	-	30	2	288
Mex	-	616	N/A	-	-	-	-	-	616
OECD Eur	454	6,800	N/A	18,828	-	-	97	48	26,227
Japan	-	5	N/A	1	-	-	-	-	6
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	231	N/A	-	-	-	-	348	579
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	593	9,485	N/A	18,950	-	-	127	398	29,553
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	23	1,353	N/A	2	-	-	-	-	1,378
Colombia	-	20	N/A	-	-	-	-	-	20
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	49	349	N/A	11	-	-	59	-	468
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	42	N/A	-	-	-	-	-	42
Venezuela	26	2,503	N/A	21	-	-	-	-	2,550
Other Latin Am.	-	58	N/A	213	-	-	-	-	271
Non OECD Eur.	-	1,343	N/A	1,113	-	-	24	-	2,480
FSU	-	82	N/A	1,031	-	-	-	-	1,113
MEG	-	1,523	N/A	202	-	-	108	288	2,121
China	-	854	N/A	-	-	-	-	30	884
Oth.Asia	-	532	N/A	6	-	-	119	244	901
Africa	-	66	N/A	284	-	-	-	-	350
Others	9	-	N/A	376	-	-	-	7	392
Total	700	18,210	N/A	22,209	-	-	437	967	42,523

OECD Imports 1985 **Kerosene** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	61	N/A	-	-	-	-	-	61
USA	182	-	N/A	1	60	-	-	-	243
Mex	-	81	N/A	-	-	-	-	-	81
OECD Eur	53	31	N/A	4,711	-	-	4	-	4,799
Japan	-	17	N/A	-	-	-	-	-	17
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	95	N/A	-	-	-	-	78	173
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	235	224	N/A	4,712	60	-	4	78	5,374
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	27	N/A	28	-	-	-	-	55
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	180	N/A	5	-	-	-	-	185
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	3	15	N/A	-	-	-	-	-	18
Venezuela	-	558	N/A	5	94	-	-	30	687
Other Latin Am.	12	88	N/A	1	-	-	-	-	101
Non OECD Eur.	-	25	N/A	131	-	-	-	-	156
FSU	-	-	N/A	96	-	-	-	-	96
MEG	24	-	N/A	22	150	-	-	20	216
China	-	-	N/A	-	236	-	-	-	236
Oth.Asia	-	145	N/A	-	1,017	-	71	247	1,480
Africa	-	1	N/A	174	6	-	-	-	181
Others	1	-	N/A	103	-	-	-	-	104
Total	275	1,263	N/A	5,277	1,563	-	75	375	8,889

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OIL PRODUCTS IMPORTS 1985 contd.

OECD Imports 1985 **Gas / Diesel** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,923	N/A	55	-	-	-	31	2,009
USA	352	-	N/A	1,011	300	-	-	141	1,804
Mex	24	446	N/A	66	-	-	-	-	536
OECD Eur	229	202	N/A	34,022	-	-	-	-	34,453
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	79	N/A	-	-	-	-	186	265
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	605	727	N/A	35,099	300	-	-	327	39,067
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	38	110	N/A	60	-	-	-	-	208
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	377	N/A	13	-	-	-	-	390
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	15	177	N/A	36	-	-	-	-	228
Venezuela	138	3,650	N/A	1,332	58	-	-	-	5,178
Other Latin Am.	55	489	N/A	757	-	-	-	-	1,301
Non OECD Eur.	-	57	N/A	7,157	20	-	11	-	7,245
FSU	-	141	N/A	14,506	485	-	43	-	15,175
MEG	-	-	N/A	4,487	-	-	26	87	4,600
China	-	78	N/A	28	249	-	-	19	374
Oth.Asia	-	151	N/A	360	595	-	492	221	1,819
Africa	39	289	N/A	4,244	-	-	-	-	4,572
Others	-	-	N/A	948	-	-	-	12	960
Total	890	6,246	N/A	69,027	1,707	-	572	666	81,117

OECD Imports 1985 **Fuel Oil** ***Figures in '000 tonnes***

FROM: TO:	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	1,628	N/A	103	-	-	-	-	1,731
USA	402	-	N/A	1,470	2,334	-	12	-	4,218
Mex	-	770	N/A	95	-	-	-	-	865
OECD Eur	-	1,421	N/A	24,145	51	-	1	-	25,618
Japan	-	18	N/A	-	-	-	-	-	18
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	89	N/A	-	26	-	-	58	173
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	-	2,298	N/A	24,240	77	-	1	58	32,623
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	1,193	N/A	-	-	-	-	-	1,193
Colombia	-	1,271	N/A	248	-	-	-	-	1,519
Ecuador	-	624	N/A	-	-	-	-	-	624
Netherlands Ant.	-	1,616	N/A	1,607	-	-	-	-	3,223
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	466	N/A	884	-	-	-	-	1,350
Venezuela	-	4,501	N/A	3,268	-	-	-	-	7,769
Other Latin Am.	-	4,202	N/A	980	-	-	-	-	5,182
Non OECD Eur.	-	65	N/A	3,653	88	-	-	-	3,806
FSU	-	-	N/A	7,071	188	-	-	-	7,259
MEG	611	-	N/A	4,770	135	-	526	-	6,042
China	-	-	N/A	-	194	-	-	-	194
Oth.Asia	-	850	N/A	648	6,863	-	509	18	8,888
Africa	-	4,649	N/A	1,904	58	-	-	-	6,611
Others	-	-	N/A	242	-	-	-	-	242
Total	611	21,735	N/A	49,515	7,603	-	1,036	76	86,525

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OIL PRODUCTS IMPORTS 1980

OECD Imports 1980 **Oil products excl. Petcoke and LPG** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	2,829	N/A	1,060	-	-	-	-	3,889
USA	247	-	N/A	369	69	-	3	8	696
Mex	30	786	N/A	559	-	-	-	-	1,375
OECD Eur	60	1,746	N/A	85,593	49	-	98	24	87,570
Japan	-	5	N/A	-	-	-	1	-	6
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	26	N/A	75	72	-	-	376	549
NZ	-	-	N/A	-	-	-	11	-	11
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	337	5,392	N/A	87,656	190	-	113	408	94,096
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	212	N/A	167	-	-	-	-	379
Ecuador	-	569	N/A	180	-	-	-	-	749
Netherlands Ant.	247	12,366	N/A	1,416	29	-	22	-	14,080
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	3,221	N/A	1,316	29	-	-	-	4,566
Venezuela	707	17,350	N/A	5,777	5	-	28	-	23,867
Other Latin Am.	79	5,698	N/A	6,000	-	-	14	11	11,802
Non OECD Eur.	-	347	N/A	16,308	-	-	-	-	16,655
FSU	-	34	N/A	22,281	440	-	-	2	22,757
MEG	-	584	N/A	6,319	4,088	-	1,940	141	13,072
China	-	289	N/A	354	652	-	42	-	1,337
Oth.Asia	37	2,296	N/A	450	6,692	-	1,388	632	11,495
Africa	-	3,587	N/A	7,254	140	-	43	24	11,048
Others	-	-	N/A	653	-	-	-	20	673
Total	1,407	51,945	N/A	156,131	12,265	-	3,590	1,238	226,576

OECD Imports 1980 **Naphtha** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	48	N/A	79	-	-	-	-	127
USA	41	-	N/A	65	-	-	-	-	106
Mex	-	183	N/A	31	-	-	-	-	214
OECD Eur	-	398	N/A	8,321	-	-	-	-	8,719
Japan	-	5	N/A	-	-	-	-	-	5
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	26	N/A	-	-	-	-	-	26
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	41	660	N/A	8,496	-	-	-	-	9,197
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	4	-	-	-	-	4
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	618	N/A	6	-	-	-	-	624
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	-	N/A	53	-	-	-	-	53
Venezuela	-	1,165	N/A	39	-	-	-	-	1,204
Other Latin Am.	-	1,474	N/A	543	-	-	-	-	2,017
Non OECD Eur.	-	292	N/A	1,791	-	-	-	-	2,083
FSU	-	-	N/A	3,779	-	-	-	-	3,779
MEG	-	151	N/A	3,089	3,394	-	-	-	6,634
China	-	126	N/A	244	474	-	-	-	844
Oth.Asia	-	83	N/A	-	1,559	-	-	-	1,642
Africa	-	139	N/A	3,033	-	-	-	-	3,172
Others	-	-	N/A	-	-	-	-	2	2
Total	41	4,708	N/A	21,077	5,427	-	-	2	31,255

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OIL PRODUCTS IMPORTS 1980 contd.

OECD Imports 1980 **Gasoline** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	586	N/A	18	-	-	-	-	604
USA	-	-	N/A	83	-	-	-	-	83
Mex	-	-	N/A	-	-	-	-	-	-
OECD Eur	38	76	N/A	16,200	-	-	29	-	16,343
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	134	134
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	38	662	N/A	16,301	-	-	29	134	17,164
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	61	71	N/A	262	-	-	-	-	394
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	675	N/A	13	-	-	-	-	688
Venezuela	-	66	N/A	19	-	-	28	-	113
Other Latin Am.	-	26	N/A	28	-	-	-	-	54
Non OECD Eur.	-	-	N/A	1,824	-	-	-	-	1,824
FSU	-	1	N/A	1,159	-	-	-	-	1,160
MEG	-	18	N/A	113	-	-	116	96	343
China	-	160	N/A	110	-	-	26	-	296
Oth.Asia	37	397	N/A	109	-	-	160	202	905
Africa	-	-	N/A	12	-	-	-	-	12
Others	-	-	N/A	1	-	-	-	-	1
Total	136	2,076	N/A	19,951	-	-	359	432	22,954

OECD Imports 1980 **Aviation fuels** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	39	N/A	31	-	-	-	-	70
USA	1	-	N/A	-	-	-	-	8	9
Mex	-	13	N/A	-	-	-	-	-	13
OECD Eur	-	311	N/A	5,508	-	-	2	19	5,840
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	111	111
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1	363	N/A	5,539	-	-	2	138	6,043
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	2	N/A	-	-	-	-	-	2
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	35	1,525	N/A	9	29	-	13	-	1,611
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	237	N/A	-	-	-	-	-	237
Venezuela	50	162	N/A	144	-	-	-	-	356
Other Latin Am.	-	209	N/A	357	-	-	-	11	577
Non OECD Eur.	-	-	N/A	84	-	-	-	-	84
FSU	-	-	N/A	146	-	-	-	-	146
MEG	-	157	N/A	-	-	-	33	-	190
China	-	3	N/A	-	-	-	-	-	3
Oth.Asia	-	281	N/A	-	-	-	119	192	592
Africa	-	-	N/A	261	-	-	-	-	261
Others	-	-	N/A	651	-	-	-	-	651
Total	86	2,939	N/A	7,191	29	-	167	341	10,753

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OIL PRODUCTS IMPORTS 1980 contd.

OECD Imports 1980 **Kerosene** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	-	N/A	3	-	-	-	-	3
USA	1	-	N/A	24	-	-	-	-	25
Mex	-	-	N/A	-	-	-	-	-	-
OECD Eur	-	-	N/A	402	-	-	-	-	402
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	15	15
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1	-	N/A	429	-	-	-	15	445
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	-	N/A	9	-	-	-	-	9
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	-	N/A	-	29	-	-	-	29
Venezuela	-	-	N/A	5	-	-	-	-	5
Other Latin Am.	-	-	N/A	6	-	-	-	-	6
Non OECD Eur.	-	-	N/A	12	-	-	-	-	12
FSU	-	-	N/A	77	-	-	-	-	77
MEG	-	-	N/A	-	-	-	-	-	-
China	-	-	N/A	-	12	-	-	-	12
Oth.Asia	-	-	N/A	-	20	-	-	14	34
Africa	-	-	N/A	55	-	-	-	-	55
Others	-	-	N/A	-	-	-	-	-	-
Total	1	-	N/A	593	61	-	-	29	684

OECD Imports 1980 **Gas / Diesel** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	7	N/A	805	-	-	-	-	812
USA	6	-	N/A	145	46	-	1	-	198
Mex	-	25	N/A	13	-	-	-	-	38
OECD Eur	-	174	N/A	29,927	-	-	67	5	30,173
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	37	-	-	-	116	153
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	6	206	N/A	30,927	46	-	68	121	31,374
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	77	781	N/A	176	-	-	9	-	1,043
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	210	N/A	310	-	-	-	-	520
Venezuela	-	28	N/A	2,035	5	-	-	-	2,068
Other Latin Am.	-	23	N/A	2,113	-	-	-	-	2,136
Non OECD Eur.	-	-	N/A	7,411	-	-	-	-	7,411
FSU	-	-	N/A	12,809	376	-	-	2	13,187
MEG	-	35	N/A	1,003	350	-	64	43	1,495
China	-	-	N/A	-	151	-	16	-	167
Oth.Asia	-	212	N/A	17	54	-	409	224	916
Africa	-	-	N/A	1,848	-	-	-	24	1,872
Others	-	-	N/A	1	-	-	-	10	11
Total	83	1,495	N/A	58,650	982	-	566	424	62,200

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OIL PRODUCTS IMORTS 1980 contd.

OECD Imports 1980 **Fuel Oil** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	2,149	N/A	124	-	-	-	-	2,273
USA	198	-	N/A	52	23	-	2	-	275
Mex	30	565	N/A	515	-	-	-	-	1,110
OECD Eur	22	787	N/A	25,235	49	-	-	-	26,093
Japan	-	-	N/A	-	-	-	1	-	1
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	38	72	-	-	-	110
NZ	-	-	N/A	-	-	-	11	-	11
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	250	3,501	N/A	25,964	144	-	14	-	29,873
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	210	N/A	163	-	-	-	-	373
Ecuador	-	569	N/A	180	-	-	-	-	749
Netherlands Ant.	74	9,371	N/A	954	-	-	-	-	10,399
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	2,099	N/A	940	-	-	-	-	3,039
Venezuela	657	15,929	N/A	3,535	-	-	-	-	20,121
Other Latin Am.	79	3,966	N/A	2,953	-	-	14	-	7,012
Non OECD Eur.	-	55	N/A	5,186	-	-	-	-	5,241
FSU	-	33	N/A	4,311	64	-	-	-	4,408
MEG	-	223	N/A	2,114	344	-	1,727	2	4,410
China	-	-	N/A	-	15	-	-	-	15
Oth.Asia	-	1,323	N/A	324	5,059	-	700	-	7,406
Africa	-	3,448	N/A	2,045	140	-	43	-	5,676
Others	-	-	N/A	-	-	-	-	8	8
Total	1,060	40,727	N/A	48,669	5,766	-	2,498	10	98,730

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OIL PRODUCTS IMPORTS 1975

OECD Imports 1975 **Oil products excl. Petcoke and LPG** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	4,450	N/A	1,116	-	-	-	-	5,566
USA	167	-	N/A	321	33	-	-	9	530
Mex	-	38	N/A	187	-	-	-	-	225
OECD Eur	111	3,672	N/A	83,786	94	-	18	-	87,681
Japan	-	42	N/A	837	-	-	-	-	879
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	271	N/A	-	268	-	-	620	1,159
NZ	-	-	N/A	-	-	-	3	-	3
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	278	8,473	N/A	86,247	395	-	21	629	96,043
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	490	N/A	261	-	-	-	-	751
Ecuador	-	15	N/A	-	-	-	-	-	15
Netherlands Ant.	241	16,493	N/A	1,488	-	-	-	-	18,222
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	118	6,283	N/A	445	-	-	-	-	6,846
Venezuela	652	15,000	N/A	2,175	-	-	-	-	17,827
Other Latin Am.	120	33,341	N/A	806	10	-	-	-	34,277
Non OECD Eur.	-	713	N/A	6,761	87	-	-	-	7,561
FSU	-	861	N/A	21,636	571	-	-	-	23,068
MEG	-	1,356	N/A	3,908	3,735	-	1,782	311	11,092
China	-	24	N/A	-	3,344	-	-	-	3,368
Oth.Asia	-	1,293	N/A	473	1,738	-	1,129	185	4,818
Africa	-	2,638	N/A	2,350	-	-	-	31	5,019
Others	-	342	N/A	301	-	-	2	-	645
Total	1,409	87,322	N/A	126,851	9,880	-	2,934	1,156	229,552

OECD Imports 1975 **Naphtha** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	5	N/A	34	-	-	-	-	39
USA	-	-	N/A	44	-	-	-	-	44
Mex	-	-	N/A	-	-	-	-	-	-
OECD Eur	-	20	N/A	8,511	-	-	-	-	8,531
Japan	-	-	N/A	77	-	-	-	-	77
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	-	-
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	-	25	N/A	8,666	-	-	-	-	8,691
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	-	79	N/A	4	-	-	-	-	83
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	60	N/A	22	-	-	-	-	82
Venezuela	-	-	N/A	19	-	-	-	-	19
Other Latin Am.	-	117	N/A	116	-	-	-	-	233
Non OECD Eur.	-	-	N/A	544	-	-	-	-	544
FSU	-	-	N/A	2,984	-	-	-	-	2,984
MEG	-	-	N/A	1,151	2,266	-	-	-	3,417
China	-	-	N/A	-	-	-	-	-	-
Oth.Asia	-	-	N/A	431	1,448	-	-	-	1,879
Africa	-	-	N/A	1,140	-	-	-	-	1,140
Others	-	-	N/A	38	-	-	-	-	38
Total	-	281	N/A	15,115	3,714	-	-	-	19,110

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OIL PRODUCTS IMPORTS 1975 contd.

OECD Imports 1975 **Gasoline** ***Figures in '000 tonnes***

Gasoline

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	463	N/A	-	-	-	-	-	463
USA	-	-	N/A	15	10	-	-	9	34
Mex	-	-	N/A	19	-	-	-	-	19
OECD Eur	20	548	N/A	12,705	-	-	18	-	13,291
Japan	-	-	N/A	1	-	-	-	-	1
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	207	207
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	20	1,011	N/A	12,740	10	-	18	216	14,015
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	3	373	N/A	185	-	-	-	-	561
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	441	N/A	83	-	-	-	-	524
Venezuela	-	216	N/A	117	-	-	-	-	333
Other Latin Am.	-	5,079	N/A	16	-	-	-	-	5,095
Non OECD Eur.	-	163	N/A	626	-	-	-	-	789
FSU	-	-	N/A	696	-	-	-	-	696
MEG	-	312	N/A	150	-	-	181	165	808
China	-	24	N/A	-	-	-	-	-	24
Oth.Asia	-	49	N/A	3	-	-	93	55	200
Africa	-	41	N/A	49	-	-	-	23	113
Others	-	175	N/A	4	-	-	-	-	179
Total	23	7,884	N/A	14,669	10	-	292	459	23,337

OECD Imports 1975 **Aviation fuels** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	291	N/A	-	-	-	-	-	291
USA	24	-	N/A	-	-	-	-	-	24
Mex	-	-	N/A	-	-	-	-	-	-
OECD Eur	8	154	N/A	4,328	-	-	-	-	4,490
Japan	-	1	N/A	-	-	-	-	-	1
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	18	N/A	-	-	-	-	205	223
NZ	-	-	N/A	-	-	-	3	-	3
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	32	464	N/A	4,328	-	-	3	205	5,032
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	40	1,006	N/A	251	-	-	-	-	1,297
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	742	N/A	44	-	-	-	-	786
Venezuela	-	654	N/A	20	-	-	-	-	674
Other Latin Am.	-	1,985	N/A	-	-	-	-	-	1,985
Non OECD Eur.	-	-	N/A	-	-	-	-	-	-
FSU	-	-	N/A	-	-	-	-	-	-
MEG	-	399	N/A	68	-	-	33	28	528
China	-	-	N/A	-	-	-	-	-	-
Oth.Asia	-	690	N/A	-	-	-	82	57	829
Africa	-	1	N/A	1	-	-	-	-	2
Others	-	123	N/A	-	-	-	-	-	123
Total	72	6,064	N/A	4,712	-	-	118	290	11,256

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OIL PRODUCTS IMPORTS 1975 contd.

OECD Imports 1975 **Kerosene** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	5	N/A	-	-	-	-	-	5
USA	1	-	N/A	-	-	-	-	-	1
Mex	-	-	N/A	5	-	-	-	-	5
OECD Eur	-	-	N/A	1,029	-	-	-	-	1,029
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	-	-
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	1	5	N/A	1,034	-	-	-	-	1,040
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	25	-	N/A	-	-	-	-	-	25
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	-	-	N/A	35	-	-	-	-	35
Venezuela	-	1	N/A	-	-	-	-	-	1
Other Latin Am.	-	133	N/A	5	-	-	-	-	138
Non OECD Eur.	-	-	N/A	10	-	-	-	-	10
FSU	-	-	N/A	273	-	-	-	-	273
MEG	-	-	N/A	15	-	-	57	-	72
China	-	-	N/A	-	-	-	-	-	-
Oth.Asia	-	-	N/A	-	-	-	19	-	19
Africa	-	-	N/A	103	-	-	-	-	103
Others	-	-	N/A	-	-	-	-	-	-
Total	26	139	N/A	1,475	-	-	76	-	1,716

OECD Imports 1975 **Gas / Diesel** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	220	N/A	386	-	-	-	-	606
USA	-	-	N/A	146	-	-	-	-	146
Mex	-	18	N/A	54	-	-	-	-	72
OECD Eur	24	443	N/A	32,856	28	-	-	-	33,351
Japan	-	-	N/A	-	-	-	-	-	-
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	-	N/A	-	-	-	-	208	208
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	24	681	N/A	33,442	28	-	-	208	34,383
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	-	N/A	-	-	-	-	-	-
Ecuador	-	-	N/A	-	-	-	-	-	-
Netherlands Ant.	136	576	N/A	549	-	-	-	-	1,261
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	28	790	N/A	109	-	-	-	-	927
Venezuela	30	873	N/A	495	-	-	-	-	1,398
Other Latin Am.	47	3,841	N/A	446	-	-	-	-	4,334
Non OECD Eur.	-	80	N/A	2,401	87	-	-	-	2,568
FSU	-	75	N/A	10,751	278	-	-	-	11,104
MEG	-	550	N/A	574	621	-	92	118	1,955
China	-	-	N/A	-	-	-	-	-	-
Oth.Asia	-	15	N/A	-	290	-	307	73	685
Africa	-	6	N/A	205	-	-	-	8	219
Others	-	13	N/A	15	-	-	2	-	30
Total	265	7,500	N/A	48,987	1,304	-	401	407	58,864

OECD-Statistics.xls/Imports-1975

OIL PRODUCTS IMPORTS 1975 contd.

OECD Imports 1975 **Fuel Oil** ***Figures in '000 tonnes***

FROM: TO	Can	USA	Mex	OECD Eur	Japan	S.Korea	Australia	NZ	Total OECD
Can	-	3,466	N/A	696	-	-	-	-	4,162
USA	142	-	N/A	116	23	-	-	-	281
Mex	-	20	N/A	109	-	-	-	-	129
OECD Eur	59	2,507	N/A	24,357	66	-	-	-	26,989
Japan	-	41	N/A	759	-	-	-	-	800
S.Korea	-	-	N/A	-	-	-	-	-	-
Australia	-	253	N/A	-	268	-	-	-	521
NZ	-	-	N/A	-	-	-	-	-	-
Other OECD	-	-	N/A	-	-	-	-	-	-
Total OECD	201	6,287	N/A	26,037	357	-	-	-	32,882
Argentina	-	-	N/A	-	-	-	-	-	-
Brazil	-	-	N/A	-	-	-	-	-	-
Colombia	-	490	N/A	261	-	-	-	-	751
Ecuador	-	15	N/A	-	-	-	-	-	15
Netherlands Ant.	37	14,459	N/A	499	-	-	-	-	14,995
Peru	-	-	N/A	-	-	-	-	-	-
Trinidad & Tobago	90	4,250	N/A	152	-	-	-	-	4,492
Venezuela	622	13,256	N/A	1,524	-	-	-	-	15,402
Other Latin Am.	73	22,186	N/A	223	10	-	-	-	22,492
Non OECD Eur.	-	470	N/A	3,180	-	-	-	-	3,650
FSU	-	786	N/A	6,932	293	-	-	-	8,011
MEG	-	95	N/A	1,950	848	-	1,419	-	4,312
China	-	-	N/A	-	3,344	-	-	-	3,344
Oth.Asia	-	539	N/A	39	-	-	628	-	1,206
Africa	-	2,590	N/A	852	-	-	-	-	3,442
Others	-	31	N/A	244	-	-	-	-	275
Total	1,023	65,454	N/A	41,893	4,852	-	2,047	-	115,269

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OIL PRODUCTS EXPORTS. Matrices for total and by type 1975-2000

Figures in '000 tonnes

OECD Exports 2000 **Oil products excl. Petcoke and LPG**

	OECD Eur	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	148,728	32	644	56	160	17,871	3,953	6,753	1,262	2,042	101	8,228	510	2,339	14,648	207,327
Can	111	-	-	-	-	14,143	-	-	-	-	-	-	-	-	8	14,262
USA	1,696	19	2,829	890	13,000	-	260	71	5,987	2,319	60	127	3	465	7	27,733
Mex	(2)	-	-	-	-	2,604	-	-	460	-	-	-	-	-	-	3,062
Japan	338	23	-	-	-	700	759	-	61	1,243	920	-	-	-	214	4,258
S.Korea	1,018	264	115	13,858	-	3,085	24	-	212	10,715	9,615	30	158	164	117	39,375
Australia	33	-	-	57	-	172	949	-	7	2,113	16	-	-	-	161	3,508
NZ	-	94	-	-	-	-	-	-	-	21	-	-	-	-	-	115
Total	151,922	432	3,588	14,861	13,160	38,575	5,945	6,824	7,989	18,453	#####	8,385	671	2,968	15,155	299,640

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FIGURES IN '000 TONNES

OECD Exports 2000 **Naphtha**

	OECD Eur	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	16,880	-	-	37	-	894	188	73	4	63	-	301	11	151	2,207	20,809
Can	-	-	-	-	-	393	-	-	-	-	-	-	-	-	-	393
USA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	-	-	-	45	75	-	-	-	-	120
S.Korea	-	-	-	5,402	-	41	-	-	-	213	-	30	-	25	-	5,711
Australia	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	4
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	16,880	-	-	5,439	-	1,328	188	73	4	323	77	331	11	176	2,207	27,037

OECD Exports 2000 **Gasoline**

	OECD Eur	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	30,561	28	450	-	37	7,559	1,387	2,133	455	50	-	1,241	289	1,208	3,265	48,663
Can	-	-	-	-	-	4,506	-	-	-	-	-	-	-	-	-	4,506
USA	122	-	387	32	5,704	-	31	-	551	-	-	-	-	31	-	6,858
Mex	-	-	-	-	-	1,916	-	-	333	-	-	-	-	-	-	2,249
Japan	-	23	-	-	-	14	39	-	-	98	13	-	-	-	-	187
S.Korea	105	-	-	548	-	166	-	-	-	892	-	-	-	6	-	1,717
Australia	-	-	-	-	-	68	735	-	-	255	-	-	-	-	-	1,058
NZ	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Total	30,788	64	837	580	5,741	14,229	2,192	2,133	1,339	1,295	13	1,241	289	1,245	3,265	65,251

OECD Exports 2000 **Kerosene**

	OECD Eur	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	8,808	-	-	-	-	357	124	354	22	1	-	498	2	6	554	10,726
Can	-	-	-	-	-	277	-	-	-	-	-	-	-	-	-	277
USA	30	-	742	4	193	-	-	-	236	-	32	-	-	319	-	1,556
Mex	-	-	-	-	-	163	-	-	-	-	-	-	-	-	-	163
Japan	-	-	-	-	-	552	104	-	-	1	70	-	-	-	-	727
S.Korea	404	3	115	3,478	-	1,701	-	-	-	621	608	-	-	-	23	6,953
Australia	2	-	-	29	-	38	81	-	-	315	-	-	-	-	-	465
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	9,244	3	857	3,511	193	3,088	309	354	258	938	710	498	2	325	577	20,867

OIL PRODUCTS EXPORTS 2000 contd.

Figures in '000 tonnes

OECD Exports 2000 Diesel

	OECD Eu	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	53,295	4	4	-	-	1,694	1,444	2,493	205	71	-	2,333	88	219	2,613	64,463
Can	85	-	-	-	-	5,278	-	-	-	-	-	-	-	-	8	5,371
USA	905	-	466	57	3,664	-	81	-	2,309	1,076	1	1	2	10	-	8,572
Mex	-	-	-	-	-	96	-	-	125	-	-	-	-	-	-	221
Japan	338	-	-	-	-	89	285	-	39	787	36	-	-	-	214	1,788
S.Korea	341	261	-	3,632	-	969	1	-	212	7,033	240	-	108	96	94	12,987
Australia	-	-	-	-	-	64	43	-	-	795	-	-	-	-	-	902
NZ	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Total	54,964	270	470	3,689	3,664	8,190	1,854	2,493	2,890	9,762	277	2,334	198	325	2,929	94,309

OECD Exports 2000 Fuel

	OECD Eu	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	27,629	-	188	5	117	6,425	404	1,141	374	1,726	85	3,287	4	474	4,205	46,064
Can	26	-	-	-	-	1,468	-	-	-	-	-	-	-	-	-	1,494
USA	549	-	598	110	3,044	-	22	33	2,407	1,089	-	126	-	88	-	8,066
Mex	(2)	-	-	-	-	-	-	-	2	-	-	-	-	-	-	
Japan	-	-	-	-	-	22	168	-	-	183	451	-	-	-	-	824
S.Korea	141	-	-	734	-	200	23	-	-	1,589	8,123	-	50	30	-	10,890
Australia	-	-	-	-	-	-	6	-	-	548	-	-	-	-	-	554
NZ	-	76	-	-	-	-	-	-	-	21	-	-	-	-	-	97
Total	28,343	76	786	849	3,161	8,115	623	1,174	2,783	5,156	8,659	3,413	54	592	4,205	67,989

OECD Exports 2000 Other Products

	OECD Eu	Austr.	Can	Japan	Mex	USA	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	11,555	-	2	14	6	942	406	559	202	131	16	568	116	281	1,804	16,602
Can	-	-	-	-	-	2,221	-	-	-	-	-	-	-	-	-	2,221
USA	90	19	636	687	395	-	126	38	484	154	27	-	1	17	7	2,681
Mex	-	-	-	-	-	429	-	-	-	-	-	-	-	-	-	429
Japan	-	-	-	-	-	23	163	-	22	129	275	-	-	-	-	612
S.Korea	27	-	-	64	-	8	-	-	-	367	644	-	-	7	-	1,117
Australia	31	-	-	28	-	2	84	-	7	198	14	-	-	-	161	525
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	11,703	19	638	793	401	3,625	779	597	715	979	976	568	117	305	1,972	24,187

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OIL PRODUCTS EXPORTS 1995

Figures in '000 tonnes

OECD Exports 1995 Oil products

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	135,570	33	922	63	8	7,874	2,650	6,297	3,768	2,989	22	6,331	2,012	2,598	10,914	182,051
Can	51	-	-	-	80	10,896	-	38	235	-	14	-	-	-	633	11,947
USA	7,665	53	2,349	1,161	4,375	-	-	137	9,765	6,229	143	139	53	726	-	32,795
Mex	191	35	43	188	-	3,061	63	28	1,306	43	26	-	-	-	-	4,984
Japan	8	-	-	-	-	7	3,048	5	8	4,033	1,368	-	7	-	147	8,631
S.Korea	1	317	-	4,886	-	1,194	200	-	7	4,236	3,056	2	-	1,213	-	15,112
Australia	529	-	-	94	-	20	348	-	-	2,394	6	-	-	35	-	3,426
NZ	-	10	-	2	-	-	-	-	-	2	-	-	-	-	-	14
Total	144,015	448	3,314	6,394	4,463	23,052	6,309	6,505	15,089	19,926	4,635	6,472	2,072	4,572	11,694	258,960

OECD Exports 1995 Naphtha

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	13,880	3	70	7	-	360	199	115	134	233	14	520	16	44	653	16,248
Can	-	-	-	-	-	462	-	-	-	-	-	-	-	-	-	462
USA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	72	-	-	143	27	-	-	-	-	242
S.Korea	-	-	-	2,182	-	-	-	-	-	-	122	-	-	93	-	2,397
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	13,880	3	70	2,189	-	822	271	115	134	376	163	520	16	137	653	19,349

OECD Exports 1995 Gasoline

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	27,638	-	464	28	2	4,564	1,498	1,559	615	55	-	1,138	1,709	976	2,026	42,272
Can	-	-	-	-	-	3,522	-	-	-	-	-	-	-	-	10	3,532
USA	45	32	143	32	2,919	-	-	52	956	54	-	-	32	137	-	4,402
Mex	-	-	43	-	-	1,360	-	28	27	-	-	-	-	-	-	1,458
Japan	-	-	-	-	-	-	609	-	-	254	-	-	7	-	-	870
S.Korea	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Australia	-	-	-	1	-	-	235	-	-	267	-	-	-	-	-	503
NZ	-	10	-	2	-	-	-	-	-	-	-	-	-	-	-	12
Total	27,683	42	650	63	2,921	9,446	2,342	1,639	1,598	631	-	1,138	1,748	1,113	2,036	53,050

OECD Exports 1995 Kerosene

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	8,536	-	163	-	-	209	86	370	2	265	-	822	8	96	254	10,811
Can	1	-	-	-	1	120	-	-	4	-	-	-	-	-	12	138
USA	2,701	-	488	257	117	-	-	22	2,989	2,381	56	-	6	176	-	9,193
Mex	-	-	-	152	-	639	-	-	92	30	-	-	-	-	-	913
Japan	-	-	-	-	-	-	331	-	-	49	8	-	-	-	43	431
S.Korea	-	-	-	858	-	133	-	-	-	-	213	-	-	-	-	1,204
Australia	528	-	-	27	-	15	-	-	-	378	-	-	-	35	-	983
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	11,766	-	651	1,294	118	1,116	417	392	3,087	3,103	277	822	14	307	309	23,673

OIL PRODUCTS EXPORTS 1995 contd.

Figures in '000 tonnes

OECD Exports 1995 Diesel

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	44,716	12	140	2	-	1,147	596	1,868	2,097	1,828	1	1,659	111	1,027	2,273	57,477
Can	44	-	-	-	79	4,031	-	38	205	-	14	-	-	-	611	5,022
USA	2,762	4	423	257	117	-	-	22	2,989	2,381	56	-	6	176	-	9,193
Mex	8	35	-	36	-	70	63	-	628	7	26	-	-	-	-	873
Japan	-	-	-	-	-	-	867	-	-	1,172	1,022	-	-	-	98	3,159
S.Korea	-	14	-	1,105	-	-	200	-	6	2,536	1,449	-	-	-	-	5,310
Australia	-	-	-	-	-	-	-	-	-	560	-	-	-	-	-	560
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	47,530	65	563	1,400	196	5,248	1,726	1,928	5,925	8,484	2,568	1,659	117	1,203	2,982	81,594

OECD Exports 1995 Fuel

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	30,454	-	80	-	-	1,373	37	1,276	642	4	-	2,072	24	75	3,240	39,277
Can	-	-	-	-	-	1,423	-	-	26	-	-	-	-	-	-	1,449
USA	1,803	-	691	62	1,030	-	-	-	2,320	1,156	13	138	-	186	-	7,399
Mex	183	-	-	-	-	111	-	-	559	6	-	-	-	-	-	859
Japan	-	-	-	-	-	-	1,000	-	-	1,980	205	-	-	-	-	3,185
S.Korea	-	303	-	741	-	1,061	-	-	-	1,699	1,187	-	-	1,002	-	5,993
Australia	-	-	-	-	-	-	-	-	-	809	-	-	-	-	-	809
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	32,440	303	771	803	1,030	3,968	1,037	1,276	3,547	5,654	1,405	2,210	24	1,263	3,240	58,971

OECD Exports 1995 Other Products

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am	Asia	China	Non OE	FSU	MEG	Other	Total
OECD Eur	10,346	18	5	26	6	221	234	1,109	278	604	7	120	144	380	2,468	15,966
Can	6	-	-	-	-	1,338	-	-	-	-	-	-	-	-	-	1,344
USA	354	17	604	553	192	-	-	41	511	257	18	1	9	51	-	2,608
Mex	-	-	-	-	-	881	-	-	-	-	-	-	-	-	-	881
Japan	8	-	-	-	-	7	169	5	8	435	106	-	-	-	6	744
S.Korea	1	-	-	-	-	-	-	-	1	-	85	2	-	118	-	207
Australia	1	-	-	66	-	5	113	-	-	380	6	-	-	-	-	571
NZ	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Total	10,716	35	609	645	198	2,452	516	1,155	798	1,678	222	123	153	549	2,474	22,323

OIL PRODUCTS EXPORTS 1990

Figures in '000 tonnes

OECD Exports 1990 **Oil products**

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	135,583	255	1,178	303	-	13,933	-	5,899	2,965	1,987	43	3,365	674	1,693	3,363	171,241
Can	187	-	-	114	-	10,920	-	-	260	-	8	-	-	-	68	11,557
USA	4,525	406	2,725	2,003	-	-	-	65	9,459	6,102	-	147	47	248	-	25,727
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	5	17	-	-	-	82	-	-	1	2,613	238	-	-	13	4,972	7,941
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	250	-	65	145	-	-	1,656	50	-	-	-	-	2,166
NZ	-	27	-	49	-	-	-	-	146	155	-	-	-	-	96	473
Total	140,300	705	3,903	2,719	-	25,000	145	5,964	12,831	12,513	339	3,512	721	1,954	8,499	219,105

OECD Exports 1990 **Naphtha**

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	13,654	1	72	49	-	724	-	69	19	217	10	264	-	46	310	15,435
Can	-	-	-	-	-	451	-	-	-	-	-	-	-	-	-	451
USA	65	8	2	37	-	-	-	-	33	26	-	7	-	2	-	180
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	311	4	-	-	-	-	315
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	13,719	9	74	86	-	1,175	-	69	52	554	14	271	-	48	310	16,381

OECD Exports 1990 **Gasoline**

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	28,062	220	314	37	-	5,311	-	826	352	203	-	1,475	456	111	929	38,296
Can	45	-	-	8	-	2,912	-	-	-	-	-	-	-	-	27	2,992
USA	808	4	248	-	-	-	-	29	1,530	141	-	30	-	28	-	2,818
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	15	-	-	-	-	-	-	-	62	-	-	-	-	-	77
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	9	-	-	19	-	-	183	-	-	-	-	-	211
NZ	-	15	-	-	-	-	-	-	36	-	-	-	-	-	67	118
Total	28,915	254	562	54	-	8,223	19	855	1,918	589	-	1,505	456	139	1,023	44,512

OECD Exports 1990 **Kerosene**

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	9,289	-	243	117	-	1,332	-	513	417	506	-	170	2	281	135	13,005
Can	47	-	-	41	-	610	-	-	-	-	-	-	-	-	41	739
USA	300	1	584	362	-	-	-	-	169	553	-	-	-	100	-	2,069
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	17	-	-	-	560	-	-	-	-	4,105	4,682
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	197	-	-	-	-	-	240	-	-	-	-	-	437
NZ	-	12	-	3	-	-	-	-	57	32	-	-	-	-	-	104
Total	9,636	13	827	720	-	1,959	-	513	643	1,891	-	170	2	381	4,281	21,036

OIL PRODUCTS EXPORTS 1990 contd.
Figures in '000 tonnes

OECD Exports 1990 Diesel

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	42,060	18	31	56	-	1,901	-	1,280	1,039	274	27	481	88	515	356	48,126
Can	37	-	-	64	-	3,612	-	-	242	-	-	-	-	-	-	3,955
USA	1,795	96	323	362	-	-	-	27	2,121	821	-	99	-	57	-	5,701
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	64	-	-	-	655	210	-	-	13	148	1,090
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	569	50	-	-	-	-	619
NZ	-	-	-	46	-	-	-	-	53	123	-	-	-	-	13	235
Total	43,892	114	354	528	-	5,577	-	1,307	3,455	2,442	287	580	88	585	517	59,726

OECD Exports 1990 Fuel

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	33,321	-	449	-	-	3,823	-	2,520	894	464	-	794	4	501	581	43,351
Can	51	-	-	-	-	2,248	-	-	-	-	-	-	-	-	-	2,299
USA	393	237	1,147	931	-	-	-	-	5,014	4,047	-	11	-	41	-	11,821
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	858	22	-	-	-	636	1,516
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	33	66	-	-	462	-	-	-	-	-	561
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	16
Total	33,765	237	1,596	931	-	6,104	66	2,520	5,908	5,831	22	805	4	542	1,233	59,564

OECD Exports 1990 Other Products

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OEC	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	9,197	16	69	44	-	842	-	691	244	323	6	181	124	239	1,052	13,028
Can	7	-	-	1	-	1,087	-	-	18	-	8	-	-	-	-	1,121
USA	1,164	60	421	311	-	-	-	9	592	514	-	-	47	20	-	3,138
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	5	2	-	-	-	1	-	-	1	167	2	-	-	-	83	261
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	44	-	32	60	-	-	202	-	-	-	-	-	338
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	10,373	78	490	400	-	1,962	60	700	855	1,206	16	181	171	259	1,135	17,886

OECD-Statistics.xls/Exports-1990

OIL PRODUCTS EXPORTS 1985

Figures in '000 tonnes

OECD Exports 1985 Oil Products

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	104,024	11	51	622	193	27	9,711	-	3,370	664	168	-	2,035	148	1,520	2,356	124,900
Can	196	-	-	-	22	-	6,466	-	-	-	-	-	-	-	-	153	6,837
USA	2,937	154	69	1,205	3,088	908	-	-	309	3,358	3,164	1	164	11	6	-	15,374
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	52	-	-	-	-	-	298	-	6	104	1,200	271	-	-	200	823	2,954
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	1	-	528	-	50	-	106	-	14	27	905	-	-	-	-	-	1,631
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	80
Total	107,210	165	648	1,827	3,353	935	16,581	-	3,699	4,153	5,437	272	2,199	159	1,726	3,412	151,776

OECD Exports 1985 Naphtha

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	11,265	3	-	47	103	-	1,045	-	63	7	-	-	127	-	74	141	12,875
Can	-	-	-	-	-	-	482	-	-	-	-	-	-	-	-	-	482
USA	18	48	-	28	17	10	-	-	3	9	29	1	-	11	5	-	179
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	8
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	11,283	51	-	75	120	10	1,527	-	66	16	37	1	127	11	79	141	13,544

OECD Exports 1985 Gasoline

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	18,487	-	29	376	-	-	6,079	-	682	184	67	-	124	64	78	562	26,732
Can	14	-	-	-	15	-	1,937	-	-	-	-	-	-	-	-	20	1,986
USA	26	26	2	175	26	3	-	-	2	527	6	-	-	-	-	-	793
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	212	-	-	-	-	-	-	2	142	-	-	-	-	-	356
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	18,527	26	243	551	41	3	8,016	-	684	713	215	-	124	64	78	583	29,868

OECD Exports 1985 Kerosene

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	5,807	7	-	107	-	-	306	-	613	61	69	-	364	-	974	443	8,751
Can	-	-	-	-	-	-	88	-	-	-	-	-	-	-	-	-	88
USA	-	-	-	309	89	58	-	-	-	63	71	-	-	-	-	-	590
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	77	-	6	94	1,017	236	-	-	200	1,083	2,713
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	1	-	76	-	50	-	25	-	5	9	98	-	-	-	-	-	264
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5,808	7	76	416	139	58	496	-	624	227	1,255	236	364	-	1,174	1,526	12,406

OIL PRODUCTS EXPORTS 1985

Figures in '000 tonnes

OECD Exports 1985 Diesel

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	35,549	1	-	59	-	-	309	-	1,002	317	-	-	277	84	248	906	38,752
Can	73	-	-	-	7	-	2,193	-	-	-	-	-	-	-	-	133	2,406
USA	1,165	23	67	401	340	-	-	-	52	912	456	-	4	-	1	-	3,421
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	52	-	-	-	-	-	221	-	-	10	175	35	-	-	-	(261)	232
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	168	-	-	-	-	-	9	8	333	-	-	-	-	-	518
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,839	24	235	460	347	-	2,723	-	1,063	1,247	964	35	281	84	249	778	45,329

OECD Exports 1985 Fuel

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	32,916	-	22	33	90	27	1,972	-	1,010	95	32	-	1,143	-	146	304	37,790
Can	109	-	-	-	-	-	1,766	-	-	-	-	-	-	-	-	-	1,875
USA	1,728	57	-	292	2,616	837	-	-	252	1,847	2,602	-	160	-	-	-	10,391
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	72	-	-	-	81	-	-	8	332	-	-	-	-	-	493
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	80
Total	34,753	57	94	325	2,706	864	3,819	-	1,262	1,950	2,966	-	1,303	-	146	384	50,629

OECD Exports 1985 Other Products

	OECD Eur	Australia	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur																
Can	* OECD do not support figures for "Other Petroleum Oil Products" until 1990															
USA																
Mex																
Japan																
S.Korea																
Australia																
NZ																
Total																

OIL PRODUCTS EXPORTS 1980

Figures in '000 tonnes

OECD Exports 1980 Oil products

	OECD Eur	Austr./NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	95,163	47	3,282	-	50	-	-	6,501	1,152	662	700	723	87	3,890	2,146	114,403
Can	1,803	-	2,238	-	-	-	-	576	208	958	-	-	-	-	-	5,783
USA	68	23	220	-	32	217	-	6	130	-	-	-	5	-	719	1,420
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	5	-	88	-	-	-	-	-	-	6	-	-	-	-	1,423	1,522
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	367	-	-	297	-	-	-	-	313	-	-	-	-	396	1,373
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	97,039	437	5,828	-	379	217	-	7,083	1,490	1,939	700	723	92	3,890	4,684	124,501

OECD Exports 1980 Naphtha

	OECD Eur	Austr./NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	9,773	-	281	-	-	-	-	7	125	49	-	51	8	-	1	10,295
Can	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	750
USA	68	6	36	-	27	12	-	6	22	-	-	-	5	-	42	224
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	9,841	6	1,067	-	27	12	-	13	147	49	-	51	13	-	43	11,269

OECD Exports 1980 Motor Gasoline

	OECD Eur	Austr./NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	16,476	11	153	-	-	-	-	2,168	103	76	-	61	-	791	66	19,905
Can	31	-	398	-	-	-	-	35	30	-	-	-	-	-	-	494
USA	-	17	1	-	-	21	-	-	1	-	-	-	-	-	17	57
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	109	-	-	20	-	-	-	-	36	-	-	-	-	64	229
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	16,507	137	552	-	20	21	-	2,203	134	112	-	61	-	791	147	20,685

OECD Exports 1980 Aviation fuels

	OECD Eur	Austr./NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	5,856	14	1,170	-	-	-	-	854	17	146	-	65	-	208	689	9,019
Can	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	150
USA	-	-	-	-	-	59	-	-	-	-	-	-	-	-	-	59
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	27	-	-	-	-	-	-	-	-	-	-	-	1,423	1,450
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	95	-	-	-	-	-	-	-	-	-	-	-	-	77	172
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	5,856	109	1,347	-	-	59	-	854	17	146	-	65	-	208	2,189	10,850

OIL PRODUCTS EXPORTS 1980 conts.

Figures in '000 tonnes

OECD Exports 1980 Kerosene

	OECD Eur	Australia/NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	1,274	17	-	-	-	-	-	398	-	-	148	120	20	55	370	2,402
Can	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-	29
USA	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	3
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	14	-	-	-	-	-	-	-	-	-	-	-	-	9	23
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1,274	31	29	-	-	2	-	398	-	-	148	120	20	55	380	2,457

OECD Exports 1980 Gas/Diesel oil

	OECD Eur	Australia/NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	32,849	5	1,061	-	-	-	-	2,263	200	-	535	225	3	2,744	464	40,349
Can	1,173	-	75	-	-	-	-	74	76	390	-	-	-	-	-	1,788
USA	-	-	1	-	3	123	-	-	36	-	-	-	-	-	1	164
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	4	-	60	-	-	-	-	-	-	3	-	-	-	-	-	67
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	129	-	-	80	-	-	-	-	204	-	-	-	-	191	604
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	34,026	134	1,197	-	83	123	-	2,337	312	597	535	225	3	2,744	656	42,972

OECD Exports 1980 Heavy Fuel

	OECD Eur	Australia/NZ	Can/USA	N/A	Japan	Mex	Oth.OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	28,935	-	617	-	50	-	-	811	707	391	17	201	56	92	556	32,433
Can	599	-	836	-	-	-	-	467	102	568	-	-	-	-	-	2,572
USA	-	-	182	-	2	-	-	-	71	-	-	-	-	-	658	913
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	1	-	1	-	-	-	-	-	-	3	-	-	-	-	-	5
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	20	-	-	197	-	-	-	-	73	-	-	-	-	55	345
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	29,535	20	1,636	-	249	-	-	1,278	880	1,035	17	201	56	92	1,269	36,268

OIL PRODUCTS EXPORTS 1975

Figures in '000 tonnes

OECD-Statistics.xls/Exports-1975

OECD Exports 1975 Oil Products

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	83,398	36	-	-	131	-	-	4,576	4,145	206	-	-	1,721	199	463	853	95,728
Can	982	-	-	-	-	113	-	2,992	13	274	-	-	-	-	-	-	4,374
USA	775	38	1	-	12	653	-	257	85	299	113	-	1	-	6	-	2,240
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	160	-	-	-	-	6	-	42	13	-	762	-	-	-	-	52	1,035
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	388	-	297	-	-	349	24	-	125	-	-	-	-	74	1,257
NZ	-	-	156	-	-	-	-	-	-	-	63	-	-	-	-	43	262
Total	85,315	74	545	-	440	772	-	8,216	4,280	779	1,063	-	1,722	199	469	1,022	104,896

OECD Exports 1975 Naphtha

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	8,470	-	-	-	-	-	-	224	17	76	-	-	57	-	-	217	9,061
Can	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USA	763	38	1	-	12	19	-	94	85	165	37	-	1	-	5	-	1,220
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	9,313	38	1	-	12	19	-	318	102	241	37	-	58	-	5	217	10,361

OECD Exports 1975 Motor Gasoline

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	12,454	17	-	-	-	-	-	601	819	1	-	-	242	-	26	48	14,208
Can	44	-	-	-	-	92	-	434	-	1	-	-	-	-	-	-	571
USA	4	-	-	-	-	6	-	2	-	71	17	-	-	-	-	-	100
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	178	-	-	-	-	-	-	-	2	-	-	-	-	21	201
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	12,502	17	178	-	-	98	-	1,037	819	73	19	-	242	-	26	69	15,080

OECD Exports 1975 Aviation fuels

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	5,174	-	-	-	-	-	-	19	468	1	-	-	289	-	242	17	6,210
Can	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USA	1	-	-	-	-	23	-	16	-	-	35	-	-	-	-	-	75
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	29
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZ	-	-	156	-	-	-	-	-	-	-	63	-	-	-	-	43	262
Total	5,175	-	156	-	-	23	-	35	468	1	98	-	289	-	242	89	6,576

OIL PRODUCTS EXPORTS 1975 contd.
Figures in '000 tonnes

OECD Exports 1975 Kerosene

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	1,143	-	-	-	-	-	-	63	289	-	-	-	50	-	45	14	1,604
Can	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USA	1	-	-	-	-	-	-	1	-	3	2	-	-	-	-	-	7
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	12	-	-	-	-	-	-	-	6	-	-	-	-	4	22
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1,144	-	12	-	-	-	-	64	289	3	8	-	50	-	45	19	1,634

OECD Exports 1975 Diesel

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	31,690	19	-	-	-	-	-	503	1,728	62	-	-	600	113	90	480	35,285
Can	518	-	-	-	-	21	-	275	13	51	-	-	-	-	-	-	878
USA	6	-	-	-	-	4	-	1	-	2	22	-	-	-	1	-	36
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	-	-	-	-	-	6	-	5	1	-	-	-	-	-	-	3	15
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	198	-	2	-	-	-	24	-	74	-	-	-	-	20	318
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	32,214	19	198	-	2	31	-	784	1,766	115	96	-	600	113	91	503	36,532

OECD Exports 1975 Fuel

	OECD Eur	Australia	NZ	Can	Japan	Mex	USA	Other OECD	Africa	Latin Am.	Asia	China	Non OECD	FSU	MEG	Other	Total
OECD Eur	24,467	-	-	-	131	-	-	3,166	824	66	-	-	483	86	60	77	29,360
Can	420	-	-	-	-	-	-	2,283	-	222	-	-	-	-	-	-	2,925
USA	-	-	-	-	-	601	-	143	-	58	-	-	-	-	-	-	802
Mex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan	80	-	-	-	-	-	-	37	12	-	762	-	-	-	-	19	910
S.Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Australia	-	-	-	-	295	-	-	349	-	-	43	-	-	-	-	29	716
NZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	24,967	-	-	-	426	601	-	5,978	836	346	805	-	483	86	60	125	34,713

ORIMULSION EXPORTS FROM VENEZUELA by destination 1988-2001

Figures in '000 tonnes

TONS

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
Barbados															
Arawak Cement										34	30	40	37	30	**171**
Guatemala															
Wartsila													4		**4**
Canada															
New Brunswick Power	77	100					269	615	677	855	772	848	714	799	**5,726**
USA															
Florida Power & Light/USA			32	229											**261**
Denmark															
SK Power							80	988	1,309	1,399	1,297	1,206	1,112	1,107	**8,498**
Finland															
Wartsila													14		**14**
Germany															
RWE													50	24	**74**
Italy															
Enel										84	750	1,779	2,717	2,212	**7,542**
Lithuania															
Lithuania State Power									48	50	81	51	51	50	**331**
UK															
Power Gen		47	156	465	1,339	1,408	1,267	1,108	976	119					**6,885**
Setubal							93								**93**
Otras Pruebas										10					**10**
China															
China Oil									197	592		368	779	1,004	**2,940**
Japan															
Mitsubishi	5					546	634								**1,185**
Kashima Kita				191	382			429	349	355	361	429	632	694	**3,822**
Mitsubishi Chemical								275	196	10	27		19	12	**539**
Kansai Electric							110	145	231	201	152	89	15	60	**1,003**
Hokkaido Electric									30	119	65	71	49	100	**434**
Singapur															
Power resaya													42	82	**124**
TOTAL	**82**	**147**	**188**	**885**	**1,721**	**1,954**	**2,453**	**3,560**	**4,013**	**3,828**	**3,535**	**4,881**	**6,235**	**6,174**	**39,656**
ACCUMULATIVE	**82**	**229**	**417**	**1,302**	**3,023**	**4,977**	**7,430**	**10,990**	**15,003**	**18,831**	**22,366**	**27,247**	**33,482**	**39,656**	

Orimulsion-Exports.xls/Exports
Source: Bitor

PANAMA CANAL CARGO VOLUME.

Total liquid bulk and by commodity, both directions 1986-2001

Figures in '000 tonnes

FROM ATLANTIC TO PACIFIC

SOURCE: ACP

Sum of INTAKE LTON																	
CARGOGROUP	CARGO	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CHEMICALS	Benzene	95	454	285	225	577	301	206	123	202	121	30	106	45	142	7	53
	Caustic soda	1,389	1,565	1,768	1,892	1,361	1,184	1,039	1,147	1,588	1,253	886	439	366	504	881	504
	Chemicals, misc	2,151	2,773	2,703	2,444	3,053	3,394	4,158	4,689	4,494	5,424	5,586	5,045	4,986	5,832	5,248	5,039
	Chemicals, petro, mis	698	589	874	1,578	924	1,186	1,013	1,823	1,950	1,442	2,607	2,298	1,447	1,529	1,195	755
	Liquors	26	0	10	22	27	0	0	19	3		7	6				5
	Molasses		4		47	22			22	3	86	62	25	8	21	7	14
	Oil, coconut						10	14					4				
	Oil, fish			4	6				6	7	10	10	5	13	8	1	33
	Oil, vegetable, misc	215	91	234	136	315	244	284	346	299	876	210	530	894	244	135	171
	Oil, whale														35		
	Oilseeds	76	46	101	54	188	219	205	89	124	233	306	87	57	90	54	19
	Resin	33	28	39	29	34	18	36	42	53	50	33	0	2	1	2	0
	Tallow	76	33	22	57	33	118	178	65	45	129	86	45	103	130	113	75
	Toluene	68	244	216	364	416	174	372	172	351	377	413	176	63	59	93	73
	Wines								29	22							
CHEMICALS Total		4,827	5,827	6,258	6,855	6,949	6,850	7,504	8,572	9,141	10,001	10,235	8,768	7,986	8,594	7,737	6,740
CRUDE	Crude petroleum	2,928	3,491	2,878	2,184	2,915	3,505	3,916	3,559	3,883	4,370	4,582	4,586	5,143	3,926	4,783	4,709
GAS	Ammonium compoun	301	155	184	139	88	192	84	164	183	271	95	312	464	149	223	330
	Liquified gas	1,168	1,078	1,057	1,077	991	1,320	1,052	1,219	1,364	1,406	1,254	1,115	866	1,038	1,183	1,256
GAS Total		1,469	1,233	1,240	1,217	1,079	1,511	1,136	1,383	1,547	1,676	1,349	1,428	1,330	1,187	1,406	1,586
ORIMULSION	Orimulsion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	217	-
PRODUCTS	Asphalt	81	198	101	66	41	50	213	46	139	439	527	319	115	158	256	170
	Diesel oil	1,915	1,844	1,541	2,096	1,497	1,697	2,040	3,078	3,240	4,083	4,644	4,702	3,045	3,538	3,488	2,389
	Gasoline	1,934	2,011	1,756	1,605	1,834	1,452	1,510	1,878	1,692	1,696	2,197	2,862	2,735	4,305	3,050	3,044
	Jet fuel	709	774	856	838	902	484	1,249	1,409	957	1,521	1,606	1,205	471	1,649	1,371	639
	Kerosene	65	25	129	8	201	23	132	186	64	38	92	49	48	37	133	129
	Lubricating oil	427	516	581	462	757	537	604	461	417	519	432	510	401	436	405	371
	Petroleum products, r	52	217	4	377	208	364	338	677	835	1,313	1,205	818	398	1,079	1,731	1,338
	Residual fuel oil	1,814	1,648	1,356	1,060	1,965	2,315	1,630	1,343	1,457	1,365	1,383	1,909	3,209	1,493	3,000	3,222
PRODUCTS Total		6,997	7,233	6,325	6,511	7,404	6,922	7,717	9,078	8,802	10,975	12,087	12,373	10,422	12,696	13,433	11,302
GRAND TOTAL		16,221	17,783	16,701	16,767	18,347	18,789	20,273	22,592	23,373	27,023	28,253	27,155	24,881	26,404	27,576	24,337

PC-cargo-volumes.xls/Total directions
Source: ACP

PANAMA CANAL CARGO VOLUME

Figures in '000 tonnes

FROM PACIFIC TO ATLANTIC

SOURCE: ACP

Sum of INTAKE LTON		YEAR															
CARGOGROUP	CARGO	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CHEMICALS	Benzene	152	191	214	100	19	43	75	46	197	66	47	114	232	215	230	218
	Caustic soda					3	87	92	24	90	109	76	1	70		6	43
	Chemicals, misc	777	937	1,118	1,287	816	1,220	1,237	1,366	1,176	1,295	1,430	976	1,495	2,327	1,874	1,781
	Chemicals, petro, misc	60	92	67	88	125	67	111	31	177	207	259	187	117	84	137	190
	Liquors	6			39	37	34		1		5		9		3	10	
	Molasses	577	549	621	806	688	525	813	938	980	701	816	692	890	585	561	501
	Oil, coconut	47	60	6	112	50	69	38	82	93	60	58	95	202	65	122	124
	Oil, fish	263	125	200	474	173	149	110	189	330	309	181	190	13	179	230	130
	Oil, vegetable, misc	144	81	152	215	168	135	296	193	227	186	254	260	225	225	314	203
	Oil, whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oilseeds	247	128	86	191	28	45	79	49	275	141	85	23	20	75	130	179
	Resin	17			12		5		5	21					9		
	Tallow	42		26	23	69		63	41	54	78	36	35	25	14	8	37
	Toluene	17	25	28			34	34	27					12	7	43	
	Wines		4			3	3	3	7	3	10	7	10	10	7	7	7
CHEMICALS Total		2,351	2,193	2,518	3,346	2,180	2,415	2,951	2,998	3,626	3,167	3,249	2,591	3,311	3,793	3,671	3,412
CRUDE	Crude petroleum	9,184	4,753	6,154	5,653	6,667	4,209	4,457	5,577	5,677	7,862	8,263	7,583	5,516	4,571	2,551	4,529
GAS	Ammonium compounds					8	0	23		0				2	15		
	Liquified gas	87	110	4	87	152	98	98	214	129	137	36	50	34	51	28	29
GAS Total		87	110	4	87	159	98	120	214	130	137	36	50	37	67	28	29
ORIMULSION	Orimulsion	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRODUCTS	Asphalt	17			15	1	3		15					0			
	Diesel oil	625	264	674	214	108	419	395	411	356	60	153	23	121	102	15	275
	Gasoline	467	302	229	434	316	1,067	916	495	576	850	638	550	1,111	626	1,148	1,459
	Jet fuel	59		38		42	26	39	5	58	29	66		45	9		6
	Kerosene	7						133	37	44		41	18	127	25		21
	Lubricating oil	275	322	209	168	183	163	131	73	61	108	90	115	118	102	131	103
	Petroleum products, m	146	72	30	19	50	104	216	529	458	544	751	248	252	134	462	374
	Residual fuel oil	4,348	4,180	2,970	3,339	3,108	2,730	2,636	2,758	1,139	1,130	1,005	280	909	257	522	890
PRODUCTS Total		5,944	5,141	4,151	4,187	3,809	4,512	4,466	4,323	2,692	2,721	2,744	1,234	2,683	1,255	2,278	3,129
GRAND TOTAL		17,566	12,196	12,826	13,274	12,815	11,235	11,994	13,112	12,124	13,887	14,292	11,457	11,547	9,685	8,528	11,099

PC-cargo-volumes.xls/Total directions
Source: ACP

US-CANADA INTERNAL OIL SHIPMENTS. VESSELS OVER 50,000 DWT 1988-2001

Figures in '000 tonnes

TOTAL

Sum of DWT		TO						
YR	FROM	Alaska	Canada EC	Canada WC	US EC	US Gulf	US WC	Grand Total
1988	Alaska			123	82		68,570	68,775
	Canada EC				988	210	70	1,268
	Canada WC					65		65
	US EC		80					80
	US Gulf		85		535			620
	US WC				50			50
1988 Total			165	123	1,655	275	68,640	**70,858**
1990	Alaska					59	79,658	79,717
	Canada EC				621	221		842
	Canada WC					113		113
	US EC		186		96			282
	US Gulf		116					116
	US WC							
1990 Total			302		717	393	79,658	**81,070**
1995	Alaska	974					74,765	75,739
	Canada EC				7,207	408		7,615
	Canada WC					64	163	227
	US EC							
	US Gulf		470					470
	US WC				69			69
1995 Total		974	470		7,276	472	74,928	**84,120**
2000	Alaska	32			150		51,686	51,868
	Canada EC				16,636	209		16,845
	Canada WC				131	32		163
	US EC		248					248
	US Gulf		749					749
	US WC							
2000 Total		32	997		16,917	241	51,686	**69,873**
2001	Alaska	188					54,697	54,885
	Canada EC				15,410	232	68	15,710
	Canada WC						71	71
	US EC		175					175
	US Gulf		900					900
	US WC			194				194
2001 Total		188	1,075	194	15,410	232	54,836	**71,935**

THROUGH PANAMA CANAL

Sum of DWT		TO						
YR	FROM	Alaska	Canada EC	Canada WC	US EC	US Gulf	US WC	Grand Total
1988	Alaska	-						-
	Canada EC						70	70
	Canada WC					65		65
	US EC	-	-					-
	US Gulf	-		-				-
	US WC				50			50
1988 Total		-	-	-	50	65	70	**185**
1990	Alaska							
	Canada EC							
	Canada WC					113		113
	US EC							
	US Gulf							
	US WC							
1990 Total						113		**113**
1995	Alaska							
	Canada EC							
	Canada WC					64		64
	US EC							
	US Gulf							
	US WC							
1995 Total						64		**64**
2000	Alaska							
	Canada EC							
	Canada WC							
	US EC							
	US Gulf			-				-
	US WC							
2000 Total				-				**-**
2001	Alaska							
	Canada EC						68	68
	Canada WC							
	US EC							
	US Gulf							
	US WC							
2001 Total							68	**68**

US-Canada-Oil-Shipments.xls/US-CANADA ONLY

Source: Fearnresearch

US-CANADA OIL IMPORTS. VESSELS OVER 50,000 DWT. TOTAL 1988-2001

Figures in '000 tonnes

TOTAL

Sum of DWT		TO						
YR	FROM	Alaska	Canada EC	Canada WC	US EC	US Gulf	US WC	Grand Total
1988	Australia/N Z				112	625	556	1,293
	Black Sea		114		3,433	949		4,496
	Caribbean		2,526		31,818	95,795	179	130,318
	China				1,552	1,342	312	3,206
	M E G		3,223		2,028	42,354	291	47,896
	Mexico West				61		513	574
	N Africa				6,221	10,098		16,319
	N America West			123	132	65	68,570	68,890
	Near East				1,534	14,745		16,279
	North Sea		11,712	103	15,845	10,553	222	38,435
	Others		339		5,904	2,979	297	9,519
	R S Africa				902	627		1,529
	R S Asia		137		1,785	7,430	64	9,416
	S America West		89		3,304	1,200	396	4,989
	S E Asia				1,027	3,999	9,454	14,480
	W Africa		2,484		25,652	18,809		46,945
1988 Total			20,624	226	101,310	211,570	80,854	414,584
1990	Australia/N Z		97		128	185	1,477	1,887
	Black Sea		68		957	2,345		3,370
	Caribbean		2,626		30,222	100,634	1,275	134,757
	China				870	2,312	912	4,094
	M E G		2,919		358	66,489	731	70,497
	Mexico West					284	584	868
	N Africa		636		6,055	10,810		17,501
	N America West					172	79,658	79,830
	Near East		465		2,134	12,444		15,043
	North Sea		12,435		13,288	12,427		38,150
	Others		368		5,346	2,785	456	8,955
	R S Africa				1,387	85		1,472
	R S Asia		90		2,010	2,027	185	4,312
	S America West				2,092	1,714	368	4,174
	S E Asia			86	534	1,986	7,812	10,418
	W Africa		1,974		31,755	27,235	54	61,018
1990 Total			21,678	86	97,136	243,934	93,512	456,346
1995	Australia/N Z					159	386	545
	Black Sea		491		143	892		1,526
	Caribbean		3,790	88	40,883	152,500	2,629	199,890
	China				940		741	1,681
	M E G		3,652	50	160	59,467	3,153	66,482
	Mexico West						153	153
	N Africa		2,067		2,142	11,088		15,297
	N America West	974			69	64	74,928	76,035
	Near East		96		150	269	61	576
	North Sea		14,288		18,180	17,786		50,254
	Others		668	54	9,592	5,428	996	16,738
	R S Africa				725	977		1,702
	R S Asia				151	303		454
	S America West				535	5,900	3,317	9,752
	S E Asia			181	1,371	1,860	4,496	7,908
	W Africa		3,457		30,960	36,269		70,686
1995 Total		974	28,509	373	106,001	292,962	90,860	519,679
2000	Australia/N Z				99	291	1,965	2,355
	Black Sea		368		149	225		742
	Caribbean		2,529		47,267	200,008	4,699	254,503
	China				70		1,456	1,526
	M E G		4,551	274	2,958	99,029	13,968	120,780
	Mexico West					361	3,194	3,555
	N Africa		3,675		4,041	11,279	61	19,056
	N America West	32			281	32	51,686	52,031
	Near East		1,225		144	701		2,070
	North Sea		17,847		32,706	27,177	794	78,524
	Others		1,663	33	23,583	7,493	2,858	35,630
	R S Africa							
	R S Asia		61		168	710	1,300	2,239
	S America West				1,267	1,052	7,114	9,433
	S E Asia			32	1,048	1,196	6,499	8,775
	W Africa		3,881		35,238	37,961		77,080
2000 Total		32	35,800	339	149,019	387,515	95,594	668,299
2001	Australia/N Z				96	373	2,034	2,503
	Black Sea				133	660		793
	Caribbean		2,948	68	43,730	221,879	4,060	272,685
	China				124	70	451	645
	M E G		3,838		995	106,725	14,830	126,388
	Mexico West				165	69	5,455	5,689
	N Africa		3,918		4,361	11,386	480	20,145
	N America West	188		194			54,768	55,150
	Near East		3,007		1,050	7,599	397	12,053
	North Sea		18,034		29,909	25,986	137	74,066
	Others		1,922		22,667	5,392	3,404	33,385
	R S Africa							
	R S Asia		55			634	715	1,404
	S America West		55	32	2,486	1,382	5,293	9,248
	S E Asia	103		48	412	1,460	6,291	8,314
	W Africa		3,506		36,086	43,528	659	83,779
2001 Total		291	37,283	342	142,214	427,143	98,974	706,247

US-Canada-Oil-Shipments.xls/US-CANADA IMPORTS
Source: Fearnresearch

US-CANADA OIL IMPORTS. VESSELS OVER 50,000 DWT. THROUGH CANAL 1988-2001

Figures in '000 tonnes

Sum of DWT		TO						
YR	FROM	Alaska	Canada EC	Canada WC	US EC	US Gulf	US WC	Grand Total
1988	Australia/N Z							
	Caribbean					91	117	208
	China							
	Mexico West				61			61
	N Africa							
	N America West				50	65		115
	Near East							
	North Sea						222	222
	Others						120	120
	S America West		89		2,806	1,122		4,017
	S E Asia				35		35	70
	W Africa							
	Black Sea	-						-
	M E G	-						-
	R S Asia	-						-
	R S Africa	-						-
1988 Total		-	89		2,952	1,278	494	4,813
1990	Australia/N Z							
	Caribbean						1,096	1,096
	China							
	Mexico West							
	N Africa							
	N America West					113		113
	Near East							
	North Sea							
	Others					84		84
	S America West				2,030	1,575		3,605
	S E Asia							
	W Africa						54	54
	Black Sea	-						-
	M E G	-						-
	R S Asia	-						-
	R S Africa	-						-
1990 Total		-			2,030	1,772	1,150	4,952
1995	Australia/N Z					51		51
	Caribbean					125	1,810	1,935
	China							
	Mexico West							
	N Africa							
	N America West					64		64
	Near East						61	61
	North Sea							
	Others				51	889	59	999
	S America West				419	5,714		6,133
	S E Asia					170		170
	W Africa							
	Black Sea	-						-
	M E G	-						-
	R S Asia	-						-
	R S Africa	-						-
1995 Total		-			470	7,013	1,930	9,413
2000	Australia/N Z							
	Caribbean				31	31	4,631	4,693
	China							
	Mexico West					361	62	423
	N Africa						61	61
	N America West							
	Near East							
	North Sea						727	727
	Others					194	132	326
	S America West				965	746		1,711
	S E Asia							
	W Africa							
	Black Sea	-						-
	M E G	-						-
	R S Asia	-						-
	R S Africa	-						-
2000 Total		-			996	1,332	5,613	7,941
2001	Australia/N Z							
	Caribbean			68	34		3,900	4,002
	China				124	70		194
	Mexico West				165	69		234
	N Africa						480	480
	N America West							
	Near East							
	North Sea						137	137
	Others						362	362
	S America West		55		2,486	1,382		3,923
	S E Asia							
	W Africa						61	61
	Black Sea	-						-
	M E G	-						-
	R S Asia	-						-
	R S Africa	-						-
2001 Total		-	55	68	2,809	1,521	4,940	9,393

US-Canada-Oil-Shipments.xls/US-CANADA IMPORTS

Source: Fearnresearch

US-CANADA OIL EXPORTS. VESSELS OVER 50,000 DWT TOTAL1988-2001

Figures in '000 tonnes

Sum of DWT		TO																
YR	FROM	Baltic	C Am. East	C Am. West	Japan	Medit.	Am.East/Gulf	N Am. West	N W Eur.	Oth.F.East	Others	S Am. East	S Am.West	S Asia	S E Afr.	S E Asia	W Afr.	Grand Total
1988	Alaska		7,063	24,391	1,063		82	68,693	142	479	416	269				112	70	102,568
	Canada EC						1,198	70										1,480
	Canada WC				414		65		187							290		956
	US EC				25		80											445
	US Gulf		216		300	1,133	1,398		340				60	123				3,833
	US WC		166	331	969	189	112		92	3,594	317	102	60	93		189		6,214
1988 Total			7,445	24,722	2,771	1,322	2,935	68,763	1,096	4,341	733	371	120	216		591	70	115,496
1990	Alaska		1,076	13,504	913		59	79,658		1,000	351					104		96,665
	Canada EC						843		137									980
	Canada WC				186		113			285								584
	US EC		221			309	282		194			178	60	61			64	1,369
	US Gulf	55	648	60	488	783	259		723	348		199				206		3,769
	US WC		117	1,168	1,012					3,746	357		76	51		295		6,822
1990 Total		55	2,062	14,732	2,599	1,092	1,556	79,658	1,054	5,379	708	377	136	112		605	64	110,189
1995	Alaska		4,756	2,952	61		7,614	75,739	371	265		51			70	88		83,596
	Canada EC		56			170	64			25								8,597
	Canada WC							163										252
	US EC		181	57		423	756		299							96		1,056
	US Gulf		1,660		84	1,420	69		1,401	1,107	252	385	58	65	390	593		8,171
	US WC			504	1,068					2,904			298			2,147		6,990
1995 Total			6,653	3,513	1,213	2,013	8,503	75,902	2,071	4,301	252	436	356	65	460	2,924		108,662
2000	Alaska				1,165		150	51,717		591						490		54,113
	Canada EC					254	16,845		195									17,294
	Canada WC						163											163
	US EC			68		371	248		603									1,290
	US Gulf		3,296	737		421	749		737	244		191	254	253	180	1,443		8,505
	US WC		61	999	929	62			61	1,334	97		189	51		2,047		5,830
2000 Total			3,357	1,804	2,094	1,108	18,155	51,717	1,596	2,169	97	191	443	304	180	3,980		87,195
2001	Alaska							54,885			84							54,885
	Canada EC					68	15,643	68	379									16,242
	Canada WC							71		288								359
	US EC		66			161	175		337			134						873
	US Gulf	144	2,095	746	96	625	900		1,323	614	68	69	127	156	377	1,781	86	9,139
	US WC		229	550	885			194		636	152	62	206			1,842		4,672
2001 Total		144	2,390	1,296	981	854	16,718	55,218	2,039	1,538	152	265	333	156	377	3,623	86	86,170

US-Canada-Oil-Shipments.xls/US-CANADA EXPORTS
Source: Fearnresearch

US-CANADA OIL EXPORTS. VESSELS OVER 50,000 DWT THROUGH CANAL 1988-2001

Figures in '000 tonnes

Sum of DWT		TO																	
YR	FROM	Baltic	C America E	C America W	Japan	Mediterr	N America E	N America W	N W Euro	Other Far	Others	S America	S America W	S Asia	S E Afric	S E Asia	W Africa	Grand Total
1988	Canada EC							70										70
	Canada WC						65											65
	US EC				25													25
	US Gulf				300								60					360
	US WC					100	112		92			51						355
	Alaska	-												-	-		-	-
1988 Total		-			325	100	177	70	92			51	60	-	-		-	875
1990	Canada EC																	
	Canada WC						113						60					113
	US EC			60	401					264						115		60
	US Gulf																	840
	US WC		63															63
	Alaska	-												-	-		-	-
1990 Total		-	63	60	401		113			264			60	-	-	115	-	1,076
1995	Canada EC									61								61
	Canada WC						64											64
	US EC			57														57
	US Gulf				84					266	51	58						459
	US WC																	
	Alaska	-												-	-		-	-
1995 Total		-		57	84		64			327	51		58	-	-		-	641
2000	Canada EC																	
	Canada WC			68														68
	US EC			737									254			61		1,052
	US Gulf								61									122
	US WC		61											-	-		-	-
	Alaska	-																
2000 Total		-	61	805					61				254	-	-	61	-	1,242
2001	Canada EC							68										68
	Canada WC																	
	US EC			746						113			127			186		1,236
	US Gulf		64									62						127
	US WC		65											-	-		-	-
	Alaska	-																
2001 Total		-	129	746				68		113		62	127	-	-	186	-	1,431

US-Canada-Oil-Shipments.xls/US-CANADA EXPORTS

Source: Fearnresearch

OIL AND ENERGY INTENSITY. OECD, Europe, USA, Japan 1975-2002

Chart ID: 310

OECD Europe

	ID 1935 Oil consumption	ID 2924 Energy cons.	ID 1471 Industrial prod.	ID 7009 Oil intensity	ID 7010 Energy Intensity
1975	100.000	100.000	100.000	1.000	1.000
1976	107.440	106.876	106.667	1.007	1.002
1977	105.180	107.281	109.091	0.964	0.983
1978	109.310	110.060	111.636	0.979	0.986
1979	111.070	114.119	116.970	0.950	0.976
1980	103.850	110.918	117.091	0.887	0.947
1981	95.260	107.727	114.909	0.829	0.937
1982	91.120	105.982	113.333	0.804	0.935
1983	88.720	106.159	114.545	0.775	0.927
1984	89.280	109.057	117.333	0.761	0.929
1985	87.810	112.797	121.212	0.724	0.931
1986	89.460	115.072	123.758	0.723	0.930
1987	91.570	117.843	126.424	0.724	0.932
1988	92.540	118.174	132.000	0.701	0.895
1989	93.230	119.820	137.333	0.679	0.872
1990	94.990	121.200	140.000	0.679	0.866
1991	97.100	122.900	139.900	0.694	0.878
1992	98.800	123.100	138.500	0.713	0.889
1993	98.800	123.100	134.200	0.736	0.917
1994	98.900	123.000	139.600	0.708	0.881
1995	99.800	125.400	144.700	0.690	0.867
1996	102.100	129.600	145.100	0.704	0.893
1997	103.000	129.300	151.800	0.679	0.852
1998	105.100	129.600	157.100	0.669	0.825
1999	106.400	131.400	159.400	0.668	0.824
2000	108.600	133.800	166.700	0.651	0.803
2001	109.700	134.800	167.500	0.655	0.805
2002	110.000	135.000	168.700	0.652	0.800

Chart ID 311

USA

ID 1934 Oil consumption	ID 2923 Energy consumption	ID 1470 Industrial prod.	ID 7011 Oil intensity	ID 7012 Energy Intensity
100.000	100.000	100.000	1.000	1.000
107.550	105.794	109.184	0.985	0.969
115.550	109.736	117.784	0.981	0.932
117.810	111.538	125.510	0.939	0.889
113.700	112.442	130.467	0.871	0.862
103.070	108.092	127.988	0.805	0.845
96.060	105.259	130.758	0.735	0.805
91.830	101.427	121.574	0.755	0.834
91.330	100.309	128.717	0.710	0.779
93.960	105.615	143.149	0.656	0.738
92.940	105.599	145.773	0.638	0.724
97.140	105.577	147.376	0.659	0.716
103.430	110.236	154.373	0.670	0.714
107.490	116.660	162.828	0.660	0.716
106.970	117.779	166.910	0.641	0.706
103.300	116.500	168.600	0.613	0.691
101.100	116.100	165.600	0.611	0.701
102.700	117.900	169.500	0.606	0.696
104.400	120.300	176.400	0.592	0.682
107.100	122.800	186.600	0.574	0.658
106.800	124.900	195.700	0.546	0.638
110.600	128.800	202.600	0.546	0.636
112.000	129.400	215.400	0.520	0.601
114.000	129.400	224.600	0.508	0.576
117.400	131.000	232.500	0.505	0.563
118.500	132.500	243.000	0.488	0.545
118.100	129.600	233.600	0.506	0.555
118.700	131.900	234.800	0.506	0.562

Chart ID: 309

Japan

ID 1936 Oil consumption	ID 2922 Energy consumption	ID 1472 Industrial prod.	ID 7013 Oil intensity	ID 7014 Energy Intensity
100.000	100.000	100.000	1.000	1.000
106.740	106.446	111.148	0.960	0.958
110.390	108.734	115.738	0.954	0.939
111.370	111.032	123.115	0.905	0.902
112.630	115.722	132.131	0.852	0.876
102.660	113.446	138.361	0.742	0.820
95.240	110.438	139.672	0.682	0.791
90.880	108.523	140.164	0.648	0.774
91.550	109.682	144.754	0.632	0.758
93.650	118.062	158.197	0.592	0.746
88.030	117.598	163.934	0.537	0.717
88.840	118.479	163.607	0.543	0.724
89.710	120.595	169.344	0.530	0.712
96.400	127.210	184.918	0.521	0.688
101.070	132.347	196.230	0.515	0.674
106.400	139.000	205.200	0.519	0.677
106.600	143.800	208.900	0.510	0.688
108.500	146.300	196.200	0.553	0.746
105.600	147.900	187.400	0.564	0.789
110.800	151.600	188.900	0.587	0.803
110.900	155.800	195.500	0.567	0.797
111.400	159.100	200.800	0.555	0.792
110.000	160.500	208.000	0.529	0.772
105.300	157.400	193.300	0.545	0.814
106.800	156.700	195.200	0.547	0.803
105.200	158.200	206.600	0.509	0.766
103.700	156.000	191.300	0.542	0.815
101.200	153.500	186.500	0.543	0.823

oil and energy intensity.xls/Intensity
Based on data from BP and OECD

WORLD AND REGIONAL OIL CONSUMPTION

Figures in million tonnes

ID 585 - OIL CONSUMPTION BY AREA

	ID: 3644	ID:3635	ID:3636	ID:3637	ID:3638	ID:3633	ID:3634	
	M.E. East	Japan	Other Asia	FSU	Others	W. Europe	N. America	WORLD
1970	50	199	115	263	261	627	768	2282
1971	54	220	129	279	281	656	795	2413
1972	57	234	143	303	298	702	855	2593
1973	62	269	163	326	328	749	902	2798
1974	67	259	171	359	338	699	867	2760
1975	66	244	180	375	346	664	849	2724
1976	74	254	198	385	365	710	908	2894
1977	80	260	212	400	387	697	952	2988
1978	86	263	228	419	401	715	976	3087
1979	95	265	247	427	419	732	958	3144
1980	100	238	249	448	426	681	882	3024
1981	105	224	249	452	424	634	828	2916
1982	123	208	241	423	413	602	778	2788
1983	132	207	247	417	405	584	773	2765
1984	140	218	253	417	407	590	790	2815
1985	145	206	262	417	412	580	789	2811
1986	147	209	282	418	424	603	820	2903
1987	151	209	297	420	435	603	838	2953
1988	151	225	324	415	443	612	874	3044
1989	156	233	347	413	456	614	876	3095
1990	165	248	369	418	455	628	860	3143
1991	169	252	393	398	439	641	840	3132
1992	172	259	432	348	441	653	857	3162
1993	176	253	463	277	444	651	866	3130
1994	184	268	501	236	460	661	889	3199
1995	191	269	540	217	465	670	884	3236
1996	200	270	576	188	481	686	915	3316
1997	204	266	611	187	498	694	930	3390
1998	207	255	598	182	513	705	947	3407
1999	215	259	626	182	513	701	966	3462
2000	220	255	650	183	517	695	970	3490

Oil-consumption.xls/Consumption
Based on data from BP and OECD

WORLD AND REGINONAL OIL CONSUMPTION VS GDP

Index 1975 = 1

	1975	1980	1985	1990	1995	2000
World						
GDP	1.000	1.234	1.396	1.667	1.923	2.328
Oil consumption	1.000	1.111	1.039	1.152	1.189	1.288
Oil intensity	1.000	0.900	0.744	0.691	0.618	0.553
Advanced economies (OECD)						
GDP	1.000	1.193	1.331	1.565	1.737	2.043
Oil consumption	1.000	1.058	0.894	0.947	1.100	1.186
Oil intensity	1.000	0.886	0.672	0.605	0.633	0.581
USA						
GDP	1.000	1.199	1.350	1.565	1.737	2.123
Oil consumption	1.000	1.035	0.941	1.018	1.055	1.170
Oil intensity	1.000	0.863	0.697	0.651	0.607	0.551
Japan						
GDP	1.000	1.276	1.545	1.926	2.075	2.224
Oil consumption	1.000	0.975	0.880	1.071	1.159	1.097
Oil intensity	1.000	0.764	0.570	0.556	0.559	0.493
OECD Europe						
GDP	1.000	1.165	1.258	1.467	1.586	1.805
Oil consumption	1.000	1.046	0.898	0.967	0.987	1.027
Oil intensity	1.000	0.898	0.714	0.659	0.622	0.569
Developing Countries						
GDP	1.000	1.351	1.551	1.961	2.649	3.396
Oil consumption	1.000	1.349	1.585	1.879	2.319	2.854
Oil intensity	1.000	0.999	1.022	0.958	0.876	0.840
Middle East						
GDP	1.000	1.234	1.228	1.466	1.758	2.159
Oil consumption	1.000	1.518	1.965	2.496	2.879	3.026
Oil intensity	1.000	1.229	1.600	1.703	1.638	1.401
Africa						
GDP	1.000	1.159	1.305	1.491	1.614	1.917
Oil consumption	1.000	1.370	1.612	1.841	2.023	2.266
Oil intensity	1.000	1.182	1.235	1.235	1.253	1.182
Latin America						
GDP	1.000	1.313	1.360	1.509	1.801	2.087
Oil consumption	1.000	1.264	1.252	1.395	1.587	1.813
Oil intensity	1.000	0.963	0.920	0.925	0.881	0.868
Asia						
GDP	1.000	1.410	1.940	2.721	4.148	5.630
Oil consumption	1.000	1.445	1.595	2.063	2.968	3.897
Oil intensity	1.000	1.040	0.822	0.758	0.715	0.692
FSU						
GDP	1.000	1,217	1.390	1.573	0.888	0.947
Oil consumption	1.000	1.193	1.182	0.934	0.484	0.387
Oil intensity	1.000	0.981	0.850	0.594	0.545	0.408

Based on data from BP, IMF and OECD

Oil-consumption.xls/Consumption-vs-Intensity

SEABORNE TRADE IN CHEMICALS 1975-2001

Summary of chemical seaborne trade 1982-2001
Source: Drewry

Seaborne Trade in mill tonnes

Year	Organics	Inorganics*	Veg/Animal Oils & Fats	Other Cargoes**	Total Trade	
1975	5.70					
1980	9.00	9.60	9.60	4.60	32.80	
1981		10.80	10.80			
1982	17.50	11.77	12.30	7.05	48.62	
1983	18.65	12.05	12.80	7.77	51.27	5.5 %
1984	19.50	12.78	13.50	8.94	54.72	6.7 %
1985	20.90	11.92	15.00	10.02	57.84	5.7 %
1986	23.80	12.88	16.60	10.30	63.58	9.9 %
1987	25.65	14.74	16.30	10.98	67.67	6.4 %
1988	26.80	15.49	16.60	10.36	69.25	2.3 %
1989	27.45	13.56	19.00	10.39	70.40	1.7 %
1990	28.35	13.63	19.70	10.36	72.04	2.3 %
1991	31.93	13.11	16.30	11.06	72.40	0.5 %
1992	30.67	13.12	16.84	11.66	72.29	-0.2 %
1993	35.29	13.29	18.27	12.26	79.11	9.4 %
1994	38.61	14.04	20.95	12.86	86.46	9.3 %
1995	41.10	14.00	22.73	12.90	90.73	4.9 %
1996	43.00	14.20	22.88	13.40	93.48	3.0 %
1997	43.69	13.76	24.90	13.50	95.85	2.5 %
1998	45.80	14.33	25.11	13.60	98.84	3.1 %
1999	49.01	14.35	24.51	13.50	101.37	2.6 %
2000	52.64	15.14	24.38	13.50	105.66	4.2 %
2001	53.18	15.05			68.23	

* Three main inorganic chemicals only - phosphoric acid, sulphuric acid, caustic soda solution
** Estimates of trades in "other" cargoes e.g. lube oils, potatble alchols, etc

Chemicals summary.xls/Summary

SEABORNE TRADE IN INORGANIC, ORGANIC, AND VEGOIL 1975-2000

Split in products, Seaborne Trade in Chemicals
('000 tonnes)

Source: Drewry	1975	1980	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Sulphuric Acid	n.a	1450	1720	1740	1750	1760	1860	1810	2350	2440	2250	2280	2340	2940	2500	2300	2120	1508	2187	2614	2500
Phosphoric Acid	n.a	4300	5400	5510	5830	4580	5270	7235	7940	6320	7070	6590	6600	6230	6990	6670	6480	8085	7988	7784	8490
Liquid Caustic Soda	n.a	3650	4650	4800	5200	5580	5750	5690	5200	4800	4310	4250	4180	4120	4050	3718	3670	4167	4155	3952	4150
Total Inorganic		9400	11770	12050	12780	11920	12880	14735	15490	13560	13630	13120	13120	13290	13540	12688	12270	13760	14330	14350	15140
in million tonnes		9.60	11.77	12.05	12.78	11.92	12.88	14.74	15.49	13.56	13.63	13.11	13.12	13.29	14.04	14.00	14.20	13.76	14.33	14.35	15.14
Phosphoric acid			5.4	5.51	5.83	4.58	5.27	7.24	7.94	6.32	7.07	6.59	6.6	6.23	6.99	6.67	6.48				
Sulphuric acid			1.72	1.74	1.75	1.76	1.86	1.81	2.35	2.44	2.25	2.28	2.34	2.94	2.5	2.3	2.12				
Liquid caustic soda			4.65	4.8	5.2	5.58	5.75	5.69	5.2	4.8	4.31	4.25	4.18	4.12	4.05	4.2	4.4				
Acetic Acid	n.a	n.a	n.a	650	n.a	500	n.a	350	n.a	400	n.a	n.a	n.a	n.a	n.a	n.a	562	n.a	n.a	n.a	916
Acetone	74	165	n.a	250	n.a	300	n.a	370	n.a	450	n.a	n.a	n.a	n.a	n.a	n.a	439	n.a	n.a	n.a	459
Acrylonitrile	n.a	n.a	n.a	600	n.a	550	n.a	500	n.a	450	n.a	n.a	n.a	n.a	n.a	n.a	1011	n.a	n.a	n.a	1087
Benzene	708	578	n.a	970	n.a	1200	n.a	1400	n.a	1600	n.a	n.a	n.a	n.a	n.a	n.a	1184	n.a	n.a	n.a	2006
Butanol	94	163	n.a	360	n.a	320	n.a	300	n.a	300	n.a	n.a	n.a	n.a	n.a	n.a	344	n.a	n.a	n.a	355
Cumene	n.a	n.a	n.a	200	n.a	250	n.a	300	n.a	250	n.a	n.a	n.a	n.a	n.a	n.a	287	n.a	n.a	n.a	350
Cyclohexane	174	164	n.a	300	n.a	450	n.a	650	n.a	650	n.a	n.a	n.a	n.a	n.a	n.a	369	n.a	n.a	n.a	483
Dodecyl Benzene	78	193	n.a	200	n.a	200	n.a	200	n.a	100	n.a	n.a	n.a	n.a	n.a	n.a	0	n.a	n.a	n.a	0
Ethanol	152	486	n.a	600	n.a	750	n.a	900	n.a	1100	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Ethyl Benzene	100	40	n.a	240	n.a	250	n.a	250	n.a	250	n.a	n.a	n.a	n.a	n.a	n.a	132	n.a	n.a	n.a	44
Ethylene Dichloride	75	383	n.a	300	n.a	860	n.a	1100	n.a	1200	n.a	n.a	n.a	n.a	n.a	n.a	2462	n.a	n.a	n.a	2651
Ethylene Glycol	220	257	n.a	570	n.a	1100	n.a	1200	n.a	1250	n.a	n.a	n.a	n.a	n.a	n.a	3344	n.a	n.a	n.a	3780
Methanol	353	904	n.a	2230	n.a	2460	n.a	5560	n.a	5800	n.a	n.a	n.a	n.a	n.a	n.a	8347	n.a	n.a	n.a	12880
Perchloroethylene	38	112	n.a	100	n.a	120	n.a	150	n.a	200	n.a	n.a	n.a	n.a	n.a	n.a	39	n.a	n.a	n.a	77
Phenol	187	214	n.a	570	n.a	500	n.a	500	n.a	400	n.a	n.a	n.a	n.a	n.a	n.a	527	n.a	n.a	n.a	498
Propanol	72	90	n.a	280	n.a	290	n.a	300	n.a	370	n.a	n.a	n.a	n.a	n.a	n.a	477	n.a	n.a	n.a	379
Propylene Glycol	32	84	n.a	100	n.a	150	n.a	170	n.a	180	n.a	n.a	n.a	n.a	n.a	n.a	256	n.a	n.a	n.a	236
Styrene	357	596	n.a	1090	n.a	1200	n.a	1400	n.a	1550	n.a	n.a	n.a	n.a	n.a	n.a	3493	n.a	n.a	n.a	3605
Trichloroethylene	n.a	n.a	n.a	100	n.a	100	n.a	100	n.a	100	n.a	n.a	n.a	n.a	n.a	n.a	100	n.a	n.a	n.a	95
Toluene	611	655	n.a	550	n.a	650	n.a	900	n.a	100	n.a	n.a	n.a	n.a	n.a	n.a	1178	n.a	n.a	n.a	1441
Xylene	667	935	n.a	1090	n.a	1110	n.a	1200	n.a	1600	n.a	n.a	n.a	n.a	n.a	n.a	5265	n.a	n.a	n.a	5532
Total Named Organic	3992	6019	n.a	11350	n.a	13310	n.a	17800	n.a	18300	n.a	n.a	n.a	n.a	n.a	n.a	29814	n.a	n.a	n.a	36872
Other Acylic Hydrocarbons	n.a	n.a	n.a	500	n.a	520	n.a	550	n.a	600	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Sulphonated/Hydrated Hydrocarbor	n.a	n.a	n.a	300	n.a	360	n.a	380	n.a	400	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Other Alchols	n.a	n.a	n.a	1400	n.a	1450	n.a	1500	n.a	1600	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Organic Acids	n.a	n.a	n.a	1900	n.a	1950	n.a	2000	n.a	2100	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Other Nitrogen Compounds	n.a	n.a	n.a	1400	n.a	1420	n.a	1450	n.a	1500	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Other Organics	n.a	n.a	n.a	1800	n.a	1900	n.a	1970	n.a	2050	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Total Other	88	2981	n.a	7300	n.a	7600	n.a	7850	n.a	8250	n.a	n.a	n.a	n.a	n.a	n.a	13186	n.a	n.a	n.a	15768
All Organics	4080	9000	17500	18650	19500	20910	23800	25650	26800	26550	28350	31930	30670	35290	38610	41100	43000	43690	45800	49010	52640
in million tonnes	n.a	9.00	17.50	18.65	19.50	20.90	23.80	25.65	26.80	27.45	28.35	31.93	30.67	35.29	38.61	41.10	43.00	43.69	45.80	49.01	52.64
Veg animal, oils and fat	n.a	9600	12300	12800	13500	15000	16600	16300	16600	19000	19700	16300	16840	18270	20950	22730	22880	24900	25110	24510	24380
in million tonnes	n.a	9.60	12.30	12.80	13.50	15.00	16.60	16.30	16.60	19.00	19.70	16.30	16.84	18.27	20.95	22.73	22.88	24.90	25.11	24.51	24.38
Molasses	n.a	n.a	5350	4950	5000	4950	5250	5950	5350	5400	5400	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
in million tonnes	n.a	n.a	5.35	4.95	5.00	4.95	5.25	5.95	5.35	5.40	5.40	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Other Cargo	n.a	n.a	1700	2820	3940	5070	5050	5030	5010	4990	4960	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Total Other Cargo	n.a	4600	7050	7770	8940	10020	10300	10980	10360	10390	10360	11060	11660	12260	12860	12900	13400	13500	13600	13500	13500
in million tonnes	n.a	4.60	7.05	7.77	8.94	10.02	10.30	10.98	10.36	10.39	10.36	11.06	11.66	12.26	12.86	12.90	13.40	13.50	13.60	13.50	13.50
Total	n.a	32600	48620	51270	54720	57850	63580	67665	69250	69500	72040	72410	72290	79110	85960	89418	91550	95850	98840	101370	105660

Chemicals summary.xls/Split
Source: OECD, Industry, Drewry

SEABORNE TRADE MATRICES IN ORGANIC 1987, 1989, 1995, 1996

Seaborne Trade in Organic Chemicals, 1987 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America	444	516	1090	31	43	41	2557	10	124	4856
Latin America	39		359				172			570
West Europe	1152	16	8556	257	42	129	454		727	11333
East Europe	515		1838							2353
Africa	1		715							716
Middle East	199		1368				1321			2888
Far East	367	14	221	2			958	45		1607
Oceania			80				179			259
Other	15		386							401
Total	2732	546	14613	290	85	170	5641	55	851	24983

Seaborne Trade in Organic Chemicals, 1989 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania		Total
North America	508	562	1188	54	48	48	2943	27		5378
Latin America	48		428				268			744
West Europe	1391	54	9204	375	54	161	910			12149
East Europe	589		2140							2729
Africa	11		803							814
Middle East	214		1536				1605			3355
Far East	401	16	235				1284	48		1984
Oceania			86				214			300
Total	3162	632	15620	429	102	209	7224	75		27453

Seaborne Trade in Organic Chemicals, 1995 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		1697	1363				5643			8703
Latin America	1706									1706
West Europe										0
East Europe										0
Africa										0
Middle East	1466						3428			4894
Far East							7414			7414
Oceania									1599	1599
Other or unspecified									16784	16784
Total	3172	1697	1363	0	0	0	16485	0	18383	41100

Seaborne Trade in Organic Chemicals, 1996 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		1735	1558				5972			9265
Latin America	2446									2446
West Europe										0
East Europe										0
Africa										0
Middle East	1782						3708			5490
Far East							8016			8016
Oceania									2316	2316
Other or unspecified									15467	15467
Total	4228	1735	1558	0	0	0	17696	0	17783	43000

Chemicals summary.xls/Organic Chemicals Trade

SEABORNE TRADE MATRICES IN ORGANIC 1997, 1998, 1999, 2000

Seaborne Trade in Organic Chemicals, 1997 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		2087	1599				5022			8708
Latin America	2171									2171
West Europe										0
East Europe										0
Africa										0
Middle East	1780						3644			5424
Far East							8743			8743
Oceania									2400	2400
Other or unspecified									16244	16244
Total	3951	2087	1599	0	0	0	17409	0	18644	43690

Seaborne Trade in Organic Chemicals, 1998 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		2671	1266				3526			7463
Latin America	2527									2527
West Europe										0
East Europe										0
Africa										0
Middle East	2033						4333			6366
Far East							10364			10364
Oceania									2400	2400
Other or unspecified									16680	16680
Total	4560	2671	1266	0	0	0	18223	0	19080	45800

Seaborne Trade in Organic Chemicals, 1999 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		2509	1292				4285			8086
Latin America	3599									3599
West Europe										0
East Europe										0
Africa										0
Middle East	1937						4598			6535
Far East							11568			11568
Oceania									2500	2500
Other or unspecified									16722	16722
Total	5536	2509	1292	0	0	0	20451	0	19222	49010

Seaborne Trade in Organic Chemicals, 2000 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other& Unspecified	Total
North America		2814	1527				4363			8704
Latin America	4754									4754
West Europe										0
East Europe										0
Africa										0
Middle East	2250						5235			7485
Far East							12001			12001
Oceania									2700	2700
Other or unspecified									16996	16996
Total	7004	2814	1527	0	0	0	21599	0	19696	52640

SEABORNE TRADE MATRICES IN INORGANIC 1987, 1989, 1995, 1996

Seaborne Trade in inorganic Chemicals, 1987 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America	630	1710	50	1280	10	20	640	680		5020
Latin America										0
West Europe	680	90	1740	430	230	130	530	200	90	4120
East Europe			240							240
Africa		410	1650	90	70		1540	30		3790
Middle East			50	10		20	300	450		830
Far East	30	10					560	200		800
Oceania										0
Other	20		110	30			30			190
Total	1360	2220	3840	1840	310	170	3600	1560	90	14990

Seaborne Trade in inorganic Chemicals, 1989 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America	400	945	50	975	10	10	580	375		3345
Latin America										0
West Europe	220	160	3210	210	30	20	145	200		4195
East Europe			230				20			250
Africa		175	800	250	55	20	1940			3240
Middle East				10	50		350	450		860
Far East	170	10					1135	345		1660
Oceania								10		10
Total	790	1290	4290	1445	145	50	4170	1380	0	13560

Seaborne Trade in inorganic Chemicals, 1995 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		1372						838		2210
Latin America			437							437
West Europe	485									485
East Europe										0
Africa			1003				1413			2416
Middle East										0
Far East							1733	614		2347
Oceania										0
Other									6105	6105
Total	485	1372	1440	0	0	0	3146	1452	6105	14000

Seaborne Trade in inorganic Chemicals, 1996 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		1611						680		2291
Latin America			449							449
West Europe	654									654
East Europe										0
Africa			960				1476			2436
Middle East										0
Far East							1850	666		2516
Oceania										0
Other									5674	5674
Total	654	1611	1409	0	0	0	3326	1346	5674	14020

Chemicals summary.xls/Inorganic Chemicals Trade

SEABORNE TRADE MATRICES IN INORGANIC 1997, 1998, 1999, 2000

Seaborne Trade in inorganic Chemicals, 1997 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		1355						321		1676
Latin America			490							490
West Europe	434									434
East Europe										0
Africa			807				1837			2644
Middle East										0
Far East							1850	847		2697
Oceania										0
Other									5819	5819
Total	434	1355	1297	0	0	0	3687	1168	5819	13760

Seaborne Trade in inorganic Chemicals, 1998 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		1434						448		1882
Latin America			490							490
West Europe	399									399
East Europe										0
Africa			780				1880			2660
Middle East										0
Far East							1700	940		2640
Oceania										0
Other									6259	6259
Total	399	1434	1270	0	0	0	3580	1388	6259	14330

Seaborne Trade in inorganic Chemicals, 1999 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		1628						476		2104
Latin America			490							490
West Europe	419									419
East Europe										0
Africa			800				1900			2700
Middle East										0
Far East							1575	980		2555
Oceania										0
Other									6082	6082
Total	419	1628	1290	0	0	0	3475	1456	6082	14350

Seaborne Trade in inorganic Chemicals, 2000 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		2000						597		2597
Latin America			500							500
West Europe	407									407
East Europe										0
Africa			800				1960			2760
Middle East										0
Far East							1600	1150		2750
Oceania										0
Other									6126	6126
Total	407	2000	1300	0	0	0	3560	1747	6126	15140

Chemicals summary.xls/Inorganic Chemicals Trade

SEABORNE TRADE MATRICES IN VEGOIL 1985, 1990

Seaborne Trade in Vegetable/ Animal oils and fats, 1985 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	Europe	Africa	Middle East	Far East	Oceania	Japan	Other	Total
North America		900	600	600		600		200	100	3000
Latin America	100	500	1000	500		400			400	2900
West Europe	100	100		800		200				1200
East Europe										0
Africa			300							300
Middle East										0
Far East	900		1500	300		3200		200		6100
Japan			300							300
Total	1100	1500	3700	2200	0	4400	0	400	500	13800

Seaborne Trade in Vegetable/ Animal oils and fats, 1990 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America	170	580	205	75	370	170	910			2480
Latin America	200	440	195	215	475	640	545	20		2730
West Europe	210	155	2400	45	370	165	475			3820
East Europe		50	60	75	75	40	25			325
Africa			170				510			680
Middle East				65	30			115		210
Far East	655	180	1850	320	630	760	4800			9195
Oceania			20		55		175			250
Total	1235	1405	4900	795	2005	1775	7440	135	0	19690

Chemicals summary.xls/Veg-an,oil,fats

IMPORTS/EXPORTS OF VEGOIL/ANIMAL PROD. TO SELECTED COUNTRIES 1975-2000

Imports of Vegetable Oils & Animal products to selected countries.
Source: FAO

Metric tons

Sum of Value	Row									
Column	World	United States	United Kingdo	Singapore	Pakistan	Netherlands	India	Germany	Egypt	China
1975	7287610	882878	358264	150211	226617	386427	34971	560018	397746	149671
1976	8118874	968774	422401	235968	276500	431745	108014	549662	372339	137494
1977	9366272	754828	451209	348666	319186	496150	1088416	619932	410293	326109
1978	9769518	671006	408045	353453	322607	437130	1135032	663065	435831	293165
1979	10581385	680986	405615	538045	477064	406989	1008754	670940	443943	312878
1980	12201107	550612	366703	740895	395111	455938	1656650	769210	508549	397165
1981	12398479	616033	354103	544505	553290	509101	1426577	848846	573758	209108
1982	13357869	560493	430937	584330	718293	544842	1255877	851823	509368	227165
1983	13851071	688034	465505	477901	730533	554865	1332315	837434	578513	210869
1984	14226575	586089	465420	840824	855055	618618	1300244	738576	611358	167845
1985	15305175	791377	510665	1122918	759692	620047	1308260	757900	680760	263228
1986	16551001	957260	643915	891733	911728	699121	1325782	918363	559368	545498
1987	17495919	894835	768126	804397	807647	676562	1938196	823396	498241	905564
1988	17548085	1175984	583842	763470	1142533	652046	1078402	858799	696505	767997
1989	19383212	840659	598837	795417	982137	719081	316445	926003	622240	1911510
1990	20413366	1085901	605989	946343	1069549	862532	518583	1039574	726429	2461233
1991	20091603	1036968	773073	812357	1051347	843848	217546	997952	711091	1818822
1992	20703114	1194001	746250	831876	1132804	925889	288548	992345	719696	1250112
1993	20670425	1254281	788704	668709	1288967	946845	106381	862083	640324	1319646
1994	24255334	1322192	721592	573537	1205837	1217562	343172	952622	609337	3408701
1995	26527756	1141936	627117	630948	1469133	1147958	1079393	833685	669486	4012846
1996	25640226	1270507	756628	417277	1212515	972275	1445491	901179	754361	3056913
1997	27986138	1374087	823650	428564	1109502	839268	1263833	1059968	690113	3158845
1998	29394120	1354234	730416	339300	1387731	1692465	2644542	1127564	594267	2467264
1999	31529111	1180879	907538	415000	1428107	1662237	4227624	897239	907786	2685493
2000	31490753	1386784	1005571	394216	1247713	1524298	4241369	1260212	573278	2481158
Grand Total	476144098	25221618	15720115	15650860	23081198	20843839	32690417	22318390	15494980	34946299

Veg Oil Import.xls/Total

Export of Vegetable Oils & Animal products from selected countries.
Source: FAO

Metric tons

Sum of Value	Row									
Column	World	United States	Philippines	Netherlands	Malaysia	Indonesia	Germany	France	Brazil	Argentina
1975	7462636	1558752	614877	331794	1236069	412855	562644	280661	273320	29795
1976	8696854	1878564	862508	365643	1345556	418914	551647	278804	510619	121945
1977	9505648	2432373	769634	346071	1412364	404638	606363	288291	523846	194540
1978	10293623	2506372	1017004	437374	1475980	412153	560546	340036	517594	341607
1979	11129099	2680729	803487	484571	1874438	374083	598595	381230	564571	420183
1980	12733900	3072057	918713	503975	2203236	551109	674911	384129	812152	520551
1981	12970218	2853009	1040006	558701	2447381	209909	714318	399257	1385414	384606
1982	13445296	2760924	921238	534303	2789840	302235	752162	398742	944356	625023
1983	14342604	2629367	1004502	643134	3014512	415007	704661	382945	1152142	965803
1984	14846965	2620740	587588	770773	3067011	282261	664370	405991	1030605	1123689
1985	16125516	2191701	652605	761024	3299760	844177	867766	469657	1080444	1473711
1986	17234908	2101060	1259460	747013	4384894	689455	924391	436211	489513	1731274
1987	17816391	2114999	1040274	865493	4228717	817570	996051	491015	1074809	1446644
1988	18619679	2673369	792895	774115	4255014	1121896	1046737	598602	783291	2013360
1989	19412712	2416547	763489	938311	5093384	1140577	1105690	646682	971405	1743696
1990	21046754	1940635	1137541	963566	5807233	1320200	1025357	624047	882502	2309059
1991	20839840	1840789	840290	1022920	5623156	1655597	1099969	655506	575760	2579429
1992	21841154	2514070	882226	1008847	5657828	1647989	1028032	654719	792044	2435379
1993	21765783	2296537	859216	1140139	5973456	1998690	1066038	527690	768916	2188243
1994	26152195	2547125	848756	1224472	7126244	2536912	1079909	651046	1569136	2495705
1995	28144414	3300752	1340410	1195049	7094805	1836389	1077582	744161	1823619	3226844
1996	26586914	2206068	792652	1282447	8100617	2063803	1184508	724635	1392922	2478351
1997	31523827	2594942	1080183	1425674	7669671	3648493	1370794	753930	1165158	3769805
1998	30384169	3281694	1185081	1532911	7543748	1852620	1465192	694601	1397572	3865233
1999	33155727	2467373	502709	1701321	8869503	3652559	1527742	647802	1591809	4934092
2000	33276804	1933855	1039454	1308570	8869503	4845420	1529325	673173	1133275	4596556
Grand Total	499353630	63414403	23556798	22868211	120463920	35455511	24785300	13533563	25206794	48015123

Veg Oil Export.xls/Total

EXPORTS OF VEGOIL/ANIMAL PROD. 1975-2000

Exports of Vegetable Oils & Animal products

	Coconut Oil	Sunflower Seed Oil	Palm Oil	Rapeseed Oil	Cotton Seed Oil	Soyabean Oil	Olive Oil	Tallow	Total
Qty (Mt)	World	World	World	World	World	World	World	World	World
1975	1,042,315	666,274	2,042,686	355,352	376,013	1,364,822	165,738	1,449,436	7,464,611
1976	1,373,466	609,028	2,206,452	420,179	283,794	1,837,324	245,403	1,721,208	8,698,830
1977	1,110,445	696,071	2,339,758	668,937	387,211	2,105,872	248,799	1,948,555	9,507,625
1978	1,334,303	804,252	2,404,144	517,652	391,281	2,609,763	264,389	1,967,839	10,295,601
1979	1,141,563	821,346	2,845,539	624,609	368,051	2,953,316	298,763	2,075,912	11,131,078
1980	1,215,506	1,113,136	3,616,636	689,354	431,135	3,196,066	265,264	2,206,803	12,735,880
1981	1,357,382	1,101,839	3,228,445	848,477	445,849	3,489,350	257,813	2,241,063	12,972,199
1982	1,270,120	1,251,246	3,776,075	815,954	555,479	3,405,542	231,223	2,139,657	13,447,278
1983	1,325,299	1,639,433	4,016,523	831,972	337,457	3,652,895	409,108	2,129,917	14,344,587
1984	984,571	1,662,572	4,317,579	1,082,330	339,579	4,040,858	354,908	2,064,568	14,848,949
1985	1,234,351	1,858,812	5,221,475	1,326,273	397,204	3,503,217	499,181	2,085,003	16,127,501
1986	1,648,681	2,115,253	6,242,040	1,403,480	299,470	2,993,619	475,268	2,057,097	17,236,894
1987	1,481,874	1,997,704	5,780,610	1,664,771	234,075	4,014,736	635,821	2,006,800	17,818,378
1988	1,333,225	2,361,134	5,989,056	1,949,748	355,737	3,916,823	462,848	2,251,108	18,621,667
1989	1,305,675	2,362,778	7,048,160	1,958,869	352,229	3,771,124	443,051	2,170,826	19,414,701
1990	1,655,726	2,648,585	8,071,864	1,969,377	309,055	3,738,885	564,828	2,088,434	21,048,744
1991	1,297,975	2,495,906	8,212,863	2,104,429	246,272	3,618,013	762,462	2,101,920	20,841,831
1992	1,541,883	2,654,712	8,181,867	1,945,312	281,265	4,257,908	610,199	2,368,008	21,843,146
1993	1,396,484	2,205,486	9,071,852	2,063,260	172,646	4,037,555	619,043	2,199,457	21,767,776
1994	1,525,475	2,504,799	10,807,254	2,627,159	272,082	5,367,377	746,295	2,301,754	26,154,189
1995	1,797,097	3,670,108	10,210,693	2,597,171	288,996	6,253,861	673,743	2,652,745	28,146,409
1996	1,440,854	3,058,814	11,405,024	2,646,212	222,179	5,023,325	598,720	2,191,786	26,588,910
1997	2,017,417	4,291,884	12,337,274	2,698,868	251,525	6,893,834	958,870	2,074,155	31,525,824
1998	1,876,549	3,511,649	10,405,223	3,054,017	268,135	7,920,033	919,757	2,428,806	30,386,167
1999	1,202,241	3,805,998	13,681,744	2,962,669	179,224	8,090,330	963,875	2,269,646	33,157,726
2000	2,143,177	3,786,851	14,465,214	2,647,764	165,703	6,927,551	994,130	2,146,414	33,278,804

Veg Oil Export.xls/Veg Oil Total

IMPORTS OF VEGOIL/ANIMAL PROD. 1975-2000

Imports of Vegetable Oils & Animal products

	Oil of Coconuts	Oil of Sunflower Seed	Oil of Soya Beans	Oil of Rapeseed	Oil of Palm	Oil of Olive	Oil of Cotton Seed	Tallow	Total
Qty (Mt)	**World**	**World**	**World**	**World**	**World**	**World**	**World**	**World**	**World**
1975	955,157	669,937	1,373,766	374,778	1,883,370	205,132	387,836	1,437,634	7,287,610
1976	1,411,582	581,236	1,616,268	395,473	2,019,382	226,813	280,635	1,587,485	8,118,874
1977	1,096,382	620,897	2,078,126	627,523	2,471,262	266,701	386,236	1,819,145	9,366,272
1978	1,254,855	805,141	2,404,100	555,164	2,319,748	253,863	381,682	1,794,965	9,769,518
1979	1,197,748	793,127	2,872,632	610,119	2,703,157	299,426	388,515	1,716,661	10,581,385
1980	1,125,048	955,116	3,228,593	711,834	3,411,693	362,585	433,672	1,972,566	12,201,107
1981	1,400,248	1,100,751	3,255,481	799,279	3,223,731	271,943	404,789	1,942,257	12,398,479
1982	1,290,624	1,080,094	3,788,210	816,242	3,688,259	276,261	527,062	1,891,117	13,357,869
1983	1,294,173	1,395,983	3,675,305	921,740	3,918,608	422,358	366,401	1,856,503	13,851,071
1984	1,052,303	1,679,521	4,028,049	957,729	3,902,244	360,001	311,316	1,935,412	14,226,575
1985	1,135,395	1,840,015	3,448,913	1,296,534	4,875,078	495,658	372,634	1,840,948	15,305,175
1986	1,471,417	1,980,561	2,986,621	1,423,010	6,004,852	525,042	289,544	1,869,954	16,551,001
1987	1,425,661	2,013,367	3,945,063	1,680,197	5,804,486	682,616	243,415	1,701,114	17,495,919
1988	1,361,702	2,272,409	3,823,102	1,616,645	5,739,575	505,651	358,984	1,870,017	17,548,085
1989	1,251,820	2,485,106	4,076,269	2,135,303	6,647,691	503,868	317,105	1,966,050	19,383,212
1990	1,526,355	2,603,859	3,620,765	2,084,780	7,822,913	577,213	266,182	1,911,299	20,413,366
1991	1,388,018	2,549,186	3,433,323	2,074,573	7,730,586	776,119	247,900	1,891,898	20,091,603
1992	1,480,990	2,683,034	3,923,995	1,903,536	7,722,135	614,675	310,426	2,064,323	20,703,114
1993	1,375,924	2,213,561	4,109,040	1,798,574	8,338,229	662,102	187,138	1,985,857	20,670,425
1994	1,513,777	2,612,495	4,923,751	2,365,062	9,689,143	824,047	259,927	2,067,132	24,255,334
1995	1,696,218	3,544,083	5,713,050	2,500,047	9,634,343	718,120	332,196	2,389,699	26,527,756
1996	1,484,015	3,389,835	5,606,352	2,393,648	9,645,091	687,870	303,718	2,129,697	25,640,226
1997	1,599,826	3,916,953	6,591,101	2,628,676	10,009,250	1,054,953	290,541	1,894,838	27,986,138
1998	1,957,593	3,828,712	6,838,976	2,835,076	10,400,294	995,914	311,710	2,225,845	29,394,120
1999	1,501,903	3,676,752	7,569,138	2,706,506	12,500,812	1,026,934	241,313	2,305,753	31,529,111
2000	2,018,442	3,470,899	6,521,647	2,612,254	13,426,548	1,121,296	174,933	2,144,734	31,490,753

Veg Oil Import.xls/Veg Oil Import
Source: ISTA Mielke

SEABORNE TRADE IN METHANOL 1985, 1987, 1996, 2000

Seaborne Trade in Methanol, 1985 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Japan	Asia/ Oceania	Other	Total
North America		13			4		563			580
Latin America			88	25						113
West Europe		5			2			1		8
East Europe			419							419
Africa										0
Middle East			282				297	209		788
Far East / Ocear	120		229				178	24		551
Other										0
Total	120	18	1018	25	6	0	1038	234	0	2459

Seaborne Trade in Methanol, 1987 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		10					530			540
Latin America			170							170
West Europe			1190						290	1480
East Europe			530							530
Africa			640							640
Middle East	114		1000				350			1464
Far East			80				160			240
Oceania			80				160			240
Other			260							260
Total	114	10	3950	0	0	0	1200	0	290	5564

Methanol Seaborne trade matrix 1996
000 tonnes

Export Region	Import Region AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	Total
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUST	28	0	0	919	0	180	0	0	0	0	819	0	0	1947
ESAF	0	0	0	0	0	0	0	0	0	0	2	0	0	2
FSU	0	0	0	0	0	0	0	0	0	0	1	0	0	1
JAP	0	0	0	0	0	0	0	0	0	0	10	0	0	10
LAMR	0	16	0	0	593	24	0	1304	1094	0	14	0	0	3046
ME	0	3	0	782	36	6	0	170	336	55	903	0	20	2311
NAFR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NAMR	11	0	1	154	84	0	0	0	74	0	365	0	0	689
OEUR	0	0	0	0	0	0	0	0	0	1	0	0	0	2
SA	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEA	0	0	0	102	1	0	0	0	0	9	228	0	0	340
Total	39	20	1	1957	714	210	0	1475	1504	65	2342	0	20	8347

Methanol Seaborne trade matrix 2000
000 tonnes

Export Region	Import Region AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	Total
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUST	40	0	0	871	0	180	0	217	0	30	999	0	0	2338
ESAF	0	0	0	0	0	0	0	0	0	7	0	0	0	7
FSU	0	0	0	0	0	0	0	230	0	0	0	0	0	230
JAP	0	0	0	0	0	0	0	12	0	0	6	0	0	18
LAMR	0	34	0	74	228	0	0	3348	1703	0	202	0	0	5589
ME	0	0	0	932	38	0	0	223	430	133	1975	0	0	3731
NAMR	0	0	0	16	52	0	0	0	0	0	2	0	0	71
OEUR	0	0	0	0	0	0	0	0	0	16	3	0	0	20
SA	0	0	0	0	0	0	0	15	0	0	5	0	0	20
SEA	4	0	0	213	0	0	0	22	0	1	572	0	0	811
WAFR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XEUR	0	0	0	0	0	0	0	45	0	0	0	0	0	45
Total	44	34	0	2107	318	181	0	4112	2133	187	3764	0	0	12880

Seaborne trade organics.xls/Methanol

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS 1996, 2000

Figures in '000 tonnes

Acetic Acid
1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.0						0.0
AUST											0.0			0.0
JAP											134.5			134.5
LAMR								9.4						9.4
ME								0.0						0.0
NAMR	1.6	3.8		13.1	28.6	0.3			74.8		100.9			223.0
OEUR				0.0				27.6			55.5			83.1
SA											1.7			1.7
SEA	2.3	0.2		17.8	0.0	0.2		0.0	1.5	2.9	85.6			110.4
Total	3.9	3.9		31.0	28.6	0.5		37.1	76.3	2.9	378.2			562.3

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other	4.9										0.0			4.9
AUST	0.0										0.3			0.4
FSU											8.0			8.0
JAP	0.1					0.0	0.1	0.0	2.5	0.1	94.4			97.3
LAMR								0.4						0.4
ME								0.0						0.0
NAMR	0.2			2.9	192.0	0.2			113.0	8.5	277.4	0.0		594.2
OEUR								0.2			43.8			44.0
SA											0.1			0.1
SEA	3.6	0.2		4.8	0.3	2.4	0.4	0.1	0.1	17.8	137.2	0.0		166.9
Total	8.8	0.2		7.6	192.3	2.6	0.6	0.8	115.6	26.4	561.2	0.0		916.3

Acetone
1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other							0.1	0.0		0.1				0.2
AUST	1.1					0.0					2.7			3.9
ESAF	0.0			3.0	7.6	0.2	0.1			11.2	30.7			52.8
JAP	0.0				0.0	0.0		0.0		0.0	51.6			51.6
LAMR					2.0			1.7		0.3	0.7			4.7
ME						0.0	0.1			1.1				1.3
NAMR	0.1	0.0		8.3	59.2	0.0			9.8	7.6	64.3	0.0	0.0	149.4
OEUR	0.0			0.0	5.2	0.5	2.5	10.6		5.6	55.5			80.0
SA					0.1	0.1			0.0		0.1			0.2
SEA	0.7	0.0		2.0	1.3	0.1		0.0		3.1	87.2	0.0		94.4
WAFR							0.1							0.1
Total	2.0	0.0		13.4	75.3	1.0	2.9	12.3	9.9	28.9	292.8	0.0	0.0	438.5

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	1.0						0.0		0.0		1.8	0.0		2.9
ESAF	0.0			6.9	3.0					12.0	42.0			63.9
FSU											4.2			4.2
JAP	0.0				0.0			0.0	0.1	0.0	59.8			59.9
LAMR											0.0			0.0
NAMR	0.1	0.0		1.5	68.6	0.2			14.0	1.0	73.8	0.0		159.2
OEUR	0.0			0.0						4.0	62.1			66.1
SA											0.5			0.5
SEA	0.3		0.0	5.1	0.0	0.4		0.0		1.5	94.7	0.0		102.0
Total	1.5	0.0	0.0	13.5	71.6	0.7	0.0	0.0	14.1	18.5	338.7	0.0		458.7

Seaborne trade organics.xls/Trade
Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Acrylonitrile

1996

Export							Import Region						Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	
ESAF				1.5						1.2	11.4		14.1
FSU										0.8			0.8
JAP	3.6								0.0	3.1	132.5		139.3
LAMR		1.0		9.8					6.7		34.3		51.8
ME										0.2			0.2
NAMR		1.1		119.3	43.1				101.8	40.9	362.9		669.1
OEUR				3.5	0.1	0.1	0.1			18.3	49.9		71.9
SEA				15.1	0.1	0.0		0.0		0.8	47.4		63.5
Total	3.6	2.1		149.3	43.3	0.1	0.1	0.0	108.5	65.4	638.5		1010.7

2000

Export							Import Region						Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	
FSU								1.0					1.0
JAP	2.0							0.0		8.1	135.4		145.5
LAMR				4.0				4.8			19.5		28.3
NAMR		4.8	2.1	91.9	91.7				125.2	17.8	426.6		760.2
OEUR								2.1		12.0	8.5		22.6
SEA				18.8				0.0	0.0	11.4	98.8		129.1
Total	2.0	4.8	2.1	114.7	91.7			7.9	125.2	49.4	688.8		1086.7

Benzene

1996

Export							Import Region						Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other							0.1						0.1
ESAF									1.0				1.0
FSU									0.0				0.0
JAP	15.1				0.0		0.0		10.0	125.1			150.2
LAMR				0.2			245.1	41.7	0.0	4.9			291.8
ME					15.7				67.2				82.9
NAFR					1.0			9.3					10.3
NAMR	0.1		0.1	0.3	0.1			4.9	5.3	13.3	0.1		24.2
OEUR			0.0	0.0	0.2		90.6		2.1	0.1			93.0
SA			0.1		0.0			0.2		0.0			0.3
SEA	46.6		55.3		47.1		12.0		61.4	307.4			529.8
Total	61.7		55.6	0.5	64.1		347.8	56.0	147.1	450.8	0.1		1183.6

2000

Export							Import Region						Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other										0.0			0.0
FSU							7.7						7.7
JAP	10.3						12.9	0.0	0.0	288.7			311.8
LAMR							286.5	25.0					311.5
ME					40.0		18.2		5.0	8.2			71.4
NAFR							14.8						14.8
NAMR	2.3			11.4				0.0		0.0			13.7
OEUR			0.0				286.0			0.0			286.0
SA							37.8						37.8
SEA	63.4	0.5	89.2		56.6		128.1	2.9	19.1	592.1			951.9
WAFR							1.5						1.5
XEUR													
Total	76.0	0.5	89.2	11.4	96.6		793.5	27.9	24.1	888.9			2008.1

Seaborne trade organics.xls/Trade
Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Butanols

1996

Export	Import Region													Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.0		0.0				0.0
AUST	0.0										0.0			0.0
ESAF					0.9		0.0			0.8	13.6			15.4
FSU	0.0				0.7		0.0			1.6	6.9			9.1
JAP								0.0		1.1	11.8			12.9
LAMR		1.3			1.8			0.7	0.0	0.0	0.0			3.8
ME						0.0	0.0			9.1	0.2			9.4
NAMR	2.4	1.2		9.8	42.9	1.1	0.3		16.2	7.6	121.8			203.2
OEUR	0.0			4.5	4.2	0.3	0.4	1.0		5.0	48.5			64.0
SA	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.5	0.0		1.3
SEA	0.4	0.0		0.0				0.0	0.0	1.6	23.1			25.1
Total	2.9	2.6	0.0	14.2	50.5	1.7	0.8	1.7	16.5	26.8	226.6	0.0		344.3

2000

Export	Import Region													Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
AUST	0.0													0.0
ESAF											17.6			17.6
FSU										2.0	11.5			13.5
JAP								0.0		1.0	29.5			30.5
LAMR		1.0						0.0			0.0			1.1
ME	0.0									8.0	2.0			10.0
NAMR	3.8			8.5	18.4	2.5			14.7	0.0	129.2			177.2
OEUR	0.0			0.6	2.0			0.0		6.0	33.8			42.4
SA								0.1						0.1
SEA	0.3	1.2	0.0	8.4				0.0		1.1	51.2			62.2
XEUR											0.4			0.4
Total	4.2	2.2	0.0	17.4	20.4	2.5		0.2	14.7	18.1	275.4			355.1

Cumene

1996

Export	Import Region											Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR	
Other							0.0					0.0
JAP									5.3	75.3		80.6
LAMR							14.0	5.6		2.6		22.2
NAMR				22.9	0.1			23.2	15.8	20.1		82.0
OEUR				0.0			100.1			1.1		101.2
SEA									0.8	0.0		0.8
Total				22.9	0.1		114.1	28.8	21.8	99.1		286.9

2000

Export	Import Region											Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR	
JAP							0.1			91.2		91.3
LAMR												
ME												
NAMR	1.0		4.4	53.8	0.3			116.8	21.4	53.4		251.1
OEUR												
SEA				0.0			0.1	0.1		7.3		7.5
WAFR												
Total	1.0		4.4	53.8	0.3		0.2	116.8	21.4	151.9		349.9

Seaborne trade organics.xls/Trade

Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Cyclohexane

1996

Export							Import Region						Total
Regions	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other							0.1						0.1
JAP							8.7	39.6	2.1	9.2			59.6
LAMR				0.2			17.2	28.1					45.6
ME					0.1	0.0			0.0			0.0	0.2
NAMR		0.0	0.0	9.1				46.7	2.9	0.1	0.0		58.9
OEUR				3.1	0.1	0.1	33.2		3.6	1.4			41.5
SA	0.0												0.0
SEA	0.1	0.0	9.6		0.0		16.9	100.3	1.1	34.7			162.7
XEUR						0.2			0.5	0.0			0.7
Total	0.1	0.0	9.6	12.4	0.2	0.3	76.2	214.7	10.2	45.4	0.0	0.0	369.2

2000

Export							Import Region						Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other										0.0			0.0
AUST	0.0									0.0			0.0
JAP							0.0	10.1	1.9	90.1			102.1
LAMR								30.0		12.9			42.9
ME										5.0			5.0
NAMR	0.1	0.0	0.0	79.6	0.0			85.0	8.1	0.2			173.2
OEUR	0.1			3.0					3.0	0.9			7.1
SA													
SEA	0.0		11.7					12.6	3.9	124.7			152.9
Total	0.3	0.0	11.8	82.6	0.0		0.0	137.7	16.9	233.8			483.1

Dodecyl Benzene

No significant seabourne trade movements observed

Ethyl Benzene

1996

Export							Import Region					Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR	
Other							0.0					0.0
JAP				7.0				9.9	0.0	30.6		47.5
LAMR							4.2	4.0		1.6		9.7
NAMR	0.0	0.0	0.0	9.2				52.7	2.1	1.4		65.4
OEUR				3.2	0.1		2.1		0.1	0.1		5.5
SA					0.0			0.0				0.0
SEA							2.0			1.7		3.7
Total	0.0	0.0	0.0	19.3	0.1		8.2	66.7	2.2	35.4		131.9

2000

Export							Import Region					Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR	
JAP										0.0		0.0
LAMR								4.0				4.0
NAMR			0.2	7.3				25.2		3.4		36.1
OEUR				3.0	0.1				0.1	0.1		3.2
SEA			0.1							0.2		0.3
Total			0.3	10.3	0.1			29.2	0.1	3.6		43.6

Seaborne trade organics.xls/Trade

Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Ethylene Dichloride

1996

Export							Import Region						Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR		
Other							0.1						0.1
ESAF					0.0				6.2				6.2
FSU									1.6				1.6
JAP					0.0				4.4	3.6			8.0
LAMR			107.0				12.0		12.0	41.5			172.5
ME			204.3						104.9	10.3			319.5
NAMR			511.6	2.6				0.0	82.0	983.2			1579.5
OEUR			2.0	17.6	0.1		38.1		67.9	22.2			147.9
SA							0.0	0.0		8.0			8.1
SEA			184.7						8.1	25.5			218.3
Total			1009.7	20.2	0.2		50.3	0.0	287.0	1094.4			2461.8

2000

Export							Import Region						Total
Region	AUST	ESAF	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	XEUR		
AUST							0.0						0.0
JAP	0.0				0.0					80.8			80.8
LAMR			90.8				14.4		9.0	68.4			182.6
ME			146.3						120.0	110.9			377.2
NAMR			601.7		0.0			2.2	132.0	868.1			1604.0
OEUR	0.0			18.0			85.0		31.0	24.6			158.6
SA										8.0			8.0
SEA			21.0						50.0	168.9			239.9
Total	0.0		859.8	18.0	0.0		99.4	2.2	342.0	1329.6			2651.0

Ethylene Glycol

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.0						0.0
AUST	0.0									1.0	0.1			1.2
ESAF											2.0			2.0
FSU					0.0		0.0			4.9	11.6			16.6
JAP	1.5	0.0			0.0			2.4	0.0	3.6	282.6			290.1
LAMR		0.0		4.0	6.0	0.0		102.4	11.6	0.2	44.7			168.9
ME	7.3			82.1	2.1	0.4	6.6	127.9	174.0	165.5	954.1			1519.9
NAFR								5.3	0.0					5.4
NAMR	1.4	23.5	0.2	58.5	57.9	0.8	0.0		91.6	2.8	880.0	0.2	0.0	1116.9
OEUR	0.0				2.3	0.1	0.4	0.9		13.2	25.1			42.0
SA	0.0					0.1					0.1			0.2
SEA	1.5			3.1	1.2	0.0		1.0		26.8	147.2			180.9
Total	11.7	23.5	0.2	147.6	69.6	1.4	7.1	239.9	277.3	217.9	2347.5	0.2	0.0	3343.9

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	0.3					0.0					0.0			0.3
ESAF											0.0			0.0
FSU										4.0	12.6			16.6
JAP	2.5							0.1	0.0	0.0	322.1			324.8
LAMR								55.1			50.7			105.8
ME	0.3			38.8				103.7	56.5	131.0	1209.0			1539.2
NAMR	5.4	42.9		4.2	137.7	0.3			35.7	0.0	1016.4	0.2		1242.7
OEUR	0.0			0.0				0.3		6.0	12.2			18.6
SA	0.0										0.5			0.5
SEA	0.3	0.0	0.0	2.1	0.0			0.9		4.0	523.6			531.0
Total	8.9	42.9	0.0	45.0	137.7	0.3		160.1	92.2	145.1	3147.1	0.2		3779.5

Seaborne trade organics.xls/Trade
Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Methanol

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.1						0.1
AUST	27.9			919.5		180.2					819.1			1946.6
ESAF											2.1			2.1
FSU											0.8			0.8
JAP								0.1	0.0	0.0	10.2			10.3
LAMR	0.0	16.2			593.3	24.3		1304.3	1093.8		13.9			3045.9
ME		3.1		782.3	35.7	5.7		170.2	335.5	55.4	902.5		20.2	2310.5
NAFR						0.0								0.0
NAMR	10.8	0.3	0.7	153.5	84.2	0.0	0.1		74.2	0.0	365.2	0.3	0.1	689.4
OEUR	0.0			0.1	0.0	0.1	0.2	0.1		0.5	0.4			1.5
SA		0.0				0.0		0.0	0.0		0.0			0.1
SEA	0.2			101.6	1.2				0.0	9.0	228.1			340.1
Total	38.9	19.6	0.7	1957.1	714.4	210.3	0.3	1474.8	1503.6	65.0	2342.3	0.3	20.2	8347.4

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	40.0	0.0		871.4		180.0		217.0	0.0	30.0	999.5			2337.9
ESAF										7.0	0.0			7.0
FSU								230.3						230.3
JAP	0.0							12.2	0.0		5.5			17.8
LAMR		34.0		74.0	228.0			3348.0	1703.0		201.6			5588.6
ME				932.1	38.0			222.9	430.0	133.0	1975.3			3731.4
NAMR	0.1	0.0	0.0	16.0	52.1	0.5			0.2	0.0	1.8	0.2	0.0	70.9
OEUR	0.0			0.0				0.2		16.0	3.5			19.7
SA								14.6			5.0			19.6
SEA	3.8		0.0	213.0	0.0	0.1		21.6	0.0	0.9	572.0	0.0		811.4
WAFR											0.0			0.0
XEUR								44.9						44.9
Total	43.8	34.0	0.0	2106.6	318.1	180.6		4111.8	2133.2	186.9	3764.3	0.2	0.0	12879.7

Perchloroethylene

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.6		0.2				0.8
AUST											0.0			0.0
ESAF					0.2	0.1				0.8	3.2			4.2
JAP	0.3									0.0	12.6			13.0
LAMR					0.1			20.4			1.2			21.7
ME										0.1				0.1
NAMR	0.5			0.4	5.6	0.0	0.0		0.9		6.0		0.0	13.6
OEUR					4.6	0.6	1.7	7.1		1.8	16.5			32.3
SEA				0.0					0.0	0.0	0.9			1.0
XEUR					0.8						1.3			2.1
Total	0.8			0.5	11.4	0.7	1.7	28.1	0.9	2.8	41.8		0.0	88.7

2000

Export							Import Region							Total
	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
AUST	0.0										0.0			0.0
ESAF	0.0										0.8			0.8
FSU								0.0						0.0
JAP											1.7			1.7
LAMR				10.3				6.1			1.1			17.5
NAMR		0.0		5.3	2.6	0.1			0.1	0.5	8.9			17.6
OEUR	2.3			0.5	2.0			8.3			16.7			29.7
SEA	0.3							0.0			2.6			3.0
WAFR											0.8			0.8
XEUR								1.9			4.3			6.2
Total	2.6	0.0		16.2	4.6	0.1		16.3	0.1	0.5	37.0			77.4

Seaborne trade organics.xls/Trade Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Phenol

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.1		1.3				1.5
ESAF					0.2	0.3	1.9			4.6	8.9			15.8
FSU					0.0					1.9				1.9
JAP	0.5				6.0			50.0	28.3	3.6	111.8			200.2
LAMR					2.0			22.8			0.1			24.8
ME					17.7	0.0				0.6	0.1			18.5
NAMR	0.0			3.0	20.5	0.1			26.3	2.2	13.5			65.6
OEUR					15.5	0.0	0.4	56.4		4.6	7.4			84.2
SA	0.0	0.0			0.0		0.0		0.0	0.0	0.0			0.1
SEA	0.1	0.0		1.6	0.1	0.6	0.0	0.1	1.1	4.7	106.1			114.3
Total	0.6	0.0		4.7	62.0	1.0	2.3	129.4	55.7	23.5	247.8			527.0

2000

Export							Import Region							Total
	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	3.5										0.5			4.0
ESAF											4.1			4.1
JAP	0.0								1.0	1.4	140.9			143.3
LAMR								26.4			0.5			26.9
NAMR	0.1			3.0	35.7	2.5			40.1	7.6	82.9			171.9
OEUR	0.0				1.5			22.1		12.0	42.6			78.2
SA											0.0			0.0
SEA		0.0	0.0	0.5	0.2	0.1	0.1	0.1	0.2	3.4	65.5		0.0	70.1
Total	3.6	0.0	0.0	3.5	37.4	2.6	0.1	48.6	41.4	24.4	336.9		0.0	498.4

Propanol

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other							0.0	0.4		0.1				0.6
AUST	0.0					0.0					1.1			1.2
ESAF	0.1				2.4	0.0		2.2		0.5	5.2			10.4
FSU										0.1	0.0			0.1
JAP	0.0				0.0			0.6	5.4	0.4	30.6			37.0
LAMR					3.5	0.1		9.0	1.1		1.0			14.7
ME						0.0	0.1			0.2				0.3
NAMR	4.4	1.0		30.0	106.6	1.8	1.1		78.0	3.3	73.2			299.5
OEUR	0.0			0.1	0.0	0.6	1.0	0.0		2.3	2.7			6.8
SA		0.0				0.1		0.1	0.0		0.0	0.0		0.3
SEA	3.3	0.0		21.4	0.3	0.5	0.1	0.0	2.0	9.0	69.2			105.9
Total	7.8	1.1		51.5	112.9	3.1	2.3	12.3	86.6	16.0	183.1	0.0		476.8

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	0.0								0.0		0.0			0.0
ESAF	1.1			2.2	6.0			5.4			27.0			41.7
JAP					0.0			1.7	1.0	0.0	40.3			43.0
LAMR					3.0			0.2	1.0					4.2
ME	0.0			0.0										0.0
NAMR	4.2	0.2	0.0	23.7	59.1	4.5	0.0		17.5	5.8	60.2	0.1	0.1	175.4
OEUR	0.0			0.0				0.0			6.7			6.8
SA								0.0						0.0
SEA	3.5		0.0	12.9	0.0	1.8		1.1		10.1	78.4			107.7
XEUR											0.0			0.0
Total	8.8	0.2	0.0	38.8	68.1	6.2	0.0	8.5	19.5	15.9	212.6	0.1	0.1	378.9

Seaborne trade organics.xls/Trade

Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Propylene Glycol

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.0			0.0			0.0
AUST					0.0					0.0	0.3			0.3
ESAF										0.0	0.0			0.0
FSU					0.0					0.1				0.1
JAP	0.7	1.0	0.0		0.2	0.3	0.4	0.0	2.0	0.7	23.7			29.0
LAMR	0.2	0.6		6.4	3.0	0.1	0.2	13.3	9.4	1.3	14.8	0.0	0.0	49.5
ME	0.1				0.0	0.2	0.0			1.1	2.7			4.1
NAFR										0.0				0.0
NAMR	0.5	0.1		0.6	17.2	0.7	0.1		1.1	2.9	54.1	0.0	0.0	77.4
OEUR				0.0	4.0	3.3	2.3	0.5		2.6	14.9			27.5
SA	0.1	0.2			0.0	0.3	0.2	0.0	0.2		0.3			1.4
SEA	1.4	0.2		3.5	0.0	1.9		0.6	2.0	3.3	53.5	0.0		66.3
XEUR							0.0							0.0
Total	3.0	2.2	0.0	10.5	24.5	6.7	3.3	14.4	14.7	12.0	164.4	0.1	0.0	255.8

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other	3.6										0.0			3.6
AUST	0.8								0.0		0.1			0.9
ESAF	0.0													0.0
JAP	0.8				0.1	0.3	0.8	0.0	0.0	0.1	11.0			13.2
LAMR				5.3				3.0			6.8			15.1
NAMR	0.0	1.6	0.0	0.8	12.2	0.0	0.0		0.6		101.6	0.0		116.9
OEUR	0.0			0.0				2.1			7.0			9.2
SEA	4.5	1.4		0.6	1.8	4.7	0.4	9.1	2.7	7.9	44.0	0.1		77.1
WAFR											0.1			0.1
Total	9.8	3.0	0.0	6.7	14.2	5.0	1.2	14.2	3.3	8.0	170.6	0.1		236.1

Styrene

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.0						0.0
AUST	2.6									1.2	13.9			17.6
FSU					2.1					1.1				3.2
JAP	0.0					0.3		0.0		25.0	781.0			806.2
LAMR					3.0			0.1	14.1	3.2	4.2			24.6
ME		4.7		26.7		7.8			59.0	70.5	217.8			386.4
NAMR	0.0	25.6		91.1	255.4	0.2	0.1		176.8	19.3	967.0		1.9	1537.6
OEUR					1.8	0.3	0.3	0.0		6.3	31.0			39.6
SA						1.0			0.0		0.2			1.2
SEA	0.1	1.0		19.1		0.0	0.1	7.0	17.9	26.9	604.9			677.1
Total	2.7	31.4		136.9	262.3	9.7	0.5	7.1	267.8	153.4	2619.9		1.9	3493.4

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
AUST											1.9			1.9
JAP									0.0	13.5	761.6			775.1
LAMR								34.5			8.3			42.9
ME										64.0	238.2			302.2
NAMR	0.1	12.0		27.3	494.8				266.1	24.3	354.2			1178.7
OEUR								1.9		6.0	9.3			17.2
SEA	2.1	8.7		16.1	1.0	3.5	0.1	2.0	51.5	105.7	1096.0			1286.6
WAFR											0.0			0.0
Total	2.2	20.7		43.4	495.8	3.5	0.1	38.4	317.5	213.6	2469.5			3604.6

Seaborne trade organics.xls/Trade
Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Trichloroethylene

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.6						0.6
ESAF					0.1						0.4			0.5
FSU					0.1			0.1			1.0			1.1
JAP	0.5					0.0				0.0	36.1	0.2		36.8
LAMR								0.0						0.0
ME						0.0				0.0				0.0
NAMR	0.9			4.1	6.0	0.0	0.0		5.7	0.0	14.3			31.0
OEUR				0.0	1.1	0.5	0.3	3.4		1.3	17.2			23.9
SA	0.0	0.0			0.0	0.1		0.0		0.0	0.2			0.4
SEA					0.1	0.0		0.0	0.0	0.0	3.9			4.0
XEUR					0.2			0.8			0.2			1.2
Total	1.4	0.0		4.1	7.5	0.6	0.4	5.0	5.7	1.3	73.3	0.2		99.5

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	0.0					0.0					0.0			0.0
FSU								0.4		0.4	1.1			1.8
JAP	0.2									0.0	31.9			32.1
LAMR								0.0						0.0
ME											0.0			0.0
NAMR	0.0				5.9	0.0	0.0		14.2		11.5	0.0		31.6
OEUR	1.6			1.1				3.2		0.9	16.4			23.2
SEA	0.3	0.0			0.0	0.0					2.2			2.5
WAFR											2.3			2.3
XEUR				0.1				0.1			1.3			1.5
Total	2.1	0.0		1.2	5.9	0.0	0.0	3.6	14.2	1.3	66.7	0.0		95.1

Toluene

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other								0.4						0.4
AUST	0.0					0.0		0.0			0.3			0.4
FSU										0.5				0.5
JAP					0.0	0.0		0.0		0.7	47.7			48.4
LAMR					11.6			34.1	0.0					45.8
ME						0.0				3.3	0.0			3.3
NAMR	0.1			1.5	24.3	0.2			2.3	1.3	158.7		0.0	188.3
OEUR	0.0				4.2	3.4	1.3	6.0		11.3	3.4			29.6
SA	0.0							0.1	0.1		0.0			0.2
SEA	17.7	0.0		59.1	1.4	0.0		39.4		29.6	713.3		0.0	860.6
XEUR					0.0									0.0
Total	17.8	0.0		60.6	41.5	3.6	1.3	80.1	2.4	46.6	923.6		0.0	1177.5

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
AUST	0.5							0.0						0.5
JAP								1.3			10.4			11.8
LAMR								30.1			0.0			30.1
ME														
NAFR														
NAMR	0.0			0.0	43.4	0.0			13.4	0.0	8.3	0.0	0.0	65.3
OEUR								3.4			0.8			4.2
SEA	18.0	0.0	0.0	132.0	0.0	5.3		92.5	27.8	50.3	1002.9			1328.9
WAFR														
XEUR											0.0			0.0
Total	18.5	0.0	0.0	132.0	43.4	5.3		127.3	41.2	50.3	1022.5	0.0	0.0	1440.7

Seaborne trade organics.xls/Trade
Source: Drewry

SEABORNE TRADE MATRICES FOR SELECTED ORGANICS

Figures in '000 tonnes

Xylene (various)

1996

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other							0.0	0.8			0.0			0.9
AUST	2.3										0.0			2.3
FSU								19.9		38.7	11.2			69.7
JAP	0.0							13.8	35.1	82.6	1121.3			1252.8
LAMR		2.0			7.7			7.8	25.0	12.7	35.8			91.1
ME						0.0				32.3	16.1			48.4
NAFR							1.2							1.2
NAMR	8.9			70.0	357.2	0.4			425.5	50.1	1018.3	0.1		1930.5
OEUR	0.0			0.0	3.1	0.0	0.4	94.4		47.3	86.5			231.7
SA									0.1		7.7			7.8
SEA	3.0	0.0	0.0	109.2	1.1	0.0			3.5	143.5	1367.8	0.0		1628.3
Total	14.1	2.1	0.0	179.2	369.1	0.5	1.6	136.8	489.2	407.2	3664.8	0.1		5264.6

2000

Export							Import Region							Total
Region	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	
Other											0.0			0.0
AUST	0.0										0.0			0.0
ESAF											2.0			2.0
FSU										10.0	6.0			16.0
JAP	0.0							0.3	5.6	81.7	1906.5			1994.2
LAMR								26.7						26.7
ME								0.4		15.0	24.2			39.5
NAFR														
NAMR		1.3	0.0	5.0	522.0	0.2	0.0		166.2	11.0	509.7	0.1		1215.4
OEUR	0.0			0.0				25.8		53.0	37.9			116.7
SA											84.5			84.5
SEA	1.3		0.0	81.6		5.2		8.7	9.4	291.6	1638.0	0.1		2035.8
WAFR								0.5						0.5
Total	1.3	1.3	0.0	86.6	522.0	5.4	0.0	62.4	181.2	462.3	4208.9	0.2		5531.5

Seaborne trade organics.xls/Trade

SEABORNE TRADE IN CAUSTIC SODA 1985, 1987,1989

Seaborne trade in Caustic Soda 1985 (000 tonnes)
Source Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Total
N.America	150	1150	60		105	70	10	630	2175
Central/South America			10					10	20
W.Europe	480	40		250	180	130		785	1865
Eastern Europe	5	5	210						220
Africa									0
Middle Eest			40	30			20	320	410
Japan								280	280
Asia/Oceania							10	10	20
Total	635	1195	320	280	285	200	40	2035	4990

Seaborne trade in Caustic Soda 1987 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Total
N.America	260	1250	50		10	20	100	590	2280
Central/South America									0
W.Europe	660	40	570	120	190	130	390	200	2300
Eastern Europe			180						180
Africa									0
Middle Eest			50	10		20	300	450	830
Japan									0
Asia/Oceania							190	160	350
Total	920	1290	850	130	200	170	980	1400	5940

Seaborne trade in Caustic Soda 1989 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Total
N.America		735	50	0	10	10	100	325	1230
Central/South America									0
W.Europe	200	150	1080	100	20		60	200	1810
Eastern Europe			120						120
Africa									0
Middle Eest				10	50	20	350	420	850
Far East	25						515	240	780
Oceania								10	10
Total	225	885	1250	110	80	30	1025	1195	4800

Inorganic Chemicals.xls/Caustic Soda

SEABORNE TRADE IN CAUSTIC SODA 1997, 1998, 1999, 2000

Caustic Soda - In Acqueous Solution, World Trade Flow by Region 1997 (000 tonnes)

Source: Tecnon

	USA	Canada	L.Ameri	W.Europe	E.Euro	USSR	Africa	M.East	Japan	E.Asia	A.Pacific	Total
UNITED STATES	- -	442	27	358	0	0	0	53	0	0	0	880
CANADA	0	- -	0	0	0	0	0	0	0	0	0	0
LATIN AMERICA	1189	33	- -	53	0	0	0	0	0	0	0	1275
WESTERN EUROPE	161	0	0	- -	412	0	1	25	0	0	0	599
EASTERN EUROPE	0	0	0	49	- -	0	0	0	0	0	0	49
FORMER USSR	0	0	0	19	17	- -	0	0	0	0	0	37
AFRICA	0	0	7	106	12	0	- -	12	0	0	0	138
MIDDLE EAST	0	0	0	4	0	2	3	- -	0	0	0	9
JAPAN	0	0	0	0	0	0	0	0	- -	0	0	0
EAST ASIA	75	4	0	33	0	1	0	99	259	- -	51	521
ASIA & PACIFIC	109	3	4	24	1	0	0	161	308	50	- -	660
Total Exports	1534	482	38	646	443	3	3	350	567	51	51	4167

Caustic Soda - In Acqueous Solution, World Trade Flow by Region 1998 (000 tonnes)

Source: Tecnon

	USA	Canada	L.Ameri	W.Europe	E.Euro	USSR	Africa	M.East	Japan	E.Asia	A.Pacific	Total
UNITED STATES	- -	415	82	307	0	0	0	84	19	40	21	967
CANADA	0	- -	0	0	0	0	0	0	0	0	0	0
LATIN AMERICA	1207	7	- -	72	6	0	1	4	0	3	0	1298
WESTERN EUROPE	288	0	21	- -	423	3	48	104	0	0	20	906
EASTERN EUROPE	0	0	0	45	- -	1	0	0	0	0	0	46
FORMER USSR	0	0	0	0	33	- -	0	0	0	0	0	33
AFRICA	41	0	9	94	0	0	- -	84	0	0	2	230
MIDDLE EAST	1	0	0	0	0	0	1	- -	0	0	0	3
JAPAN	0	0	0	0	0	0	0	0	- -	0	0	0
EAST ASIA	18	0	0	4	0	1	0	16	184	- -	20	242
ASIA & PACIFIC	11	95	4	3	0	0	0	101	143	73	- -	430
Total Exports	1566	517	116	524	461	4	50	392	346	115	63	4155

Caustic Soda - In Acqueous Solution, World Trade Flow by Region 1999 (000 tonnes)

Source: Tecnon

	USA	Canada	L.Ameri	W.Europe	E.Euro	USSR	Africa	M.East	Japan	E.Asia	A.Pacific	Total
UNITED STATES	- -	401	34	257	0	0	0	72	26	23	5	818
CANADA	0	- -	0	0	0	0	0	0	0	0	0	0
LATIN AMERICA	1526	11	- -	53	0	0	1	0	0	4	0	1595
WESTERN EUROPE	424	0	0	- -	356	4	41	38	0	0	0	864
EASTERN EUROPE	0	0	0	37	- -	0	0	4	0	0	0	41
FORMER USSR	0	0	0	0	14	- -	0	0	0	0	0	14
AFRICA	25	0	0	137	0	0	- -	35	0	0	7	203
MIDDLE EAST	0	0	0	7	0	0	0	- -	0	0	0	7
JAPAN	0	0	0	0	0	0	0	0	- -	0	0	0
EAST ASIA	16	0	0	6	0	0	0	0	74	- -	56	153
ASIA & PACIFIC	14	25	2	15	0	0	0	51	105	46	- -	257
Total Exports	2005	437	36	512	371	4	42	199	205	73	68	3952

Caustic Soda - In Acqueous Solution, World Trade Flow by Region 2000 (000 tonnes)

Source: Tecnon

	USA	Canada	L.Ameri	W.Europe	E.Euro	USSR	Africa	M.East	Japan	E.Asia	A.Pacific	Total
UNITED STATES	- -	446	19	263	0	0	0	13	62	64	0	866
CANADA	0	- -	0	0	0	0	0	0	0	0	0	0
LATIN AMERICA	1453	1	- -	39	0	0	0	0	0	16	0	1510
WESTERN EUROPE	438	0	17	- -	310	3	51	14	0	14	0	848
EASTERN EUROPE	0	0	0	56	- -	9	0	0	0	0	0	65
FORMER USSR	0	0	0	0	30	- -	0	0	0	0	0	30
AFRICA	117	0	7	130	0	0	- -	119	0	7	8	388
MIDDLE EAST	0	0	0	1	1	0	0	- -	0	0	0	2
JAPAN	0	0	0	0	0	0	0	0	- -	0	0	0
EAST ASIA	25	0	0	1	0	0	0	0	49	- -	18	92
ASIA & PACIFIC	1	0	7	0	0	0	0	20	173	148	- -	349
Total Exports	2033	447	49	491	341	12	51	165	284	249	27	4150

Inorganic Chemicals.xls/Caustic Soda

SEABORNE TRADE IN SULPHURIC ACID 1985, 1987, 1989, 1999, 2000

Seaborne trade in Sulphuric Acid 1985 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
N.America	180	100	50					10	340
W.Europe	20	20			70			50	160
E.Europe/USSR			50	40				60	150
Asia			150		20	300		20	490
Other		10	20						30
Total	200	130	270	40	90	300	0	140	1170

Seaborne trade in Sulphuric Acid 1987 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
N.America	370	50				10			430
W.Europe	20	50	700	20	40			90	920
E.Europe/USSR			60	0					60
Asia	30	10			50	370	40		500
Other	20		10						30
Total	440	110	770	20	90	380	40	90	1940

Seaborne trade in Sulphuric Acid 1989 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
N.America	400	50				10			460
W.Europe	20	10	1010		10	20			1070
E.Europe/USSR			100						100
Asia	145	10				550	105		810
Other									0
Total	565	70	1110	0	10	580	105	0	2440

Seaborne trade in Sulphuric Acid 1999 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
N.America	18	125							143
W.Europe	111	113						66	290
E.Europe/USSR									0
Asia	813	357			26	699	113	101	2109
Other		72							72
Total	942	667	0	0	26	699	113	167	2614

Seaborne trade in Sulphuric Acid 2000 (000 tonnes)
Source: Drewry

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
N.America	0	131				2	0	25	158
W.Europe	129	113						67	309
E.Europe/USSR	3								3
Asia	272	219			123	932	156	189	1891
Other	71	16				7	1	2	96
Total	475	479	0	0	123	941	158	282	2457

Inorganic Chemicals.xls/Sulphuric Acid

SEABORNE TRADE IN PHOSPHORIC ACID 1985, 1987, 1989

Seaborne trade in Phosphoric Acid 1985 (000 tonnes)

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
USA		160	70	1000		380			1610
W.Europe				210		130			340
Morocco			910	40		760			1710
Other Africa		20	400			480		10	910
Other	10	20	230	10		100		10	380
Total	10	200	1610	1260	0	1850	0	20	4950

Seaborne trade in Phosphoric Acid 1987 (000 tonnes)

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
USA		410		1280		530	90		2310
W.Europe			470	290		140			900
Morocco		360	1110	80	10	1020	30		2610
Other Africa		50	540	10	10	520			1130
Other			100	30		30			160
Total	0	820	2220	1690	20	2240	120	0	7110

Seaborne trade in Phosphoric Acid 1989 (000 tonnes)

From/To	North America	Central/South America	West Europe	East Europe	Africa	Asia	Oceania	Other	Total
USA		150		1360		300	50		1860
W.Europe			1005	210		85			1300
E. Europe			10			20			30
Morocco/ Other Africa		175	800	250	55	1680			2960
Far East/Other						170			170
Total	0	325	1815	1820	55	2255	50	0	6320

Inorganic Chemicals.xls/Phosphoric Acid

Source: IFA

SEABORNE TRADE IN MOLASSES 1987, 1989

Seaborne Trade in Molasses, 1987 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Other	Total
North America		800	60					140		1000
Latin America	30									30
West Europe	240	900	300	200	750	30	1050	60	40	3570
East Europe										0
Africa					40					40
Middle East			20							20
Far East			10				980	160		1150
Oceania								10		10
Other					30	10	50	40		130
Total	270	1700	390	200	790	30	2030	370	40	5950

Seaborne Trade in Molasses, 1989 ('000 tonnes)
Source: Drewry

From/To	North America	Latin America	West Europe	East Europe	Africa	Middle East	Far East	Oceania	Total
North America		30	170						200
Latin America	550		440						990
West Europe	80		300			20			400
East Europe			220						220
Africa			800		50				850
Middle East			30						30
Far East			1625				580		2205
Oceania	325		130				30	15	500
Total	955	30	3715	0	50	20	610	15	5395

molasses.xls/Seaborne Trade

EXPORTS OF MOLASSES FROM MAJOR COUNTRIES. 1975-2000

Figures in metric tonnes

Rank by 2000 exports

Molasses	Year												
	1975	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**
Pakistan	167,646	111,563	157,590	325,317	406,849	213,806	315,993	472,587	602,740	386,438	683,185	768,222	500,086
Thailand	500,027	722,063	953,176	742,030	628,784	245,846	454,005	927,423	726,839	774,504	896,919	830,824	482,621
Indonesia	176,908	169,084	67,135	203,780	239,896	224,010	255,873	459,654	619,384	690,528	577,002	714,712	737,512
Philippines	674,212	792,755	548,442	387,908	462,987	442,889	375,768	462,570	500,472	516,223	422,386	279,275	152,874
Cuba	442,894	503,870	566,031	527,902	725,569	590,782	413,344	508,953	237,126	387,884	242,755	285,832	228,151
Mexico	498,686	435,643	555,164	547,453	590,390	506,746	123,537	291,788	247,886	176,077	280,755	307,725	435,245
Australia	247,505	301,018	280,648	172,931	74,945	76,044	133,553	202,609	186,859	180,309	355,067	210,156	318,551
Brazil	881,500	843,643	1,041,048	778,200	670,556	831,033	620,143	18,766	386,230	371,125	200,736	372,924	451,687
Poland	50,000	80,000	86,700	59,550	81,167	66,600	40,000	53,800	82,708	256,785	342,891	287,936	317,808
Netherlands	219,466	243,385	280,826	252,075	312,838	236,362	277,093	325,732	328,449	311,345	317,197	296,745	331,568
United States of America	42,818	73,176	124,609	108,407	234,000	276,481	237,531	252,250	258,591	140,200	223,874	398,513	367,450
Guatemala	39,857	283,564	158,284	140,860	108,616	103,447	160,140	194,151	176,650	92,628	137,927	129,837	162,577
South Africa	130,000	181,216	214,495	103,200	330,000	33,000	88,000	256,400	150,000	228,000	355,489	338,436	205,317
Dominican Republic	290,431	279,079	252,888	263,448	266,426	180,152	185,501	307,574	225,602	189,722	156,769	165,794	184,629
France	283,164	271,485	343,599	269,966	157,047	140,033	111,778	361,992	303,243	222,244	145,958	152,734	112,746
India	38,318	52,423	35,027	25,220	384,522	81,166	858	279	268,581	297,456	28,637	1,238	-
Mauritius	121,186	129,728	194,660	156,937	171,600	154,254	161,513	175,313	137,300	126,977	150,920	129,108	130,946
Fiji Islands	70,328	72,056	90,404	121,306	128,353	160,768	140,979	156,832	92,878	155,135	139,561	125,590	126,631
Swaziland	55,555	69,067	62,716	63,025	67,445	85,963	116,918	139,480	145,431	121,205	72,401	131,258	144,161
Colombia	56,642	67,495	15,000	169,496	152,925	245,175	105,746	93,044	131,062	53,656	83,964	112,887	76,382
Egypt	59,843	77,168	46,450	230,025	110,860	110,720	56,890	112,700	93,940	83,414	113,013	116,813	143,961
Belgium-Luxembourg	20,122	156,432	164,398	183,259	168,775	180,012	128,917	165,653	216,386	162,901	82,388	68,303	98,633
Sudan	-	5,500	-	-	-	11,000	34,261	50,000	83,285	100,000	94,063	131,644	151,125
Germany	51,037	101,798	93,303	43,463	24,128	18,659	33,329	10,398	14,289	42,337	14,990	29,003	21,719
Ukraine													
Sub Total	5,118,145	6,023,211	6,332,593	5,875,758	6,498,678	5,214,948	4,571,670	5,999,948	6,215,931	6,067,093	6,118,847	6,385,509	5,882,380
World Total	5957270	7058744	7299651	7083976	7557884	6355525	5599941	7006687	7529700	7251428	7118935	7298765	6742502
Sub total / world total	86 %	85 %	87 %	83 %	86 %	82 %	82 %	86 %	83 %	84 %	86 %	87 %	87 %

	1988	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Pakistan	798,523	753,239	1,166,012	776,071	947,000	892,618	1,729,921	1,709,045	1,029,768	1,056,134	1,668,841	1,835,411	1,236,915
Thailand	417,374	603,907	910,111	1,046,978	1,113,326	569,179	838,190	1,194,209	1,043,701	877,282	636,053	617,430	1,009,545
Indonesia	521,415	447,490	623,141	386,267	555,087	788,984	799,439	436,789	185,270	331,281	167,931	178,075	131,368
Philippines	191,183	413,210	424,101	317,415	327,372	499,610	254,846	92,647	33,049	197,599	289,642	158,121	104,644
Cuba	321,838	413,349	413,000	377,596	312,541	110,756	220,741	130,044	241,641	157,020	115,438	131,336	161,321
Mexico	245,120	133,363	83,713	190,369	81,046	135,731	260,413	512,174	590,712	322,212	407,325	384,645	330,189
Australia	311,916	356,525	433,847	271,376	150,769	417,128	288,099	436,088	666,681	654,810	658,395	710,411	370,449
Brazil	353,265	52,627	-	-	2	3	40	3	20	-	14	34	52
Poland	293,968	330,359	499,675	569,496	513,066	410,100	412,300	361,900	475,732	456,559	508,316	377,686	242,215
Netherlands	340,461	266,065	250,241	194,466	244,471	198,069	143,195	139,763	103,932	124,604	119,717	167,420	89,733
United States of America	299,620	213,669	157,172	199,114	221,153	194,505	206,404	205,992	212,482	253,024	307,868	378,464	319,206
Guatemala	206,660	221,723	212,548	264,748	282,555	231,740	218,330	305,443	311,259	298,386	316,475	317,481	263,296
South Africa	193,243	87,854	57,547	150,000	152,682	75,000	160,551	64,426	224,225	474,653	373,286	151,166	242,776
Dominican Republic	179,186	156,475	140,456	150,241	131,245	182,240	148,018	134,196	142,110	171,458	132,990	136,215	107,936
France	150,398	75,280	89,139	116,483	35,530	136,192	55,226	90,618	72,336	103,177	148,447	81,725	141,617
India	96,106	135,556	164,265	268,904	89,169	14,722	81	455,897	1,049,081	73,515	9,870	129,701	428,455
Mauritius	153,752	125,080	161,028	130,505	130,840	125,335	123,179	116,766	97,972	112,097	133,321	34,682	78,030
Fiji Islands	133,574	138,786	87,780	251,283	136,677	117,721	140,316	188,539	144,000	122,000	101,000	151,000	102,000
Swaziland	113,775	120,334	119,301	122,000	120,000	114,760	114,760	114,760	114,760	53,531	341,662	69,621	30,416
Colombia	74,608	30,701	27,500	14,000	49,981	140,486	155,232	107,574	71,582	75,961	218,668	205,753	134,609
Egypt	157,465	158,052	111,098	106,821	156,925	94,279	36,164	19,817	56,994	25,384	63,998	89,106	212,612
Belgium-Luxembourg	106,789	66,551	62,202	53,006	47,582	38,359	62,544	64,123	52,165	61,513	32,486	72,211	-
Sudan	117,400	66,070	168,000	147,000	130,000	137,517	98,000	180,382	174,001	126,860	159,660	182,000	21,100
Germany	29,592	67,109	120,998	150,115	117,136	114,220	153,910	96,200	169,690	122,564	147,832	122,469	116,187
Ukraine					172,000	70,000	325,559	249,760	118,077	236,024	257,268	342,568	100,385
Sub Total	5,807,231	5,433,374	6,482,875	6,254,254	6,218,155	5,809,254	6,945,458	7,407,155	7,381,240	6,487,648	7,316,503	7,024,731	5,975,056
World Total	6805631	6468250	7542976	7350489	7464808	6994244	8145082	8447890	8534602	7443700	8292892	8245462	7198006
Sub total / world total	85 %	84 %	86 %	85 %	83 %	83 %	85 %	88 %	86 %	87 %	88 %	85 %	83 %

molasses.xls/25 largest exporters

Source: FAO

IMPORTS OF MOLASSES FROM MAJOR COUNTRIES. 1975-2000

Figures in metric tonnes

Rank by 2000 imports
Molasses

Imports - Qty (Mt)	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
United States of America	1698844	2314940	2122652	1592381	1495481	1030380	1056491	1100636	1648904	1369804	1644152	1229349	961230
Netherlands	637110	711275	866792	702103	885791	754620	716780	779921	775372	860151	880716	883431	976047
United Kingdom	455601	605658	579262	542318	714819	607961	509719	698439	726590	666796	545405	830857	664727
Japan	819015	961871	911840	942363	838663	788268	643266	801520	921494	785973	785493	596168	507952
China	26627	108185	110000	126262	220163	101100	133700	171832	288069	262940	278182	401991	471029
Korea, Republic of	293826	342017	405082	435066	411231	263684	310711	448973	249356	295969	186183	142610	168024
Germany	265991	348049	475533	435859	578273	524493	377514	570488	570801	534118	545250	532560	502555
France	198909	263857	245728	303780	302737	309823	273145	301507	326809	324732	269935	328994	327552
Denmark	20228	154547	380840	411761	605605	335978	263553	464608	503086	440322	318920	367623	358376
Italy	213405	215367	337208	352922	379748	241930	128177	186218	300829	367131	524244	298196	330615
Belgium-Luxembourg	199703	329537	338293	300670	286547	304526	215938	298273	305777	209805	236480	258095	286700
Ireland	81479	105252	104076	136510	164871	142311	147788	179422	259178	178318	227683	265038	201085
Spain	103313	9462	1193	20882	9230	11874	3284	2149	5334	3066	52731	281839	237318
Bulgaria	227764	124788	118783	203237	111309	157954	125557	173700	316652	432419	319810	180946	321657
Canada	146618	156190	157224	149720	185072	141797	152996	172469	146874	127751	159557	156462	173329
Portugal	24846	42626	48115	73922	67082	49500	53993	76809	70719	66399	64433	85330	137288
Sweden	40549	28821	28323	42601	47956	62899	79691	54533	49638	75121	74356	113889	77816
Austria	48148	49273	80995	69685	32897	30209	38636	69041	36261	33982	4071	49373	46135
Norway	44142	53023	62475	65355	51191	80033	52488	58792	83175	41304	45189	82558	52005
Czechoslovakia	74619	46315	55040	41700	18800	9800	29300	34800	95400	66700	44500	56300	104800
Indonesia	11	2	1	41	30	15	69	28	50	69	53	53	82
Viet Nam	0	0	0	0	0	0	0	0	0	0	0	0	0
Finland	21538	22188	25002	24036	39877	59352	32447	31341	28643	23147	6728	13526	22766
Philippines	0	0	0	0	0	0	0	0	0	0	0	0	0
Romania	121499	0	0	0	0	0	0	0	0	0	0	0	0
Sub total	5763785	6993243	7454457	6973174	7447373	6008507	5345243	6675499	7709011	7166017	7214071	7155188	6929088
World Total	5952562	7199261	7669291	7180862	7551334	6166669	5489270	6781757	7887420	7342577	7403652	7296408	7063111
Sub total / world total	97 %	97 %	97 %	97 %	99 %	97 %	97 %	98 %	98 %	98 %	97 %	98 %	98 %

Imports - Qty (Mt)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
United States of America	985926	671738	810683	889798	799432	747169	1117436	1062182	1396788	1446685	1512748	1081237	1156907
Netherlands	987409	926056	806768	799589	1066842	767189	818773	771457	618608	736073	703041	769516	735567
United Kingdom	679415	677182	690388	650388	787533	756844	1056724	942871	834157	667819	597768	618008	663564
Japan	387066	438223	474270	486480	447305	421313	425756	393269	262987	263485	217296	202923	183772
China	395107	359930	600127	622775	513842	440741	560126	694983	565934	573602	729499	1821534	918329
Korea, Republic of	222157	259349	377690	366824	450605	512015	575677	647290	722663	726033	797011	727270	795841
Germany	532142	466307	448242	329585	464284	273650	315116	303002	273830	234676	208146	250190	231615
France	373639	468571	590091	583665	564083	493649	452317	515010	530110	454712	396110	461114	490201
Denmark	434164	277827	320768	311671	514538	385794	329038	335530	313173	343282	256406	296160	239863
Italy	149050	206143	304288	258176	331982	298259	395821	384558	515127	514408	404554	213314	179931
Belgium-Luxembourg	252116	189668	235397	200358	171829	197690	228073	264282	216663	223907	250971	305492	0
Ireland	261176	221389	261936	272553	329414	339005	210269	307305	311506	316883	324690	263948	250809
Spain	186167	154839	180111	276803	292035	219721	254562	293645	391137	397863	385978	358305	323903
Bulgaria	287467	254506	233031	121094	53083	105281	116609	34140	53638	103386	57993	50000	50000
Canada	140618	139567	139609	143228	110809	126053	162719	159873	149646	278169	173807	199264	212261
Portugal	146339	127224	139129	162081	167428	164941	131433	142029	121781	110349	75302	92873	98229
Sweden	100188	79140	92161	74744	110877	120194	109429	84615	74267	74225	58042	74819	44465
Austria	30186	77589	79273	119990	70652	64824	42985	40125	100843	116349	124839	113203	56836
Norway	60939	68590	47032	47933	75798	50278	46926	63858	57383	73808	91420	60127	90953
Czechoslovakia	115600	103000	90000	71010	78000								
Indonesia	71	451	73	2212	16812	13346	18434	34218	186776	95874	105290	185008	139092
Viet Nam	0	0	0	0	0	0	0	132627	118276	134123	61000	178000	440
Finland	23385	18595	10717	6726	8073	9845	7741	11459	6000	20	2009	12	772
Philippines	0	0	15213	1	0	0	0	55671	203606	2	5081	107825	65923
Romania	0	0	22723	5527	15733	13007	75066	64153	39827	39641	12263	14771	23417
Sub total	6750327	6185884	6969720	6803211	7440989	6520808	7451030	7738152	8064726	7925374	7551264	8444913	6952690
World Total	6910494	6376541	7170724	6948732	7935365	7058242	7968633	8350654	8630765	8477237	8144920	9028696	7787669
Sub total / world total	98 %	97 %	97 %	98 %	94 %	92 %	94 %	93 %	93 %	93 %	93 %	94 %	89 %

molasses.xls/25 largest importers
Source: FAO

PRODUCTION IN INORGANIC, ORGANIC AND VEGOIL

Organic, inorganic, vegetable oil and animal fats production

World production of the six major base chemicals ('000 tonnes)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Africa	70	54	45	41	70	53	50	79	61	62
America, North	42,028	44,830	43,871	45,851	46,514	47,366	46,425	52,229	54,052	54,588
Canada	4,551	4,858	4,861	4,885	4,609	4,672	4,635	5,191	5,377	5,349
Mexico	3	3	3	3	4	2	1	1	-	-
United States	37,474	39,969	39,009	40,621	38,830	39,621	38,716	44,308	40,180	40,712
America, South	4,284	4,294	4,356	4,393	4,192	4,361	4,848	5,314	5,429	5,430
Asia	19,925	21,585	23,703	26,208	29,164	33,111	34,329	37,292	39,997	46,014
Europe	35,706	38,440	37,527	35,570	43,768	44,459	39,384	41,802	42,294	40,161
EEC	27,985	30,267	29,534	28,482	30,626	32,213	28,766	31,876	31,984	31,746
EFTA	1,126	1,163	1,075	1,149	1,169	1,176	1,131	1,234	1,277	1,260
East Europe	6,105	6,537	6,439	5,446	11,597	10,800	9,271	8,446	8,761	7,486
Other Europe	492	474	480	496	384	280	224	256	274	243
Oceania	-	-	-	-	-	-	-	-	-	-
Total	102,013	109,203	109,502	112,063	123,708	129,350	125,036	136,716	141,833	146,255

World production of inorganics - phosphoric acid and sulphuric acid ('000 tonnes)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Africa	4,161	4,171	4,468	4,270	4,298	4,566	4,482	5,133	5,265	6,400
America, North	50,282	54,586	55,093	56,389	28,580	28,528	26,442	28,134	28,058	29,170
Canada	3,901	4,280	4,189	4,232	4,024	3,776	3,713	4,059	3,844	3,929
Mexico	783	710	598	639	528	343	178	375	-	634
United States	45,227	49,205	49,929	51,140	23,649	23,689	21,620	22,800	23,100	23,789
America, South	5,503	5,806	5,720	5,083	5,922	5,343	6,011	6,764	6,955	7,206
Asia	21,022	22,883	23,304	23,697	32,637	32,045	29,240	29,269	33,114	33,724
Europe	38,179	39,527	38,064	31,808	44,745	38,195	32,330	30,410	34,314	32,067
EEC	23,683	24,273	23,402	21,033	18,765	16,929	14,585	15,107	17,202	16,091
EFTA	2,771	3,182	2,952	2,851	2,912	2,797	2,940	2,487	2,576	2,268
East Europe	9,757	9,970	9,724	6,002	21,913	17,505	14,245	12,308	13,927	12,935
Other Europe	1,968	2,101	1,985	1,910	1,156	963	561	508	608	773
Oceania	1,680	1,818	1,904	1,464	986	816	868	833	781	695
Total	120,827	128,791	128,553	122,711	117,168	109,493	99,373	100,543	108,487	109,262

World production of vegetable oils and animal fats (million tonnes)

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Soybean	Oil	16.10	15.98	16.94	17.51	18.68	20.41	20.33	21.03	24.01	24.74
Palm	Oils	11.01	11.48	12.13	13.79	14.16	15.21	16.28	17.89	16.71	20.48
Rapeseed	Oils	8.16	8.93	9.37	9.07	9.97	10.96	11.48	11.84	12.22	12.95
Sunflower	Oil	7.87	8.12	8.27	7.59	7.39	8.56	9.03	9.21	8.58	9.30
Tallow/	Grease	6.81	6.86	6.96	7.28	7.50	7.51	7.42	7.51	7.74	8.13
Groundnut	Oil	3.90	3.81	3.88	4.04	4.31	4.42	4.55	4.50	4.55	4.70
Cottonseed	Oil	3.78	4.20	4.24	3.78	3.57	3.91	4.12	4.05	4.04	3.82
Coconut	Oil	3.39	3.05	2.87	2.98	3.01	3.35	2.87	3.32	3.21	2.45
Olive	Oil	1.86	1.79	2.28	1.95	1.90	1.89	2.04	2.70	2.58	2.43
Palm Kern	Oil	1.45	1.45	1.53	1.77	1.86	1.95	2.08	2.23	2.16	2.54
Corn	Oil	1.48	1.52	1.59	1.61	1.67	1.86	1.83	1.89	1.93	1.99
Fish	Oil	1.38	1.36	1.04	1.19	1.49	1.29	1.34	1.19	0.85	1.30
Sesame	Oil	0.61	0.67	0.67	0.69	0.62	0.59	0.67	0.72	0.72	0.69
Linseed	Oil	0.65	0.67	0.62	0.56	0.64	0.70	0.67	0.69	0.70	0.73
Castor	Oil	0.44	0.48	0.46	0.44	0.45	0.48	0.48	0.44	0.44	0.43
Total		68.88	70.39	72.84	74.26	77.21	83.06	85.19	89.20	90.42	96.68

Source: UN Statistics, Ista Mielke Gmbh, Drewry Shipping Consultants

Chemicals summary.xls/Production

PRODUCTION OF MAJOR ORGANIC CHEMICALS 1989-1998

World 6 base chemical production 1989-1998
Source: Drewry
('000 mt)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Ethylene	45,319	46,504	49,199	51,828	49,916	54,755	55,834	57,566	61,100	63,553
Butylene	10,204	10,353	11,204	11,160	10,937	11,274	11,818	12,043	11,836	11,739
Propylene	24,793	25,780	25,891	27,783	27,042	29,219	30,147	29,678	32,280	33,813
Benzene	19,372	19,208	18,542	18,671	17,501	19,804	20,758	20,407	21,945	21,691
Toluene	7,480	7,677	7,637	7,210	6,994	7,951	7,685	7,878	8,240	7,925
Xylene	10,634	10,449	10,427	11,259	11,055	12,084	12,915	13,175	14,971	13,281
Total	117,802	119,970	122,900	127,910	123,444	135,088	139,156	140,747	150,372	152,003

Chemicals summary.xls/Production 89-98

SEABORNE TRADE IN LNG 2000

Natural gas: Trade movements 2000 – LNG*

Billion cubic metres

To	From USA	Trinidad & Tobago	Oman	Qatar	UAE	Algeria	Libya	Nigeria	Australia	Brunei	Indonesia	Malaysia	Total imports
North America													
USA	-	2.7	0.2	1.3	-	1.3	-	0.6	0.2	-	-	-	**6.2**
Europe													
Belgium	-	-	-	-	-	4.2	-	-	-	-	-	-	**4.2**
France	-	-	-	0.1	-	10.9	-	0.3	-	-	-	-	**11.2**
Greece	-	-	-	-	-	0.3	-	-	-	-	-	-	**0.3**
Italy	-	-	-	0.1	-	2.5	-	2.2	-	-	-	-	**4.8**
Spain	-	0.8	0.1	0.3	0.3	4.2	0.8	1.9	-	-	-	0.2	**8.5**
Turkey	-	-	-	-	-	3.0	-	0.7	-	-	-	-	**3.7**
Asia Pacific													
Japan	1.7	-	0.1	7.9	6.3	-	-	-	9.8	7.7	24.3	14.8	**72.5**
South Korea	-	-	2.2	4.4	0.3	-	-	-	0.1	1.1	8.4	3.3	**19.7**
Taiwan	-	-	-	-	-	-	-	-	-	-	3.1	2.8	**5.9**
TOTAL EXPORTS	**1.7**	**3.5**	**2.5**	**14.0**	**6.9**	**26.3**	**0.8**	**5.6**	**10.1**	**8.8**	**35.7**	**21.0**	**137.0**

*Liquefied Natural Gas. Source: Cedigaz.

LNG Trade Data.xls/Data LNG Trades

Year	World LNG Exports (Million tonnes)) *Exporting countries* Australia	United States	Algeria	Brunei	Indonesia	Libya	Malaysia	Nigeria	Oman	Qatar	Trinidad	United Arab Emirates	Non specified Other Imports	Total Imports (trade)
1970	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.3
1971	0.0	0.0	0.8	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1
1972	0.0	0.0	1.2	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.8
1973	0.0	0.0	1.4	1.1	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.5
1974	0.0	0.0	1.6	2.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.2	6.0
1975	0.0	1.1	1.7	3.6	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	8.9
1976	0.0	1.0	1.7	4.9	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1
1977	0.0	1.0	2.8	5.6	0.5	2.6	0.0	0.0	0.0	0.0	0.0	0.4	0.0	12.9
1978	0.0	1.0	4.2	5.4	3.9	2.5	0.0	0.0	0.0	0.0	0.0	1.3	0.0	18.2
1979	0.0	1.0	8.0	5.6	6.3	2.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	24.5
1980	0.0	0.9	4.2	5.6	8.3	1.4	0.0	0.0	0.0	0.0	0.0	1.9	0.0	22.3
1981	0.0	1.1	5.0	5.4	8.8	0.5	0.0	0.0	0.0	0.0	0.0	1.9	0.0	22.7
1982	0.0	1.0	7.4	5.2	9.4	0.5	0.0	0.0	0.0	0.0	0.0	2.3	0.0	25.8
1983	0.0	1.1	11.3	5.3	9.7	0.5	1.2	0.0	0.0	0.0	0.0	1.8	0.0	31.0
1984	0.0	1.0	9.2	5.3	14.3	0.7	3.6	0.0	0.0	0.0	0.0	2.1	0.0	36.3
1985	0.0	1.0	9.7	5.2	15.1	0.7	4.5	0.0	0.0	0.0	0.0	2.4	0.0	38.6
1986	0.0	1.0	9.2	5.3	15.4	0.5	5.2	0.0	0.0	0.0	0.0	2.2	0.0	38.7
1987	0.0	1.0	10.0	5.3	16.9	0.4	6.1	0.0	0.0	0.0	0.0	2.2	0.0	41.9
1988	0.0	1.0	10.5	5.3	18.5	0.6	6.3	0.0	0.0	0.0	0.0	2.4	0.0	44.5
1989	0.7	1.0	12.0	5.4	19.5	0.9	6.6	0.0	0.0	0.0	0.0	2.4	0.0	48.5
1990	3.0	1.1	13.4	5.5	20.8	0.7	6.8	0.0	0.0	0.0	0.0	2.3	0.0	53.4
1991	4.1	1.0	13.4	5.4	22.6	0.9	7.6	0.0	0.0	0.0	0.0	2.6	0.0	57.6
1992	4.6	1.3	13.9	5.5	23.9	1.1	7.0	0.0	0.0	0.0	0.0	2.5	0.0	60.0
1993	5.0	1.1	14.3	5.7	24.0	0.9	8.1	0.0	0.0	0.0	0.0	2.5	0.0	61.6
1994	6.5	1.2	13.2	5.8	26.4	1.0	8.2	0.0	0.0	0.0	0.0	3.2	0.0	65.7
1995	7.3	1.3	13.1	6.4	25.0	0.9	9.6	0.0	0.0	0.0	0.0	4.7	0.0	68.2
1996	7.5	1.3	14.8	6.5	26.3	0.9	13.3	0.0	0.0	0.0	0.0	5.4	0.0	76.0
1997	7.4	1.3	18.9	6.2	26.1	0.8	15.4	0.0	0.0	2.2	0.0	5.6	0.0	83.9
1998	7.7	1.3	17.7	6.1	27.2	0.7	15.0	0.0	0.0	3.6	0.0	5.4	0.0	84.7
1999	7.5	1.3	19.1	6.4	29.3	0.7	15.1	0.4	0.0	6.4	1.6	5.3	0.2	93.1
2000	7.6	1.3	19.6	6.6	27.1	0.6	15.4	3.1	1.5	10.6	2.7	5.2	0.1	101.3

LNG Trade Data.xls/EIA LNG Trades
Source: EIA

WORLD AMMONIA TRADE. 1994, 1997, 2000

Figures in thousand tonnes

From: / *To:*	*West Europe*	*FSU ex Balt*	*North America*	*C & S America*	*M.East Gulf*	*Other*	*Total 1994*
UK/Continent	798	503	1	76	13	398	1789
Other Europe	84	1163	-	32	-	694	1973
North America	14	675	933	1663	184	130	3599
Other America	-	64	40	153	-	19	276
Africa	1	435	-	38	17	64	555
Turkey	-	269	-	-	-	15	284
India	-	132	-	-	445	135	712
Korea	-	125	169	-	43	13	350
Others & N.S	2	136	36	-	225	83	482
Total 1994	899	3502	1179	1962	927	1551	10020

LPG tables.xls/1994

Figures in thousand tonnes

From: / *To:*	*West Europe*	*FSU ex Balt*	*North America*	*C & S America*	*M.East Gulf*	*Other*	*Total 1997*
UK/Continent	973	419	1	31	-	258	1682
Other Europe	345	1018	-	19	-	537	1919
North America	-	1041	811	1625	-	8	3485
Other America	17	129	2	306	-	7	461
Africa	6	346	-	27	14	217	610
Turkey	-	380	-	-	-	14	394
India	-	155	-	-	697	91	943
Korea	-	174	381	-	61	17	633
Others & N.S	5	169	50	11	456	533	1224
Total 1997	1346	3831	1245	2019	1228	1682	11351

LPG tables.xls/1997

Figures in thousand tonnes

From: / *To:*	*West Europe*	*FSU ex Balt*	*North America*	*C & S America*	*M.East Gulf*	*Other*	*Total 2000*
UK/Continent	959	316	2	94	-	143	1514
Other Europe	526	861	-	8	-	722	2117
North America	9	922	879	2286	17	118	4230
Other America	-	72	76	448	-	3	599
Africa	22	431	15	23	17	162	669
Turkey	-	581	-	-	-	20	600
India	-	119	-	-	813	173	1105
Korea	-	72	530	20	-	32	654
Others & N.S	-	268	48	-	388	496	1200
Total 2000	1515	3641	1549	2879	1235	1868	12687

LPG tables.xls/2000
Source: IFA

AMMONIA PRODUCTION AND EXPORTS, SELECTED COUNTRIES 1998-2000

Figures in mill. tonnes

	PRODUCTION			EXPORTS		
AREA	***1998***	***1999***	***2000***	***1998***	***1999***	***2000***
EUROPE	14.18	13.97	15.56	1.74	1.67	1.91
Netherlands	2.35	2.44	2.54	0.57	0.59	0.59
Germany	2.51	2.45	2.47	0.34	0.28	0.31
UK	0.87	0.90	0.82	0.18	0.22	0.18
France	1.57	1.58	1.70	0.05	0.06	0.12
Poland	1.68	1.47	1.86	0.18	0.09	0.20
E.EUROPE & C. ASIA	12.09	13.65	14.50	3.83	3.94	3.82
N. AMERICA	17.28	17.07	16.13	1.34	1.45	1.55
Canada	3.90	4.14	4.13	0.70	0.89	0.89
USA	13.38	12.93	12.00	0.64	0.56	0.66
C & S AMERICA	5.39	5.49	4.98	2.33	2.58	2.88
Trinidad	2.27	2.72	2.69	1.99	2.39	2.42
Mexico	1.45	1.00	0.70	0.14	0.03	0.20
Venezuela	0.52	0.52	0.38	0.90	0.82	0.92
AFRICA	1.30	1.49	1.08	0.35	0.45	0.31
Algeria	0.35	0.45	0.46	0.26	0.38	0.29
S.Africa	0.72	0.78	0.56	0.02	0.03	0.02
M.EAST	7.05	6.92	7.34	1.12	1.29	1.29
S. Arabia	1.42	1.40	1.74	0.28	0.29	0.40
Bahrain	0.34	0.37	0.50	0.11	0.15	0.89
Qatar	1.13	1.13	1.10	0.36	0.35	0.31
Iran	1.03	0.87	0.97	0.08	0.08	0.12
Libya	0.55	0.55	0.55	0.13	0.14	0.12
OTH. ASIA	45.43	46.96	47.53	0.58	0.56	0.94
China	26.11	27.30	27.65	-	-	-
India	10.24	10.38	10.15	-	-	-
Indonesia	3.58	3.46	4.01	0.46	0.38	0.78
WORLD	103.24	106.04	107.80	11.26	11.95	12.71

LPG tables.xls/Prod-Exp
Source: IFA

SHIPMENT ANALYSIS FOR LPG CARRIERS 20.000 CBM +

Figures in '000 cbm.

						EXPORTS						IMPORTS					
Period	LPG	AMM	CPP	Chem Gas	Total	MEG incl RS	North Africa	Oth. Europe	Bl.Sea	Carib	Others	Japan	S.Kor.	Europe	U.S Gulf	S.Am E.C.	Oth.
1995	66041	12408	653	835	79937	40799	5464	12620	5232	5174	10649	26404	7246	19746	5826	4487	16229
1996	71737	11907	2082	503	86230	44523	5433	12348	4806	5674	13445	26998	8978	18827	6095	4412	20919
1997	72741	12826	387	330	86285	45224	7939	10468	4911	5432	12311	28346	7156	18534	6474	4420	21355
1998	73784	11796	211	114	85905	45592	9174	9712	4164	4990	12273	26106	6525	18438	7436	4657	22744
1999	73603	12742	702	199	87246	41961	10284	9955	4779	6179	14087	25109	7869	18299	4909	4576	26484
2000	74751	12329	895	167	88141	43477	11152	8467	4251	4867	15928	27006	8945	17520	3984	4578	26108

LPG tables.xls/Shipments2

TRADE ANALYSIS FOR LPG CARRIERS 20.000 CBM +. 2000

Figures in '000 cbm.

2000	Japan	Europe	South Korea	U S Gulf	S/E Asia	S.Am E C	Indian Subcont.	China	Others	Total
MEG	21,155	1,248	6,393	180	2,594	427	3,388	2,643	1,139	39,167
Red Sea	1,313	655	514	78	191	78	24	169	1,287	4,310
Other Europe	-	7,051	-	101	75	361	-	22	857	8,467
Black Sea	-	810	160	974	62	111	231	-	1,902	4,251
North Africa	39	7,093	172	280	75	895	-	136	2,462	11,152
Caribbean	-	146	37	2,070	-	416	-	-	2,198	4,867
S/E Asia	2,603	22	353	-	433	-	268	712	78	4,469
Australia	1,712	-	269	-	265	-	-	182	145	2,573
Others	184	495	1,048	302	419	2,291	1,103	127	2,919	8,887
Total	27,006	17,520	8,945	3,984	4,115	4,578	5,014	3,991	12,987	88,141

LPG tables.xls/Shipments1

SHIPMENT ANALYSIS FOR LPG CARRIERS 2000 AND 2001

AREA SURVEY FOR GAS SHIPMENTS

Figures in million tons.

Exports	2000	2001	Imports	2000	2001
			Europe	14.5	14.4
MEG	23.6	21.9	Japan	14.8	14.3
Africa	9.2	9.8	China	4.8	4.9
Europe	6.8	7.3	S. Korea	4.7	4.0
USA	1.2	0.6	India	0.6	0.5
Lat. America	2.3	2.5	USA	1.2	2.3
S/E Asia	3.3	3.3	Lat. America	5.8	4.8
Total	46.4	45.4	Total	46.4	45.4

LPG tables.xls/LPG seaborne trade
Source: Fearnresearch

LPG/NGL IMPORTS TO OECD BY MAIN AREAS 1988-1998

Source: IEA '000 tonnes

From:	OECD			OPEC		OTHERS			
To:	W. Europe	N.America	Pac.	M.East	Others	Mex.	Ex CPE	Others	Total
OECD									
1988	4594	4043	1176	13909	7964	996	647	833	34162
1989	5001	3968	1085	14931	8616	802	544	1225	36172
1990	4686	3717	1115	16985	9611	1325	398	1735	39572
1991	5365	3015	1132	18082	9154	889	192	1982	39811
1992	5829	2994	1412	18635	8991	615	251	1404	40131
1993	5450	3016	1305	18132	10372	755	316	3123	42469
1994	5598	2610	1215	17314	10789	984	217	1653	40380
1995	7367	3215	928	16123	11775	464	131	3090	43093
1996	7323	3670	1306	16276	15148	343	535	1075	45676
1997	7740	3650	954	18030	11858	18	906	2119	45275
1998	7341	4036	1027	16897	13139	-	1492	906	44838
USA									
1988	116	3982	28	798	1100	996	-	66	7086
1989	129	3763	51	215	912	802	-	24	5896
1990	64	3325	146	164	973	1311	-	14	5997
1991	53	2794	138	131	506	839	-	120	4581
1992	26	2729	38	222	628	615	3	24	4285
1993	102	2949	17	770	1252	755	-	33	5878
1994	349	3395	-	736	1348	987	-	22	6837
1995	341	3085	-	324	1751	464	-	54	6019
1996	339	3053	-	160	2761	343	-	134	6790
1997	85	3167	-	-	2565	18	-	57	5892
1998	380	3601	-	92	2900	-	-	137	7110
W.Europe									
1988	4478	59	5	1249	4880	-	647	369	11687
1989	4872	20	3	2006	4628	-	539	826	12894
1990	4621	61	4	2438	4796	14	398	1616	13948
1991	5308	173	-	3239	5035	50	188	976	14969
1992	5803	211	30	2650	5245	-	231	858	15028
1993	5326	-	-	2576	4955	-	316	3035	16208
1994	6683	28	-	2044	5987	-	218	1597	16557
1995	7013	130	73	1647	6972	-	131	3015	18981
1996	6627	617	149	1850	8875	-	535	900	19553
1997	7671	147	9	1834	7029	-	906	1339	18935
1998	6961	305	42	1807	7705	-	1492	844	19156
Japan									
1988	-	-	1143	11760	2033	-	-	436	15372
1989	-	-	1031	12694	3076	-	5	350	17156
1990	-	-	965	14383	3932	-	-	364	19644
1991	-	-	994	14712	3440	-	5	741	19892
1992	-	-	1342	15763	3089	-	17	522	20733
1993	-	-	1288	14745	4096	-	-	85	20214
1994	75	626	1079	14174	3469	267	-	49	19739
1995	-	-	855	14135	3052	-	-	21	18063
1996	-	-	962	14222	3512	-	-	147	18843
1997	-	96	945	16095	2144	-	-	662	19942
1998	-	130	985	14953	2534	-	-	62	18664

LPG tables.xls/Imports

APPENDIX:

TRADING VOLUMES /

CANAL'S POTENTIAL MARKET

CANAL TRANSIT VOLUMES AND VALUES - UNEXPANDED CANAL

BEST CASE

BEST CASE

PANAMA TRANSIT VOLUMES IN '000 TON
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	4,580	4,850	5,030	5,220	5,360
OIL PRODUCTS	13,530	12,390	14,550	16,800	17,540	18,960
CHEMICALS	8,757	7,543	6,763	6,703	7,007	8,169
LPG	1,196	1,062	1,555	1,935	2,452	2,947
LNG	-	-	2,150	2,450	2,840	2,940
ORIMULSION	217	690	990	1,390	1,590	1,815
TOTAL	28,183	26,266	30,858	34,308	36,650	40,191

PANAMA TRANSIT VOLUMES IN '000 TON
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	4,280	4,410	4,540	4,750	4,850
OIL PRODUCTS	2,012	2,620	3,240	3,790	4,050	4,350
CHEMICALS	3,748	4,665	5,577	6,416	7,131	8,271
LPG	13	67	183	340	579	883
LNG	-	-	1,330	2,790	2,790	2,800
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	11,632	14,740	17,876	19,299	21,154

PANAMA TRANSIT VOLUMES IN '000 TON
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	8,860	9,260	9,570	9,970	10,210
OIL PRODUCTS	15,542	15,010	17,790	20,590	21,590	23,310
CHEMICALS	12,505	12,207	12,340	13,119	14,138	16,440
LPG	1,209	1,129	1,738	2,274	3,031	3,830
LNG	-	-	3,480	5,240	5,630	5,740
ORIMULSION	217	690	990	1,390	1,590	1,815
BALLAST						
TOTAL	36,711	37,897	45,598	52,184	55,949	61,345

BEST CASE

TOTAL VALUE OF ROUTES IN '000 USD
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	7,816	8,276	8,584	8,908	9,147
OIL PRODUCTS	21,542	24,342	28,586	33,007	34,460	37,250
CHEMICALS	13,675	13,907	12,537	12,480	13,109	15,339
LPG	3,092	3,326	4,866	6,057	7,675	9,223
LNG	-	-	9,058	10,322	11,965	12,386
ORIMULSION	319	1,177	1,688	2,370	2,711	3,094
TOTAL	45,357	50,568	65,011	72,819	78,828	86,440

TOTAL VALUE OF ROUTES IN '000 USD
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	7,304	7,526	7,747	8,106	8,276
OIL PRODUCTS	4,286	5,147	6,366	7,446	7,957	8,546
CHEMICALS	7,394	8,857	10,593	12,196	13,562	15,729
LPG	84	201	551	1,021	1,740	2,656
LNG	-	-	5,603	11,754	11,754	11,797
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	21,510	30,639	40,164	43,120	47,004

TOTAL VALUE OF ROUTES IN '000 USD
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	15,119	15,802	16,331	17,014	17,423
OIL PRODUCTS	25,827	29,490	34,952	40,453	42,417	45,797
CHEMICALS	21,069	22,765	23,130	24,676	26,671	31,068
LPG	3,176	3,527	5,417	7,078	9,416	11,879
LNG	-	-	14,661	22,076	23,719	24,183
ORIMULSION	319	1,177	1,688	2,370	2,711	3,094
BALLAST	18,321	21,979	32,030	38,172	39,654	40,989
TOTAL	79,527	94,057	127,680	151,156	161,602	174,433

ForecastUnexpandedCanal.xls/Summery-Including Ballast

CANAL TRANSIT VOLUMES AND VALUES - UNEXPANDED CANAL

REFERENCE CASE

REFERENCE CASE

PANAMA TRANSIT VOLUMES IN '000 TON
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	4,360	4,580	4,810	5,020	4,860
OIL PRODUCTS	13,530	12,040	13,640	14,390	15,250	16,860
CHEMICALS	8,757	7,483	6,537	5,694	4,966	4,768
LPG	1,196	1,038	1,353	1,506	1,688	1,885
LNG	-	-	1,440	1,850	1,850	1,950
ORIMULSION	217	525	750	1,100	1,200	1,350
TOTAL	28,183	25,446	28,300	29,350	29,975	31,673

PANAMA TRANSIT VOLUMES IN '000 TON
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	4,040	4,250	4,450	4,640	4,520
OIL PRODUCTS	2,012	2,630	3,020	3,230	3,500	3,940
CHEMICALS	3,748	4,637	5,400	5,986	6,441	7,260
LPG	13	65	159	264	399	565
LNG	-	-	840	1,820	1,660	1,660
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	11,372	13,669	15,751	16,640	17,945

PANAMA TRANSIT VOLUMES IN '000 TON
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	8,400	8,830	9,260	9,660	9,380
OIL PRODUCTS	15,542	14,670	16,660	17,620	18,750	20,800
CHEMICALS	12,505	12,120	11,937	11,680	11,407	12,029
LPG	1,209	1,104	1,512	1,770	2,087	2,450
LNG		-	2,280	3,670	3,510	3,610
ORIMULSION	217	525	750	1,100	1,200	1,350
BALLAST						
TOTAL	36,711	36,819	41,969	45,100	46,614	49,619

REFERENCE CASE

TOTAL VALUE OF ROUTES IN '000 USD
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	7,440	7,816	8,208	8,567	8,294
OIL PRODUCTS	21,542	23,655	26,798	28,272	29,961	33,125
CHEMICALS	13,675	13,797	12,111	10,561	9,221	8,856
LPG	3,092	3,249	4,234	4,713	5,285	5,900
LNG	-	-	6,067	7,794	7,794	8,215
ORIMULSION	319	895	1,278	1,875	2,045	2,301
TOTAL	45,357	49,037	58,304	61,423	62,873	66,691

TOTAL VALUE OF ROUTES IN '000 USD
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	6,894	7,253	7,594	7,918	7,713
OIL PRODUCTS	4,286	5,167	5,933	6,346	6,876	7,741
CHEMICALS	7,394	8,804	10,255	11,373	12,243	13,797
LPG	84	197	479	794	1,198	1,699
LNG	-	-	3,539	7,668	6,994	6,994
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	21,063	27,459	33,775	35,230	37,944

TOTAL VALUE OF ROUTES IN '000 USD
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	14,334	15,068	15,802	16,485	16,007
OIL PRODUCTS	25,827	28,822	32,732	34,618	36,838	40,865
CHEMICALS	21,069	22,602	22,367	21,934	21,464	22,653
LPG	3,176	3,446	4,713	5,507	6,483	7,599
LNG	-	-	9,606	15,462	14,788	15,209
ORIMULSION	319	895	1,278	1,875	2,045	2,301
BALLAST	18,321	21,263	27,999	31,759	32,230	33,499
TOTAL	79,527	91,363	113,763	126,957	130,333	138,134

ForecastUnexpandedCanal.xls/Summery-Including Ballast

CANAL TRANSIT VOLUMES AND VALUES - UNEXPANDED CANAL

WORST CASE

WORST CASE

PANAMA TRANSIT VOLUMES IN '000 TON
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	3,920	3,820	3,940	3,940	4,080
OIL PRODUCTS	13,530	11,400	13,090	13,650	14,660	14,710
CHEMICALS	8,757	7,398	6,378	5,475	4,692	4,427
LPG	1,196	1,014	1,173	1,061	1,126	1,165
LNG	-	-	170	900	1,100	1,100
ORIMULSION	217	154	154	154	154	154
TOTAL	28,183	23,885	24,784	25,179	25,672	25,636

PANAMA TRANSIT VOLUMES IN '000 TON
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	-	-	-	-	-
OIL PRODUCTS	2,012	1,950	2,270	2,380	2,570	2,580
CHEMICALS	3,748	4,557	5,185	5,630	5,932	6,572
LPG	13	64	138	340	266	349
LNG	-	-	-	240	400	400
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	6,571	7,593	8,590	9,168	9,902

PANAMA TRANSIT VOLUMES IN '000 TON
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	3,920	3,820	3,940	3,940	4,080
OIL PRODUCTS	15,542	13,350	15,360	16,030	17,230	17,290
CHEMICALS	12,505	11,954	11,562	11,105	10,624	10,999
LPG	1,209	1,078	1,311	1,400	1,392	1,515
LNG		-	170	1,140	1,500	1,500
ORIMULSION	217	154	154	154	154	154
BALLAST						
TOTAL	36,711	30,456	32,377	33,769	34,839	35,537

WORST CASE

TOTAL VALUE OF ROUTES IN '000 USD
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	6,689	6,519	6,724	6,724	6,962
OIL PRODUCTS	21,542	22,397	25,718	26,818	28,802	28,900
CHEMICALS	13,675	13,645	11,824	10,163	8,719	8,228
LPG	3,092	3,173	3,671	3,320	3,524	3,648
LNG	-	-	716	3,792	4,634	4,634
ORIMULSION	319	262	262	262	262	262
TOTAL	45,357	46,167	48,710	51,078	52,665	52,634

TOTAL VALUE OF ROUTES IN '000 USD
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	-	-	-	-	-
OIL PRODUCTS	4,286	3,831	4,460	4,676	5,049	5,069
CHEMICALS	7,394	8,651	9,841	10,689	11,265	12,476
LPG	84	192	416	1,021	799	1,050
LNG	-	-	-	1,011	1,685	1,685
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	12,674	14,717	17,397	18,799	20,281

TOTAL VALUE OF ROUTES IN '000 USD
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	6,689	6,519	6,724	6,724	6,962
OIL PRODUCTS	25,827	26,228	30,177	31,494	33,851	33,969
CHEMICALS	21,069	22,296	21,665	20,852	19,984	20,704
LPG	3,176	3,365	4,087	4,341	4,323	4,698
LNG	-	-	716	4,803	6,320	6,320
ORIMULSION	319	262	262	262	262	262
BALLAST	18,321	16,220	18,067	20,511	21,985	21,726
TOTAL	79,527	75,061	81,494	88,986	93,449	94,642

ForecastUnexpandedCanal.xls/Summery-Including Ballast

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

CRUDE AND OIL PRODUCTS - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CRUDE AND OIL PRODUCTS - REF CASE
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	-	878	-	28	47	1,159	-	479	-	73	-	-	-	14	44	236	91	2,867
EC CAN	-	180	-	-	-	-	-	14	-	-	-	-	-	-	-	36	-	230
EC C AM	100	152	-	-	61	185	-	34	111	418	-	-	52	-	54	208	378	996
EC S AM	719	1,660	-	-	1,644	639	1,333	1,244	33	132	-	-	-	31	-	149	3,729	3,855
CHRISTOBAL RP	-	10	-	-	-	38	-	55	-	51	-	-	-	-	-	-	-	153
W INDIES	180	2,055	-	20	25	1,899	-	499	27	50	-	-	-	-	-	65	232	4,587
EUROPE	47	617	-	-	5	51	-	86	-	-	-	-	-	-	-	-	52	755
AFRICA	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53
ASIA (M.E.)	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Total	1,047	5,638	-	48	1,781	3,970	1,333	2,411	171	724	-	-	52	45	99	694	4,483	13,530

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	900	-	-	100	1,020	-	490	-	140	-	-	-	30	20	270	220	2,850
EC CAN	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160
EC C AM	-	160	-	-	60	130	-	120	90	330	-	-	-	-	-	130	150	870
EC S AM	770	1,330	-	-	1,600	560	1,350	930	-	120	-	-	-	-	-	70	3,720	3,010
CHRISTOBAL RP	-	-	-	-	-	50	-	80	-	30	-	-	-	-	-	-	-	160
W INDIES	190	1,780	-	-	30	1,520	-	440	-	30	-	-	-	-	-	70	220	3,840
EUROPE	50	580	-	-	-	50	-	160	-	-	-	-	-	-	-	-	50	790
AFRICA	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,110	5,270	-	-	1,790	3,330	1,350	2,220	90	650	-	-	-	30	20	540	4,360	12,040

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	930	-	-	100	1,150		550	-	150	-	-	-	30	20	320	220	3,130
EC CAN	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	190
EC C AM	-	190	-	-	60	140	-	130	100	370	-	-	-	-	-	160	160	990
EC S AM	840	1,570	-	-	1,620	630	1,360	1,050	-	130	-	-	-	-	-	80	3,820	3,460
CHRISTOBAL RP	-	-	-	-	-	60	-	90	-	30	-	-	-	-	-	-	-	180
W INDIES	200	2,110	-	-	30	1,720	-	500	-	-	-	-	-	-	-	80	230	4,410
EUROPE	50	580	-	-	-	50	-	180	-	-	-	-	-	-	-	-	50	810
AFRICA	100	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	440
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,290	6,040	-	-	1,810	3,750	1,360	2,500	100	680	-	-	-	30	20	640	4,580	13,640

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	950	-	-	100	1,190	-	570	-	160	-	-	-	30	20	350	220	3,250
EC CAN	-	210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210
EC C AM	-	200	-	-	60	150	-	130	110	380	-	-	-	-	-	170	170	1,030
EC S AM	890	1,700	-	-	1,670	650	1,400	1,080	-	140	-	-	-	-	-	90	3,960	3,660
CHRISTOBAL RP	-	-	-	-	-	60	-	90	-	30	-	-	-	-	-	-	-	180
W INDIES	230	2,290	-	-	30	1,770	-	520	-	30	-	-	-	-	-	80	260	4,690
EUROPE	50	580	-	-	-	50	-	180	-	-	-	-	-	-	-	-	50	810
AFRICA	150	530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	530
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,420	6,490	-	-	1,860	3,870	1,400	2,570	110	740	-	-	-	30	20	690	4,810	14,390

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	980	-	-	110	1,240	-	590	-	170	-	-	-	30	30	380	240	3,390
EC CAN	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200
EC C AM	-	220	-	-	60	150	-	140	110	400	-	-	-	-	-	190	170	1,100
EC S AM	940	1,870	-	-	1,710	680	1,440	1,130	-	140	-	-	-	-	-	100	4,090	3,920
CHRISTOBAL RP	-	-	-	-	-	60	-	100	-	30	-	-	-	-	-	-	-	190
W INDIES	240	2,520	-	-	30	1,840	-	540	-	30	-	-	-	-	-	90	270	5,020
EUROPE	50	580	-	-	-	50	-	190	-	-	-	-	-	-	-	-	50	820
AFRICA	200	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	580
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,530	6,980	-	-	1,910	4,020	1,440	2,690	110	770	-	-	-	30	30	760	5,020	15,250

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	1,000	-	-	100	1,330	-	640	-	180	-	-	-	30	30	450	230	3,630
EC CAN	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200
EC C AM	-	260	-	-	60	170	-	150	110	430	-	-	-	-	-	220	170	1,230
EC S AM	870	2,220	-	-	1,650	730	1,390	1,210	-	150	-	-	-	-	-	120	3,910	4,430
CHRISTOBAL RP	-	-	-	-	-	60	-	100	-	40	-	-	-	-	-	-	-	200
W INDIES	220	2,980	-	-	30	1,980	-	580	-	40	-	-	-	-	-	110	250	5,690
EUROPE	50	580	-	-	-	50	-	200	-	-	-	-	-	-	-	-	50	830
AFRICA	250	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	620
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,490	7,890	-	-	1,840	4,320	1,390	2,880	110	840	-	-	-	30	30	900	4,860	16,860

ForecastUnexpandedCanal.xls/Crude&Products-Ref

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

CRUDE AND OIL PRODUCTS - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CRUDE AND OIL PRODUCTS - REF CASE
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	37	394			-	-	-	-	-	-	-	77		-		-		7	37	478
WC CAN	-				-		-		-		-								-	-
WC C AM		-			15	86		-	-	69	-	13		-		-		-	15	168
WC S AM	1,162	467			1,249	78	101	8	-	19	106	291		28		-		-	2,617	891
BALBOA RP	-	-			-	10	-	-	13	4	-	-		-		-		-	13	14
HAWAII	-				-		-		-		-								-	-
OCEANIA	-	33			-	-	-	-	-	-	-	-		-		-		-	-	33
ASIA	73	320			-	-	-	-	-	-	-	83		-		25		-	73	427
Total	1,271	1,213	-	-	1,264	174	101	8	13	93	106	464	-	28	-	25	-	7	2,755	2,012

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	40	340	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	40	400
WC CAN	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
WC C AM	-	70	-	-	-	40	-	-	-	70	-	-	-	-	-	-	-	-	-	180
WC S AM	1,930	1,010	-	-	1,380	60	300	20	-	60	330	230	-	-	-	-	-	-	3,940	1,380
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	60	510	-	-	-	30	-	-	-	-	-	30	-	-	-	-	-	-	60	570
Total	2,030	2,030	-	-	1,380	130	300	20	-	130	330	320	-	-	-	-	-	-	4,040	2,630

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	40	350	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	40	420
WC CAN	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120
WC C AM	-	90	-	-	-	50	-	-	-	80	-	-	-	-	-	-	-	-	-	220
WC S AM	2,110	1,200	-	-	1,390	60	310	30	-	70	340	270	-	-	-	-	-	-	4,150	1,630
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	60	560	-	-	-	40	-	-	-	-	-	30	-	-	-	-	-	-	60	630
Total	2,210	2,320	-	-	1,390	150	310	30	-	150	340	370	-	-	-	-	-	-	4,250	3,020

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	50	370	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	50	440
WC CAN	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130
WC C AM	-	90	-	-	-	50	-	-	-	80	-	-	-	-	-	-	-	-	-	220
WC S AM	2,240	1,300	-	-	1,430	70	320	30	-	70	350	270	-	-	-	-	-	-	4,340	1,740
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	60	630	-	-	-	40	-	-	-	-	-	30	-	-	-	-	-	-	60	700
Total	2,350	2,520	-	-	1,430	160	320	30	-	150	350	370	-	-	-	-	-	-	4,450	3,230

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	50	380	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	50	450
WC CAN	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150
WC C AM	-	100	-	-	-	50	-	-	-	90	-	-	-	-	-	-	-	-	-	240
WC S AM	2,360	1,430	-	-	1,470	70	330	30	-	70	360	290	-	-	-	-	-	-	4,520	1,890
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	70	700	-	-	-	40	-	-	-	-	-	30	-	-	-	-	-	-	70	770
Total	2,480	2,760	-	-	1,470	160	330	30	-	160	360	390	-	-	-	-	-	-	4,640	3,500

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	60	380	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	60	460
WC CAN	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140
WC C AM	-	120	-	-	-	60	-	-	-	100	-	-	-	-	-	-	-	-	-	280
WC S AM	2,190	1,690	-	-	1,500	70	330	30	-	80	360	310	-	-	-	-	-	-	4,380	2,180
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	80	810	-	-	-	40	-	-	-	-	-	30	-	-	-	-	-	-	80	880
Total	2,330	3,140	-	-	1,500	170	330	30	-	180	360	420	-	-	-	-	-	-	4,520	3,940

ForecastUnexpandedCanal.xls/Crude&Products-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

ORIMULSION - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
ORIMULSION
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	217	217
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	217	217

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	525	525
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	525	525

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	750	750
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	750	750

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	1,100	1,100
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	1,100	1,100

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	1,200	1,200
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	1,200	1,200

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	1,350	1,350
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	1,350	1,350

ForecastUnexpandedCanal.xls/Orimulsion-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

ORIMULSION - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
ORIMULSION
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

ForecastUnexpandedCanal.xls/Orimulsion-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

LPG - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LPG
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	90	33	-	-	101	138	362
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	2	1	-	-	-	-	3
EC S AM	-	-	-	29	-	-	-	-	29
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	271	156	1	-	-	-	428
EUROPE	-	-	35	-	-	-	-	-	35
AFRICA	-	-	132	174	-	-	-	-	306
ASIA (M.E.)	-	-	33	-	-	-	-	-	33
Total	-	-	563	394	1	-	101	138	1,196

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	2	-	47	31	-	-	98	146	324
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	30	-	0	-	-	8	39
EC S AM	33	-	118	250	-	1	-	3	404
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	6	-	62	9	-	-	-	3	79
EUROPE	3	-	13	25	-	2	-	-	43
AFRICA	-	-	18	169	-	-	-	-	187
ASIA (M.E.)	-	-	9	23	-	-	-	-	31
Total	44	-	296	506	0	3	98	160	1,038

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	3	-	61	40	-	-	128	190	422
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	40	-	0	-	-	11	51
EC S AM	43	-	154	325	-	1	-	4	527
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	8	-	81	11	-	-	-	4	103
EUROPE	4	-	16	33	-	2	-	-	56
AFRICA	-	-	23	220	-	-	-	-	243
ASIA (M.E.)	-	-	11	30	-	-	-	-	41
Total	58	-	385	660	0	4	128	208	1,353

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	3	-	68	45	-	-	142	211	470
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	44	-	0	-	-	12	57
EC S AM	47	-	171	362	-	1	-	4	586
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	8	-	90	12	-	-	-	4	115
EUROPE	5	-	18	37	-	3	-	-	63
AFRICA	-	-	26	245	-	-	-	-	271
ASIA (M.E.)	-	-	12	33	-	-	-	-	45
Total	64	-	429	734	0	4	142	232	1,506

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	4	-	76	51	-	-	159	237	527
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	49	-	0	-	-	14	64
EC S AM	53	-	192	406	-	2	-	5	657
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	10	-	101	14	-	-	-	5	129
EUROPE	5	-	21	41	-	3	-	-	70
AFRICA	-	-	29	275	-	-	-	-	303
ASIA (M.E.)	-	-	14	37	-	-	-	-	51
Total	72	-	481	823	0	5	159	260	1,688

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	4	-	85	56	-	-	178	265	588
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	55	-	0	-	-	15	71
EC S AM	59	-	214	453	-	2	-	5	734
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	11	-	112	15	-	-	-	5	144
EUROPE	6	-	23	46	-	3	-	-	78
AFRICA	-	-	32	307	-	-	-	-	339
ASIA (M.E.)	-	-	15	41	-	-	-	-	57
Total	80	-	537	919	0	5	178	290	1,885

ForecastUnexpandedCanal.xls/LPG-Ref. Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

LPG - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LPG
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	1	-	-	-	1
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	6	-	6	-	-	-	-	-	-	13
Total	6	-	6	-	-	1	-	-	-	13

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	14	-	-	16	1	-	1	-	-	33
WC CAN	2	-	-	-	-	-	-	-	-	2
WC C AM	-	-	0	0	-	-	-	-	-	0
WC S AM	7	-	2	-	-	-	-	-	-	9
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	19	-	4	-	-	-	-	-	-	23
Total	42	-	6	16	1	-	1	-	-	65

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	33	-	-	39	4	-	4	-	-	
WC CAN	5	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	1	-	-	-	-	-	
WC S AM	18	-	5	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	46	-	9	-	-	-	-	-	-	
Total	102	-	14	40	4	-	4	-	-	159

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	55	-	-	64	6	-	6	-	-	
WC CAN	8	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	1	-	-	-	-	-	
WC S AM	30	-	8	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	76	-	16	-	-	-	-	-	-	
Total	169	-	24	66	6	-	6	-	-	264

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	83	-	-	97	9	-	9	-	-	
WC CAN	12	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	2	-	-	-	-	-	
WC S AM	45	-	12	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	115	-	24	-	-	-	-	-	-	
Total	255	-	36	99	9	-	9	-	-	399

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	118	-	-	138	13	-	13	-	-	
WC CAN	17	-	-	-	-	-	-	-	-	
WC C AM	-	-	1	3	-	-	-	-	-	
WC S AM	64	-	17	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	164	-	34	-	-	-	-	-	-	
Total	362	-	51	140	13	-	13	-	-	565

ForecastUnexpandedCanal.xls/LPG-Ref. Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

LNG - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LNG
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	-		800						800
CHRISTOBAL RP									-
W INDIES	-		640						640
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	-	-	1,440	-	-	-	-	-	1,440

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	150		1,100						1,250
CHRISTOBAL RP									-
W INDIES	-		600						600
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	150	-	1,700	-	-	-	-	-	1,850

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	150		1,060						1,210
CHRISTOBAL RP									-
W INDIES	-		640						640
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	150	-	1,700	-	-	-	-	-	1,850

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	150		1,060						1,210
CHRISTOBAL RP									-
W INDIES	100		640						740
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	250	-	1,700	-	-	-	-	-	1,950

ForecastUnexpandedCanal.xls/LNG-Ref. Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

LNG - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LNG
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-									-
WC CAN										-
WC C AM										-
WC S AM	840									840
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	840	-	-	-	-	-	-	-	-	840

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	100									100
WC CAN										-
WC C AM										-
WC S AM	1,720									1,720
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	1,820	-	-	-	-	-	-	-	-	1,820

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	100									100
WC CAN										-
WC C AM										-
WC S AM	1,560									1,560
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	1,660	-	-	-	-	-	-	-	-	1,660

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	100									100
WC CAN										-
WC C AM										-
WC S AM	1,560									1,560
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	1,660	-	-	-	-	-	-	-	-	1,660

ForecastUnexpandedCanal.xls/LNG-Ref. Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

CHEMICALS - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CHEMICALS
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	910	149	34	340	12	-	703	5,548	7,696
EC CAN	-	-	-	40	-	-	-	-	40
EC C AM	57	-	3	0	-	-	-	36	96
EC S AM	276	-	6	71	-	-	-	-	353
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	42	4	-	-	12	61	119
EUROPE	45	-	72	-	-	-	29	-	146
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	2	2
Total	1,287	149	157	455	12	-	744	5,646	8,451

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	789	130	33	328			562	4,389	6,232
EC CAN		-							-
EC C AM	75	-						50	126
EC S AM		-	50	50					100
CHRISTOBAL RP		-							-
W INDIES	-	-	74	37				75	186
EUROPE	50	-	74						124
AFRICA		-							-
ASIA (M.E.)		-							-
Total	915	130	230	415	-	-	562	4,514	7,024

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	674	111	28	280			480	3,747	5,320
EC CAN									-
EC C AM	69							46	115
EC S AM			47	47					94
CHRISTOBAL RP									-
W INDIES	-		63	32				69	164
EUROPE	46		63						109
AFRICA									-
ASIA (M.E.)									-
Total	789	111	201	359	-	-	480	3,862	5,997

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	571	94	24	237			406	3,172	4,504
EC CAN									-
EC C AM	53							36	89
EC S AM			49	49					97
CHRISTOBAL RP									-
W INDIES	-		53	27				53	133
EUROPE	36		53						89
AFRICA									-
ASIA (M.E.)									-
Total	660	94	179	312	-	-	406	3,261	5,077

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	480	79	20	200			342	2,669	3,789
EC CAN									-
EC C AM	39							26	66
EC S AM			50	50					99
CHRISTOBAL RP									-
W INDIES	-		45	22				39	107
EUROPE	26		45						71
AFRICA									-
ASIA (M.E.)									-
Total	546	79	159	272	-	-	342	2,734	4,271

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	449	74	19	187			320	2,497	3,546
EC CAN									-
EC C AM	30							20	50
EC S AM			57	57					113
CHRISTOBAL RP									-
W INDIES	-		42	21				30	93
EUROPE	20		42						62
AFRICA									-
ASIA (M.E.)									-
Total	499	74	159	264	-	-	320	2,547	3,997

ForecastUnexpandedCanal.xls/Chem-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

CHEMICALS - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CHEMICALS
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	161	-	-	1	-	-	17	-	2	181
WC CAN	154	-	58	-	-	-	-	-	-	212
WC C AM	156	-	37	10	-	246	19	-	4	472
WC S AM	255	-	42	-	-	35	2	-	-	334
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	178	-	10	-	-	-	-	-	-	187
ASIA	875	8	163	21	-	5	32	-	-	1,105
Total	1,780	8	309	32	-	286	71	-	6	2,492

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	201									201
WC CAN	-									-
WC C AM	209		47			330	25			611
WC S AM	207		74				-			281
BALBOA RP										-
HAWAII										-
OCEANIA	239									239
ASIA	1,424		230							1,654
Total	2,280	-	351	-	-	330	25	-	-	3,038

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	232									
WC CAN	-									
WC C AM	242		54			381	29			
WC S AM	239		85				-			
BALBOA RP										
HAWAII										
OCEANIA	275									
ASIA	1,644		266							
Total	2,632	-	405	-	-	381	29	-	-	3,507

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	253									
WC CAN	-									
WC C AM	264		59			415	31			
WC S AM	261		93				-			
BALBOA RP										
HAWAII										
OCEANIA	300									
ASIA	1,792		290							
Total	2,870	-	442	-	-	415	31	-	-	3,824

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	265									
WC CAN	-									
WC C AM	277		62			436	33			
WC S AM	274		98				-			
BALBOA RP										
HAWAII										
OCEANIA	315									
ASIA	1,881		304							
Total	3,012	-	464	-	-	436	33	-	-	4,013

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	303									
WC CAN	-									
WC C AM	316		71			497	37			
WC S AM	313		111				-			
BALBOA RP										
HAWAII										
OCEANIA	360									
ASIA	2,147		347							
Total	3,438	-	529	-	-	497	37	-	-	4,580

ForecastUnexpandedCanal.xls/Chem-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

VEG. OIL ETC. - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
VEGOIL ETC.
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	67	40	5	-	1	189	302
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	1	-	-	-	-	-	1
EC S AM	-	-	-	2	-	-	-	-	2
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	1	-	-	-	-	-	1
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	70	42	5	-	1	189	307

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	7	-	86	66			31	202	393
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	7	-	86	66	-	-	31	202	390

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	8	-	102	78			37	240	465
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	8	-	102	78	-	-	37	240	462

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	10	-	117	89			42	274	532
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	10	-	117	89	-	-	42	274	528

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	11	-	131	100			47	307	597
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	11	-	131	100	-	-	47	307	593

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	12	-	145	111			52	339	659
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	12	-	145	111	-	-	52	339	654

ForecastUnexpandedCanal.xls/VegOil-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

VEG OIL ETC. - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
VEGOIL ETC.
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	3	-	-	-	-	-	-	-	-	3
WC CAN	-	-	-	-	-	-	17	-	-	17
WC C AM	193	-	74	-	-	154	65	-	-	486
WC S AM	61	17	57	5	-	-	208	-	-	348
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	106	-	-	-	-	-	-	-	-	106
ASIA	282	-	14	-	-	-	-	-	-	296
Total	645	17	145	5	-	154	290	-	-	1,256

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	3									3
WC CAN	-									-
WC C AM	239		107			185	81			612
WC S AM	-						21			21
BALBOA RP	75		75	17			268			435
HAWAII										-
OCEANIA	125									125
ASIA	408		22							430
Total	851	-	204	17	-	185	369	-	-	1,599

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	4									
WC CAN	-									
WC C AM	283		126			220	96			
WC S AM	-						24			
BALBOA RP	89		89	21			317			
HAWAII										
OCEANIA	148									
ASIA	483		26							
Total	1,008	-	241	21	-	220	437	-	-	1,893

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	5									
WC CAN	-									
WC C AM	324		144			251	109			
WC S AM	-						28			
BALBOA RP	102		102	23			362			
HAWAII										
OCEANIA	169									
ASIA	552		30							
Total	1,151	-	276	23	-	251	499	-	-	2,162

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	5									
WC CAN	-									
WC C AM	363		162			282	123			
WC S AM	-						31			
BALBOA RP	114		114	26			406			
HAWAII										
OCEANIA	190									
ASIA	619		33							
Total	1,292	-	310	26	-	282	560	-	-	2,428

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	6									
WC CAN	-									
WC C AM	401		179			311	135			
WC S AM	-						35			
BALBOA RP	126		126	29			449			
HAWAII										
OCEANIA	210									
ASIA	684		37							
Total	1,427	-	342	29	-	311	619	-	-	2,680

ForecastUnexpandedCanal.xls/VegOil-Ref Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

METHANOL - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
METHANOL
ATLANTIC - PACIFIC

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	60	-	-	-	-	-	-	-	60

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	69	-	-	-	-	-	-	-	69
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	69	-	-	-	-	-	-	-	69

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	18	-	-	-	-	-	-	-	18
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	78	-	-	-	-	-	-	-	78

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	29	-	-	-	-	-	-	-	29
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	89	-	-	-	-	-	-	-	89

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	42	-	-	-	-	-	-	-	42
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	102	-	-	-	-	-	-	-	102

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	57	-	-	-	-	-	-	-	57
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	117	-	-	-	-	-	-	-	117

ForecastUnexpandedCanal.xls/Methanol-Ref. Case

CANAL TRANSIT VOLUMES - UNEXPANDED CANAL

METHANOL - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
METHANOL
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

ForecastUnexpandedCanal.xls/Methanol-Ref. Case

TOTAL CANAL TRANSIT DETAILS BY DWT-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																								
DWT Range – Metric Tons	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10,000	3,090	4,232	5,012	5,792	6,571	7,325	7,332	7,340	7,347	7,355	7,336	7,265	7,195	7,125	7,055	6,959	6,898	6,836	6,774	6,712	6,627	6,626	6,625	6,624
Greater than 10,000--Less than 15,000	2,251	2,822	3,284	3,746	4,209	4,655	4,688	4,721	4,755	4,788	4,805	4,790	4,776	4,761	4,746	4,716	4,705	4,694	4,683	4,672	4,645	4,677	4,709	4,741
Greater or equal to 15,000--Less than 20,000	2,410	3,137	3,863	4,590	5,316	6,020	6,073	6,127	6,180	6,233	6,264	6,255	6,246	6,237	6,228	6,196	6,192	6,187	6,182	6,178	6,151	6,201	6,252	6,302
Greater or equal to 20,000--Less than 25,000	1,164	2,340	3,566	4,791	6,017	7,215	7,290	7,366	7,441	7,516	7,563	7,565	7,567	7,570	7,572	7,545	7,552	7,559	7,566	7,573	7,551	7,625	7,698	7,772
Greater or equal to 25,000 -- Less than 30,000	3,610	5,061	5,887	6,713	7,539	8,331	8,431	8,531	8,630	8,730	8,794	8,813	8,831	8,850	8,868	8,851	8,874	8,898	8,921	8,945	8,932	9,032	9,133	9,234
Greater or equal to 30,000 -- Less than 40,000	15,734	17,118	17,376	17,634	17,892	18,072	18,324	18,575	18,827	19,078	19,245	19,338	19,432	19,525	19,618	19,624	19,731	19,838	19,944	20,051	20,068	20,339	20,611	20,882
Greater or equal to 40,000--Less than 50,000	21,325	21,752	20,534	19,317	18,100	16,804	17,112	17,419	17,727	18,034	32,812	34,757	36,702	38,647	40,592	42,445	42,416	42,386	42,357	42,328	42,202	42,640	43,079	43,517
Greater or equal to 50,000--Less than 60,000	2,647	4,841	6,195	7,550	8,904	10,194	10,491	10,787	11,084	11,381	11,604	11,847	12,090	12,334	12,577	12,741	12,952	13,164	13,376	13,587	13,713	13,953	14,192	14,432
Greater or equal to 60,000--Less than 70,000	25,171	25,433	20,861	16,290	11,718	7,102	7,341	7,580	7,819	8,058	8,245	8,475	8,705	8,935	9,165	9,338	9,537	9,735	9,933	10,131	10,266	10,459	10,652	10,845
Greater or equal to 70,000--Less than 80,000	2,164	2,623	2,919	3,215	3,512	3,782	3,921	4,060	4,199	4,338	4,447	4,583	4,720	4,857	4,994	5,097	5,244	5,391	5,538	5,685	5,794	5,917	6,041	6,165
Greater or equal to 80,000--Less than 90,000	274	781	1,279	1,777	2,275	2,755	2,876	2,997	3,118	3,240	3,338	3,481	3,623	3,765	3,907	4,022	4,188	4,355	4,521	4,688	4,821	4,960	5,098	5,237
Greater or equal to 90,000--Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000-- Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000--Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000-- Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000																								
Total	79,839	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751

PCUMS	YEAR																								
DWT Range – Metric Tons	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10,000	978	1,174	1,390	1,607	1,823	2,039	2,040	2,042	2,043	2,045	2,047	2,028	2,010	1,991	1,973	1,954	1,938	1,922	1,906	1,890	1,874	1,876	1,877	1,879
Greater than 10,000--Less than 15,000	816	891	995	1,100	1,205	1,310	1,319	1,328	1,337	1,347	1,356	1,352	1,349	1,346	1,343	1,339	1,337	1,335	1,333	1,330	1,328	1,339	1,350	1,361
Greater or equal to 15,000--Less than 20,000	832	916	1,106	1,295	1,484	1,674	1,688	1,702	1,716	1,730	1,745	1,743	1,741	1,739	1,738	1,736	1,735	1,735	1,734	1,734	1,734	1,750	1,766	1,782
Greater or equal to 20,000--Less than 25,000	433	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,126	2,127	2,128	2,129	2,130	2,133	2,135	2,138	2,141	2,143	2,166	2,189	2,212
Greater or equal to 25,000 -- Less than 30,000	1,111	1,394	1,624	1,854	2,084	2,314	2,340	2,369	2,391	2,417	2,443	2,448	2,453	2,458	2,463	2,469	2,475	2,482	2,489	2,496	2,503	2,533	2,563	2,593
Greater or equal to 30,000 -- Less than 40,000	5,270	5,492	5,349	5,205	5,061	4,918	4,980	5,042	5,104	5,166	5,229	5,252	5,276	5,300	5,324	5,348	5,376	5,404	5,432	5,460	5,488	5,566	5,643	5,721
Greater or equal to 40,000--Less than 50,000	6,419	6,156	5,755	5,353	4,952	4,551	4,628	4,706	4,783	4,861	8,309	8,764	9,218	9,672	10,127	10,581	10,578	10,576	10,573	10,570	10,567	10,684	10,800	10,916
Greater or equal to 50,000--Less than 60,000	687	1,144	1,473	1,801	2,130	2,459	2,534	2,609	2,683	2,758	2,833	2,898	2,964	3,029	3,094	3,159	3,212	3,265	3,318	3,371	3,425	3,486	3,547	3,609
Greater or equal to 60,000--Less than 70,000	6,584	6,028	4,953	3,877	2,801	1,726	1,786	1,847	1,908	1,969	2,029	2,091	2,152	2,214	2,275	2,337	2,386	2,436	2,485	2,534	2,583	2,633	2,682	2,731
Greater or equal to 70,000--Less than 80,000	573	613	683	752	821	891	924	957	991	1,024	1,058	1,091	1,124	1,158	1,191	1,224	1,260	1,296	1,331	1,367	1,403	1,434	1,464	1,495
Greater or equal to 80,000--Less than 90,000	71	183	299	416	532	649	677	706	734	763	791	825	859	893	926	960	1,000	1,039	1,079	1,119	1,159	1,192	1,225	1,259
Greater or equal to 90,000--Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000-- Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000--Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000-- Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557

Cargo in tons	YEAR																								
DWT Range – Metric Tons	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10,000	1,392	1,698	2,003	2,309	2,615	2,920	2,916	2,911	2,907	2,902	2,898	2,868	2,837	2,807	2,777	2,746	2,719	2,692	2,665	2,639	2,612	2,611	2,611	2,610
Greater than 10,000--Less than 15,000	1,158	1,304	1,450	1,595	1,741	1,887	1,895	1,904	1,913	1,922	1,930	1,923	1,916	1,908	1,901	1,893	1,887	1,881	1,875	1,869	1,863	1,876	1,889	1,902
Greater or equal to 15,000--Less than 20,000	993	1,278	1,563	1,848	2,134	2,419	2,434	2,448	2,463	2,478	2,493	2,487	2,481	2,475	2,468	2,462	2,457	2,452	2,448	2,443	2,438	2,457	2,477	2,496
Greater or equal to 20,000--Less than 25,000	529	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,055	3,052	3,050	3,047	3,044	3,043	3,042	3,040	3,039	3,038	3,066	3,094	3,122
Greater or equal to 25,000 -- Less than 30,000	1,686	2,027	2,368	2,709	3,050	3,391	3,423	3,454	3,485	3,517	3,548	3,551	3,554	3,557	3,560	3,564	3,568	3,572	3,577	3,581	3,586	3,624	3,662	3,701
Greater or equal to 30,000 -- Less than 40,000	8,360	8,148	7,935	7,723	7,511	7,299	7,381	7,463	7,545	7,626	7,708	7,736	7,763	7,791	7,818	7,845	7,877	7,909	7,941	7,973	8,004	8,107	8,210	8,313
Greater or equal to 40,000--Less than 50,000	9,380	8,878	8,376	7,874	7,372	6,870	6,980	7,091	7,202	7,312	9,703	10,041	10,380	10,719	11,057	11,396	11,425	11,453	11,482	11,511	11,540	11,679	11,819	11,959
Greater or equal to 50,000--Less than 60,000	1,244	1,761	2,277	2,794	3,311	3,827	3,940	4,053	4,166	4,279	4,392	4,492	4,591	4,691	4,791	4,890	4,969	5,047	5,126	5,205	5,283	5,371	5,458	5,545
Greater or equal to 60,000--Less than 70,000	11,190	9,500	7,811	6,121	4,431	2,741	2,836	2,931	3,025	3,120	3,215	3,311	3,408	3,505	3,602	3,699	3,775	3,851	3,927	4,003	4,079	4,152	4,225	4,297
Greater or equal to 70,000--Less than 80,000	827	949	1,071	1,193	1,314	1,436	1,489	1,541	1,594	1,646	1,699	1,751	1,804	1,857	1,910	1,962	2,019	2,075	2,131	2,188	2,244	2,290	2,336	2,382
Greater or equal to 80,000--Less than 90,000	104	296	488	680	872	1,064	1,111	1,157	1,204	1,250	1,297	1,352	1,407	1,462	1,517	1,572	1,637	1,702	1,767	1,832	1,896	1,950	2,003	2,056
Greater or equal to 90,000--Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000-- Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000--Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000-- Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383

DWT	YEAR																								
DWT Range – Metric Tons	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10,000	1,873	2,293	2,712	3,131	3,550	3,969	3,967	3,965	3,962	3,960	3,958	3,919	3,880	3,840	3,801	3,762	3,727	3,693	3,658	3,624	3,589	3,590	3,591	3,592
Greater than 10,000--Less than 15,000	1,551	1,754	1,955	2,155	2,356	2,556	2,570	2,585	2,599	2,613	2,628	2,619	2,610	2,602	2,593	2,585	2,578	2,571	2,564	2,558	2,551	2,570	2,589	2,608
Greater or equal to 15,000--Less than 20,000	1,417	1,753	2,132	2,512	2,891	3,271	3,294	3,317	3,341	3,364	3,388	3,381	3,375	3,369	3,362	3,356	3,352	3,348	3,343	3,339	3,335	3,363	3,392	3,420
Greater or equal to 20,000--Less than 25,000	776	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,140	4,139	4,138	4,136	4,135	4,137	4,138	4,139	4,140	4,142	4,183	4,224	4,265
Greater or equal to 25,000 -- Less than 30,000	2,075	2,741	3,194	3,647	4,100	4,552	4,599	4,645	4,691	4,737	4,784	4,791	4,798	4,805	4,811	4,818	4,828	4,837	4,846	4,856	4,865	4,921	4,976	5,031
Greater or equal to 30,000 -- Less than 40,000	11,044	10,910	10,614	10,318	10,022	9,726	9,843	9,960	10,076	10,193	10,310	10,352	10,394	10,436	10,478	10,520	10,570	10,619	10,668	10,717	10,766	10,913	11,060	11,207
Greater or equal to 40,000--Less than 50,000	12,729	12,045	11,296	10,546	9,797	9,047	9,199	9,351	9,503	9,655	12,285	12,671	13,058	13,444	13,831	14,217	14,268	14,319	14,370	14,420	14,471	14,662	14,853	15,043
Greater or equal to 50,000--Less than 60,000	1,519	2,281	2,935	3,590	4,244	4,898	5,047	5,196	5,345	5,493	5,642	5,771	5,901	6,030	6,159	6,289	6,394	6,499	6,604	6,709	6,814	6,935	7,057	7,178
Greater or equal to 60,000--Less than 70,000	13,849	12,026	9,880	7,734	5,588	3,442	3,564	3,686	3,806	3,927	4,049	4,171	4,294	4,417	4,539	4,662	4,760	4,859	4,957	5,055	5,154	5,252	5,350	5,448
Greater or equal to 70,000--Less than 80,000	1,140	1,228	1,362	1,500	1,639	1,777	1,844	1,910	1,977	2,043	2,110	2,176	2,243	2,309	2,376	2,442	2,513	2,585	2,656	2,728	2,799	2,860	2,921	2,982
Greater or equal to 80,000--Less than 90,000	149	365	597	829	1,062	1,294	1,351	1,408	1,465	1,522	1,579	1,646	1,713	1,781	1,848	1,915	1,994	2,074	2,153	2,232	2,311	2,378	2,444	2,511
Greater or equal to 90,000--Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000-- Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000--Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000-- Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,121	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286

Transits	YEAR																								
DWT Range – Metric Tons	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10,000	319	459	542	626	710	794	793	793	792	792	792	784	776	768	760	752	745	739	732	725	718	718	718	718
Greater than 10,000--Less than 15,000	163	140	156	172	188	204	206	207	208	209	210	210	209	208	207	207	206	206	205	205	204	206	207	209
Greater or equal to 15,000--Less than 20,000	62	100	122	144	165	187	188	190	191	192	194	193	193	192	192	192	192	191	191	191	191	192	194	195
Greater or equal to 20,000--Less than 25,000	45	61	90	119	148	176	178	179	181	183	184	184	184	184	184	184	184	184	184	184	184	186	188	190
Greater or equal to 25,000 -- Less than 30,000	71	100	116	133	149	166	167	169	171	172	174	174	174	175	175	175	176	176	176	177	177	179	181	183
Greater or equal to 30,000 -- Less than 40,000	428	312	303	295	286	278	281	285	288	291	295	296	297	298	299	301	302	303	305	306	308	312	316	320
Greater or equal to 40,000--Less than 50,000	239	268	251	234	218	201	204	208	211	215	273	282	290	299	307	316	317	318	319	320	322	326	330	334
Greater or equal to 50,000--Less than 60,000	89	41	53	65	77	89	92	94	97	100	103	105	107	110	112	114	116	118	120	122	124	126	128	131
Greater or equal to 60,000--Less than 70,000	191	185	152	119	86	53	55	57	59	60	62	64	66	68	70	72	73	75	76	78	79	81	82	84
Greater or equal to 70,000--Less than 80,000	13	16	18	20	22	24	25	26	27	28	29	29	30	31	32	33	34	34	35	36	37	38	39	40
Greater or equal to 80,000--Less than 90,000	-	4	7	10	12	15	16	17	17	18	19	19	20	21	22	23	23	24	25	26	27	28	29	30
Greater or equal to 90,000--Less than 100,000																								
Greater or equal to 100,000-- Less than 110,000																								
Greater or equal to 110,000--Less than 120,000																								
Greater or equal to 120,000-Less than 150,000																								
Greater or equal to 150,000-- Less than 200,000																								
Greater or equal to 200,000																								
Total	1,620	1,687	1,812	1,937	2,062	2,187	2,205	2,223	2,241	2,259	2,332	2,340	2,347	2,354	2,361	2,368	2,368	2,369	2,369	2,370	2,370	2,391	2,412	2,433

TOTAL CANAL TRANSIT DETAILS BY DRAFT-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

TOTAL **DRAFT RANGE**

Tolls in USD$	YEAR																							
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10.0	7,544	10,192	12,160	14,128	16,096	18,000	18,094	18,188	18,282	18,376	18,404	18,310	18,216	18,123	18,029	17,872	17,794	17,717	17,639	17,561	17,423	17,504	17,586	17,667
Greater than 10.0 – Less than 10.5	2,196	2,340	3,566	4,791	6,017	7,215	7,290	7,366	7,441	7,516	7,563	7,565	7,567	7,570	7,572	7,545	7,552	7,559	7,566	7,573	7,551	7,625	7,698	7,772
Greater or equal to 10.5 – Less than 11.0	8,761	13,221	13,851	14,481	15,111	15,675	15,870	16,065	16,260	16,455	16,577	16,632	16,687	16,741	16,796	16,776	16,838	16,900	16,962	17,024	17,010	17,214	17,418	17,621
Greater or equal to 11.0 – Less than 11.5	10,381	14,313	14,394	14,474	14,554	14,571	14,773	14,975	15,177	15,379	15,511	15,588	15,665	15,742	15,819	15,824	15,907	15,990	16,073	16,156	16,164	16,376	16,588	16,800
Greater or equal to 11.5 – Less or equal to 12.0	6,118	15,772	15,020	14,268	13,517	12,706	12,945	13,184	13,423	13,661	28,392	30,300	32,208	34,115	36,023	37,862	37,796	37,729	37,663	37,596	37,457	37,825	38,193	38,561
Greater than 12.0 – Less than 12.5	23,427	5,465	6,728	7,990	9,252	10,450	10,769	11,089	11,408	11,728	11,974	12,235	12,496	12,756	13,017	13,198	13,432	13,666	13,900	14,134	14,283	14,549	14,816	15,083
Greater or equal to 12.5 – Less than 13.0	11,456	25,433	20,861	16,290	11,718	7,102	7,341	7,580	7,819	8,058	8,245	8,475	8,705	8,935	9,165	9,338	9,537	9,735	9,933	10,131	10,266	10,459	10,652	10,845
Greater or equal to 13.0 – Less than 13.5	4,342	2,623	2,919	3,215	3,512	3,782	3,921	4,060	4,199	4,338	4,447	4,583	4,720	4,857	4,994	5,097	5,244	5,391	5,538	5,685	5,794	5,917	6,041	6,165
Greater or equal to 13.5 - Less than 14.0	3,219	781	1,279	1,777	2,275	2,755	2,876	2,997	3,118	3,240	3,338	3,481	3,623	3,765	3,907	4,022	4,188	4,355	4,521	4,688	4,821	4,960	5,098	5,237
Greater or equal to 14.0 – Less than 14.5	929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 14.5 – Less or equal to 15.2	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 15.2 – Less than 17.5	178	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 17.5 – Less than 20.0	1,290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,975	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751

PCUMS	YEAR																							
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10.0	2,588	2,981	3,492	4,002	4,512	5,023	5,048	5,072	5,097	5,122	5,147	5,123	5,100	5,076	5,053	5,029	5,010	4,992	4,973	4,954	4,936	4,964	4,993	5,022
Greater than 10.0 – Less than 10.5	686	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,126	2,127	2,128	2,129	2,130	2,133	2,135	2,138	2,141	2,143	2,166	2,189	2,212
Greater or equal to 10.5 – Less than 11.0	3,030	4,102	4,147	4,192	4,236	4,281	4,328	4,376	4,423	4,470	4,518	4,531	4,544	4,557	4,570	4,583	4,599	4,614	4,629	4,645	4,660	4,718	4,776	4,834
Greater or equal to 11.0 – Less than 11.5	3,294	4,296	4,213	4,130	4,047	3,964	4,014	4,063	4,112	4,162	4,211	4,230	4,249	4,268	4,286	4,305	4,326	4,347	4,368	4,388	4,409	4,469	4,529	4,589
Greater or equal to 11.5 – Less or equal to 12.0	1,972	4,426	4,182	3,937	3,693	3,448	3,509	3,570	3,631	3,692	7,123	7,569	8,014	8,459	8,905	9,350	9,338	9,327	9,315	9,303	9,292	9,389	9,486	9,583
Greater than 12.0 – Less than 12.5	6,380	1,363	1,659	1,955	2,251	2,547	2,630	2,713	2,796	2,879	2,962	3,033	3,104	3,175	3,246	3,318	3,378	3,439	3,500	3,561	3,622	3,693	3,763	3,834
Greater or equal to 12.5 – Less than 13.0	3,047	6,028	4,953	3,877	2,801	1,726	1,786	1,847	1,908	1,969	2,029	2,091	2,152	2,214	2,275	2,337	2,386	2,436	2,485	2,534	2,583	2,633	2,682	2,731
Greater or equal to 13.0 – Less than 13.5	1,219	613	683	752	821	891	924	957	991	1,024	1,058	1,091	1,124	1,158	1,191	1,224	1,260	1,296	1,331	1,367	1,403	1,434	1,464	1,495
Greater or equal to 13.5 - Less than 14.0	856	183	299	416	532	649	677	706	734	763	791	825	859	893	926	960	1,000	1,039	1,079	1,119	1,159	1,192	1,225	1,259
Greater or equal to 14.0 – Less than 14.5	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 14.5 – Less or equal to 15.2	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 15.2 – Less than 17.5	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 17.5 – Less than 20.0	372	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557

Cargo (in tons)	YEAR																							
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10.0	3,571	4,280	5,017	5,753	6,489	7,226	7,245	7,264	7,283	7,302	7,322	7,278	7,234	7,190	7,146	7,102	7,064	7,026	6,988	6,950	6,912	6,944	6,976	7,008
Greater than 10.0 – Less than 10.5	943	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,055	3,052	3,050	3,047	3,044	3,043	3,042	3,040	3,039	3,038	3,066	3,094	3,122
Greater or equal to 10.5 – Less than 11.0	4,681	6,075	6,146	6,216	6,287	6,357	6,420	6,482	6,545	6,607	6,670	6,684	6,698	6,712	6,726	6,740	6,756	6,772	6,789	6,805	6,821	6,899	6,977	7,055
Greater or equal to 11.0 – Less than 11.5	5,203	6,292	6,201	6,110	6,019	5,928	5,996	6,064	6,131	6,199	6,267	6,291	6,314	6,338	6,362	6,386	6,411	6,437	6,462	6,487	6,513	6,594	6,676	6,757
Greater or equal to 11.5 – Less or equal to 12.0	3,131	6,469	6,149	5,828	5,508	5,187	5,273	5,358	5,444	5,530	7,896	8,221	8,546	8,871	9,197	9,522	9,537	9,553	9,569	9,585	9,600	9,713	9,825	9,937
Greater than 12.0 – Less than 12.5	9,882	1,977	2,462	2,946	3,431	3,915	4,036	4,157	4,278	4,399	4,520	4,625	4,731	4,836	4,942	5,047	5,134	5,220	5,306	5,393	5,479	5,575	5,672	5,769
Greater or equal to 12.5 – Less than 13.0	5,120	9,500	7,811	6,121	4,431	2,741	2,836	2,931	3,025	3,120	3,215	3,311	3,408	3,505	3,602	3,699	3,775	3,851	3,927	4,003	4,079	4,152	4,225	4,297
Greater or equal to 13.0 – Less than 13.5	1,913	949	1,071	1,193	1,314	1,436	1,489	1,541	1,594	1,646	1,699	1,751	1,804	1,857	1,910	1,962	2,019	2,075	2,131	2,188	2,244	2,290	2,336	2,382
Greater or equal to 13.5 - Less than 14.0	1,341	296	488	680	872	1,064	1,111	1,157	1,204	1,250	1,297	1,352	1,407	1,462	1,517	1,572	1,637	1,702	1,767	1,832	1,896	1,950	2,003	2,056
Greater or equal to 14.0 – Less than 14.5	363	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 14.5 – Less or equal to 15.2	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 15.2 – Less than 17.5	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 17.5 – Less than 20.0	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383

DWT	YEAR																							
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 10.0	4,895	5,801	6,799	7,798	8,797	9,796	9,831	9,867	9,902	9,938	9,973	9,919	9,865	9,811	9,757	9,703	9,657	9,612	9,566	9,521	9,475	9,524	9,572	9,621
Greater than 10.0 – Less than 10.5	1,253	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,140	4,139	4,138	4,136	4,135	4,137	4,138	4,139	4,140	4,142	4,183	4,224	4,265
Greater or equal to 10.5 – Less than 11.0	6,122	8,144	8,227	8,311	8,394	8,477	8,566	8,656	8,745	8,834	8,924	8,946	8,969	8,992	9,014	9,037	9,063	9,090	9,116	9,143	9,169	9,280	9,391	9,501
Greater or equal to 11.0 – Less than 11.5	6,448	8,475	8,324	8,173	8,021	7,870	7,965	8,060	8,155	8,250	8,345	8,380	8,415	8,450	8,485	8,520	8,558	8,596	8,634	8,672	8,710	8,826	8,941	9,056
Greater or equal to 11.5 – Less or equal to 12.0	3,753	8,735	8,262	7,788	7,314	6,840	6,959	7,077	7,195	7,313	9,910	10,278	10,646	11,014	11,382	11,750	11,783	11,816	11,849	11,882	11,915	12,067	12,219	12,372
Greater than 12.0 – Less than 12.5	11,528	2,623	3,226	3,830	4,433	5,037	5,198	5,359	5,520	5,682	5,843	5,981	6,120	6,259	6,398	6,536	6,654	6,771	6,888	7,005	7,123	7,259	7,395	7,530
Greater or equal to 12.5 – Less than 13.0	5,538	12,026	9,880	7,734	5,588	3,442	3,564	3,685	3,806	3,927	4,049	4,171	4,294	4,417	4,539	4,662	4,760	4,859	4,957	5,055	5,154	5,252	5,350	5,448
Greater or equal to 13.0 – Less than 13.5	2,419	1,224	1,362	1,500	1,639	1,777	1,844	1,910	1,977	2,043	2,110	2,176	2,243	2,309	2,376	2,442	2,513	2,585	2,656	2,728	2,799	2,860	2,921	2,982
Greater or equal to 13.5 - Less than 14.0	1,658	365	597	829	1,062	1,294	1,351	1,408	1,465	1,522	1,579	1,646	1,713	1,781	1,848	1,915	1,994	2,074	2,153	2,232	2,311	2,378	2,444	2,511
Greater or equal to 14.0 – Less than 14.5	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 14.5 – Less or equal to 15.2	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 15.2 – Less than 17.5	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 17.5 – Less than 20.0	787	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,019	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286

ForecastUnexpandedCanal.xls/Draft Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY BEAM-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

TOTAL **BEAM RANGE**

Tolls in USD$	Year																								
Extreme Beam Range (Meters)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Less or equal to 24.3	8,048	10,192	12,160	14,128	16,096	18,000	18,094	18,188	18,282	18,376	18,404	18,310	18,216	18,123	18,029	17,872	17,794	17,717	17,639	17,561	17,423	17,504	17,586	17,667	17,749
Greater than 24.3 – Less than 25.9	3,159	2,340	3,566	4,791	6,017	7,215	7,290	7,366	7,441	7,516	7,563	7,565	7,567	7,570	7,572	7,545	7,552	7,559	7,566	7,573	7,551	7,625	7,698	7,772	7,845
Greater or equal to 25.9 – Less than 27.7	6,356	4,931	5,736	6,541	7,346	8,118	8,200	8,283	8,365	8,448	8,495	8,502	8,509	8,516	8,523	8,494	8,503	8,512	8,521	8,530	8,503	8,588	8,672	8,756	8,841
Greater or equal to 27.7 – Less than 29.0	3,529	2,810	2,891	2,972	3,053	3,122	3,194	3,266	3,338	3,410	3,469	3,507	3,546	3,584	3,622	3,647	3,694	3,740	3,786	3,833	3,865	3,942	4,018	4,095	4,171
Greater or equal to 29.0 – Less than 30.4	4,507	5,199	5,289	5,378	5,468	5,534	5,620	5,705	5,790	5,876	5,935	5,971	6,006	6,041	6,076	6,085	6,127	6,168	6,209	6,250	6,264	6,357	6,449	6,542	6,634
Greater or equal to 30.4 – Less or equal to 32.3	54,239	31,083	30,066	29,049	28,031	26,893	27,351	27,810	28,268	28,726	43,608	45,645	47,683	49,721	51,758	53,656	53,678	53,700	53,721	53,743	53,618	54,202	54,786	55,370	55,954
Greater than 32.3 – Less than 33.5	-	30,173	26,855	23,538	20,220	16,793	17,284	17,776	18,267	18,759	19,126	19,533	19,941	20,349	20,757	21,028	21,415	21,801	22,188	22,575	22,812	23,211	23,610	24,009	24,407
Greater or equal to 33.5 – Less than 36.6	-	3,413	4,216	5,019	5,822	6,581	6,846	7,110	7,375	7,640	7,852	8,135	8,419	8,702	8,985	9,207	9,526	9,845	10,165	10,484	10,731	11,001	11,271	11,541	11,811
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,839	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751	137,411

PCUMS	Year																								
Extreme Beam Range (Meters)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Less or equal to 24.3	2,724	2,981	3,492	4,002	4,512	5,023	5,048	5,072	5,097	5,122	5,147	5,123	5,100	5,076	5,053	5,029	5,010	4,992	4,973	4,954	4,936	4,964	4,993	5,022	5,050
Greater than 24.3 – Less than 25.9	1,049	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,126	2,127	2,128	2,129	2,130	2,133	2,135	2,138	2,141	2,143	2,166	2,189	2,212	2,235
Greater or equal to 25.9 – Less than 27.7	1,822	1,349	1,572	1,794	2,017	2,240	2,260	2,280	2,300	2,320	2,339	2,341	2,342	2,343	2,344	2,346	2,347	2,349	2,351	2,353	2,355	2,380	2,404	2,429	2,453
Greater or equal to 27.7 – Less than 29.0	1,109	907	900	893	886	879	901	922	943	964	985	997	1,009	1,021	1,033	1,045	1,059	1,074	1,089	1,103	1,118	1,142	1,166	1,190	1,214
Greater or equal to 29.0 – Less than 30.4	1,522	1,670	1,631	1,592	1,553	1,514	1,536	1,558	1,580	1,602	1,624	1,634	1,644	1,653	1,663	1,673	1,684	1,696	1,707	1,719	1,730	1,758	1,785	1,812	1,839
Greater or equal to 30.4 – Less or equal to 32.3	15,548	9,149	8,689	8,229	7,769	7,309	7,426	7,542	7,659	7,775	11,262	11,744	12,226	12,708	13,190	13,672	13,682	13,692	13,703	13,713	13,723	13,881	14,038	14,196	14,354
Greater than 32.3 – Less than 33.5	-	7,137	6,355	5,572	4,790	4,008	4,128	4,248	4,368	4,489	4,609	4,713	4,816	4,920	5,024	5,127	5,221	5,316	5,410	5,504	5,598	5,697	5,796	5,895	5,993
Greater or equal to 33.5 – Less than 36.6	-	799	988	1,177	1,366	1,555	1,618	1,682	1,746	1,809	1,873	1,941	2,010	2,078	2,147	2,215	2,293	2,370	2,448	2,525	2,603	2,669	2,736	2,802	2,869
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557	36,007

Cargo (in tons)	Year																								
Extreme Beam Range (Meters)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Less or equal to 24.3	3,692	4,280	5,017	5,753	6,489	7,226	7,245	7,264	7,283	7,302	7,322	7,278	7,234	7,190	7,146	7,102	7,064	7,026	6,988	6,950	6,912	6,944	6,976	7,008	7,040
Greater than 24.3 – Less than 25.9	1,410	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,055	3,052	3,050	3,047	3,044	3,043	3,042	3,040	3,039	3,038	3,066	3,094	3,122	3,150
Greater or equal to 25.9 – Less than 27.7	2,857	1,982	2,316	2,650	2,984	3,318	3,344	3,369	3,395	3,420	3,446	3,445	3,444	3,443	3,442	3,441	3,441	3,441	3,440	3,440	3,439	3,472	3,505	3,537	3,570
Greater or equal to 27.7 – Less than 29.0	1,621	1,305	1,288	1,270	1,253	1,235	1,259	1,283	1,307	1,331	1,355	1,368	1,380	1,393	1,405	1,417	1,432	1,448	1,463	1,478	1,493	1,521	1,548	1,576	1,604
Greater or equal to 29.0 – Less than 30.4	2,340	2,466	2,407	2,347	2,288	2,228	2,256	2,284	2,312	2,340	2,368	2,379	2,389	2,400	2,411	2,421	2,434	2,447	2,459	2,472	2,485	2,519	2,554	2,589	2,623
Greater or equal to 30.4 – Less or equal to 32.3	24,944	13,352	12,774	12,196	11,619	11,041	11,210	11,379	11,548	11,716	14,165	14,547	14,929	15,311	15,693	16,075	16,122	16,170	16,217	16,265	16,313	16,514	16,715	16,916	17,117
Greater than 32.3 – Less than 33.5	-	11,205	9,977	8,748	7,520	6,291	6,475	6,658	6,842	7,025	7,209	7,368	7,528	7,688	7,848	8,008	8,151	8,293	8,436	8,579	8,722	8,864	9,006	9,149	9,291
Greater or equal to 33.5 – Less than 36.6	-	1,248	1,565	1,882	2,199	2,516	2,616	2,717	2,817	2,918	3,019	3,128	3,237	3,347	3,456	3,565	3,688	3,812	3,935	4,058	4,181	4,283	4,385	4,487	4,589
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383	48,984

DWT	Year																								
Extreme Beam Range (Meters)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Less or equal to 24.3	5,106	5,801	6,799	7,798	8,797	9,796	9,831	9,867	9,902	9,938	9,973	9,919	9,865	9,811	9,757	9,703	9,657	9,612	9,566	9,521	9,475	9,524	9,572	9,621	9,669
Greater than 24.3 – Less than 25.9	1,865	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,140	4,139	4,138	4,136	4,135	4,137	4,138	4,139	4,140	4,142	4,183	4,224	4,265	4,306
Greater or equal to 25.9 – Less than 27.7	3,571	2,671	3,113	3,554	3,996	4,437	4,474	4,511	4,548	4,585	4,622	4,623	4,624	4,625	4,625	4,626	4,628	4,629	4,631	4,633	4,634	4,681	4,727	4,774	4,821
Greater or equal to 27.7 – Less than 29.0	2,269	1,767	1,745	1,724	1,702	1,681	1,716	1,752	1,788	1,824	1,860	1,880	1,899	1,918	1,938	1,957	1,981	2,005	2,028	2,052	2,076	2,117	2,158	2,200	2,241
Greater or equal to 29.0 – Less than 30.4	3,239	3,307	3,225	3,143	3,061	2,979	3,019	3,059	3,100	3,140	3,180	3,197	3,213	3,230	3,246	3,263	3,283	3,302	3,322	3,342	3,361	3,411	3,461	3,511	3,561
Greater or equal to 30.4 – Less or equal to 32.3	28,968	18,015	17,149	16,283	15,417	14,551	14,780	15,009	15,239	15,468	18,175	18,617	19,058	19,500	19,942	20,383	20,460	20,536	20,613	20,690	20,766	21,040	21,313	21,587	21,861
Greater than 32.3 – Less than 33.5	-	14,238	12,677	11,116	9,556	7,995	8,235	8,475	8,715	8,955	9,195	9,401	9,608	9,815	10,022	10,229	10,417	10,605	10,793	10,981	11,169	11,366	11,563	11,760	11,957
Greater or equal to 33.5 – Less than 36.6	-	1,593	1,969	2,344	2,720	3,095	3,221	3,347	3,473	3,600	3,726	3,862	3,998	4,134	4,270	4,406	4,559	4,713	4,867	5,021	5,174	5,306	5,437	5,569	5,700
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,019	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286	64,115

ForecastUnexpandedCanal.xls/Beam Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY PCUMS-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

TOTAL **PCUMS RANGE**

Tolls in USD$	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	6,759	9,523	11,441	13,360	15,278	17,133	17,168	17,203	17,238	17,273	17,242	17,115	16,988	16,862	16,735	16,545	16,428	16,312	16,195	16,079	15,901	15,940	15,980	16,019
Greater than 10,000–Less than 15,000	3,247	6,976	9,007	11,038	13,070	15,040	15,172	15,303	15,434	15,565	15,632	15,621	15,610	15,599	15,588	15,512	15,503	15,493	15,484	15,475	15,400	15,528	15,656	15,784
Greater or equal to 15,000–Less than 20,000	17,896	17,316	17,501	17,686	17,871	17,978	18,214	18,449	18,685	18,920	19,071	19,147	19,224	19,300	19,376	19,365	19,449	19,532	19,616	19,700	19,693	19,935	20,176	20,418
Greater or equal to 20,000–Less than 25,000	20,409	23,544	23,300	23,056	22,812	22,453	22,993	23,532	24,071	24,610	25,019	25,344	25,670	25,995	26,321	26,506	26,859	27,212	27,565	27,918	28,120	28,697	29,275	29,852
Greater or equal to 25,000 – Less than 30,000	20,610	27,008	23,120	19,232	15,345	11,384	11,654	11,925	12,195	12,466	12,655	12,876	13,096	13,317	13,538	13,670	13,896	14,122	14,348	14,573	14,704	14,847	14,990	15,133
Greater or equal to 30,000 – Less than 40,000	10,917	3,814	4,762	5,709	6,657	7,561	7,909	8,258	8,606	8,954	9,250	9,627	10,004	10,380	10,757	11,072	11,449	11,826	12,203	12,580	12,885	13,228	13,572	13,915
Greater or equal to 40,000–Less than 50,000	-	1,951	1,629	1,307	985	663	722	781	840	899	15,515	17,367	19,220	21,072	22,924	24,777	24,611	24,446	24,280	24,114	23,949	24,129	24,310	24,490
Greater or equal to 50,000–Less than 60,000	-	9	18	26	35	44	49	53	58	63	67	71	76	80	84	88	94	100	105	111	117	124	132	139
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,839	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751

PCUMS	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	2,286	2,756	3,249	3,743	4,236	4,730	4,735	4,740	4,744	4,749	4,754	4,720	4,685	4,650	4,615	4,581	4,549	4,517	4,485	4,453	4,421	4,436	4,450	4,465
Greater than 10,000–Less than 15,000	1,136	1,959	2,510	3,061	3,611	4,162	4,192	4,222	4,253	4,283	4,313	4,309	4,304	4,299	4,295	4,290	4,285	4,281	4,277	4,272	4,268	4,305	4,342	4,379
Greater or equal to 15,000–Less than 20,000	5,877	5,557	5,388	5,220	5,051	4,882	4,938	4,995	5,051	5,108	5,164	5,182	5,200	5,217	5,235	5,253	5,273	5,293	5,313	5,333	5,353	5,420	5,487	5,555
Greater or equal to 20,000–Less than 25,000	5,938	6,428	6,299	6,169	6,039	5,909	6,043	6,177	6,311	6,445	6,578	6,659	6,740	6,821	6,902	6,983	7,070	7,158	7,245	7,333	7,420	7,571	7,723	7,874
Greater or equal to 25,000 – Less than 30,000	5,583	6,380	5,467	4,553	3,640	2,727	2,795	2,862	2,930	2,997	3,065	3,119	3,174	3,229	3,284	3,339	3,396	3,453	3,510	3,566	3,623	3,661	3,699	3,737
Greater or equal to 30,000 – Less than 40,000	2,954	938	1,177	1,417	1,656	1,895	1,988	2,080	2,173	2,266	2,358	2,459	2,560	2,661	2,762	2,863	2,961	3,058	3,156	3,253	3,351	3,443	3,535	3,627
Greater or equal to 40,000–Less than 50,000	-	684	572	459	346	233	253	274	295	316	3,707	4,145	4,583	5,021	5,459	5,897	5,864	5,830	5,796	5,762	5,729	5,777	5,825	5,873
Greater or equal to 50,000–Less than 60,000	-	3	6	9	12	15	17	19	20	22	24	25	27	28	29	31	33	35	37	39	41	44	46	49
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557

Cargo (in tons)	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	3,180	4,056	4,776	5,496	6,216	6,935	6,935	6,934	6,934	6,933	6,932	6,877	6,823	6,768	6,713	6,658	6,607	6,556	6,504	6,453	6,402	6,420	6,438	6,456
Greater than 10,000–Less than 15,000	1,550	2,893	3,710	4,526	5,343	6,160	6,199	6,238	6,276	6,315	6,354	6,344	6,333	6,322	6,312	6,301	6,291	6,280	6,270	6,259	6,249	6,299	6,349	6,399
Greater or equal to 15,000–Less than 20,000	9,323	8,212	7,975	7,738	7,501	7,264	7,340	7,416	7,492	7,568	7,644	7,666	7,687	7,709	7,730	7,752	7,775	7,799	7,823	7,847	7,871	7,963	8,055	8,148
Greater or equal to 20,000–Less than 25,000	9,141	9,483	9,316	9,149	8,982	8,814	9,005	9,195	9,385	9,576	9,766	9,880	9,995	10,109	10,223	10,338	10,460	10,583	10,706	10,828	10,951	11,165	11,378	11,592
Greater or equal to 25,000 – Less than 30,000	9,267	10,031	8,604	7,177	5,749	4,322	4,420	4,519	4,617	4,715	4,813	4,895	4,976	5,057	5,138	5,219	5,302	5,384	5,466	5,549	5,631	5,678	5,724	5,770
Greater or equal to 30,000 – Less than 40,000	4,405	1,406	1,794	2,181	2,568	2,956	3,094	3,232	3,370	3,509	3,647	3,802	3,957	4,113	4,268	4,423	4,570	4,717	4,864	5,011	5,157	5,291	5,424	5,557
Greater or equal to 40,000–Less than 50,000	-	767	658	550	442	333	363	392	421	451	2,760	3,079	3,397	3,716	4,034	4,353	4,338	4,324	4,309	4,295	4,280	4,324	4,368	4,413
Greater or equal to 50,000–Less than 60,000	-	3	6	9	12	15	17	19	20	22	23	25	26	28	29	31	33	35	37	39	41	43	46	48
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383

Cargo (in tons)	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	4,352	5,448	6,420	7,393	8,366	9,338	9,343	9,347	9,351	9,355	9,359	9,288	9,216	9,145	9,074	9,002	8,936	8,870	8,804	8,738	8,671	8,698	8,724	8,751
Greater than 10,000–Less than 15,000	2,233	3,887	4,976	6,066	7,155	8,244	8,301	8,358	8,415	8,471	8,528	8,517	8,505	8,494	8,482	8,471	8,460	8,449	8,438	8,427	8,416	8,487	8,558	8,629
Greater or equal to 15,000–Less than 20,000	11,841	11,011	10,676	10,341	10,005	9,670	9,778	9,886	9,994	10,102	10,209	10,242	10,275	10,307	10,340	10,373	10,409	10,446	10,482	10,519	10,555	10,686	10,816	10,947
Greater or equal to 20,000–Less than 25,000	11,842	12,777	12,512	12,247	11,983	11,718	11,980	12,241	12,503	12,765	13,026	13,184	13,342	13,500	13,658	13,816	13,987	14,157	14,328	14,498	14,669	14,966	15,262	15,559
Greater or equal to 25,000 – Less than 30,000	11,839	12,688	10,860	9,033	7,205	5,377	5,507	5,636	5,766	5,895	6,025	6,131	6,237	6,342	6,448	6,554	6,664	6,773	6,882	6,992	7,101	7,171	7,242	7,312
Greater or equal to 30,000 – Less than 40,000	5,924	1,824	2,292	2,760	3,229	3,697	3,874	4,052	4,229	4,407	4,584	4,780	4,976	5,173	5,369	5,565	5,752	5,940	6,128	6,315	6,503	6,678	6,854	7,029
Greater or equal to 40,000–Less than 50,000	-	1,130	956	781	607	433	472	510	548	587	3,103	3,457	3,811	4,165	4,519	4,873	4,862	4,851	4,840	4,829	4,818	4,873	4,928	4,982
Greater or equal to 50,000–Less than 60,000	-	5	10	14	19	24	27	29	32	34	37	39	41	44	46	48	52	55	58	61	64	68	72	76
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,030	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286

ForecastUnexpandedCanal.xls/PCUMS Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY LOA-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

TOTAL **LOA RANGE**

Tolls in USD$	YEAR																							
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 200.0	45,842	54,907	58,305	61,703	65,101	68,219	69,027	69,836	70,644	71,453	71,958	72,133	72,307	72,482	72,656	72,523	72,736	72,950	73,163	73,377	73,276	74,088	74,900	75,711
Greater than 200.0 –Less than 230.9	30,457	31,829	28,274	24,719	21,164	17,500	18,055	18,610	19,165	19,721	20,151	20,640	21,130	21,619	22,109	22,462	22,893	23,324	23,755	24,186	24,468	24,927	25,386	25,845
Greater or equal to 230.9– Less or equal to 289.6	3,540	3,404	4,198	4,993	5,787	6,537	6,797	7,057	7,317	7,577	22,342	24,396	26,450	28,504	30,558	32,550	32,659	32,769	32,878	32,987	33,025	33,415	33,805	34,195
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,839	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751

PCUMS	YEAR																							
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 200.0	14,623	16,191	16,833	17,475	18,117	18,758	18,962	19,165	19,368	19,572	19,775	19,820	19,864	19,908	19,953	19,997	20,053	20,109	20,165	20,221	20,277	20,514	20,751	20,988
Greater than 200.0 –Less than 230.9	8,192	7,718	6,853	5,987	5,121	4,256	4,398	4,541	4,683	4,826	4,969	5,101	5,233	5,366	5,498	5,630	5,740	5,850	5,960	6,070	6,179	6,299	6,419	6,539
Greater or equal to 230.9– Less or equal to 289.6	960	796	982	1,168	1,354	1,539	1,601	1,663	1,725	1,787	5,219	5,697	6,175	6,653	7,131	7,609	7,638	7,666	7,694	7,722	7,750	7,844	7,937	8,031
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557

Cargo in tons	YEAR																							
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 200.0	21,927	23,804	24,768	25,732	26,696	27,659	27,918	28,177	28,436	28,695	28,954	28,992	29,031	29,070	29,109	29,148	29,198	29,248	29,299	29,349	29,400	29,711	30,023	30,335
Greater than 200.0 –Less than 230.9	13,379	11,802	10,511	9,221	7,930	6,640	6,854	7,069	7,283	7,497	7,712	7,914	8,116	8,318	8,520	8,722	8,884	9,046	9,208	9,370	9,532	9,701	9,871	10,040
Greater or equal to 230.9– Less or equal to 289.6	1,559	1,245	1,559	1,873	2,187	2,500	2,599	2,698	2,797	2,896	5,275	5,661	6,047	6,433	6,819	7,204	7,294	7,383	7,472	7,561	7,650	7,770	7,889	8,008
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383

DWT	YEAR																							
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less or equal to 200.0	28,694	32,020	33,260	34,500	35,739	36,979	37,353	37,727	38,101	38,475	38,849	38,918	38,987	39,056	39,126	39,195	39,283	39,371	39,460	39,548	39,636	40,082	40,529	40,975
Greater than 200.0 –Less than 230.9	17,247	15,160	13,483	11,806	10,129	8,452	8,733	9,014	9,295	9,576	9,856	10,117	10,378	10,639	10,900	11,161	11,376	11,591	11,806	12,021	12,236	12,470	12,704	12,938
Greater or equal to 230.9– Less or equal to 289.6	2,089	1,588	1,959	2,330	2,700	3,071	3,195	3,318	3,442	3,565	6,167	6,603	7,039	7,475	7,911	8,346	8,462	8,578	8,694	8,810	8,926	9,075	9,224	9,373
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,030	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286

ForecastUnexpandedCanal.xls/LOA Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY GRT-GROUPS - UNEXPANDED CANAL

BOTH WAYS - REFERENCE CASE

TOTAL **GROSS RANGE**

Tolls in USD$	YEAR																							
Gross Tonnage Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less than 9,999	5,802	6,902	8,083	9,264	10,444	11,583	11,597	11,612	11,627	11,642	11,613	11,515	11,416	11,318	11,219	11,080	10,991	10,902	10,813	10,724	10,596	10,610	10,624	10,638
Greater or equal to 10,000 – Less than 19,999	9,057	10,429	13,226	16,023	18,821	21,536	21,756	21,976	22,196	22,416	22,549	22,551	22,554	22,557	22,559	22,474	22,487	22,501	22,514	22,527	22,453	22,662	22,871	23,080
Greater or equal to 19,999 – Less than 29,999	31,980	37,575	36,996	36,416	35,836	35,100	35,674	36,247	36,821	37,395	37,796	38,067	38,337	38,607	38,878	38,969	39,258	39,547	39,836	40,126	40,228	40,816	41,405	41,994
Greater or equal to 29,999 – Less than 39,999	29,141	31,820	28,257	24,693	21,129	17,456	18,006	18,557	19,107	19,658	20,084	20,569	21,054	21,539	22,025	22,373	22,799	23,224	23,649	24,075	24,351	24,802	25,254	25,706
Greater or equal to 39,999 – Less than 49,999	3,858	3,413	4,216	5,019	5,822	6,581	6,846	7,110	7,375	7,640	7,852	8,135	8,419	8,702	8,985	9,207	9,526	9,845	10,165	10,484	10,731	11,001	11,271	11,541
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	14,557	16,332	18,107	19,882	21,657	23,432	23,227	23,023	22,819	22,614	22,410	22,538	22,665	22,793
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,839	90,140	90,777	91,415	92,052	92,256	93,879	95,503	97,127	98,751	114,451	117,169	119,887	122,605	125,323	127,534	128,288	129,042	129,796	130,550	130,769	132,429	134,090	135,751

PCUMS	YEAR																							
Gross Tonnage Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less than 9,999	1,958	2,014	2,314	2,614	2,915	3,215	3,217	3,219	3,220	3,222	3,224	3,198	3,171	3,145	3,119	3,092	3,068	3,045	3,021	2,997	2,974	2,980	2,987	2,994
Greater or equal to 10,000 – Less than 19,999	3,076	2,985	3,739	4,492	5,246	5,999	6,056	6,113	6,170	6,227	6,283	6,285	6,286	6,287	6,288	6,290	6,294	6,299	6,304	6,308	6,313	6,376	6,440	6,503
Greater or equal to 19,999 – Less than 29,999	9,797	11,193	10,781	10,368	9,956	9,544	9,689	9,834	9,978	10,123	10,268	10,337	10,407	10,476	10,546	10,615	10,690	10,765	10,840	10,915	10,990	11,157	11,324	11,490
Greater or equal to 29,999 – Less than 39,999	7,908	7,715	6,846	5,978	5,109	4,240	4,381	4,522	4,663	4,804	4,945	5,076	5,207	5,338	5,468	5,599	5,707	5,815	5,923	6,031	6,138	6,256	6,373	6,490
Greater or equal to 39,999 – Less than 49,999	1,035	799	988	1,177	1,366	1,555	1,618	1,682	1,746	1,809	1,873	1,941	2,010	2,078	2,147	2,215	2,293	2,370	2,448	2,525	2,603	2,669	2,736	2,802
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	3,370	3,781	4,192	4,603	5,014	5,425	5,378	5,331	5,283	5,236	5,189	5,218	5,248	5,277
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,706	24,668	24,630	24,591	24,553	24,961	25,369	25,777	26,185	29,963	30,618	31,273	31,927	32,582	33,237	33,431	33,625	33,819	34,013	34,207	34,657	35,107	35,557

Cargo in tons	YEAR																							
Gross Tonnage Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less than 9,999	2,791	2,951	3,382	3,813	4,243	4,674	4,670	4,665	4,661	4,656	4,652	4,610	4,567	4,525	4,483	4,440	4,402	4,363	4,325	4,286	4,248	4,255	4,261	4,268
Greater or equal to 10,000 – Less than 19,999	4,354	4,279	5,395	6,510	7,625	8,741	8,807	8,873	8,939	9,005	9,071	9,062	9,053	9,043	9,034	9,025	9,019	9,013	9,007	9,001	8,995	9,075	9,155	9,235
Greater or equal to 19,999 – Less than 29,999	15,255	16,574	15,992	15,409	14,827	14,244	14,442	14,639	14,836	15,033	15,231	15,321	15,411	15,502	15,592	15,682	15,777	15,872	15,967	16,062	16,157	16,382	16,607	16,831
Greater or equal to 29,999 – Less than 39,999	12,908	11,799	10,505	9,212	7,918	6,624	6,837	7,050	7,263	7,476	7,689	7,889	8,090	8,290	8,491	8,691	8,851	9,011	9,171	9,331	9,491	9,658	9,825	9,991
Greater or equal to 39,999 – Less than 49,999	1,557	1,248	1,565	1,882	2,199	2,516	2,616	2,717	2,817	2,918	3,019	3,128	3,237	3,347	3,456	3,565	3,688	3,812	3,935	4,058	4,181	4,283	4,385	4,487
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	2,280	2,558	2,836	3,114	3,392	3,670	3,638	3,606	3,574	3,542	3,510	3,530	3,550	3,570
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,851	36,838	36,825	36,812	36,799	37,372	37,944	38,516	39,088	41,941	42,567	43,194	43,821	44,447	45,074	45,376	45,677	45,979	46,281	46,582	47,182	47,783	48,383

DWT	YEAR																							
Gross Tonnage Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less than 9,999	3,434	3,967	4,555	5,142	5,729	6,316	6,314	6,312	6,311	6,309	6,307	6,252	6,197	6,142	6,087	6,032	5,982	5,932	5,883	5,833	5,783	5,794	5,805	5,816
Greater or equal to 10,000 – Less than 19,999	5,521	5,810	7,300	8,790	10,281	11,771	11,870	11,970	12,069	12,169	12,268	12,262	12,257	12,251	12,245	12,240	12,239	12,239	12,238	12,238	12,237	12,353	12,469	12,585
Greater or equal to 19,999 – Less than 29,999	17,827	22,243	21,405	20,567	19,730	18,892	19,169	19,445	19,721	19,997	20,274	20,403	20,533	20,663	20,793	20,923	21,062	21,200	21,339	21,477	21,616	21,935	22,254	22,573
Greater or equal to 29,999 – Less than 39,999	13,368	15,155	13,474	11,792	10,110	8,428	8,706	8,985	9,263	9,541	9,820	10,078	10,337	10,595	10,854	11,112	11,324	11,536	11,748	11,960	12,172	12,401	12,631	12,861
Greater or equal to 39,999 – Less than 49,999	1,577	1,593	1,969	2,344	2,720	3,095	3,221	3,347	3,473	3,600	3,726	3,862	3,998	4,134	4,270	4,406	4,559	4,713	4,867	5,021	5,174	5,306	5,437	5,569
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	2,478	2,780	3,083	3,385	3,687	3,989	3,954	3,920	3,885	3,850	3,815	3,837	3,859	3,880
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	41,728	48,769	48,702	48,635	48,569	48,502	49,280	50,059	50,837	51,616	54,872	55,638	56,404	57,170	57,936	58,702	59,121	59,540	59,959	60,378	60,797	61,627	62,456	63,286

ForecastUnexpandedCanal.xls/Gross Tonnage - Ref. Case

CANAL TRANSIT VOLUMES AND VALUES - EXPANDED CANAL

BEST CASE

BEST CASE

PANAMA TRANSIT VOLUMES IN '000 TON
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	4,580	4,850	6,009	6,226	6,389
OIL PRODUCTS	13,530	12,390	14,550	21,497	22,430	24,243
CHEMICALS	8,757	7,543	6,763	6,703	7,007	8,169
LPG	1,196	1,062	1,555	2,074	2,639	3,203
LNG	-	-	1,900	3,950	4,600	4,700
ORIMULSION	217	690	990	5,773	5,973	6,273
TOTAL	28,183	26,266	30,608	46,005	48,875	52,977

PANAMA TRANSIT VOLUMES IN '000 TON
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	4,280	4,410	5,442	5,693	5,812
OIL PRODUCTS	2,012	2,620	3,240	4,816	5,139	5,519
CHEMICALS	3,748	4,665	5,577	6,416	7,131	8,271
LPG	13	67	183	364	623	960
LNG	-	-	600	4,000	4,000	4,100
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	11,632	14,010	21,038	22,585	24,662

PANAMA TRANSIT VOLUMES IN '000 TON
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	8,860	9,260	11,451	11,919	12,201
OIL PRODUCTS	15,542	15,010	17,790	26,313	27,569	29,762
CHEMICALS	12,505	12,207	12,340	13,119	14,138	16,440
LPG	1,209	1,129	1,738	2,437	3,262	4,163
LNG	-	-	2,500	7,950	8,600	8,800
ORIMULSION	217	690	990	5,773	5,973	6,273
BALLAST						
TOTAL	36,711	37,897	44,618	67,043	71,461	77,639

BEST CASE

TOTAL VALUE OF ROUTES IN '000 USD
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	7,880	8,344	10,338	10,712	10,992
OIL PRODUCTS	21,542	24,342	28,586	42,234	44,068	47,630
CHEMICALS	13,675	13,907	12,537	12,480	13,109	15,339
LPG	3,092	3,326	4,866	6,490	8,260	10,025
LNG	-	-	8,003	16,638	19,375	19,797
ORIMULSION	319	1,177	1,688	9,841	10,181	10,693
TOTAL	45,357	50,632	64,024	98,021	105,705	114,475

TOTAL VALUE OF ROUTES IN '000 USD
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	7,364	7,587	9,363	9,795	9,999
OIL PRODUCTS	4,286	5,147	6,366	9,462	10,096	10,842
CHEMICALS	7,394	8,857	10,593	12,196	13,562	15,729
LPG	84	201	551	1,094	1,873	2,887
LNG	-	-	2,527	16,848	16,848	17,269
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	21,570	27,624	48,962	52,174	56,727

TOTAL VALUE OF ROUTES IN '000 USD
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	15,243	15,931	19,701	20,506	20,991
OIL PRODUCTS	25,827	29,490	34,952	51,696	54,164	58,472
CHEMICALS	21,069	22,765	23,130	24,676	26,671	31,068
LPG	3,176	3,527	5,417	7,584	10,133	12,912
LNG	-	-	10,530	33,486	36,224	37,066
ORIMULSION	319	1,177	1,688	9,841	10,181	10,693
BALLAST	18,321	21,964	29,894	50,767	53,020	54,860
TOTAL	79,527	94,166	121,543	197,751	210,899	226,062

ForecastExpandedCanal.xls/SUMMERY-Including Ballast

CANAL TRANSIT VOLUMES AND VALUES - EXPANDED CANAL

REFERENCE CASE

REFERENCE CASE						
PANAMA TRANSIT VOLUMES IN '000 TON						
ATLANTIC - PACIFIC						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	4,360	4,580	5,510	5,745	5,556
OIL PRODUCTS	13,530	12,040	13,640	17,059	18,078	19,991
CHEMICALS	8,757	7,483	6,537	5,694	4,966	4,768
LPG	1,196	1,038	1,353	1,565	1,855	2,095
LNG	-	-	1,100	2,500	2,600	2,700
ORIMULSION	217	525	750	4,205	4,330	4,580
TOTAL	28,183	25,446	27,960	36,532	37,574	39,690

REFERENCE CASE						
TOTAL VALUE OF ROUTES IN '000 USD						
ATLANTIC - PACIFIC						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	7,440	7,816	9,402	9,804	9,481
OIL PRODUCTS	21,542	23,655	26,798	33,515	35,517	39,276
CHEMICALS	13,675	13,797	12,111	10,561	9,221	8,856
LPG	3,092	3,249	4,234	4,899	5,805	6,557
LNG	-	-	4,633	10,530	10,951	11,373
ORIMULSION	319	895	1,278	7,168	7,381	7,807
TOTAL	45,357	49,037	56,871	76,075	78,679	83,350

PANAMA TRANSIT VOLUMES IN '000 TON						
PACIFIC - ATLANTIC						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	4,040	4,250	5,112	5,329	5,190
OIL PRODUCTS	2,012	2,630	3,020	3,806	4,123	4,640
CHEMICALS	3,748	4,637	5,400	5,986	6,441	7,260
LPG	13	65	159	275	438	628
LNG	-	-	400	2,900	2,700	2,800
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	11,372	13,229	18,079	19,031	20,518

TOTAL VALUE OF ROUTES IN '000 USD						
PACIFIC - ATLANTIC						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	6,894	7,253	8,723	9,094	8,857
OIL PRODUCTS	4,286	5,167	5,933	7,478	8,100	9,116
CHEMICALS	7,394	8,804	10,255	11,373	12,243	13,797
LPG	84	197	479	826	1,316	1,888
LNG	-	-	1,685	12,215	11,373	11,794
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	21,063	25,605	40,614	42,127	45,452

PANAMA TRANSIT VOLUMES IN '000 TON						
BOTH WAYS						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	8,400	8,830	10,621	11,074	10,746
OIL PRODUCTS	15,542	14,670	16,660	20,865	22,201	24,631
CHEMICALS	12,505	12,120	11,937	11,680	11,407	12,029
LPG	1,209	1,104	1,512	1,840	2,292	2,723
LNG		-	1,500	5,400	5,300	5,500
ORIMULSION	217	525	750	4,205	4,330	4,580
BALLAST						
TOTAL	36,711	36,819	41,189	54,611	56,605	60,208

TOTAL VALUE OF ROUTES IN '000 USD						
BOTH WAYS						
CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	14,334	15,068	18,125	18,898	18,338
OIL PRODUCTS	25,827	28,822	32,732	40,993	43,618	48,392
CHEMICALS	21,069	22,602	22,367	21,934	21,464	22,653
LPG	3,176	3,446	4,713	5,724	7,122	8,445
LNG	-	-	6,318	22,745	22,324	23,166
ORIMULSION	319	895	1,278	7,168	7,381	7,807
BALLAST	18,321	21,249	26,299	39,521	40,328	42,031
TOTAL	79,527	91,348	108,775	156,210	161,134	170,832

ForecastExpandedCanal.xls/SUMMERY-Including Ballast

CANAL TRANSIT VOLUMES AND VALUES - EXPANDED CANAL

WORST CASE

WORST CASE

PANAMA TRANSIT VOLUMES IN '000 TON
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,483	3,920	3,820	5,516	5,516	5,712
OIL PRODUCTS	13,530	11,400	13,090	14,926	16,027	16,082
CHEMICALS	8,757	7,398	6,378	5,475	4,692	4,427
LPG	1,196	1,014	1,173	1,172	1,261	1,324
LNG	-	-	300	1,500	1,400	1,400
ORIMULSION	217	154	154	564	564	564
TOTAL	28,183	23,885	24,914	29,153	29,460	29,508

PANAMA TRANSIT VOLUMES IN '000 TON
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	2,755	-	-	-	-	-
OIL PRODUCTS	2,012	1,950	2,270	2,618	2,827	2,838
CHEMICALS	3,748	4,557	5,185	5,630	5,932	6,572
LPG	13	64	138	364	298	397
LNG	-	-	-	400	1,100	1,100
ORIMULSION	-	-	-	-	-	-
TOTAL	8,528	6,571	7,593	9,012	10,157	10,907

PANAMA TRANSIT VOLUMES IN '000 TON
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	7,237	3,920	3,820	5,516	5,516	5,712
OIL PRODUCTS	15,542	13,350	15,360	17,544	18,854	18,920
CHEMICALS	12,505	11,954	11,562	11,105	10,624	10,999
LPG	1,209	1,078	1,311	1,536	1,559	1,721
LNG		-	300	1,900	2,500	2,500
ORIMULSION	217	154	154	564	564	564
BALLAST						
TOTAL	36,711	30,456	32,507	38,165	39,616	40,415

WORST CASE

TOTAL VALUE OF ROUTES IN '000 USD
ATLANTIC - PACIFIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	6,730	6,689	6,519	9,413	9,413	9,747
OIL PRODUCTS	21,542	22,397	25,718	29,325	31,487	31,595
CHEMICALS	13,675	13,645	11,824	10,163	8,719	8,228
LPG	3,092	3,173	3,671	3,670	3,948	4,146
LNG	-	-	1,264	6,318	5,897	5,897
ORIMULSION	319	262	262	961	961	961
TOTAL	45,357	46,167	49,257	59,849	60,425	60,573

TOTAL VALUE OF ROUTES IN '000 USD
PACIFIC - ATLANTIC

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	4,085	-	-	-	-	-
OIL PRODUCTS	4,286	3,831	4,460	5,144	5,554	5,576
CHEMICALS	7,394	8,651	9,841	10,689	11,265	12,476
LPG	84	192	416	1,094	895	1,194
LNG	-	-	-	1,685	4,633	4,633
ORIMULSION	-	-	-	-	-	-
TOTAL	15,849	12,674	14,717	18,611	22,348	23,879

TOTAL VALUE OF ROUTES IN '000 USD
BOTH WAYS

CARGO	2000	2005	2010	2015	2020	2025
CRUDE OIL	10,815	6,689	6,519	9,413	9,413	9,747
OIL PRODUCTS	25,827	26,228	30,177	34,468	37,041	37,171
CHEMICALS	21,069	22,296	21,665	20,852	19,984	20,704
LPG	3,176	3,365	4,087	4,763	4,843	5,339
LNG	-	-	1,264	8,003	10,530	10,530
ORIMULSION	319	262	262	961	961	961
BALLAST	18,321	16,213	18,347	24,778	26,845	26,584
TOTAL	79,527	75,054	82,321	103,238	109,618	111,036

ForecastExpandedCanal.xls/SUMMERY-Including Ballast

CANAL TRANSIT VOLUMES - EXPANDED CANAL

CRUDE AND OIL PRODUCTS - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CRUDE AND OIL PRODUCTS - REF CASE
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	-	878	-	28	47	1,159	-	479	-	73	-	-	-	14	44	236	91	2,867
EC CAN	-	180	-	-	-	-	-	14	-	-	-	-	-	-	-	36	-	230
EC C AM	100	152	-	-	61	185	-	34	111	418	-	-	52	-	54	208	378	996
EC S AM	719	1,660	-	-	1,644	639	1,333	1,244	33	132	-	-	-	31	-	149	3,729	3,855
CHRISTOBAL RP	-	10	-	-	-	38	-	55	-	51	-	-	-	-	-	-	-	153
W INDIES	180	2,055	-	20	25	1,899	-	499	27	50	-	-	-	-	-	65	232	4,587
EUROPE	47	617	-	-	5	51	-	86	-	-	-	-	-	-	-	-	52	755
AFRICA	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53
ASIA (M.E.)	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Total	1,047	5,638	-	48	1,781	3,970	1,333	2,411	171	724	-	-	52	45	99	694	4,483	13,530

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	900	-	-	100	1,020	-	490	-	140	-	-	-	30	20	270	220	2,850
EC CAN	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160
EC C AM	-	160	-	-	60	130	-	120	90	330	-	-	-	-	-	130	150	870
EC S AM	770	1,330	-	-	1,600	560	1,350	930	-	120	-	-	-	-	-	70	3,720	3,010
CHRISTOBAL RP	-	-	-	-	-	50	-	80	-	30	-	-	-	-	-	-	-	160
W INDIES	190	1,780	-	-	30	1,520	-	440	-	30	-	-	-	-	-	70	220	3,840
EUROPE	50	580	-	-	-	50	-	160	-	-	-	-	-	-	-	-	50	790
AFRICA	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,110	5,270	-	-	1,790	3,330	1,350	2,220	90	650	-	-	-	30	20	540	4,360	12,040

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	100	930	-	-	100	1,150		550	-	150	-	-	-	30	20	320	220	3,130
EC CAN	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	190
EC C AM	-	190	-	-	60	140	-	130	100	370	-	-	-	-	-	160	160	990
EC S AM	840	1,570	-	-	1,620	630	1,360	1,050	-	130	-	-	-	-	-	80	3,820	3,460
CHRISTOBAL RP	-	-	-	-	-	60	-	90	-	30	-	-	-	-	-	-	-	180
W INDIES	200	2,110	-	-	30	1,720	-	500	-	-	-	-	-	-	-	80	230	4,410
EUROPE	50	580	-	-	-	50	-	180	-	-	-	-	-	-	-	-	50	810
AFRICA	100	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	440
ASIA (M.E.)	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Total	1,290	6,040	-	-	1,810	3,750	1,360	2,500	100	680	-	-	-	30	20	640	4,580	13,640

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	115	1,140	-	-	115	1,428	-	684	-	192	-	-	-	33	21	385	251	3,862
EC CAN	-	252	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	252
EC C AM	-	240	-	-	69	180	-	156	127	456	-	-	-	-	-	187	196	1,219
EC S AM	1,024	2,040	-	-	1,921	780	1,610	1,296	-	168	-	-	-	-	-	99	4,554	4,383
CHRISTOBAL RP	-	-	-	-	-	72	-	108	-	36	-	-	-	-	-	-	-	216
W INDIES	265	2,748	-	-	35	2,124	-	624	-	36	-	-	-	-	-	88	299	5,620
EUROPE	53	638	-	-	-	55	-	198	-	-	-	-	-	-	-	-	53	891
AFRICA	158	583	-	-	-	-	-	-	-	-	-	-	-	-	-	-	158	583
ASIA (M.E.)	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33
Total	1,613	7,674	-	-	2,139	4,639	1,610	3,066	127	888	-	-	-	33	21	759	5,510	17,059

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	115	1,176	-	-	127	1,488	-	708	-	204	-	-	-	33	32	418	273	4,027
EC CAN	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240
EC C AM	-	264	-	-	69	180	-	168	127	480	-	-	-	-	-	209	196	1,301
EC S AM	1,081	2,244	-	-	1,967	816	1,656	1,356	-	168	-	-	-	-	-	110	4,704	4,694
CHRISTOBAL RP	-	-	-	-	-	72	-	120	-	36	-	-	-	-	-	-	-	228
W INDIES	276	3,024	-	-	35	2,208	-	648	-	36	-	-	-	-	-	99	311	6,015
EUROPE	53	638	-	-	-	55	-	209	-	-	-	-	-	-	-	-	53	902
AFRICA	210	638	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	638
ASIA (M.E.)	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33
Total	1,735	8,257	-	-	2,197	4,819	1,656	3,209	127	924	-	-	-	33	32	836	5,745	18,078

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US		WC CAN		WC C AM		WC S AM		BALBOA RP		HAWAII		OCEANIA		ASIA		TOTAL	
EC US	115	1,200	-	-	115	1,596	-	768	-	216	-	-	-	33	32	495	262	4,308
EC CAN	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240
EC C AM	-	312	-	-	69	204	-	180	127	516	-	-	-	-	-	242	196	1,454
EC S AM	1,001	2,664	-	-	1,898	876	1,599	1,452	-	180	-	-	-	-	-	132	4,497	5,304
CHRISTOBAL RP	-	-	-	-	-	72	-	120	-	48	-	-	-	-	-	-	-	240
W INDIES	253	3,576	-	-	35	2,376	-	696	-	48	-	-	-	-	-	121	288	6,817
EUROPE	53	638	-	-	-	55	-	220	-	-	-	-	-	-	-	-	53	913
AFRICA	263	682	-	-	-	-	-	-	-	-	-	-	-	-	-	-	263	682
ASIA (M.E.)	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33
Total	1,684	9,345	-	-	2,116	5,179	1,599	3,436	127	1,008	-	-	-	33	32	990	5,556	19,991

ForecastExpandedCanal.xls/Crude&Products-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

CRUDE AND OIL PRODUCTS - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CRUDE AND OIL PRODUCTS - REF CASE
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	37	394			-	-	-	-	-	-	-	77		-		-		7	37	478
WC CAN	-				-		-		-		-								-	-
WC C AM	-	-			15	86	-	-	-	69	-	13		-		-		-	15	168
WC S AM	1,162	467			1,249	78	101	8	-	19	106	291		28		-		-	2,617	891
BALBOA RP	-	-			-	10	-	-	13	4	-	-		-		-		-	13	14
HAWAII	-				-		-		-		-								-	-
OCEANIA	-	33			-	-	-	-	-	-	-	-		-		-		-	-	33
ASIA	73	320			-	-	-	-	-	-	-	83		-		25		-	73	427
Total	1,271	1,213	-	-	1,264	174	101	8	13	93	106	464	-	28	-	25	-	7	2,755	2,012

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	40	340	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	40	400
WC CAN	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
WC C AM	-	70	-	-	-	40	-	-	-	70	-	-	-	-	-	-	-	-	-	180
WC S AM	1,930	1,010	-	-	1,380	60	300	20	-	60	330	230	-	-	-	-	-	-	3,940	1,380
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	60	510	-	-	-	30	-	-	-	-	-	30	-	-	-	-	-	-	60	570
Total	2,030	2,030	-	-	1,380	130	300	20	-	130	330	320	-	-	-	-	-	-	4,040	2,630

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	40	350	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	40	420
WC CAN	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120
WC C AM	-	90	-	-	-	50	-	-	-	80	-	-	-	-	-	-	-	-	-	220
WC S AM	2,110	1,200	-	-	1,390	60	310	30	-	70	340	270	-	-	-	-	-	-	4,150	1,630
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	60	560	-	-	-	40	-	-	-	-	-	30	-	-	-	-	-	-	60	630
Total	2,210	2,320	-	-	1,390	150	310	30	-	150	340	370	-	-	-	-	-	-	4,250	3,020

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	58	444	-	-	-	-	-	-	-	-	-	84	-	-	-	-	-	-	58	528
WC CAN	-	156	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156
WC C AM	-	108	-	-	-	60	-	-	-	96	-	-	-	-	-	-	-	-	-	264
WC S AM	2,576	1,560	-	-	1,645	84	368	36	-	84	403	324	-	-	-	-	-	-	4,991	2,088
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	63	693	-	-	-	44	-	-	-	-	-	33	-	-	-	-	-	-	63	770
Total	2,697	2,961	-	-	1,645	188	368	36	-	180	403	441	-	-	-	-	-	-	5,112	3,806

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	58	456	-	-	-	-	-	-	-	-	-	84	-	-	-	-	-	-	58	540
WC CAN	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	180
WC C AM	-	120	-	-	-	60	-	-	-	108	-	-	-	-	-	-	-	-	-	288
WC S AM	2,714	1,716	-	-	1,691	84	380	36	-	84	414	348	-	-	-	-	-	-	5,198	2,268
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	74	770	-	-	-	44	-	-	-	-	-	33	-	-	-	-	-	-	74	847
Total	2,845	3,242	-	-	1,691	188	380	36	-	192	414	465	-	-	-	-	-	-	5,329	4,123

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US		EC CAN		EC C AM		EC S AM		CHRISTOBAL RP		W INDIES		EUROPE		AFRICA		ASIA (M.E.)		TOTAL	
WC US	69	456	-	-	-	-	-	-	-	-	-	96	-	-	-	-	-	-	69	552
WC CAN	-	168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	168
WC C AM	-	144	-	-	-	72	-	-	-	120	-	-	-	-	-	-	-	-	-	336
WC S AM	2,519	2,028	-	-	1,725	84	380	36	-	96	414	372	-	-	-	-	-	-	5,037	2,616
BALBOA RP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASIA	84	891	-	-	-	44	-	-	-	-	-	33	-	-	-	-	-	-	84	968
Total	2,672	3,687	-	-	1,725	200	380	36	-	216	414	501	-	-	-	-	-	-	5,190	4,640

ForecastExpandedCanal.xls/Crude&Products-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

ORIMULSION - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
ORIMULSION
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	217	217
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	217	217

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	525	525
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	525	525

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	750	750
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	750	750

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	4,205	4,205
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	4,205	4,205

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	4,330	4,330
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	4,330	4,330

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	4,580	4,580
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	4,580	4,580

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CANAL TRANSIT VOLUMES - EXPANDED CANAL

ORIMULSION - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
ORIMULSION
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

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CANAL TRANSIT VOLUMES - EXPANDED CANAL

LPG - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LPG
ATLANTIC - PACIFIC

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	90	33	-	-	101	138	362
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	2	1	-	-	-	-	3
EC S AM	-	-	-	29	-	-	-	-	29
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	271	156	1	-	-	-	428
EUROPE	-	-	35	-	-	-	-	-	35
AFRICA	-	-	132	174	-	-	-	-	306
ASIA (M.E.)	-	-	33	-	-	-	-	-	33
Total	-	-	563	394	1	-	101	138	1,196

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	2	-	47	31	-	-	98	146	324
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	30	-	0	-	-	8	39
EC S AM	33	-	118	250	-	1	-	3	404
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	6	-	62	9	-	-	-	3	79
EUROPE	3	-	13	25	-	2	-	-	43
AFRICA	-	-	18	169	-	-	-	-	187
ASIA (M.E.)	-	-	9	23	-	-	-	-	31
Total	44	-	296	506	0	3	98	160	1,038

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	3	-	61	40	-	-	128	190	422
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	40	-	0	-	-	11	51
EC S AM	43	-	154	325	-	1	-	4	527
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	8	-	81	11	-	-	-	4	103
EUROPE	4	-	16	33	-	2	-	-	56
AFRICA	-	-	23	220	-	-	-	-	243
ASIA (M.E.)	-	-	11	30	-	-	-	-	41
Total	58	-	385	660	0	4	128	208	1,353

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	4	-	71	47	-	-	148	220	488
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	46	-	0	-	-	13	59
EC S AM	49	-	178	376	-	1	-	4	609
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	9	-	93	13	-	-	-	4	119
EUROPE	5	-	19	38	-	3	-	-	65
AFRICA	-	-	27	255	-	-	-	-	281
ASIA (M.E.)	-	-	13	34	-	-	-	-	47
Total	67	-	446	763	0	4	148	241	1,565

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	4	-	84	56	-	-	175	260	579
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	54	-	0	-	-	15	70
EC S AM	58	-	211	446	-	2	-	5	722
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	10	-	110	15	-	-	-	5	141
EUROPE	6	-	23	45	-	3	-	-	77
AFRICA	-	-	31	302	-	-	-	-	333
ASIA (M.E.)	-	-	15	40	-	-	-	-	56
Total	79	-	529	905	0	5	175	286	1,855

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	5	-	95	63	-	-	198	294	654
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	61	-	1	-	-	17	79
EC S AM	66	-	238	504	-	2	-	6	816
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	12	-	125	17	-	-	-	6	160
EUROPE	7	-	26	51	-	4	-	-	87
AFRICA	-	-	36	341	-	-	-	-	376
ASIA (M.E.)	-	-	17	46	-	-	-	-	63
Total	89	-	597	1,022	1	6	198	323	2,095

ForecastExpandedCanal.xls/LPG-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

LPG - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
LPG
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	1	-	-	-	1
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	6	-	6	-	-	-	-	-	-	13
Total	6	-	6	-	-	1	-	-	-	13

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	14	-	-	16	1	-	1	-	-	33
WC CAN	2	-	-	-	-	-	-	-	-	2
WC C AM	-	-	0	0	-	-	-	-	-	0
WC S AM	7	-	2	-	-	-	-	-	-	9
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	19	-	4	-	-	-	-	-	-	23
Total	42	-	6	16	1	-	1	-	-	65

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	33	-	-	39	4	-	4	-	-	
WC CAN	5	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	1	-	-	-	-	-	
WC S AM	18	-	5	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	46	-	9	-	-	-	-	-	-	
Total	102	-	14	40	4	-	4	-	-	159

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	57	-	-	67	6	-	6	-	-	
WC CAN	8	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	1	-	-	-	-	-	
WC S AM	31	-	8	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	79	-	16	-	-	-	-	-	-	
Total	176	-	25	68	6	-	6	-	-	275

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	91	-	-	107	10	-	10	-	-	
WC CAN	13	-	-	-	-	-	-	-	-	
WC C AM	-	-	0	2	-	-	-	-	-	
WC S AM	50	-	13	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	127	-	26	-	-	-	-	-	-	
Total	281	-	39	109	10	-	10	-	-	438

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	131	-	-	153	14	-	14	-	-	
WC CAN	19	-	-	-	-	-	-	-	-	
WC C AM	-	-	1	3	-	-	-	-	-	
WC S AM	71	-	19	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	182	-	37	-	-	-	-	-	-	
Total	402	-	57	156	14	-	14	-	-	628

ForecastExpandedCanal.xls/LPG-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

LNG - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSITS VOLUMES FISCAL YEAR 2000 IN '000 TON
LNG
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	-	-	-	-	-	-	-	-	-
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	-		400						400
CHRISTOBAL RP									-
W INDIES	-		700						700
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	-	-	1,100	-	-	-	-	-	1,100

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	300		1,300						1,600
CHRISTOBAL RP									-
W INDIES	-		900						900
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	300	-	2,200	-	-	-	-	-	2,500

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	300		1,400						1,700
CHRISTOBAL RP									-
W INDIES	-		900						900
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	300	-	2,300	-	-	-	-	-	2,600

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US									-
EC CAN									-
EC C AM									-
EC S AM	300		1,500						1,800
CHRISTOBAL RP									-
W INDIES	-		900						900
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	300	-	2,400	-	-	-	-	-	2,700

ForecastExpandedCanal.xls/LNG-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

LNG - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSITS VOLUMES FISCAL YEAR 2000 IN '000 TON
LNG
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-									-
WC CAN										-
WC C AM										-
WC S AM	400									400
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	400	-	-	-	-	-	-	-	-	400

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	200									200
WC CAN										-
WC C AM										-
WC S AM	2,700									2,700
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	2,900	-	-	-	-	-	-	-	-	2,900

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	200									200
WC CAN										-
WC C AM										-
WC S AM	2,500									2,500
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	2,700	-	-	-	-	-	-	-	-	2,700

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	300									300
WC CAN										-
WC C AM										-
WC S AM	2,500									2,500
BALBOA RP										-
HAWAII										-
OCEANIA										-
ASIA										-
Total	2,800	-	-	-	-	-	-	-	-	2,800

ForecastExpandedCanal.xls/LNG-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

CHEMICALS - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CHEMICALS
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	910	149	34	340	12		703	5,548	7,696
EC CAN				40					40
EC C AM	57		3	0				36	96
EC S AM	276		6	71					353
CHRISTOBAL RP									-
W INDIES			42	4			12	61	119
EUROPE	45		72				29		146
AFRICA									-
ASIA (M.E.)								2	2
Total	1,287	149	157	455	12	-	744	5,646	8,451

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	789	130	33	328			562	4,389	6,232
EC CAN		-							-
EC C AM	75	-						50	126
EC S AM		-	50	50					100
CHRISTOBAL RP		-							-
W INDIES	-	-	74	37				75	186
EUROPE	50	-	74						124
AFRICA		-							-
ASIA (M.E.)		-							-
Total	915	130	230	415	-	-	562	4,514	7,024

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	674	111	28	280			480	3,747	5,320
EC CAN									-
EC C AM	69							46	115
EC S AM			47	47					94
CHRISTOBAL RP									-
W INDIES	-		63	32				69	164
EUROPE	46		63						109
AFRICA									-
ASIA (M.E.)									-
Total	789	111	201	359	-	-	480	3,862	5,997

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	571	94	24	237			406	3,172	4,504
EC CAN									-
EC C AM	53							36	89
EC S AM			49	49					97
CHRISTOBAL RP									-
W INDIES	-		53	27				53	133
EUROPE	36		53						89
AFRICA									-
ASIA (M.E.)									-
Total	660	94	179	312	-	-	406	3,261	5,077

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	480	79	20	200			342	2,669	3,789
EC CAN									-
EC C AM	39							26	66
EC S AM			50	50					99
CHRISTOBAL RP									-
W INDIES	-		45	22				39	107
EUROPE	26		45						71
AFRICA									-
ASIA (M.E.)									-
Total	546	79	159	272	-	-	342	2,734	4,271

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	449	74	19	187			320	2,497	3,546
EC CAN									-
EC C AM	30							20	50
EC S AM			57	57					113
CHRISTOBAL RP									-
W INDIES	-		42	21				30	93
EUROPE	20		42						62
AFRICA									-
ASIA (M.E.)									-
Total	499	74	159	264	-	-	320	2,547	3,997

ForecastExpandedCanal.xls/Chem-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

CHEMICALS - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
CHEMICALS
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	161			1			17		2	181
WC CAN	154		58							212
WC C AM	156		37	10		246	19		4	472
WC S AM	255		42			35	2			334
BALBOA RP										-
HAWAII										-
OCEANIA	178		10							187
ASIA	875	8	163	21		5	32			1,105
Total	1,780	8	309	32	-	286	71	-	6	2,492

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	201									201
WC CAN	-									-
WC C AM	209		47			330	25			611
WC S AM	207		74				-			281
BALBOA RP										-
HAWAII										-
OCEANIA	239									239
ASIA	1,424		230							1,654
Total	2,280	-	351	-	-	330	25	-	-	3,038

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	232									
WC CAN	-									
WC C AM	242		54			381	29			
WC S AM	239		85				-			
BALBOA RP										
HAWAII										
OCEANIA	275									
ASIA	1,644		266							
Total	2,632	-	405	-	-	381	29	-	-	3,507

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	253									
WC CAN	-									
WC C AM	264		59			415	31			
WC S AM	261		93				-			
BALBOA RP										
HAWAII										
OCEANIA	300									
ASIA	1,792		290							
Total	2,870	-	442	-	-	415	31	-	-	3,824

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	265									
WC CAN	-									
WC C AM	277		62			436	33			
WC S AM	274		98				-			
BALBOA RP										
HAWAII										
OCEANIA	315									
ASIA	1,881		304							
Total	3,012	-	464	-	-	436	33	-	-	4,013

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	303									
WC CAN	-									
WC C AM	316		71			497	37			
WC S AM	313		111				-			
BALBOA RP										
HAWAII										
OCEANIA	360									
ASIA	2,147		347							
Total	3,438	-	529	-	-	497	37	-	-	4,580

ForecastExpandedCanal.xls/Chem-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

VEG OIL ETC. - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
VEGOIL ETC.
ATLANTIC - PACIFIC

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US			67	40	5	-	1	189	302
EC CAN						-	-	-	-
EC C AM			1			-	-	-	1
EC S AM				2		-	-	-	2
CHRISTOBAL RP						-	-	-	-
W INDIES						-	-	-	-
EUROPE			1			-	-	-	1
AFRICA						-	-	-	-
ASIA (M.E.)						-	-	-	-
Total	-	-	70	42	5	-	1	189	307

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	7	-	86	66			31	202	393
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	7	-	86	66	-	-	31	202	390

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	8	-	102	78			37	240	465
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	8	-	102	78	-	-	37	240	462

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	10	-	117	89			42	274	532
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	10	-	117	89	-	-	42	274	528

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	11	-	131	100			47	307	597
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	11	-	131	100	-	-	47	307	593

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	12	-	145	111			52	339	659
EC CAN									-
EC C AM									-
EC S AM									-
CHRISTOBAL RP									-
W INDIES									-
EUROPE									-
AFRICA									-
ASIA (M.E.)									-
Total	12	-	145	111	-	-	52	339	654

ForecastExpandedCanal.xls/VegOil-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

VEG OIL ETC. - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
VEGOIL ETC.
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	3									3
WC CAN							17			17
WC C AM	193		74			154	65			486
WC S AM	61	17	57	5			208			348
BALBOA RP										-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	106									106
ASIA	282		14							296
Total	645	17	145	5	-	154	290	-	-	1,256

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	3									3
WC CAN	-									-
WC C AM	239		107			185	81			612
WC S AM	-						21			21
BALBOA RP	75		75	17			268			435
HAWAII										-
OCEANIA	125									125
ASIA	408		22							430
Total	851	-	204	17	-	185	369	-	-	1,599

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	4									
WC CAN	-									
WC C AM	283		126			220	96			
WC S AM	-						24			
BALBOA RP	89		89	21			317			
HAWAII										
OCEANIA	148									
ASIA	483		26							
Total	1,008	-	241	21	-	220	437	-	-	1,893

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	5									
WC CAN	-									
WC C AM	324		144			251	109			
WC S AM	-						28			
BALBOA RP	102		102	23			362			
HAWAII										
OCEANIA	169									
ASIA	552		30							
Total	1,151	-	276	23	-	251	499	-	-	2,162

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	5									
WC CAN	-									
WC C AM	363		162			282	123			
WC S AM	-						31			
BALBOA RP	114		114	26			406			
HAWAII										
OCEANIA	190									
ASIA	619		33							
Total	1,292	-	310	26	-	282	560	-	-	2,428

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	6									
WC CAN	-									
WC C AM	401		179			311	135			
WC S AM	-						35			
BALBOA RP	126		126	29			449			
HAWAII										
OCEANIA	210									
ASIA	684		37							
Total	1,427	-	342	29	-	311	619	-	-	2,680

ForecastExpandedCanal.xls/VegOil-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

METHANOL - ATLANTIC - PACIFIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
METHANOL
ATLANTIC - PACIFIC

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	60	-	-	-	-	-	-	-	60

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	-	-	-	-	-	-	-	-	-
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	69	-	-	-	-	-	-	-	69
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	69	-	-	-	-	-	-	-	69

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	18	-	-	-	-	-	-	-	18
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	78	-	-	-	-	-	-	-	78

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	29	-	-	-	-	-	-	-	29
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	89	-	-	-	-	-	-	-	89

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	42	-	-	-	-	-	-	-	42
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	102	-	-	-	-	-	-	-	102

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROM AREA	WC US	WC CAN	WC C AM	WC S AM	BALBOA RP	HAWAII	OCEANIA	ASIA	TOTAL
EC US	-	-	-	-	-	-	-	-	-
EC CAN	-	-	-	-	-	-	-	-	-
EC C AM	-	-	-	-	-	-	-	-	-
EC S AM	57	-	-	-	-	-	-	-	57
CHRISTOBAL RP	-	-	-	-	-	-	-	-	-
W INDIES	60	-	-	-	-	-	-	-	60
EUROPE	-	-	-	-	-	-	-	-	-
AFRICA	-	-	-	-	-	-	-	-	-
ASIA (M.E.)	-	-	-	-	-	-	-	-	-
Total	117	-	-	-	-	-	-	-	117

ForecastExpandedCanal.xls/Methanol-Ref Case

CANAL TRANSIT VOLUMES - EXPANDED CANAL

METHANOL - PACIFIC - ATLANTIC - REFERENCE CASE

PANAMA TRANSIT VOLUMES FISCAL YEAR 2000 IN '000 TON
METHANOL
PACIFIC - ATLANTIC

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2005 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	-
WC CAN	-	-	-	-	-	-	-	-	-	-
WC C AM	-	-	-	-	-	-	-	-	-	-
WC S AM	-	-	-	-	-	-	-	-	-	-
BALBOA RP	-	-	-	-	-	-	-	-	-	-
HAWAII	-	-	-	-	-	-	-	-	-	-
OCEANIA	-	-	-	-	-	-	-	-	-	-
ASIA	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2010 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2015 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2020 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

PANAMA TRANSIT VOLUMES YEAR 2025 IN '000 TON

ACP-FROMAREA	EC US	EC CAN	EC C AM	EC S AM	CHRISTOBAL RP	W INDIES	EUROPE	AFRICA	ASIA (M.E.)	TOTAL
WC US	-	-	-	-	-	-	-	-	-	
WC CAN	-	-	-	-	-	-	-	-	-	
WC C AM	-	-	-	-	-	-	-	-	-	
WC S AM	-	-	-	-	-	-	-	-	-	
BALBOA RP	-	-	-	-	-	-	-	-	-	
HAWAII	-	-	-	-	-	-	-	-	-	
OCEANIA	-	-	-	-	-	-	-	-	-	
ASIA	-	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	-	-

ForecastExpandedCanal.xls/Methanol-Ref Case

TOTAL CANAL TRANSIT DETAILS BY DWT-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																								
DWT Range – Metric Tons	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	3,090	4,232	5,012	5,792	6,571	7,325	7,358	7,366	7,374	7,381	7,336	7,462	7,536	7,610	7,683	7,668	7,699	7,640	7,582	7,524	7,355	7,465	7,464	7,464
Greater than 10,000–Less than 15,000	2,251	2,822	3,284	3,746	4,209	4,655	4,704	4,737	4,771	4,804	4,805	4,915	4,992	5,069	5,147	5,167	5,219	5,213	5,208	5,203	5,124	5,234	5,270	5,306
Greater or equal to 15,000-Less than 20,000	2,410	3,137	3,863	4,590	5,316	6,020	6,095	6,149	6,202	6,256	6,264	6,429	6,548	6,667	6,786	6,826	6,910	6,914	6,918	6,922	6,821	6,898	6,870	6,842
Greater or equal to 20,000-Less than 25,000	1,164	2,340	3,566	4,791	6,017	7,215	7,318	7,394	7,470	7,545	7,563	7,596	7,570	7,545	7,520	7,410	7,704	7,914	8,124	8,334	8,407	8,629	8,714	8,798
Greater or equal to 25,000 – Less than 30,000	3,610	5,061	5,887	6,713	7,539	8,331	8,465	8,565	8,665	8,765	8,794	9,013	9,161	9,309	9,457	9,485	9,713	9,821	9,929	10,036	9,972	10,202	10,260	10,318
Greater or equal to 30,000 – Less than 40,000	15,734	16,835	16,810	16,785	16,760	16,667	17,021	17,307	17,593	17,879	18,012	18,399	18,634	18,868	19,102	19,085	19,334	19,333	19,331	19,330	18,999	19,325	19,323	19,320
Greater or equal to 40,000-Less than 50,000	21,325	21,689	20,409	19,129	17,849	16,493	16,927	17,284	17,641	17,998	27,759	27,607	27,282	26,957	26,632	26,029	26,094	25,881	25,668	25,455	24,900	25,271	25,299	25,327
Greater or equal to 50,000-Less than 60,000	2,647	2,975	2,464	1,954	1,443	929	988	1,043	1,099	1,155	1,204	1,109	1,007	905	803	689	587	472	358	243	128	137	145	154
Greater or equal to 60,000-Less than 70,000	25,171	26,449	22,893	19,338	15,782	12,148	12,103	11,980	11,857	11,734	11,465	10,275	8,940	7,604	6,268	4,838	4,236	3,539	2,842	2,146	1,414	1,175	901	628
Greater or equal to 70,000-Less than 80,000	2,164	4,177	6,027	7,877	9,728	11,501	12,451	13,324	14,197	15,070	15,731	14,972	14,001	13,030	12,058	10,867	10,512	9,937	9,362	8,787	7,996	8,008	7,805	7,602
Greater or equal to 80,000-Less than 90,000	274	414	544	674	805	929	853	772	690	608	519	5,936	11,346	16,756	22,165	27,575	27,473	27,371	27,269	27,166	27,064	27,269	27,473	27,677
Greater or equal to 90,000-Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	2,149	4,298	6,447	8,596	10,568	11,990	13,235	14,481	15,726	16,572	18,066	19,161	20,255
Greater or equal to 110,000-Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	2,193	4,386	6,579	8,772	10,789	12,214	13,463	14,711	15,960	16,809	18,336	19,463	20,591
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	448	897	1,345	1,794	2,215	1,976	1,709	1,443	1,176	909	904	898	893
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	1,529	3,058	4,586	6,115	7,535	7,987	8,330	8,673	9,016	9,170	9,327	9,295	9,263
Greater or equal to 200,000																								
Total	79,839	90,131	90,760	91,388	92,017	92,212	94,283	95,921	97,558	99,196	109,450	120,032	129,655	139,277	148,899	156,747	159,647	160,772	161,898	163,024	161,643	166,246	168,342	170,438

PCUMS	YEAR																								
DWT Range – Metric Tons	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	978	1,174	1,390	1,607	1,823	2,039	2,040	2,042	2,043	2,045	2,047	2,061	2,076	2,091	2,106	2,121	2,107	2,094	2,080	2,067	2,053	2,055	2,058	2,061
Greater than 10,000–Less than 15,000	816	891	995	1,100	1,205	1,310	1,319	1,328	1,337	1,347	1,356	1,374	1,392	1,410	1,428	1,446	1,446	1,446	1,446	1,446	1,446	1,458	1,470	1,482
Greater or equal to 15,000-Less than 20,000	832	916	1,106	1,295	1,484	1,674	1,688	1,702	1,716	1,730	1,745	1,772	1,800	1,828	1,856	1,883	1,886	1,889	1,892	1,895	1,898	1,897	1,895	1,894
Greater or equal to 20,000-Less than 25,000	433	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,120	2,115	2,111	2,106	2,102	2,153	2,203	2,254	2,305	2,355	2,381	2,407	2,433
Greater or equal to 25,000 – Less than 30,000	1,111	1,394	1,624	1,854	2,084	2,314	2,340	2,365	2,391	2,417	2,443	2,478	2,514	2,549	2,585	2,621	2,648	2,675	2,703	2,730	2,758	2,779	2,799	2,820
Greater or equal to 30,000 – Less than 40,000	5,270	5,427	5,219	5,010	4,801	4,592	4,662	4,732	4,802	4,871	4,941	4,998	5,055	5,112	5,169	5,225	5,230	5,234	5,239	5,243	5,247	5,262	5,277	5,292
Greater or equal to 40,000-Less than 50,000	6,419	6,141	5,725	5,309	4,893	4,477	4,566	4,655	4,744	4,833	7,139	7,067	6,995	6,923	6,851	6,779	6,733	6,687	6,641	6,595	6,549	6,569	6,589	6,609
Greater or equal to 50,000-Less than 60,000	687	708	600	492	385	277	295	313	331	350	368	329	291	252	213	175	149	123	97	71	45	48	51	54
Greater or equal to 60,000-Less than 70,000	6,584	6,266	5,428	4,590	3,752	2,914	2,890	2,865	2,841	2,817	2,793	2,470	2,148	1,825	1,502	1,180	1,015	850	686	521	357	291	225	160
Greater or equal to 70,000-Less than 80,000	573	977	1,410	1,843	2,275	2,708	2,913	3,118	3,323	3,528	3,733	3,507	3,280	3,054	2,828	2,601	2,489	2,336	2,203	2,070	1,938	1,892	1,846	1,800
Greater or equal to 80,000-Less than 90,000	71	97	127	158	188	219	200	180	161	142	123	1,375	2,628	3,880	5,132	6,385	6,361	6,337	6,314	6,290	6,266	6,314	6,361	6,408
Greater or equal to 90,000-Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	548	1,096	1,643	2,191	2,739	3,032	3,325	3,618	3,911	4,204	4,463	4,722	4,982
Greater or equal to 110,000-Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	563	1,127	1,690	2,253	2,817	3,111	3,405	3,699	3,993	4,287	4,558	4,829	5,099
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	126	251	377	502	628	566	504	443	381	319	317	315	313
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	409	819	1,228	1,637	2,046	2,128	2,210	2,292	2,373	2,455	2,449	2,443	2,436
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,705	24,666	24,627	24,588	24,549	24,958	25,367	25,775	26,184	28,811	31,198	33,585	35,972	38,360	40,747	41,033	41,319	41,605	41,891	42,177	42,732	43,288	43,844

Cargo in tons	YEAR																								
DWT Range – Metric Tons	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	1,392	1,698	2,003	2,309	2,615	2,920	2,916	2,911	2,907	2,902	2,898	2,916	2,933	2,951	2,968	2,986	2,960	2,935	2,909	2,884	2,858	2,858	2,858	2,858
Greater than 10,000–Less than 15,000	1,158	1,304	1,450	1,595	1,741	1,887	1,895	1,904	1,913	1,922	1,930	1,954	1,977	2,000	2,023	2,046	2,042	2,038	2,034	2,030	2,025	2,040	2,054	2,068
Greater or equal to 15,000-Less than 20,000	993	1,278	1,563	1,848	2,134	2,419	2,434	2,448	2,463	2,478	2,493	2,530	2,566	2,603	2,639	2,675	2,674	2,672	2,670	2,668	2,666	2,660	2,653	2,646
Greater or equal to 20,000-Less than 25,000	529	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,046	3,035	3,023	3,012	3,001	3,068	3,135	3,202	3,269	3,336	3,367	3,399	3,430
Greater or equal to 25,000 – Less than 30,000	1,686	2,027	2,368	2,709	3,050	3,391	3,423	3,454	3,485	3,517	3,548	3,596	3,643	3,691	3,738	3,786	3,818	3,851	3,884	3,917	3,949	3,973	3,996	4,019
Greater or equal to 30,000 – Less than 40,000	8,360	8,039	7,718	7,397	7,077	6,756	6,850	6,945	7,039	7,134	7,228	7,306	7,384	7,462	7,540	7,618	7,615	7,611	7,608	7,605	7,601	7,613	7,625	7,636
Greater or equal to 40,000-Less than 50,000	9,380	8,836	8,292	7,748	7,204	6,660	6,788	6,916	7,044	7,172	8,800	8,792	8,785	8,777	8,770	8,763	8,696	8,630	8,564	8,497	8,431	8,446	8,462	8,477
Greater or equal to 50,000-Less than 60,000	1,244	1,080	916	752	588	424	453	481	509	537	565	500	435	370	305	241	201	162	123	84	45	48	51	54
Greater or equal to 60,000-Less than 70,000	11,190	9,883	8,576	7,269	5,962	4,655	4,604	4,552	4,501	4,450	4,398	3,880	3,361	2,842	2,324	1,805	1,550	1,295	1,040	785	531	434	337	240
Greater or equal to 70,000-Less than 80,000	827	1,540	2,252	2,964	3,677	4,389	4,724	5,058	5,393	5,727	6,062	5,690	5,318	4,946	4,575	4,203	3,985	3,768	3,550	3,333	3,115	3,034	2,953	2,872
Greater or equal to 80,000-Less than 90,000	104	152	201	249	298	346	313	280	247	213	180	1,008	1,836	2,664	3,492	4,320	4,304	4,288	4,272	4,256	4,240	4,272	4,304	4,336
Greater or equal to 90,000-Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	850	1,700	2,551	3,401	4,251	4,705	5,158	5,612	6,066	6,520	6,907	7,295	7,682
Greater or equal to 110,000-Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	875	1,751	2,626	3,502	4,377	4,833	5,288	5,744	6,199	6,655	7,061	7,467	7,873
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	207	414	621	829	1,036	932	829	726	623	520	516	513	510
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	677	1,354	2,031	2,709	3,386	3,522	3,658	3,795	3,931	4,068	4,057	4,046	4,036
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	43,827	46,493	49,159	51,826	54,492	54,905	55,319	55,733	56,146	56,560	57,286	58,012	58,738

DWT	YEAR																								
DWT Range – Metric Tons	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	1,873	2,293	2,712	3,131	3,550	3,969	3,967	3,965	3,962	3,960	3,958	3,984	4,011	4,037	4,063	4,090	4,058	4,026	3,995	3,963	3,932	3,934	3,935	3,937
Greater than 10,000–Less than 15,000	1,351	1,754	1,958	2,155	2,356	2,556	2,570	2,585	2,599	2,613	2,628	2,661	2,694	2,727	2,760	2,793	2,790	2,787	2,783	2,780	2,777	2,798	2,819	2,840
Greater or equal to 15,000-Less than 20,000	1,417	1,753	2,132	2,512	2,891	3,271	3,294	3,317	3,341	3,364	3,388	3,491	3,543	3,543	3,590	3,640	3,647	3,647	3,648	3,649	3,650	3,644	3,637	3,631
Greater or equal to 20,000-Less than 25,000	776	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,128	4,114	4,101	4,088	4,074	4,170	4,265	4,360	4,456	4,551	4,597	4,643	4,690
Greater or equal to 25,000 – Less than 30,000	2,075	2,741	3,194	3,647	4,100	4,552	4,599	4,645	4,691	4,737	4,784	4,850	4,917	4,984	5,051	5,117	5,166	5,215	5,264	5,312	5,361	5,397	5,433	5,469
Greater or equal to 30,000 – Less than 40,000	11,044	10,780	10,354	9,929	9,503	9,077	9,209	9,341	9,473	9,605	9,737	9,844	9,950	10,057	10,164	10,271	10,270	10,270	10,269	10,269	10,269	10,288	10,308	10,328
Greater or equal to 40,000-Less than 50,000	12,729	12,016	11,237	10,458	9,680	8,901	9,075	9,250	9,424	9,598	11,403	11,413	11,423	11,433	11,442	11,452	11,364	11,275	11,187	11,098	11,010	11,030	11,050	11,071
Greater or equal to 50,000-Less than 60,000	1,519	1,411	1,194	978	762	546	581	617	652	688	723	646	568	490	413	335	282	229	176	123	70	75	80	84
Greater or equal to 60,000-Less than 70,000	13,849	12,500	10,828	9,156	7,485	5,813	5,764	5,716	5,668	5,620	5,571	4,928	4,284	3,641	2,997	2,353	2,025	1,697	1,368	1,040	711	580	449	318
Greater or equal to 70,000-Less than 80,000	1,140	1,949	2,813	3,676	4,539	5,403	5,812	6,221	6,629	7,038	7,447	6,996	6,544	6,093	5,641	5,190	4,925	4,660	4,395	4,130	3,865	3,774	3,683	3,591
Greater or equal to 80,000-Less than 90,000	149	193	254	315	376	436	398	360	322	284	246	1,237	2,229	3,221	4,213	5,205	5,186	5,166	5,147	5,128	5,108	5,147	5,186	5,224
Greater or equal to 90,000-Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	1,093	2,186	3,279	4,371	5,464	6,049	6,633	7,218	7,802	8,386	8,904	9,421	9,938
Greater or equal to 110,000-Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	1,124	2,248	3,371	4,495	5,619	6,206	6,792	7,379	7,965	8,552	9,093	9,633	10,173
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	250	501	751	1,002	1,252	1,129	1,006	883	760	637	633	629	625
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	816	1,633	2,449	3,266	4,082	4,245	4,408	4,572	4,735	4,898	4,885	4,873	4,860
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,121	48,767	48,699	48,630	48,562	48,493	49,273	50,054	50,834	51,614	54,024	57,409	60,793	64,177	67,561	70,945	71,511	72,078	72,644	73,211	73,777	74,778	75,779	76,779

Transits Laden	YEAR																								
DWT Range – Metric Tons	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	319	459	542	626	710	794	793	793	792	792	792	797	802	807	813	818	812	805	799	793	786	787	787	787
Greater than 10,000–Less than 15,000	163	140	156	172	188	204	206	207	208	209	210	213	216	218	221	223	223	223	223	222	222	224	226	227
Greater or equal to 15,000-Less than 20,000	62	100	122	144	165	187	188	190	191	192	194	197	199	202	205	208	208	208	208	209	209	208	208	207
Greater or equal to 20,000-Less than 25,000	45	61	90	119	148	176	178	179	181	183	184	183	183	182	182	181	185	190	194	198	202	204	206	208
Greater or equal to 25,000 – Less than 30,000	71	100	116	133	149	166	167	169	171	172	174	176	179	181	184	186	188	190	191	193	195	196	198	199
Greater or equal to 30,000 – Less than 40,000	428	308	296	284	272	259	263	267	271	274	278	281	284	287	290	293	293	293	293	293	293	294	295	295
Greater or equal to 40,000-Less than 50,000	239	267	250	232	215	198	202	206	209	213	253	254	254	254	254	254	253	251	249	247	245	245	246	246
Greater or equal to 50,000-Less than 60,000	89	26	22	18	14	10	11	11	12	13	13	12	10	9	8	6	5	4	3	2	1	1	1	2
Greater or equal to 60,000-Less than 70,000	191	192	167	141	115	88	89	88	87	86	86	70	66	56	46	36	31	26	21	16	11	9	7	5
Greater or equal to 70,000-Less than 80,000	13	26	38	49	61	72	77	83	88	94	99	93	87	81	75	69	66	62	59	55	52	50	49	48
Greater or equal to 80,000-Less than 90,000		2	3	4	4	5	5	4	4	3	3	15	26	38	50	61	61	61	61	60	60	61	61	61
Greater or equal to 90,000-Less than 100,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000		-	-	-	-	-	-	-	-	-	-	10	21	31	42	52	58	63	69	74	80	85	90	95
Greater or equal to 110,000-Less than 120,000		-	-	-	-	-	-	-	-	-	-	10	20	29	39	49	54	59	64	69	74	79	84	88
Greater or equal to 120,000-Less than 150,000		-	-	-	-	-	-	-	-	-	-	2	4	6	7	9	8	7	7	6	5	5	5	5
Greater or equal to 150,000– Less than 200,000		-	-	-	-	-	-	-	-	-	-	5	9	14	19	23	24	25	26	27	28	28	28	28
Greater or equal to 200,000																								
Total	1,620	1,681	1,801	1,921	2,041	2,161	2,179	2,196	2,214	2,232	2,286	2,323	2,360	2,397	2,434	2,471	2,469	2,468	2,466	2,465	2,463	2,476	2,489	2,502

ForecastExpandedCanal.xls/DWT Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY DRAFT-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																								
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 10.0	7,535	10,192	12,160	14,128	16,096	18,000	18,158	18,252	18,347	18,441	18,404	18,806	19,076	19,346	19,616	19,661	19,827	19,768	19,708	19,649	19,300	19,597	19,604	19,612	19,620
Greater than 10.0 – Less than 10.5	2,182	2,340	3,566	4,791	6,017	7,215	7,318	7,394	7,470	7,545	7,563	7,596	7,570	7,545	7,520	7,410	7,704	7,914	8,124	8,334	8,407	8,629	8,714	8,798	8,883
Greater or equal to 10.5 – Less than 11.0	8,703	13,051	13,512	13,972	14,432	14,831	15,108	15,324	15,540	15,756	15,837	16,187	16,401	16,615	16,830	16,821	17,086	17,129	17,171	17,213	16,955	17,266	17,276	17,286	17,297
Greater or equal to 11.0 – Less than 11.5	10,246	14,185	14,136	14,087	14,039	13,931	14,219	14,447	14,676	14,904	15,000	15,326	15,519	15,712	15,904	15,879	16,075	16,053	16,031	16,009	15,701	15,986	15,985	15,984	15,983
Greater or equal to 11.5 – Less or equal to 12.0	6,018	15,725	14,926	14,127	13,329	12,473	12,806	13,082	13,358	13,634	23,357	23,116	22,745	22,374	22,003	21,423	21,475	21,318	21,161	21,004	20,590	20,889	20,932	20,974	21,017
Greater than 12.0 – Less than 12.5	23,422	3,600	2,997	2,394	1,791	1,185	1,266	1,345	1,423	1,502	1,574	1,500	1,419	1,338	1,258	1,165	1,092	1,008	923	839	754	794	834	874	915
Greater or equal to 12.5 – Less than 13.0	11,456	26,449	22,893	19,338	15,782	12,148	12,103	11,980	11,857	11,734	11,465	10,275	8,940	7,604	6,268	4,838	4,236	3,539	2,842	2,146	1,414	1,175	901	628	354
Greater or equal to 13.0 – Less than 13.5	4,334	4,177	6,027	7,877	9,728	11,501	12,451	13,324	14,197	15,070	15,731	14,972	14,001	13,030	12,058	10,867	10,512	9,937	9,362	8,787	7,996	8,008	7,805	7,602	7,399
Greater or equal to 13.5 - Less than 14.0	3,219	414	544	674	805	929	853	772	690	608	519	5,936	11,346	16,756	22,165	27,575	27,473	27,371	27,269	27,166	27,064	27,269	27,473	27,677	27,881
Greater or equal to 14.0 – Less than 14.5	929	-	-	-	-	-	-	-	-	-	-	2,149	4,298	6,447	8,596	10,568	11,990	13,235	14,481	15,726	16,572	18,066	19,161	20,255	21,350
Greater or equal to 14.5 – Less or equal to 15.2	133	-	-	-	-	-	-	-	-	-	-	2,193	4,386	6,579	8,772	10,789	12,214	13,463	14,711	15,960	16,809	18,336	19,463	20,591	21,718
Greater than 15.2 – Less than 17.5	178	-	-	-	-	-	-	-	-	-	-	448	897	1,345	1,794	2,215	1,976	1,709	1,443	1,176	909	904	898	893	887
Greater or equal to 17.5 – Less than 20.0	1,290	-	-	-	-	-	-	-	-	-	-	1,529	3,058	4,586	6,115	7,535	7,987	8,330	8,673	9,016	9,170	9,327	9,295	9,263	9,232
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,645	90,131	90,760	91,388	92,017	92,212	94,283	95,921	97,558	99,196	109,450	120,032	129,655	139,277	148,899	156,747	159,647	160,772	161,898	163,024	161,643	166,246	168,342	170,438	172,535

PCUMS	YEAR																								
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 10.0	2,588	2,981	3,492	4,002	4,512	5,023	5,048	5,072	5,097	5,122	5,147	5,207	5,268	5,329	5,389	5,450	5,439	5,429	5,418	5,407	5,397	5,410	5,424	5,437	5,451
Greater than 10.0 – Less than 10.5	686	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,120	2,115	2,111	2,106	2,102	2,153	2,203	2,254	2,305	2,355	2,381	2,407	2,433	2,459
Greater or equal to 10.5 – Less than 11.0	3,030	4,063	4,069	4,074	4,080	4,086	4,138	4,190	4,242	4,294	4,345	4,396	4,446	4,496	4,547	4,597	4,609	4,620	4,632	4,644	4,656	4,669	4,682	4,696	4,709
Greater or equal to 11.0 – Less than 11.5	3,294	4,266	4,153	4,041	3,928	3,816	3,871	3,926	3,981	4,036	4,092	4,137	4,183	4,228	4,274	4,320	4,316	4,313	4,309	4,306	4,303	4,313	4,323	4,334	4,344
Greater or equal to 11.5 – Less or equal to 12.0	1,972	4,415	4,160	3,904	3,649	3,393	3,462	3,532	3,601	3,671	5,957	5,875	5,792	5,709	5,626	5,544	5,511	5,478	5,445	5,412	5,379	5,400	5,421	5,442	5,462
Greater than 12.0 – Less than 12.5	6,380	926	786	646	506	365	392	418	444	470	496	465	433	402	371	340	324	308	293	277	262	276	290	304	318
Greater or equal to 12.5 – Less than 13.0	3,047	6,266	5,428	4,590	3,752	2,914	2,890	2,865	2,841	2,817	2,793	2,470	2,148	1,825	1,502	1,180	1,015	850	686	521	357	291	225	160	94
Greater or equal to 13.0 – Less than 13.5	1,219	977	1,410	1,843	2,275	2,708	2,913	3,118	3,323	3,528	3,733	3,507	3,280	3,054	2,828	2,601	2,469	2,336	2,203	2,070	1,938	1,892	1,846	1,800	1,754
Greater or equal to 13.5 - Less than 14.0	856	97	127	158	188	219	200	180	161	142	123	1,375	2,628	3,880	5,132	6,385	6,361	6,337	6,314	6,290	6,266	6,314	6,361	6,408	6,456
Greater or equal to 14.0 – Less than 14.5	245	-	-	-	-	-	-	-	-	-	-	548	1,096	1,643	2,191	2,739	3,032	3,325	3,618	3,911	4,204	4,463	4,722	4,982	5,241
Greater or equal to 14.5 – Less or equal to 15.2	35	-	-	-	-	-	-	-	-	-	-	563	1,127	1,690	2,253	2,817	3,111	3,405	3,699	3,993	4,287	4,558	4,829	5,099	5,370
Greater than 15.2 – Less than 17.5	52	-	-	-	-	-	-	-	-	-	-	126	251	377	502	628	566	504	443	381	319	317	315	313	311
Greater or equal to 17.5 – Less than 20.0	372	-	-	-	-	-	-	-	-	-	-	409	819	1,228	1,637	2,046	2,128	2,210	2,292	2,373	2,455	2,449	2,443	2,436	2,430
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,705	24,666	24,627	24,588	24,549	24,958	25,367	25,775	26,184	28,811	31,198	33,585	35,972	38,360	40,747	41,033	41,319	41,605	41,891	42,177	42,732	43,288	43,844	44,400

Cargo (in tons)	YEAR																								
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 10.0	3,571	4,280	5,017	5,753	6,489	7,226	7,245	7,264	7,283	7,302	7,322	7,399	7,476	7,553	7,630	7,707	7,676	7,644	7,613	7,581	7,550	7,557	7,565	7,573	7,580
Greater than 10.0 – Less than 10.5	943	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,046	3,035	3,023	3,012	3,001	3,068	3,135	3,202	3,269	3,336	3,367	3,399	3,430	3,462
Greater or equal to 10.5 – Less than 11.0	4,681	6,010	6,015	6,021	6,026	6,031	6,101	6,171	6,241	6,312	6,382	6,452	6,522	6,592	6,663	6,733	6,743	6,753	6,764	6,774	6,784	6,797	6,810	6,824	6,837
Greater or equal to 11.0 – Less than 11.5	5,203	6,238	6,093	5,948	5,803	5,658	5,736	5,813	5,890	5,967	6,044	6,109	6,174	6,239	6,304	6,369	6,359	6,349	6,339	6,329	6,319	6,329	6,339	6,349	6,359
Greater or equal to 11.5 – Less or equal to 12.0	3,131	6,438	6,086	5,734	5,382	5,030	5,129	5,227	5,326	5,425	7,023	6,999	6,975	6,950	6,926	6,902	6,854	6,806	6,759	6,711	6,663	6,679	6,696	6,712	6,728
Greater than 12.0 – Less than 12.5	9,882	1,297	1,101	905	708	512	548	584	620	656	692	635	577	519	462	404	375	346	317	288	260	273	287	301	315
Greater or equal to 12.5 – Less than 13.0	5,120	9,883	8,576	7,269	5,962	4,655	4,604	4,552	4,501	4,450	4,398	3,880	3,361	2,842	2,324	1,805	1,550	1,295	1,040	785	531	434	337	240	143
Greater or equal to 13.0 – Less than 13.5	1,913	1,540	2,252	2,964	3,677	4,389	4,724	5,058	5,393	5,727	6,062	5,690	5,318	4,946	4,575	4,203	3,985	3,768	3,550	3,333	3,115	3,034	2,953	2,872	2,791
Greater or equal to 13.5 - Less than 14.0	1,341	152	201	249	298	346	313	280	247	213	180	1,008	1,836	2,664	3,492	4,320	4,304	4,288	4,272	4,256	4,240	4,272	4,304	4,336	4,368
Greater or equal to 14.0 – Less than 14.5	363	-	-	-	-	-	-	-	-	-	-	850	1,700	2,551	3,401	4,251	4,705	5,158	5,612	6,066	6,520	6,907	7,295	7,682	8,069
Greater or equal to 14.5 – Less or equal to 15.2	53	-	-	-	-	-	-	-	-	-	-	875	1,751	2,626	3,502	4,377	4,833	5,288	5,744	6,199	6,655	7,061	7,467	7,873	8,279
Greater than 15.2 – Less than 17.5	94	-	-	-	-	-	-	-	-	-	-	207	414	621	829	1,036	932	829	726	623	520	516	513	510	507
Greater or equal to 17.5 – Less than 20.0	571	-	-	-	-	-	-	-	-	-	-	677	1,354	2,031	2,709	3,386	3,522	3,658	3,795	3,931	4,068	4,057	4,046	4,036	4,025
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	43,827	46,493	49,159	51,826	54,492	54,905	55,319	55,733	56,146	56,560	57,286	58,012	58,738	59,464

DWT	YEAR																								
Draft Range (Design draft- Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 10.0	4,895	5,801	6,799	7,798	8,797	9,796	9,831	9,867	9,902	9,938	9,973	10,084	10,196	10,307	10,418	10,529	10,495	10,461	10,427	10,393	10,358	10,375	10,391	10,408	10,424
Greater than 10.0 – Less than 10.5	1,253	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,128	4,114	4,101	4,088	4,074	4,170	4,265	4,360	4,456	4,551	4,597	4,643	4,690	4,736
Greater or equal to 10.5 – Less than 11.0	6,122	8,066	8,072	8,077	8,082	8,088	8,186	8,284	8,383	8,481	8,580	8,676	8,772	8,868	8,964	9,060	9,077	9,095	9,112	9,130	9,147	9,168	9,189	9,210	9,231
Greater or equal to 11.0 – Less than 11.5	6,448	8,416	8,205	7,995	7,784	7,574	7,681	7,787	7,894	8,000	8,107	8,195	8,283	8,370	8,458	8,546	8,535	8,524	8,512	8,501	8,490	8,506	8,522	8,537	8,553
Greater or equal to 11.5 – Less or equal to 12.0	3,753	8,714	8,218	7,722	7,226	6,731	6,866	7,001	7,136	7,271	9,036	9,024	9,012	9,001	8,989	8,977	8,914	8,851	8,789	8,726	8,663	8,685	8,707	8,729	8,751
Greater than 12.0 – Less than 12.5	11,528	1,752	1,485	1,218	951	684	732	780	828	876	924	858	791	725	659	592	556	519	482	446	409	431	453	475	497
Greater or equal to 12.5 – Less than 13.0	5,538	12,500	10,828	9,156	7,485	5,813	5,764	5,716	5,668	5,620	5,571	4,928	4,284	3,641	2,997	2,353	2,025	1,697	1,368	1,040	711	580	449	318	187
Greater or equal to 13.0 – Less than 13.5	2,419	1,949	2,813	3,676	4,539	5,403	5,812	6,221	6,629	7,038	7,447	6,996	6,544	6,093	5,641	5,190	4,925	4,660	4,395	4,130	3,865	3,774	3,683	3,591	3,500
Greater or equal to 13.5 - Less than 14.0	1,658	193	254	315	376	436	398	360	322	284	246	1,237	2,229	3,221	4,213	5,205	5,186	5,166	5,147	5,128	5,108	5,147	5,186	5,224	5,263
Greater or equal to 14.0 – Less than 14.5	452	-	-	-	-	-	-	-	-	-	-	1,093	2,186	3,279	4,371	5,464	6,049	6,633	7,218	7,802	8,386	8,904	9,421	9,938	10,456
Greater or equal to 14.5 – Less or equal to 15.2	78	-	-	-	-	-	-	-	-	-	-	1,124	2,248	3,371	4,495	5,619	6,206	6,792	7,379	7,966	8,552	9,093	9,633	10,173	10,713
Greater than 15.2 – Less than 17.5	91	-	-	-	-	-	-	-	-	-	-	250	501	751	1,002	1,252	1,129	1,006	883	760	637	633	629	625	621
Greater or equal to 17.5 – Less than 20.0	787	-	-	-	-	-	-	-	-	-	-	816	1,633	2,449	3,266	4,082	4,245	4,408	4,572	4,735	4,898	4,885	4,873	4,860	4,848
Greater or equal to 20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,019	48,767	48,699	48,630	48,562	48,493	49,273	50,054	50,834	51,614	54,024	57,409	60,793	64,177	67,561	70,945	71,511	72,078	72,644	73,211	73,777	74,778	75,779	76,779	77,780

ForecastExpandedCanal.xls/Draft Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY BEAM-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	Year																								
Extreme Beam Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 24.3	8,028	10,192	12,160	14,128	16,096	18,000	18,158	18,252	18,347	18,441	18,404	18,806	19,076	19,346	19,616	19,661	19,827	19,768	19,708	19,649	19,300	19,597	19,604	19,612	19,620
Greater than 24.3 – Less than 25.9	3,109	2,340	3,566	4,791	6,017	7,215	7,318	7,394	7,470	7,545	7,563	7,596	7,570	7,545	7,520	7,410	7,704	7,914	8,124	8,334	8,407	8,629	8,714	8,798	8,883
Greater or equal to 25.9 – Less than 27.7	6,319	4,931	5,736	6,541	7,346	8,118	8,234	8,317	8,400	8,483	8,495	8,700	8,833	8,967	9,101	9,114	9,322	9,410	9,498	9,586	9,502	9,712	9,751	9,790	9,828
Greater or equal to 27.7 – Less than 29.0	3,529	2,767	2,806	2,844	2,883	2,911	2,999	3,076	3,153	3,230	3,284	3,372	3,437	3,502	3,567	3,594	3,673	3,715	3,756	3,797	3,789	3,880	3,922	3,963	4,005
Greater or equal to 29.0 – Less than 30.4	4,504	5,114	5,119	5,124	5,128	5,113	5,229	5,325	5,420	5,516	5,565	5,690	5,770	5,849	5,928	5,931	6,019	6,031	6,043	6,054	5,968	6,078	6,090	6,102	6,114
Greater or equal to 30.4 – Less or equal to 32.3	54,019	30,865	29,630	28,394	27,158	25,809	26,450	26,977	27,504	28,031	37,877	37,783	37,431	37,079	36,728	35,959	36,128	35,880	35,632	35,384	34,613	35,127	35,119	35,110	35,102
Greater than 32.3 – Less than 33.5	-	29,323	25,156	20,989	16,822	12,574	12,543	12,432	12,321	12,209	11,945	10,787	9,475	8,164	6,853	5,436	4,723	3,905	3,086	2,267	1,414	1,175	901	628	354
Greater or equal to 33.5 – Less than 36.6	-	4,599	6,589	8,578	10,567	12,474	13,353	14,149	14,945	15,741	16,318	15,465	14,394	13,322	12,250	10,958	10,611	10,043	9,475	8,908	8,125	8,145	7,951	7,756	7,561
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	421	316	211	105	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	7,664	15,328	22,992	30,656	38,143	39,463	40,606	41,749	42,893	43,637	45,335	46,634	47,932	49,231
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	2,641	5,283	7,924	10,566	13,004	14,190	15,172	16,154	17,136	17,719	19,240	20,362	21,483	22,605
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	1,529	3,058	4,586	6,115	7,535	7,987	8,330	8,673	9,016	9,170	9,327	9,295	9,263	9,232
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,509	90,131	90,760	91,388	92,017	92,212	94,283	95,921	97,558	99,196	109,450	120,453	129,970	139,487	149,004	156,747	159,647	160,772	161,898	163,024	161,643	166,246	168,342	170,438	172,535

PCUMS	Year																								
Extreme Beam Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 24.3	2,724	2,981	3,492	4,002	4,512	5,023	5,048	5,072	5,097	5,122	5,147	5,207	5,268	5,329	5,389	5,450	5,439	5,429	5,418	5,407	5,397	5,410	5,424	5,437	5,451
Greater than 24.3 – Less than 25.9	1,049	714	1,041	1,369	1,697	2,025	2,045	2,065	2,085	2,105	2,125	2,120	2,115	2,111	2,106	2,102	2,153	2,203	2,254	2,305	2,355	2,381	2,407	2,433	2,459
Greater or equal to 25.9 – Less than 27.7	1,822	1,349	1,572	1,794	2,017	2,240	2,260	2,280	2,300	2,320	2,339	2,370	2,401	2,431	2,462	2,493	2,513	2,534	2,554	2,575	2,595	2,610	2,624	2,638	2,652
Greater or equal to 27.7 – Less than 29.0	1,109	898	881	864	847	831	853	875	897	920	942	961	980	998	1,017	1,036	1,051	1,066	1,081	1,096	1,111	1,128	1,144	1,161	1,178
Greater or equal to 29.0 – Less than 30.4	1,522	1,650	1,592	1,533	1,475	1,417	1,441	1,465	1,490	1,514	1,538	1,558	1,578	1,598	1,619	1,639	1,644	1,650	1,655	1,661	1,667	1,675	1,684	1,693	1,702
Greater or equal to 30.4 – Less or equal to 32.3	15,548	9,098	8,588	8,078	7,568	7,057	7,189	7,321	7,453	7,584	9,933	9,838	9,743	9,648	9,553	9,458	9,402	9,347	9,292	9,236	9,181	9,197	9,213	9,229	9,245
Greater than 32.3 – Less than 33.5	-	6,938	5,957	4,976	3,995	3,014	2,992	2,971	2,950	2,928	2,907	2,590	2,273	1,956	1,639	1,322	1,129	936	743	550	357	291	225	160	94
Greater or equal to 33.5 – Less than 36.6	-	1,077	1,543	2,010	2,476	2,942	3,130	3,317	3,505	3,692	3,880	3,630	3,381	3,132	2,883	2,634	2,503	2,373	2,243	2,113	1,983	1,940	1,897	1,854	1,811
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	98	74	49	25	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	1,825	3,649	5,474	7,299	9,124	9,393	9,662	9,932	10,201	10,470	10,777	11,083	11,390	11,697
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	689	1,378	2,067	2,756	3,444	3,677	3,909	4,141	4,374	4,606	4,875	5,144	5,413	5,682
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	409	819	1,228	1,637	2,046	2,128	2,210	2,292	2,373	2,455	2,449	2,443	2,436	2,430
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,705	24,666	24,627	24,588	24,549	24,958	25,367	25,775	26,184	28,811	31,296	33,659	36,022	38,384	40,747	41,033	41,319	41,605	41,891	42,177	42,732	43,288	43,844	44,400

Cargo (in tons)	Year																								
Extreme Beam Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 24.3	3,692	4,280	5,017	5,753	6,489	7,226	7,245	7,264	7,283	7,302	7,322	7,399	7,476	7,553	7,630	7,707	7,676	7,644	7,613	7,581	7,550	7,557	7,565	7,573	7,580
Greater than 24.3 – Less than 25.9	1,410	1,012	1,495	1,978	2,461	2,944	2,967	2,990	3,012	3,035	3,058	3,046	3,035	3,023	3,012	3,001	3,068	3,135	3,202	3,269	3,336	3,367	3,399	3,430	3,462
Greater or equal to 25.9 – Less than 27.7	2,857	1,982	2,316	2,650	2,984	3,318	3,344	3,369	3,395	3,420	3,446	3,488	3,531	3,574	3,616	3,659	3,685	3,711	3,737	3,763	3,788	3,805	3,822	3,839	3,855
Greater or equal to 27.7 – Less than 29.0	1,621	1,289	1,255	1,221	1,188	1,154	1,180	1,206	1,232	1,257	1,283	1,305	1,327	1,349	1,371	1,393	1,406	1,420	1,434	1,448	1,461	1,477	1,493	1,510	1,526
Greater or equal to 29.0 – Less than 30.4	2,340	2,433	2,341	2,249	2,157	2,065	2,097	2,129	2,160	2,192	2,224	2,250	2,277	2,303	2,329	2,356	2,359	2,362	2,366	2,369	2,372	2,380	2,388	2,396	2,403
Greater or equal to 30.4 – Less or equal to 32.3	24,944	13,250	12,571	11,892	11,212	10,533	10,726	10,919	11,112	11,305	12,998	12,950	12,903	12,855	12,807	12,759	12,679	12,599	12,520	12,440	12,360	12,369	12,379	12,389	12,398
Greater than 32.3 – Less than 33.5	-	10,908	9,381	7,855	6,328	4,802	4,754	4,707	4,660	4,612	4,565	4,055	3,544	3,034	2,524	2,013	1,717	1,420	1,124	827	531	434	337	240	143
Greater or equal to 33.5 – Less than 36.6	-	1,695	2,459	3,223	3,987	4,751	5,054	5,356	5,659	5,962	6,265	5,859	5,453	5,047	4,641	4,235	4,020	3,805	3,590	3,375	3,160	3,082	3,004	2,926	2,848
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	144	108	72	36	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	1,714	3,428	5,143	6,857	8,571	9,009	9,446	9,884	10,322	10,760	11,179	11,599	12,018	12,437
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	1,083	2,165	3,248	4,330	5,413	5,765	6,117	6,470	6,822	7,175	7,578	7,981	8,383	8,786
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	677	1,354	2,031	2,709	3,386	3,522	3,658	3,795	3,931	4,068	4,057	4,046	4,036	4,025
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	43,971	46,601	49,212	51,862	54,492	54,905	55,319	55,733	56,146	56,560	57,286	58,012	58,738	59,464

DWT	Year																								
Extreme Beam Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Less or equal to 24.3	5,106	5,801	6,799	7,798	8,797	9,796	9,831	9,867	9,902	9,938	9,973	10,084	10,196	10,307	10,418	10,529	10,495	10,461	10,427	10,393	10,358	10,375	10,391	10,408	10,424
Greater than 24.3 – Less than 25.9	1,865	1,376	2,024	2,673	3,321	3,969	4,003	4,038	4,072	4,106	4,141	4,128	4,114	4,101	4,088	4,074	4,170	4,265	4,360	4,456	4,551	4,597	4,643	4,690	4,736
Greater or equal to 25.9 – Less than 27.7	3,571	2,671	3,113	3,554	3,996	4,437	4,474	4,511	4,548	4,585	4,622	4,681	4,740	4,799	4,858	4,917	4,955	4,993	5,032	5,070	5,108	5,133	5,158	5,184	5,209
Greater or equal to 27.7 – Less than 29.0	2,269	1,747	1,706	1,665	1,624	1,583	1,621	1,660	1,698	1,736	1,774	1,806	1,839	1,871	1,903	1,935	1,957	1,980	2,002	2,024	2,047	2,072	2,098	2,123	2,149
Greater or equal to 29.0 – Less than 30.4	3,239	3,268	3,147	3,026	2,905	2,784	2,829	2,874	2,919	2,963	3,008	3,045	3,082	3,119	3,155	3,192	3,199	3,205	3,212	3,218	3,225	3,238	3,251	3,264	3,276
Greater or equal to 30.4 – Less or equal to 32.3	28,968	17,915	16,948	15,981	15,015	14,048	14,308	14,568	14,828	15,087	16,978	16,941	16,905	16,869	16,833	16,796	16,689	16,582	16,475	16,367	16,260	16,272	16,285	16,297	16,309
Greater than 32.3 – Less than 33.5	-	13,842	11,884	9,927	7,970	6,013	5,970	5,927	5,884	5,841	5,799	5,166	4,534	3,902	3,270	2,638	2,252	1,867	1,482	1,097	711	580	449	318	187
Greater or equal to 33.5 – Less than 36.6	-	2,147	3,076	4,005	4,934	5,863	6,237	6,610	6,983	7,356	7,729	7,232	6,734	6,236	5,738	5,240	4,979	4,718	4,458	4,197	3,936	3,849	3,762	3,676	3,589
Greater or equal to 36.6 – Less than 39.6	-	-	-	-	-	-	-	-	-	-	-	196	147	98	49	-	-	-	-	-	-	-	-	-	-
Greater or equal to 39.6 – Less than 42.7	-	-	-	-	-	-	-	-	-	-	-	2,134	4,268	6,402	8,535	10,669	11,234	11,799	12,365	12,930	13,495	14,051	14,607	15,162	15,718
Greater or equal to 42.7 – Less than 45.7	-	-	-	-	-	-	-	-	-	-	-	1,374	2,749	4,123	5,497	6,871	7,335	7,798	8,262	8,725	9,189	9,725	10,262	10,798	11,334
Greater or equal to 45.7 – Less than 48.8	-	-	-	-	-	-	-	-	-	-	-	816	1,633	2,449	3,266	4,082	4,245	4,408	4,572	4,735	4,898	4,885	4,873	4,860	4,848
Greater or equal to 48.8 –Less than 51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 51.8 – Less or equal 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 54.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45,019	48,767	48,699	48,630	48,562	48,493	49,273	50,054	50,834	51,614	54,024	57,605	60,940	64,275	67,610	70,945	71,511	72,078	72,644	73,211	73,777	74,778	75,779	76,779	77,780

ForecastExpandedCanal.xls/Beam Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY PCUMS-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	6,753	9,330	11,297	13,263	15,230	17,133	17,232	17,268	17,303	17,338	17,242	17,600	17,827	18,054	18,280	18,282	18,389	18,271	18,153	18,036	17,628	17,875	17,832	17,789
Greater than 10,000–Less than 15,000	3,233	6,886	8,940	10,994	13,047	15,040	15,233	15,365	15,497	15,629	15,632	15,845	15,929	16,013	16,097	15,976	16,444	16,708	16,971	17,235	17,190	17,587	17,676	17,764
Greater or equal to 15,000–Less than 20,000	17,807	16,454	16,501	16,548	16,594	16,572	16,911	17,181	17,451	17,721	17,838	18,206	18,421	18,637	18,852	18,816	19,037	19,007	18,977	18,947	18,588	18,880	18,843	18,806
Greater or equal to 20,000–Less than 25,000	20,203	22,649	21,304	19,959	18,614	17,191	17,654	18,039	18,424	18,809	19,014	19,439	19,684	19,929	20,175	20,129	20,122	19,824	19,526	19,227	18,587	18,912	18,895	18,878
Greater or equal to 25,000 – Less than 30,000	20,597	27,588	23,740	19,891	16,043	12,116	12,066	11,938	11,809	11,681	11,407	10,333	9,113	7,893	6,674	5,360	4,811	4,168	3,524	2,881	2,204	2,018	1,797	1,576
Greater or equal to 30,000 – Less than 40,000	10,917	5,000	7,134	9,268	11,403	13,453	14,416	15,296	16,176	17,055	17,716	16,771	15,608	14,444	13,280	11,896	11,588	11,060	10,532	10,004	9,261	9,320	9,164	9,008
Greater or equal to 40,000–Less than 50,000	-	1,951	1,629	1,307	985	663	722	781	840	899	10,535	10,352	9,642	8,933	8,223	7,514	7,502	7,491	7,479	7,467	7,456	7,523	7,591	7,658
Greater or equal to 50,000–Less than 60,000	-	9	18	26	35	44	49	53	58	63	67	2,221	4,375	6,529	8,682	10,660	12,089	13,342	14,594	15,847	16,701	18,203	19,306	20,409
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	2,641	5,283	7,924	10,566	13,004	14,190	15,172	16,154	17,136	17,719	19,240	20,362	21,483
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	7,044	14,088	21,131	28,175	35,110	35,460	35,701	35,941	36,182	36,234	36,595	36,768	36,940
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,509	89,867	90,562	91,257	91,951	92,212	94,283	95,921	97,558	99,196	109,450	120,453	129,970	139,487	149,004	156,747	159,632	160,742	161,853	162,963	161,567	166,153	168,232	170,312

PCUMS	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	2,286	2,779	3,267	3,754	4,242	4,730	4,735	4,740	4,744	4,749	4,754	4,800	4,846	4,892	4,938	4,984	4,954	4,923	4,893	4,862	4,832	4,828	4,825	4,821
Greater than 10,000–Less than 15,000	1,136	1,955	2,507	3,058	3,610	4,162	4,192	4,222	4,253	4,283	4,313	4,331	4,349	4,366	4,384	4,401	4,460	4,520	4,579	4,638	4,698	4,725	4,753	4,781
Greater or equal to 15,000–Less than 20,000	5,877	5,145	4,998	4,851	4,704	4,557	4,621	4,685	4,749	4,813	4,877	4,927	4,977	5,027	5,077	5,127	5,122	5,116	5,110	5,105	5,099	5,102	5,104	5,107
Greater or equal to 20,000–Less than 25,000	5,938	6,102	5,744	5,386	5,028	4,670	4,767	4,864	4,961	5,058	5,155	5,216	5,277	5,338	5,399	5,460	5,395	5,330	5,265	5,200	5,136	5,145	5,155	5,165
Greater or equal to 25,000 – Less than 30,000	5,583	6,566	5,650	4,733	3,817	2,900	2,874	2,847	2,821	2,795	2,769	2,487	2,204	1,922	1,640	1,358	1,212	1,066	920	774	628	581	533	486
Greater or equal to 30,000 – Less than 40,000	2,954	1,216	1,732	2,249	2,766	3,283	3,499	3,716	3,932	4,149	4,365	4,084	3,802	3,520	3,238	2,956	2,840	2,723	2,606	2,490	2,373	2,343	2,314	2,284
Greater or equal to 40,000–Less than 50,000	-	684	572	459	346	233	253	274	295	316	2,554	2,504	2,331	2,159	1,986	1,814	1,813	1,811	1,810	1,809	1,808	1,826	1,844	1,861
Greater or equal to 50,000–Less than 60,000	-	3	6	9	12	15	17	19	20	22	24	573	1,123	1,672	2,222	2,771	3,067	3,362	3,658	3,953	4,249	4,511	4,774	5,036
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	689	1,378	2,067	2,756	3,444	3,677	3,909	4,141	4,374	4,606	4,875	5,144	5,413
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	1,686	3,372	5,059	6,745	8,431	8,489	8,547	8,605	8,663	8,721	8,762	8,804	8,845
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,451	24,475	24,500	24,524	24,549	24,958	25,367	25,775	26,184	28,811	31,296	33,659	36,022	38,384	40,747	41,028	41,308	41,589	41,870	42,150	42,700	43,250	43,800

Cargo (in tons)	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	3,180	3,961	4,705	5,448	6,192	6,935	6,935	6,934	6,934	6,933	6,932	6,995	7,058	7,120	7,183	7,245	7,194	7,143	7,092	7,041	6,990	6,981	6,971	6,962
Greater than 10,000–Less than 15,000	1,550	2,860	3,685	4,510	5,335	6,160	6,199	6,238	6,276	6,315	6,354	6,377	6,400	6,423	6,445	6,468	6,549	6,630	6,711	6,792	6,873	6,909	6,945	6,982
Greater or equal to 15,000–Less than 20,000	9,323	7,955	7,647	7,338	7,029	6,720	6,809	6,898	6,987	7,076	7,164	7,236	7,307	7,378	7,450	7,521	7,508	7,494	7,481	7,468	7,454	7,454	7,454	7,453
Greater or equal to 20,000–Less than 25,000	9,141	9,180	8,609	8,039	7,469	6,899	7,036	7,173	7,310	7,447	7,585	7,673	7,761	7,849	7,937	8,025	7,925	7,824	7,724	7,623	7,523	7,532	7,541	7,550
Greater or equal to 25,000 – Less than 30,000	9,267	10,271	8,838	7,405	5,972	4,538	4,476	4,414	4,352	4,290	4,228	3,769	3,310	2,851	2,391	1,932	1,699	1,466	1,232	999	766	690	615	539
Greater or equal to 30,000 – Less than 40,000	4,405	1,853	2,687	3,522	4,356	5,191	5,531	5,872	6,212	6,553	6,894	6,426	5,958	5,490	5,022	4,555	4,350	4,145	3,940	3,735	3,530	3,461	3,392	3,324
Greater or equal to 40,000–Less than 50,000	-	767	658	550	442	333	363	392	421	451	1,980	1,997	1,834	1,671	1,508	1,344	1,342	1,340	1,338	1,335	1,333	1,344	1,354	1,365
Greater or equal to 50,000–Less than 60,000	-	3	6	9	12	15	17	19	20	22	23	875	1,727	2,579	3,431	4,283	4,739	5,195	5,652	6,108	6,565	6,955	7,345	7,736
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	1,083	2,165	3,248	4,330	5,413	5,765	6,117	6,470	6,822	7,175	7,578	7,981	8,383
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	1,541	3,082	4,623	6,165	7,706	7,826	7,946	8,067	8,187	8,308	8,329	8,350	8,372
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	43,971	46,601	49,232	51,862	54,492	54,897	55,302	55,707	56,111	56,516	57,233	57,949	58,666

Cargo (in tons)	YEAR																							
PCUMS Range	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Less or equal to 10,000	4,352	5,433	6,409	7,385	8,362	9,338	9,343	9,347	9,351	9,355	9,359	9,448	9,536	9,624	9,713	9,801	9,736	9,671	9,606	9,541	9,476	9,465	9,455	9,445
Greater than 10,000–Less than 15,000	2,233	3,924	5,004	6,084	7,164	8,244	8,301	8,358	8,415	8,471	8,528	8,560	8,593	8,625	8,657	8,690	8,804	8,919	9,034	9,148	9,263	9,315	9,368	9,420
Greater or equal to 15,000–Less than 20,000	11,841	10,339	10,010	9,680	9,351	9,021	9,144	9,267	9,390	9,513	9,636	9,732	9,829	9,925	10,021	10,117	10,101	10,085	10,069	10,053	10,037	10,038	10,039	10,040
Greater or equal to 20,000–Less than 25,000	11,842	12,048	11,347	10,647	9,946	9,246	9,434	9,622	9,810	9,998	10,186	10,304	10,421	10,539	10,656	10,774	10,639	10,503	10,368	10,233	10,097	10,112	10,126	10,140
Greater or equal to 25,000 – Less than 30,000	11,839	13,015	11,192	9,368	7,545	5,721	5,664	5,607	5,549	5,492	5,434	4,867	4,300	3,733	3,166	2,599	2,301	2,004	1,707	1,410	1,113	1,012	912	812
Greater or equal to 30,000 – Less than 40,000	5,924	2,378	3,400	4,421	5,443	6,465	6,890	7,314	7,739	8,163	8,588	8,019	7,451	6,882	6,313	5,744	5,502	5,261	5,019	4,777	4,535	4,466	4,397	4,328
Greater or equal to 40,000–Less than 50,000	-	1,130	956	781	607	433	472	510	548	587	2,255	2,310	2,119	1,928	1,737	1,547	1,548	1,549	1,550	1,551	1,553	1,568	1,584	1,599
Greater or equal to 50,000–Less than 60,000	-	5	10	14	19	24	27	29	32	34	37	1,132	2,228	3,324	4,419	5,515	6,103	6,691	7,280	7,868	8,457	8,979	9,501	10,023
Greater or equal to 60,000–Less than 70,000	-	-	-	-	-	-	-	-	-	-	-	1,374	2,749	4,123	5,497	6,871	7,335	7,798	8,262	8,725	9,189	9,725	10,262	10,798
Greater or equal to 70,000–Less than 80,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 80,000–Less than 90,000	-	-	-	-	-	-	-	-	-	-	-	1,857	3,715	5,572	7,430	9,287	9,431	9,575	9,719	9,862	10,006	10,032	10,058	10,085
Greater or equal to 90,000–Less than 100,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 100,000– Less than 110,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 110,000–Less than 120,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 120,000-Less than 150,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 150,000– Less than 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,030	48,271	48,326	48,382	48,438	48,493	49,273	50,054	50,834	51,614	54,024	57,605	60,940	64,275	67,610	70,945	71,501	72,057	72,613	73,168	73,724	74,713	75,702	76,691

ForecastExpandedCanal.xls/PCUMS Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY LOA-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																						
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Less or equal to 200.0	45,569	54,561	57,614	60,666	63,719	66,502	67,665	68,559	69,453	70,347	70,652	72,060	72,879	73,698	74,517	74,377	75,378	75,419	75,461	75,502	74,275	75,638	75,732
Greater than 200.0 –Less than 230.9	30,400	30,980	26,575	22,171	17,766	13,280	13,314	13,266	13,219	13,171	12,971	11,705	10,286	8,868	7,450	5,925	5,248	4,464	3,681	2,897	2,079	1,879	1,645
Greater or equal to 230.9– Less or equal to 289.6	3,540	4,590	6,571	8,552	10,532	12,430	13,304	14,096	14,887	15,678	25,827	24,441	22,835	21,229	19,623	17,796	17,423	16,829	16,235	15,641	14,832	14,904	14,760
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	11,827	23,655	35,482	47,310	58,649	61,599	64,060	66,522	68,983	70,457	73,825	76,205
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,509	90,131	90,760	91,388	92,017	92,212	94,283	95,921	97,558	99,196	109,450	120,032	129,655	139,277	148,899	156,747	159,647	160,772	161,898	163,024	161,643	166,246	168,342

PCUMS	YEAR																						
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Less or equal to 200.0	14,623	16,112	16,674	17,236	17,798	18,360	18,582	18,804	19,026	19,248	19,471	19,665	19,859	20,053	20,247	20,441	20,463	20,485	20,507	20,529	20,551	20,623	20,696
Greater than 200.0 –Less than 230.9	8,192	7,520	6,455	5,391	4,326	3,262	3,263	3,264	3,265	3,266	3,266	2,912	2,557	2,203	1,848	1,494	1,313	1,132	952	771	590	538	486
Greater or equal to 230.9– Less or equal to 289.6	960	1,074	1,537	2,000	2,464	2,927	3,113	3,299	3,484	3,670	6,073	5,698	5,323	4,948	4,573	4,198	4,059	3,921	3,782	3,643	3,505	3,471	3,437
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	2,004	4,008	6,012	8,016	10,020	10,251	10,482	10,713	10,943	11,174	11,278	11,382
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,705	24,666	24,627	24,588	24,549	24,958	25,367	25,775	26,184	28,811	30,279	31,747	33,216	34,684	36,153	36,086	36,020	35,953	35,886	35,820	35,910	36,000

Cargo in tons	YEAR																						
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Less or equal to 200.0	21,927	23,654	24,467	25,280	26,093	26,907	27,195	27,484	27,773	28,062	28,350	28,612	28,873	29,134	29,395	29,656	29,649	29,642	29,635	29,628	29,620	29,691	29,762
Greater than 200.0 –Less than 230.9	13,379	11,504	9,916	8,327	6,739	5,150	5,134	5,117	5,101	5,085	5,068	4,491	3,915	3,338	2,761	2,184	1,899	1,615	1,331	1,046	762	679	595
Greater or equal to 230.9– Less or equal to 289.6	1,559	1,692	2,453	3,214	3,974	4,735	5,037	5,338	5,639	5,941	7,742	7,250	6,758	6,266	5,775	5,283	5,061	4,840	4,618	4,397	4,175	4,102	4,029
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	2,072	4,144	6,217	8,289	10,361	10,770	11,179	11,587	11,996	12,405	12,531	12,657
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	42,425	43,690	44,955	46,219	47,484	47,379	47,275	47,171	47,067	46,962	47,003	47,043

DWT	YEAR																						
LOA Range (Meters)	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Less or equal to 200.0	28,694	31,861	32,942	34,023	35,103	36,184	36,595	37,007	37,418	37,830	38,241	38,603	38,966	39,328	39,690	40,052	40,062	40,072	40,082	40,092	40,102	40,215	40,329
Greater than 200.0 –Less than 230.9	17,247	14,764	12,690	10,617	8,543	6,470	6,468	6,466	6,464	6,462	6,460	5,750	5,039	4,328	3,617	2,906	2,540	2,174	1,808	1,442	1,076	967	857
Greater or equal to 230.9– Less or equal to 289.6	2,089	2,142	3,066	3,991	4,915	5,839	6,210	6,581	6,951	7,322	9,323	8,731	8,139	7,547	6,955	6,364	6,094	5,825	5,556	5,287	5,018	4,935	4,852
Greater than 289.6 – Less or equal to 294.1	-	-	-	-	-	-	-	-	-	-	-	2,492	4,983	7,475	9,966	12,458	12,946	13,435	13,923	14,411	14,899	15,050	15,202
Greater than 294.1 – Less than 330.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 330.9 – Less than 360.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 360.9 – Less or equal to 385.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater than 385.6 – Less than 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 399.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	48,030	48,767	48,699	48,630	48,562	48,493	49,273	50,054	50,834	51,614	54,024	55,576	57,127	58,678	60,229	61,780	61,643	61,506	61,369	61,232	61,095	61,167	61,239

ForecastExpandedCanal.xls/LOA Range - Ref. Case

TOTAL CANAL TRANSIT DETAILS BY GRT-GROUPS - EXPANDED CANAL

BOTH WAYS - REFERENCE CASE

Tolls in USD$	YEAR																							
Gross Tonnage Range	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less than 9,999	5,795	6,902	8,083	9,264	10,444	11,583	11,640	11,655	11,670	11,684	11,613	11,832	11,964	12,097	12,229	12,216	12,273	12,185	12,097	12,009	11,736	11,935	11,950	11,965
Greater or equal to 10,000 – Less than 19,999	9,041	10,429	13,226	16,023	18,821	21,536	21,839	22,060	22,282	22,503	22,549	22,956	23,188	23,419	23,651	23,598	24,189	24,496	24,803	25,109	25,003	25,513	25,610	25,707
Greater or equal to 19,999 – Less than 29,999	31,679	37,230	36,304	35,379	34,454	33,384	34,186	34,844	35,501	36,159	36,490	37,272	37,727	38,182	38,637	38,563	38,915	38,738	38,561	38,384	37,536	38,190	38,172	38,155
Greater or equal to 29,999 – Less than 39,999	29,136	30,971	26,558	22,144	17,731	13,237	13,265	13,213	13,161	13,108	12,903	11,633	10,209	8,786	7,363	5,833	5,149	4,358	3,567	2,776	1,951	1,742	1,499	1,256
Greater or equal to 39,999 – Less than 49,999	3,858	4,599	6,589	8,578	10,567	12,474	13,353	14,149	14,945	15,741	16,318	15,465	14,394	13,322	12,250	10,958	10,611	10,043	9,475	8,908	8,125	8,145	7,951	7,756
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	9,577	11,189	12,802	14,415	16,027	17,464	18,860	20,080	21,299	22,519	23,340	24,885	26,031	27,176
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	2,193	4,386	6,579	8,772	10,789	12,214	13,463	14,711	15,960	16,809	18,336	19,463	20,591
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	448	897	1,345	1,794	2,215	1,976	1,709	1,443	1,176	909	904	898	893
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	7,044	14,088	21,131	28,175	35,110	35,460	35,701	35,941	36,182	36,234	36,595	36,768	36,940
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	79,509	90,131	90,760	91,388	92,017	92,212	94,283	95,921	97,558	99,196	109,450	120,032	129,655	139,277	148,899	156,747	159,647	160,772	161,898	163,024	161,643	166,246	168,342	170,438

PCUMS	YEAR																							
Gross Tonnage Range	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less than 9,999	1,958	2,014	2,314	2,614	2,915	3,215	3,217	3,219	3,220	3,222	3,224	3,251	3,277	3,304	3,331	3,357	3,335	3,314	3,292	3,270	3,248	3,256	3,263	3,271
Greater or equal to 10,000 – Less than 19,999	3,076	2,985	3,739	4,492	5,246	5,999	6,056	6,113	6,170	6,227	6,283	6,339	6,394	6,449	6,504	6,559	6,635	6,710	6,786	6,861	6,937	6,976	7,016	7,055
Greater or equal to 19,999 – Less than 29,999	9,797	11,113	10,621	10,129	9,638	9,146	9,309	9,473	9,636	9,800	9,963	10,075	10,188	10,300	10,412	10,524	10,493	10,461	10,429	10,397	10,366	10,391	10,417	10,442
Greater or equal to 29,999 – Less than 39,999	7,908	7,516	6,449	5,382	4,314	3,247	3,246	3,245	3,244	3,244	3,243	2,887	2,530	2,174	1,818	1,462	1,278	1,095	912	728	545	490	435	380
Greater or equal to 39,999 – Less than 49,999	1,035	1,077	1,543	2,010	2,476	2,942	3,130	3,317	3,505	3,692	3,880	3,630	3,381	3,132	2,883	2,634	2,503	2,373	2,243	2,113	1,983	1,940	1,897	1,854
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	2,217	2,641	3,065	3,488	3,912	4,336	4,623	4,910	5,197	5,484	5,771	6,042	6,313	6,584
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	563	1,127	1,690	2,253	2,817	3,111	3,405	3,699	3,993	4,287	4,558	4,829	5,099
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	126	251	377	502	628	566	504	443	381	319	317	315	313
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	1,686	3,372	5,059	6,745	8,431	8,489	8,547	8,605	8,663	8,721	8,762	8,804	8,845
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	23,775	24,705	24,666	24,627	24,588	24,549	24,958	25,367	25,775	26,184	28,811	31,198	33,585	35,972	38,360	40,747	41,033	41,319	41,605	41,891	42,177	42,732	43,288	43,844

Cargo in tons	YEAR																							
Gross Tonnage Range	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less than 9,999	2,791	2,951	3,382	3,813	4,243	4,674	4,670	4,665	4,661	4,656	4,652	4,686	4,721	4,756	4,790	4,825	4,787	4,749	4,711	4,673	4,635	4,642	4,649	4,657
Greater or equal to 10,000 – Less than 19,999	4,354	4,279	5,395	6,510	7,625	8,741	8,807	8,873	8,939	9,005	9,071	9,140	9,209	9,278	9,347	9,416	9,508	9,601	9,693	9,786	9,878	9,920	9,962	10,004
Greater or equal to 19,999 – Less than 29,999	15,255	16,424	15,691	14,958	14,225	13,492	13,719	13,946	14,173	14,400	14,627	14,785	14,943	15,101	15,259	15,416	15,354	15,293	15,231	15,169	15,107	15,129	15,150	15,172
Greater or equal to 29,999 – Less than 39,999	12,908	11,501	9,910	8,318	6,726	5,135	5,117	5,099	5,081	5,063	5,045	4,466	3,888	3,309	2,730	2,152	1,865	1,578	1,291	1,004	717	631	545	458
Greater or equal to 39,999 – Less than 49,999	1,557	1,695	2,459	3,223	3,987	4,751	5,054	5,356	5,659	5,962	6,265	5,859	5,453	5,047	4,641	4,235	4,020	3,805	3,590	3,375	3,160	3,082	3,004	2,926
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	1,500	2,266	3,032	3,799	4,565	5,331	5,781	6,230	6,680	7,130	7,580	7,975	8,371	8,766
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	875	1,751	2,626	3,502	4,377	4,833	5,288	5,744	6,199	6,655	7,061	7,467	7,873
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	207	414	621	829	1,036	932	829	726	623	520	516	513	510
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	1,541	3,082	4,623	6,165	7,706	7,826	7,946	8,067	8,187	8,308	8,329	8,350	8,372
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	36,864	36,850	36,835	36,821	36,806	36,792	37,366	37,939	38,513	39,087	41,161	43,827	46,493	49,159	51,826	54,492	54,905	55,319	55,733	56,146	56,560	57,286	58,012	58,738

DWT	YEAR																							
Gross Tonnage Range	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Less than 9,999	3,434	3,967	4,555	5,142	5,729	6,316	6,314	6,312	6,311	6,309	6,307	6,357	6,407	6,456	6,506	6,556	6,508	6,460	6,412	6,364	6,316	6,328	6,340	6,352
Greater or equal to 10,000 – Less than 19,999	5,521	5,810	7,300	8,790	10,281	11,771	11,870	11,970	12,069	12,169	12,268	12,367	12,467	12,566	12,666	12,765	12,902	13,038	13,175	13,311	13,447	13,513	13,578	13,644
Greater or equal to 19,999 – Less than 29,999	17,827	22,084	21,087	20,090	19,094	18,097	18,411	18,725	19,038	19,352	19,666	19,879	20,092	20,305	20,518	20,731	20,653	20,574	20,496	20,417	20,339	20,374	20,410	20,445
Greater or equal to 29,999 – Less than 39,999	13,368	14,759	12,681	10,602	8,524	6,446	6,441	6,437	6,432	6,428	6,424	5,710	4,996	4,283	3,569	2,856	2,486	2,116	1,746	1,376	1,006	891	777	663
Greater or equal to 39,999 – Less than 49,999	1,577	2,147	3,076	4,005	4,934	5,863	6,237	6,610	6,983	7,356	7,729	7,232	6,734	6,236	5,738	5,240	4,979	4,718	4,458	4,197	3,936	3,849	3,762	3,676
Greater or equal to 49,999 – Less than 59,999	-	-	-	-	-	-	-	-	-	-	1,630	2,632	3,634	4,635	5,637	6,638	7,218	7,798	8,378	8,958	9,539	10,065	10,591	11,117
Greater or equal to 59,999 – Less than 69,999	-	-	-	-	-	-	-	-	-	-	-	1,124	2,248	3,371	4,495	5,619	6,206	6,792	7,379	7,966	8,552	9,093	9,633	10,173
Greater or equal to 69,999 – Less than 79,999	-	-	-	-	-	-	-	-	-	-	-	250	501	751	1,002	1,252	1,129	1,006	883	760	637	633	629	625
Greater or equal to 79,999 – Less than 89,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 89,999 – Less than 99,999	-	-	-	-	-	-	-	-	-	-	-	1,857	3,715	5,572	7,430	9,287	9,431	9,575	9,719	9,862	10,006	10,032	10,058	10,085
Greater or equal to 99,999 – Less than 149,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 149,999 – Less than 199,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 199,999 – Less than 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greater or equal to 249,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	41,728	48,767	48,699	48,630	48,562	48,493	49,273	50,054	50,834	51,614	54,024	57,409	60,793	64,177	67,561	70,945	71,511	72,078	72,644	73,211	73,777	74,778	75,779	76,779

ForecastExpandedCanal.xls/Gross Tonnage - Ref. Case

TRANSPORT CALCULATIONS - VLCC, SUEZMAX AND AFRAMAX

COMPETITIVENESS OF ALTERNATIVE TRADES INTO SPECIFIC AREAS OF RELEVANCE OF CANAL

TRADE Load	TRADE Discharge	Passing	Canal Use	Cargo Type	Intake in '1000 tonne	Distance Laden	Distance Ballast	Days at Sea Laden	Days at Sea Ballast	Days in Port+ Pumping	Days in Canal Laden	Days in Canal Ballast	Total	Pipeline Cost	Canal costs	Pipeline Cost/ per tonne	Canal Cost per/ tonne	Total (Ex. Port Charges) USD/tonne 2005	2010	2015	2020	2025
VLCC																						
RAS TANURA - LOS ANGELES		Singap.	No	CRUDE	280	11367	11367	31.58	31.58	4	0	0	67.15		-		0.00	8.24	7.62	7.61	7.63	7.69
VLADIVOSTOK - LOS ANGELES			No	CRUDE	280	4920	4920	13.67	13.67	4	0	0	31.33		-		0.00	3.82	3.54	3.53	3.53	3.56
RAS TANURA - CORPUS CHRISTI		GH	No	CRUDE	280	12591	12591	34.98	34.98	4	0	0	73.95		-		0.00	9.08	8.40	8.38	8.41	8.47
BONNY - CORPUS CHRISTI			No	CRUDE	280	6250	6250	17.36	17.36	4	0	0	38.72		-		0.00	4.73	4.38	4.37	4.38	4.41
MURMANSK - CORPUS CHRISTI			No	CRUDE	280	5802	5802	16.12	16.12	4	0	0	36.23		-		0.00	4.43	4.09	4.08	4.09	4.12
PUERTO LA CRUZ - LOS ANGELES		PC	Yes	CRUDE	280	3950	3950	10.97	10.97	4	1	1	27.94		801,960		2.86	6.27	6.01	6.00	6.01	6.03
BONNY - TALARA		PC	Yes	CRUDE	280	6135	6135	17.04	17.04	4	1	1	40.08		801,960		2.86	7.76	7.40	7.39	7.40	7.43
ESMERALDAS - CORPUS CHRISTI		PC	Yes	CRUDE	280	2103	2103	5.84	5.84	4	1	1	17.68		801,960		2.86	5.00	4.84	4.83	4.84	4.85
BONNY - LOS ANGELES		PC	Yes	CRUDE	280	8248	8248	22.91	22.91	4	1	1	51.82		801,960		2.86	9.21	8.74	8.72	8.74	8.78
VLADIVOSTOK - CORPUS CHRISTI		PC	Yes	CRUDE	280	9415	9415	26.15	26.15	4	1	1	58.31		801,960		2.86	10.01	9.48	9.46	9.48	9.53
ESMERALDAS - CORPUS CHRISTI		Petroline	No	CRUDE	280	2100	2100	5.83	5.83	8	0	0	19.67	1,436,680	-	5.13	0.00	7.38	7.22	7.19	7.18	7.17
PUERTO LA CRUZ -LOS ANGELES		Petroline	No	CRUDE	280	3767	3767	10.46	10.46	8	0	0	28.93	1,436,680	-	5.13	0.00	8.52	8.27	8.25	8.24	8.24
VLADIVOSTOK - CORPUS CHRISTI		Petroline	No	CRUDE	280	9118	9118	25.33	25.33	8	0	0	58.66	1,436,680	-	5.13	0.00	12.19	11.67	11.64	11.64	11.67
SUEZMAX																						
PUERTO LA CRUZ - LOS ANGELES		PC	Yes	CRUDE	130	3950	3950	10.97	10.97	4	1	1	27.94		418,710		3.22	8.39	8.03	8.05	8.10	8.17
BONNY - TALARA		PC	Yes	CRUDE	130	6135	6135	17.04	17.04	4	1	1	40.08		418,710		3.22	10.69	10.17	10.20	10.28	10.39
ESMERALDAS - CORPUS CHRISTI		PC	Yes	CRUDE	130	2103	2103	5.84	5.84	4	1	1	17.68		418,710		3.22	6.44	6.22	6.23	6.25	6.29
BONNY - LOS ANGELES		PC	Yes	CRUDE	130	8248	8248	22.91	22.91	4	1	1	51.82		418,710		3.22	12.91	12.24	12.28	12.39	12.53
VLADIVOSTOK - CORPUS CHRISTI		PC	Yes	CRUDE	130	9415	9415	26.15	26.15	4	1	1	58.31		418,710		3.22	14.14	13.38	13.43	13.55	13.72
BONNY - TALARA		CH	No	CRUDE	130	8416	8416	23.38	23.38	4	0	0	50.76		-		0.00	9.49	8.83	8.87	8.97	9.12
PUERTO LA CRUZ - CORPUS CHRISTI			No	CRUDE	130	2158	2158	5.99	5.99	4	0	0	15.99		-		0.00	2.90	2.70	2.70	2.73	2.76
ESMERALDAS - LOS ANGELES			No	CRUDE	130	3030	3030	8.42	8.42	4	0	0	20.83		-		0.00	3.82	3.56	3.56	3.60	3.64
NOVOROSSIYSK - CORPUS CHRISTI		GIBR	No	CRUDE	130	7099	7099	19.72	19.72	4	0	0	43.44		-		0.00	8.10	7.54	7.57	7.66	7.78
ST PETERSBURG - CORPUS CHRISTI			No	CRUDE	130	6052	6052	16.81	16.81	4	0	0	37.62		-		0.00	7.00	6.51	6.54	6.61	6.71
BONNY - LOS ANGELES		Petroline	No	CRUDE	130	8058	8058	22.38	22.38	8	0	0	52.77	667,030	-	5.13	0.00	14.78	14.12	16.52	14.21	14.33
ESMERALDAS - CORPUS CHRISTI		Petroline	No	CRUDE	130	2100	2100	5.83	5.83	8	0	0	19.67	667,030	-	5.13	0.00	8.50	8.28	12.59	8.27	8.28
PUERTO LA CRUZ - LOS ANGELES		Petroline	No	CRUDE	130	3767	3767	10.46	10.46	8	0	0	28.93	667,030	-	5.13	0.00	10.26	9.92	13.69	9.93	9.97
PUERTO LA CRUZ - SINGAPORE		PC	Yes	ORIMULSION	130	11571	11571	32.14	32.14	4	1	1	70.28		418,710		3.22	16.41	15.49	15.55	15.71	15.91
PUERTO LA CRUZ - ULSAN		PC	Yes	ORIMULSION	130	9073	9073	25.20	25.20	4	1	1	56.41		418,710		3.22	13.78	13.05	13.09	13.21	13.37
PUERTO LA CRUZ - SINGAPORE		GH	No	ORIMULSION	130	11087	11087	30.80	30.80	4	0	0	65.59		-		0.00	12.30	11.44	11.50	11.64	11.83
PUNTA ARENAS - HOUSTON			No	METHANOL	130	7496	7496	20.82	20.82	4	0	0	45.64		-		0.00	8.52	7.93	7.96	8.06	8.18
PUNTA ARENAS - LOS ANGELES			No	METHANOL	130	5865	5865	16.29	16.29	4	0	0	36.58		-		0.00	6.80	6.33	6.36	6.43	6.52
DAMPIER - HOUSTON		GH	No	METHANOL	130	12662	12662	35.17	35.17	4	0	0	74.34		-		0.00	13.96	12.99	13.05	13.21	13.43
PUNTA ARENAS - HOUSTON		PC	Yes	METHANOL	130	5504	5504	15.29	15.29	4	0	0	34.58		418,710		3.22	9.64	9.20	9.22	9.29	9.38
DAMPIER - HOUSTON		PC	Yes	METHANOL	130	11741	11741	32.61	32.61	4	0	0	69.23		418,710		3.22	16.21	15.31	15.36	15.52	15.72
CALLAO - HOUSTON		PC	Yes	METHANOL	130	2907	2907	8.08	8.08	4	0	0	20.15		418,710		3.22	6.91	6.66	6.66	6.70	6.74
KITIMAT - HOUSTON		PC	Yes	METHANOL	130	5847	5847	16.24	16.24	4	0	0	36.48		418,710		3.22	10.01	9.54	9.56	9.63	9.73
TRINIDAD - LOS ANGELES		PC	Yes	METHANOL	130	4091	4091	11.36	11.36	4	0	0	26.73		418,710		3.22	8.16	7.82	7.83	7.88	7.94
PUERTO LA CRUZ - LOS ANGELES		PC	Yes	METHANOL	130	3923	3923	10.90	10.90	4	0	0	25.79		418,710		3.22	7.98	7.65	7.66	7.71	7.77
AFRAMAX																						
PUERTO LA CRUZ - LOS ANGELES		PC	Yes	CRUDE	85	3950	3950	10.97	10.97	4	1	1	27.94		316,510		3.72	10.25	9.81	9.77	9.77	9.75
ESMERALDAS - CORPUS CHRISTI		PC	Yes	CRUDE	85	2103	2103	5.84	5.84	4	1	1	17.68		316,510		3.72	7.80	7.52	7.50	7.49	7.47
PUERTO LA CRUZ - CORPUS CHRISTI			No	CRUDE	85	2158	2158	5.99	5.99	4	0	0	15.99		-		0.00	3.67	3.42	3.40	3.39	3.37
ESMERALDAS - LOS ANGELES			No	CRUDE	85	3030	3030	8.42	8.42	4	0	0	20.83		-		0.00	4.83	4.50	4.47	4.46	4.45
BONNY - LOS ANGELES		Petroline	No	CRUDE	85	8058	8058	22.38	22.38	8	0	0	52.77	436,135	-	5.13	0.00	17.33	16.51	16.87	16.41	16.37
ESMERALDAS - CORPUS CHRISTI		Petroline	No	CRUDE	85	2100	2100	5.83	5.83	8	0	0	19.67	436,135	-	5.13	0.00	9.43	9.15	9.26	9.05	9.00
PUERTO LA CRUZ - LOS ANGELES		Petroline	No	CRUDE	85	3767	3767	10.46	10.46	8	0	0	28.93	436,135	-	5.13	0.00	11.64	11.21	11.39	11.11	11.06
PUERTO LA CRUZ - YOKOHAMA		PC	Yes	ORIMULSION	85	8721	8721	24.23	24.23	4	1	1	54.45		316,510		3.72	16.58	15.70	15.65	15.66	15.65
PUERTO LA CRUZ - YOKOHAMA		GH	No	ORIMULSION	85	13786	13786	38.29	38.29	4	0	0	80.59		-		0.00	19.10	17.79	17.73	17.75	17.75
PUNTA ARENAS - HOUSTON			No	METHANOL	90	7496	7496	20.82	20.82	4	0	0	45.64		-		0.00	10.15	9.46	9.42	9.43	9.42
PUNTA ARENAS - LOS ANGELES			No	METHANOL	90	5865	5865	16.29	16.29	4	0	0	36.58		-		0.00	8.11	7.56	7.52	7.52	7.51
DAMPIER - HOUSTON		GH	No	METHANOL	90	12662	12662	35.17	35.17	4	0	0	74.34		-		0.00	16.63	15.49	15.44	15.45	15.45
PUNTA ARENAS - HOUSTON		PC	Yes	METHANOL	90	5504	5504	15.29	15.29	4	0	0	34.58		316,510		3.52	11.17	10.66	10.62	10.62	10.61
DAMPIER - HOUSTON		PC	Yes	METHANOL	90	11741	11741	32.61	32.61	4	0	0	69.23		316,510		3.52	18.99	17.93	17.88	17.90	17.89
CALLAO - HOUSTON		PC	Yes	METHANOL	90	2907	2907	8.08	8.08	4	0	0	20.15		316,510		3.52	7.92	7.62	7.60	7.59	7.57
KITIMAT - HOUSTON		PC	Yes	METHANOL	90	5847	5847	16.24	16.24	4	0	0	36.48		316,510		3.52	11.60	11.06	11.02	11.02	11.01
TRINIDAD - LOS ANGELES		PC	Yes	METHANOL	90	4091	4091	11.36	11.36	4	0	0	26.73		316,510		3.52	9.40	9.01	8.98	8.97	8.96
PUERTO LA CRUZ - LOS ANGELES		PC	Yes	METHANOL	90	3923	3923	10.90	10.90	4	0	0	25.79		316,510		3.52	9.19	8.81	8.78	8.77	8.76

Transp cost.xls/Voyage Cost

TRANSPORT CALCULATIONS - PANAMAX, VLGC, LGC AND CHEMICAL VESSELS

COMPETETIVENESS OF ALTERNATIVE TRADES INTO SPECIFIC AREAS OF RELEVANCE OF CANAL

TRADE						Distance		Days at Sea	Days at Sea	Days in Port+ Pumping	Days in Canal	Days in Canal					Total (Ex. Port Charges) USD/tonne				
Load	Discharge	Passing	Canal Use	Cargo Type	Intake in '1000 tonne	Laden	Ballast	Laden	Ballast		Laden	Ballast	Total	Pipeline Cost	Canal costs	**Pipeline Cost/ per tonne**	Canal Cost per/ tonne	2005	2010	2015	2020	2025
PANAMAX																						
PUERTO LA CRUZ	LOS ANGELES	PC	Yes	CRUDE	55	3950	3950	10.97	10.97	4	1	1	27.94		219,420		3.99	12.52	11.92	11.92	11.83	11.93
ESMERALDAS	CORPUS CHRISTI	PC	Yes	CRUDE	55	2103	2103	5.84	5.84	4	1	1	17.68		219,420		3.99	9.31	8.94	8.93	8.86	8.91
PUERTO LA CRUZ	CORPUS CHRISTI		No	CRUDE	55	2158	2158	5.99	5.99	4	0	0	15.99		-		0.00	4.79	4.46	4.44	4.38	4.42
ESMERALDAS	LOS ANGELES		No	CRUDE	55	3030	3030	8.42	8.42	4	0	0	20.83		-		0.00	6.31	5.87	5.85	5.78	5.85
PUERTO LA CRUZ	YOKOHAMA	PC	Yes	ORIMULSION	55	8721	8721	24.23	24.23	4	1	1	54.45		219,420		3.99	20.83	19.62	19.64	19.49	19.73
PUERTO LA CRUZ	YOKOHAMA	GH	No	ORIMULSION	55	13786	13786	38.29	38.29	4	0	0	80.59		-		0.00	25.03	23.23	23.27	23.07	23.43
PUNTA ARENAS	HOUSTON		No	METHANOL	60	7496	7496	20.82	20.82	4	0	0	45.64		-		0.00	12.91	11.99	11.99	11.88	12.05
PUNTA ARENAS	LOS ANGELES		No	METHANOL	60	5865	5865	16.29	16.29	4	0	0	36.58		-		0.00	10.30	9.57	9.57	9.47	9.61
DAMPIER	HOUSTON	GH	No	METHANOL	60	12662	12662	35.17	35.17	4	0	0	74.34		-		0.00	21.15	19.63	19.66	19.49	19.79
PUNTA ARENAS	HOUSTON	PC	Yes	METHANOL	60	5504	5504	15.29	15.29	4	1	1	36.58		219,420		3.66	13.96	13.23	13.23	13.13	13.26
DAMPIER	HOUSTON	PC	Yes	METHANOL	60	11741	11741	32.61	32.61	4	1	1	71.23		219,420		3.66	23.91	22.46	22.48	22.32	22.61
CALLAO	HOUSTON	PC	Yes	METHANOL	60	2907	2907	8.08	8.08	4	1	1	22.15		219,420		3.66	9.82	9.38	9.38	9.30	9.37
KITIMAT	HOUSTON	PC	Yes	METHANOL	60	5847	5847	16.24	16.24	4	1	1	38.48		219,420		3.66	14.51	13.73	13.74	13.63	13.78
TRINIDAD	LOS ANGELES	PC	Yes	METHANOL	60	4091	4091	11.36	11.36	4	1	1	28.73		219,420		3.66	11.71	11.14	11.13	11.05	11.15
PUERTO LA CRUZ	LOS ANGELES	PC	Yes	METHANOL	60	3923	3923	10.90	10.90	4	1	1	27.79		219,420		3.66	11.44	10.89	10.88	10.80	10.89
LPG - VLGC																						
PUERTO LA CRUZ	YOKOHAMA	GH	No	LPG	40	13786	13786	35.90	35.90	4	0	0	75.80		-		0.00	58.31	53.95	52.84	52.20	51.83
BONNY	YOKOHAMA	GH	No	LPG	40	10710	10710	27.89	27.89	4	0	0	59.78		-		0.00	45.86	42.44	41.55	41.02	40.72
ILO	LOS ANGELES		No	LPG	40	4153	4153	10.82	10.82	4	0	0	25.63		-		0.00	19.32	17.89	17.47	17.20	17.02
PUERTO LA CRUZ	YOKOHAMA	PC	Yes	LPG	40	8721	8721	22.71	22.71	4	1	1	51.42		134,583		3.36	42.73	39.79	39.02	38.56	38.28
BONNY	YOKOHAMA	PC	Yes	LPG	40	13020	13020	33.91	33.91	4	1	1	73.81		134,583		3.36	60.13	55.89	54.81	54.18	53.82
PUERTO LA CRUZ	LOS ANGELES	PC	Yes	LPG	40	3950	3950	10.29	10.29	4	1	1	26.57		134,583		3.36	23.41	21.93	21.50	21.22	21.04
ILO	CORPUS CHRISTI	PC	Yes	LPG	40	3468	3468	9.03	9.03	4	1	1	24.06		134,583		3.36	21.46	20.13	19.73	19.47	19.30
LPG - LGC																						
PUERTO LA CRUZ	CORPUS CHRISTI		No	LPG	32	2158	2158	5.71	5.62	4			15.33		-		0.00	12.81	11.91	11.65	11.49	11.36
PUERTO LA CRUZ	YOKOHAMA	PC	Yes	LPG	32	8721	8721	23.07	22.71	4	1	0	50.78		70,530		2.20	46.19	43.01	42.34	42.01	41.81
PUERTO LA CRUZ	LOS ANGELES	PC	Yes	LPG	32	3950	3950	10.45	10.29	4	1	1	26.74		116,410		3.64	26.48	24.84	24.45	24.24	24.09
ILO	CORPUS CHRISTI	PC	Yes	LPG	32	3468	3468	9.17	9.03	4	1	1	24.21		116,410		3.64	24.25	22.78	22.42	22.22	22.07
CHEMICALS																						
HOUSTON	HONG KONG	GH	No	CHEMICALS	32	14394	0	39.98	0.00	4	0	0	43.98		-		0.00	53.27	51.33	50.79	50.39	49.88
HOUSTON	VALPARAISO	CH	No	CHEMICALS	32	9092	0	25.26	0.00	4	0	0	29.26		-		0.00	35.27	34.00	33.63	33.34	32.98
ME GULF	HOUSTON	GH	No	CHEMICALS	32	12502	0	34.73	0.00	4	0	0	38.73		-		0.00	46.85	45.14	44.67	44.31	43.85
HOUSTON	HONG KONG	PC	Yes	CHEMICALS	32	10763	0	29.90	0.00	4	1	0	34.90		68,530		2.14	44.31	42.78	42.34	42.02	41.60
HOUSTON	VALPARAISO	PC	Yes	CHEMICALS	32	4182	0	11.62	0.00	4	1	0	16.62		68,530		2.14	21.98	21.28	21.04	20.85	20.62
ME GULF	HOUSTON	PC	Yes	CHEMICALS	32	11006	0	30.57	0.00	4	1	0	35.57		68,530		2.14	45.13	43.57	43.13	42.80	42.37

Transp cost.xls/Voyage Cost

VOYAGE COST COMPARISON

TRADE		Passing	Cargo Type	Intake in '1000 tonne	Distance		Days at Sea	Days at Sea	Days in Port	Days in Canal	Days in Canal	Total	Canal costs	Total (Ex. Port Charges) USD/tonne				
Load	Discharge				Laden	Ballast	Laden	Ballast		Laden	Ballast			2005	2010	2015	2020	2025
Peru/Pisco	Lazaro Cardenas		LNG	43	2449	2449	5.52	5.52	4			15.03		23.04	21.75	21.69	21.72	21.97
Peru/Pisco	Lake C*	PC	LNG	43	3006	3006	6.77	6.77	4	1	1	19.54	273165	36.67	34.93	34.90	35.00	35.39
Peru/Pisco	Altamira*	PC	LNG	43	3080	3080	6.94	6.94	4	1	1	19.87	273165	37.21	35.44	35.41	35.51	35.91
Peru/Pisco	San Diego		LNG	43	3718	3718	8.37	8.37	4			20.75		32.32	30.47	30.44	30.55	30.98
Peru/Pisco	San Fransisco		LNG	43	4125	4125	9.29	9.29	4			22.58		35.29	33.26	33.25	33.39	33.87
Peru/Pisco	Vancouver		LNG	43	4920	4920	11.08	11.08	4			26.16		41.11	38.73	38.73	38.92	39.51
Venezuela & Trinidad	Lake C		LNG	43	2208	2208	4.97	4.97	4			13.95		21.28	20.09	20.02	20.04	20.26
Venezuela & Trinidad	Lazaro Cardenas*	PC	LNG	43	2789	2789	6.28	6.28	4	1	1	18.56	273165	35.08	33.44	33.40	33.49	33.85
Venezuela & Trinidad	San Diego*	PC	LNG	43	4061	4061	9.15	9.15	4	1	1	24.29	273165	44.38	42.18	42.18	42.34	42.88
Venezuela & Trinidad	Vancouver*	PC	LNG	43	5262	5262	11.85	11.85	4	1	1	29.70	273165	53.16	50.44	50.47	50.70	51.40
Venezuela & Trinidad	Bahamas		LNG	43	1390	1390	3.13	3.13	4			10.26		15.30	14.47	14.38	14.35	14.46
Venezuela & Trinidad	Cove point		LNG	43	1850	1850	4.17	4.17	4			12.33		18.66	17.63	17.55	17.55	17.72
Venezuela & Trinidad	Altamira		LNG	43	2296	2296	5.17	5.17	4			14.34		21.92	20.69	20.63	20.65	20.89
Venezuela & Trinidad	San Fransisco*	PC	LNG	43	4469	4469	10.07	10.07	4	1	1	26.13	273165	47.36	44.99	45.00	45.18	45.77
Alaska/Kenai	Vancouver		LNG	43	1278	1278	2.88	2.88	4			9.76		14.48	13.70	13.61	13.57	13.66
Alaska/Kenai	San Fransisco		LNG	43	1821	1821	4.10	4.10	4			12.20		18.45	17.43	17.35	17.35	17.52
Alaska/Kenai	San Diego		LNG	43	2247	2247	5.06	5.06	4			14.12		21.57	20.36	20.29	20.31	20.54
Alaska/Kenai	Lazaro Cardenas		LNG	43	3478	3478	7.83	7.83	4			19.67		30.56	28.82	28.78	28.88	29.28
Alaska/Kenai	Lake C*	PC	LNG	43	6594	6594	14.85	14.85	4	1	1	35.70	273165	62.90	59.59	59.66	59.98	60.86
Alaska/Kenai	Altamira*	PC	LNG	43	6668	6668	15.02	15.02	4	1	1	36.04	273165	63.44	60.10	60.17	60.49	61.38
Peru/Pisco	Lazaro Cardenas		LNG	63	2449	2449	5.37	5.37	4			14.74		18.76	17.57	17.44	17.36	17.47
Peru/Pisco	Lake C*	PC	LNG	63	3006	3006	6.59	6.59	4	1	1	19.18	377760	30.80	29.21	29.08	29.03	29.23
Peru/Pisco	Altamira*	PC	LNG	63	3080	3080	6.75	6.75	4	1	1	19.51	377760	31.24	29.62	29.49	29.45	29.65
Peru/Pisco	San Diego		LNG	63	3718	3718	8.15	8.15	4			20.31		26.31	24.62	24.48	24.44	24.66
Peru/Pisco	San Fransisco		LNG	63	4125	4125	9.05	9.05	4			22.09		28.73	26.87	26.74	26.71	26.97
Peru/Pisco	Vancouver		LNG	63	4920	4920	10.79	10.79	4			25.58		33.46	31.29	31.15	31.15	31.47
Venezuela & Trinidad	Lake C		LNG	63	2208	2208	4.84	4.84	4			13.68		17.33	16.23	16.10	16.02	16.11
Venezuela & Trinidad	Lazaro Cardenas*	PC	LNG	63	2789	2789	6.12	6.12	4	1	1	18.23	377760	29.51	28.01	27.87	27.82	28.00
Venezuela & Trinidad	San Diego*	PC	LNG	63	4061	4061	8.91	8.91	4	1	1	23.81	377760	37.08	35.07	34.93	34.92	35.21
Venezuela & Trinidad	Vancouver*	PC	LNG	63	5262	5262	11.54	11.54	4	1	1	29.08	377760	44.22	41.73	41.60	41.62	42.01
Venezuela & Trinidad	Bahamas		LNG	63	1390	1390	3.05	3.05	4			10.10		12.46	11.69	11.56	11.46	11.48
Venezuela & Trinidad	Cove point		LNG	63	1850	1850	4.06	4.06	4			12.11		15.20	14.25	14.11	14.02	14.08
Venezuela & Trinidad	Altamira		LNG	63	2296	2296	5.04	5.04	4			14.07		17.85	16.72	16.59	16.51	16.61
Venezuela & Trinidad	San Fransisco*	PC	LNG	63	4469	4469	9.80	9.80	4	1	1	25.60	377760	39.51	37.33	37.20	37.19	37.52
Alaska/Kenai	Vancouver		LNG	63	1278	1278	2.80	2.80	4			9.61		11.79	11.07	10.93	10.83	10.84
Alaska/Kenai	San Fransisco		LNG	63	1821	1821	3.99	3.99	4			11.99		15.02	14.09	13.95	13.86	13.92
Alaska/Kenai	San Diego		LNG	63	2247	2247	4.93	4.93	4			13.86		17.56	16.45	16.31	16.24	16.33
Alaska/Kenai	Lazaro Cardenas		LNG	63	3478	3478	7.63	7.63	4			19.25		24.88	23.28	23.15	23.10	23.30
Alaska/Kenai	Lake C*	PC	LNG	63	6594	6594	14.46	14.46	4	1	1	34.92	377760	52.15	49.13	49.00	49.05	49.56
Alaska/Kenai	Altamira*	PC	LNG	63	6668	6668	14.62	14.62	4	1	1	35.25	377760	52.59	49.54	49.41	49.46	49.98

Transp cost.xls/Voyage Cost

WORLD OIL CONSUMPTION 2000-2025

REFERENCE CASE (mill b/d)

	2000	% P.A.	2005	% P.A.	2010	% P.A.	2015	% P.A.	2020	% P.A.	2025	% P.A. 2000-2025
USA*	19.70	0.4 %	20.10	0.9 %	21.02	0.7 %	21.76	0.5 %	22.31	0.3 %	22.65	0.6 %
CANADA*	1.94	0.5 %	1.99	1.0 %	2.09	0.8 %	2.18	0.6 %	2.24	0.4 %	2.29	0.7 %
LAT.AM.*	6.57	1.5 %	7.09	2.4 %	8.00	2.3 %	8.96	2.1 %	9.96	1.9 %	10.95	2.1 %
MEXICO	1.84	1.4 %	1.97	2.0 %	2.18	2.0 %	2.40	1.7 %	2.62	1.4 %	2.80	1.7 %
OTH.LAT.AM.	4.73	1.6 %	5.12	2.6 %	5.82	2.4 %	6.55	2.3 %	7.34	2.1 %	8.15	2.2 %
BRAZIL	1.87	1.6 %	2.02	2.6 %	2.30	2.4 %	2.59	2.3 %	2.90	2.1 %	3.22	2.2 %
EUROPE*	15.98	0.2 %	16.14	0.4 %	16.47	0.4 %	16.80	0.3 %	17.05	0.2 %	17.22	0.3 %
JAPAN*	5.58	0.2 %	5.64	0.3 %	5.72	0.4 %	5.84	0.1 %	5.87	-0.2 %	5.81	0.2 %
DEVELOPING ASIA*	14.39	2.5 %	16.28	3.2 %	19.06	3.2 %	22.31	3.0 %	25.86	2.6 %	29.40	2.9 %
SOUTH KOREA	2.23	0.7 %	2.31	1.5 %	2.49	1.4 %	2.67	1.3 %	2.84	1.2 %	3.02	1.2 %
CHINA	4.99	3.1 %	5.81	3.5 %	6.90	2.7 %	7.89	2.2 %	8.79	2.0 %	9.71	2.7 %
INDIA	2.07	3.2 %	2.42	3.7 %	2.91	3.0 %	3.37	2.3 %	3.77	2.2 %	4.21	2.9 %
OTH.ASIA	5.10	2.4 %	5.74	3.3 %	6.75	4.5 %	8.42	4.4 %	10.44	3.6 %	12.46	3.6 %
AUS/NZ*	0.97	0.5 %	0.99	1.0 %	1.05	0.8 %	1.09	0.6 %	1.12	0.4 %	1.14	0.7 %
M.EAST*	4.31	1.7 %	4.69	2.0 %	5.18	1.8 %	5.66	1.5 %	6.10	1.2 %	6.47	1.6 %
AFRICA*	2.46	2.0 %	2.72	2.7 %	3.10	3.0 %	3.60	3.3 %	4.23	2.5 %	4.79	2.7 %
FSU*	3.41	1.9 %	3.75	2.1 %	4.16	1.8 %	4.54	1.6 %	4.92	1.3 %	5.25	1.7 %
WORLD*	75.31	1.1 %	79.38	1.6 %	85.84	1.6 %	92.73	1.5 %	99.66	1.2 %	105.97	1.4 %

OilTradeModel.xls/World-cons-REF CASE

BEST CASE (mill b/d)

	2000	% P.A.	2005	% P.A.	2010	% P.A.	2015	% P.A.	2020	% P.A.	2025	% P.A. 2000-2025
USA*	19.70	0.5 %	20.22	1.1 %	21.31	0.9 %	22.30	0.7 %	23.10	0.5 %	23.68	0.7 %
CANADA*	1.94	0.7 %	2.01	1.2 %	2.13	1.0 %	2.24	0.8 %	2.33	0.6 %	2.40	0.9 %
LAT.AM.*	6.57	1.9 %	7.23	2.8 %	8.32	2.7 %	9.48	2.5 %	10.76	2.3 %	12.06	2.5 %
MEXICO	1.84	1.8 %	2.01	2.4 %	2.27	2.3 %	2.54	2.2 %	2.83	1.7 %	3.08	2.1 %
OTH.LAT.AM.	4.73	2.0 %	5.22	3.0 %	6.05	2.8 %	6.94	2.7 %	7.93	2.5 %	8.98	2.6 %
BRAZIL	1.87	1.9 %	2.06	3.0 %	2.39	2.8 %	2.74	2.7 %	3.13	2.5 %	3.55	2.6 %
EUROPE*	15.98	0.3 %	16.23	0.6 %	16.72	0.6 %	17.24	0.5 %	17.66	0.4 %	18.01	0.5 %
JAPAN*	5.58	0.3 %	5.68	0.5 %	5.82	0.6 %	5.99	0.3 %	6.08	0.0 %	6.08	0.3 %
DEVELOPING ASIA*	14.39	2.9 %	16.59	3.6 %	19.79	3.6 %	23.60	3.4 %	27.88	3.0 %	32.31	3.3 %
SOUTH KOREA	2.23	1.1 %	2.35	1.9 %	2.59	1.8 %	2.83	1.6 %	3.06	1.6 %	3.32	1.6 %
CHINA	4.99	3.3 %	5.88	3.9 %	7.11	3.1 %	8.28	2.6 %	9.40	2.4 %	10.58	3.1 %
INDIA	2.07	3.6 %	2.47	4.1 %	3.02	3.4 %	3.56	2.7 %	4.06	2.6 %	4.62	3.3 %
OTH.ASIA	5.10	2.8 %	5.85	3.7 %	7.03	4.9 %	8.92	4.8 %	11.30	4.0 %	13.72	4.0 %
AUS/NZ*	0.97	0.0 %	0.97	1.4 %	1.04	1.0 %	1.09	0.7 %	1.13	0.6 %	1.16	0.7 %
M.EAST*	4.31	2.1 %	4.78	2.4 %	5.38	2.2 %	6.00	1.9 %	6.59	1.6 %	7.13	2.0 %
AFRICA*	2.46	2.4 %	2.77	3.1 %	3.22	3.4 %	3.81	3.7 %	4.57	2.9 %	5.27	3.1 %
FSU*	3.41	2.3 %	3.83	2.5 %	4.32	2.2 %	4.81	2.0 %	5.31	1.7 %	5.79	2.1 %
WORLD*	75.31	1.3 %	80.30	1.9 %	88.06	1.9 %	96.57	1.8 %	105.41	1.6 %	113.89	1.7 %

OilTradeModel.xls/World-cons-BEST CASE

WORST CASE (mill b/d)

	2000	% P.A.	2005	% P.A.	2010	% P.A.	2015	% P.A.	2020	% P.A.	2025	% P.A. 2000-2025
USA*	19.70	0.2 %	19.87	0.5 %	20.34	0.3 %	20.68	0.1 %	20.80	-0.1 %	20.71	0.2 %
CANADA*	1.94	0.1 %	1.95	0.6 %	2.01	0.4 %	2.05	0.2 %	2.07	0.0 %	2.07	0.3 %
LAT.AM.*	6.57	0.7 %	6.82	1.7 %	7.41	1.5 %	7.98	1.4 %	8.54	1.1 %	9.03	1.3 %
MEXICO	1.84	0.6 %	1.90	1.3 %	2.02	1.2 %	2.14	1.0 %	2.24	0.6 %	2.31	0.9 %
OTH.LAT.AM.	4.73	0.8 %	4.92	1.8 %	5.39	1.6 %	5.84	1.5 %	6.29	1.3 %	6.72	1.4 %
BRAZIL	1.87	0.8 %	1.94	1.8 %	2.13	1.6 %	2.30	1.5 %	2.48	1.3 %	2.65	1.4 %
EUROPE*	15.98	0.0 %	15.94	0.0 %	15.96	0.0 %	15.97	-0.1 %	15.89	-0.2 %	15.74	-0.1 %
JAPAN*	5.58	0.0 %	5.58	-0.1 %	5.55	0.0 %	5.55	-0.3 %	5.47	-0.6 %	5.31	-0.2 %
DEVELOPING ASIA*	14.39	1.7 %	15.67	2.4 %	17.66	2.4 %	19.91	2.2 %	22.22	1.8 %	24.31	2.1 %
SOUTH KOREA	2.23	-0.1 %	2.22	0.8 %	2.31	0.6 %	2.38	0.5 %	2.44	0.5 %	2.50	0.5 %
CHINA	4.99	2.6 %	5.68	2.7 %	6.50	1.9 %	7.16	1.4 %	7.68	1.2 %	8.17	2.0 %
INDIA	2.07	2.4 %	2.33	3.0 %	2.70	2.2 %	3.01	1.5 %	3.24	1.5 %	3.48	2.1 %
OTH.ASIA	5.10	1.6 %	5.52	2.5 %	6.25	3.7 %	7.49	3.6 %	8.96	2.8 %	10.27	2.8 %
AUS/NZ*	0.97	-0.6 %	0.94	0.8 %	0.98	0.4 %	1.00	0.1 %	1.00	0.0 %	1.00	0.1 %
M.EAST*	4.31	0.9 %	4.51	1.2 %	4.79	1.0 %	5.04	0.7 %	5.22	0.4 %	5.33	0.9 %
AFRICA*	2.46	1.2 %	2.62	1.9 %	2.87	2.2 %	3.21	2.5 %	3.62	1.7 %	3.95	1.9 %
FSU*	3.41	1.2 %	3.62	1.3 %	3.85	1.0 %	4.04	0.8 %	4.22	0.5 %	4.33	1.0 %
WORLD*	75.31	0.6 %	77.51	1.0 %	81.42	1.0 %	85.41	0.8 %	89.06	0.6 %	91.79	0.8 %

OilTradeModel.xls/World-cons-WORST CASE

WORLD CRUDE OIL PRODUCTION, REFINERY CAP., THROUGHPUT AND DIRECT USE, ETC.

REFERENCE, BEST AND WORST

CRUDE OIL PRODUCTION
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	7.73	7.70	7.70	7.20	6.40	5.70
CANADA	2.72	3.10	3.40	3.50	3.60	3.60
LATIN AMERICA	10.34	10.90	12.90	14.30	15.80	16.80
EUROPE	6.93	6.70	6.60	6.30	5.90	5.50
FSU	8.01	10.10	12.40	13.60	14.60	15.40
AFRICA	7.80	9.70	11.30	13.00	14.40	15.90
MIDDLE EAST	22.97	21.25	20.89	23.67	27.26	30.84
JAPAN	0.07	0.08	0.08	0.07	0.07	0.07
DEV. ASIA	7.07	7.30	7.80	8.20	8.60	9.00
AUSTR/NZ	0.85	0.77	0.84	0.81	0.79	0.78
TOTAL	74.49	77.60	83.91	90.65	97.42	103.59

CRUDE OIL PRODUCTION
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	7.73	7.80	7.90	7.50	6.60	5.90
CANADA	2.72	3.10	3.20	3.30	3.40	3.40
LATIN AMERICA	10.34	12.10	14.20	15.90	17.30	19.00
EUROPE	6.93	6.70	6.60	5.90	5.70	5.40
FSU	8.01	9.90	11.70	12.50	13.40	14.00
AFRICA	7.80	9.90	11.40	13.60	15.00	16.70
MIDDLE EAST	22.97	20.91	22.69	27.45	33.63	39.03
JAPAN	0.07	0.07	0.06	0.06	0.05	0.05
DEV. ASIA	7.07	7.20	7.50	7.40	7.20	7.10
AUSTR/NZ	0.85	0.81	0.83	0.79	0.76	0.75
TOTAL	74.49	78.49	86.08	94.40	103.04	111.33

CRUDE OIL PRODUCTION
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	7.73	7.80	8.00	7.70	6.90	6.50
CANADA	2.72	3.20	3.40	3.50	3.80	3.80
LATIN AMERICA	10.34	10.70	11.50	12.40	13.20	14.00
EUROPE	6.93	6.90	6.70	6.40	6.10	5.70
FSU	8.01	9.80	10.80	11.90	12.60	13.00
AFRICA	7.80	9.20	10.50	11.60	12.50	13.30
MIDDLE EAST	22.97	19.61	19.94	19.82	23.03	24.61
JAPAN	0.07	0.07	0.06	0.06	0.05	0.05
DEV. ASIA	7.07	7.60	7.80	7.90	8.00	7.90
AUSTR/NZ	0.85	0.89	0.89	0.89	0.88	0.87
TOTAL	74.49	75.77	79.59	82.17	87.06	89.73

REFINERY CAPACITY
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	16.60	16.60	16.80	17.10	17.30	17.60
CANADA	1.86	1.90	2.00	2.00	2.10	2.10
LATIN AMERICA	7.87	8.40	9.60	10.80	12.00	13.30
EUROPE	16.34	16.40	16.40	16.80	17.30	17.70
FSU	8.71	8.80	9.30	9.90	10.90	11.80
AFRICA	2.96	3.20	3.90	4.60	5.50	6.60
MIDDLE EAST	6.31	7.50	8.50	10.40	12.30	13.90
JAPAN	5.03	4.80	4.80	4.90	4.90	4.90
DEV. ASIA	15.03	16.50	18.80	20.70	23.10	25.00
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	81.63	85.00	91.00	98.20	106.40	113.90

REFINERY CAPACITY
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	16.60	16.60	16.80	17.20	17.40	17.70
CANADA	1.77	1.90	2.00	2.00	2.10	2.10
LATIN AMERICA	7.87	8.80	10.40	12.10	13.70	15.30
EUROPE	16.34	16.40	16.50	16.90	17.50	18.00
FSU	8.71	8.80	9.40	10.20	11.20	12.00
AFRICA	2.96	3.30	4.20	5.20	6.30	7.50
MIDDLE EAST	6.31	7.20	9.30	11.30	13.80	15.50
JAPAN	5.03	4.80	4.80	4.90	4.90	4.90
DEV. ASIA	15.03	16.50	19.10	21.70	24.50	26.50
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	81.54	85.20	93.40	102.50	112.40	120.50

REFINERY CAPACITY
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	16.60	16.50	16.50	16.50	16.50	16.50
CANADA	1.77	1.90	2.00	2.00	2.10	2.10
LATIN AMERICA	7.87	8.00	9.00	9.90	11.10	12.00
EUROPE	16.34	16.40	16.40	16.10	15.80	15.50
FSU	8.71	8.70	9.00	9.40	9.80	10.30
AFRICA	2.96	3.30	3.60	4.10	4.90	6.00
MIDDLE EAST	6.31	7.60	8.00	8.90	9.70	10.30
JAPAN	5.03	4.80	4.80	4.90	4.90	4.90
DEV. ASIA	15.03	16.30	17.50	18.70	19.80	21.00
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	81.54	84.40	87.70	91.50	95.60	99.60

REFINERY THROUGPUT AND DIRECT USE, ETC.
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	18.67	18.40	18.70	18.90	19.20	19.40
CANADA	2.46	2.51	2.65	2.65	2.78	2.78
LATIN AMERICA	7.16	7.30	8.80	9.90	11.10	12.50
EUROPE	14.41	14.20	14.40	14.60	14.90	15.20
FSU	4.96	5.10	6.00	7.10	8.30	9.40
AFRICA	3.41	3.70	4.30	5.10	5.90	6.60
MIDDLE EAST	6.36	7.22	8.10	9.45	10.09	11.06
JAPAN	4.26	4.07	4.07	4.15	4.15	4.15
DEV. ASIA	14.00	14.20	16.00	17.80	20.00	21.50
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	76.61	77.60	83.91	90.65	97.42	103.59

REFINERY THROUGPUT AND DIRECT USE, ETC.
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	18.67	18.50	18.90	19.10	19.40	19.50
CANADA	2.46	2.51	2.65	2.65	2.78	2.78
LATIN AMERICA	7.16	7.60	9.30	11.00	12.40	14.00
EUROPE	14.41	14.30	14.70	15.00	15.40	15.70
FSU	4.96	5.30	6.30	7.40	8.50	9.60
AFRICA	3.41	3.70	4.50	5.50	6.80	8.20
MIDDLE EAST	7.08	7.41	8.47	10.00	11.41	12.90
JAPAN	4.26	4.07	4.07	4.15	4.15	4.15
DEV. ASIA	13.28	14.20	16.30	18.60	21.20	23.50
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	76.61	78.49	86.08	94.40	103.04	111.33

REFINERY THROUGPUT AND DIRECT USE, ETC.
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	18.67	18.30	18.20	18.00	17.90	17.80
CANADA	2.46	2.40	2.55	2.55	2.60	2.70
LATIN AMERICA	7.16	7.20	8.20	8.90	9.70	10.20
EUROPE	14.41	14.20	14.10	13.90	13.80	13.50
FSU	4.96	5.00	5.60	6.00	6.60	7.00
AFRICA	3.41	3.40	3.90	4.30	5.30	6.30
MIDDLE EAST	7.08	6.90	7.47	8.07	9.01	9.08
JAPAN	4.26	4.07	4.07	4.15	4.15	4.15
DEV. ASIA	13.28	13.40	14.60	15.30	17.00	18.00
AUSTR/NZ	0.92	0.90	0.90	1.00	1.00	1.00
TOTAL	76.61	75.77	79.59	82.17	87.06	89.73

OilTradeModel.xls/Input Oil Key Figures

CRUDE OIL EXPORTS AND IMPORTS, 2000-2025

REFERENCE CASE (mill b/d)

CRUDE OIL EXPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	0.05	0.23	0.26	0.33	0.44	0.53
CANADA	1.18	1.51	1.69	1.80	1.76	1.76
LATIN AMERICA	5.04	5.54	6.14	6.50	6.86	6.38
EUROPE	4.99	4.85	4.88	4.93	5.00	5.07
FSU	3.06	5.21	6.75	6.86	6.64	6.31
AFRICA	5.17	7.11	8.31	9.39	10.11	11.07
MIDDLE EAST	16.02	14.42	13.06	14.62	17.87	20.74
JAPAN	0.00	0.00	0.00	0.00	0.00	0.00
DEV. ASIA	1.85	2.12	2.38	2.66	3.02	3.24
AUSTR/NZ	0.40	0.34	0.33	0.35	0.35	0.35
TOTAL	37.76	41.33	43.80	47.44	52.06	55.46

CRUDE OIL IMPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	9.21	10.93	11.26	12.03	13.24	14.23
CANADA	0.92	0.92	0.94	0.95	0.94	0.94
LATIN AMERICA	1.86	1.94	2.04	2.10	2.16	2.08
EUROPE	12.53	12.35	12.68	13.23	14.00	14.77
FSU	0.01	0.21	0.35	0.36	0.34	0.31
AFRICA	0.78	1.11	1.31	1.49	1.61	1.77
MIDDLE EAST	0.50	0.39	0.27	0.41	0.70	0.96
JAPAN	4.25	3.99	3.99	4.08	4.08	4.08
DEV. ASIA	8.00	9.02	10.58	12.26	14.42	15.74
AUSTR/NZ	0.47	0.47	0.39	0.54	0.56	0.57
TOTAL	38.53	41.33	43.80	47.44	52.06	55.46

BEST CASE (mill b/d)

CRUDE OIL EXPORTS
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	0.05	0.23	0.26	0.32	0.44	0.52
CANADA	1.18	1.51	1.47	1.58	1.54	1.54
LATIN AMERICA	5.04	6.62	7.10	7.10	7.10	7.22
EUROPE	4.99	4.86	4.91	5.01	5.07	5.13
FSU	3.06	4.77	5.65	5.32	5.10	4.55
AFRICA	5.17	7.35	8.19	9.63	9.75	10.11
MIDDLE EAST	16.02	13.83	14.63	18.18	23.43	27.73
JAPAN	0.00	0.00	0.00	0.00	0.00	0.00
DEV. ASIA	1.85	2.14	2.50	2.98	3.54	4.02
AUSTR/NZ	0.40	0.34	0.33	0.35	0.35	0.35
TOTAL	37.76	41.65	45.05	50.47	56.33	61.18

CRUDE OIL IMPORTS
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	9.21	10.93	11.26	11.92	13.24	14.12
CANADA	0.92	0.92	0.92	0.93	0.92	0.92
LATIN AMERICA	1.86	2.12	2.20	2.20	2.20	2.22
EUROPE	12.53	12.46	13.01	14.11	14.77	15.43
FSU	0.01	0.17	0.25	0.22	0.20	0.15
AFRICA	0.78	1.15	1.29	1.53	1.55	1.61
MIDDLE EAST	0.50	0.34	0.41	0.73	1.21	1.60
JAPAN	4.25	4.00	4.01	4.09	4.10	4.10
DEV. ASIA	8.00	9.14	11.30	14.18	17.54	20.42
AUSTR/NZ	0.47	0.43	0.40	0.56	0.59	0.60
TOTAL	38.53	41.65	45.05	50.47	56.33	61.18

WORST CASE (mill b/d)

CRUDE OIL EXPORTS
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	0.05	0.21	0.18	0.19	0.26	0.29
CANADA	1.18	1.74	1.79	1.90	2.18	2.07
LATIN AMERICA	5.04	5.42	5.18	5.42	5.42	5.78
EUROPE	4.99	4.83	4.84	4.85	4.87	4.88
FSU	3.06	4.99	5.43	6.20	6.31	6.31
AFRICA	5.17	6.87	7.83	8.67	8.55	8.31
MIDDLE EAST	16.02	12.96	12.70	11.91	14.41	16.07
JAPAN	0.00	0.00	0.00	0.00	0.00	0.00
DEV. ASIA	1.85	1.90	2.10	2.22	2.54	2.76
AUSTR/NZ	0.40	0.33	0.33	0.34	0.34	0.34
TOTAL	37.76	39.26	40.39	41.71	44.88	46.81

CRUDE OIL IMPORTS
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	9.21	10.71	10.38	10.49	11.26	11.59
CANADA	0.92	0.94	0.94	0.95	0.98	0.97
LATIN AMERICA	1.86	1.92	1.88	1.92	1.92	1.98
EUROPE	12.53	12.13	12.24	12.35	12.57	12.68
FSU	0.01	0.19	0.23	0.30	0.31	0.31
AFRICA	0.78	1.07	1.23	1.37	1.35	1.31
MIDDLE EAST	0.50	0.26	0.23	0.16	0.39	0.54
JAPAN	4.25	4.00	4.01	4.09	4.10	4.10
DEV. ASIA	8.00	7.70	8.90	9.62	11.54	12.86
AUSTR/NZ	0.47	0.34	0.34	0.45	0.46	0.47
TOTAL	38.53	39.26	40.39	41.71	44.88	46.81

OilTradeModel.xls/Output Crude

OIL PRODUCTS EXPORT AND IMPORTS, 2000-2025

REFERENCE CASE (mill b/d)

OIL PRODUCT EXPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	0.99	0.98	1.04	1.09	1.12	1.13
CANADA	0.37	0.80	0.84	0.74	0.82	0.77
LATIN AMERICA	2.06	1.82	2.63	2.85	3.14	3.71
EUROPE	4.68	4.72	4.73	4.74	4.74	4.73
FSU	1.09	1.51	2.08	2.90	3.83	4.70
AFRICA	1.14	1.67	1.97	2.39	2.63	2.83
MIDDLE EAST	3.14	3.03	3.48	4.48	4.71	5.39
JAPAN	0.09	0.13	0.14	0.14	0.15	0.14
DEV. ASIA	2.70	2.85	3.14	3.56	3.95	4.55
AUSTR/NZ	0.12	0.13	0.13	0.13	0.13	0.13
TOTAL	16.38	17.64	20.17	23.03	25.21	28.09

OIL PRODUCT IMPORTS
REF. CASE

	2000	2005	2010	2015	2020	2025
USA	1.59	2.26	2.89	3.51	3.78	3.93
CANADA	0.16	0.22	0.22	0.21	0.22	0.22
LATIN AMERICA	1.55	1.44	1.63	1.68	1.75	1.88
EUROPE	5.37	6.32	6.46	6.61	6.55	6.40
FSU	0.01	0.05	0.10	0.17	0.26	0.34
AFRICA	0.53	0.60	0.67	0.77	0.83	0.87
MIDDLE EAST	0.35	0.33	0.37	0.47	0.49	0.55
JAPAN	1.24	1.62	1.71	1.74	1.77	1.71
DEV. ASIA	3.86	4.61	5.82	7.65	9.34	11.95
AUSTR/NZ	0.11	0.20	0.26	0.19	0.23	0.25
TOTAL	14.77	17.64	20.15	23.01	25.21	28.09

BEST CASE (mill b/d)

OIL PRODUCT EXPORTS
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	0.99	0.98	1.05	1.13	1.18	1.22
CANADA	0.37	0.80	0.84	0.74	0.82	0.77
LATIN AMERICA	2.06	2.04	2.88	3.63	3.83	4.27
EUROPE	4.68	4.72	4.73	4.75	4.75	4.75
FSU	1.09	1.65	2.23	2.94	3.62	4.34
AFRICA	1.14	1.60	2.08	2.64	3.39	4.33
MIDDLE EAST	3.14	3.14	3.67	4.72	5.66	6.74
JAPAN	0.09	0.14	0.15	0.16	0.17	0.17
DEV. ASIA	2.70	2.95	3.26	3.70	4.19	4.81
AUSTR/NZ	0.12	0.13	0.13	0.13	0.13	0.13
TOTAL	16.38	18.14	21.03	24.54	27.74	31.55

OIL PRODUCT IMPORTS
BEST CASE

	2000	2005	2010	2015	2020	2025
USA	1.59	2.27	3.03	3.89	4.43	4.96
CANADA	0.16	0.22	0.22	0.21	0.22	0.22
LATIN AMERICA	1.55	1.49	1.69	1.86	1.91	2.01
EUROPE	5.37	6.31	6.41	6.64	6.66	6.71
FSU	0.01	0.06	0.11	0.18	0.24	0.31
AFRICA	0.53	0.59	0.70	0.83	1.00	1.22
MIDDLE EAST	0.35	0.34	0.39	0.49	0.57	0.67
JAPAN	1.24	1.65	1.81	1.90	2.00	2.00
DEV. ASIA	3.86	5.01	6.38	8.28	10.38	13.08
AUSTR/NZ	0.11	0.18	0.25	0.19	0.24	0.27
TOTAL	14.77	18.13	20.99	24.47	27.65	31.43

WORST CASE (mill b/d)

OIL PRODUCT EXPORTS
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	0.99	0.97	1.02	1.08	1.10	1.10
CANADA	0.37	0.67	0.73	0.64	0.62	0.68
LATIN AMERICA	2.06	2.04	2.60	2.79	3.13	3.15
EUROPE	4.68	4.70	4.71	4.73	4.74	4.75
FSU	1.09	1.55	1.97	2.21	2.69	3.02
AFRICA	1.14	1.40	1.74	1.84	2.62	3.53
MIDDLE EAST	3.14	2.87	3.21	3.60	4.46	4.42
JAPAN	0.09	0.13	0.12	0.12	0.11	0.09
DEV. ASIA	2.70	2.92	3.15	3.61	3.78	4.10
AUSTR/NZ	0.12	0.12	0.13	0.12	0.12	0.12
TOTAL	16.38	17.37	19.37	20.73	23.36	24.96

OIL PRODUCT IMPORTS
WORST CASE

	2000	2005	2010	2015	2020	2025
USA	1.59	2.11	2.75	3.34	3.59	3.60
CANADA	0.16	0.21	0.21	0.20	0.20	0.21
LATIN AMERICA	1.55	1.49	1.62	1.67	1.74	1.75
EUROPE	5.37	6.11	6.24	6.48	6.51	6.68
FSU	0.01	0.05	0.09	0.11	0.16	0.19
AFRICA	0.53	0.54	0.62	0.64	0.82	1.03
MIDDLE EAST	0.35	0.32	0.35	0.39	0.46	0.46
JAPAN	1.24	1.54	1.51	1.42	1.33	1.15
DEV. ASIA	3.86	4.88	5.87	7.86	8.60	10.00
AUSTR/NZ	0.11	0.14	0.18	0.09	0.10	0.10
TOTAL	14.77	17.40	19.46	22.20	23.52	25.17

OilTradeModel.xls/Output Oil Product

ORIMULSION FORECAST
UNEXPANDED

Projects and yearly production profiles				Year	2000	2005	2010	2015	2020	2025
Venezuela Orimulsion Exports										
				Year	2000	2005	2010	2015	2020	2025
Best Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	860,800	31 %	2000	262,974	262,974	262,974	262,974	262,974	262,974
	China Nat	1,614,000	0 %	2000	-	-	-	-	-	-
	Samsung	269,000	31 %	2003		82,180	82,180	82,180	82,180	82,180
	KEPCO	269,000	31 %	2003		82,180	82,180	82,180	82,180	82,180
	Mitsubishi	1,076,000	12 %	2003		131,487	131,487	131,487	131,487	131,487
	Seraya	1,614,000	0 %	2004		-	-	-	-	-
	CNPC	6,456,000	0 %	2005		-	-	-	-	-
	KSEPC	1,076,000	12 %	2005		131,487	131,487	131,487	131,487	131,487
	New	2,000,000	15 %	2010			300,000	300,000	300,000	300,000
	New	2,000,000	20 %	2015				400,000	400,000	400,000
	New	500,000	40 %	2020					200,000	200,000
	New	750,000	30 %	2025						225,000
Total					262,974	690,308	990,308	1,390,308	1,590,308	1,815,308
				Year	2000	2005	2010	2015	2020	2025
Ref. Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	800,000	25 %	2000	200,000	200,000	200,000	200,000	200,000	200,000
	China Nat	1,500,000	0 %	2000	-	-	-	-	-	-
	Samsung	250,000	25 %	2003		62,500	62,500	62,500	62,500	62,500
	KEPCO	250,000	25 %	2003		62,500	62,500	62,500	62,500	62,500
	Mitsubishi	1,000,000	10 %	2003		100,000	100,000	100,000	100,000	100,000
	Seraya	1,500,000	0 %	2004		-	-	-	-	-
	CNPC	6,000,000	0 %	2005		-	-	-	-	-
	KSEPC	1,000,000	10 %	2005		100,000	100,000	100,000	100,000	100,000
	New	1,500,000	15 %	2010			225,000	225,000	225,000	225,000
	New	1,750,000	20 %	2015				350,000	350,000	350,000
	New	250,000	40 %	2020					100,000	100,000
	New	500,000	30 %	2025						150,000
Total					200,000	525,000	750,000	1,100,000	1,200,000	1,350,000
				Year	2000	2005	2010	2015	2020	2025
Worst Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	600,000	10 %	2000	58,500	58,500	58,500	58,500	58,500	58,500
	China Nat	1,125,000	0 %	2000	-	-	-	-	-	-
	Samsung	187,500	10 %	2003		18,281	18,281	18,281	18,281	18,281
	KEPCO	187,500	10 %	2003		18,281	18,281	18,281	18,281	18,281
	Mitsubishi	750,000	4 %	2003		29,250	29,250	29,250	29,250	29,250
	Seraya	1,125,000	0 %	2004		-	-	-	-	-
	CNPC	4,500,000	0 %	2005		-	-	-	-	-
	KSEPC	750,000	4 %	2005		29,250	29,250	29,250	29,250	29,250
	New	-								
	New	-								
	New	-								
	New	-								
Total					58,500	153,563	153,563	153,563	153,563	153,563

ForeCastTablesUnexpandedCanal.xls/Orimulsion

ORIMULSION FORECAST
EXPANDED

Projects and yearly production profiles				Year	2000	2005	2010	2015	2020	2025
Venezuela Orimulsion Exports										
				Year	2000	2005	2010	2015	2020	2025
Best Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	860,800	73 %	2000	631,139	631,139	631,139	631,139	631,139	631,139
	China Nat	1,614,000	61 %	2000	986,154	986,154	986,154	986,154	986,154	986,154
	Samsung	269,000	43 %	2003		115,051	115,051	115,051	115,051	115,051
	KEPCO	269,000	31 %	2003		82,180	82,180	82,180	82,180	82,180
	Mitsubishi	1,076,000	61 %	2003		657,436	657,436	657,436	657,436	657,436
	Seraya	1,614,000	49 %	2004		788,923	788,923	788,923	788,923	788,923
	CNPC	6,456,000	18 %	2005		1,183,385	1,183,385	1,183,385	1,183,385	1,183,385
	KSEPC	1,076,000	31 %	2005		328,718	328,718	328,718	328,718	328,718
	New	2,000,000	25 %	2010			500,000	500,000	500,000	500,000
	New	2,000,000	25 %	2015				500,000	500,000	500,000
	New	500,000	40 %	2020					200,000	200,000
	New	750,000	40 %	2025						300,000
Total					1,617,293	4,772,985	5,272,985	5,772,985	5,972,985	6,272,985
				Year	2000	2005	2010	2015	2020	2025
Ref. Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	800,000	60 %	2000	480,000	480,000	480,000	480,000	480,000	480,000
	China Nat	1,500,000	50 %	2000	750,000	750,000	750,000	750,000	750,000	750,000
	Samsung	250,000	35 %	2003		87,500	87,500	87,500	87,500	87,500
	KEPCO	250,000	25 %	2003		62,500	62,500	62,500	62,500	62,500
	Mitsubishi	1,000,000	50 %	2003		500,000	500,000	500,000	500,000	500,000
	Seraya	1,500,000	40 %	2004		600,000	600,000	600,000	600,000	600,000
	CNPC	6,000,000	15 %	2005		900,000	900,000	900,000	900,000	900,000
	KSEPC	1,000,000	25 %	2005		250,000	250,000	250,000	250,000	250,000
	New	1,500,000	15 %	2010			225,000	225,000	225,000	225,000
	New	1,750,000	20 %	2015				350,000	350,000	350,000
	New	250,000	50 %	2020					125,000	125,000
	New	500,000	50 %	2025						250,000
Total					1,230,000	3,630,000	3,855,000	4,205,000	4,330,000	4,580,000
				Year	2000	2005	2010	2015	2020	2025
Worst Case	**Charterers**	**Volumes**	**Ref. Case**	**start-up**						
	Kashima	600,000	12 %	2000	74,520	74,520	74,520	74,520	74,520	74,520
	China Nat	1,125,000	10 %	2000	116,438	116,438	116,438	116,438	116,438	116,438
	Samsung	187,500	7 %	2003		13,584	13,584	13,584	13,584	13,584
	KEPCO	187,500	5 %	2003		9,703	9,703	9,703	9,703	9,703
	Mitsubishi	750,000	10 %	2003		77,625	77,625	77,625	77,625	77,625
	Seraya	1,125,000	8 %	2004		93,150	93,150	93,150	93,150	93,150
	CNPC	4,500,000	3 %	2005		139,725	139,725	139,725	139,725	139,725
	KSEPC	750,000	5 %	2005		38,813	38,813	38,813	38,813	38,813
	New	-								
	New	-								
	New	-								
	New	-								
Total					190,958	563,558	563,558	563,558	563,558	563,558

ForeCastTablesExpandedCanal.xls/Orimulsion

LPG AND LNG FORECAST
UNEXPANDED AND EXPANDED CANAL

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
World LPG Trade in Mill. Tonnes (Fearnleys)	69.2	69.8	72.7	77.0	83.0	86.1	89.5	93.1	96.8	100.7	104.7	107.7	110.8	113.9	117.2	120.5	123.7	127.0	130.4	133.8	137.4	140.8	144.3	147.9	151.6	155.4
World LPG Fleet Development ('000 cbm)	13462	14079	13860	14641	15721	16274	16880	17510	18165	18847	19556	20063	20585	21122	21674	22241	22752	23277	23815	24368	24935	25467	2601.3	26572	27145	27733
LPG																										
Expanded Canal Best case (Mill. tonnes)	1.20	1.04	1.10	1.16	1.23	1.35	1.47	1.60	1.74	1.90	2.07	2.21	2.37	2.54	2.71	2.90	3.08	3.26	3.46	3.66	3.88	4.08	4.28	4.50	4.72	4.96
Expanded Canal Most Probable case (Mill. tonnes)	**1.20**	**1.04**	**1.07**	**1.10**	**1.13**	**1.21**	**1.28**	**1.37**	**1.46**	**1.55**	**1.65**	**1.72**	**1.79**	**1.86**	**1.93**	**2.01**	**2.10**	**2.20**	**2.29**	**2.40**	**2.50**	**2.59**	**2.68**	**2.78**	**2.87**	**2.98**
Expanded Canal Worst Case (Mill. tonnes)	1.20	1.04	1.07	1.10	1.13	1.18	1.22	1.27	1.32	1.38	1.43	1.45	1.46	1.48	1.49	1.51	1.54	1.58	1.62	1.66	1.70	1.74	1.77	1.81	1.84	1.88
Expanded Canal Best case (Mill. barrels)	13.89	12.02	12.74	13.51	14.32	15.60	17.01	18.54	20.21	22.03	24.01	25.69	27.49	29.41	31.47	33.67	35.69	37.84	40.11	42.51	45.06	47.32	49.68	52.17	54.78	57.51
Expanded Canal Most Probable case (Mill. barrels)	13.89	12.02	12.38	12.75	13.13	13.99	14.90	15.87	16.90	18.00	19.17	19.93	20.73	21.56	22.42	23.32	24.37	25.46	26.61	27.81	29.06	30.07	31.13	32.22	33.34	34.51
Expanded Canal Worst Case (Mill. barrels)	13.89	12.02	12.38	12.75	13.13	13.66	14.21	14.77	15.37	15.98	16.62	16.79	16.95	17.12	17.29	17.47	17.90	18.35	18.81	19.28	19.76	20.16	20.56	20.97	21.39	21.82
LPG																										
Unexpanded Canal Best case (Mill. tonnes)	1.20	1.04	1.10	1.16	1.23	1.35	1.47	1.60	1.74	1.90	2.07	2.08	2.23	2.38	2.55	2.73	2.86	3.03	3.22	3.41	3.61	3.75	3.94	4.14	4.34	4.56
Unexpanded Canal Most Probable case (Mill. tonnes)	**1.20**	**1.04**	**1.07**	**1.10**	**1.13**	**1.21**	**1.28**	**1.37**	**1.46**	**1.55**	**1.65**	**1.58**	**1.64**	**1.71**	**1.78**	**1.85**	**1.91**	**2.00**	**2.09**	**2.18**	**2.28**	**2.33**	**2.42**	**2.50**	**2.59**	**2.68**
Unexpanded Canal Worst Case (Mill. tonnes)	1.20	1.04	1.07	1.10	1.13	1.18	1.22	1.27	1.32	1.38	1.43	1.30	1.32	1.33	1.34	1.36	1.37	1.41	1.44	1.48	1.52	1.53	1.56	1.59	1.62	1.66
Unexpanded Canal Best case (Mill. barrels)	13.89	12.02	12.74	13.51	14.32	15.60	17.01	18.54	20.21	22.03	24.01	24.15	25.84	27.65	29.58	31.65	33.20	35.19	37.30	39.54	41.91	43.53	45.71	47.99	50.39	52.91
Unexpanded Canal Most Probable case (Mill. barrels)	13.89	12.02	12.38	12.75	13.13	13.99	14.90	15.87	16.90	18.00	19.17	18.34	19.07	19.83	20.63	21.45	22.17	23.17	24.21	25.30	26.44	27.07	28.01	29.00	30.01	31.06
Unexpanded Canal Worst Case (Mill. barrels)	13.89	12.02	12.38	12.75	13.13	13.66	14.21	14.77	15.37	15.98	16.62	15.11	15.26	15.41	15.56	15.72	15.93	16.33	16.74	17.16	17.59	17.74	18.09	18.46	18.82	19.20

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
World LNG Trade in Mill. Tonnes (Fearnleys)	100.1	104.1	108.4	120.9	128.8	156.1	174.4	202.3	233.3	253.2	259.8	279.7	298.3	304.2	307.8	312.9	321.2	327.3	334.8	343.2	351.5	358.2	365.4	371.9	380.7	387.7
World LNG Fleet Development ('000 CBM)	12,689	14,200	15,437	17,793	20,648	22,914	25,046	25,046	28,062	29,985	30,889	33,054	35,063	35,857	36,336	37,008	38,092	38,889	39,855	40,927	41,977	42,822	43,729	44,534	45,611	46,466
LNG																										
Expanded Canal Best case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.9	2.5	6.4	7.7	7.7	7.9	8.0	7.8	7.8	7.9	7.9	8.6	8.6	8.7	8.8	8.8	8.8
Expanded Canal Most Probable case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.5	3.0	4.1	4.7	4.8	5.4	5.4	5.4	5.4	5.4	5.3	5.3	5.5	5.5	5.5	5.5
Expanded Canal Worst Case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.4	2.0	2.0	1.9	2.4	2.9	2.9	2.9	3.2	3.2	3.2	3.2	3.2	3.2
Expanded Canal Best case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.7	26.5	34.9	89.4	107.5	107.5	110.3	111.7	108.9	108.9	110.3	110.3	120.1	120.1	121.5	122.9	122.9	122.9
Expanded Canal Most Probable case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	11.2	20.9	41.9	57.3	65.6	67.0	75.4	75.4	75.4	75.4	75.4	74.0	74.0	76.8	76.8	76.8	76.8
Expanded Canal Worst Case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	11.2	19.5	27.9	27.9	26.5	33.5	40.5	40.5	40.5	44.7	44.7	44.7	44.7	44.7	44.7
LNG																										
Unexpanded Canal Best case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0	2.9	3.5	4.2	5.3	5.2	5.3	5.3	5.2	5.2	5.3	5.3	5.6	5.6	5.6	5.6	5.6	5.6
Unexpanded Canal Most Probable case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	2.3	2.8	3.2	3.3	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
Unexpanded Canal Worst Case (Mill. tonnes)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	1.2	1.2	1.1	1.4	1.4	1.4	1.4	1.8	1.8	1.8	1.8	1.8	1.8
Unexpanded Canal Best case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	27.9	40.5	48.9	57.9	73.7	73.2	73.9	73.9	72.5	72.5	73.4	73.4	78.6	78.6	78.6	78.6	78.6	78.6
Unexpanded Canal Most Probable case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	30.7	32.4	39.1	44.4	46.1	51.8	51.8	51.8	51.8	51.8	49.6	49.6	49.6	49.6	49.6	49.6
Unexpanded Canal Worst Case (Mill. barrels)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.4	8.8	16.8	16.8	15.9	20.1	20.1	20.1	20.1	24.4	24.4	24.4	24.4	24.4	24.4

Forecast LNG and LPG.xls/Summary

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

TOTAL VEGOIL IMPORTS, FORECAST 2000-2020

Total Vegoil Import, Forecasts 2000-2020

Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World
1976	1,739	109	42	12	129	985	41	-	32	71	67	80	200	2	459	127	6	344	10	146	87	10	2,864	7562
1977	1,944	95	67	15	96	764	59	-	26	45	77	290	1,123	11	398	161	9	302	15	34	93	13	3,014	8651
1978	1,876	166	111	18	89	676	113	1	71	52	100	254	1,309	92	404	183	7	394	16	33	87	13	3,337	9402
1979	1,833	297	142	16	79	687	62	1	167	70	28	280	1,085	27	394	215	17	529	21	95	92	19	4,121	10277
1980	1,867	447	218	34	67	554	154	-	138	63	38	333	1,394	1	401	183	6	536	22	168	84	20	4,888	11616
1981	1,887	752	289	63	53	638	78	-	56	83	73	148	1,441	35	422	224	6	660	23	170	109	26	4,964	12200
1982	2,004	1,031	393	58	56	558	197	4	55	87	66	139	1,024	2	404	258	3	683	27	195	127	26	4,976	12373
1983	1,894	897	276	36	68	651	186	3	69	115	82	119	1,436	1	383	289	13	737	41	183	132	34	5,191	12836
1984	1,601	878	163	83	70	580	221	2	173	98	67	96	1,597	83	336	258	42	838	43	292	92	24	5,719	13356
1985	1,751	991	123	65	79	744	216	-	149	89	42	184	1,292	39	334	247	25	834	15	311	82	33	6,720	14365
1986	2,240	601	209	60	73	931	329	4	309	62	55	496	1,461	10	360	311	41	905	22	283	101	26	6,574	15463
1987	2,042	1,005	48	31	79	867	277	3	82	52	75	883	1,847	215	376	317	206	921	25	307	123	33	6,445	16259
1988	2,137	522	49	28	79	995	537	3	123	50	86	765	1,724	414	441	300	207	1,101	29	432	140	38	6,930	17130
1989	2,260	1,298	24	52	77	794	669	4	174	57	50	1,875	530	415	471	316	164	1,097	36	626	134	42	7,103	18268
1990	2,728	734	43	60	93	926	706	4	91	96	76	2,370	720	30	501	406	115	1,142	34	611	149	44	7,959	19638
1991	2,849	438	81	88	95	959	749	13	242	86	70	1,908	246	50	546	440	370	1,161	27	744	160	49	7,723	19094
1992	2,887	628	133	94	107	1149	672	21	199	120	125	1,334	347	325	542	422	258	1,210	56	709	174	58	8,375	19945
1993	2,777	279	173	107	125	1151	814	11	250	149	129	1,381	271	192	525	381	342	1,461	64	741	185	56	8,516	20080
1994	3,243	269	70	92	145	1228	848	11	393	154	139	3,619	508	178	502	427	381	1,514	73	720	179	58	9,100	23851
1995	3,092	451	76	110	170	1194	740	11	347	161	114	4,015	1,197	87	535	402	169	1,408	67	817	182	53	10,074	25472
1996	3,019	434	141	105	247	1264	750	12	276	167	99	3,296	1,512	178	537	402	122	1,323	82	648	175	46	9,659	24494
1997	3,333	861	128	113	262	1471	760	24	314	153	170	4,853	2,013	206	558	404	226	1,466	71	783	191	38	10,569	28967
1998	3,587	833	82	133	184	1456	841	51	412	197	226	3,642	2,563	99	545	346	509	1,512	91	696	166	47	11,032	29250
1999	3,565	1,067	148	163	200	1269	789	10	290	149	140	2,545	4,890	17	539	488	511	1,487	139	605	165	53	11,365	30594
2000	3,668	744	166	134	270	1471	799	27	277	134	125	2,729	5,298	54	584	490	363	1,427	98	664	172	62	11,685	31441
1976-1980	1,851.8	222.8	116.0	19.0	92.0	733.2	85.8	0.4	86.8	60.2	62.0	247.4	1,022.2	26.6	411.2	173.8	9.0	421.0	16.8	95.2	88.6	15.0	3,644.8	9501.6
1981-1985	1,827.4	909.8	248.8	61.0	65.2	634.2	179.6	1.8	100.4	94.4	66.0	137.2	1,358.0	32.0	375.8	255.2	17.8	750.4	29.8	230.2	108.4	28.6	5,514.0	13026.0
1986-1990	2,281.4	832.0	74.6	46.2	80.2	902.6	503.6	3.6	155.8	63.4	68.4	1,277.8	1,256.4	216.8	429.8	330.0	146.6	1,033.2	29.2	451.8	129.4	36.6	7,002.2	17351.6
1991-1995	2,969.6	413.0	106.6	98.2	128.4	1,136.2	764.6	13.4	286.2	134.0	115.4	2,451.4	513.8	166.4	530.0	414.4	304.0	1,350.8	57.4	746.2	176.0	54.8	8,757.6	21688.4
1996-2000	3,434.4	787.8	133.0	129.6	232.6	1,386.2	787.8	24.8	313.8	160.0	152.0	3,413.0	3,255.2	110.8	552.6	426.0	346.2	1,443.0	96.2	679.2	173.8	49.2	10,862.0	28949.2
2001-2005	4,797	948	259	159	275	1625	827	38	295	167	218	4,101	5,141	83	587	521	455	1,666	119	881	191	54	13,991	37398
2006-2010	5,153	1,076	389	193	302	1843	953	50	409	192	253	6,127	6,082	103	667	559	489	1,972	163	1,099	214	58	17,197	45543
2011-2015	5,496	1,195	518	237	332	2078	1,088	59	471	214	284	7,938	6,985	99	746	611	521	2,305	196	1,227	228	60	20,172	53060
2016-2020	5,754	1,295	631	279	364	2345	1,223	68	523	244	324	9,584	7,804	116	840	674	555	2,720	212	1,348	241	67	23,176	60387

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Total import

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

TOTAL VEGOIL EXPORTS, FORECAST 2000-2020

Total Vegoil Exports, Forecasts 2000-2020

Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	In
1976	689	303	3	-	158	1921	-	143	511	-	-	17	-	419	10	-	1,371	-	851	2	240	96	1,021	7755	
1977	799	235	1	-	251	2489	-	230	524	-	-	7	1	405	8	-	1,455	-	791	36	234	96	1,139	8701	
1978	970	157	3	-	239	2553	-	353	518	-	-	15	2	412	8	6	1,537	-	990	8	247	81	1,175	9274	
1979	1,111	119	-	-	285	2744	-	422	568	-	-	16	4	375	8	24	1,966	-	795	30	246	82	1,371	10166	
1980	1,170	128	-	-	363	3154	-	523	812	-	-	14	-	552	21	10	2,327	-	917	3	190	109	1,527	11820	
1981	1,318	116	3	-	399	2902	-	393	1,395	-	-	13	-	210	3	10	2,580	-	1,050	44	172	122	1,347	12077	
1982	1,301	114	2	8	363	2845	-	625	984	-	-	72	-	302	4	10	2,917	-	951	24	221	94	1,537	12374	
1983	1,377	111	-	-	286	2662	-	966	1,042	-	-	105	2	415	6	1	3,049	-	1,020	66	171	124	1,425	12828	
1984	1,586	107	-	-	396	2635	-	1,125	1,008	-	3	88	14	282	14	1	3,086	-	586	29	200	117	2,121	13398	
1985	1,556	144	-	-	418	2217	-	1,475	1,089	-	6	87	7	844	5	1	3,371	-	653	45	188	138	2,226	14470	
1986	1,691	140	2	-	415	2135	-	1,732	475	-	-	57	5	715	6	-	4,638	-	1,248	56	220	112	2,142	15789	
1987	2,095	114	-	-	429	2140	2	1,447	1,092	-	-	15	2	857	7	3	4,415	-	1,063	83	231	130	2,066	16191	
1988	2,105	144	-	-	549	2700	7	1,932	762	-	-	4	4	1,157	13	3	4,475	-	805	101	256	137	1,942	17096	
1989	2,326	141	-	-	359	2485	25	1,743	900	-	-	61	12	1,223	6	1	5,374	-	769	166	237	121	2,166	18115	
1990	2,259	119	-	-	389	1958	11	2,310	887	-	7	156	1	1,386	3	1	6,089	-	1,165	149	272	102	2,273	19537	
1991	2,000	104	-	-	459	1871	15	2,558	566	-	5	129	-	1,848	2	-	5,881	-	892	151	309	126	2,218	19134	-
1992	2,011	98	1	-	584	2538	7	2,438	814	1	-	108	1	1,681	1	6	5,919	-	901	173	315	129	2,306	20032	
1993	1,534	84	-	-	622	2319	12	2,199	741	-	4	228	-	2,015	5	4	6,395	4	1,021	79	322	119	2,401	20108	
1994	1,855	277	-	-	660	2572	33	2,513	1,566	-	8	612	2	2,595	6	4	7,057	1	880	117	357	139	2,747	24001	
1995	2,151	56	-	-	794	3325	31	3,236	1,827	-	5	500	5	2,013	4	8	6,843	-	1,349	183	311	138	2,924	25703	
1996	1,670	184	-	-	942	2229	31	3,253	1,388	-	2	461	1	2,248	3	7	7,408	-	799	120	368	142	2,874	24130	-
1997	2,467	100	3	-	928	2623	12	3,788	1,165	2	-	811	28	3,656	3	18	7,926	-	1,087	187	356	158	3,943	29261	2
1998	2,624	133	3	-	989	3381	12	4,095	1,408	3	-	300	6	2,446	3	17	8,002	-	1,187	177	439	121	3,725	29071	-
1999	2,409	75	6	-	996	2624	17	4,944	1,596	2	6	79	16	3,673	3	5	9,506	-	508	164	458	139	3,385	30611	
2000	2,259	585	8	-	1,106	2097	12	4,667	1,133	1	5	123	11	4,875	3	17	9,537	-	1,067	67	470	134	3,612	31789	
1976-1980	947.8	188.4	1.4	-	259.2	2,572.2	-	334.2	586.6	-	-	13.8	1.4	432.6	11.0	8.0	1,731.2	-	868.8	15.8	231.4	92.8	1,246.6	9543.2	
1981-1985	1,427.6	118.4	1.0	1.6	372.4	2,652.2	-	916.8	1,103.6	-	1.8	73.0	4.6	410.6	6.4	4.6	3,000.6	-	852.0	41.6	190.4	119.0	1,731.2	13029.4	3
1986-1990	2,095.2	131.6	0.4	-	428.2	2,283.6	9.0	1,832.8	823.2	-	1.4	58.6	4.8	1,067.6	7.0	1.6	4,998.2	-	1,010.0	111.0	243.2	120.4	2,117.8	17345.6	3
1991-1995	1,910.2	123.8	0.2	-	623.8	2,525.0	19.6	2,588.8	1,102.8	0.2	4.4	315.4	1.6	2,030.4	3.6	4.4	6,419.0	1.0	1,008.6	140.6	322.8	130.2	2,519.2	21795.6	2
1996-2000	2,285.8	215.4	4.0	-	992.2	2,590.8	16.8	4,149.4	1,338.0	1.6	2.6	354.8	12.4	3,379.6	3.0	12.8	8,475.8	-	929.6	143.0	418.2	138.8	3,507.8	28972.4	3
2001-2005	2,115	572	6	-	1,141	3020	17	5,049	1,880	1	4	199	17	6,091	7	17	11,292	-	1,081	119	496	144	4,019	37286	2
2006-2010	2,104	730	10	-	1,484	3447	24	6,741	2,617	2	4	247	16	8,227	8	22	12,969	-	1,055	173	586	150	4,963	45579	2
2011-2015	2,383	937	15	-	1,803	3593	30	7,944	3,211	2	5	269	23	10,734	9	27	14,231	-	1,035	189	719	162	5,746	53067	1
2016-2020	2,707	1,157	20	0	1,958	4001	37	9,195	3,778	2	5	281	30	13,146	12	27	15,288	-	1,005	210	847	177	6,513	60396	1

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Total export

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

TALLOW AND GREASE EXPORT, FORECAST 2000-2020

Export of Tallow & Greases

Exports		EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
	1976	62	9	-	-	115	1078	-	26	-	-	-	-	-	-	6	-	-	-	-	-	240	96	98	1730	
	1977	54	4	-	-	148	1322	-	40	-	-	-	-	-	-	4	-	-	-	-	-	233	96	116	2017	16.6
	1978	56	8	-	-	144	1228	-	79	-	-	-	-	-	-	3	-	-	-	-	-	247	81	103	1949	-3.4
	1979	63	6	-	-	155	1287	-	82	-	-	-	-	-	-	4	-	-	-	-	-	246	82	132	2057	5.5
	1980	64	5	-	-	175	1517	-	61	-	-	-	-	-	-	3	-	-	-	-	-	190	109	129	2253	9.5
	1981	80	4	-	-	187	1490	-	93	-	-	-	-	-	-	1	-	-	-	-	-	172	122	130	2279	1.2
	1982	60	5	-	-	180	1414	-	37	-	-	-	-	-	-	1	-	-	-	-	2	216	94	128	2137	-6.2
	1983	75	7	-	-	173	1387	-	35	-	-	-	-	-	-	2	-	-	-	-	-	171	124	152	2126	-0.5
	1984	81	7	-	-	177	1268	-	27	-	-	-	-	10	-	6	-	-	-	-	3	197	117	147	2040	-4.0
	1985	62	14	-	-	162	1281	-	26	-	-	-	-	1	-	2	-	-	-	-	9	187	138	149	2031	-0.4
	1986	68	4	-	-	177	1192	-	28	-	-	-	-	-	-	4	-	-	-	-	3	218	112	186	1992	-1.9
	1987	70	1	-	-	163	1155	-	35	-	-	-	-	-	-	5	-	-	-	-	10	208	130	195	1972	-1.0 %
	1988	87	5	-	-	179	1337	-	26	-	-	-	-	-	-	4	1	-	-	-	8	243	137	203	2230	13.1 %
	1989	84	4	-	-	187	1300	-	19	1	-	-	-	-	1	3	1	-	-	-	5	226	121	207	2159	-3.2 %
	1990	72	9	-	-	202	1104	-	25	-	-	-	-	-	-	2	1	-	-	-	9	261	102	207	1994	-7.6 %
	1991	52	6	-	-	191	1138	-	23	-	-	-	-	-	-	2	-	-	-	-	5	293	126	201	2037	2.2 %
	1992	57	7	-	-	213	1347	-	6	2	-	-	-	-	-	1	-	-	-	-	5	289	129	199	2255	11 %
	1993	39	3	-	-	171	1260	-	28	2	-	-	-	-	-	2	-	-	-	-	3	305	119	182	2114	-6 %
	1994	44	4	-	-	160	1322	-	31	1	-	-	1	1	1	4	-	-	-	-	3	348	139	195	2254	7 %
	1995	66	1	-	-	194	1595	-	51	4	-	-	-	-	-	3	-	-	-	-	6	309	138	184	2551	13 %
	1996	52	1	-	-	191	1156	-	23	8	-	-	-	-	14	2	-	-	-	-	12	351	142	201	2153	-15.6 %
	1997	83	1	-	-	207	980	-	28	9	-	-	-	-	1	2	-	-	-	-	1	315	158	222	2007	-6.8 %
	1998	72	-	-	-	218	1320	-	17	4	-	-	1	-	-	2	-	-	-	-	1	370	121	221	2347	16.9 %
	1999	72	-	-	-	257	1185	-	24	3	-	-	1	-	1	2	1	-	-	-	1	386	139	270	2342	-0.2 %
	2000	77	-	-	-	230	1070	-	36	-	-	-	3	-	-	2	1	-	-	-	1	401	134	275	2230	-4.8 %
1976-1980		59.8	6.4	-	-	147.4	1,286.4	-	57.6	-	-	-	-	-	-	4.0	-	-	-	-	-	231.2	92.8	115.6	2001.2	
1981-1985		71.6	7.4	-	-	175.8	1,368.0	-	43.6	-	-	-	-	2.2	-	2.4	-	-	-	-	2.8	188.6	119.0	141.2	2122.6	6.1 %
1986-1990		76.2	4.6	-	-	181.6	1,217.6	-	26.6	0.2	-	-	-	-	0.2	3.6	0.6	-	-	-	7.0	231.2	120.4	199.6	2069.4	-2.5 %
1991-1995		51.6	4.2	-	-	185.8	1,332.4	-	27.8	1.8	-	-	0.2	0.2	0.2	2.4	-	-	-	-	4.4	308.8	130.2	192.2	2242.2	8.4 %
1996-2000		71.2	0.4	-	-	220.6	1,142.2	-	25.6	4.8	-	-	1.0	-	3.2	2.0	0.4	-	-	-	3.2	364.6	138.8	237.8	2215.8	-1.2 %
2001-2005		70	4	-	-	240	1250	-	20	25	-	-	3	-	1	2	-	-	-	-	3	405	144	265	2432	9.8 %
2006-2010		75	5	-	-	260	1400	-	40	30	-	-	4	-	2	2	-	-	-	-	4	435	150	290	2697	10.9 %
2011-2015		80	6	-	-	280	1520	-	59	40	-	-	5	-	2	2	1	-	-	-	5	470	162	320	2952	9.5 %
2016-2020		90	7	-	-	295	1690	-	70	50	-	-	6	-	3	2	1	-	-	-	6	500	177	360	3257	10.3 %

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Tallow & Greases, exports

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

TALLOW AND GREASE IMPORT, FORECAST 2000-2020

Tallow & Greases

Imports		EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World
	1976	469	11	34	7	3	12	27	-	21	4	4	51	24	-	235	123	3	35	9	16	-	-	601	16
	1977	583	11	34	12	3	9	37	-	15	5	5	99	72	-	191	156	5	51	12	10	-	-	680	19
	1978	524	58	37	11	8	6	54	1	59	4	5	93	48	-	187	164	4	43	12	4	-	-	692	20
	1979	448	108	36	9	6	6	59	1	73	5	3	99	13	-	154	177	4	51	13	1	-	-	768	20
	1980	502	103	42	8	6	6	83	-	71	5	3	130	36	1	171	143	2	73	11	18	-	-	818	22
	1981	539	110	35	6	5	7	73	-	37	6	3	48	102	1	135	156	1	95	11	20	-	-	906	22
	1982	533	60	34	1	5	5	83	1	21	4	2	46	85	1	117	138	-	80	10	23	-	-	862	21
	1983	433	68	29	1	8	6	87	-	26	6	6	65	121	1	113	138	-	87	10	29	-	-	871	21
	1984	379	65	49	18	10	8	115	1	41	7	2	42	-	1	103	175	2	115	10	37	-	-	884	20
	1985	357	77	47	10	9	10	115	-	25	4	2	60	-	1	103	123	-	99	8	35	-	-	859	19
	1986	439	49	21	11	12	9	120	1	105	3	4	60	1	1	100	104	1	96	9	31	-	-	846	20
	1987	343	61	27	11	14	10	165	1	30	2	1	88	4	1	95	122	1	110	10	41	-	-	844	19
	1988	353	65	31	11	13	8	174	1	43	2	-	98	1	1	113	114	-	122	8	39	-	-	912	21
	1989	377	80	14	18	18	9	191	2	100	3	-	80	-	1	127	120	-	144	7	72	-	3	893	22
	1990	341	60	35	11	18	15	176	1	58	3	-	80	-	1	129	106	-	112	7	74	-	1	854	20
	1991	317	25	45	6	21	31	204	8	54	5	4	67	-	1	126	104	-	81	7	57	-	-	860	20
	1992	486	72	30	11	27	35	164	16	30	7	15	51	-	2	117	136	-	59	11	69	-	1	859	21
	1993	422	12	33	2	33	37	230	6	48	8	6	82	-	2	96	108	1	68	10	88	-	3	875	21
	1994	469	1	19	5	42	33	256	4	61	10	2	111	1	3	75	113	1	76	11	84	-	5	873	22
	1995	440	8	25	16	50	34	260	4	46	8	3	263	2	2	96	124	1	64	15	128	-	5	943	25
	1996	392	9	32	9	57	36	252	3	15	8	1	170	1	14	104	93	1	47	16	152	-	6	760	21
	1997	371	10	9	7	47	55	234	9	17	3	-	162	1	3	98	74	2	41	16	130	1	2	679	19
	1998	329	21	10	25	48	44	322	37	31	15	12	147	3	1	91	75	2	101	19	168	1	5	814	23
	1999	266	40	45	29	50	56	297	3	29	3	2	261	2	1	90	121	2	91	21	103	1	5	859	23
	2000	257	25	53	10	43	49	296	11	57	2	1	343	4	2	100	93	2	98	9	131	2	6	677	22
1976-1980		505.2	58.2	36.6	9.4	5.2	7.8	52.0	0.4	47.8	4.6	4.0	94.4	38.6	0.2	187.6	152.6	3.6	50.6	11.4	9.8	-	-	711.8	199
1981-1985		448.2	76.0	38.8	7.2	7.4	7.2	94.6	0.4	30.0	5.4	3.0	52.2	61.6	1.0	114.2	146.0	0.6	95.2	9.8	28.8	-	-	876.4	210
1986-1990		370.6	63.0	25.6	12.4	15.0	10.2	165.2	1.2	67.2	2.6	1.0	81.2	1.2	1.0	112.8	113.2	0.4	116.8	8.2	51.4	-	0.8	869.8	209
1991-1995		426.8	23.6	30.4	8.0	34.6	34.0	222.8	7.6	47.8	7.6	6.0	114.8	0.6	2.0	102.0	117.0	0.6	69.6	10.8	85.2	-	2.8	882.0	223
1996-2000		323.0	21.0	29.8	16.0	49.0	48.0	280.2	12.6	29.8	6.2	3.2	216.6	2.2	4.2	96.6	91.2	1.8	75.6	16.2	136.8	1.0	4.8	757.8	222
2001-2005		290	30	80	17	45	65	305	20	25	6	10	340	4	4	90	75	1	85	15	150	2	4	767	24
2006-2010		260	46	100	20	50	68	330	30	20	7	15	445	6	5	95	80	1	95	20	210	2	3	785	26
2011-2015		250	50	125	25	55	70	360	35	20	8	20	520	8	6	100	85	1	105	20	235	2	2	845	29
2016-2020		240	55	160	30	60	75	390	40	20	8	25	620	10	8	105	85	1	115	25	262	2	2	920	32

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Tallow & Greases, imports

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

OLIVE OIL EXPORT, FORECAST 2000-2020

Olive oil

Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World
1976	76	-	-		-	-	-	10	-		-	-	-	-	-	-	-	-	-	2	-	-	101	18
1977	81	-	-		-	-	-	13	-		-	-	-	-	-	-	-	-	-	36	-	-	83	21
1978	86	-	-		-	-	-	9	-		-	-	-	-	-	-	-	-	-	8	-	-	87	19
1979	109	-	-		-	-	-	10	-		-	-	-	-	-	-	-	-	-	30	-	-	90	23
1980	111	-	-		-	-	-	10	-		-	-	-	-	-	-	-	-	-	3	-	-	92	21
1981	90	-	-		-	-	-	8	-		-	-	-	-	-	-	-	-	-	43	-	-	83	22
1982	75	-	-		-	-	-	6	-		-	-	-	-	-	-	-	-	-	21	-	-	73	17
1983	123	-	-		-	-	-	6	-		-	-	-	-	-	-	-	-	-	64	-	-	48	24
1984	130	-	-		-	-	-	5	-		-	-	-	-	-	-	-	-	-	21	-	-	83	23
1985	159	-	-		-		-	6	-		-	-	-	-	-	-	-	-	-	28	-	-	52	24
1986	129	-	-		-	-	-	5	-		-	-	-	-	-	-	-	-	-	29	-	-	51	21
1987	146	-	-		-	-	-	3	-		-	-	-	-	-	-	-	-	-	37	-	-	62	24
1988	172	-	-		-	-	-	4	-		-	-	-	-	1	-	-	-	-	22	-	-	72	27
1989	152	-	-		-	3	-	7	-		-	-	-	-	-	-	-	-	-	37	-	-	68	26
1990	170	-	-		-	5	-	4	-		-	-	-	-	-	-	-	-	-	4	-	-	95	27
1991	140	-	-		-	5	-	8	-		-	-	-	-	-	-	-	-	-	16	-	-	182	35
1992	204	-	-		-	11	-	6	-		-	-	-	-	-	-	-	-	-	12	-	-	122	35
1993	196	-	-		-	8	-	6	-		-	-	-	-	-	-	-	-	-	6	-	-	142	35
1994	200	-	-		-	6	-	3	-		-	-	-	-	-	-	-	-	-	14	-	-	224	44
1995	181	-	-		-	12	-	5	-		-	-	-	-	-	-	-	-	-	58	-	-	128	38
1996	179	-	-		-	12	-	5	-		-	-	-	-	-	-	-	-	-	23	-	-	87	30
1997	260	-	-		-	9	-	6	-		-	-	-	-	-	-	-	-	-	50	-	-	184	50
1998	248	-	-		-	9	-	7	-		-	-	-	-	-	-	-	-	-	49	-	-	163	47
1999	240	-	-		-	8	-	7	-		-	-	-	-	-	-	-	-	-	97	-	-	213	56
2000	327	-	-		-	6	-	6	-		-	-	-	-	-	-	-	-	-	21	-	-	155	51
1976-1980	92.6	-	-	#DIV/0!	-	-	-	10.4	-	#DIV/0!	-	-	-	-	-	-	-	-	-	15.8	-	-	90.6	209.
1981-1985	115.4	-	-	#DIV/0!	-	-	-	6.2	-	#DIV/0!	-	-	-	-	-	-	-	-	-	35.4	-	-	67.8	224.
1986-1990	153.8	-	-	#DIV/0!	-	1.6	-	4.6	-	#DIV/0!	-	-	-	-	0.2	-	-	-	-	25.8	-	-	69.6	255.
1991-1995	184.2	-	-	#DIV/0!	-	8.4	-	5.6	-	#DIV/0!	-	-	-	-	-	-	-	-	-	21.2	-	-	159.6	379.
1996-2000	250.8	-	-	#DIV/0!	-	8.8	-	6.2	-	#DIV/0!	-	-	-	-	-	-	-	-	-	48.0	-	-	160.4	474.
2001-2005	300	-	-		-	7	-	9	-		-	-	-	-	-	-	-	-	-	65	-	-	193	57
2006-2010	320	-	-		-	8	-	9	-		-	-	-	-	-	-	-	-	-	75	-	-	210	62
2011-2015	345	-	-		-	9	-	10	-		-	-	-	-	-	-	-	-	-	85	-	-	265	71
2016-2020	355	-	-		-	10	-	10	-		-	-	-	-	-	-	-	-	-	100	-	-	285	76

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/olive oil, exports

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

OLIVE OIL IMPORT, FORECAST 2000-2020

Olive oil

Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World
1976	63	9	-		5	29	-	-	11		-	-	-	-	-	-	-	-	-	-	5	-	60	18
1977	103	6	-		5	25	-	-	11		-	-	-	-	1	-	-	-	-	-	7	-	65	22
1978	56	9	-		3	28	-	-	11		-	-	-	-	1	-	-	-	-	-	6	-	75	18
1979	85	7	4		3	27	-	-	13		-	-	-	-	1	-	-	-	-	-	5	-	73	21
1980	104	12	1		4	26	-	-	8		-	-	-	-	1	-	-	-	-	-	5	-	71	23
1981	60	23	-		3	28	-	-	11		-	-	-	-	2	-	-	-	-	-	5	-	94	22
1982	54	13	-		4	29	-	-	10		-	-	-	-	1	-	-	-	-	-	4	-	79	19
1983	53	19	-		4	33	-	-	10		-	-	-	-	1	-	-	-	-	2	6	-	94	22
1984	44	21	-		5	41	-	-	8		-	-	-	-	2	-	-	-	-	3	6	-	65	19
1985	62	30	-		5	44	-	-	10		-	-	-	-	2	-	-	-	-	26	7	-	70	25
1986	13	30	-		4	52	-	-	12		-	-	-	-	2	-	-	-	-	13	7	-	84	21
1987	29	21	-		6	64	-	-	14		-	-	-	-	2	-	-	-	-	3	7	-	89	23
1988	56	17	-		8	81	1	-	10		-	-	-	-	3	-	-	-	-	6	9	-	89	28
1989	48	28	-		8	81	1	-	20		-	-	-	-	3	1	-	-	-	2	10	-	82	28
1990	81	10	-		9	97	1	-	13		-	-	-	-	4	1	-	-	-	2	12	-	48	27
1991	143	7	-		10	99	2	-	14		-	-	-	-	4	1	-	-	-	-	12	-	63	35
1992	95	13	-		12	114	2	-	13		-	-	-	-	5	2	-	-	-	2	16	1	77	35
1993	100	11	-		13	121	2	-	16		-	1	-	-	5	5	-	-	-	-	16	1	49	34
1994	180	19	-		12	126	3	2	22		-	-	-	-	7	4	-	-	-	1	17	1	50	44
1995	165	9	-		14	122	1	1	20		-	-	-	-	9	3	-	-	-	-	17	1	41	40
1996	77	10	-		15	113	1	2	23		-	6	-	-	18	3	-	-	-	-	16	1	39	32
1997	165	7	-		18	163	3	7	27		-	-	-	-	29	3	-	-	-	-	21	2	65	51
1998	120	4	-		19	165	4	8	28		-	-	-	-	34	1	-	-	-	-	19	2	65	46
1999	234	2	-		18	163	3	2	23		-	-	-	-	27	1	-	-	-	1	23	3	57	55
2000	112	2	-		25	204	4	10	26		-	-	-	-	27	1	-	-	-	1	27	3	79	52
1976-1980	82.2	8.6	1.0	#DIV/0!	4.0	27.0	-	-	10.8	#DIV/0!	-	-	-	-	0.8	-	-	-	-	-	5.6	-	68.8	208.
1981-1985	54.6	21.2	-	#DIV/0!	4.2	35.0	-	-	9.8	#DIV/0!	-	-	-	-	1.6	-	-	-	-	6.2	5.6	-	80.4	218.
1986-1990	45.4	21.2	-	#DIV/0!	7.0	75.0	0.6	-	13.8	#DIV/0!	-	-	-	-	2.8	0.4	-	-	-	5.2	9.0	-	78.4	258.
1991-1995	136.6	11.8	-	#DIV/0!	12.2	116.4	2.0	0.6	17.0	#DIV/0!	-	0.2	-	-	6.0	3.0	-	-	-	0.6	15.6	0.8	56.0	378.
1996-2000	141.6	5.0	-	#DIV/0!	19.0	161.6	3.0	5.8	25.4	#DIV/0!	-	1.2	-	-	27.0	1.8	-	-	-	0.4	21.2	2.2	61.0	476.

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/olive oil, imports

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

RAPSEED IMPORT, FORECAST 2000-2020

Rapseed Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
1976	16	8	-	-	-	6	-	-	-	13	-	-	37	-	14	-	-	-	-	-	1	-	184	279	
1977	25	-	1	-	-	8	-	-	-	2	-	3	264	-	8	-	-	-	-	-	4	-	162	477	71.0
1978	35	4	2	-	-	7	1	-	-	1	-	1	236	-	14	-	-	-	-	-	4	-	147	452	-5.2
1979	27	5	43	-	-	8	1	-	-	12	-	1	113	-	11	2	-	-	-	-	6	-	220	449	-0.7
1980	19	17	98	-	-	6	-	-	-	5	-	-	151	-	8	-	-	-	-	-	5	1	179	489	8.9
1981	20	10	126	1	-	6	-	-	-	-	-	7	130	-	24	-	-	-	-	-	14	1	229	568	16.2
1982	27	11	136	-	-	7	-	-	-	-	-	4	75	-	19	-	-	4	-	-	15	1	216	515	-9.3
1983	21	12	61	1	-	5	1	-	-	-	-	6	148	-	13	-	-	11	-	-	10	1	231	521	1.2
1984	29	17	15	6	-	5	1	-	-	-	3	3	216	3	23	-	-	2	-	-	7	2	289	621	19.2
1985	34	16	-	34	-	15	16	-	-	-	3	4	207	-	13	-	-	3	-	-	1	2	506	854	37.5
1986	34	14	-	33	-	54	7	-	-	3	1	24	255	-	5	1	-	7	-	-	1	2	495	936	9.6
1987	46	34	-	11	-	87	-	-	-	-	9	99	269	48	4	-	25	59	-	1	1	2	543	1238	32.3
1988	52	30	-	-	1	153	17	-	1	1	1	70	307	78	6	-	22	11	-	2	1	3	593	1349	9.0
1989	34	63	-	16	2	195	65	-	-	1	-	612	28	-	6	-	70	7	-	5	2	4	524	1634	21.1
1990	31	25	-	18	2	202	187	-	-	1	14	591	11	-	6	-	29	3	-	2	1	5	559	1687	3.2
1991	38	15	-	57	1	307	189	-	-	2	1	284	5	-	6	12	18	1	-	38	1	5	528	1508	-10.6
1992	31	61	2	54	1	382	155	-	3	-	23	193	29	-	5	10	10	5	-	26	1	4	411	1406	-6.8
1993	29	18	-	42	6	396	93	-	2	-	8	150	27	-	5	14	12	2	-	3	1	4	430	1242	-11.7
1994	13	68	-	42	13	426	81	-	2	1	6	545	25	-	4	12	50	2	-	-	1	4	477	1772	42.7
1995	3	113	1	43	13	431	31	-	4	-	5	631	23	-	14	9	15	3	-	13	1	4	531	1888	6.5
1996	9	126	4	41	48	523	35	-	2	-	-	332	19	-	5	11	9	2	-	12	1	4	653	1836	-2.8
1997	10	215	-	21	79	491	55	-	10	-	-	420	23	-	4	11	16	6	1	2	1	4	502	1871	1.9
1998	7	215	-	3	31	500	119	-	4	2	2	424	181	-	4	5	29	1	4	13	2	6	656	2208	18.0
1999	9	240	1	8	39	523	75	-	10	3	1	98	200	-	3	8	53	7	1	22	3	10	499	1813	-17.9
2000	6	135	2	7	91	534	66	-	8	-	1	170	105	-	19	8	16	33	1	39	3	14	599	1857	2.4
1976-1980	24.4	6.8	28.8	-	-	7.0	0.4	-	-	6.6	-	1.0	160.2	-	11.0	0.4	-	-	-	-	4.0	0.2	178.4	429.2	
1981-1985	26.2	13.2	67.6	8.4	-	7.6	3.6	-	-	-	1.2	4.8	155.2	0.6	18.4	-	-	4.0	-	-	9.4	1.4	294.2	615.8	43.5
1986-1990	39.4	33.2	-	15.6	1.0	138.2	55.2	-	0.2	1.2	5.0	279.2	174.0	25.2	5.4	0.2	29.2	17.4	-	2.0	1.2	3.2	542.8	1368.8	122.3
1991-1995	22.8	55.0	0.6	47.6	6.8	388.4	109.8	-	2.2	0.6	8.6	360.6	21.8	-	6.8	11.4	21.0	2.6	-	16.0	1.0	4.2	475.4	1563.2	14.2
1996-2000	8.2	186.2	1.4	16.0	57.6	514.2	70.0	-	6.8	1.0	0.8	288.8	105.6	-	7.0	8.6	24.6	9.8	1.4	17.6	2.0	7.6	581.8	1917.0	22.6
2001-2005	13	110	5	15	60	625	75	-	10	5	1	114	72	1	7	11	18	12	1	25	3	9	671	1863	-2.8
2006-2010	14	105	8	42	70	725	100	-	12	8	2	300	145	2	8	12	21	16	2	30	3	11	840	2476	32.9
2011-2015	23	80	10	52	90	850	120	-	15	11	4	450	260	2	8	12	22	26	5	35	4	11	965	3055	23.4
2016-2020	24	60	10	62	100	950	130	-	20	15	7	550	300	2	8	13	24	35	7	40	4	12	1,140	3513	15.0

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/rapseed, import

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

RAPSEED EXPORT, FORECAST 2000-2020

Rapseed Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
1976	167	-	-	-	43	-	-	-	-	-	-	11	-	-	1	-	-	-	-	-	-	-	85	307	
1977	279	-	-	-	103	-	-	-	-	-	-	4	-	-	2	-	-	-	-	-	-	-	115	503	63.8
1978	220	-	-	-	94	-	-	-	-	-	-	8	-	-	2	-	-	-	-	-	-	-	77	401	-20.3
1979	263	-	-	-	119	-	-	-	-	-	-	11	-	-	1	13	-	-	-	-	-	-	48	455	13.5
1980	245	-	-	-	173	-	-	3	16	-	-	13	-	-	1	5	-	-	-	-	-	-	24	480	5.5
1981	364	-	-	-	191	-	-	-	-	-	-	9	-	-	1	9	-	-	-	-	-	-	29	603	25.6
1982	314	-	-	-	145	-	-	-	-	-	-	25	-	-	-	9	-	-	-	-	-	-	34	527	-12.6
1983	312	-	-	-	94	-	-	-	-	-	-	34	-	-	-	1	-	-	-	-	-	-	35	476	-9.7
1984	389	-	-	-	201	-	-	-	-	-	-	27	-	-	3	-	-	-	-	-	-	-	63	683	43.5
1985	470	-	-	-	245	-	-	-	1	-	-	14	-	-	-	-	-	-	-	-	-	-	65	795	16.4
1986	612	-	-	-	229	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	99	954	20.0
1987	771	-	-	-	264	-	-	-	-	-	-	10	-	5	-	-	13	-	-	-	-	-	169	1232	29.1
1988	1,011	-	-	-	364	-	-	-	-	-	-	2	-	10	-	-	18	-	-	-	-	-	108	1513	22.8
1989	1,147	1	-	-	169	6	-	3	-	-	-	50	-	-	-	-	50	-	-	-	-	-	134	1560	3.1
1990	1,134	-	-	-	183	4	-	-	-	-	-	75	-	-	-	-	35	-	-	-	-	-	157	1588	1.8
1991	1,146	1	-	-	259	2	-	-	-	-	-	51	-	-	-	-	15	-	-	-	-	-	106	1580	-0.5
1992	864	1	-	-	363	12	-	2	-	-	-	53	-	-	-	-	16	-	-	-	-	-	80	1391	-12.0
1993	639	2	-	-	443	8	-	-	-	-	-	58	-	-	-	-	12	-	-	-	-	-	67	1229	-11.6
1994	949	1	-	-	472	63	-	-	-	-	-	161	-	-	-	-	28	-	-	-	3	-	176	1853	50.8
1995	855	1	-	-	587	59	-	-	1	-	-	171	-	-	-	-	24	-	-	-	-	-	200	1898	2.4
1996	606	11	-	-	704	96	-	-	-	-	-	174	-	-	-	-	10	-	-	-	8	-	169	1778	-6.3
1997	693	1	-	-	687	140	-	-	-	-	-	141	5	-	-	-	9	-	-	-	21	-	221	1918	7.9
1998	853	-	-	-	741	156	-	-	-	-	-	73	-	-	-	-	22	-	-	-	41	-	346	2232	16.4
1999	666	-	-	-	700	101	-	-	1	-	-	25	-	-	-	-	51	-	-	-	43	-	147	1734	-22.3
2000	467	-	-	-	839	121	-	-	-	-	-	85	2	-	-	-	15	-	-	-	40	-	291	1860	7.3
1976-1980	234.8	-	-	-	106.4	-	-	0.6	3.2	-	-	9.4	-	-	1.4	3.6	-	-	-	-	-	-	69.8	429.2	
1981-1985	369.8	-	-	-	175.2	-	-	-	0.2	-	-	21.8	-	-	0.8	3.8	-	-	-	-	-	-	45.2	616.8	43.7
1986-1990	935.0	0.2	-	-	241.8	2.0	-	0.6	-	-	-	30.2	-	3.0	-	-	23.2	-	-	-	-	-	133.4	1369.4	122.0
1991-1995	890.6	1.2	-	-	424.8	28.8	-	0.4	0.2	-	-	98.8	-	-	-	-	19.0	-	-	-	0.6	-	125.8	1590.2	16.1
1996-2000	657.0	2.4	-	-	734.2	122.8	-	-	0.2	-	-	99.6	1.4	-	-	-	21.4	-	-	-	30.6	-	234.8	1904.4	19.8
2001-2005	390	11	-	-	860	135	-	6	2	-	-	100	-	-	1	-	13	-	-	-	55	-	275	1848	-3.0
2006-2010	425	15	-	-	1,150	220	-	12	3	-	-	120	-	-	1	-	15	-	-	-	110	-	410	2481	34.3
2011-2015	500	19	-	-	1,420	237	-	25	5	-	-	130	-	-	1	-	16	-	-	-	200	-	500	3053	23.1
2016-2020	640	26	-	-	1,550	260	-	35	8	-	-	140	-	-	1	-	17	-	-	-	290	-	540	3507	14.9

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

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WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

SOYA OIL EXPORT, FORECAST 2000-2020

Soya Oil

Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World
1976	306	-	-	-		510	-	64	498	-	-	1	-	-	2	-	-	-	-	-	-	-	20	140
1977	320	-	-	-		774	-	40	502	-	-	2	-	-	1	-	-	-	-	-	-	-	23	166
1978	533	-	-	-	1	929	-	66	504	-	-	6	-	-	1	-	-	-	-	-	-	-	25	206
1979	625	-	-	-	10	1,129	-	81	534	-	-	4	-	-	3	-	-	-	-	-	-	-	38	242
1980	631	-	-	-	14	1,096	-	92	744	-	-	-	-	-	17	5	4	-	-	-	-	-	42	264
1981	687	-	-	-	11	819	-	70	1,281	-	-	-	-	-	1	1	22	-	-	-	-	-	34	292
1982	776	-	-	-	31	938	-	174	890	-	-	1	-	-	3	1	31	-	-	1	-	-	50	289
1983	789	-	-	-	12	786	-	293	960	-	-	11	2	-	4	-	34	-	-	2	-	-	73	296
1984	821	-	-	-	16	1,011	-	484	905	-	-	8	4	-	4	1	40	-	-	1	-	-	116	341
1985	723	-	-	-	7	587	-	551	963	-	-	7	3	-	2	1	25	-	-	1	-	-	63	293
1986	723	-	-	-	4	541	-	692	383	-	-	1	4	-	2	-	31	-	-	1	-	-	76	245
1987	821	-	-	-	-	630	-	736	1,006	-	-	-	-	-	2	-	95	-	-	-	-	-	145	343
1988	539	-	-	-	3	893	-	1,004	659	-	-	-	-	20	7	-	53	-	-	21	-	-	187	338
1989	592	-	-	-	1	715	-	802	819	-	-	-	-	33	2	-	55	-	-	37	-	-	160	321
1990	596	-	-	-	2	536	-	1,003	799	-	-	7	-	29	1	-	45	-	-	26	-	-	158	320
1991	523	-	-	-	5	444	-	1,246	502	-	-	1	-	21	-	-	45	-	-	30	-	-	142	295
1992	588	-	-	-	3	765	-	1,320	737	-	-	4	1	24	-	-	29	-	1	10	-	-	180	366
1993	479	2	-	-	5	691	1	1,372	701	-	-	15	-	38	2	4	47	4	-	4	-	-	176	354
1994	440	3	-	-	27	823	23	1,485	1,519	-	-	73	-	26	2	3	57	1	-	8	1	-	302	479
1995	690	-	-	-	12	1,037	27	1,545	1,764	-	-	66	1	9	1	7	99	-	-	2	-	-	398	565
1996	535	2	-	-	44	571	27	1,689	1,332	-	-	127	1	-	1	7	113	-	-	-	-	-	434	488
1997	874	-	-	-	34	1,016	2	1,962	1,126	-	-	556	4	28	1	18	131	-	-	-	-	-	1,028	678
1998	1,085	-	-	-	30	1,464	6	2,464	1,367	-	-	185	-	-	1	17	172	-	6	1	-	-	1,146	794
1999	1,113	-	-	-	38	882	12	3,015	1,552	-	-	53	-	-	1	4	170	-	24	3	1	-	733	760
2000	1,065	1	-	-	37	596	8	3,021	1,073	-	-	35	2	-	1	15	176	-	20	1	3	-	804	685
1976-1980	483.0	-	-	-	5.0	887.6	-	68.6	556.4	-	-	2.6	-	-	4.8	1.0	0.8	-	-	-	-	-	29.6	2039.
1981-1985	759.2	-	-	-	15.4	828.2	-	314.4	999.8	-	-	5.4	1.8	-	2.8	0.8	30.4	-	-	1.0	-	-	67.2	3026.
1986-1990	654.2	-	-	-	2.0	663.0	-	847.4	733.2	-	-	1.6	0.8	16.4	2.8	-	55.8	-	-	17.0	-	-	145.2	3139.
1991-1995	544.0	1.0	-	-	10.4	752.0	10.2	1,393.6	1,044.6	-	-	31.8	0.4	23.6	1.0	2.8	55.4	1.0	0.2	10.8	0.2	-	239.6	4122.
1996-2000	934.4	0.6	-	-	36.6	905.8	11.0	2,430.2	1,290.0	-	-	191.2	1.4	5.6	1.0	12.2	152.4	-	10.0	1.0	0.8	-	829.0	6813.
2001-2005	1,090	1	-	-	39	1,138	10	3,589	1,771	-	-	92	1	1	3	16	185	-	24	3	1	-	915	887
2006-2010	1,000	2	-	-	70	1,280	13	4,320	2,460	-	-	110	2	3	4	21	205	-	35	4	2	-	1,100	1063
2011-2015	1,180	2	-	-	96	1,250	15	4,770	3,000	-	-	110	3	4	5	25	220	-	40	5	4	-	1,150	1187
2016-2020	1,300	2	-	-	103	1,400	18	5,320	3,470	-	-	100	3	5	8	25	225	-	45	5	5	-	1,250	1328

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

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WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

SOYA OIL IMPORT, FORECAST 2000-2020

Soya Oil

Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	Worlc
1976	23	-	3	-	31	-	3	-	-	54	63	6	116	-	12	1	-	193	-	63	33	7	793	1
1977	34	-	30	-	28	-	15	-	-	38	72	148	453	-	-	-	1	96	-	11	23	7	686	1
1978	21	3	62	-	28	6	38	-	-	47	95	134	488	-	-	-	1	203	2	29	21	6	900	2
1979	25	24	46	3	22	-	-	-	77	53	25	116	556	-	-	-	1	279	4	81	22	10	1,084	2
1980	27	83	55	3	12	-	42	-	50	49	35	120	668	-	-	-	2	213	8	102	18	10	1,176	2
1981	19	115	23	17	4	5	2	-	-	71	70	54	635	-	29	-	3	313	6	135	23	14	1,387	2
1982	19	201	70	47	4	-	104	-	22	74	64	43	438	-	38	10	2	312	6	136	36	13	1,314	2
1983	21	181	48	26	5	-	-	-	32	102	76	12	511	-	7	25	10	259	10	90	37	19	1,490	2
1984	21	120	10	57	13	-	86	-	123	83	62	10	752	14	9	-	13	320	5	134	22	11	1,543	3
1985	16	301	3	9	7	12	45	-	114	81	37	32	422	1	2	2	2	246	4	106	7	14	1,421	2
1986	22	56	8	7	8	1	40	-	190	42	50	171	241	-	-	-	2	274	10	76	13	12	1,259	2
1987	18	200	1	2	8	7	27	-	37	39	65	407	406	-	-	-	79	283	13	159	21	15	1,605	3
1988	48	55	-	1	5	144	87	-	67	35	84	138	389	33	21	-	34	437	17	167	21	19	1,479	3
1989	66	257	-	-	4	7	90	-	48	41	48	421	42	-	3	-	34	403	21	166	30	16	1,638	3
1990	27	134	-	1	8	17	45	-	11	74	53	525	33	2	4	11	40	339	22	124	27	17	1,697	3
1991	26	165	-	2	7	2	41	-	67	55	64	323	26	3	3	57	28	165	20	122	28	21	1,676	2
1992	14	227	-	4	16	1	81	-	97	83	83	223	101	2	1	13	25	212	18	152	32	25	2,188	3
1993	8	67	-	38	21	10	94	-	137	99	112	76	79	3	2	10	13	247	16	232	26	22	2,426	3
1994	8	55	-	29	9	26	101	-	255	94	122	1,064	66	1	1	35	29	198	17	138	29	23	2,473	4
1995	4	66	-	28	30	13	62	-	203	92	100	1,482	179	3	15	44	39	187	14	157	38	19	2,600	5
1996	4	80	3	36	60	43	83	-	169	93	93	1,362	54	11	1	52	66	149	21	106	14	16	2,617	5
1997	2	126	-	68	55	28	95	-	145	69	157	2,376	82	49	3	58	116	233	23	164	15	14	3,025	6
1998	5	182	2	97	13	29	106	-	223	87	169	1,624	369	21	1	65	120	287	42	158	21	16	4,052	7
1999	6	368	7	108	14	38	110	-	159	71	110	804	902	12	4	135	117	334	53	166	9	16	4,056	7
2000	12	300	-	85	28	36	101	-	105	66	101	356	813	15	1	135	140	163	23	159	8	15	4,025	6
1976-1980	26.0	22.0	39.2	1.2	24.2	1.2	19.6	-	25.4	48.2	58.0	104.8	456.2	-	2.4	0.2	1.0	196.8	2.8	57.2	23.4	8.0	927.8	204
1981-1985	19.2	183.6	30.8	31.2	6.6	3.4	47.4	-	58.2	82.2	61.8	30.2	551.6	3.0	17.0	7.4	6.0	290.0	6.2	120.2	25.0	14.2	1,431.0	302
1986-1990	36.2	140.4	1.8	2.2	6.6	35.2	57.8	-	70.6	46.2	60.0	332.4	222.2	7.0	5.6	2.2	37.8	347.2	16.6	138.4	22.4	15.8	1,535.6	314
1991-1995	12.0	116.0	-	20.2	16.6	10.4	75.8	-	151.8	84.6	96.2	633.6	90.2	2.4	4.4	31.8	26.8	201.8	17.0	160.2	30.6	22.0	2,272.6	407
1996-2000	5.8	211.2	2.4	78.8	34.0	34.8	99.0	-	160.2	77.2	126.0	1,304.4	444.0	21.6	2.0	89.0	111.8	233.2	32.4	150.6	13.4	15.4	3,555.0	680
2001-2005	15	455	3	85	51	30	120	-	135	91	180	1,110	930	23	3	159	160	220	42	235	12	13	4,852	8
2006-2010	12	520	4	90	45	33	135	-	210	95	177	2,140	1,240	25	4	160	200	245	65	250	12	12	4,960	10
2011-2015	14	580	5	108	40	40	145	-	240	105	185	3,080	1,200	20	5	162	220	250	87	270	11	13	5,100	11
2016-2020	15	620	6	121	40	42	150	-	260	120	200	3,910	1,300	25	5	160	230	265	109	280	10	14	5,400	13

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Soya Oil Imp

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

COTTON OIL EXPORT, FORECAST 2000-2020

Cotton Oil

Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
1976	1	1	-	-	-	236	-	5	13	-	-	5	-	-	-	-	-	-	-	-	-	-	25	286	
1977	3	-	-	-	-	332	-	6	22	-	-	1	-	-	-	-	-	-	-	-	1	-	18	383	33.9
1978	1	1	-	-	-	331	-	16	14	-	-	1	-	-	-	-	-	-	-	-	-	-	41	405	5.7
1979	1	-	-	-	-	288	-	28	32	-	-	1	-	-	-	-	-	-	-	-	-	-	25	375	-7.4
1980	3	-	-	-	-	356	-	19	50	-	-	1	-	-	-	-	-	-	-	-	-	-	19	448	19.5
1981	2	-	-	-	-	319	-	10	104	-	-	2	-	-	-	-	-	-	-	-	-	-	28	465	3.8
1982	5	-	-	-	-	388	-	14	84	-	-	23	-	-	-	-	-	-	-	-	5	-	25	544	17.0
1983	1	1	-	-	-	195	-	17	78	-	-	35	-	-	-	-	-	-	-	-	-	-	20	347	-36.2
1984	5	-	-	-	-	171	-	14	98	-	-	23	-	-	-	-	-	-	-	3	1	-	21	336	-3.2
1985	5	-	-	-	-	191	-	29	117	-	-	25	-	-	-	-	-	-	-	2	-	-	22	391	16.4
1986	8	-	-	-	-	174	-	9	92	-	-	7	-	-	-	-	-	-	-	1	2	-	20	313	-19.9
1987	7	-	-	-	-	110	-	9	83	-	-	-	-	-	-	-	-	-	-	-	23	-	13	245	-21.7
1988	2	-	-	-	-	168	-	47	98	-	-	-	-	-	-	-	-	-	-	13	12	-	15	355	44.9
1989	1	-	-	-	-	209	-	32	75	-	-	-	-	3	-	-	-	-	-	8	10	-	17	355	-
1990	2	-	-	-	-	136	-	45	86	-	-	-	-	-	-	-	-	-	-	2	11	-	17	299	-15.8
1991	4	-	-	-	-	97	-	57	62	-	-	-	-	-	-	-	-	-	-	-	16	-	17	253	-15.4
1992	2	1	-	-	-	123	-	48	65	-	-	-	-	2	-	-	-	-	-	10	26	-	9	286	13.0
1993	3	2	-	-	-	83	-	28	26	-	-	2	-	-	-	-	-	-	-	1	17	-	11	173	-39.5
1994	7	3	-	-	-	136	-	44	33	-	-	1	-	1	-	-	-	-	-	1	5	-	22	253	46.2
1995	4	2	-	-	-	134	-	60	37	-	-	1	-	-	-	-	-	-	-	2	2	-	23	265	4.7
1996	7	10	-	-	-	100	-	55	16	-	-	-	-	2	-	-	-	-	-	3	9	-	36	238	-10.2
1997	11	10	-	-	-	111	-	42	-	-	-	2	-	1	-	-	-	-	-	9	17	-	33	236	-0.8
1998	10	20	-	-	-	86	-	39	11	-	-	1	-	-	-	-	-	-	-	16	24	-	47	254	7.6
1999	9	14	-	-	-	58	-	24	26	-	-	-	-	2	-	-	-	-	-	6	22	-	39	200	-21.3
2000	9	16	-	-	-	59	-	13	29	-	-	-	-	-	-	-	-	-	-	6	22	-	45	199	-0.5
1976-1980	1.8	0.4	-	-	-	308.6	-	14.8	26.2	-	-	1.8	-	-	-	-	-	-	-	-	0.2	-	25.6	379.4	
1981-1985	3.6	0.2	-	-	-	252.8	-	16.8	96.2	-	-	21.6	-	-	-	-	-	-	-	1.0	1.2	-	23.2	416.6	9.8
1986-1990	4.0	-	-	-	-	159.4	-	28.4	86.8	-	-	1.4	-	0.6	-	-	-	-	-	4.8	11.6	-	16.4	313.4	-24.8
1991-1995	4.0	1.6	-	-	-	114.6	-	47.4	44.6	-	-	0.8	-	0.6	-	-	-	-	-	2.8	13.2	-	16.4	246.0	-21.5
1996-2000	9.2	14.0	-	-	-	82.8	-	34.6	16.4	-	-	0.6	-	1.0	-	-	-	-	-	8.0	18.8	-	40.0	225.4	-8.4
2001-2005	7	16	-	-	-	105	-	15	41	-	-	1	-	1	-	-	-	-	-	8	28	-	41	263	16.7
2006-2010	7	18	-	-	-	100	-	50	60	-	-	-	-	1	-	-	-	-	-	10	30	-	43	319	21.3
2011-2015	7	20	-	-	-	105	-	90	80	-	-	-	-	1	-	-	-	-	-	9	35	-	50	397	24.5
2016-2020	8	22	-	-	-	115	-	125	120	-	-	-	-	1	-	-	-	-	-	9	40	-	58	498	25.4

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WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

COTTON OIL IMPORT FORECAST 2000-2020

Cotton Oil Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
1976	28	-	-	-	5	-	-	-	-	-	-	-	-	-	13	-	-	-	-	11	1	-	216	274	
1977	34	-	1	-	5	-	-	-	-	-	-	-	-	-	23	1	-	-	-	-	2	-	329	395	44.
1978	21	-	3	-	5	-	-	-	-	-	-	-	-	-	31	1	-	10	-	-	1	-	333	405	2.
1979	19	-	-	-	4	-	-	-	-	-	-	-	-	-	37	1	-	-	-	-	-	-	314	375	-7.
1980	27	-	2	-	5	-	-	-	2	-	-	-	-	-	32	2	-	-	-	12	-	-	359	441	17.
1981	20	2	-	-	3	-	-	-	-	-	-	-	28	-	43	2	-	4	-	1	-	-	356	459	4.
1982	23	4	-	-	5	-	-	1	-	-	-	-	-	-	40	4	-	-	-	4	-	-	456	537	17.
1983	20	-	-	-	4	9	8	2	-	-	-	-	-	-	34	3	-	-	-	3	-	-	297	380	-29.
1984	17	-	-	-	3	-	-	-	-	-	-	-	-	-	12	3	-	-	-	-	-	-	281	316	-16.
1985	17	-	-	-	3	-	-	-	-	-	-	-	-	-	26	2	-	-	-	-	-	-	325	373	18.
1986	14	-	-	-	4	-	10	-	-	9	-	-	-	-	30	7	-	-	-	2	-	-	249	325	-12.
1987	14	-	-	-	4	5	2	-	-	5	-	-	-	-	36	9	-	-	-	2	-	-	193	270	-16.
1988	9	-	-	-	5	12	5	-	-	6	-	-	-	-	26	14	-	-	-	17	-	-	271	365	35.
1989	5	-	-	-	6	-	2	-	1	1	-	-	-	-	22	24	-	-	-	2	-	-	270	333	-8.
1990	5	1	-	1	6	7	7	-	-	4	-	-	-	-	24	41	-	-	-	1	-	-	182	279	-16.
1991	4	-	-	-	7	-	4	-	2	5	-	-	-	-	21	30	-	-	-	7	-	-	188	268	-3.
1992	10	1	2	-	11	10	11	-	-	2	-	-	-	-	20	24	-	-	-	6	-	-	203	300	11.
1993	3	2	-	-	10	15	7	-	-	2	-	-	-	-	18	17	-	-	-	1	-	-	93	168	-44.
1994	3	1	-	-	10	12	11	-	1	1	-	-	-	-	18	18	-	-	-	-	-	-	154	229	36.
1995	4	1	-	3	12	-	6	-	10	1	-	-	41	-	16	26	-	8	-	2	-	-	143	273	19.
1996	13	1	-	1	23	-	2	-	9	1	-	2	32	-	14	16	-	2	-	2	1	-	117	236	-13.
1997	40	2	-	-	28	-	2	1	19	1	-	-	22	-	12	16	-	-	-	3	-	-	94	240	1.
1998	21	2	-	-	38	12	4	1	10	1	-	-	29	-	12	10	-	-	-	11	-	-	67	218	-9.
1999	3	1	-	1	37	10	6	1	1	-	-	-	49	-	12	10	-	-	-	6	-	-	50	187	-14.
2000	1	-	-	-	40	4	5	1	1	-	-	-	47	-	9	9	-	-	-	19	-	-	56	192	2.
1976-1980	25.8	-	1.2	-	4.8	-	-	-	0.4	-	-	-	-	-	27.2	1.0	-	2.0	-	4.6	0.8	-	310.2	378.0	
1981-1985	19.4	1.2	-	-	3.6	1.8	1.6	0.6	-	-	-	-	5.6	-	31.0	2.8	-	0.8	-	1.6	-	-	343.0	413.0	9.
1986-1990	9.4	0.2	-	0.2	5.0	4.8	5.2	-	0.2	5.0	-	-	-	-	27.6	19.0	-	-	-	4.8	-	-	233.0	314.4	-23.
1991-1995	4.8	1.0	0.4	0.6	10.0	7.4	7.8	-	2.6	2.2	-	-	8.2	-	18.6	23.0	-	1.6	-	3.2	-	-	156.2	247.6	-21.
1996-2000	15.6	1.2	-	0.4	33.2	5.2	3.8	0.8	8.0	0.6	-	0.4	35.8	-	11.8	12.2	-	0.4	-	8.2	0.2	-	76.8	214.6	-13.
2001-2005	15	1	-	1	40	4	8	5	10	2	-	-	30	-	11	15	-	5	-	25	-	-	100	272	26.
2006-2010	17	-	-	1	45	5	8	4	12	2	-	-	34	-	15	19	-	6	-	30	-	-	120	318	16.
2011-2015	19	-	-	1	50	5	10	3	14	3	-	-	37	-	19	22	-	8	-	35	-	-	170	396	24.
2016-2020	20	-	-	1	55	5	12	1	16	3	-	-	40	-	22	25	-	10	-	40	-	-	245	495	25.

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WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

SUN OIL EXPORT FORECAST 2000-2020

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1976	23	293	-	-	-	-	50	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	151	555	
1977	17	231	-	-	-	-	16	-	131	-	-	-	-	-	-	-	-	-	-	-	-	-	230	625	1
1978	28	148	-	-	-	-	44	-	183	-	-	-	-	-	-	-	-	-	-	-	-	-	239	642	-
1979	21	113	-	-	1	-	30	-	221	-	-	-	-	-	-	-	-	-	-	-	-	-	255	641	-
1980	58	123	-	-	1	-	158	-	338	2	-	-	-	-	-	-	-	-	-	-	-	-	209	889	3
1981	42	112	-	-	10	-	257	-	212	6	-	-	2	-	-	-	-	-	-	-	1	-	244	886	-
1982	29	109	-	8	7	-	89	-	394	4	-	-	23	-	-	-	-	-	-	-	-	-	330	993	1
1983	44	103	-	-	7	-	281	-	615	-	-	-	25	-	-	-	-	-	-	-	-	-	291	1366	3
1984	114	100	-	-	2	-	152	-	595	-	-	-	30	-	-	-	-	-	-	-	1	2	355	1351	-
1985	96	130	-	-	4	-	133	-	863	-	-	-	39	-	-	-	-	-	-	-	5	1	233	1504	1
1986	120	136	-	-	5	-	205	-	998	-	-	-	35	-	-	-	-	-	-	-	22	-	242	1763	1
1987	253	113	-	-	2	-	204	2	664	-	-	-	5	-	-	-	-	-	-	-	36	-	307	1586	-1
1988	266	139	-	-	3	-	260	7	851	-	-	-	1	-	-	-	-	-	-	-	37	1	343	1908	2
1989	322	136	-	-	2	-	216	25	880	-	-	-	-	3	-	-	3	-	-	-	79	1	269	1936	-
1990	262	110	-	-	2	-	148	11	1,233	-	-	-	-	-	-	-	5	-	-	-	108	-	257	2136	1
1991	114	97	-	-	4	-	156	15	1,224	1	-	-	-	1	-	-	10	-	-	-	100	-	330	2052	-
1992	263	89	-	-	4	-	264	7	1,056	2	1	-	2	-	-	-	7	-	-	-	136	-	331	2162	-
1993	141	75	-	-	1	-	259	11	765	1	-	-	6	-	-	-	14	-	-	-	65	-	365	1703	-2
1994	165	266	-	-	1	-	209	10	950	-	-	-	-	1	-	-	17	-	-	-	91	-	284	1994	1
1995	299	52	-	-	1	-	471	4	1,575	1	-	-	1	-	-	-	22	-	-	-	115	-	373	2914	4
1996	226	160	-	-	3	-	281	4	1,481	1	-	-	-	2	-	-	20	-	-	-	82	-	386	2646	-
1997	450	88	-	-	-	-	358	10	1,750	-	2	-	2	-	-	-	6	-	-	-	127	3	627	3423	2
1998	260	113	-	-	-	-	336	6	1,568	-	3	-	1	-	-	-	11	-	-	-	110	4	364	2776	-1
1999	192	61	-	-	1	-	379	5	1,874	-	2	-	-	1	-	-	7	-	-	-	57	6	347	2932	-
2000	174	568	-	-	-	-	234	4	1,591	-	1	-	-	-	-	-	7	-	-	-	38	4	269	2890	-
1976-1980	29.4	181.6	-	-	0.4	59.6	-	182.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	216.8	670.4	
1981-1985	65.0	110.8	-	1.6	6.0	182.4	-	535.8	2.0	-	-	23.8	-	-	-	-	-	-	-	-	1.4	0.6	290.6	1220.0	8
1986-1990	244.6	126.8	-	-	2.8	206.6	9.0	925.2	-	-	-	8.2	-	0.6	-	-	1.6	-	-	-	56.4	0.4	283.6	1865.8	5
1991-1995	196.4	115.8	-	-	2.2	271.8	9.4	1,114.0	1.0	0.2	-	1.8	-	0.4	-	-	14.0	-	-	-	101.4	-	336.6	2165.0	1
1996-2000	260.4	198.0	-	-	0.8	317.6	5.8	1,652.8	0.2	1.6	-	0.6	-	0.6	-	-	10.2	-	-	-	82.8	3.4	398.6	2933.4	3
2001-2005	110	540	-	-	2	370	7	1,410	1	1	-	2	-	1	-	-	10	-	-	-	40	7	330	2831	-
2006-2010	165	690	-	-	4	420	11	2,310	2	2	-	3	-	1	-	-	14	-	-	-	80	9	460	4171	4
2011-2015	150	890	-	-	7	450	15	2,990	6	2	-	4	-	2	-	-	15	-	-	-	85	10	563	5189	2
2016-2020	180	1,100	-	0	10	500	19	3,635	10	2	-	5	-	2	-	-	16	-	-	-	90	12	588	6169	1

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WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

SUN OIL IMPORT FORECAST 2000-2020

Sun Oil

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1976	226	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	15	1	3	318	564
1977	242	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	8	5	300	573
1978	218	-	1	3	-	-	-	-	1	-	-	-	43	-	-	-	-	-	-	-	8	5	364	643
1979	134	-	-	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	13	3	5	525	686
1980	86	52	-	20	-	-	10	-	3	3	-	-	-	-	6	-	-	-	-	35	2	6	619	842
1981	96	245	3	33	-	-	1	-	7	5	-	-	-	-	12	-	-	-	-	10	-	6	516	934
1982	242	277	-	7	2	-	-	-	-	8	-	-	-	-	9	-	-	-	-	3	2	6	389	945
1983	156	231	-	1	6	-	83	-	-	6	-	-	-	-	10	-	-	-	-	20	1	7	809	1330
1984	187	311	6	-	6	-	8	-	-	7	-	-	49	-	9	-	1	-	-	79	1	3	658	1325
1985	203	275	-	3	6	-	37	-	-	3	-	-	1	-	8	-	-	-	-	72	-	6	952	1566
1986	200	188	-	8	7	5	144	-	1	3	-	-	-	-	11	-	-	-	-	52	1	4	1,130	1754
1987	121	345	-	4	7	-	59	-	-	4	-	3	-	-	12	-	-	-	-	48	11	5	946	1565
1988	132	161	-	7	6	-	207	-	-	5	-	-	79	-	16	-	-	1	-	147	8	5	1,123	1897
1989	161	352	-	7	10	2	238	-	3	9	2	-	-	-	17	-	4	-	-	218	6	6	948	1983
1990	263	228	-	-	13	6	164	-	6	12	9	-	-	-	19	-	6	-	-	214	16	8	1,154	2118
1991	198	76	9	1	8	15	184	-	5	17	-	-	-	-	15	1	13	-	-	303	21	7	1,280	2153
1992	154	194	-	2	10	4	115	-	6	25	3	-	-	-	12	-	10	-	-	291	25	8	1,260	2119
1993	164	101	-	-	12	-	249	-	10	38	3	-	-	-	12	-	15	-	-	154	40	9	816	1623
1994	160	70	-	3	13	4	233	-	19	46	8	-	-	-	13	-	19	4	-	288	18	8	1,135	2041
1995	136	190	-	-	13	1	291	-	58	58	5	1	87	-	11	-	27	21	-	306	10	6	1,697	2918
1996	82	144	-	-	19	1	248	-	52	63	5	11	145	-	14	1	18	16	-	192	28	5	1,587	2631
1997	59	368	-	-	14	10	229	4	63	78	10	2	412	-	14	-	17	35	-	230	27	3	1,870	3445
1998	185	279	-	-	15	3	162	-	78	90	16	9	304	-	13	-	16	3	-	158	8	4	1,503	2846
1999	241	234	3	-	24	2	189	-	58	71	26	1	456	-	10	-	21	-	1	132	5	5	1,451	2930
2000	115	102	-	-	25	2	169	-	59	63	22	1	629	-	23	1	21	19	1	98	10	6	1,407	2773
1976-1980	181.2	10.4	0.2	4.6	-	-	2.0	-	1.2	0.6	-	-	12.4	-	2.0	-	-	-	-	12.6	4.4	4.8	425.2	661.6
1981-1985	176.8	267.8	1.8	8.8	4.0	-	25.8	-	1.4	5.8	-	-	10.0	-	9.6	-	0.2	-	-	36.8	0.8	5.6	664.8	1220.0
1986-1990	175.4	254.8	-	5.2	8.6	2.6	162.4	-	2.0	6.6	2.2	0.6	15.8	-	15.0	-	2.0	0.2	-	135.8	8.4	5.6	1,060.2	1863.4
1991-1995	162.4	126.2	1.8	1.2	11.2	4.8	214.4	-	19.6	36.8	3.8	0.2	17.4	-	12.6	0.2	16.8	5.0	-	268.4	22.8	7.6	1,237.6	2170.8
1996-2000	136.4	225.4	0.6	-	19.4	3.6	199.4	0.8	62.0	73.0	15.8	4.8	389.2	-	14.8	0.4	18.6	14.6	0.4	162.0	15.6	4.6	1,563.6	2925.0
2001-2005	380	100	1	1	30	5	158	1	56	60	25	56	270	1	23	1	20	14	1	170	20	6	1,420	2819
2006-2010	350	130	1	5	35	7	230	-	68	75	34	120	430	1	30	1	25	25	2	270	25	6	2,300	4170
2011-2015	460	150	2	6	35	8	273	-	80	80	42	150	650	1	35	1	28	34	4	280	30	6	2,850	5205
2016-2020	560	130	3	10	40	8	320	-	90	90	50	200	920	1	40	1	30	40	5	330	35	6	3,270	6179

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Sun Oil Imp

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

PALM OIL EXPORT FORECAST 2000-2020

Palm Oil

Exports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	Wo
1976	29	-	3	-	-	21	-	-	-	-	-	-	-	406	-	-	1,335	-	-	-	-	-	367	
1977	26	-	1	-	-	28	-	-	-	-	-	-	1	405	-	-	1,427	-	-	-	-	-	431	
1978	30	-	3	-	-	12	-	-	-	-	-	-	2	412	1	-	1,514	-	-	-	-	-	447	
1979	20	-	-	-	-	5	-	-	2	-	-	-	4	354	-	-	1,900	-	-	-	-	-	608	
1980	49	-	-	-	-	8	-	-	-	-	-	-	-	511	-	-	2,260	-	3	-	-	-	877	
1981	40	-	3	-	-	3	-	-	4	-	-	-	-	206	-	-	2,493	-	3	-	-	-	620	
1982	28	-	2	-	-	3	-	-	6	-	-	-	-	302	-	-	2,827	-	2	-	-	-	703	
1983	20	-	-	-	-	2	-	-	4	-	-	-	-	407	-	-	2,948	-	-	-	-	-	618	
1984	34	-	-	-	-	12	-	-	5	-	3	-	-	247	1	-	2,978	-	-	-	-	-	1,116	
1985	30	-	-	-	-	6	-	-	8	-	6	-	3	652	1	-	3,286	-	2	-	-	-	1,379	
1986	21	-	2	-	-	5	-	-	-	-	-	-	1	709	-	-	4,558	-	10	-	-	-	1,187	
1987	16	-	-	-	-	2	-	-	3	-	-	-	1	734	-	1	4,261	-	9	-	-	-	993	
1988	21	-	-	-	-	2	-	-	5	-	-	1	4	920	1	-	4,348	-	12	-	-	-	839	
1989	22	-	-	-	-	3	-	-	5	-	-	11	2	991	1	-	5,213	-	9	-	-	-	1,121	
1990	19	-	-	-	-	2	-	-	2	-	7	74	-	1,163	-	-	5,949	-	7	-	-	-	1,200	
1991	17	-	-	-	-	3	-	-	1	-	5	77	-	1,628	-	-	5,769	-	5	-	-	-	1,105	
1992	27	-	1	-	-	4	-	-	8	-	-	49	-	1,304	-	-	5,801	-	4	-	-	-	1,204	
1993	29	-	-	-	-	3	-	-	11	-	4	147	-	1,719	1	-	6,265	-	7	-	-	-	1,307	
1994	41	-	-	-	-	3	-	-	13	-	8	376	-	2,173	-	1	6,895	-	9	-	-	-	1,408	
1995	42	-	-	-	-	7	-	-	20	-	5	261	4	1,856	-	1	6,643	-	9	-	-	-	1,476	
1996	53	-	-	-	-	8	-	-	31	-	2	160	-	1,851	-	-	7,230	-	6	-	-	-	1,433	
1997	78	-	3	-	-	4	-	-	30	-	-	109	19	2,982	-	-	7,747	-	7	-	-	-	1,491	
1998	70	-	3	-	-	6	-	-	26	-	-	35	2	2,002	-	-	7,748	-	2	-	-	-	1,287	
1999	86	-	6	-	-	4	-	-	14	-	6	-	15	3,319	-	-	9,235	-	6	-	-	-	1,498	
2000	105	-	8	-	-	4	-	-	31	-	5	-	5	4,140	-	1	9,280	-	10	-	-	-	1,614	
2001	129.0	-	5.0	-	-	7.0	-	-	29.0	-	4.0	-	8.0	4,800.0	-	1.0	10,759.0	-	3.0	-	-	-	1,767.0	1
2002	121.0	-	5.0	-	-	6.0	-	-	27.0	-	5.0	-	15.0	5,060.0	-	1.0	10,480.0	-	5.0	-	-	-	1,765.0	1
2003	100.0	-	7.0	-	-	7.0	-	-	40.0	-	4.0	2.0	10.0	5,310.0	1.0	1.0	10,500.0	-	8.0	-	-	-	1,830.0	1
2004	110.0	-	7.0	-	-	7.0	-	-	50.0	-	3.0	2.0	15.0	5,875.0	1.0	1.0	11,325.0	-	9.0	-	-	-	1,860.0	1
2005	120.0	-	7.0	-	-	7.0	-	-	55.0	-	3.0	3.0	16.0	6,540.0	1.0	1.0	12,000.0	-	10.0	-	-	-	1,910.0	2
1976-1980	31	-	1	-	-	15	-	-	0	-	-	-	1	418	0	-	1,687	-	1	-	-	-	546	
1981-1985	30	-	1	-	-	5	-	-	5	-	2	-	1	363	0	-	2,906	-	1	-	-	-	887	
1986-1990	20	-	0	-	-	3	-	-	3	-	1	17	2	903	0	0	4,866	-	9	-	-	-	1,068	
1991-1995	31	-	0	-	-	4	-	-	11	-	4	182	1	1,736	0	0	6,275	-	7	-	-	-	1,300	
1996-2000	78.4	0	4	0	0	5.2	0	0	26.4	0	2.6	60.8	8.2	2858.8	0	0.2	8248	0	6.2	0	0	0	1464.6	1
2001-2005	116	0	6.2	0	0	6.8	0	0	40.2	0	3.8	1.4	12.8	5517	0.6	1	11012.8	0	7	0	0	0	1826.4	1
2006-2010	90	0	10	0	0	9	0	0	62	0	4	10	10	7470	1	1	12700	0	20	0	0	0	2270	2
2011-2015	98	0	15	0	0	10	0	0	80	0	5	20	15	9850	1	1	13950	0	25	0	0	0	2700	2
2016-2020	109	0	20	0	0	12	0	0	120	0	5	30	20	12100	1	1	15000	0	30	0	0	0	3220	3

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Palm Oil Exp

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

PALM OIL IMPORT FORECAST 2000-2020

Palm Oil

Imports	EU-15	Ex USSR	Nige-ria	Sene-gal	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	Worl
1976	731	10	5	5	55	361	2	-	-	-	-	-	22	-	154	3	-	114	1	20	27	-	515	
1977	741	46	1	3	31	251	2	-	-	-	-	25	300	-	147	2	-	155	3	13	29	1	658	
1978	712	41	6	4	23	149	2	-	-	-	-	11	485	-	142	3	-	138	2	-	29	2	710	
1979	767	105	13	4	18	145	2	-	2	-	-	42	398	-	139	12	5	192	4	-	38	4	1,011	
1980	744	101	20	3	20	117	3	-	4	-	-	57	534	-	148	33	-	249	3	1	38	3	1,514	
1981	645	181	102	6	15	122	2	-	-	-	-	16	475	33	141	54	-	247	6	2	50	5	1,350	
1982	664	376	153	3	16	113	3	1	-	-	-	19	417	-	148	89	-	285	11	24	50	5	1,511	
1983	743	316	138	7	19	149	3	-	-	-	-	16	647	-	162	104	2	379	21	35	58	4	1,266	
1984	614	280	83	2	13	148	3	-	-	-	-	18	571	65	157	66	16	400	28	36	41	5	1,853	
1985	701	237	73	9	26	213	3	-	-	-	-	57	662	37	161	107	22	486	3	65	52	7	2,389	
1986	985	206	180	1	14	276	8	-	-	-	-	194	963	9	196	183	36	522	3	86	61	5	2,280	
1987	959	268	20	3	13	188	2	-	-	-	-	255	1,167	166	212	171	91	466	2	42	65	7	2,012	
1988	1,001	143	18	9	17	152	10	-	-	-	1	399	946	302	238	156	130	527	4	46	83	8	2,266	
1989	1,153	430	10	11	8	108	46	-	-	-	-	734	456	414	259	165	41	538	8	150	70	9	2,619	
1990	1,407	202	8	29	16	130	119	-	-	-	-	1,133	668	27	276	217	18	683	5	182	81	9	3,183	
1991	1,569	108	27	22	15	114	89	-	100	-	1	1,205	213	39	320	216	281	912	-	208	86	10	3,013	
1992	1,598	54	99	23	10	102	114	1	48	-	1	830	207	310	323	207	167	932	27	154	89	12	3,134	
1993	1,594	55	140	25	12	129	124	-	37	-	-	1,059	151	153	356	195	252	1,141	38	250	92	12	3,577	
1994	1,842	47	51	13	25	160	155	-	33	-	1	1,863	408	128	349	201	227	1,230	45	201	100	10	3,676	
1995	1,738	58	50	20	14	102	58	-	5	-	1	1,595	863	55	351	156	41	1,122	38	200	99	14	3,864	
1996	1,867	51	102	18	9	125	112	-	6	-	-	1,370	1,254	109	361	184	14	1,103	45	171	100	8	3,761	
1997	2,045	110	119	17	8	135	133	-	33	-	3	1,860	1,469	93	370	197	49	1,144	31	240	111	10	4,074	
1998	2,142	103	70	8	7	116	100	-	38	1	27	1,373	1,672	19	357	151	280	1,114	26	174	97	10	3,635	
1999	2,290	151	92	17	3	143	100	-	10	-	1	1,347	3,257	4	365	172	265	1,052	63	166	109	11	4,349	
2000	2,414	142	111	32	4	165	139	-	21	2	-	1,764	3,677	7	373	200	68	1,107	64	204	110	14	4,645	
2001	2,986.0	283.0	166.0	34.0	6.0	171.0	165.0	-	19.0	1.0	-	2,049.0	3,507.0	7.0	393.0	232.0	188.0	1,325.0	58.0	266.0	115.0	16.0	5,453.0	17
2002	3,000.0	185.0	165.0	44.0	6.0	160.0	130.0	1.0	20.0	1.0	1.0	2,105.0	3,650.0	10.0	379.0	206.0	180.0	1,306.0	60.0	261.0	107.0	15.0	5,797.0	17
2003	3,100.0	165.0	140.0	35.0	8.0	150.0	120.0	1.0	17.0	1.0	2.0	2,350.0	3,800.0	25.0	380.0	190.0	110.0	1,260.0	55.0	230.0	100.0	11.0	5,618.0	17
2004	3,340.0	195.0	170.0	38.0	9.0	185.0	140.0	1.0	42.0	2.0	3.0	2,600.0	4,000.0	30.0	385.0	210.0	115.0	1,306.0	60.0	260.0	116.0	11.0	6,030.0	19
2005	3,695.0	216.0	210.0	48.0	10.0	195.0	160.0	1.0	42.0	2.0	4.0	2,750.0	4,100.0	40.0	400.0	220.0	120.0	1,352.0	65.0	285.0	117.0	12.0	6,600.0	20
1976-1980	739	61	9	4	29	205	2	-	1	-	-	27	348	-	146	11	1	170	3	7	32	2	882	
1981-1985	673	278	110	5	18	149	3	0	-	-	-	25	554	27	154	84	8	359	14	32	50	5	1,674	
1986-1990	1,101	250	47	11	14	171	37	-	-	-	0	543	840	184	236	178	63	547	4	101	72	8	2,472	
1991-1995	1,668	64	73	21	15	121	108	0	45	-	1	1,310	368	137	340	195	194	1,067	30	203	93	12	3,453	
1996-2000	2151.6	111.4	98.8	18.4	6.2	136.8	116.8	0	21.6	0.6	6.2	1542.8	2265.8	46.4	365.2	180.8	135.2	1104	45.8	191	105.4	10.6	4092.8	12
2001-2005	3224.2	208.8	170.2	39.8	7.8	172.2	143	0.8	28	1.4	2	2370.8	3811.4	22.4	387.4	211.6	142.6	1309.8	59.6	260.4	111	13	5899.6	18
2006-2010	3650	220	275	35	10	230	130	3	50	2	25	3000	4200	45	440	235	132	1570	74	290	125	16	7870	22
2011-2015	3850	265	375	45	11	275	160	6	60	3	33	3600	4800	50	495	270	140	1870	80	350	130	18	9870	26
2016-2020	4000	350	450	55	12	365	200	10	70	4	42	4150	5200	60	570	325	150	2240	66	370	135	22	11800	30

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Palm Oil Imp

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

COCO OIL EXPORT FORECAST 2000-2020

Coco Oil Exports	EU-15	Ex USSR	Canada	USA	Mexico	Argentina	Brazil	Chile	Peru	China, P.R.	India	Indonesia	Japan	South Korea	Malaysia	Pakistan	Philippines	Turkey	Australia	N.Zealand	Other ctrs	World	Incr.
1976	25	-	-	26	-	-	-	-	-	-	-	13	1	-	36	-	851	-	-	-	174	1126	
1977	19	-	-	17	-	-	-	-	-	-	-	-	1	-	28	-	791	-	-	-	123	979	-13.1
1978	16	-	-	9	-	-	-	-	-	-	-	-	1	6	23	-	990	-	-	-	156	1201	22.7
1979	9	-	-	5	-	-	-	-	-	-	-	21	-	11	66	-	795	-	-	-	175	1082	-9.9
1980	9	-	-	19	-	-	-	-	-	-	-	41	-	-	63	-	914	-	-	-	135	1181	9.1
1981	13	-	-	14	-	-	-	-	-	-	-	4	-	-	65	-	1,047	-	-	-	179	1322	11.9
1982	14	-	-	13	-	-	-	-	-	-	-	-	-	-	59	-	949	-	-	-	194	1229	-7.0
1983	13	-	-	11	-	-	-	-	-	-	-	8	-	-	67	-	1,020	-	-	-	188	1307	6.3
1984	12	-	-	21	-	-	-	-	-	-	-	35	-	-	68	-	586	-	-	-	220	942	-27.9
1985	11	-	-	19	-	-	-	-	-	2	-	192	-	-	60	-	651	-	-	-	263	1198	27.2
1986	10	-	-	18	-	-	-	-	-	-	-	6	-	-	49	-	1,238	-	-	-	281	1602	33.7
1987	11	-	-	39	-	-	-	-	-	-	1	118	-	2	46	-	1,054	-	-	-	182	1453	-9.3
1988	7	-	-	40	-	-	-	-	-	-	-	207	-	2	56	-	793	-	-	-	175	1280	-11.9
1989	6	-	-	33	-	-	-	-	-	-	10	192	-	-	53	-	760	-	-	-	190	1244	-2.8
1990	4	-	-	23	-	-	-	-	-	-	1	194	-	-	55	-	1,158	-	-	-	182	1617	30.0
1991	4	-	-	26	-	-	-	-	-	-	-	198	-	-	42	-	887	-	-	-	135	1292	-20.1
1992	6	-	1	12	-	-	-	-	-	-	-	351	-	6	66	-	896	-	-	-	181	1519	17.6
1993	8	-	2	7	-	-	-	-	-	-	-	258	-	-	57	-	1,014	-	-	-	151	1497	-1.4
1994	9	-	-	10	-	-	-	-	-	-	1	393	-	-	60	-	871	-	-	-	136	1480	-1.1
1995	14	-	-	10	-	-	-	-	-	-	-	148	-	-	55	-	1,340	-	-	-	142	1709	15.5
1996	12	-	-	5	-	-	-	-	-	-	-	379	-	-	35	-	793	-	-	-	128	1352	-20.9
1997	18	-	-	5	-	-	-	-	-	1	-	644	-	-	33	-	1,080	-	-	-	137	1918	41.9
1998	26	-	-	4	-	-	-	-	-	4	4	444	-	-	49	-	1,179	-	-	-	151	1861	-3.0
1999	31	-	-	7	-	-	-	-	-	-	1	350	-	-	43	-	478	-	-	-	138	1048	-43.7
2000	35	-	-	7	-	-	-	-	-	-	2	735	-	-	59	-	1,037	-	-	-	159	2034	94.1
2001	59.0	-	-	8.0	-	-	-	-	-	-	4.0	460.0	-	-	43.0	-	1,370.0	-	-	-	167.0	2111.0	3.8
2002	25.0	-	-	8.0	-	-	-	-	-	-	2.0	570.0	-	-	41.0	-	1,155.0	-	-	-	175.0	1976.0	-6.4
2003	20.0	-	-	8.0	-	-	-	-	-	-	3.0	540.0	-	-	80.0	-	930.0	-	-	-	170.0	1751.0	-11.4
2004	25.0	-	-	8.0	-	-	-	-	-	-	3.0	610.0	-	-	90.0	-	866.0	-	-	-	175.0	1777.0	1.5
2005	30.0	-	-	8.0	-	-	-	-	-	-	3.0	670.0	-	-	100.0	-	930.0	-	-	-	180.0	1921.0	8.1
1976-1980	16	-	-	15	-	-	-	-	-	-	-	15	1	3	43	-	868	-	-	-	153	1114	
1981-1985	13	-	-	16	-	-	-	-	-	0	-	48	-	-	64	-	851	-	-	-	209	1200	7.7
1986-1990	8	-	-	31	-	-	-	-	-	-	2	143	-	1	52	-	1,001	-	-	-	202	1439	20.0
1991-1995	8	-	1	13	-	-	-	-	-	-	0	270	-	1	56	-	1,002	-	-	-	149	1499	4.2
1996-2000	24.4	0	0	5.6	0	0	0	0	0	1	1.4	510.4	0	0	43.8	0	913.4	0	0	0	142.6	1,642.6	9.6
2001-2005	31.8	0	0	8	0	0	0	0	0	0	3	570	0	0	70.8	0	1050.2	0	0	0	173.4	1,907.2	16.1
2006-2010	22	0	0	10	0	0	0	0	0	0	4	750	0	0	35	0	1000	0	0	0	180	2,001.0	4.9
2011-2015	23	0	0	12	0	0	0	0	0	0	5	875	0	0	30	0	970	0	0	0	198	2,113.0	5.6
2016-2020	25	0	0	14	0	0	0	0	0	0	7	1035	0	0	30	0	930	0	0	0	212	2,253.0	6.6

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Coco Oil Exp

WORLD SUPPLY & DEMAND BALANCES FOR VEGOIL

COCO OIL IMPORT FORECAST 2000-2020

Coco Oil

Imports	EU-15	Ex USSR	Cana-da	USA	Mex-ico	Argen-tina	Bra-zil	Chi-le	Peru	China, P.R.	In-dia	Indo-nesia	Ja-pan	South Korea	Malay-sia	Pakis-tan	Philip-pines	Tur-key	Austra-lia	N.Zea-land	Other ctrs	World	Incr.
1976	183	71	30	577	9	-	-	-	-	23	-	2	31	-	3	2	-	21	19	0	177.0	1148	
1977	182	32	24	471	5	-	-	-	-	15	16	11	28	2	3	-	-	-	20	0	134.0	943	-17.9
1978	289	51	22	480	18	-	-	-	-	15	9	92	29	15	2	-	-	-	18	0	116.0	1156	22.6
1979	328	48	26	501	-	-	-	-	-	22	5	27	48	23	7	7	-	-	18	0	126.0	1186	2.6
1980	358	79	20	399	16	-	-	1	-	26	5	-	35	5	2	1	-	-	16	0	152.0	1115	-6.0
1981	488	66	23	470	-	-	1	1	-	23	71	1	36	12	2	1	-	2	17	0	126.0	1340	20.2
1982	442	89	20	404	7	1	2	1	-	27	9	1	32	17	1	2	-	5	20	1	149.0	1230	-8.2
1983	447	70	22	449	4	1	1	1	-	20	9	-	43	19	1	1	-	4	20	3	133.0	1248	1.5
1984	310	64	20	378	8	1	1	1	-	23	9	-	21	14	10	1	-	3	15	3	146.0	1028	-17.6
1985	361	55	23	450	-	-	-	1	-	31	-	-	19	13	1	-	-	7	15	4	198.0	1178	14.6
1986	533	58	24	534	-	3	1	2	-	47	1	-	16	16	2	6	-	23	18	3	231.0	1518	28.9
1987	512	76	27	506	22	2	1	2	-	31	1	-	15	15	10	3	-	11	18	4	213.0	1469	-3.2
1988	486	51	24	445	36	2	2	1	-	60	2	-	18	16	21	3	-	8	18	3	197.0	1393	-5.2
1989	416	88	21	392	36	2	2	2	-	28	4	-	34	6	15	5	-	11	16	4	129.0	1211	-13.1
1990	573	74	21	452	7	3	3	2	-	41	8	-	39	30	22	5	-	12	12	4	282.0	1590	31.3
1991	554	42	26	391	36	5	-	2	-	29	2	7	51	19	30	2	-	9	12	6	115.0	1338	-15.8
1992	499	6	20	501	30	4	2	3	-	37	10	11	59	30	46	2	-	9	11	7	243.0	1530	14.3
1993	457	13	18	443	15	5	-	2	-	13	14	34	31	32	49	3	-	13	10	5	250.0	1407	-8.0
1994	568	8	21	441	8	5	-	2	-	36	8	46	35	44	55	4	-	8	14	7	262.0	1572	11.7
1995	602	6	24	491	31	6	1	2	-	43	2	27	23	40	46	3	-	11	17	4	255.0	1634	3.9
1996	575	13	16	423	17	7	-	2	-	43	7	44	20	42	14	4	-	13	15	6	125.0	1386	-15.2
1997	641	23	13	589	9	3	-	2	-	33	4	61	28	45	26	7	-	14	15	3	260.0	1776	28.1
1998	778	27	13	587	24	5	-	1	-	65	5	58	33	39	62	6	-	14	18	4	240.0	1979	11.4
1999	516	31	15	334	9	4	-	1	-	34	24	-	28	41	53	3	-	9	15	3	44.0	1164	-41.2
2000	751	38	14	477	19	5	-	1	-	95	23	30	32	43	116	7	-	13	12	4	197.0	1877	61.3
2001	820.0	34.0	16.0	468.0	11.0	5.0	1.0	2.0	-	198.0	24.0	60.0	29.0	45.0	164.0	41.0	-	10.0	14.0	6.0	278.0	2226	18.6
2002	670.0	32.0	16.0	472.0	14.0	5.0	1.0	2.0	-	90.0	20.0	25.0	28.0	45.0	118.0	15.0	-	14.0	14.0	6.0	160.0	1747	-21.5
2003	702.0	35.0	16.0	505.0	15.0	5.0	1.0	2.0	-	70.0	25.0	25.0	30.0	45.0	92.0	15.0	-	15.0	14.0	6.0	209.0	1827	4.6
2004	686.0	36.0	16.0	525.0	15.0	5.0	1.0	2.0	-	90.0	25.0	25.0	32.0	45.0	92.0	15.0	-	18.0	14.0	6.0	209.0	1857	1.6
2005	722.0	37.0	16.0	550.0	15.0	5.0	1.0	2.0	-	100.0	26.0	25.0	32.0	45.0	102.0	15.0	-	18.0	14.0	6.0	209.0	1940	4.5
1976-1980	268	56	24	486	10	-	-	0	-	20	7	26	34	9	3	2	-	4	18	0	141.0	1109.6	
1981-1985	410	69	22	430	4	1	1	1	-	25	20	0	30	15	3	1	-	4	17	2	150.4	1204.8	8.6
1986-1990	504	69	23	466	20	2	2	2	-	41	3	-	24	17	14	4	-	13	16	4	210.4	1436.2	19.2
1991-1995	536	15	22	453	24	5	1	2	-	32	7	25	40	33	45	3	-	10	13	6	225.0	1496.2	4.2
1996-2000	652.2	26.4	14.2	482	15.6	4.8	0	1.4	0	54	12.6	38.6	28.2	42	54.2	5.4	0	12.6	15	4.0	173.2	1636.4	9.4
2001-2005	720	34.8	16	504	14	5	1	2	0	109.6	24	32	30.2	45	113.6	20.2	0	15	14	6.0	213.0	1919.4	17.3
2006-2010	720	43	17	530	15	6	2	3	0	120	27	25	32	48	110	15	0	18	12	7.0	251.0	2001	4.3
2011-2015	735	55	16	560	15	7	2	4	0	135	30	20	34	54	110	12	0	21	11	6.0	285.0	2112	5.5
2016-2020	750	60	17	610	15	8	2	4	0	150	34	20	35	59	120	15	0	25	10	7.0	310.0	2251	6.6

Source: ISTA Mielke GmbH - The Revised Oil World 2020, Supply, Demand and Prices

Vegoil-Forecast.xls/Coco Oil Imp

INTRA-REGIONAL ORGANIC AND INORGANIC TRADE 1995-2001

Organic	From	To	1995	1996	1997	1998	1998	2000e	2001e
	Intra SE Asia (incl Japan)		7,414	8,016	8,743	10,364	11,568	12,001	12,500
	North America	SE Asia (incl Japan)	5,643	5,972	5,022	3,526	4,285	4,363	3,000
	Middle East	SE Asia (incl Japan)	3,428	3,708	3,644	4,333	4,598	5,235	5,950
	Latin America	North America	1,706	2,446	2,171	2,527	3,599	4,754	5,221
	Australasia	Rest of World	1,599	2,316	2,400	2,400	2,500	2,700	2,750
	North America	Latin America	1,697	1,735	2,087	2,671	2,509	2,814	2,624
	Middle East	North America	1,466	1,782	1,780	2,033	1,937	2,250	2,006
	North America	OECD Europe	1,363	1,558	1,599	1,266	1,292	1,527	1,340
Organic Total (Selected)			24,316	27,533	27,446	29,120	32,288	35,644	35,391

Inorganic			1,995	1,996	1,997	1,998	1,998	2000e	2001e
	Intra SE Asia (incl Japan)		1,733	1,850	1,850	1,700	1,575	1,600	1,600
	North America	Latin America	1,372	1,611	1,355	1,434	1,628	2,000	1,750
	North Africa	South Asia	1,413	1,476	1,837	1,880	1,900	1,960	1,980
	North Africa	OECD Europe	1,003	960	807	780	800	800	800
	North America	Australasia	838	680	321	448	476	597	594
	OECD Europe	North America	485	654	434	399	419	407	460
	SE Asia (incl Japan)	Australasia	614	666	847	940	980	1,150	800
	Latin America	OECD Europe	437	449	490	490	490	500	510
Inorganic Total (Selected)			7,895	8,346	7,941	8,071	8,268	9,014	8,494

Vegetable and animal oils and fats			1,995	1,996	1,997	1,998	1,998	2000e	2001e
	Intra SE Asia (incl Japan)		3,544	3,520	4,078	3,320	3,320	23,000	25,000
	SE Asia (excl Japan)	South Asia	1,688	2,043	2,300	2,787	2,790		
	SE Asia (excl Japan)	OECD Europe	2,539	2,394	3,281	2,729	2,730		
	South Asia	OECD Europe	2,053	2,470	2,390	2,580	2,580		
	Latin America	SE Asia (excl Japan)	1,247	1,239	1,313	950	950		
	North America	Latin America	600	762	814	1,158	1,050		
	SE Asia (excl Japan)	North America	737	698	823	740	800		
	Intra Latin America	America	815	734	777	700	700	-	-
Vegetable Total (Selected)			13,223	13,860	15,776	14,964	14,920	23,828	25,000
Total Seaborne Trade			22,320	22,730	25,060	24,270	23,870	23,870	25,000

Source: Drewry Shipping Consultants Ltd.

CHEMICAL PLANT PROJECTS

NEW ETHYLENE PLANTS - SCHEDULED

Country	Company	Capacity	Status	Startup	Project Notes
Belgium	BASF	250,000	Engineering	2005	Expansion
Brazil	Copene Petrochim	130,000	Engineering	2003	Expansion
	Petrobras	520,000	Planning	2003	New
	Rio Polimeros	500,000	Planning	2003	New
	Petroquimica	120,000		2002	
China	BASF	600,000	Engineering	2004	New
	CNOC/Shell	800,000	Engineering	2005	New
	Shanghai Secco	850,000	Planning	2005	New
	Fujian Petro	600,000	Planning	2006	New
	Jilin Petro	300,000	Engineering	2003	New
	Maoming Petro	850,000	Planning	2003	New
	Shanghai Petro	300,000	Under Construction	2003	Expansion
	Sinopec	180,000	Under Construction	2003	Expansion
	Sinopec	270,000	Engineering	2004	Expansion
	Yangzi Petro	250,000	Under Construction	2003	Expansion
Chzech Rep.	Chemopetrol	25,000	Engineering	2003	
	Chemopetrol	50,000	Planning	2006	
Germany	Veba	1,000,000	Planning	2004	
Hungary	Tiszai Petro	265,000	Engineering	2004	New
India	Bharat Petr.	500,000	Planning	2002	New
	GAIL	200,000	Planning	2002	New
	NOCI	700,000	Planning	2003	New
	Reliance	300,000	Planning	2005	New
Iran	Fanaravan Petro	63,000	Planning	2003	Expansion
	Jam Petro	1,400,000	Planning	2003	New
	Marun Petro	1,100,000	Under Construction	2003	New
	NPC	1,000,000	Engineering	2003	New
	NPC	520,000	Under Construction	2003	New
	Pars Petro	1,000,000	Planning	2004	New
Italy	Enichem	80,000	Planning	2004	Expansion
Japan	Idemitsu	600,000	Under Construction	2003	Expansion
Kuwait	Petro. Ind.	850,000	Planning	2005	New
Mexico	Petroquimica	100,000	Planning	2003	
	Petroquimica	100,000	Planning	2003	Expansion
Phillipines	CPC	350,000	Planning	2004	New
Qatar	Qatar Chemicals	1,200,000		2006	New
Russia	Gazkomplektex	340,000	Under Construction	2006	New
Saudi Arabia	Sabic	1,000,000	Planning	2004	New
Singapore	Shell	250,000	Planning	2006	New
Spain	Dow Chemical	100,000	Under Construction	2003	Expansion
	Repsol	80,000	Under Construction	2003	Expansion
Thailand	Rayong	200,000	Under Construction	2003	Expansion
	Thai Olefins	315,000	Planning	2004	New
Trinidad & Tobago	National Gas Co.	750,000	Planning	2003	New
Turkey	Petkim Petro	120,000	Engineering	2003	Expansion
United States	BP America	220,000	Engineering	2005	Expansion
	Shell Chemical	544,000	Under Construction	2003	Expansion
Venezuela	Pequiven	1,000,000	Planning	2003	New
	Pequiven	830,000	Planning	2008	New

GEOGRAPHICAL DISTRIBUTION - NEW ETHYLENE PLANTS

	Planned Capacity	Share of Increase
East Asia	5,950,000	25.1 %
SE Asia	765,000	3.2 %
South Asia	1,700,000	7.2 %
M/E	8,133,000	34.4 %
Europe	2,310,000	9.8 %
USA	764,000	3.2 %
SAM	4,050,000	17.1 %
Sum	23,672,000	100 %

Source: Oil and Gas Journal

Chem plant_dev.xls/Ethylene

CHEMICAL PLANT PROJECTS

NEW CHEMICAL PLANTS - OTHER INORGANICS

Country	Company	Product	Capacity	Status	Startup	Project Notes
Canada	Interquisa	Terephthalic Acid	500,000	Under Cosnstruction	2002	New
China	Amoco Zhuhai	Terephthalic Acid	350,000	Under Cosnstruction	2003	New
	BASF-YPC	Acrylic Acid	160,000	Planning	2005	New
	BASF-YPC	ethylene Glycol	300,000	Planning	2005	New
	BASF-YPC	Oxo Alcohols	250,000	Planning	2005	New
	China National	Bisphenol	25,000	Engineering	2003	New
	CNOOC	Benzene	250,000	Engineering	2004	New
	CNOOC	Ethylene Glycol	250,000	Planning	2005	New
	CNOOC	Propylene Oxide	250,000	Planning	2005	New
	CNOOC	Styrene	300,000	Planning	2005	New
	Shanghai Gaoqiao	Phenol	200,000	Planning	2005	New
	Uni-President Ent.	Terephthalic Acid	350,000	Planning	2003	New
Czech Rep.	Chemopetrol	Ethylbenzene	300,000	Planning	2003	New
	Chemopetrol	Propylene	280,000	Planning	2003	New
Germany	BASF	Ethylbenzene	600,000	Planning	2003	New
	BASF	Styrene	55,000	Planning	2003	
India	Gujarat Narmada	Acetic Acid	100,000	Engineering	2003	Expansion
Iran	Jam Petro.	Ethylene Glycol	400,000	Engineering	2003	New
	Marun Petro.	Propylene	200,000	Under Cosnstruction	2003	New
	Nat. Petro	Paraxylene	428,000	Under Cosnstruction	2003	New
	Pars Petro.	Styrene	50,000	Planning	2004	New
Japan	Asahi Kasei	Cyclohexanol	150,000	Engineering	2003	New
	Nihon Oxyrane	Propylene Oxide	200,000	Under Cosnstruction	2004	New
Kuwait	Petrochemical Ind.	Xylenes	650,000	Planning	2005	New
Malaysia	BASF Petronas	Butandiol	100,000	Under Cosnstruction	2003	New
Mexico	Pemex	Ethylene dichloride	200,000	Under Cosnstruction	2003	New
Netherlands	Lyondell	Butandiol	126,000	Under Cosnstruction	2003	New
	Lyondell	Propylene oxide	285,000	Engineering	2003	New
Saudi Arabia	Sabic	Butandiol	50,000	Planning	2003	
	Sabic	Acetic Acid	200,000	Planning	2004	New
RSA	Sasol	Acrylic Acid	80,000	Planning	2004	New
Spain	BASF Sonatrach	Propylene	350,000	Planning	2003	New
	Interquisa	Terephthalic Acid	320,000	Under Cosnstruction	2003	New
Taiwan	China American Petro.	Terephthalic Acid	700,000	Engineering	2003	New
Thailand	Siam Mitsui	Terephthalic Acid	350,000	Under Cosnstruction	2003	New
Turkey	Petkim	Ethylene dichloride	136,000	Under Cosnstruction	2003	Expansion
USA	BASF	Prpylene	325,000	Planning	2003	New
Venezuela	Pequiven	Acetic Acid	500,000	Planning	2005	New

GEOGRAPHICAL DISTRIBUTION - OTHER INORGANICS

	Planned Capacity	Share of Increase
East Asia	3,035,000	29.4 %
SE Asia	1,150,000	11.1 %
South Asia	100,000	1.0 %
M/E	1,978,000	19.2 %
Europe	2,452,000	23.8 %
NAM	1,025,000	9.9 %
SAM/Others	580,000	5.6 %
Sum	10,320,000	100 %

Source: Oil and Gas Journal

Chem plant_dev.xls/Other Chems.

CHEMICAL PLANT PROJECTS

NEW METHANOL PLANTS - SCHEDULED

Country	Company	Capacity	Status	Startup	Project Notes
Australia	Methanex	5,000,000	Planning	2005	New
China	Shanghai Petrochemical	31,000	Engineering	2002	New
Iran	Fanaravan Petrochemical	1,106,000	Engineering	2003	New
	National Petrochemical Co	660,000	Engineering	2002	New
	Zagross Petrochemical Co	1,600,000	Planning	2004	New
Russia	Siberian Ural Oil, Gas & Chemical Co	825,000	Planning	2002	New
Trinidad &	Atlas Methanol Co.	1,650,000	Engineering	2003	New
Venezuela	Pequiven	750,000	Planning	2003	New
	Pequiven	830,000	Planning	2006	New
Total		12,452,000			

Source: Oil and Gas Journal

SIZE DISTRIBUTION FOR CHEMICALS THROUGH THE PANAMA CANAL FY 2001

	Volume Transported	Number of Parcels	Average Parcel Size	Number of vessels	Average Cargo Size
Parcels Tankers	8,085,017	1,737	4,655	481	16,809
Prod/Chem Tankers	2,938,923	236	12,453	102	28,813
Total	11,023,940	1,973	5,587	583	18,909

Source: ACP

Chem plant_dev.xls/Methanol

PANAMA CANAL CARGO VOLUMES IN CHEMICALS

FROM ATLANTIC TO PACIFIC, CALENDAR YEAR, IN '000 LONG TONS

Sum of INTAKE LTON		YEAR															
CARGOGROUP	CARGO	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CHEMICALS	Benzene	95	454	285	225	577	301	206	123	202	121	30	106	45	142	7	53
	Caustic soda	1,389	1,565	1,768	1,892	1,361	1,184	1,039	1,147	1,588	1,253	886	439	366	504	881	504
	Chemicals, misc	2,151	2,773	2,703	2,444	3,053	3,394	4,158	4,689	4,494	5,424	5,586	5,045	4,986	5,832	5,248	5,039
	Liquors	26	0	10	22	27	0	0	19	3	-	7	6	-	-	-	5
	Molasses	-	4	-	47	22	-	-	22	3	86	62	25	8	21	7	14
	Oil, coconut	-	-	-	-	-	10	14	-	-	-	-	4	-	-	-	-
	Oil, fish	-	-	4	6	-	-	-	6	7	10	10	5	13	8	1	33
	Oil, veg., misc	215	91	234	136	315	244	284	346	299	876	210	530	894	244	135	171
	Oil, whale	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-
	Oilseeds	76	46	101	54	188	219	205	89	124	233	306	87	57	90	54	19
	Resin	33	28	39	29	34	18	36	42	53	50	33	0	2	1	2	0
	Tallow	76	33	22	57	33	118	178	65	45	129	86	45	103	130	113	75
	Toluene	68	244	216	364	416	174	372	172	351	377	413	176	63	59	93	73
	Wines	-	-	-	-	-	-	-	29	22	-	-	-	-	-	-	-
CHEMICALS Total		4,129	5,238	5,383	5,277	6,026	5,664	6,491	6,749	7,192	8,559	7,628	6,469	6,539	7,066	6,542	5,985

Source: ACP

FROM PACIFIC TO ATLANTIC, CALENDAR YEAR, IN '000 LONG TONS

Sum of INTAKE LTON		YEAR															
CARGOGROUP	CARGO	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CHEMICALS	Benzene	152	191	214	100	19	43	75	46	197	66	47	114	232	215	230	218
	Caustic soda	-	-	-	-	3	87	92	24	90	109	76	1	70	-	6	43
	Chemicals, misc	777	937	1,118	1,287	816	1,220	1,237	1,366	1,176	1,295	1,430	976	1,495	2,327	1,874	1,781
	Liquors	6	-	-	39	37	34	-	1	-	5	-	9	-	3	10	-
	Molasses	577	549	621	806	688	525	813	938	980	701	816	692	890	585	561	501
	Oil, coconut	47	60	6	112	50	69	38	82	93	60	58	95	202	65	122	124
	Oil, fish	263	125	200	474	173	149	110	189	330	309	181	190	13	179	230	130
	Oil, veg., misc	144	81	152	215	168	135	296	193	227	186	254	260	225	225	314	203
	Oil, whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oilseeds	247	128	86	191	28	45	79	49	275	141	85	23	20	75	130	179
	Resin	17	-	-	12	-	5	-	5	21	-	-	-	-	9	-	-
	Tallow	42	-	26	23	69	-	63	41	54	78	36	35	25	14	8	37
	Toluene	17	25	28	-	-	34	34	27	-	-	-	-	12	7	43	-
	Wines	-	4	-	-	3	3	3	7	3	10	7	10	10	7	7	7
CHEMICALS Total		2,290	2,101	2,451	3,258	2,055	2,348	2,840	2,968	3,449	2,960	2,990	2,404	3,195	3,709	3,533	3,222

Source: ACP

PANAMA CANAL SHARE OF TOTAL SEABORNE TRADE IN CHEMICALS

CHEMICALS		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	AV.
TOTAL	ANT-PAC SHARE	64 %	71 %	69 %	62 %	75 %	71 %	70 %	69 %	68 %	74 %	72 %	73 %	67 %	66 %	65 %	65 %	69 %
	PAC-ANT SHARE	36 %	29 %	31 %	38 %	25 %	29 %	30 %	31 %	32 %	26 %	28 %	27 %	33 %	34 %	35 %	35 %	31 %
	SUM	6,522	7,456	7,960	8,671	8,210	8,140	9,480	9,872	10,811	11,703	10,788	9,015	9,889	10,947	10,236	9,355	
	WORLD SEAB TRADE	64	68	69	70	72	72	72	79	86	91	93	96	99	101	106	107	
	ACP SHARE	10 %	11 %	11 %	12 %	11 %	11 %	13 %	12 %	13 %	13 %	12 %	9 %	10 %	11 %	10 %	9 %	11 %
EX VEG OIL	ANT-PAC	3,730	5,036	4,982	4,947	5,433	5,054	5,775	6,150	6,639	7,175	6,922	5,773	5,461	6,537	6,229	5,673	
	PAC-ANT	953	1,153	1,360	1,425	875	1,418	1,438	1,464	1,464	1,475	1,553	1,100	1,809	2,551	2,163	2,042	
	SUM	4,757	6,288	6,444	6,474	6,409	6,576	7,329	7,736	8,232	8,788	8,611	6,982	7,386	9,234	8,526	7,838	
	ANT-PAC SHARE	78 %	80 %	77 %	76 %	85 %	77 %	79 %	79 %	81 %	82 %	80 %	83 %	74 %	71 %	73 %	72 %	78 %
	PAC-ANT SHARE	20 %	18 %	21 %	22 %	14 %	22 %	20 %	19 %	18 %	17 %	18 %	16 %	24 %	28 %	25 %	26 %	20 %
	WORLD SEAB TRADE	47	51	53	51	52	56	55	61	66	68	71	71	74	79	81	82	
	ACP SHARE	10 %	12 %	12 %	13 %	12 %	12 %	13 %	13 %	13 %	13 %	12 %	10 %	10 %	12 %	10 %	10 %	12 %
VEG/AN/FAT	VEG/AN/FAT TOTAL	1,397	944	1,276	1,937	1,582	1,285	1,795	1,901	2,042	2,439	1,719	1,896	2,374	1,472	1,501	1,292	1,678
	VEGANFAT ATL-PAC	317	128	271	268	398	373	475	458	357	1,101	374	615	1,018	402	257	297	
	VEGANFAT PAC-ATL	1,079	816	1,005	1,669	1,185	912	1,319	1,443	1,685	1,338	1,345	1,280	1,356	1,070	1,244	995	
	ATL-PAC SHARE	23 %	14 %	21 %	14 %	25 %	29 %	26 %	24 %	17 %	45 %	22 %	32 %	43 %	27 %	17 %	23 %	25 %
	PAC-ATL SHARE	77 %	86 %	79 %	86 %	75 %	71 %	74 %	76 %	83 %	55 %	78 %	68 %	57 %	73 %	83 %	77 %	75 %
	WORLD SEABORNE TR	17	16	17	19	20	16	17	18	21	23	23	25	25	25	24	25	
	ACP SHARE	8 %	6 %	8 %	10 %	8 %	8 %	11 %	10 %	10 %	11 %	8 %	8 %	9 %	6 %	6 %	5 %	8 %

Source: Drewry, ISTA Mieke, Industry, ACP

GLOBAL SEABORNE TRADE IN ORGANIC CHEMICALS EXCL. METHANOL (in '000 tonnes)

1996

Sum of Value	Column													
Row	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	Grand Total
AUST	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	18.5	0.0	0.0	26.8
ESAF	0.1	0.0	0.0	4.6	11.3	0.6	2.0	2.2	7.2	19.1	75.5	0.0	0.0	122.6
FSU	0.0	0.0	0.0	0.0	2.9	0.0	0.0	19.9	1.7	49.6	30.7	0.0	0.0	104.8
JAP	22.3	1.0	0.0	7.0	6.3	0.6	9.1	116.3	92.6	364.7	2777.8	0.2	0.0	3397.7
LAMR	0.2	5.0	107.0	20.6	40.9	0.2	292.6	301.1	79.9	68.2	136.9	0.0	0.0	1052.6
ME	7.4	4.7	204.3	108.7	35.6	8.6	6.9	127.9	405.1	294.1	1191.1	0.0	0.0	2394.5
NAFR	0.0	0.0	0.0	0.0	1.0	0.0	1.2	14.6	0.0	0.0	0.0	0.0	0.0	16.8
NAMR	20.8	56.4	512.0	453.7	1024.6	5.8	1.7	127.6	1118.8	1156.2	3835.3	0.2	2.0	8315.1
OEUR	0.1	0.0	2.1	32.0	46.8	9.8	275.3	207.9	73.6	144.3	414.3	0.0	0.0	1206.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.1	0.0	1.8	0.0	0.0	0.0	5.4
Region	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Regions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
SA	0.3	0.3	0.1	0.0	0.1	1.8	0.3	0.4	0.8	8.1	10.9	0.0	0.0	23.1
SEA	77.1	1.5	249.6	252.0	52.7	3.3	31.1	148.6	99.5	621.6	3310.1	0.1	0.0	4847.2
WAFR	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
XEUR	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.8	0.5	0.0	1.5	0.0	0.0	4.1
Grand Total	134.2	68.9	1075.2	878.7	1223.2	30.8	620.7	1070.4	1879.8	2729.9	11802.4	0.5	2.0	21516.6

2000

Sum of Value	Column													
Row	AUST	ESAF	FSU	JAP	LAMR	ME	NAFR	NAMR	OEUR	SA	SEA	WAFR	XEUR	Grand Total
AUST	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	11.0
ESAF	1.2	0.0	0.0	9.1	9.0	0.0	0.0	5.4	0.0	12.0	93.4	0.0	0.0	130.1
FSU	0.0	0.0	0.0	0.0	0.0	0.0	7.7	1.4	0.0	16.4	43.5	0.0	0.0	68.8
JAP	15.9	0.0	0.0	0.0	0.2	0.3	13.9	13.6	12.1	656.8	3545.5	0.0	0.0	4258.4
LAMR	0.0	1.0	90.8	19.6	3.0	0.0	300.9	246.4	10.0	81.3	87.0	0.0	0.0	840.0
ME	0.3	0.0	146.3	38.8	40.0	0.0	18.2	104.1	181.5	342.1	1473.3	0.0	0.0	2344.5
NAFR	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.0	14.8
NAMR	17.3	62.9	608.5	326.1	1684.7	10.5	0.0	229.3	982.4	1001.7	3060.6	0.5	0.1	7984.5
OEUR	4.1	0.0	0.0	26.2	5.6	0.0	371.0	69.4	34.1	125.5	297.9	0.0	0.0	933.7
Other	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6
SA	0.0	0.0	0.0	0.0	0.0	0.0	37.8	0.1	0.0	8.0	85.6	0.0	0.0	131.6
SEA	98.0	12.0	122.0	283.0	59.9	23.4	129.2	130.1	164.8	1397.9	4835.2	0.2	0.0	7255.5
WAFR	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.5	0.0	0.0	3.2	0.0	0.0	5.1
XEUR	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.0	0.0	0.0	6.1	0.0	0.0	8.2
Grand Total	151.6	75.9	967.7	702.9	1802.2	34.1	895.1	802.2	1384.9	3641.5	13535.9	0.6	0.1	23994.8

Source: Drewry, ISTA Mieke, Industry

WORLD AND REGIONAL GDP FORECASTS. BASE SCENARIO

Fig. Show annual change in pct

	1976-2000	1991-1995	1996-2000	2001-2005	2006-2010	2011-2025	2011-2015	2016-2020	2021 2025	2001-2025 D-W	2001-2025 FC
World	3.4	2.9	3.9								
Advanced c	2.9	2.1	2.3								
Developing c	5.0	6.2	5.1								
USA	3.1	2.1	4.1	**2.9**	**3.4**	**3.2**	2.8	3.6	3.1	**3.1/2.7**	3.2
OECD Europe	2.4	1.6	2.6	2.5	2.5	2.3	2.0	2.5	2.5	**2.4**	2.4
UK				**2.6**	**2.4**	**2.2**				**2.3**	
Germany				**2.4**	**2.5**	**2.5**				**2.4**	
France				**2.6**	**2.6**	**2.5**					
Italy				**2.3**	**2.2**	**2.2**				**2.2**	
Japan	3.2	1.5	1.4	**1.3**	**2.3**	**2.0**	1.7	2.3	2.0	**1.8/2.1**	1.9
Developing Asia	7.0	8.8	6.3	5.0	6.5	5.7	6.5	5.5	5.0		5.7
S. Korea				**5.3**	**5.7**	**5.4**	5.0	6.0	5.3		5.4
China				**7.4**	**7.6**	**7.1**	6.6	7.7	7.0	**7.3**	7.3
Hong Kong				**3.8**	**4.6**	**4.5**	4.0	5.0	4.5		4.4
Taiwan				**4.0**	**6.2**	**6.2**	5.0	7.0	6.5	**5.5**	5.7
India			6.1	6.0	6.5	6.2	7.0	6.0	5.5		6.2
M. East	3.1	3.7	4.2	2.5	3.5	3.5	4.0	3.5	3.0		3.3
Africa	2.6	1.6	3.5	3.5	4.0	3.8	4.5	3.5	3.5		3.7
Latin America	3.0	3.6	3.0	3.5	4.5	4.0	4.5	4.0	3.5	**4.0**	4.0
Venezuela				**3.7**	**4.3**	**4.2**	3.8	4.5	4.2		4.1
Ecuador				**3.7**	**3.7**	**3.5**	3.0	4.0	3.5		3.6
Chile				**4.9**	**6.0**	**5.8**	5.5	6.5	5.5	**5.6**	5.6
C. In transition	0.6	-7.5	2.1								
Russia	-0.2	-10.8	1.3	4.5	4.0	3.1	3.0	3.5	3.0		3.6

Notes:
Figures in bold provided by DRI-WEFA.
Historic figures compiled by Fearnley Consultants from IMF data.
DRI-WEFA figures for 2011-2025 modulated into 5-year periods by Fearnley Consultants.
Other forecasts prepared by Fearnley Consultants, with 2001-2005 figures influenced by IMF forecasts for 2001-2003.