

**Unclassified**

**SG/EMEF/C/WP6(97)4**



Organisation de Coopération et de Développement Economiques  
Organisation for Economic Co-operation and Development

**OLIS : 02-Oct-1997**  
**Dist. : 06-Oct-1997**

**Or. Eng.**

**GENERAL SECRETARIAT  
LIAISON AND CO-ORDINATION UNIT**

**Emerging Market Economy Forum**

**INFORMAL WORKSHOP ON SHIPBUILDING POLICIES**

**BULK VESSEL SCRAPPING REVIEW AND OUTLOOK**

**Paris, 8-9 December 1997**

*This document is submitted to Delegations as a background paper for Session 1 "Basic Conditions: Supply and Demand" of the Informal Workshop on Shipbuilding Policies to be held at the Château de la Muette on 8-9 December 1997.*

For further information, please contact: Mr. Shinichiro Otsubo, Administrator, DSTI/SID, tel: 33-1-45.24.91.30; fax: 33-1-45.24.93.86; E-Mail: Shinichiro.Otsubo@OECD.org

**56667**

Document complet disponible sur OLIS dans son format d'origine  
Complete document available on OLIS in its original format

**Unclassified**  
**SG/EMEF/C/WP6(97)4**

**Or. Eng.**

## **SUMMARY**

The present report, prepared by SSY Consultancy and Research Ltd, examines: a) developments in bulk vessel scrapping during the period 1992-97 inclusive, plus b) prospective future activity in this sector. In particular, it notes the likely influence on scrapping of:

- freight market conditions in the dry bulk and oil trades;
- the wider application of port state control by various countries, plus greater ship vetting by leading charterers;
- the introduction of IMO acceptance of “hydrostatically-balanced loading” as a method of life extension to 30 years’ age for existing single-hulled tankers;
- new IACS rules on safety requirements for existing dry bulk carriers.

## **ACTION**

This document is submitted to Delegations as a background paper for Session 1 “Basic Conditions: Supply and Demand” of the Informal Workshop on Shipbuilding Policies to be held at the Château de la Muette on 8-9 December 1997.

## **RELATED DOCUMENTS**

SG/EMEF/C/WP6/A(97)1 -- “Draft Agenda for the Informal Workshop on Shipbuilding Policies”.

## TABLE OF CONTENTS

GLOSSARY .....	4
BULK VESSEL SCRAPPING REVIEW & OUTLOOK .....	5
1. Introduction.....	5
2. Bulk shipping: scrapping activity 1992-97.....	7
3. Influence of freight market developments .....	12
4. Port state control & ship vetting .....	14
5. Life extension of existing tankers .....	15
6. IACS rules for existing dry bulk carriers .....	18
7. Summary and conclusions.....	19
APPENDICES	
I. Bulk ship demolition 1992-97 by: .....	22
– Location	
– Vessel type	
– Vessel size	
– Owner nationality	
– Owning company	
II. Bulk shipping fleet age profiles, July 1997.....	40
III. Ship demolition & freight rates .....	49
IV. Time-table of new legislation .....	52
V. Port State Control regimes.....	55
INFORMATION SOURCES .....	57

## GLOSSARY

Aframax	tanker of 80-119,999 dwt
BFI	Baltic Freight Index
COW	crude oil washing
dwt	deadweight tonne
Handysize	bulk carrier of 10-34,999 dwt
Handymax	bulk carrier of 35-49,999 dwt
HBL	hydrostatically-balanced loading
IACS	International Association of Classification Societies
IMO	International Maritime Organisation
LLP	LLP Ltd (previously Lloyd's of London Press Ltd)
LR	Lloyd's Register of Shipping
lwt	lightweight ton
MARPOL	IMO International Convention for Prevention of Pollution from Ships, 1973 (including 1978 Protocol)
MOU	memorandum of understanding
Mdwt	million deadweight tonnes
OPA	US Oil Pollution Act 1990
Panamax	bulk carrier of 50-79,999 dwt
PRC	Peoples' Republic of China
SBT	segregated ballast tanks
SOLAS	IMO Safety of Life at Sea Convention, 1978
Suezmax	tanker of 120-159,999 dwt
VAT	value added tax
VLCC	very large crude carrier (200-299,999 dwt)
ULCC	ultra large crude carrier (300,000 dwt & over)

## BULK VESSEL SCRAPPING REVIEW & OUTLOOK

### 1. Introduction

1. By 1992, all three bulk shipping fleets (tankers, dry bulk and combined carriers) were characterised by large numbers of “overage” vessels.<sup>1</sup> This was a direct result of lower demolition in the second half of the 1980s. The following figures compare the situation in terms of overage supply in October 1992 (the date of SSY’s previous study on ship scrapping) and at present:

#### Overage Bulk Vessel Supply 1992 & 1997

	10/92		7/97	
	<u>Mdwt</u>		<u>Mdwt</u>	
Tankers	153.75	(58.0%)	138.41	(51.0%)
Bulk Carriers	83.17	(39.1%)	105.77	(41.0%)
Combis	<u>18.32</u>	(59.5%)	<u>13.01</u>	(61.1%)
Total	255.24	(50.2%)	257.19	(46.7%)

Ships greater than 10,000 dwt.

*Figures in brackets denote overage tonnage as percentage of fleet totals.*

Source: SSY.

2. These figures show that the proportion of overage shipping within total bulk vessel supply has declined from around 50% to 47% since 1992; this has been due to greater newbuilding activity in recent years and hence a rise in the share of modern ships within the overall fleets, particularly for tankers. Nonetheless, the overage “problem” has not gone away, in that tonnage of 15 years’ age or more has risen in absolute terms, albeit marginally. The data also show that, *while some progress has been made in the removal of older units from the tanker fleet, the reverse is true for the dry bulk carrier sector, with a substantial increase in overage tonnage.*<sup>2</sup>

3. One clear conclusion from the above is that if extensive reliance on older vessels is deemed undesirable, considerable volumes of tonnage need to be scrapped before a relatively modern ship supply

---

<sup>1</sup> For the purposes of this study, “overage” units are defined as ships of 15 years old or greater.

<sup>2</sup> Older tonnage, per se, is not a problem *as long as ships have been well maintained*, and age is a poor proxy for vessel condition. However, the incidence of serious casualty incidence increases steeply with ship’s age, implying that many overage units may not be sufficiently robust to trade safely.

position can be attained.<sup>3</sup> Despite this, total demolition, including non-bulk ship types, has not exceeded 20.0 MdwT in any single year since the mid-1980s. Thus, *even if some increase occurs in annual volumes broken up, it would take many years of concerted scrapping before the overage tonnage total could be reduced to more acceptable proportions.*

4. This report focuses specifically on the bulk shipping fleets, as this is the area of shipping where the overage problem is currently the source of greatest concern. Admittedly, figures from Lloyd's Register of Shipping show that the overage tonnage phenomenon also applies to other sectors of shipping, with a very high proportion of these ships in the general cargo and reefer categories at the end of 1996. However, the design lives of such vessels are somewhat greater than for bulk ship types.

5. The limited replenishment of the bulk fleets with new tonnage seen in recent years has been due to the success of many ships in surviving to ages far greater than envisaged when they were built. This has followed from the lack of any market forces capable of forcing badly-maintained older units out of the market. Reasons for this are well documented and include:

- the incentive to owners to retain low-cost, fully-depreciated ships, rather than scrap them, as these are the vessels most able to trade profitably when charter markets are weak;
- a tendency for many companies to own either relatively modern ships or older ones, rather than both. Hence, when newbuildings are delivered, such owners do not necessarily have overage vessels that they can scrap;
- the willingness of many charterers and port authorities to accept low-quality tonnage although, as explained later, this situation is now changing.

6. Admittedly, in the 1990s, some age-related legislation has entered force, e.g. the 1990 US Oil Pollution Act and the 1993 MARPOL Amendments, both of which specify double-hull requirements for existing tankers. However, compliance with these standards is not needed until ships reach 25 years old, an age greater than that at which most oil-carrying ships are normally scrapped for commercial reasons. (In the period 1992-97 inclusive, the average age of tankers scrapped - excluding damaged vessels - was 24.1 years). Hence, the influence that these requirements have on demolition activity may ultimately prove limited.

7. Apart from the age limits contained within OPA and MARPOL, several countries have adopted unilateral regulations that stipulate maximum age restrictions on ships trading within their territorial waters. In the tanker sector, these include Japan, Korea, Libya, Nigeria, PR China and Syria, but such requirements typically operate only on a discretionary basis. Some ships older than the 15-year limit applied by most of these states are still accepted, if they are well known to the vessel charterers and/or port authorities. Accordingly, unless the adoption of more widespread age limits takes place, this alone is unlikely to increase the momentum of scrap sales.

---

<sup>3</sup> This in turn would imply substantial demand for replacement newbuildings, yet for most of the 1980s and 1990s the bulk shipping markets have been anticipating such a situation, without it materialising.

8. Despite the above, other factors imply increased pressure on owners to scrap tonnage in future. These are:

- wider application of port state control as a means of eliminating sub-standard ships from various trades;
- more rigorous ship vetting by charterers, especially in the tanker market;
- new rules by the leading classification societies regarding the safety of existing dry bulk carriers, to be implemented from July 1998 onwards.

9. Together, these could form the inducement for some rise in ship demolition. Such a tendency may be further accentuated by any new legislation that specifies additional requirements for vessel design, equipment or operation. Alternatively, it could arise from wider application of standards embodied in existing regulations, e.g. by some of the main oil producers that have not yet adopted MARPOL's requirements for tankers to have SBT and COW.

## 2. Bulk shipping: scrapping activity 1992-97

### *Total Demolition*

10. Graphs and tables showing developments in bulk vessel scrapping are provided in Appendix I to this report. These demonstrate that after a marked lull in shipbreaking during the late 1980s and start of the 1990s, a notable recovery took place from 1992 onwards. In the table below, preliminary data for demolition in first-half 1997 appears to have stalled significantly, but these statistics may be misleading. Time lags in reporting from the demolition yards mean that such data may be subject to significant upward revision.

### **Total Ship Demolition 1990-1997**

	<b>Bulk Ships</b>	<b>Other Types</b>	<b>Grand Total</b>
1990	1.55	1.08	2.63
1991	2.61	2.17	4.78
1992	14.20	1.65	15.85
1993	16.41	1.80	18.21
1994	18.32	1.69	20.01
1995	13.98	1.64	15.62
1996	16.00	2.33	18.33
1997 (Jan-June)	4.69	1.43	6.12

*Figures in million dwt. 1997 totals are subject to upward revision.*

Source: LLP Ltd.

11. Thus, whereas only 2.6 MdwT of ships were broken up in 1990, the annual total rose by 1994 to its highest level for eight years, yet remained under half the 42.6 MdwT of 1985. Since then, activity has fluctuated, but present indications are that the 1997 total will also fall far short of 1994's level. In first-half 1997, 290 ships of 9.2 MdwT were sold for breaking, against year-earlier levels of 173 vessels of 8.42 MdwT, i.e. an increase of 9%. However, in the second half of the year, scrap sales are likely to moderate as a result of:

- recent problems in India, the world's largest shipbreaker, following a serious accident at Alang in late April. This resulted in the Gujarat Maritime Board insisting that all tankers arriving in the area should be fully gas-free and that dry cargo vessels should be clear of all slops and residues. It was also stipulated that breakers would not be permitted to land a second vessel on a beaching plot until at least 65% of the first ship had been demolished. These requirements led to many sales being renegotiated as vessels arrived and have already led to reluctance by some owners to sell to Indian breakers;<sup>4</sup>
- a 7.5% rise in import tax by Bangladesh, effective since mid-June, which will add to the cost of acquiring tonnage by scrap-yards in that country;
- the onset of the monsoon season in the Indian sub-Continent, which traditionally stems scrapping activity during the third quarter.

12. Current indications are that perhaps under 15 MdwT may be demolished in 1997, a significant prospective decline from 1996's figure. Overall deletions from the fleets, though, would be somewhat higher due to total losses and the conversion of some ships to other uses.<sup>5</sup>

### *Demolition by Ship Type*

13. Most of the rise in ship demolition during 1992-96 inclusive was accounted for by higher scrapping of **oil tankers** (61.4 out of 88.0 MdwT in all). In the early 1990s, this had been the sector of bulk shipping that contained the greatest volume of overage tonnage. From only 0.8 MdwT broken up in 1990 (i.e. the equivalent of just three large vessels), scrapping reached 14.8 MdwT in 1994, with this increase arising from a combination of low freight rates, the rising costs of insurance and maintenance, plus mounting environmental concerns about overage tonnage. In addition, 1992's scrapping volumes were inflated by the demolition of several VLCCs that had been damaged during the Gulf war. Since its recent peak in 1994, though, scrapping has again subsided amid rising vessel demand and growth of seaborne oil trade, which have together led to firmer freight markets.

14. Much of the variation in tanker demolition from year to year in tonnage terms has been accounted for by breaking of VL/ULCCs. This is not surprising, in view of: a) the greater average size of vessels in this fleet sector, plus b) the volatility of demand for these ships. In 1992-96 inclusive, annual demolition totals for these sizes ranged from as high as 35 vessels in 1994 to as few as 14 in 1996 (excluding ships broken up as a result of casualty). NB: in the first six months of 1997, there were only

---

<sup>4</sup> An easing of some beaching restrictions seemed to be emerging in late July 1997, but the effects that this will have remain to be seen.

<sup>5</sup> In particular, a significant volume of tankers may leave the fleet to undergo conversion to floating production, storage and offloading units ("FPSOs") for use at offshore oil-fields.



five VL/ULCCs removed from the fleet, implying that scrapping of these sizes is likely to decline for a third successive year.

15. In the 1980s and start of the 1990s, VLCC demolition was the virtual preserve of Chinese Taipei and China respectively. Following the withdrawal of these countries from the ship scrapping market, though, new centres emerged for the disposal of such tonnage. A limited number of these ships had already been broken up in Pakistan and Bangladesh, with India buying its first scrap VLCC in July 1993, being followed by Thailand in November that year. From 1993 onwards, improved capacity and increased availability of funds for buying scrap ships contributed to greater VLCC demolition by all three of these countries. In May 1995, Vietnam also entered the VLCC demolition field, but most of its breaking to date has been of tonnage below 100,000 dwt.

16. For sub-VLCC sizes, demolition has been concentrated mainly among smaller sizes, partly due to the generally greater age of tonnage in this fleet segment. In particular, older ships up to 30,000 dwt have found it harder to find regular profitable employment, despite an overall improvement in the tanker charter market since 1992. This has arisen from:

- a general upward trend in cargo sizes on many routes;
- greater awareness among charterers of the importance of vessel quality considerations.

17. From the start of 1992 to mid-1997 inclusive, tanker scrappings in the 10-49,999 dwt size range (excluding tonnage removed from the fleet due to total losses or conversion to other uses) totalled 4.6 Mdw.

18. By comparison, in the interim size categories (i.e. Panamax, Aframax and Suezmax), there has been relatively little demolition activity,<sup>6</sup> despite the presence of significant numbers of overage ships within these sectors. This can be partly ascribed to:

- the growth of short-haul cargo supply in the 1990s, which has led to greater demand for Aframax vessels;
- changes in existing oil trade patterns, some of which have arisen from greater regional imbalances in supply/demand conditions for respective crude oil grades. For example, higher demand for light, sweet crudes east of Suez have presented new, long-haul trading opportunities for Suezmax tonnage (and larger vessels) on trades from West Africa, the North Sea and western hemisphere to Asia-Pacific destinations.

19. By comparison with the tanker scrapping described above, **bulk carrier** demolition remained relatively limited until 1996, with only limited growth in the early 1990s from exceptionally low levels late in the 1980s. Even the very weak freight market of 1992 failed to precipitate a full-scale revival of dry bulk demolition such as there had been in 1985-87 inclusive. A large rise in scrapping did ensue in 1996, when demolition reached its highest level for ten years, yet current indications are that this may prove to be short-lived. Preliminary figures for first-half 1997 imply a reduction to perhaps 5 Mdw. This

---

<sup>6</sup> 15.2 Mdw, comprising 3.0 Mdw of ships in the 50-79,999 dwt size group, 6.5 Mdw in the 80-119,999 dwt segment and 5.7 Mdw in the 120-159,999 dwt category. This excludes total losses and ships converted to other uses.

follows from revisions to owners' expectations of the future market after a pick up in dry bulk charter rates from September last year.

NB: despite the many overage ships that now exist in the Panamax and Capesize sectors, over half of the ships scrapped from the start of 1992 onwards were in the 10-49,999 dwt size group (242 vessels totalling 6.6 Mdw). This partly arose from a particularly high number of very old ships (vessels over 25 years old) in this fleet segment, especially units under 30,000 dwt - for which demand had declined as a consequence of the upward trend in cargo sizes seen since their construction.

20. **Combined carrier** scrapping totalled 9.1 Mdw from the start of 1992 to mid-1997 inclusive, demonstrating the continued decline in demand for this ship type, due to:

- the advanced age structure of the fleet;
- changes in charterer preference towards purpose-built bulk carrier and tanker tonnage.

21. The vast majority of this combi scrapping was of early 1970s-built tonnage over 80,000 dwt, partly reflecting limited use of older combined carriers in an increasingly quality-conscious tanker market. This was compounded by lower employment in dry bulk trades as large numbers of Capesize bulk carrier newbuildings entered service and as demand for overage combis declined in the Pacific Basin.

### ***Demolition by Location***

22. Since the mid-1980s, the geographical location of ship scrapping has continued to alter. After the withdrawal of Chinese Taipei and Korea from this sector in the late 1980s, China emerged as the world's leading demolition centre in 1992-93, only to relinquish this role thereafter. Since then, India and (to a lesser degree) Pakistan and Bangladesh have accounted for most of the tonnage broken up. In 1996, breakers in the Indian sub-Continent were responsible for 96% of tonnage scrapped, with India alone accounting for almost 8.5 Mdw.

23. The near-total departure of China from the ship scrapping since 1994 has been due to shortages of hard currency, plus increases in import duties in 1995 and the imposition of VAT at 17.5% on scrap ships that year. *It has not been the result of any change in regulations regarding use of re-rolled steel in the country's construction industry, despite reports to the contrary in parts of the shipping media.* Amid rapid industrialisation and resulting higher demand for various industrial raw materials, the availability of hard currency for the purchase of scrap ships has inevitably been in short supply. In fact, the little demolition by Chinese breakers that has taken place has involved domestic vessels for which foreign exchange was not required. However, recent political developments appear set to alter this situation.

24. The return of Hong Kong to Chinese rule in July 1997 should, by providing the PRC with a ready source of hard currency, enable that country to return to the shipbreaking market in the very near future. Amid continued industrialisation and growing demand for scrap steel as a feedstock for its electric arc furnaces, conditions appear ripe for such a return. Furthermore, the country is well supplied with suitable locations, including deep-water sites able to accommodate larger tonnage. NB: some of China's ship scrapping is undertaken at berths, meaning that no beaching procedure is needed. The time needed to break up a vessel is therefore shorter than at other centres, with VLCCs being demolished in as little as 35 days.

25. Outside Asia, ship scrapping remains relatively small scale, often involving localised demolition of damaged vessels or tonnage which could not have economically repositioned to the Far East to be broken up. Within Europe, the shipbreaking industry that had existed in Spain in the early 1990s has

virtually disappeared. This now leaves Turkey as Europe's largest shipbreaker, with 29 ships totalling 0.21 Mdwat scrapped in 1996; as implied by the number of vessels broken up last year, relative to the total for the year, activity in that country is mainly confined to smaller sizes. The scrap steel that results from these operations provides a source of feedstock for Turkey's electric arc furnaces.

### ***Owner Nationality of Ships Demolished***

26. To an extent, whether companies tend to own modern ships or older units may reflect a variety of factors.<sup>7</sup> It is plain, though, that the national fleets of some countries are considerably older than others, for whatever reasons. The degree to which existing overage tonnage is already owned by companies in such nations may provide clues as to the likely life expectancy of some of these older ships.

27. SSY has analysed the nationality of companies which owned the ships scrapped in undamaged condition since the start of 1992. It was found that owners from Greece accounted for the largest single share of the demolition total, being responsible for the disposal of 31.0 Mdwat of bulk shipping tonnage. This vastly exceeded the next highest nation, the US (10.3 Mdwat).

28. The pre-eminence of Greek owners among companies scrapping their ships in 1992-97 inclusive does not in itself tell us very much, as such selling for demolition could be partly ascribed simply to the large share of the tanker, bulk carrier and combi fleets accounted for by Greek owners, especially within the overage segment. For example, it does not indicate whether some of these ships were scrapped due to the commissioning of replacement newbuildings by some of these owners. However, further inspection shows that:

- 148 Mdwat of overage vessels<sup>8</sup> are still owned by the five nationalities that have been responsible for the greatest volumes of bulk vessel scrapping since 1992 (Greece, the US, Hong Kong (China), Norway and the UK); this implies continued scope for more disposals by owners in these countries;
- the average age at which ships were scrapped in 1992-97 to date has ranged from 21.4 years for owners from Japan to 27.6 years for those from Argentina, demonstrating an apparent difference in national attitudes towards the acceptability of using older tonnage.

NB: The tendency for owners of certain nationalities to trade their vessels for longer than others before selling them for scrap has particular significance in terms of the implications for ship demolition of: a) life extension of single-hulled tankers via HBL and b) new IACS safety rules for existing bulk carriers. For example, ships owned by companies based in such countries as Argentina, the US, Italy, Latvia and Russia had average ages over 25 years when broken up; therefore, it is owners from these countries that are likeliest, on the basis of past experience, to be deciding whether to put their vessels through the fifth special survey.

---

<sup>7</sup> These may include: a) the maritime policies of respective countries (e.g. the acquisition of low-price older vessels by companies based in developing economies to help expand the national fleet) and/or b) a dearth of the ship finance needed for owners to purchase relatively modern tonnage.

<sup>8</sup> This comprises 87.2 Mdwat of tankers, 56.8 Mdwat of bulk carriers and 6.0 Mdwat of combis.

### ***Demolition by Owner***

29. Analysis of the bulk shipping industry clearly demonstrates that owners are not uniform in their behaviour. Differences in their commercial strategies even extend to the ages and condition of the vessels that they own, as well as the way that these assets trade: whereas certain owners are closely associated with the operation of modern fleets, others usually own just older tonnage. The existence of this latter group creates a ready market for ships that become too old for companies which choose to own only modern units. Furthermore, as the price of tonnage sold for further trading exceeds its scrap value, few owners in the former group sell their ships for demolition when these need to be replaced. It is this which prevents “scrap and build” strategies from being pursued; new ships are ordered without the tonnage that they are replacing simultaneously leaving the fleet.

30. Three owners in particular have been responsible for much of the bulk vessel demolition seen since the end of 1991. All three of these companies - Troodos Shipping Company, World-Wide Shipping Ltd and the Iranian government (including its shipping subsidiary the National Iranian Tanker Company) - are heavily involved in oil trades. Collectively, these three parties were responsible for the removal of 11.7 Mdw of tonnage from bulk shipping supply in 1992-97 to date. NB: *despite the large-scale scrapping that they have undertaken, these interests still possess numerous overage ships, which implies potential for further demolition sales by them in years ahead.*

31. Among owners of dry bulk vessels, the ownership profile of ships scrapped has been generally less concentrated than for tankers, although the Israeli-owned SAMAMA and Zodiac Maritime together accounted for almost 1.6 Mdw of the demolition total, with most of this comprising Capesize tonnage. Numerous vessels were also scrapped by COSCO (China), Pan Ocean Shipping (Korea), plus the Greek owners Kappa Maritime (now renamed “Kosmos Maritime”), Polembros and Tsakos.

### **3. Influence of freight market developments**

32. *General:* Previous studies of ship demolition have shown that a clear, inverse relationship exists between freight market conditions and scrapping activity: when chartering conditions are firm and vessel earnings high, the tendency of owners to sell their ships for scrap is correspondingly diminished. Conversely, amid severe weakness of vessel demand and low freight rates, owners eventually become more willing to dispose of tonnage. However, it has also been shown that when upswings in freight markets take place, there is almost immediately a sharp fall off in sales for scrap; by comparison, when rates decline, owners are typically slower to respond and it may take some months for demolition selling to show any notable increase. Nonetheless, sustained periods of weakness are invariably associated with greater demolition than when markets are strong.

33. The above premise is well demonstrated by the relationship between levels of **dry bulk carrier** scrapping and the Baltic Freight Index, as shown in the graph in Appendix III. This illustrates how, during the firm markets of 1995 and of 1997 to date, a pronounced decline took place in scrapping in this sector. NB: admittedly, the BFI is not an ideal proxy for dry bulk market conditions in this instance, due to its lack of any Handysize component. This helps to explain why there is not a perfect inverse relationship between scrapping and the BFI in the period covered by the graph; e.g. higher scrapping in 1994, despite an overall increase in the Index that year.

34. No universal indicator exists for the **tanker** freight market, yet a general indirect relationship is also apparent between 12-month VLCC time-charter rates and total tanker scrapping (see second graph in Appendix III). Amid the strong freight markets of 1990-91 (largely a consequence of the Gulf war<sup>9</sup>), demolition was very limited, yet underwent a subsequent renaissance in the following three years. In 1994, the weakest tanker freight market for ten years, demolition reached its highest level since the mid-1980s, only to slide again thereafter with the onset of progressively firmer markets from mid-1995 onwards. These were the result of:

- changes in tanker trading patterns precipitated by the decision of the US federal government in July 1995 that American companies and their subsidiaries should not purchase oil from Iran;
- rising oil demand and increases in total seaborne oil trade;
- increased awareness of vessel quality as reflected in more stringent ship vetting by leading tanker charterers, plus the mounting influence of port state control regimes. Together, these reduced the effective supply of tonnage to some trades and thereby led to higher freight rates.

35. Firmer freight markets continued in 1996 and first half-1997, with VLCCs especially commanding very high rates. This has been despite widespread availability of short-haul crude that had been expected to reduce demand for Middle East oil and bring a downturn in cargo movements on traditional long-haul routes. Instead, rising oil consumption, in particular east of Suez, has brought further growth of tanker employment in which even overage ships have shared. Another factor which has encouraged owners of older vessels (even in the VLCC size range) to keep their tonnage trading had been the greater availability of back-haul cargoes as trading patterns change: this has meant that ships spend more time in laden, and therefore cargo-earning, condition. Moreover, some of the loading areas associated with these back-haul cargoes are those that currently exercise few controls on the quality of the tonnage calling at their export terminals.

NB: an improvement in the freight market can have exaggerated effect on the life of overage vessels, in that the prospect of profitable trading can persuade an owner to put his ship through its next special survey. Firmer charter rates for oil tankers from 1995 onwards led to increased numbers of VLCCs being put through their fourth special surveys; this has created the prospect that some of these ships may now survive until their 25<sup>th</sup> anniversary looms. By comparison, in the severely over-tonnaged markets of the mid-1980s, many owners scrapped such ships rather than face the expense of putting them through their third special survey, at 15 years' age.

NB: As compliance of existing ships with MARPOL double-hull requirements is now due when ships reach 25 years old, the fifth special survey is likely to assume even greater importance in a tanker owner's decision whether to scrap his vessel.

36. After a very firm year in 1995, the **dry bulk** charter market experienced pronounced weakness in the first eight months of 1996; this arose from a combination of record newbuilding deliveries and limited growth of cargo demand in all main sectors except steam coal. The resulting decline in freight rates persuaded many owners to sell their ships for demolition, only for firmer conditions to return from

---

<sup>9</sup> Some of this market strength was directly attributable to the extensive use by Saudi Arabia and Iran of VLCCs and ULCCs for floating storage duties, which removed a large volume of tonnage from the spot market, thereby putting upward pressure on rates.

September onwards. As explained above, on a rising market, owners' attitudes towards the disposal of further tonnage are rapidly revised, which explains the downturn in sales to breakers of such tonnage apparent since late last year.

37. The upswing in the dry bulk market that took place in the last four months of 1996 has not been sustained, owing to continued fleet expansion amid a high volume of deliveries from newbuilding yards, and trading conditions for respective ship sizes have not been uniform. In particular, very firm Handysize rates have not been matched by a similar performance for Panamaxes, the sector where fleet expansion has been especially pronounced. The future prospects for the dry bulk market have thus been still harder than usual to ascertain. While such uncertainty exists, owners can be expected to continue trading their overage ships, rather than selling them for scrap. When the full implications of the forthcoming IACS rules for existing dry bulk carriers and the ISM Code become apparent, though, resumed scrapping of such tonnage is expected to emerge. This is discussed in detail in section 6 of this report.

38. Apart from the points made above, factors such as shifts in preferred ship size can reduce the suitability of some existing tonnage for particular trades and thereby reduce its long-term trading prospects - possibly contributing to greater demolition of these sizes. This has been responsible, for example, for the high number of "small" VLCCs (ships of up to 250,000 dwt) removed from that sector of the fleet.

#### **4. Port state control & ship vetting**

39. The 1995 "Donaldson report" into the "Braer" tanker accident off the UK's Shetland Islands in January 1993 noted that:

"Port state control as practised at present undoubtedly has some effect in maintaining standards of safety, but it is a long way from being fully effective".

40. In the two years since its publication, though, further progress has been made in increasing its impact. The two principal regional initiatives: the Paris MOU (covering much of Western Europe, Canada, Poland and the Russian Federation), plus the Tokyo MOU (governing the Asia/Pacific region) have been in force since 1982 and 1994 respectively. NB: since 1 July 1996, under the European Union's Directive 95/21, the Paris MOU became legally binding, requiring the inspection of 25% of all ships visiting each port in member states.

41. Although the Paris MOU and Tokyo MOU are both already in existence, the intensity with which they will be enforced is set to increase within the next few years. This will follow from:

- greater targeting of ships which have bad records of safety, as now being undertaken by the Paris MOU members;<sup>10</sup>
- statutory detention of vessels with serious detentions until appropriate repairs have been implemented - another provision of the Paris MOU;

---

<sup>10</sup> Specific targets are: a) ships visiting the Paris MOU area for the first time, or making their first visit for over one year, plus b) oil tankers older than 15 years, bulk carriers over 12 years, chemical tankers and gas carriers over 10 years, and all passenger ships. All of these will be subject to expanded inspection.

- imposition by the European Commission of financial penalties on owners of tonnage detained by port state authorities;
- planned increases in the proportion of ships to be inspected; e.g. in the case of the Tokyo MOU, the target is a 50% inspection rate by 2000.

42. Much of the impact of port state control to date has been in Pacific dry bulk trades, which has been attributable to the actions taken by the Australian Maritime Safety Association (AMSA) - a response to the loss of several ships that had loaded iron ore cargoes in that country. This, in conjunction with the ship vetting applied by major importers based in Japan and Korea has already had a clear effect, with tonnage that operates in the Pacific Basin being notably more modern than in the Atlantic market. However, a series of further port state control regimes are under development which should intensify pressure on sub-standard tonnage trading in the Atlantic region and encourage greater demolition of these ships by the start of the 21<sup>st</sup> Century. These comprise the Caribbean MOU, the Latin American Port State Control agreement (“Vina del Mar”), the recently announced Mediterranean MOU and the Mombasa MOU. The last of these covers Eastern and Southern Africa and is due to take effect in 1998. The respective members of these regimes are featured in Appendix V to this report.

43. Of the above initiatives, the port state controls that have been applied by Brazil since June 1995 are of particular note, as it is one of the major sources of employment for large bulk carriers in the Atlantic Basin. However, it has been claimed that after its initial introduction, the vigour with which Brazil’s port state controls is being applied has diminished.

44. Another measure poised to influence the outlook for existing ships and their future candidacy for demolition is the impending implementation of the IMO’s International Safety Management (“ISM”) Code in 1998.<sup>11</sup> This requires a company to obtain appropriate certification from its flag authority and it has been claimed may present particular compliance problems for smaller owners.

## 5. Life extension of existing tankers

45. In 1994, the IMO accepted “hydrostatically-balanced loading” (“HBL”<sup>12</sup>) as a means of limiting cargo spills from existing tankers in the event of accident. HBL entails loading cargo tanks to a height below that of the sea water surrounding the ship’s hull; this means that if this is ruptured in a grounding or collision incident, there is a tendency for water to flow into the tank, rather than for oil to escape. NB: *the IMO’s willingness to accept HBL is potentially of major significance to the trading outlook for single-hulled tonnage as, by using it, an owner can defer by up to five years compliance with the double-hull requirements laid down in OPA 90 and the 1993 MARPOL Annex I Amendments.*

<sup>11</sup> This applies to all bulk cargo vessels and passenger ships, and takes effect from 1 July 1998.

<sup>12</sup> HBL works because oil is less dense than water. Hence, if the bottom of a ship is holed, oil will not escape provided that the pressure of water from outside the hull exceeds the pressure of oil from the inside. The permitted level of cargo loaded into each tank is calculated according to the density of the oil in question. Ships have to be certified to operate HBL, with the loss of cargo-carrying capacity that it entails averaging 10-12% but reputedly being far lower in some cases. The principle of HBL was accepted by the IMO in November 1994 and has also been approved by the US Coast Guard. However, the first ship scheduled to operate HBL (the 1972-built VLCC “Stena Convoy”) is not due to be certified until December 1997.

46. This action by the IMO has led to considerable controversy, as it threatens to delay any scrapping of older ships that would result from double-hull legislation. Apart from IMO acceptance, the US Coast Guard too has endorsed the principle of HBL, yet recent media coverage indicates that the US authorities are surprised at how little cargo-carrying capacity is lost by its operation. The Coast Guard's approval may have been given in the belief that HBL would so reduce cargo capacity that few owners would choose to operate it.<sup>13</sup> If this is correct, and practical experience proves otherwise, the US authorities could reverse their decision.

47. The main arguments in favour of HBL are that:

- the IMO believes it to be an effective means of cargo-containment if a tanker's hull is breached;
- it is an inexpensive means of keeping ships operating for a longer period (if this is desirable), as it entails no large outlays on structural modifications, unlike the retrofitting of double hulls;
- contrary to initial assessments, it has now emerged that HBL entails little loss of cargo-carrying capacity: estimates place this even as low as 3% for some vessels;
- it rewards owners who have maintained their ships in good condition by enabling them to trade beyond the 25 year limit now stipulated for single-hulled vessels under OPA and MARPOL;
- it allows more time for the tanker industry to replenish the current fleet.

48. Conversely, though, there are critics of HBL, who claim that it:

- is theoretically invalid. Hydrostatic balance assumes that when the hull grounds, the ship remains in upright condition. In practice, during a grounding, one side of the vessel is likely to be raised upwards, meaning that the breach in the hull may be lifted out of the water, causing a net outflow of cargo to take place. Similarly, a ship enters port at high tide: if it is grounded in the process, then at low tide, the level of water outside the hull is likely to fall below that of the cargo inside;
- also rewards unscrupulous owners who have not maintained their ships well, rather than helping to force them out of the market;<sup>14</sup>
- may, by prolonging the existence of the pre-MARPOL fleet, sustain the threat of marine pollution arising from the operation of these vessels;

---

<sup>13</sup> A US Coast Guard study of a 264,000 dwt ship had indicated a capacity loss associated with use of HBL of 27.6%.

<sup>14</sup> Mr Clarence Dybeck, chairman of ICB Tankers, Sweden, has argued that as HBL is so inexpensive, it will be widely used by those owners who are least prepared to spend money on maintaining their ships. (Based on historical casualty statistics, these are the vessels likeliest to experience accidents).



- increases the risk of major oil spills from older ships, by presenting them with this opportunity for life extension;
- provides charterers with a continued “cheap option,” thereby deferring the need (on trades where older ships are still accepted) to pay the higher freight rates that modern tonnage would command.

49. Owners’ attitudes to HBL have already polarised, ranging from enthusiastic support to outright opposition. Concordia Maritime/Stena AB of Sweden is planning to use HBL to trade to 30 years’ age its early-1970s-built VLCCs, which possess the highest rating available under the classification societies’ conditional assessment programme (“CAP”). Conversely, Teekay Shipping of Vancouver, the world’s largest owner of Aframax, has rejected HBL as an undesirable development. (In the early 1990s, this company undertook an extensive replacement newbuilding programme and now owns one of the most modern fleets in the industry).

50. The question remains whether the availability of HBL will result in large numbers of existing ships surviving beyond their fifth special survey, with opinion also being divided on this point. Teekay states in its 1996 “Annual Report,” (as cited in “Lloyd’s List of 18 July 1997) that:

“We do not believe that large-scale operation of 25-year-old tankers is commercially viable.”

51. By contrast, though, one of Lloyd’s Register of Shipping’s senior surveyors, Mr John Ferguson, believes that: “The majority of the better ships” will trade to 30 years old. Use of mild steel, rather than high-tensile steel in the construction of these older vessels is one factor likely to contribute to their potential durability. In practice, the number of ships surviving beyond their fifth special survey will depend on:

- the state of the charter market: if demand is very strong, tonnage shortages could emerge at times, forcing some charterers to fix older units, even if their preference is for newer vessels;
- any further serious accidents and oil spills involving single-hulled ships.

52. In connection with the latter point, the recent grounding of a VLCC in Tokyo Bay (July 1997) is already causing speculation that Japan will introduce now restrictions on use of all single-hulled vessels in its territorial waters - even though the ship in this incident was a modern (1994-built) unit.

53. A detailed survey of owners to ascertain their plans regarding HBL is beyond the remit of this study. However, the following observations are offered:

- for owners such as the Japanese operators, who mainly own tonnage for use on trades to their own country, HBL is not a relevant option; this is due to the 15-year limit that generally applies on ships trading to their country. Furthermore, many of these companies have already undertaken extensive replenishment of their fleets in recent years;
- the Korean Maritime Port Authority has directed charterers to avoid fixing any VLCCs that reach 25 years old and which continue trading via use of HBL; this demonstrates concerns arising from a spate of small oil spills off Korea in the past two years;

- there has been an upward trend in parcel sizes on most tanker routes, clean and dirty, since the 1970s. This means that some older ships cannot offer the cargo-carrying capacity now preferred by various charterers;
- if HBL is widely adopted, this seems likeliest to be in the VL/ULCC size sector, due to: a) the lack of modern alternatives to the larger ULCCs and b) the plentiful employment of VL/ULCCs that still exists from countries which are not signatories to MARPOL. NB: this also applies for some large discharge areas for these ships (e.g. Thailand). However, in view of the increase in cargo sizes noted above, vessels below around 250,000 dwt are less likely candidates for survival.

54. Given the age profile of the present fleet, only three existing VLCCs are currently 25 years old, with another eleven coming to that age next year. However, excluding any allowance for ships scrapped in the interim, significant numbers of VLCCs are due to reach 25 years old from 1999 onwards: 41 that year, 61 in 2000 and 62 the year after. If many of these vessels do go through their fifth special survey, this would impinge on newbuilding demand, even though these older ships might trade only to destinations other than the major oil importers.

## 6. IACS rules for existing dry bulk carriers

55. In November 1996, the International Association of Classification Societies (IACS) ratified new measures to enhance the safety of existing dry bulk carriers.<sup>15</sup> These rules apply to single-skinned ships above 20,000 dwt, that are aged 15 years or greater, with LOA of 150 metres or over, that are carrying cargoes with a density of 1.0 cubic metres/tonne. The new standards enter force from 1 July 1998 and require the strengthening of the transverse corrugated bulkhead between cargo holds 1 and 2, plus the double bottom in way of hold no. 1. Compliance is then required according to the following schedule:

- for ships 10 years old or over: on date of next special survey (no later than 1 July 2003);
- ships below 10 years old: no later than date of third special survey.

NB: attempts by owners to delay conformity with these measures, by bringing forward surveys that are not due until after the rules take effect on 1 July 1998, will not be permitted. The compliance schedule of the current fleet, based on vessel ages, is contained in Appendix IV. This shows that from 1999 onwards, large numbers of existing bulk carriers will be obliged to undergo these structural modifications if they are to continue trading. *In the years 1999 to 2002 inclusive, up to 128 Mdw of ships would be due to comply, if they are not scrapped in the interim.*

56. The impact of the new rules will have on bulk carrier demolition will depend on:

- costs of compliance with these standards;
- freight market conditions, and owners' expectations of the trading outlook.

---

<sup>15</sup> Requirements for bulk carrier newbuildings are likely to be developed as amendments to the IMO's SOLAS Convention, with implementation in 1999.

57. Costs of compliance with these requirements are expected to vary widely, even between ships of similar sizes and age, depending on vessel design and condition. As a bench-mark, though, one north European-based Capesize owner is reportedly spending US\$3.5 million at time of writing on structural measures in anticipation of the new IACS rules' entry into force.

58. Given that older tonnage has a limited prospective trading horizon within which such costs can be recouped, the owners of ships that are in very poor condition are unlikely to undertake such investments. However, the higher freight earnings that were available earlier in the 1990s in the Capesize sector, for example, meant that money was available to spend on vessel maintenance; as a result, few very poor-quality ships appear to remain in this particular fleet segment.

## 7. Summary and conclusions

59. By the early 1990s, the bulk shipping fleets were characterised by high volumes of "overage" tonnage (ships greater than 15 years old) and, despite some revival in demolition from very low levels in 1988-91 inclusive, this situation largely persists. As at July 1997, a collective 257.2 Mdw of bulk carriers, combis and tankers over 10,000 dwt were 15 years old or more, equating to 47% of existing tonnage.

60. Scrapping of bulk vessels has risen sharply since the start of the 1990s, yet annual volumes of tonnage broken up have remained well below the peaks reached in the mid-1980s, averaging some 17.6 Mdw p.a. in 1992-96 inclusive.

61. The geographical pattern of ship scrapping has continued to alter, although most demolition still takes place in Asia; the world's leading shipbreaking nations are now all based in the Indian sub-Continent. At 8.5 million dwt, India alone accounted for 46% of tonnage broken up in 1996.

62. In contrast to the mid-1980s, Chinese Taipei and Korea have withdrawn from the shipbreaking sector and are unlikely to re-enter it; furthermore, China - due mainly to currency shortages, plus increased import duties and the imposition of VAT on scrap ships - has been far less active in this sphere since 1993.<sup>16</sup>

63. Looking ahead, the recent handing back of Hong Kong to China by the UK will provide the PRC with much-needed foreign exchange that should enable it to re-enter the ship demolition market. This implies a resumption of large-scale scrapping by China by the year 2000.

64. Renewed ship demolition by China should also ensue from: a) its ongoing industrialisation and the need for scrap steel to serve electric arc furnaces, b) the ready availability of suitable locations for ship demolition, even for larger vessels.

65. Otherwise, the only noteworthy new entrant to the shipbreaking industry since the early 1990s has been Vietnam which, in 1995, scrapped its first VLCC. Even so, demolition has been limited to date (only 11 vessels since 1993) and future potential may be limited.

---

<sup>16</sup> It has been widely reported that this relative absence of China from the ship demolition market has been due to new regulations which prohibit the use of re-rolled steel in the construction industry; *such reports are incorrect.*

66. Most scrapping in 1992-96 inclusive was of tankers: 61.4 out of 88.0 Mdw (70% of the total); this arose from owners' greater willingness to sell their ships for breaking amid depressed freight markets in the earlier part of this period. A marked rise occurred in bulk carriers scrapped during 1996, but may prove short-lived on the evidence of demolition so far in 1997.

67. Changes in the quantities of tonnage going for demolition depend closely on freight market conditions and owners' expectations regarding the trading outlook for their ships. A strengthening of chartering conditions in both the dry bulk and tanker markets in 1996-97 to date has accordingly reduced the incentive for owners to dispose of their vessels.

68. The heightened importance of tanker quality has been evident in more stringent ship vetting by many charterers since the early 1990s, especially by oil companies. Ships without "oil company approval" command lower freight rates and thus may ultimately be greater candidates for scrapping than tonnage with "approved" status.

69. Since the early 1990s, the role of port state control has become more prominent in attempts to drive out sub-standard tonnage and further initiatives in this respect may make it harder for poorly-maintained tonnage to find regular employment. If so, this could contribute to increased demolition of such vessels.

70. New IACS rules for safety of existing bulk carriers start to take effect from July 1998 and may bring increased scrapping of older tonnage. The Panamax and Capesize sectors seem likeliest to be affected, due to the greater use of these sizes for carriage of "high-density" cargoes.

71. Despite the inadequacy of age alone as a measure of ship condition, several countries (e.g. China, Japan, Nigeria and Korea) now operate theoretical maximum age limits on ships trading in their territorial waters. If such measures are more widely adopted, these, too, could precipitate greater scrapping of older tonnage in the next few years.

72. IMO acceptance of "hydrostatically-balanced loading" ("HBL")<sup>17</sup> as a means by which existing single-hulled tankers can trade until 30 years' age *may* defer the greater demolition of such ships that had been expected by the end of the 1990s. This would seem destined to affect primarily the VL/ULCC sector, if any, due to the high capital costs of replacing tonnage in this size group.

73. Although deferral of tanker scrapping, as implied by the scope to use HBL, implies some moderation of newbuilding demand, other factors should offset this. These include: a) changes in the pattern of oil trade and the typical cargo sizes shipped on respective routes, b) a mounting tendency for "two-tiered" markets to evolve because, on certain trades, only modern tonnage can conform with the requirements of end-users and maritime authorities.

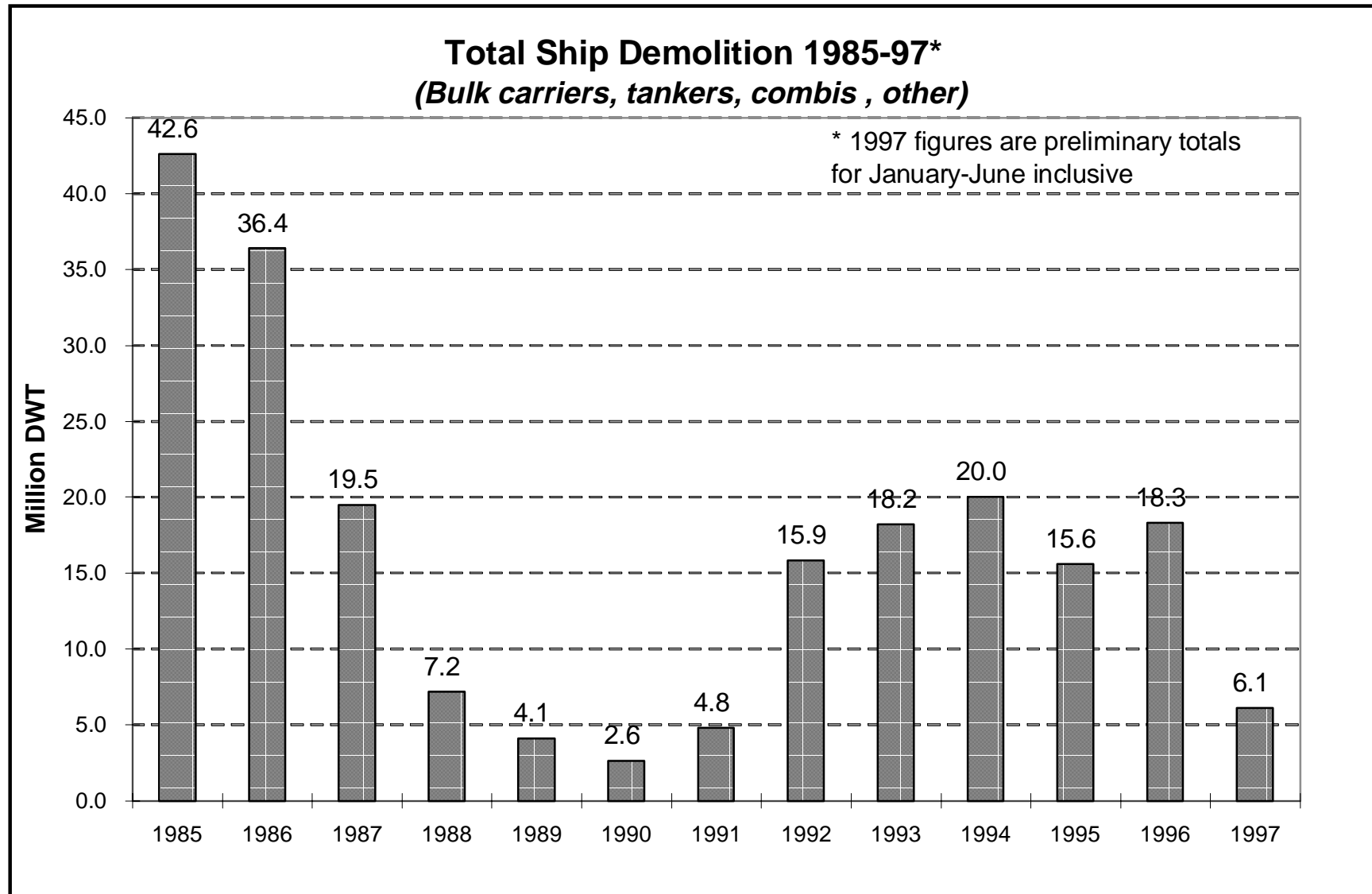
---

<sup>17</sup> In practice, HBL entails loading the cargo tanks to a level lower than that of the sea water outside the ship's hull. This implies that if the hull is breached, this results in water flowing in, rather than cargo flowing out.

# **APPENDICES**

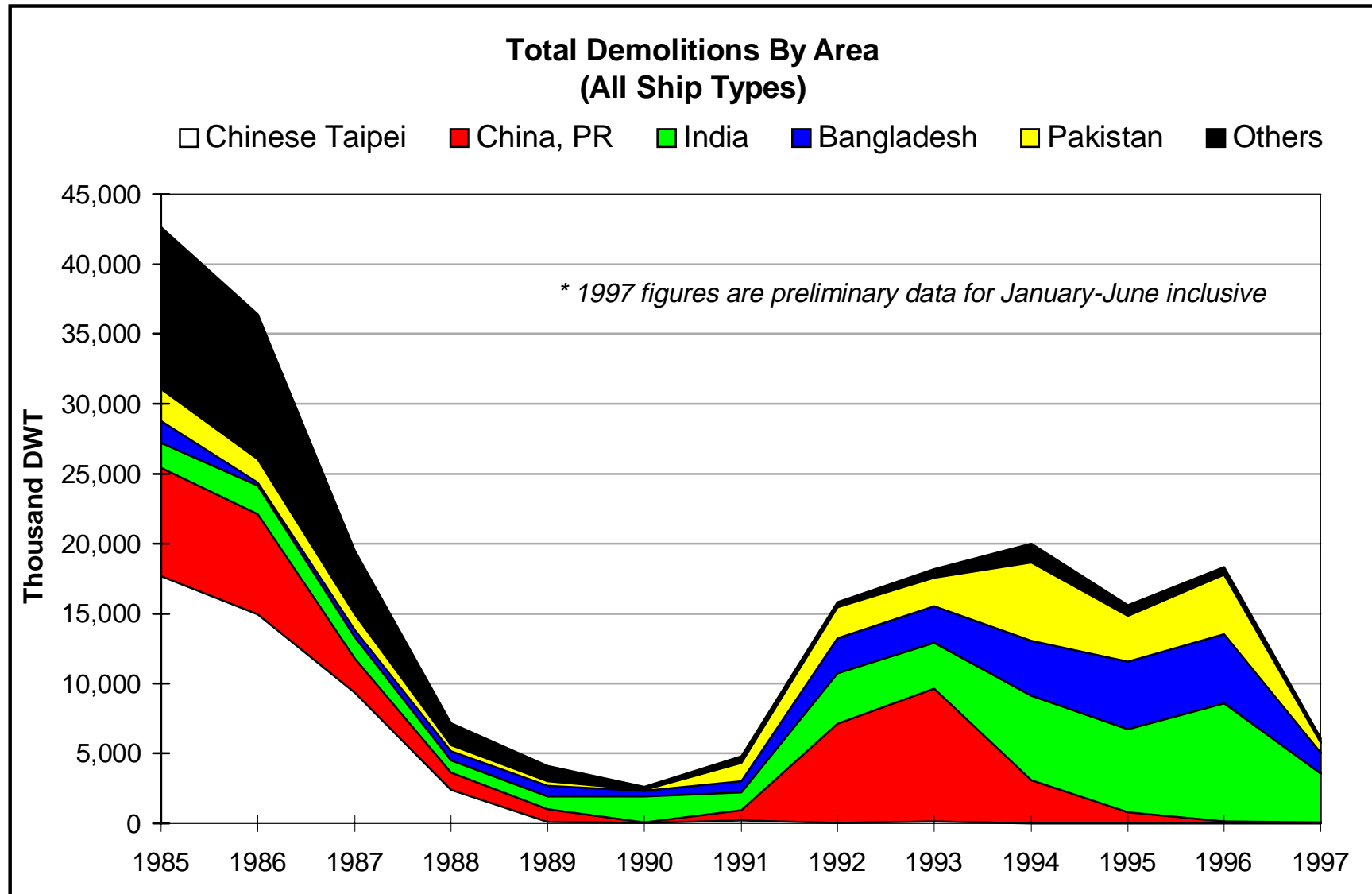
## **APPENDIX I**

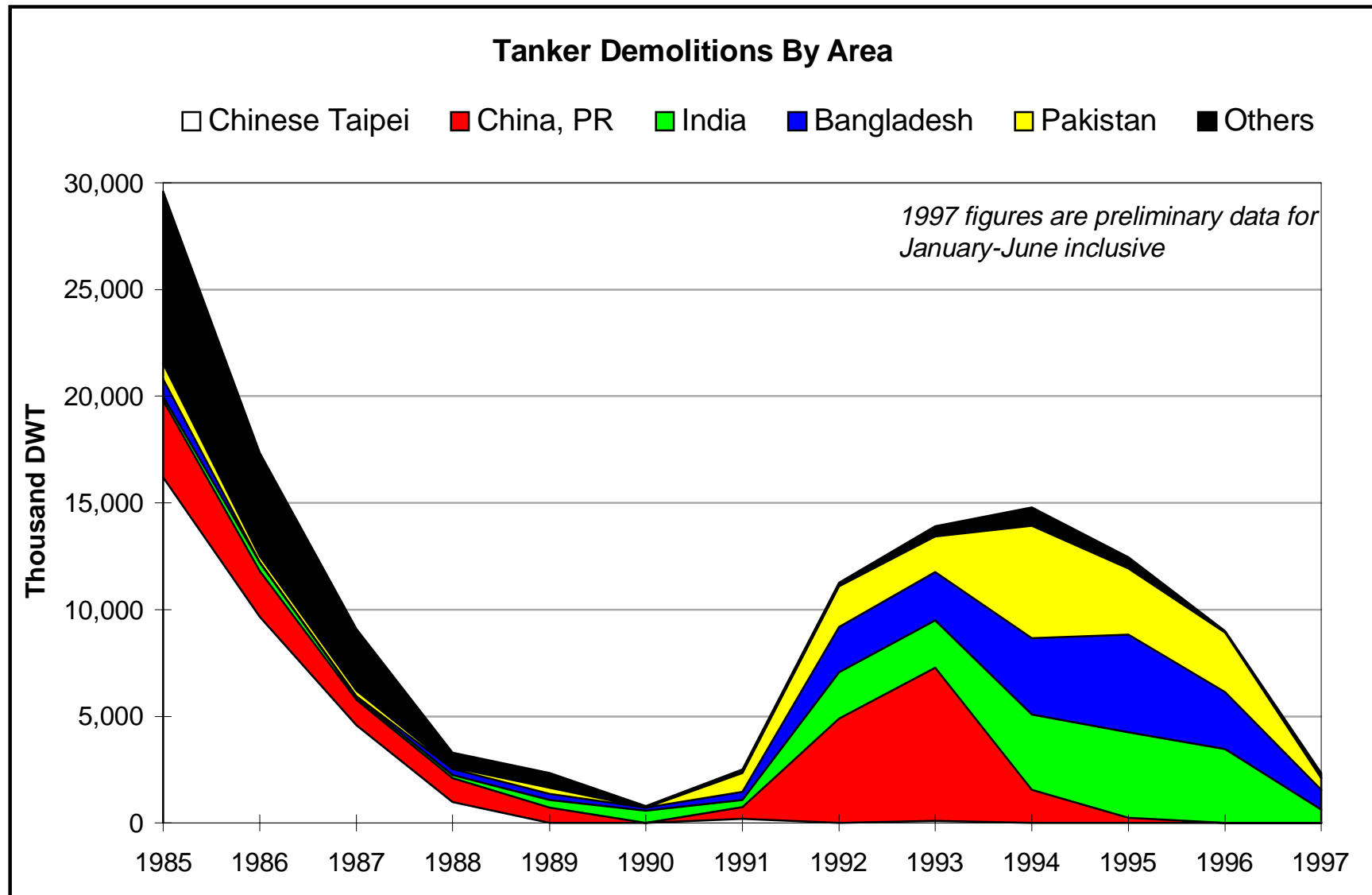
### **BULK SHIP DEMOLITION 1992-97**

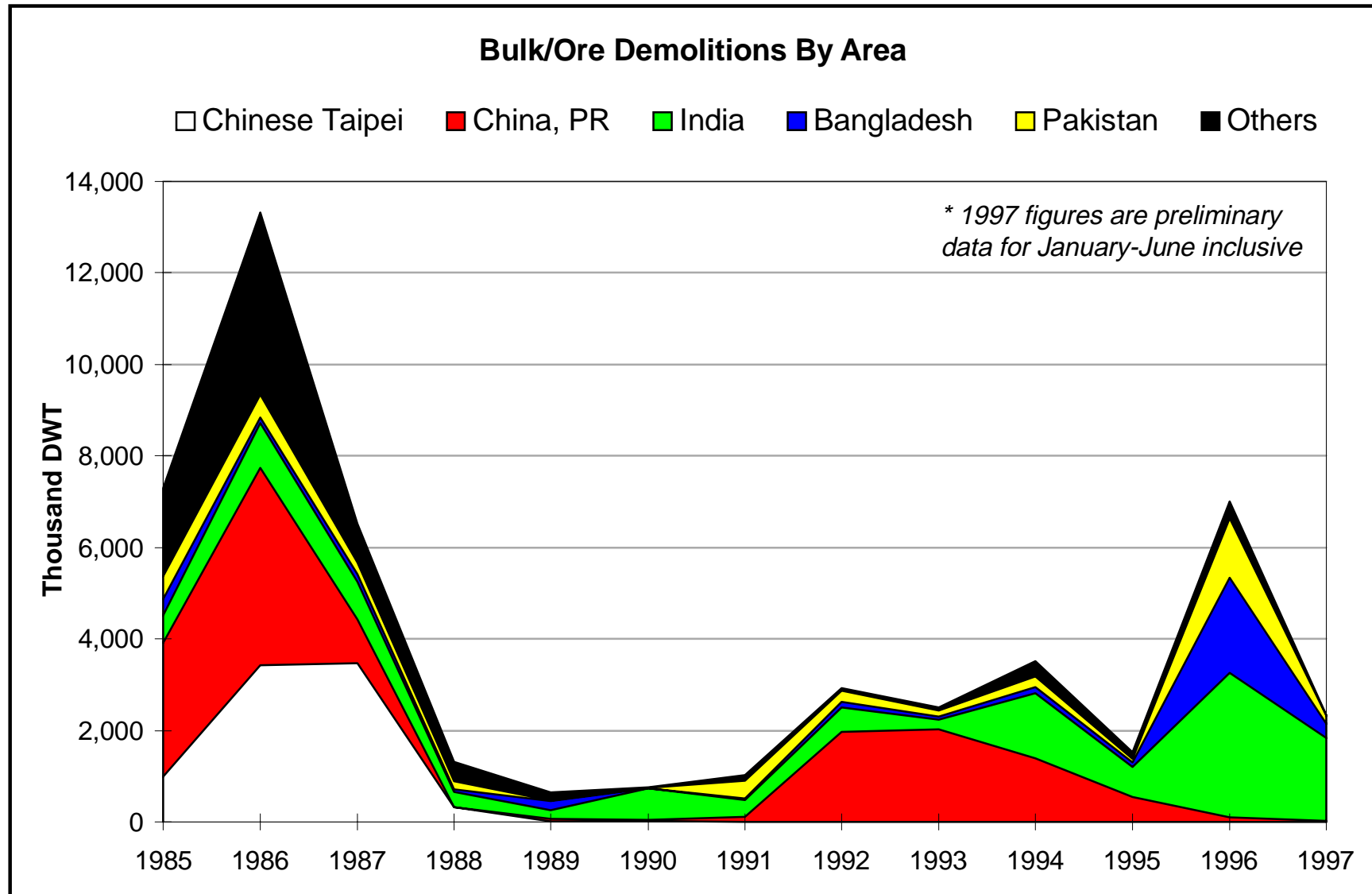


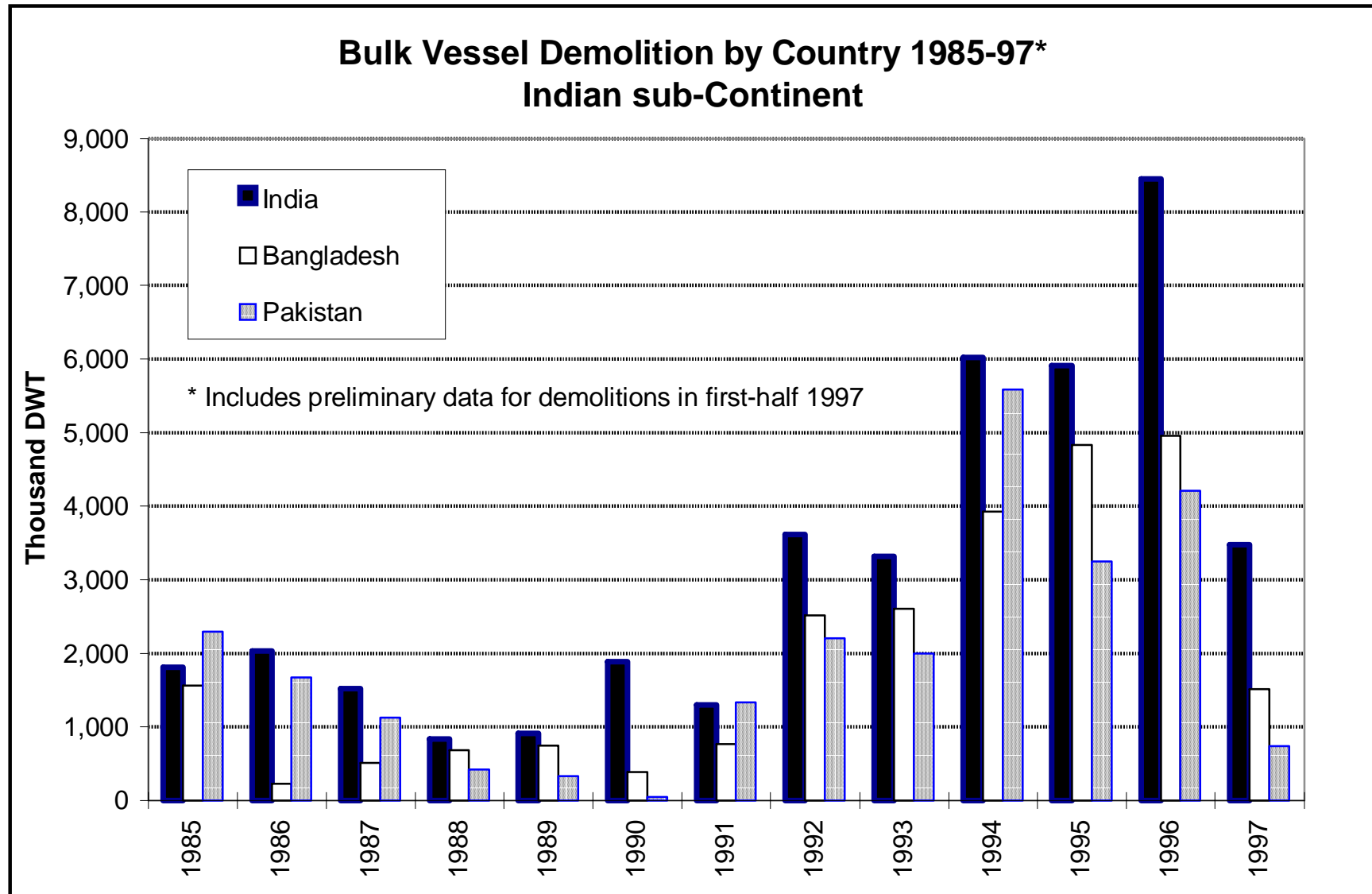
<b>Ship Scrapping: Demolition by Country of Breaking &amp; Vessel Type 1985-97</b>													
<b>(1,000 Dwt)</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
<b>CHINESE TAIPEI</b>													
Tankers	16,182	9,659	4,576	975	0	0	186	0	99	0	0	0	0
Bulk/Ore	998	3,424	3,474	324	16	33	0	0	0	0	0	0	0
Others	504	1,854	1,307	1,093	88	1	31	26	15	0	0	0	0
Total	17,684	14,937	9,357	2,392	104	34	217	26	114	0	0	0	0
<b>CHINA, PR</b>													
Tankers	3,607	2,141	1,209	1,120	727	0	558	4,895	7,193	1,540	246	3	6
Bulk/Ore	2,914	4,324	953	1	58	15	123	1,965	2,029	1,397	546	96	27
Others	1,216	721	277	138	142	5	27	230	290	163	31	56	29
Total	7,737	7,186	2,439	1,259	927	20	708	7,090	9,512	3,100	823	155	62
<b>INDIA</b>													
Tankers	186	405	115	151	347	562	333	2,167	2,195	3,555	4,023	3,480	629
Bulk/Ore	607	981	829	333	184	689	358	546	216	1,417	661	3,160	1,812
Others	1,012	640	576	353	379	637	606	904	908	1,052	1,233	1,812	1,041
Total	1,805	2,026	1,520	837	910	1,888	1,297	3,617	3,319	6,024	5,917	8,452	3,482
<b>BANGLADESH</b>													
Tankers	810	0	60	288	297	151	389	2,124	2,263	3,566	4,562	2,651	911
Bulk/Ore	351	110	161	55	195	0	32	113	55	143	95	2,092	319
Others	398	117	288	339	253	239	349	280	287	218	177	210	283
Total	1,559	227	509	682	745	390	770	2,517	2,605	3,927	4,834	4,953	1,513
<b>PAKISTAN</b>													
Tankers	740	304	255	76	286	0	880	1,908	1,686	5,261	3,091	2,795	561
Bulk/Ore	500	494	252	175	17	16	398	255	141	220	86	1,291	170
Others	1,054	872	616	169	28	32	55	45	172	106	76	125	7
Total	2,294	1,670	1,123	420	331	48	1,333	2,208	1,999	5,587	3,253	4,211	738
<b>OTHERS</b>													
Tankers	8,065	4,824	2,872	689	691	81	156	181	459	873	527	66	235
Bulk/Ore	1,917	3,987	855	424	186	10	119	41	68	341	140	363	17
Others	1,565	1,539	811	481	211	154	181	175	137	154	123	124	72
Total	11,547	10,350	4,538	1,594	1,088	245	456	397	664	1,368	790	553	324
<b>TOTAL WORLD</b>													
	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
Tankers	29,590	17,333	9,087	3,299	2,348	794	2,502	11,275	13,895	14,795	12,449	8,995	2,342
Bulk/Ore	7,287	13,320	6,524	1,312	656	763	1,030	2,920	2,509	3,518	1,528	7,002	2,345
Others	5,749	5,743	3,875	2,573	1,101	1,068	1,249	1,660	1,809	1,693	1,640	2,327	1,432
Total	42,626	36,396	19,486	7,184	4,105	2,625	4,781	15,855	18,213	20,006	15,617	18,324	6,119
<b>BREAKING BY COUNTRY:</b>													
<b>(1,000 Dwt)</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>
Chinese Taipei	17,684	14,937	9,357	2,392	104	34	217	26	114	0	0	0	0
China, PR	7,737	7,186	2,439	1,259	927	20	708	7,090	9,512	3,100	823	155	62
India	1,805	2,026	1,520	837	910	1,888	1,297	3,617	3,319	6,024	5,917	8,452	3,482
Bangladesh	1,559	227	509	682	745	390	770	2,517	2,605	3,927	4,834	4,953	1,513
Pakistan	2,294	1,670	1,123	420	331	48	1,333	2,208	1,999	5,587	3,253	4,211	738
Others	11,547	10,350	4,538	1,594	1,088	245	456	397	664	1,368	790	553	324
<i>1997 figures = preliminary data for January-June only.</i>													
<i>Source: LLP's "Inactive Vessels".</i>													

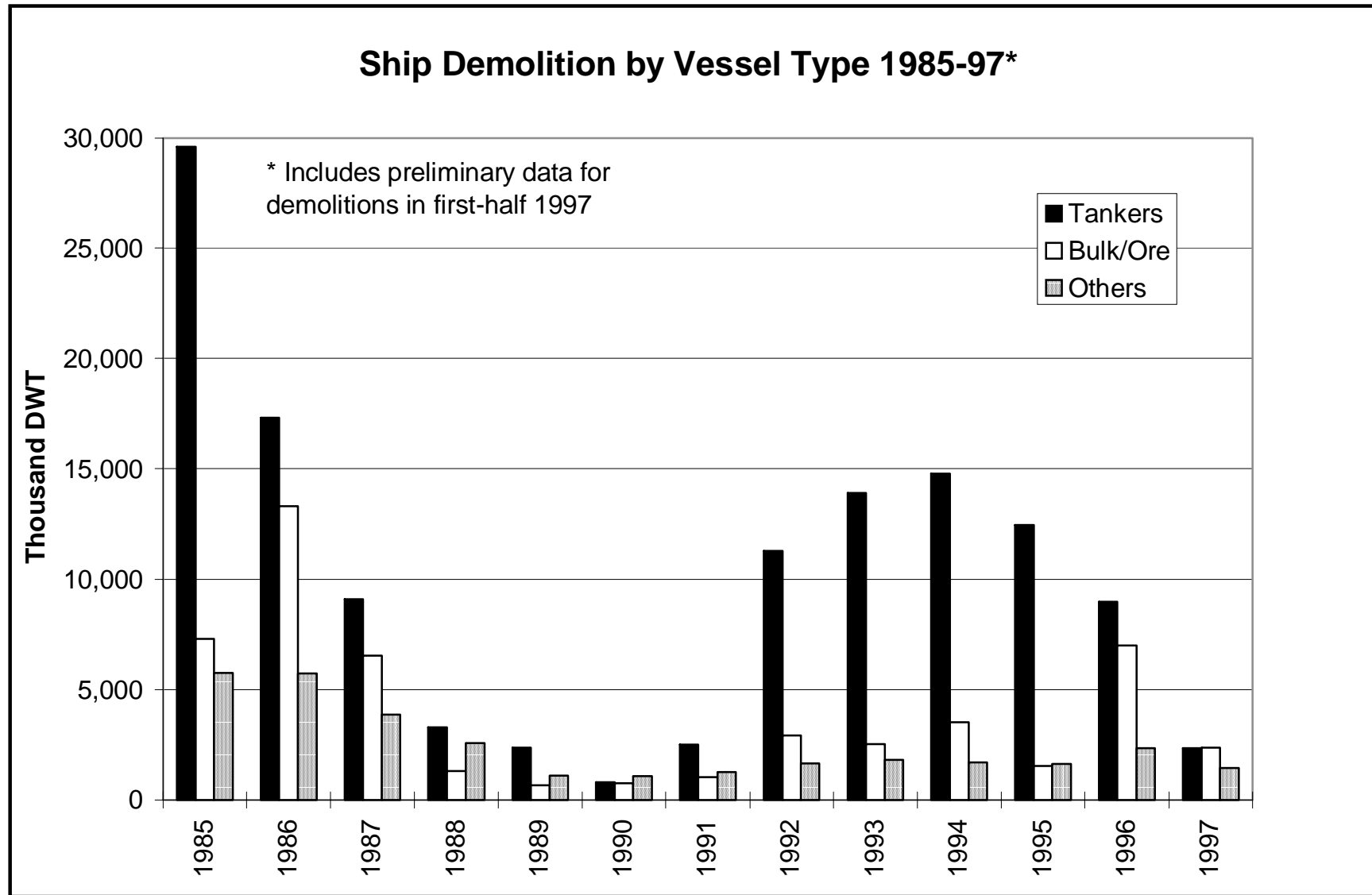












**Bulk Vessel Demolition by Size and Type**

**Bulk Carrier Scrappings By Size**

Size Group	1992			1993			1994			1995			1996			1997		
	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age
10-49,999	31	890	25.3	40	960	25.0	49	1,310	24.7	20	489	27.6	68	2,001	25.2	34	907	26.3
50-79,999	12	747	23.3	6	404	25.0	13	799	24.2	5	343	26.6	34	1,993	24.6	11	717	25.0
80-139,999	9	998	22.0	8	887	21.4	14	1,566	22.2	2	237	21.0	17	1,992	22.6	2	219	26.5
140-199,999	4	629	20.5	7	1,083	21.1	3	479	20.3	2	324	23.0	6	928	24.2	3	501	25.0
200,000+	0	0	0.0	0	0	0.0	0	0	0.0	2	487	23.0	0	0	0.0	0	0	0.0
<b>Total</b>	<b>56</b>	<b>3,264</b>	<b>24.0</b>	<b>61</b>	<b>3,334</b>	<b>24.1</b>	<b>79</b>	<b>4,154</b>	<b>24.0</b>	<b>31</b>	<b>1,880</b>	<b>26.4</b>	<b>125</b>	<b>6,914</b>	<b>24.6</b>	<b>50</b>	<b>2,344</b>	<b>26.0</b>

**Tanker Scrappings By Size**

Size Group	1992			1993			1994			1995			1996			1997		
	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age
10-49,999	27	738	27.4	50	1,279	26.6	32	787	26.8	27	656	28.3	34	875	27.5	8	211	31.1
50-79,999	18	1,195	26.2	7	474	25.3	7	503	26.0	10	602	29.9	1	67	25.0	0	0	0.0
80-139,999	19	2,119	21.9	29	3,161	21.6	19	2,056	21.9	12	1,258	21.8	7	784	23.6	6	602	24.5
140-199,999	0	0	0.0	5	725	20.8	2	294	21.5	2	319	20.5	6	957	19.0	1	174	22.0
200,000+	18	4,443	19.0	25	6,089	19.9	35	9,118	19.8	29	7,339	21.1	14	3,778	21.9	4	994	24.8
<b>Total</b>	<b>82</b>	<b>8,495</b>	<b>24.0</b>	<b>116</b>	<b>11,727</b>	<b>23.6</b>	<b>95</b>	<b>12,758</b>	<b>23.1</b>	<b>80</b>	<b>10,174</b>	<b>24.7</b>	<b>62</b>	<b>6,461</b>	<b>25.0</b>	<b>19</b>	<b>1,981</b>	<b>27.2</b>

**Combined Carrier Scrappings By Size**

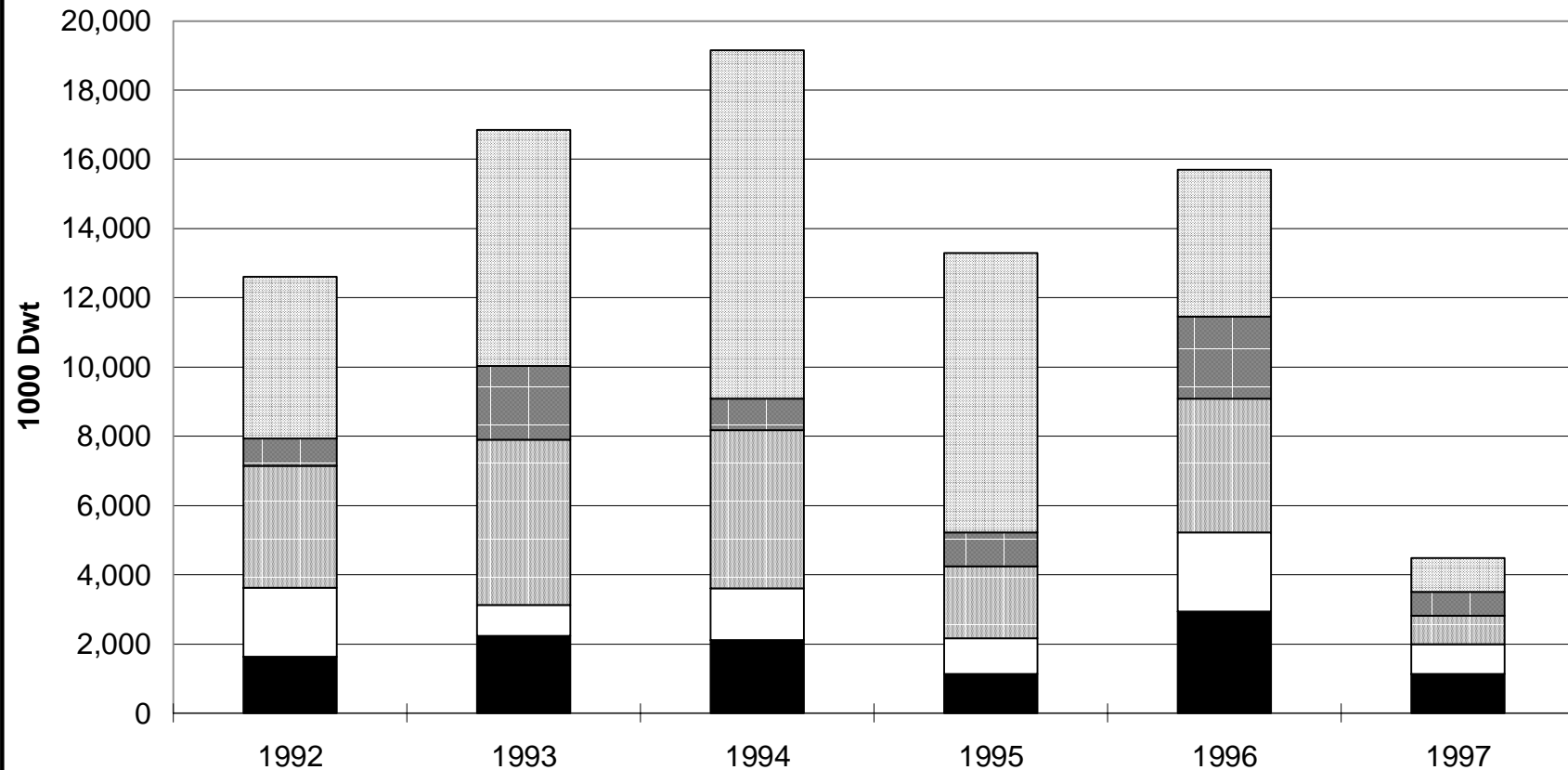
Size Group	1992			1993			1994			1995			1996			1997		
	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age
10-49,999	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	49	21.0	0	0	0.0
50-79,999	1	57	25.0	0	0	0.0	3	207	23.7	1	77	23.0	3	222	23.3	2	156	24.5
80-139,999	4	402	19.8	7	736	21.9	9	941	22.6	5	575	22.2	10	1,100	22.1	0	0	0.0
140-199,999	1	159	21.0	2	310	20.5	1	151	22.0	2	342	23.5	3	487	23.7	0	0	0.0
200,000+	1	224	19.0	3	737	21.0	4	947	21.5	1	249	23.0	2	462	22.5	0	0	0.0
<b>Total</b>	<b>7</b>	<b>851</b>	<b>20.6</b>	<b>12</b>	<b>1,783</b>	<b>21.4</b>	<b>17</b>	<b>2,246</b>	<b>22.5</b>	<b>9</b>	<b>1,243</b>	<b>22.7</b>	<b>19</b>	<b>2,320</b>	<b>22.5</b>	<b>2</b>	<b>156</b>	<b>24.5</b>

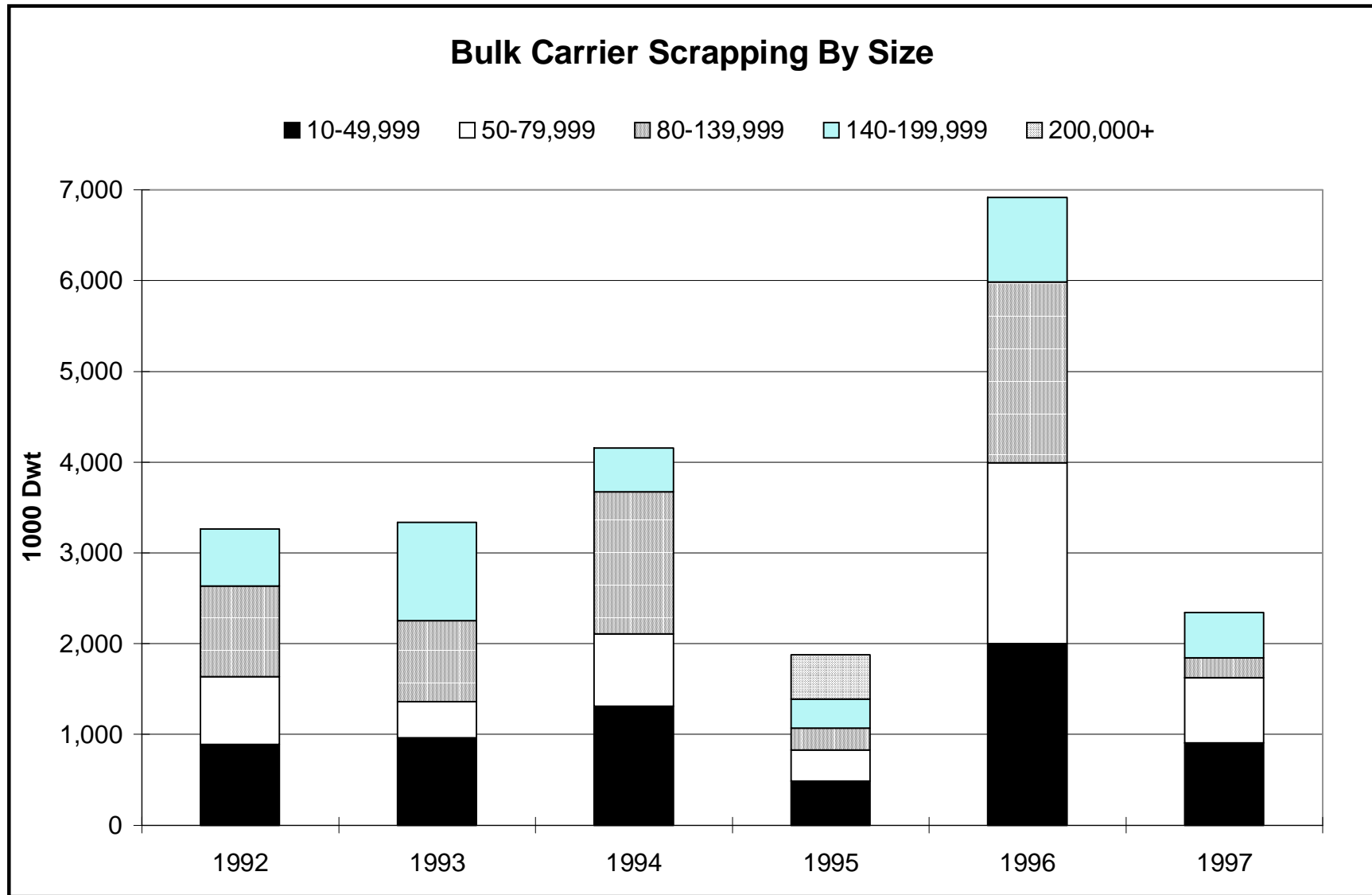
**Total Scrappings By Size**

Size Group	1992			1993			1994			1995			1996			1997		
	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age	No.	1000 Dwt	Av Age
10-49,999	58	1,628	26.3	90	2,239	25.9	81	2,097	25.5	47	1,145	28.0	103	2,925	25.9	42	1,118	27.2
50-79,999	31	1,999	25.1	13	878	25.2	23	1,509	24.7	16	1,022	28.4	38	2,282	24.5	13	873	24.9
80-139,999	32	3,519	21.7	44	4,784	21.6	42	4,563	22.1	19	2,070	21.8	34	3,876	22.6	8	821	25.0
140-199,999	5	788	20.6	14	2,118	20.9	6	924	21.0	6	985	22.3	15	2,372	22.0	4	675	24.3
200,000+	19	4,667	19.0	28	6,826	20.0	39	10,065	20.0	32	8,075	21.3	16	4,240	22.0	4	994	24.8
<b>Total</b>	<b>145</b>	<b>12,610</b>	<b>23.8</b>	<b>189</b>	<b>16,844</b>	<b>23.6</b>	<b>191</b>	<b>19,158</b>	<b>23.4</b>	<b>120</b>	<b>13,297</b>	<b>25.0</b>	<b>206</b>	<b>15,695</b>	<b>24.5</b>	<b>71</b>	<b>4,481</b>	<b>26.3</b>

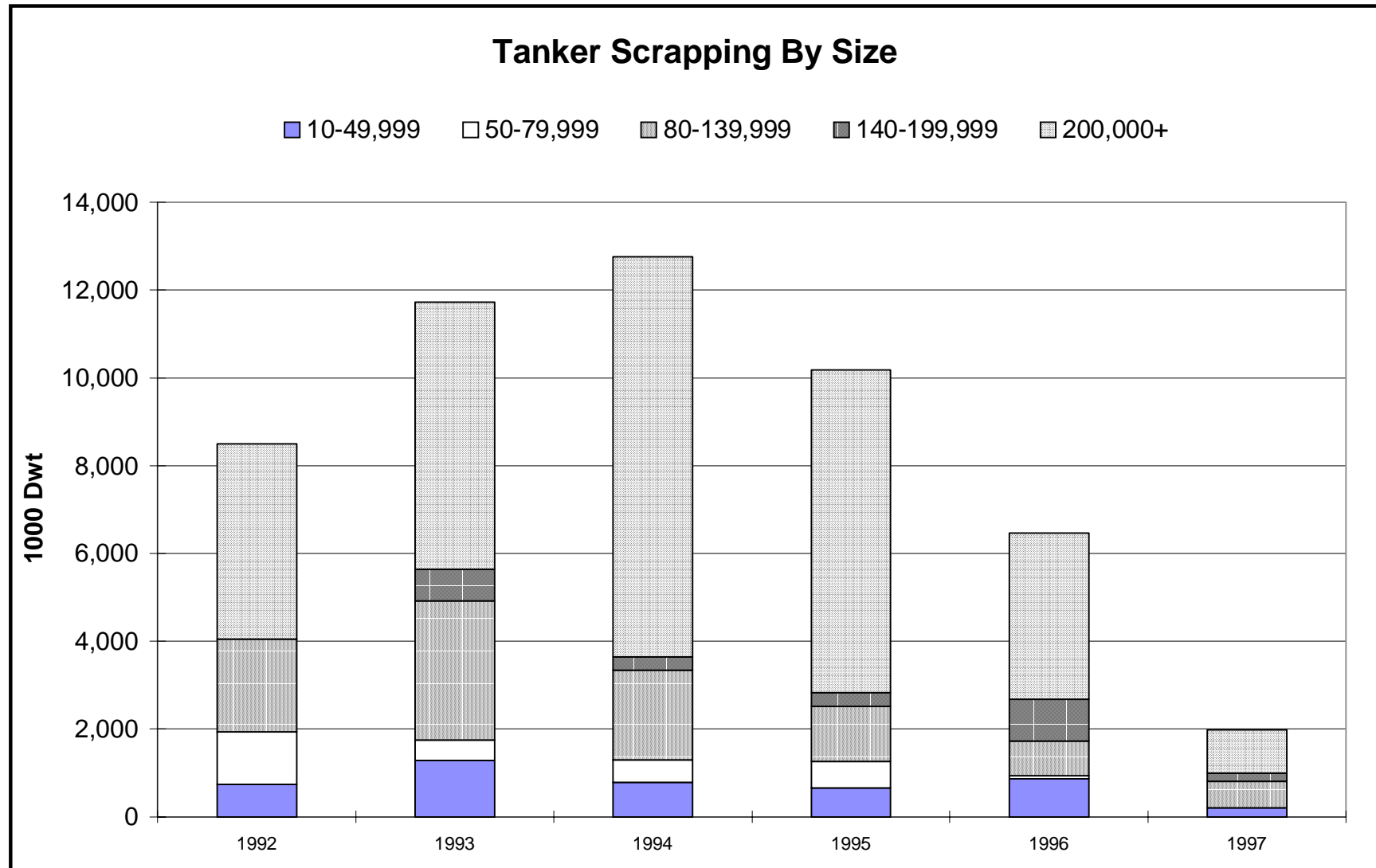
### Total Bulk Fleet Scrapping 1992-97 (Bulk carriers, tankers, combis)

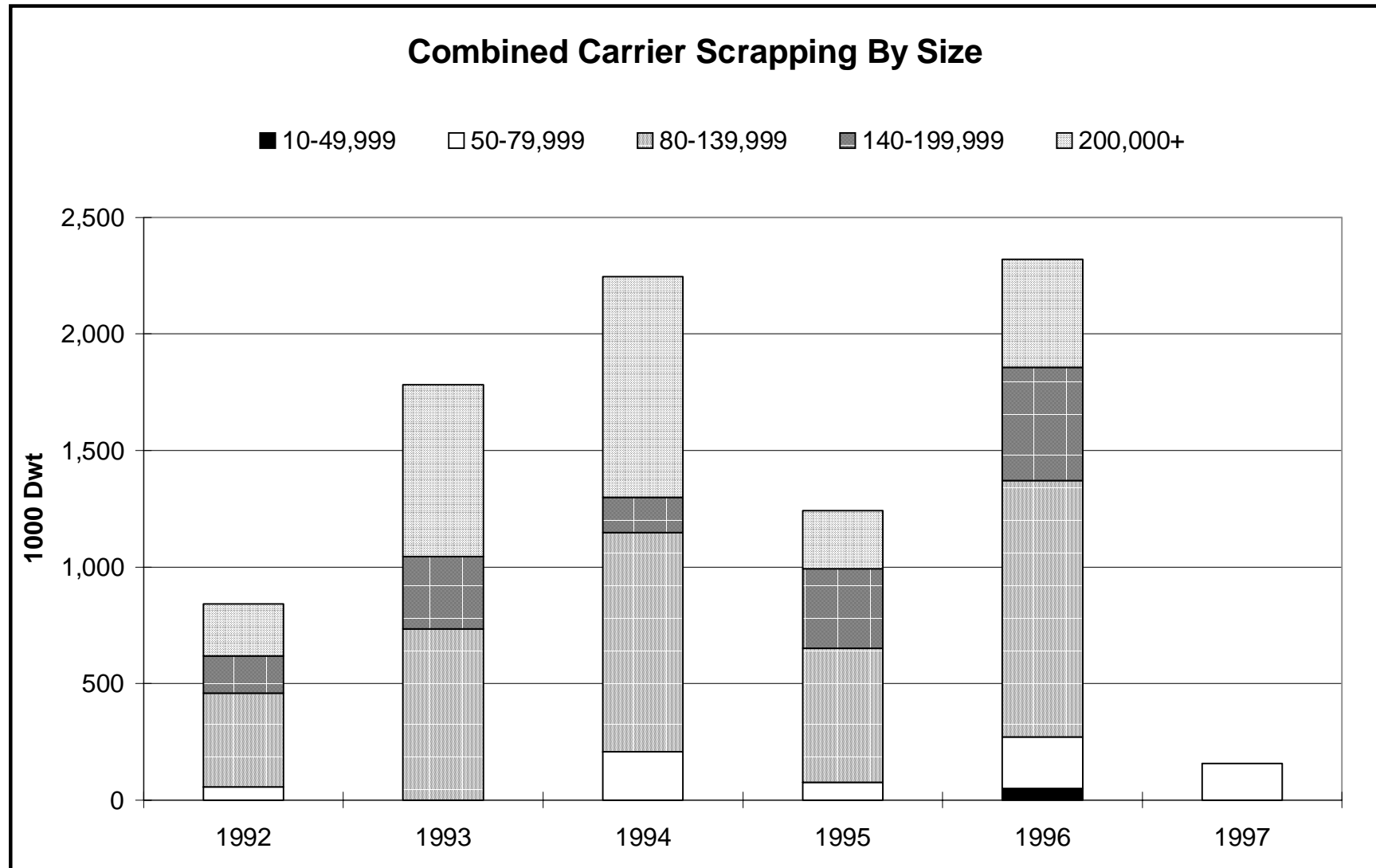
10-49,999  
  50-79,999  
  80-139,999  
  140-199,999  
  200,000+





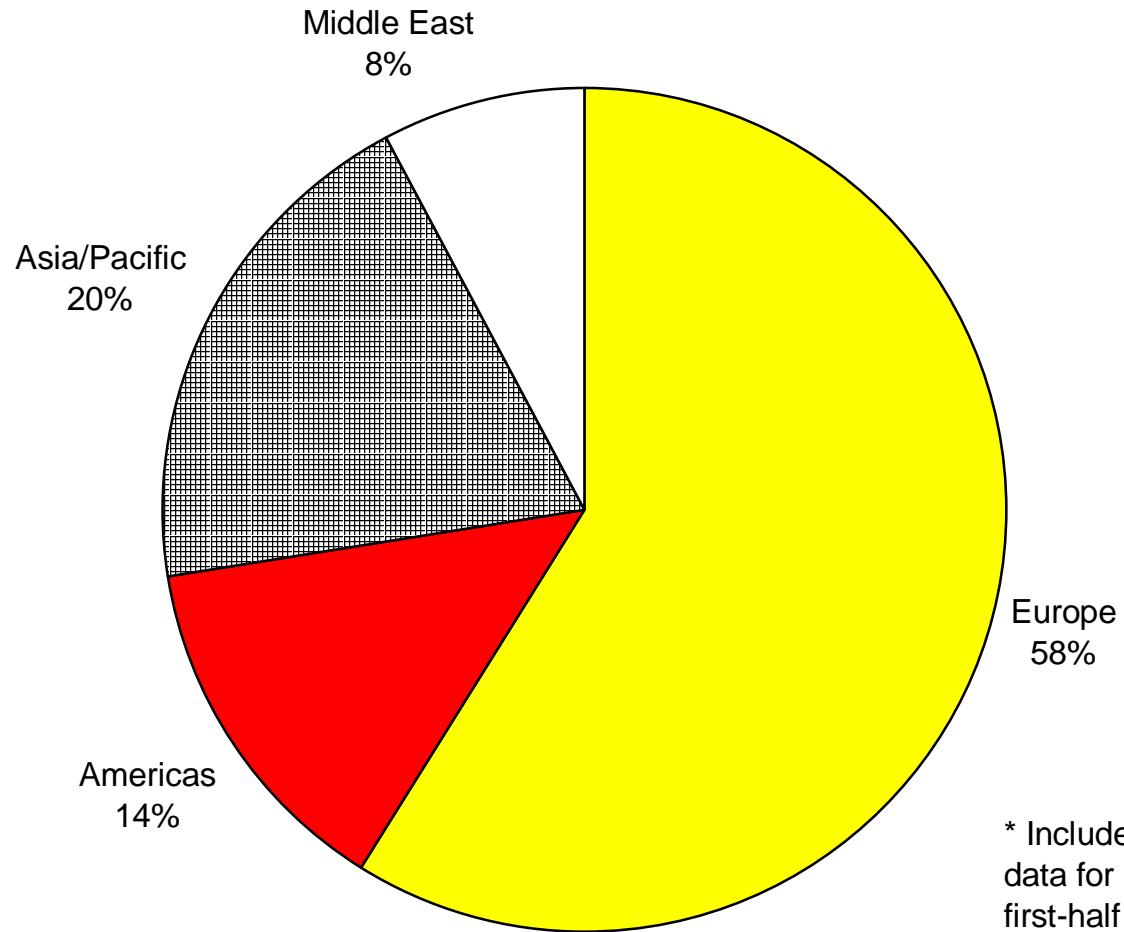




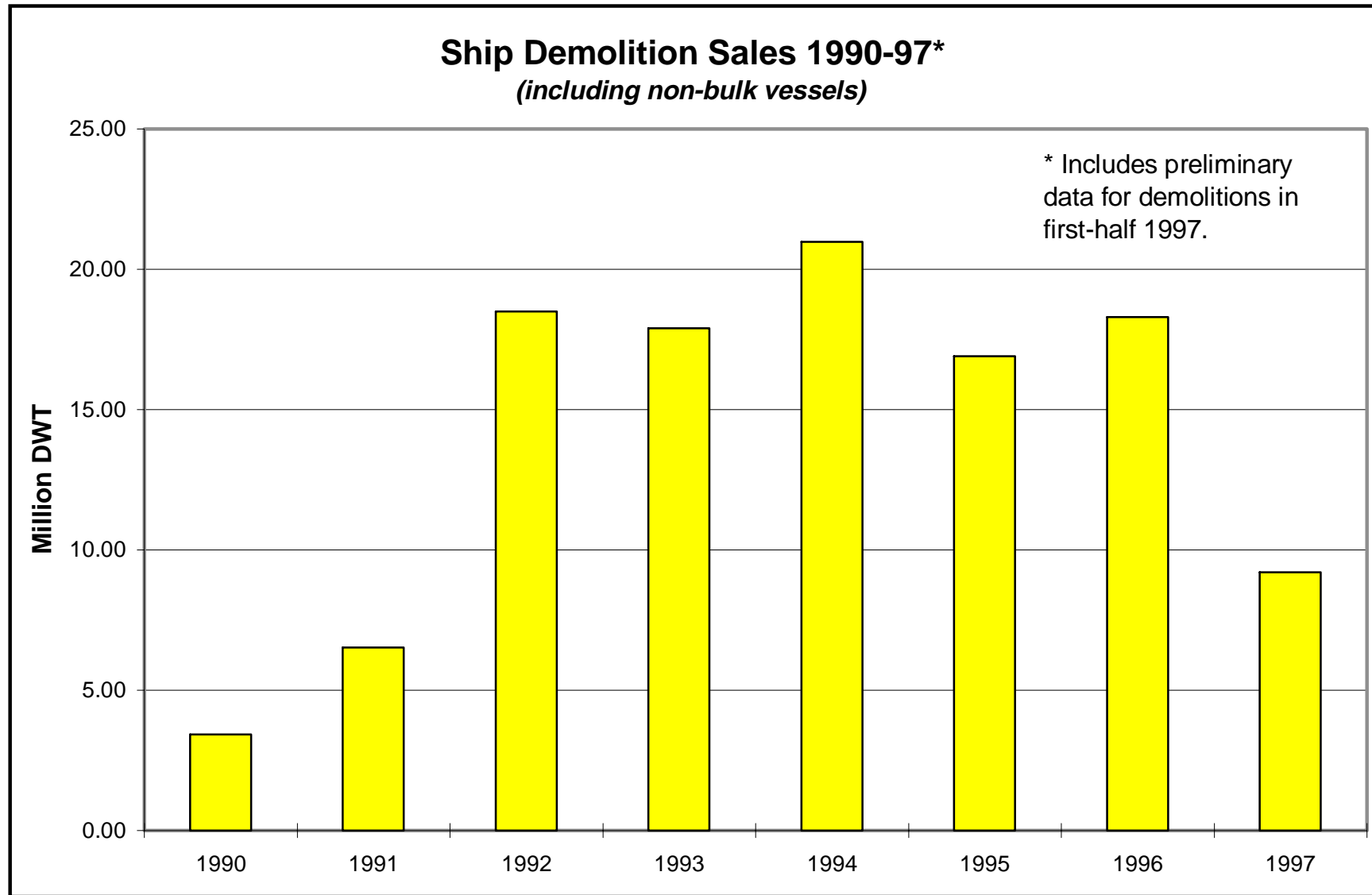


<b>Main Nationalities of Owners of Vessels Scrapped 1992-97*</b>		
<b>Country</b>	<b>No of Ships</b>	<b>Mdwt</b>
Greece	374	31,045
USA	112	10,335
Hong Kong, China	64	9,857
Norway	47	6,167
UK	35	4,180
Iran	18	3,638
Korea	26	2,856
Japan	22	2,780
Turkey	29	2,180
Israel	14	1,780
Chinese Taipei	21	1,477
India	22	1,376
Brazil	6	1,161
Russia	29	1,158
Italy	19	1,209
Finland	9	1,111
China, PR	17	1,083
Germany	8	816
Portugal	6	741
Spain	5	716
Monaco	10	591
Philippines	4	568
Tankers, bulk carriers & combis over 10,000 dwt.		
<i>Source</i> : SSY Consultancy and Research Ltd.		

### Bulk Ship Demolition by Owner Nationality 1992-97\*



Deletions from the Bulk Shipping Fleets by Top 50 Owners 1992-1997 to date							
Vessel Owner	Nationality	No.	DWT	Av. Size	Oldest	Newest	Av. Age
Troodos Shipping Co	Greece	30	4,149,553	138,318	1959	1975	23.14
World-Wide (Shipping) Ltd	Hong Kong, China	16	4,016,027	251,002	1971	1976	19.31
Iranian Govt/NITC	Iran	13	3,505,327	269,641	1970	1978	19.08
Polembros Shipping Ltd	Greece	21	1,520,562	72,408	1961	1974	25.19
Texaco Inc	United States	10	1,499,351	149,935	1944	1976	24.00
Shell-Royal Dutch Group	UK-Netherlands	9	1,399,766	155,530	1966	1976	24.67
Tsakos Shipping & Trading	Greece	12	1,312,941	109,412	1963	1974	24.25
Adriatic Tankers Shipping Co	Greece	8	1,285,947	160,743	1968	1975	24.13
Kappa Maritime Ltd	Greece	8	1,189,898	148,737	1969	1977	22.13
Brokerage & Management Corp	Greece	7	1,125,402	160,772	1970	1973	21.14
Nippon Yusen Kaisha	Japan	6	1,108,461	184,744	1971	1974	21.00
Novorossiysk Shipping Co	Russia	23	1,026,644	44,637	1964	1980	26.57
European Navigation Inc	Greece	12	950,857	79,238	1967	1975	23.33
Norman International A/S	Norway	4	938,210	234,553	1972	1975	18.75
Petrobras	Brazil	4	897,501	224,375	1960	1978	24.00
SAMAMA	Israel	6	850,576	141,763	1971	1973	21.83
Mayamar Marine Enterprises SA	Greece	10	835,686	83,569	1965	1975	24.10
Ceres Hellenic Shipping Enterprises Ltd	Greece	3	820,303	273,434	1975	1975	19.67
Amerada Hess Corp	United States	3	777,936	259,312	1971	1973	23.67
Cosco	China	12	775,690	64,641	1965	1974	24.75
Pan Ocean Shipping Co Ltd	Korea	10	762,296	76,230	1968	1975	22.30
Exxon Group	United States	7	706,454	100,922	1967	1973	25.14
Zodiac Maritime Agencies Ltd	Israel	7	703,984	100,569	1971	1976	23.71
Mobil Oil Corp	United States	5	698,767	139,753	1958	1973	25.60
Hoyu Tanker Co Ltd	Korea	3	681,277	227,092	1972	1990	16.00
Shipping Corp of India	India	6	678,275	113,046	1974	1981	18.17
Styga Cia Naviera SA	Greece	8	661,497	82,687	1969	1974	22.50
Chevron Corp	United States	3	586,486	195,495	1972	1975	21.00
AGIP SpA	Italy	3	580,110	193,370	1976	1977	16.67
Lundqvist Rederierna	Finland	4	579,778	144,945	1965	1974	24.50
Philippine National Oil Co	Philippines	4	568,126	142,032	1974	1975	20.50
Livanos Group	Greece	2	549,346	274,673	1974	1974	20.50
Sea Trade Shipping Corp SA	Greece	2	546,815	273,408	1975	1976	18.50
Eastern Mediterranean Maritime	Greece	7	537,157	76,737	1969	1975	22.14
Alandia Tanker Co AB	Finland	5	530,920	106,184	1967	1973	24.60
Lange, Einar	Norway	3	518,278	172,759	1971	1973	23.67
Bergesen D.Y. A/S	Norway	2	498,544	249,272	1972	1976	21.50
Yukong Line Ltd	Korea	2	485,977	242,989	1974	1974	21.00
Norbulk Shipping (UK) Ltd	United Kingdom	2	483,956	241,978	1973	1973	21.00
Pegasus Ocean Services Ltd	Greece	2	478,736	239,368	1972	1972	20.50
Ocean Tramping Co Ltd	Hong Kong, China	5	478,670	95,734	1963	1975	25.40
Niarchos Group	Greece	3	459,290	153,097	1970	1973	21.67
United Shipping & Trading Co Greece SA	Greece	2	451,544	225,772	1972	1973	21.50
Seven Seas Maritime Ltd	Great Britain	6	444,864	74,144	1970	1974	22.33
Sonmez Group	Turkey	4	422,232	105,558	1965	1970	24.50
Golden Union Shipping Co SA	Chinese Taipei	12	413,772	34,481	1963	1973	25.58
Krupp Lonrho GmbH Seeschiffahrt	Germany	3	411,275	137,092	1968	1972	23.67
Single Buoy Moorings (UK) Ltd	United Kingdom	2	410,228	205,114	1974	1976	21.00
Chandris Group	Greece	8	404,838	50,605	1960	1973	26.38
Soponata SA	Portugal	3	402,672	134,224	1973	1974	19.67



<b>Ship Demolition Sales by Year 1990-97</b>			
<b>Year</b>	<b>No of Ships</b>	<b>Mdwt</b>	<b>MIwt</b>
1990	190	3.43	1.09
1991	169	6.53	1.37
1992	348	18.50	3.85
1993	392	17.90	3.94
1994	362	20.98	4.42
1995	413	16.90	3.79
1996	459	18.30	4.34
1997	290	9.21	2.27
<i>1997 data are for January-June only.</i>			
<i>Source: SSY.</i>			

**APPENDIX II**

**BULK SHIPPING FLEETS:**

**AGE PROFILES JULY 1997**

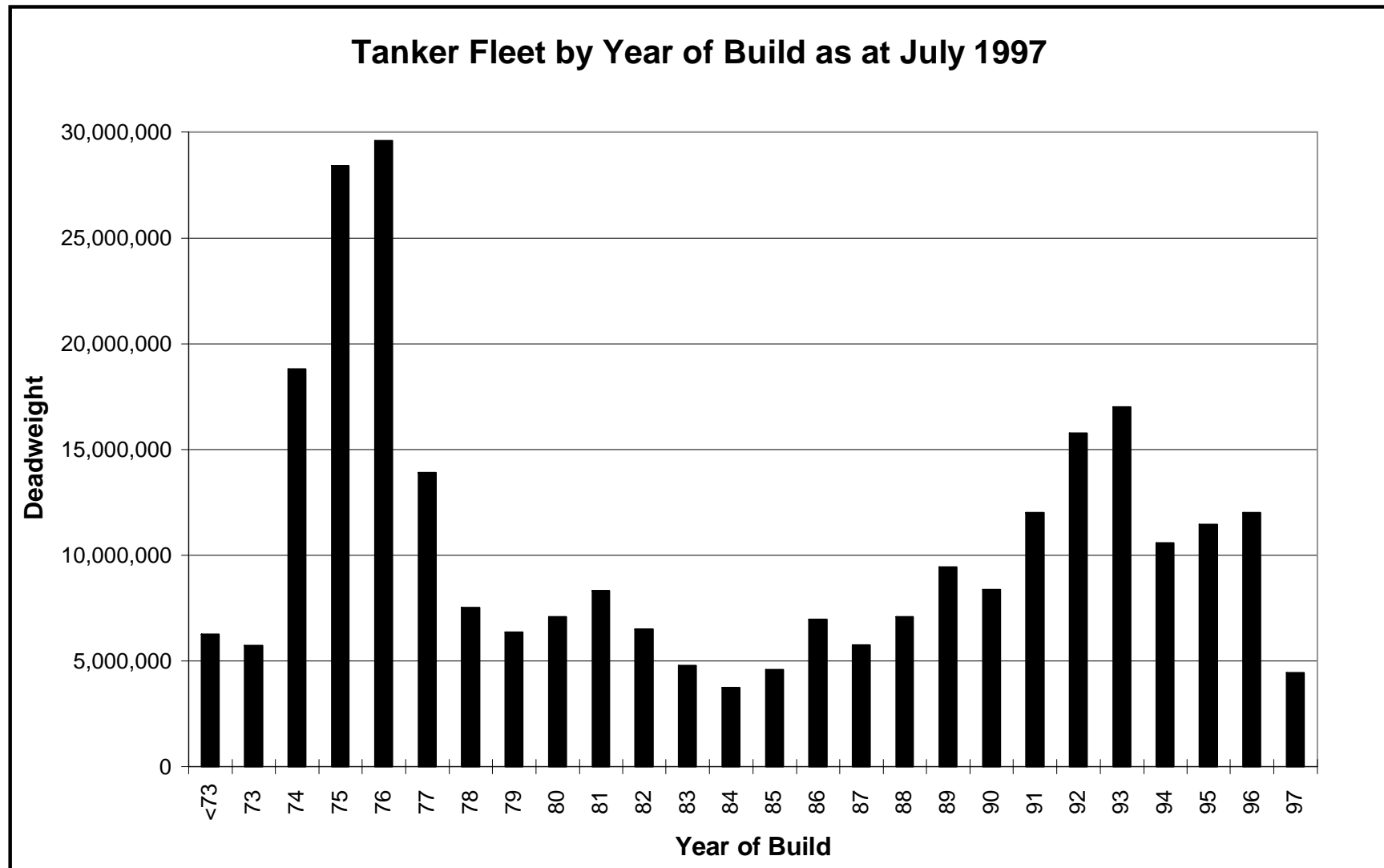


SG/EMEF/C/WP6(97)4

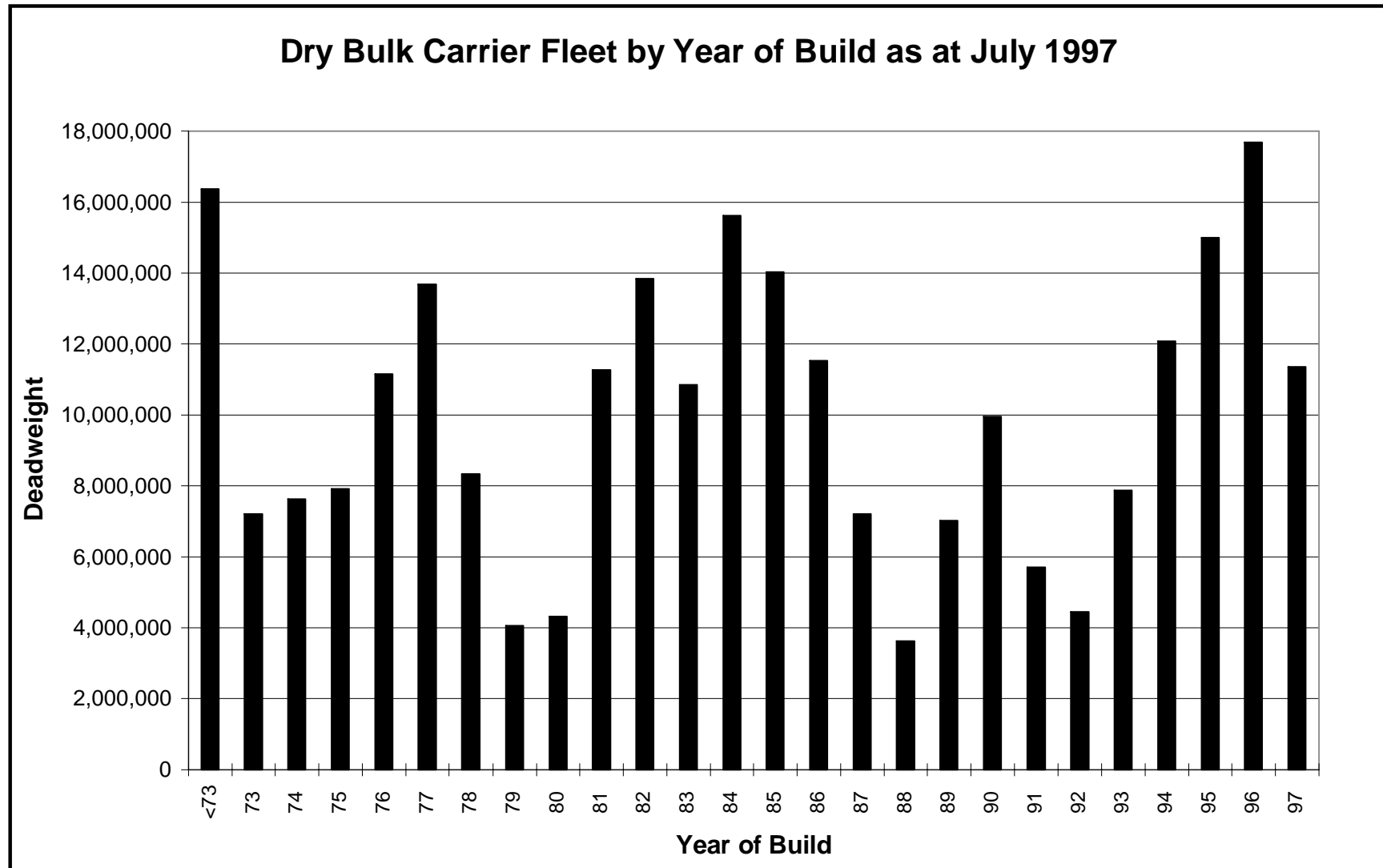
Bulk Shipping Fleets: Size & Age Profile as at July 1997

Bulk Shipping Fleets: Size & Age Profile as at July 1997														
	<b>Tanker Fleet:</b>													
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>1983/87:</b>		<b>1988/92:</b>		<b>1993/97:</b>		<b>Total:</b>	
<b>Size range:</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>
10-49,999	123	3.17	340	9.95	285	8.13	280	8.11	196	6.43	230	6.87	1454	42.66
50-79,999	19	1.28	27	1.73	117	7.13	76	4.76	29	1.92	23	1.55	291	18.37
80-139,999	7	0.73	194	20.74	109	10.21	80	7.58	157	16.68	100	10.11	647	66.03
140-199,999	2	0.32	36	5.39	15	2.58	2	0.31	36	5.32	29	4.30	120	18.22
>=200,000	3	0.74	198	58.62	23	7.72	20	5.04	84	22.35	114	32.66	442	127.13
Total	154	6.24	795	96.42	549	35.76	458	25.80	502	52.70	496	55.49	2954	272.41
	<b>Dry Bulk Carrier Fleet:</b>													
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>1983/87:</b>		<b>1988/92:</b>		<b>1993/97:</b>		<b>Total:</b>	
<b>Size range:</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>
10-49,999	462	11.69	969	25.87	711	20.04	938	31.33	228	7.77	540	18.82	3848	115.51
50-79,999	37	2.30	200	12.45	186	11.89	186	12.15	111	7.48	238	16.75	958	63.01
80-139,999	14	1.40	54	6.33	51	6.08	17	1.98	13	1.53	22	2.47	171	19.78
140-199,999	3	0.47	12	1.93	20	3.14	65	10.97	62	9.68	153	24.47	315	50.66
>=200,000	2	0.51	4	1.00	3	0.69	12	2.80	19	4.30	7	1.48	47	10.77
Total	518	16.37	1239	47.57	971	41.83	1218	59.23	433	30.75	960	63.98	5339	259.73
	<b>Combined Carrier Fleet:</b>													
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>1983/87:</b>		<b>1988/92:</b>		<b>1993/97:</b>		<b>Total:</b>	
<b>Size range:</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>
10-49,999	0	0.00	2	0.06	2	0.04	11	0.52	0	0.00	0	0.00	15	0.62
50-79,999	1	0.05	5	0.39	27	1.86	20	1.39	5	0.35	1	0.08	59	4.13
80-139,999	1	0.10	35	4.01	27	3.16	5	0.50	19	2.14	12	1.18	99	11.09
140-199,999	1	0.17	9	1.47	1	0.15	4	0.62	0	0.00	0	0.00	15	2.42
>=200,000	0	0.00	6	1.53	0	0.00	4	1.22	1	0.31	0	0.00	11	3.06
Total	3	0.33	57	7.47	57	5.21	44	4.24	25	2.80	13	1.25	199	21.30
	<b>Grand Totals:</b>													
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>1983/87:</b>		<b>1988/92:</b>		<b>1993/97:</b>		<b>Total:</b>	
<b>Size range:</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>	<b>No</b>	<b>MM DWT</b>
10-49,999	585	14.86	1311	35.88	998	28.21	1229	39.95	424	14.20	770	25.69	5317	158.79
50-79,999	57	3.63	232	14.56	330	20.88	282	18.30	145	9.75	262	18.37	1308	85.50
80-139,999	22	2.23	283	31.08	187	19.44	102	10.05	189	20.35	134	13.75	917	96.90
140-199,999	6	0.96	57	8.79	36	5.87	71	11.91	98	15.00	182	28.77	450	71.30
>=200,000	5	1.25	208	61.15	26	8.41	36	9.05	104	26.95	121	34.14	500	140.96
Total	675	22.94	2091	151.46	1577	82.80	1720	89.27	960	86.26	1469	120.72	8492	553.45

Tanker Fleet by Year of Build as at July 1997															
Size range (dwt):															
	10-49,999			50-79,999			80-139,999			140-199,999			≥200,000		Total
	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT	
<73	123	3,167,557	19	1,278,163	7	728,785	2	321,157	3	743,717	154	6,239,379			
73	55	1,539,933	1	67,051	10	1,029,813	1	140,462	11	2,962,220	78	5,739,479			
74	57	1,708,159	7	481,573	42	4,476,408	6	866,557	41	11,257,085	153	18,789,782			
75	93	2,734,579	4	292,076	64	6,820,428	9	1,279,008	61	17,279,848	231	28,405,939			
76	84	2,540,074	8	472,894	54	5,661,595	12	1,894,723	62	19,010,709	220	29,579,995			
77	51	1,430,235	7	415,702	24	2,749,008	8	1,204,492	23	8,107,952	113	13,907,389			
78	35	1,027,872	14	843,944	16	1,741,674	6	1,026,039	8	2,873,187	79	7,512,716			
79	27	770,265	16	966,037	19	1,811,511	4	691,931	6	2,104,345	72	6,344,089			
80	48	1,270,150	25	1,555,709	32	2,846,852	2	368,897	3	1,044,921	110	7,086,529			
81	68	2,009,044	37	2,247,693	31	2,783,104	1	163,647	4	1,115,270	141	8,318,758			
82	107	3,048,832	25	1,513,030	11	1,030,913	2	329,612	2	584,824	147	6,507,211			
83	66	1,854,478	19	1,155,659	11	1,126,683	0	-	2	645,358	98	4,782,178			
84	48	1,373,675	24	1,501,164	4	452,487	1	161,477	1	238,465	78	3,727,268			
85	62	1,723,673	13	831,782	17	1,519,525	0	-	2	521,082	94	4,596,062			
86	60	1,733,052	10	651,583	26	2,383,047	0	-	9	2,184,697	105	6,952,379			
87	44	1,423,570	10	622,949	22	2,099,852	1	151,717	6	1,445,440	83	5,743,528			
88	48	1,578,374	6	399,855	20	2,084,786	3	454,807	10	2,560,322	87	7,078,144			
89	38	1,187,772	4	265,698	32	3,507,129	2	293,941	16	4,201,649	92	9,456,189			
90	29	894,877	8	525,061	28	2,762,972	5	731,013	13	3,450,533	83	8,364,456			
91	39	1,316,568	5	322,643	37	4,082,937	10	1,484,183	18	4,818,772	109	12,025,103			
92	42	1,455,275	6	406,789	40	4,242,319	16	2,357,904	27	7,318,720	131	15,781,007			
93	48	1,323,210	15	1,021,284	32	3,303,003	6	885,156	37	10,477,909	138	17,010,562			
94	37	1,036,535	3	192,127	22	2,161,468	8	1,185,882	21	6,002,688	91	10,578,700			
95	47	1,377,910	3	198,165	17	1,708,441	5	744,538	26	7,436,029	98	11,465,083			
96	70	2,309,866	2	137,022	18	1,807,888	7	1,033,815	23	6,705,056	120	11,993,647			
97	28	823,126	0	-	11	1,125,798	3	452,306	7	2,042,983	49	4,444,213			
<b>Total</b>	<b>1,454</b>	<b>42,658,661</b>	<b>291</b>	<b>18,365,653</b>	<b>647</b>	<b>66,048,426</b>	<b>120</b>	<b>18,223,264</b>	<b>442</b>	<b>127,133,781</b>	<b>2,954</b>	<b>272,429,785</b>			
<b>Source : SSY Consultancy and Research Ltd.</b>															

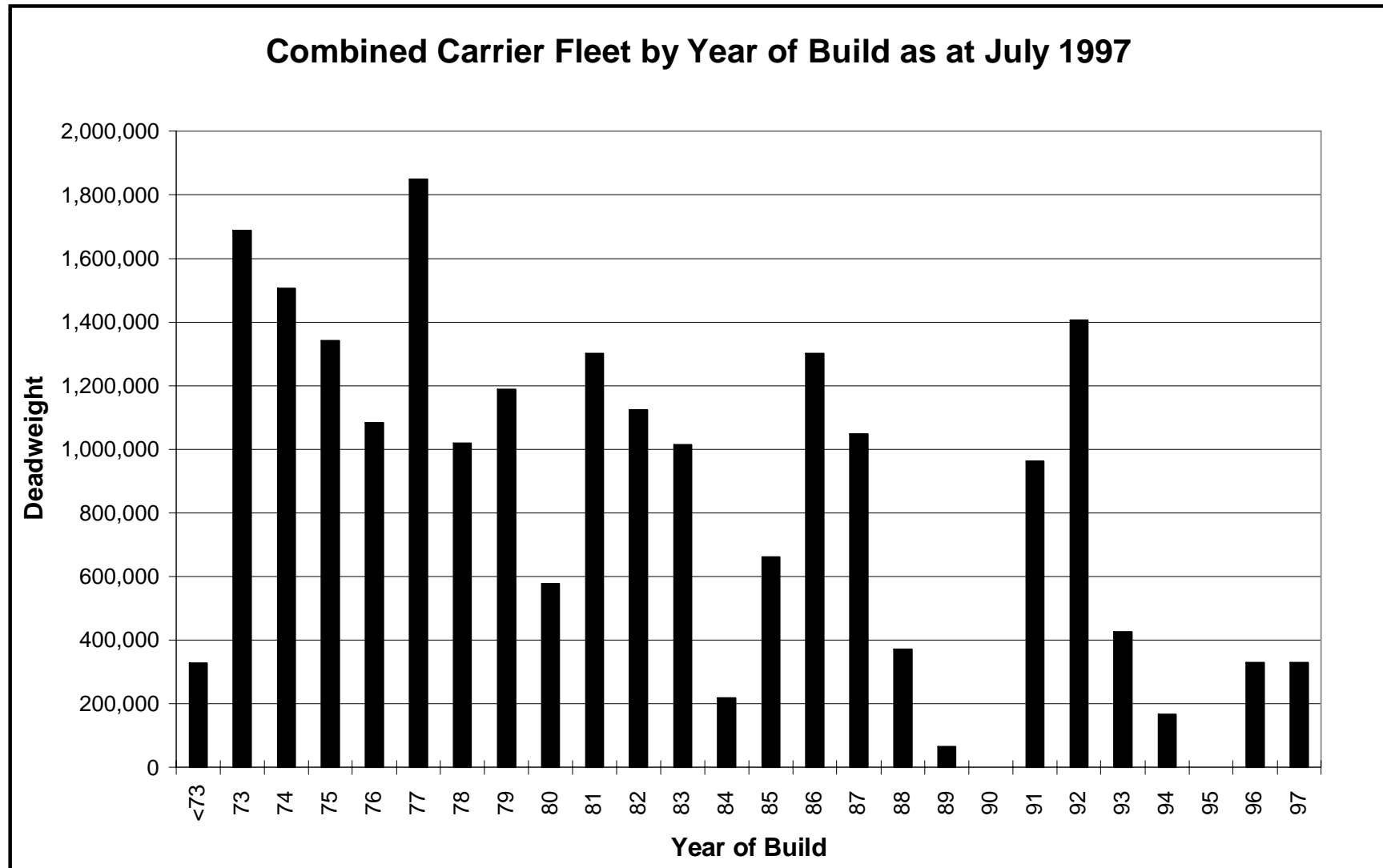


<b>Bulk Carrier Fleet by Year of Build as at July 1997</b>												
	<b>Size range (dwt):</b>											
	<b>10-49,999</b>		<b>50-79,999</b>		<b>80-139,999</b>		<b>140-199,999</b>		<b>&gt;=200,000</b>		<b>Total</b>	
	<b>No.</b>	<b>DWT</b>	<b>No.</b>	<b>DWT</b>	<b>No.</b>	<b>DWT</b>	<b>No.</b>	<b>DWT</b>	<b>No.</b>	<b>DWT</b>	<b>No.</b>	<b>DWT</b>
<73	462	11,690,968	37	2,300,415	14	1,401,230	3	467,032	2	510,019	518	16,369,664
73	132	3,705,303	24	1,468,524	9	1,039,790	5	775,508	1	218,359	171	7,207,484
74	161	4,355,741	39	2,357,069	4	474,321	1	155,049	1	278,734	206	7,620,914
75	146	3,680,531	36	2,199,474	14	1,610,616	1	154,489	1	274,999	198	7,920,109
76	209	5,484,283	52	3,242,139	16	1,917,027	3	500,743	0	-	280	11,144,192
77	321	8,644,621	49	3,178,974	11	1,290,325	2	343,055	1	225,162	384	13,682,137
78	205	5,605,972	26	1,637,849	10	1,095,830	0	-	0	-	241	8,339,651
79	105	2,849,508	12	748,902	4	458,295	0	-	0	-	121	4,056,705
80	101	2,645,147	21	1,287,254	2	189,618	1	194,399	0	-	125	4,316,418
81	142	4,003,224	51	3,297,243	19	2,441,516	10	1,530,873	0	-	222	11,272,856
82	158	4,937,689	76	4,922,232	16	1,890,268	9	1,410,875	3	685,580	262	13,846,644
83	161	5,132,567	55	3,625,406	6	668,684	5	771,147	3	646,567	230	10,844,371
84	289	9,655,020	56	3,687,460	6	758,433	9	1,524,042	0	-	360	15,624,955
85	274	9,325,183	19	1,225,888	2	226,506	16	2,777,938	2	473,559	313	14,029,074
86	145	4,811,379	27	1,721,905	2	239,547	22	3,709,639	4	1,048,500	200	11,530,970
87	69	2,401,120	29	1,887,746	1	88,309	13	2,192,054	3	631,300	115	7,200,529
88	25	825,263	18	1,212,859	1	134,836	3	553,785	4	901,021	51	3,627,764
89	53	1,803,439	36	2,410,622	1	134,965	10	1,607,674	5	1,055,584	105	7,012,284
90	53	1,854,938	33	2,249,697	6	749,656	25	3,819,393	6	1,291,021	123	9,964,705
91	55	1,962,734	18	1,203,487	3	282,489	11	1,728,063	2	521,649	89	5,698,422
92	42	1,321,108	6	399,514	2	225,835	13	1,971,665	2	528,932	65	4,447,054
93	32	952,440	34	2,343,894	5	587,334	23	3,566,470	2	416,582	96	7,866,720
94	93	3,435,397	62	4,332,976	2	263,826	25	3,831,383	1	206,258	183	12,069,840
95	144	5,101,163	57	4,058,341	8	783,905	32	5,051,144	0	-	241	14,994,553
96	173	6,194,686	48	3,372,309	4	469,584	44	7,227,608	2	422,521	271	17,686,708
97	98	3,136,286	37	2,638,215	3	360,700	29	4,792,656	2	431,201	169	11,359,058
Total	3848	115,515,710	958	63,010,394	171	19,783,445	315	50,656,684	47	10,767,548	5339	259,733,781
<b>Source: SSY Consultancy and Research Ltd.</b>												



**Combined Carrier Fleet by Year of Build as at July 1997**

Combined Carrier Fleet by Year of Build as at July 1997												
	Size range:											
	10-49,999		50-79,999		80-139,999		140-199,999		≥200,000		Total	
	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT	No.	DWT
<73	0	-	1	52,942	1	101,518	1	172,278	0	-	3	326,738
73	1	44,990	2	155,061	4	409,947	2	326,616	3	751,592	12	1,688,206
74	0	-	2	156,150	3	335,887	3	478,706	2	535,357	10	1,506,100
75	0	-	0	-	9	1,014,305	2	327,507	0	-	11	1,341,812
76	0	-	1	78,079	7	833,259	1	172,165	0	-	9	1,083,503
77	1	15,163	0	-	12	1,417,566	1	169,584	1	247,867	15	1,850,180
78	1	26,440	3	201,194	7	792,280	0	-	0	-	11	1,019,914
79	0	-	5	320,084	7	868,347	0	-	0	-	12	1,188,431
80	1	13,209	1	70,731	4	494,000	0	-	0	-	6	577,940
81	0	-	10	759,064	5	541,167	0	-	0	-	15	1,300,231
82	0	-	8	511,968	4	461,886	1	149,645	0	-	13	1,123,499
83	1	49,990	7	513,569	3	299,874	1	149,864	0	-	12	1,013,297
84	0	-	4	218,000	0	-	0	-	0	-	4	218,000
85	0	-	9	661,067	0	-	0	-	0	-	9	661,067
86	6	284,460	0	-	1	98,358	2	316,395	2	601,491	11	1,300,704
87	4	182,942	0	-	1	97,179	1	152,295	2	616,549	8	1,048,965
88	0	-	1	64,850	0	-	0	-	1	305,863	2	370,713
89	0	-	1	64,850	0	-	0	-	0	-	1	64,850
90	0	-	0	-	0	-	0	-	0	-	0	-
91	0	-	0	-	8	963,051	0	-	0	-	8	963,051
92	0	-	3	224,871	11	1,180,564	0	-	0	-	14	1,405,435
93	0	-	1	75,075	4	350,893	0	-	0	-	5	425,968
94	0	-	0	-	2	166,310	0	-	0	-	2	166,310
95	0	-	0	-	0	-	0	-	0	-	0	-
96	0	-	0	-	3	329,673	0	-	0	-	3	329,673
97	0	-	0	-	3	329,614	0	-	0	-	3	329,614
Total	15	617,194	59	4,127,555	99	11,085,678	15	2,415,055	11	3,058,719	199	21,304,201

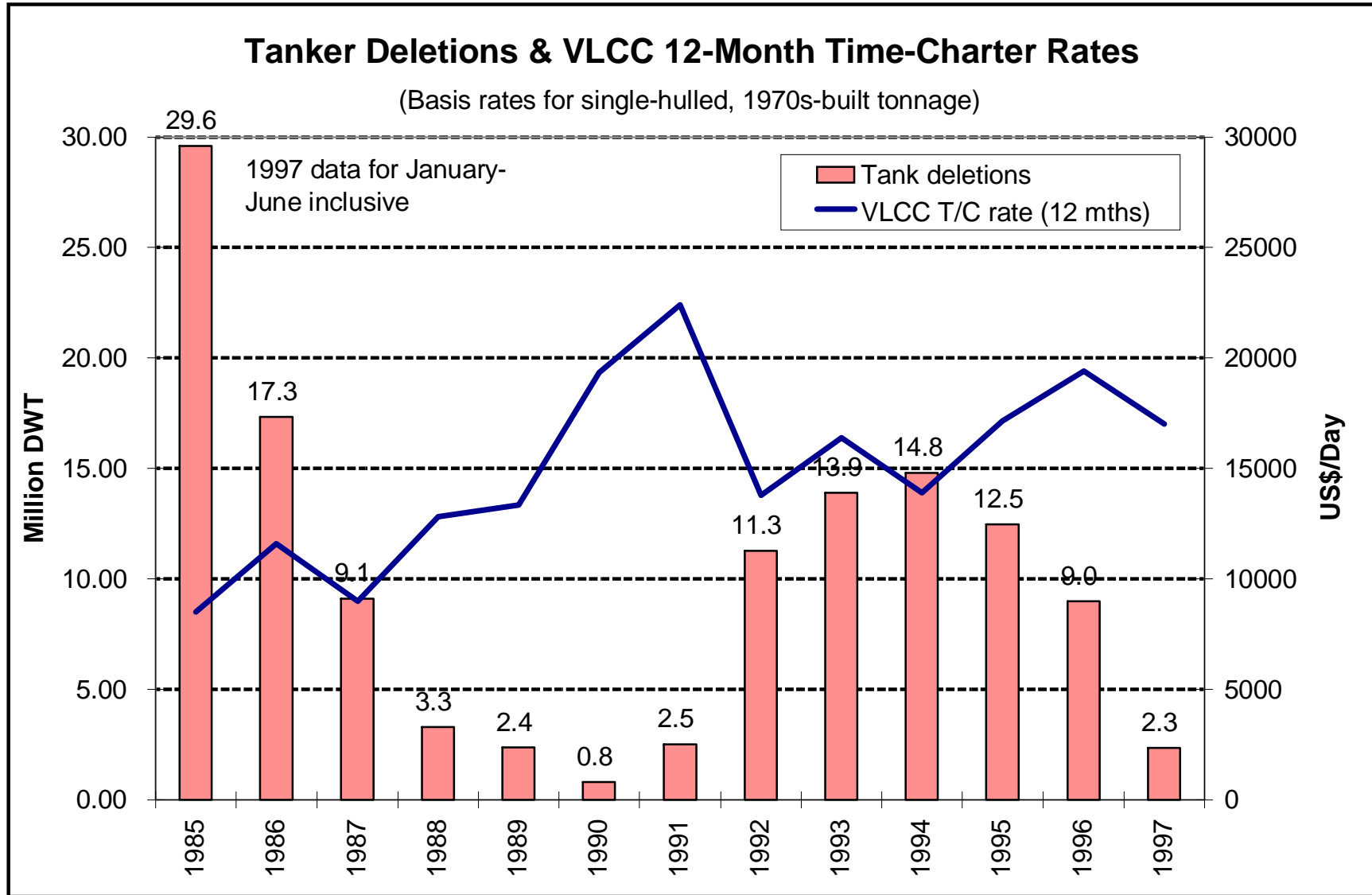


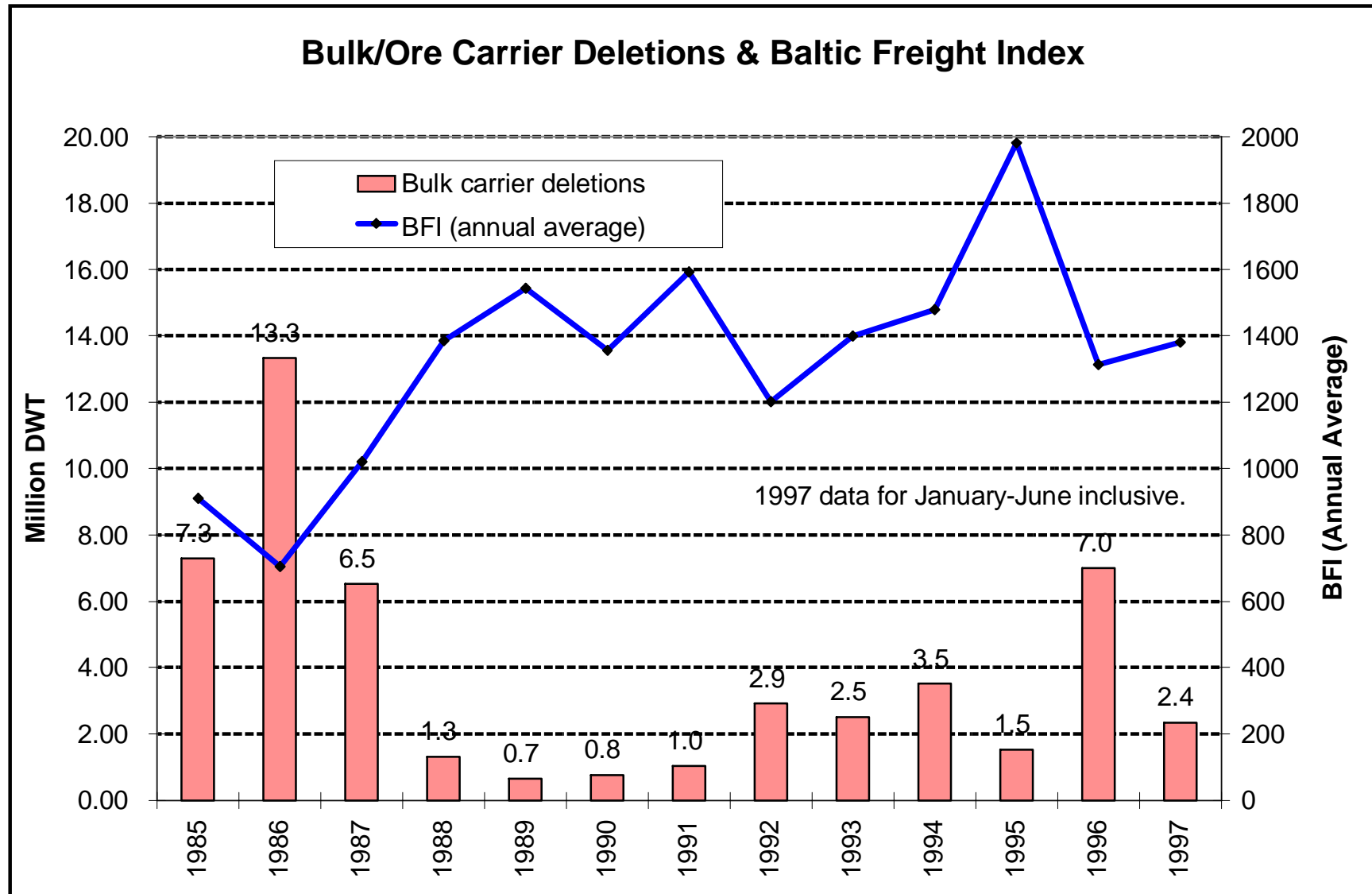
Bulk Shipping Fleets: Overage Tonnage* as at July 1997								
	<b>Tankers:</b>							
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>Total:</b>	
	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>
<b>Size Range:</b>								
10-49,999	123	3.17	340	9.95	285	8.13	748	21.25
50-79,999	19	1.28	27	1.73	117	7.12	163	10.12
80-139,999	7	0.73	194	20.74	109	10.21	310	31.67
140-199,999	2	0.32	36	5.39	15	2.58	53	8.29
>=200,000	3	0.74	198	58.62	23	7.72	224	67.08
<b>Total</b>	154	6.24	795	96.42	549	35.75	1498	138.41
	<b>Dry Bulk Carriers:</b>							
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>Total:</b>	
	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>
<b>Size Range:</b>								
10-49,999	462	11.69	969	25.87	711	20.04	2142	57.60
50-79,999	37	2.30	200	12.45	186	11.89	423	26.64
80-139,999	14	1.40	54	6.33	51	6.08	119	13.81
140-199,999	3	0.47	12	1.93	20	3.14	35	5.53
>=200,000	2	0.51	4	1.00	3	0.69	9	2.19
<b>Total</b>	518	16.37	1239	47.57	971	41.83	2728	105.77
	<b>Combined Carriers:</b>							
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>Total:</b>	
	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>
<b>Size Range:</b>								
10-49,999	0	0.00	2	0.06	2	0.04	4	0.10
50-79,999	1	0.05	5	0.39	27	1.86	33	2.31
80-139,999	1	0.10	35	4.02	27	3.16	63	7.28
140-199,999	1	0.17	9	1.47	1	0.15	11	1.80
>=200,000	0	0.00	6	1.53	0	0.00	6	1.53
<b>Total</b>	3	0.33	57	7.48	57	5.21	117	13.01
	<b>Total Bulk Shipping Fleets:</b>							
<b>Built:</b>	<b>Pre-1973:</b>		<b>1973/77:</b>		<b>1978/82:</b>		<b>Total:</b>	
	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>	<b>No</b>	<b>DWT</b>
<b>Size Range:</b>								
10-49,999	585	15	1311	36	998	28	2894	78.95
50-79,999	57	4	232	15	330	21	619	39.07
80-139,999	22	2	283	31	187	19	492	52.76
140-199,999	6	1	57	9	36	6	99	15.62
>=200,000	5	1	208	61	26	8	239	70.81
<b>Total</b>	675	22.94	2091	151.47	1577	82.80	4343	257.20
<i>* Ships &gt;= 15 years old.</i>								
<b>Source: SSY Consultancy and Research Ltd.</b>								



## **APPENDIX III**

# **SHIP DEMOLITION & FREIGHT RATES**





**APPENDIX IV**

**TIME-TABLE OF NEW LEGISLATION**

## APPENDIX IV

### TIME-TABLE OF NEW LEGISLATIVE MEASURES FOR BULK CARRIER SAFETY & TANKER DESIGN

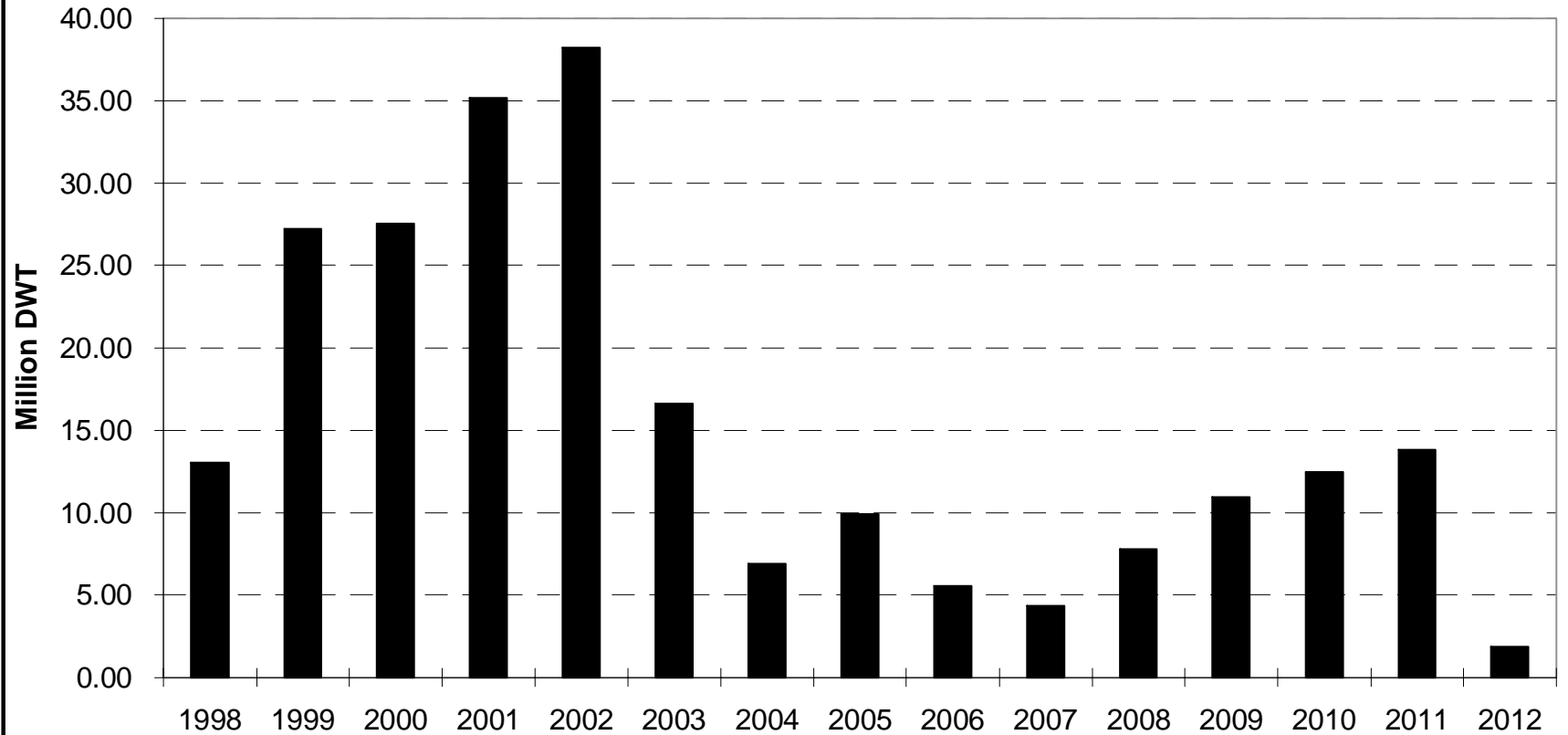
- 10/90 US Oil Pollution Act (“OPA 90”) enters force, specifying schedules for conformity with double hull requirements for tankers trading in US territorial waters.
- 07/93 Introduction of IACS “Enhanced Survey Programme” (“ESP”) for all dry bulk carriers and tankers, to reduce the danger of water entering cargo holds.
- Regulation 13F of MARPOL Annex I enters force, stipulating compliance rules for new single-hulled tankers (ships built from 1993 onwards). Crude oil carriers above 20,000 dwt and products tankers over 30,000 dwt to have double hulls if ordered after 6 July 1993.
- 07/95 Regulation 13G of MARPOL enters force, defining compliance rules for existing single-hulled tankers, i.e. ships built before 6 July 1993. Crude oil carriers above 20,000 dwt and product tankers over 30,000 dwt to have double hulls at 25 years’ age.<sup>18</sup>
- 12/96 IACS ratifies new measures to enhance safety of existing single-hulled bulk carriers over 15 years old and of LOA exceeding 150 m.<sup>19</sup> These require strengthening of bulkhead between cargo hold nos. 1 & 2, plus double bottom in no. 1 hold.
- 06/97 IACS revises its definition of “high-density” cargoes for existing ships to 1.78 tonnes/cubic metre, from its proposed 1.0 tonne/cubic metre.
- Paris MOU becomes legally binding under EU Directive 95/21, requiring inspection of 25% of all ships visiting ports in member states.
- 07/98 Implementation date of IACS requirements for existing dry bulk carriers trading in “high-density” cargoes.
- Scheduled introduction of ISM Code.

<sup>18</sup> NB: Ships which already possess a double bottom or double sides are allowed to continue trading to 30 years old before compliance is required. IMO acceptance of hydrostatically-balanced loading also means that single-hulled ships can still trade to 30 years’ age by operating HBL.

<sup>19</sup> Required compliance for bulk carriers of 10 years old or over as at 1 July 1998 is on scheduled date of third special survey (or subsequent surveys for older ships), from 1 July 1998 to 1 July 2003 inclusive; for ships under 10 years old, compliance is due no later than date of third special survey.

### IACS Safety Rules for Existing Dry Bulk Carriers: Compliance Schedules

*Implementation date: 1 July 1998. Applies to ships of 20,000 dwt and over, 15 years old or above, with LOA of 150 m or greater, carrying high-density cargoes. Compliance is due on date of special survey.*



## **APPENDIX V**

# **PORT STATE CONTROL REGIMES**

## APPENDIX V

### PORT STATE CONTROL REGIMES

The members of the principal port state control regimes in existence as at July 1997 are as follows:

**Paris MOU:**<sup>20</sup>

Belgium, Canada, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russian Federation, Spain, Sweden, UK, plus European Commission.

**Caribbean MOU:**<sup>21</sup>

Antigua & Barbuda, Barbados, Dominica, Grenada, Guyana, Jamaica, Netherlands Antilles, Surinam, Trinidad & Tobago.

**Latin American Port State Control (“Vina del Mar”) Agreement:**

Argentina, Brazil, Chile, Cuba, Mexico, Panama, Uruguay, Venezuela.

**Tokyo MOU:**<sup>22</sup>

Australia, Canada, China, Fiji, Indonesia, Japan, Korea (South), Malaysia, New Zealand, Papua New Guinea, Russian Federation, Singapore, Thailand, Vanuatu.

**Mediterranean MOU:**<sup>23</sup>

Algeria, Cyprus, Egypt, Israel, Malta, Morocco, Tunisia, Turkey.

**Other Developments:**

The prospective “Mombasa MOU” on port state control for Eastern and Southern Africa, due to take effect in 1998, may include:

Kenya, Mauritius, Mozambique, Seychelles, South Africa, Sudan and Tanzania.

---

<sup>20</sup> Effective since 1 July 1982.

<sup>21</sup> Effective since February 1996.

<sup>22</sup> Effective since 1 April 1994.

<sup>23</sup> Signed 11 July 1997.



## INFORMATION SOURCES

This report has been prepared by SSY Consultancy and Research Ltd, using its own statistical data for the existing bulk vessel fleets over 10,000 dwt<sup>24</sup> and for ship demolition sales. This is in addition to information from the IMO plus the major classification societies, reports within the general shipping media and materials obtained via the Internet. While every effort has been made to ensure accuracy, SSY cannot be responsible for any errors or omissions arising from incorrect information derived from external sources.

SSY's own statistics on bulk shipping supply and removals from the fleet have been supplemented where necessary by:

- information from Lloyd's Register of Shipping and the American Bureau of Shipping defining the terms of new legislation for bulk carrier safety and double-hull tanker requirements;
- data from LLP Ltd's monthly report "Inactive Vessels"; which includes details of demolition by ship type and country.

---

<sup>24</sup> NB: SSY does not have its own statistics for bulk ships under 10 000 dwt. However, one problem facing the ship scrapping sector is the disposal of very small units. With most of the world's shipbreaking facilities now based in the Asia-Pacific region, it can be prohibitively expensive for owners to reposition such ships to that part of the globe for demolition.