A TANKEROperator supplement

Tanker shipping review

March 2011

Contents

Odfjell's *Bow Flora* and *Bow Sun* seen at Ulsan. Photo credit – Odfjell Mr Lee.

...take a closer look

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What will 2011 hold?

Global economic recovery is underway, supported by robust emerging markets growth. The strength and resiliency of the global economic recovery thus far has been a welcome surprise.

During the course of 2010 the world economy continued to post impressive gains and has withstood significant challenges to derail it, such as the Greek and Irish sovereign debt crises, said McQuilling Services in its Annual Review.

Industry watchers continue to warn of the possibility of downside risks, but for now, a positive – even robust – economic backdrop can be taken as the planning case. The IMF World Economic Outlook in October 2010 projected global economic growth at 4.2% in 2011, now it expects 4.4% expansion.

Tanker demand measured in tonne/miles grew an estimated 3.9% in 2010 over 2009 levels but only 2.7% from 2008 levels. The majority of demand resides in the VLCC sector at over half of total tanker tonne/miles recorded, the consultancy said.

Estimated year-on-year gains of 3.5% for crude and residual fuels transport demand and 7.3% refined products transport demand were observed in 2010. On average, clean transport demand has risen 5.2% per year since 1999.

Tanker demand going forward is expected to average between 1-2% for crude and residual fuels transport, although McQuilling forecasted about 4% growth in the VLCC sector in 2011. The report also said that clean product transport was estimated to grow at about 4-5% per year on average during the planning period.

In 2010, it was expected that 327 vessels would be delivered into the trading tanker fleet from shipyards. Only 234 deliveries occurred, 93 fewer than anticipated, but net fleet growth in 2010 was still 7%. McQuilling's orderbook at the beginning of 2011, after adjusting for the likelihood of delays and cancellations, amounts to 713 vessels on order between 2011 and 2014, (excluding IMO I and II types).

Single hull question

Last year was the deadline for the phase-out of single-hull tankers under IMO 13G regulations and 152 tankers exited the trading fleet. Going forward, fewer exits are expected as the decision criteria returns to economic obsolescence from regulatory mandate. McQuilling forecasted that 75 vessels will leave the trading fleet this year but the fleet will still expand by 6% due to the heavy delivery schedule.

The main theme for the 2011-2015 planning period is again net fleet growth, carried over from last year. However, differences in the supply and demand balance across sectors will be seen with VLCC and Suezmax tonnage challenged the most by the spectre of a developing tonnage surplus. Supply factors such as slow steaming or floating storage can absorb a substantial portion of the surplus of vessels available to meet demand, however.

Spot freight markets increased in 2010 over 2009, but bunker prices were 6.4% higher than forecast, reducing earnings somewhat. McQuilling expected freight rates in the larger sectors to trade sideways for the next two years, driven by an oversupply of vessels.

Freight rates in the smaller sectors will be influenced by these levels, as has been observed historically, even though their supply and demand fundamentals are generally better than in the VLCC, or Suezmax sector.

Lacklustre freight markets in the near-term may lead to a bearish asset price sentiment and weaken the resolve of shipbuilders. This may lead to an erosion of newbuilding contract prices but over the five-year forecast period, it is expected that the overall asset price trend to be up.

Traditional shipping finance remained tight in 2010, available to mainly existing clients of the few banks who continued their lending with stricter terms and covenants. Analysis of acquisition projects revealed lacklustre operating returns based on forecasted freight rates and current asset prices.

Secondhand tonnage yields the best return results. Successful tanker enterprises will need to combine steady operating returns with well-timed acquisitions and sales of vessels in order to yield acceptable total returns over the next few years, as has been the case historically.

Bunker prices will continue to escalate, driven by thinning supply, quality problems and emissions restrictions. This will continue to erode TCE revenues for tanker operators.

For 2011, McQuilling said that it expected freight to remain at or near 2010 levels (adjusted to 2011 WS flat rates).

Bunkers are forecast to average $510 per tonne this year, so TCE revenues should be slightly less than last year*.

**This is an exert taken from the McQuilling Services Tanker Market Outlook: 2011-2015, which is available in PDF and hardcopy versions, 100+ page full-colour report (~70 figures / ~25 tables).*

	Sport rate Forecast (2011 WS)		TCE Revenue Forecast (US$ 000/Day)	
	2010 (Act)*	2011	2010 (Act)*	2011
Crude & DPP				
VLCC 260 MMT (AG / East) TD 3	59	58	33.1	27.6
Suezmax 130 MMT (Wafr / USAC) TD 5	82	82	25.6	23.1
Aframax 70 MMT (Carib / USG) TD 9	115	117	14.5	13.0
Panamax 50 MMT (Carib /USAC) TD 10	124	127	11.8	11.5
Clean Products				
Aframax 75 MMT CPP (AG / Japan) TC 1	101	105	13.3	12.3
MR 38 MMT CPP (Carib/USAC) TC 3	121	120	7.5	7.3
MR 30 MMT CPP (Sing / Japan) TC 4	121	145	3.5	5.6

**Actual 2010 average spot rates based on 2011 Worldscale flat rates*

Source: McQuilling Services

Spot Rate Forecast by Trade (2011 WS) / TCE Revenue Forecast by Trade (US$ 000/Day)

Worth biding your time before investing?

While in the first half of 2010, tanker freight rates and tanker asset prices held strong, everything else considered, in the second half of the year there had been a precipitous drop of spot freight rates and in turn, a noticeable decline of tanker asset prices*.

The consensus for the cause of the strength has been that the contango play for oil and a sizeable number of the world fleet utilised as storage (up to about 50 VLCCs at one point, or close to 10% of the world VLCC fleet) in the first quarter of 2010 provided a strong floor for the market. In the second half, when there was not noticeable storage play, and the newbuildings kept being delivered with almost metronomic repetition, the tonnage supply did dwarf the demand for tankers.

Based on data collected from Compass Maritime and the Baltic Exchange, one-year timecharter rates for modern VLCCs fell from $45,000 per day in July 2010 to about $30,000 per day at present, a drop of about one-third (Graph 1). There has been an almost tantamount drop in the rates for Suezmax tankers, while declines for Aframax and coated Panamax (LR1) and MR2 tankers have been contained in the 10-15% range.

One has to keep in mind that timecharter data is more 'predictable' than the spot market and it presents the 'smoothed out' version of daily market gyrations. If one were to consider spot rates, there had been numerous fixtures in the past couple of months where tankers were fixed below operating breakeven, or at rates to cover only the bunkers' expense, or even at rates that were downright negative.

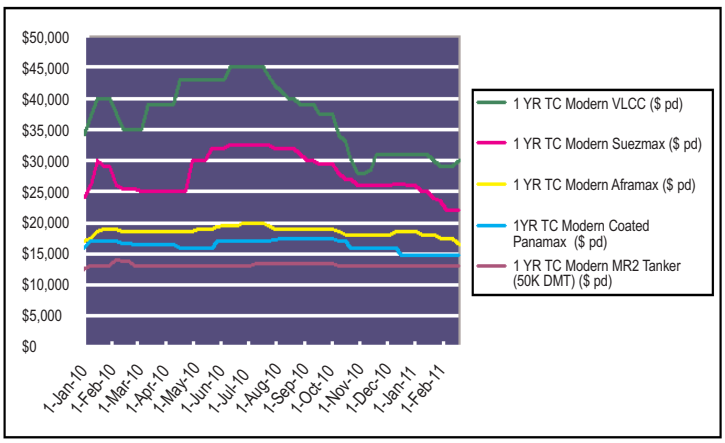
With an anemic freight market in plain view, it's not a surprise that asset prices have been on a softening trajectory. Based again on data provided by Compass Maritime and the Baltic Exchange, for five-year old vessels, between July 2010 and at present, asset prices have dropped by about 15%, with coated Panamax tankers experiencing the worst decline of about 20% while MR2 tankers behaving best with a 7% decline (Graph 2).

On a note of caution, such data is based strictly on 'last done' in a not-always-liquid market, and, in certain cases an argument can be made of what defines a 'market transaction' when allegedly there should be no compulsion to act by either the buyer or the seller.

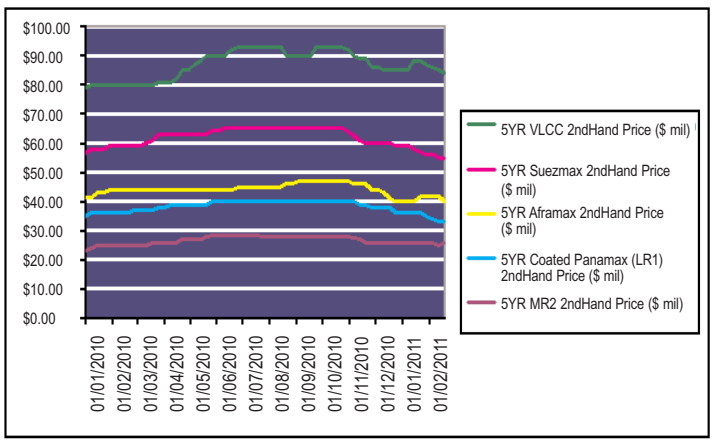
It should also be noted, however, that different age vessels within each asset class are behaving in a completely different way in the present changing market. At present, first generation double-hull tankers of about 14-17 years of age, even from very reputable yards and from 'good stables', can only hope for a less than 100% premium over the demolition market, assuming a decent survey position. Some of these vessels have 10 years of remaining commercial life, given that they have no phase-out or any other regulatory handicaps.

For instance, 1993-1995 built Aframax tankers from South Korean yards can only hope for a price of $12-14 mill range when their scrap price is $6-8 mill. Assuming 10 years remaining commercial life and today's demolition prices at that time, the premium over scrap price plus the capital expenses required special and intermediate surveys, imply about $10 mill above scrap market, or about one million dollars per annum. If it were to be amortised, she would require, on average, less than $3,000 per day operating profit to break even, that is, a freight market of less than $10,000 per day; based on Compass Maritime data, the 20-yr average T/C rate for an early 1990's built Aframax has been around $19,000 per day, thus allowing substantial room for error.

However, it should be noted that it will be impossible to obtain in today's market competitive debt finance (mortgage) and such vessels cannot be commercially competitive when modern tonnage has flooded the market and even they can be had below operating breakeven. For charterers of quality, there is no logic utilising a 'vintage' vessel when they can have their choice of modern tonnage at very competitive rates. Again, such



Graph 1 - TC Rates Feb 20 2010.



Graph 2 - Asset Prices Feb 20 2010.

discrimination by charterers may have forced prices of such vintage vessels to such low levels, in the first place!

However, for charterers with their own captive cargo or for charterers who have access to ports and jurisdictions of less than demanding standards, these vessels could be the source of significant profits. And, as it has been the case, these are the buyers who have been showing interest for such tonnage primarily from Asian countries.

Values holding

On the other hand, vessels of less than five years old, although they have not actively been transacted in the last six months, seem to be holding onto their nominal values fairly well and very close to their newbuilding contract price ('intrinsic value' as some may say), given that they are ideal candidates for financial buyers and buyers with an eye for the capital markets. In a commodity pricing freight market, obviously these vessels have been the most competitive at obtaining cargo (but again, at rates the market would bear); besides, they are the easiest types of vessels to obtain debt financing given that they have most of their economic life ahead of them.

For five-year old prices in each major asset class in the tanker market space, we have calculated the implied EBITDA based on prevailing market prices and rates, and making standard industry assumptions in terms of financing and operations. The results are shown in Table 1, and the EBITDA multiples are ranging in a band of 10-12, with VLCCs being the most overpriced vessels and MR2 tankers the least.

In each case, the multiple is within investment standards and implying about a decade or a bit more of payback period. By comparison, the price-to-earnings ratio (PE) for the Standard & Poor's 500 Index is considered fairly priced at 17, indicating that asset prices are trading below the equities market, overall.

	VLCC	Suezmax	Aframax	LR1	MR2
Asset Price (5yr old) ($ mil)	$84.00	$55.00	$40.00	$33.00	$26.00
1YR TC Rate ($'000 pd)	$30.00	$22.50	$17.00	$15.00	$13.00
Utilization Rate	92%	92%	92%	92%	92%
Vessel Daily OpEx ($'000 pd)	$9.00	$8.00	$7.00	$6.00	$5.00
Leverage	50%	50%	50%	50%	50%
Cost of Debt	6%	6%	6%	6%	6%
Cost of Equity	12%	12%	12%	12%	12%
Cost of Capital	9%	9%	9%	9%	9%
EBITDA	**12.37**	**11.86**	**12.68**	**11.59**	**10.23**

Table 1 - Tanker asset classes - EBITDA Calculation.

In general, shipping equities seem to be trading at similar or higher PE ratios than the underlying assets, and a direct implication might be that an investor is better off in investing directly in assets at present market conditions than in shipping equities. Of course, PE ratios and EBITDA multiples are 'historical' and backward looking numbers without telling the whole story: it would still be difficult justifying such 'low' ratios when one takes into consideration that one brand-new VLCC and three brand-new MR2s will be delivered every five days this year alone! Such a generous supply of additional vessels in an already oversupplied market could definitely pull rates even lower and thus pushing the ratios much higher.

In Table 2, based on the same financial and operating assumptions as for the calculation of EBIDTA multiples, we run calculations for the internal rate of return (IRR) in each of the five tanker asset classes. Based on current asset prices and prevailing one-year time charter rates, VLCC vessels of five-years of age seem the least attractive with an IRR comparable to the 10-year Treasure Note (about 4%), while MR2s at present prices and rates seem the most promising with more than 20% IRR. Again, IRR calculations heavily depend on the assumption that future rates will at least remain constant and equal to today's rates during the remaining commercial life of the vessels.

Our calculations were meant to be for illustration and discussion purposes, and not for real life investment guidance. Almost 30 months after the Lehman Brothers collapse, financial and shipping markets are still dislocated, to a fair extent, and for the sake of uniformity, we assumed same amount and cost of leverage in each of the asset classes, similar (and some might argue low) cost of equity (irrespective of asset class), etc.

On the one hand, leverage today requires a strong balance sheet and track record and not just a decent vessel or employment. And on the other, we assumed it will just remain constant, an assumption that the events and volatility of the recent years have shown that the only constant in shipping is change itself, sounding more like an ancient Greek philosophical aphorism (by Heraclites) than an investment guideline.

However, overall, given the just acceptable ratios and taking into consideration that there is still a robust amount of vessels to be delivered, irregardless of market conditions, one might say that there is still time before an investor wishes to go full steam ahead on tanker projects. TO

	VLCC	Suezmax	Aframax	LR1	MR2
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Leverage	50%	50%	50%	50%	50%
Cost of Debt	6%	6%	6%	6%	6%
Cost of Equity	12%	12%	12%	12%	12%
Cost of Capital	9%	9%	9%	9%	9%
IRR	**4.17%**	**8.63%**	**14.85%**	**18.44%**	**23.82%**

Table 2 - Tanker asset classes - IRR Calculation.

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TANKER*Operator's* Top 30 owners and operators

Taking the usual format, this list has been compiled in descending order of total tanker deadweight tonnage per company. The figures have been taken from company websites, the Equasis database, other sources and the companies themselves. We have not included FPSOs, FSOs, LPG carriers, or LNGCs in the total.

With the plethora of newbuildings delivered last year and the amount of tonnage yet to come, there has been and still will be changes in fleet compositions during the next couple of years, which has and will result in some companies having a higher ranking in the table in future editions.

For example, NITC has claimed that once its massive VLCC newbuilding programme has been completed, the company will attain second, or third place in terms of total deadweight tonnage.

FRONTLINE

(19.3 mill dwt, plus 1.8 mill dwt newbuildings)

1 **John Fredriksen's Frontline** is the world's largest operator of VLCCs with 50 on its books, plus five newbuildings.

In addition, the company operates eight OBOs and 21 Suezmaxes and has another two Suezmax tankers on order.

The total includes those commercially managed by Frontline and owned by subsidiary Independent Tankers Corp. Several are bareboat and timechartered out for long periods.

Frontline's policy is not to undertake technical management of its fleet, but rather use third party shipmanagement concerns.

This is undertaken by several shipmanagement companies, including oil majors BP, Chevron and Shell, which have several vessels on bareboat charter. Other independent shipmanagement companies used include V Ships (UK, Norway and Germany), V Ships subsidiary ITM, Sea Team and Thome.

Earlier this year, Frontline announced that it had sold its 2006-built VLCC 'Front Shanghai' for $91.24 mill. As part of the transaction, Frontline has chartered back the vessels for two years at a daily rate of $35,000.

More recently, Frontline sold its entire stake of 1.4 mill shares in OSG. ■

Teekay Corp

(14.9 mill dwt, plus 218,000 dwt newbuildings)

2 **Again Teekay has been** forced into second place purely on deadweight tonnage terms.

Teekay's fleet still number over 150 vessels, including FPSOs, FSOs, LNGCs, LPG carriers, plus more than 70 timechartered vessels.

However, as with every company listed, we have excluded the FPSOs, FSOs, LNGCs and LPG carriers from the total deadweight tonnage.

The group still claims to transport around 10% of the world's seaborne oil trade, as its mainstream tanker fleet consists of 36 Aframaxes; eight product tankers; 36 shuttle tankers, plus another two newbuildings, 27 Suezmaxes and one VLCC in a joint venture with Wah Kwong.

In addition, the group operates six FSOs; five FPSOs; 17 LNGCs; plus four newbuildings and three LPG carriers, plus another two newbuildings.

It remains the world's largest shuttle tanker operator and is currently taking delivery of four state-of-the-art shuttle tankers from Samsung.

Teekay Corp has split its empire up into four publicly listed companies – Teekay Corp and subsidiaries Teekay LNG Partners, Teekay Offshore Partners and Teekay Tankers.

On 1st April of this year, Teekay's long time president and CEO Bjorn Moller steps down to be replaced by executive vice president Peter Evensen. ■

Teekay's Aframax *Axel Spirit*.

MOL Group

(13.9 mill dwt)

3 **This year, we have only** included the vessels managed by MOL Tankship Management Asia and MOL Tankship Management Europe, as chartered vessels have proved difficult to quantify, hence the Japanese giant moves down to third spot in the rankings.

In total, these two concerns manage 40 VLCCs, one Suezmax, 10 Aframaxes, 10 LR1s, four MRs and five Handymax tankers. In addition, the companies manage nine LPG carrier, according to the Equasis database.

Of course, MOL is a prolific charterer of tonnage and has interests in over 70 LNGCs, which, as mentioned above, have not been included in the figures for this year's review, and the chartered vessels change almost daily. ■

Nippon Yusen Kaisha (NYK)

(12.8 mill dwt)

4 **NYK has further increased** its fleet with deliveries of VLCCs and chemical/product carriers. There are still more to come.

We have taken the figures for the group as a whole and not disseminated the vessels between various owning and management companies.

Thus far, there are 42 crude oil tankers, of which 36 are VLCCs, 27 chemical/product carriers and five pure chemical carriers managed.

In addition, NYK controls 10 LPGs and an ammonia carrier, plus over 30 LNGCs, which have not been included in the figures.

At the beginning of February, it was reported that the 266,000 dwt VLCC *Tajima* had been sold to Dynacom for $28.1 mill.

In another move, last year, NYK decided to invest in Knutsen Offshore Tankers ASA (KOT), which will result in NYK owning 50% of KOT's total capital.

Following this investment, KOT's name will change to Knutsen NYK Offshore Tankers AS.

KOT is the world's second-largest owner and operator of crude oil shuttle tankers and operates all over the world.

In a statement, NYK said that it considered the offshore shuttle tanker business to be ripe for growth following the expansion of offshore operations related to oil production in deepsea areas, including those off Brazil.

Knutsen NYK Offshore Tankers will begin operations with 24 of the world's 82 shuttle tankers (existing and under construction). ■

Overseas Shipholding Group (OSG)

(11.4 mill dwt, plus 1.1 mill dwt newbuildings)

5 **OSG owns or manages a** variety of tonnage, including the three out of four of the world's largest remaining ULCCs of 440,000 dwt each.

Two are on storage duties, while the other is still trading. In total, OSG boasts 124 vessels, including wholly-owned and bareboat chartered tonnage.

Broken down into vessel types, these include three ULCCs, 14 VLCCs, plus two newbuildings; two Suezmaxes; 20 Aframaxes, plus two newbuildings (includes the lighterage fleet); 13 Panamxes, plus two newbuildings; 46 Handysize, plus three newbuildings (includes the US flag fleet); one newbuilding chemical carrier; one car carrier; 10 articulated tug barge (ATB) combinations, plus one newbuilding and four LNGCs.

Nine of the 11 newbuildings are wholly owned.

Last year, OSG moved the commercial management of its LNGC fleet, previously managed as a standalone business unit, to the company's international product carrier and gas strategic business unit.

OSG said that this move reflected the recent focus on its three core segments - crude oil, products and US flag - while ensuring that the LNG business was optimally managed. ■

OSG owns a considerable number of Jones Act tankers.

AET Tankers

(10.7 mill dwt, plus 2.9 mill dwt newbuildings)

7 **MISC Berhad subsidiary AET** has shot up the rankings due to the deliveries of two VLCCs and 10 Aframaxes in the past 12 months.

This gives the Singapore-based concern 13 VLCCs, one Suezmax, 59 Aframaxes, one Panamax and nine product carriers of various sizes.

Not stopping there, AET has another four VLCCs, four Suezmaxes, four Aframaxes, two dynamic positioning shuttle tankers and one product carrier still to come, which should propel the company into the top five next year. ■

Sovcomflot Group (SCF)

(11.02 mill dwt, plus 2.07 mill dwt newbuildings)

6 **Taking SCF's tanker fleet, the** Russian giant controls 132 vessels and has another 19 on order. In addition, the group controls eight LNGCs and two LPG carriers.

The in-service tanker fleet includes 12 coastal/small vessels, 10 Handysize tankers, 30 MRs, six Panamaxes (including five ice class shuttles), 48 Aframaxes (including two ice class shuttles) and 18 Suezmaxes.

Still to come are two VLCCs, seven Aframaxes and four Panamaxes (LR1s).

The company claims to be No 1 in MR, Arctic shuttle tanker and ice class LNGC operation and No 2 in Aframaxes and MRs.

In February, it was announced that SCF had purchased six Aframax shuttle tankers from Primorsk Shipping. They are each fitted for loading at Sakhalin.

In addition to these six vessels, the delivery of a new Aframax *Suvorovsky Prospect* (ice-class 1B) and three LR1 product carriers (in joint ownership with Glencore) in February/March 2011, will see the Group's fleet increase by another 1 mill dwt. ■

SCF is No 1 in Arctic shuttle tankers.

NITC

(10.59 mill dwt, plus 6.82 mill dwt newbuildings)

8 **NITC owns and operates 43** tankers and has another 22 on order for delivery 2011-2013.

Its current fleet consists of 28 VLCCs, nine Suezmaxes, five Aframaxes and one Handysize.

The newbuilding programme includes another 22 VLCCs, plus six 'Caspimax' shuttle tankers of 63,000 dwt, one small LPG carrier and two chemical/product tankers.

At a recent press conference, NITC said that once all of the newbuildings were delivered, NITC would reach at least No 3 in the world in terms of dwt, as the VLCC fleet alone would total 17.5 mill dwt.

Long term, NITC said that if and when the various Iranian gas trains come on stream, there would be a need for about 83 LNGCs to transport the gas. ■

NITC's latest VLCC is the *Sifa*, which is on bareboat from Oman Shipping.

Maersk Tankers

(8.77 mill dwt, plus abt 2.15 mill dwt newbuildings)

9 **Maersk Tankers, part of the** giant AP Moller-Maersk group, has increased its fleet of managed vessels by an infusion of newbuildings of which there are still more to come.

In all, the fleet amounts to 229 tankers, plus 18 newbuildings, which includes 11 VLCCs, plus six newbuildings; a large fleet of LR2s in a managed pooling arrangement with TORM; another large fleet of Handysizes and MRs in the Handytankers pool and also a considerable number of intermediate and smaller chemical/products tankers under the Broström banner.

In addition, Maersk Tankers looks after another 30 LPG carriers, 16 of which come under the VLGC pool. These, plus the LNGCs, FPSOs, FSOs, have not been included in the figures. ■

Euronav

(8.7 mill dwt, plus 0.95 mill dwt newbuildings)

10 **Antwerp-based large tanker** operator Euronav has 17 VLCCs, 20 Suezmaxes and one ULCC in its fleet, having sold off some of the older VLCCs.

In addition, there are a further four Suezmaxes and one VLCC under construction.

The company has a 50% share in two 440,000 dwt FSOs together with OSG and operates another sister vessel (ULCC) in the Tankers International pool in which Euronav is a major player. ■

Maran Tankers Management

(8.4 mill dwt, plus 1.1 mill dwt newbuildings)

11 **Maran Tankers Management** is part of the Angelicoussis Shipping group and is represented by Agelef Tankers in London, acting as agents.

This shipmanagement concern looks after 16 VLCCs, 12 Suezmaxes and eight Aframaxes.

In addition, there are seven newbuildings to come.

An affiliate, Maran Gas, has five LNGCs and two LPG carriers on its books, which have not been included in the figures. ■

The 2009-built VLCC *Caesar* seen at her delivery.

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TORM

(7.85 mill dwt, plus 282,000 dwt newbuildings)

12 **The Danish product tanker** giant has slipped down the ratings, due to the loss of some pool members to a breakaway group.

However, TORM still controls 117 tankers and has six newbuilding MRs to come. The in service fleet is split between 28 LR2, 28 LR1s, 50 MRs and 11 Handies, or SRs.

TORM manages three pools – LR2, LR1 and MR, but lost some tonnage when former employees started up a rival pooling arrangement and took a few owners with them. ■

TORM's Aframax *Torm Marianne*.

China Shipping Development

(6.9 mill dwt, plus 1.9 mill dwt newbuildings)

13 **The Chinese giant has taken** delivery of several VLCCs since last year's report, pushing the company up the listing.

According to the Equasis database, China Shipping Development manages 11 VLCCs, four Aframaxes and a plethora of crude, products and chemical tankers of all sizes, ranging from Panamaxes to small 4,000 dwt product carriers.

The 42,000 dwt *Chang Chi* seen at Fawley refinery.

Many purely operate on the Chinese coast and river systems and therefore are difficult to trace.

Last August, the company said it would purchase 14 new vessels for $424 mill after its first-half 2010 profit jumped 60%.

China Shipping Development said in a statement that it had 65 tankers and 103 commodity vessels at the end of June 2010. The company also said it had 49 vessels on order for 2012 delivery. The backlog included six tankers.

Last December, China Shipping Development announced that it will build eight 48,000 dwt crude/product tankers at Guangzhou Shipyard for about $300 mill. ■

Vela International Marine

(6.58 mill dwt)

14 **The Dubai-based Saudi** Aramco subsidiary has continued its policy of selling its older VLCCs and taking delivery of newbuilding units.

Vela controls 20 VLCCs, four MRs and one LR2.

At any one time, Vela will also have about 40 VLCCs and product tankers on spot, or long term timecharter. ■

National Shipping Co of Saudi Arabia (NSCSA)

(6 mill dwt, plus a plethora of newbuildings)

15 **NSCSA currently owns 17** VLCCs, 13 chemical carriers and 4 ro-ro vessels.

NSCSA is the 6th largest VLCC operator globally. The company also has a 30.3 % stake in Petredec, which a leading LPG trader and controls large number of LPG carriers.

The chemical carrier fleet operates under the banner of National Chemical Carriers (NCC) – an 80:20 joint venture with SABIC. NCC claims to be the leader in Middle East chemical transportation.

The company has another 11 chemical carriers on order that includes two re-purchased tankers, due for delivery during 2011-2012.

In 2009, the company entered into an agreement with Odfjell to bareboat charter three stainless steel parcel tankers for a period of 10 years with purchase options after three years. The ships will continue to be operated by Odfjell Tankers.

In June 2009, NCC signed a 50:50 joint venture with Odfjell to establish an operating company in Dubai. This was set up to commercially operate their combined fleet of coated chemical tankers in a pool. The JV came into effect on 1st January, 2010.

On 4th July, 2010 the company signed a contract with Daewoo (DSME) to build a specialised chemical tanker of 75,000 dwt, which is expected to be delivered during 2013. This takes the number of chemical tanker newbuildings up to 12.

NSCSA has its own in-house ship management concern Mideast Ship Management, which will handle up to 46 vessels by the end of 2013. ■

Ocean Tankers

(5.74 mill dwt, plus 1.9 mill dwt newbuildings)

16 **The Singapore-based** company's fleet consists of more than 110 vessels of all shapes and sizes, ranging from six VLCCs, Suezmaxes, Aframaxes, Panamaxes, MR1s, MR2s, GP tankers and bunker/lubricant barges, as well as tugs, towing supply tugs, to passenger boats.

The newbuildings are six VLCCs, which will be delivered over the next two years starting almost immediately, Ocean Tankers reported.

As of now, Ocean Tankers' current shipping capacity is 5.74 mil dwt, plus 1.9 mill newbuildings.

The newbuildings are all VLCCs, which will be delivered over the next two years starting from now. They are world's largest and most modern double-hull oil tankers built to the requirement of IACS' Common Structural Rules (CSR). ■

The 2008-built VLCC *Hua San*.

Dynacom Tankers Management

(5.7 mill dwt, plus 1.2 mill dwt newbuildings)

17 **Also reflecting the number of** tanker deliveries during the year was Athens-based Dynacom Tankers Management.

This increased Dynacom's fleet to 12 VLCCs, 14 Suezmaxes, one Aframax and 17 Panamaxes.

In addition, in February of this year, it was reported that the company had purchased the 1996-built NYK managed VLCC *Tajima* for $28.1 mill. ■

Tsakos Energy Navigation (TEN)

(4.9 mill dwt, plus four newbuildings of 630,000 dwt)

19 **TEN's pro-forma fleet** consists of 52 double hull vessels of 5.6 mill dwt, which includes two Suezmaxes under construction for delivery in 2011 and a further two DP2 Suezmaxes for delivery late 2012/early 2013.

The balanced fleet ranges from VLCCs, Aframaxes through to 26 product carriers (LR2s to Handysize), plus one LNGC.

TEN has remained profitable each year since its inception in 1993, deriving profits from both operations and sale and purchase activities. ■

Tanker Pacific Management

(4.76 mill dwt, plus 1.28 mill dwt newbuildings)

20 **Tanker pacific has managed** to shed some of its older tonnage, but has a number of newbuildings to come.

In total, the fleet consists of seven VLCCs, 20 Aframaxes and 10 MRs.

The newbuildings include four Suezmaxes, four LR1s and seven MRs. ■

BW Maritime

(5.46 mill dwt, including one newbuilding)

18 **BW Maritime manages 15** VLCCs, including one newbuilding to be delivered this year, plus 12 product tankers and two chemical carriers.

In addition, the BW Group's gas and offshore divisions are responsible for a large fleet of LPG carriers, LNG carriers and FPSOs. ■

The VLCC *Utah* is now the *BW Utah*.

Shipping Corporation of India (SCI)

(4.45 mill dwt, plus 864,000 dwt newbuildings)

21 **SCI has been taking delivery** of several vessels this year and at the same time disposing of elderly units in the fleet.

Deliveries have included six LR1s, two LR2s and one Aframax, while six tankers were recycled. Newbuildings still to come include two Aframaxes and two VLCCs.

The company has around 41 tankers of all types and size ranges, including four VLCCs.

In addition, SCI has one FSO and interests in two LPG carriers and two LNGCs. ■

Minerva Marine

(4.38 mill dwt)

22 **Minerva continues to add** tonnage and currently has three VLCCs, five Suezmaxes, 20 Aframaxes and 10 MRs on its books.

The company also manages three capesize and one Kamsarmax bulk carriers. ■

One of Minerva's MRs seen at Gibraltar.

BP Shipping

(4.3 mill dwt)

23 **Once again there is no** change to BP Shipping's fleet composition.

BP manages four VLCCs, 20 Aframaxes, 17 MRs and a shuttle tanker.

In addition, the oil major subsidiary manages four VLGCs, seven LNGCs and another LNGC for the Northwest Shelf project. ■

Dalian Ocean Shipping

(4.2 mill dwt)

24 **The COSCO subsidiary** controls 10 VLCCs, two Suezmaxes, three Aframaxes, 10 Panamaxes and three MRs.

In addition, Dalian Ocean manages six small LPG carriers. ■

Associated Maritime Corp (AMC)

(4.12 mill dwt, plus 594,000 dwt newbuildings)

25 **The Hong Kong Min Wah** subsidiary has also risen in the listing due to an influx of large tankers.

At present, AMC manages 11 VLCCs, one Suezmax and seven Aframaxes and is about to take delivery of another two VLCCs.

Both concerns are part of the giant China Merchants conglomerate. ■

SK Shipping

(3.78 mill dwt, plus 1.28 mill dwt newbuildings)

26 **The South Korean concern** has climbed the rankings thanks to the delivery of several VLCCs last year.

In total, SK Shipping now has 11 VLCCs, two Aframaxes, three chemical/products carriers, one product carrier and four small chemical/products carriers.

Last year, SK ordered another four 320,000 dwt VLCCs from Hyundai.

In addition, the company operates five LNGCs and four LPG carriers. ■

Thenamaris Ships Management

(3.37 mill dwt)

27 **Thenamaris' total tonnage** has fallen slightly due to fleet disposals.

However, the company has two VLCCs, six Suezmaxes, 16 Aframaxes and eight chemical/products tankers on its books.

The company also has interests in drybulk carriers and a containership. ■

The Aframax *Seamusic* seen at Coryton refinery.

Univan Ship Management

(3.24 mill dwt)

28 **Univan currently manages** 10 VLCCs, four MRs, one Handysize chemical/products carrier and two small chemical/product carriers.

Other vessel types are also managed and the company is involved in newbuilding supervision for third party owners, including VLCCs. ■

Chevron Shipping

(2.9 mill dwt)

29 **Chevron Shipping's fleet** includes seven VLCCs, four Suezmaxes, two Aframaxes, four chemical/products carriers and one product carrier.

In addition, Chevron manages two LPG carriers and one LNGC. ■

Odfjell

(2.35 mill dwt, plus 18 newbuildings of 760,000 dwt)

30 **The world's leading parcel** tanker operator has crept into the top 30 at the expense of Kuwait Oil Tanker Co with a total of 86 vessels.

These are split between about 45 owned, 32 timechartered and nine under commercial management.

Odfjell also has 18 vessels on order, 12 of these with partner NCC and is in dispute with Sevmash over another tranche of cancelled orders. ■

Are owners and charterers really that stupid?

Much of IMO's thinking about regulatory alternatives for reducing CO2 emissions from ships is based on the assumption that shipowners have been slow to adopt measures which would increase fuel efficiency, even when such measures are economic*.

For example, the Bahamas flag state said that unfortunately, due to various structural impediments in the industry, the high cost of fuel has not been the main driver for the adoption of these technical and operational measures.[1]

This failure is variously ascribed to the fact that –

1) Owners know their ships will spend a part of their lives, quite possibly a large part, under term or bareboat charter. While a ship is under term or bareboat charter, it is the charterer that purchases the fuel, and decides where and how fast the ship steams. Therefore, it is claimed the owner has no or at least greatly reduced motivation to invest in fuel saving technology.

The Bahamas in support correctly calls this a "key assumption" in the thinking of the IMO's Market Based Measures (MBM) working group. The MBM Working Group report repeatedly refers to "non-price barriers" which "restrict the uptake of fuel/energy operational and technical measures".

2) Owners have the ability to pass through any increase in BFO cost to their customers in the form of higher freight or timecharter rates, therefore there's no point investing in saving. The Bahamian submittal puts it succinctly; "The high cost of fuel, although a significant factor, can be passed on through freight rates, or is paid by an external party and not the owner."[2]

This view is further supported by the fact that several influential studies have found that there is tremendous potential to cut fuel consumption at little or no cost by employing technologies that owners currently are not using. For example, the second IMO GHG Study 2009 said that CO2 emissions could be reduced 25% to 75% "….by using known technology and practices."[3]

DNV claimed that measures exist which would reduce CO2 emissions from ships by 400 mill tonnes per year (about 26%), which have negative abatement costs, meaning if implemented, they would increase the owner's profits.[4]

Therefore, DNV was forced to conclude; "The results of this study indicate the lack of responsiveness to economics as a driving factor for change". This has become received wisdom at the IMO.

The term charter issue

Let's begin with the term charter issue. In any term charter, the shipowner must stipulate the ship's speed-fuel curve. The contract or charterparty then goes into considerable detail about what happens if the ship fails to perform up to the warranted fuel consumption. Basically, the owner pays for any fuel the ship uses above the charter party curve.

Prospective term charterers collect a batch of offers, each of which include not only a term charter rate but also a stipulated cargo capacity and a stipulated speed fuel curve. They run these offers through an analysis to determine which ship will meet their transport capacity at minimum cost. I operated large tankers for some 25 years and was involved in numerous T/C negotiations. I can assure you that speed/fuel was front and centre everytime. Here is a memo that I wrote to my troops in July, 2002. The memo was mainly in response to their moaning that our standard speed/fuel curves were unrealistic (translation: they had to work too hard to get the fuel consumption down to these levels) But it also makes the point of the importance of speed/fuel curves in winning term charters.

Note: The *Empress des Mer* was a 1976-built ULCC owned by a competitor.

Notice that in at least one example cited the ship with the lower term charter rate did not get the business.

TO: hsc_/ppd1, apb1, kis1
FROM: martingale/jack
RE: Consumption Curves in T/C description, Q88, MFIX etc
The speed-fuel curves in MFIX, T/C description, Q88 etc are,
ME + 1 gen + sludge under ideal conditions.

That is:

1) A fuel with an NCV of 42,707 kJ/kg.
2) Calm water, no wind.
3) Perfectly clean hull and propeller.
4) Main engine operating right on spec.

In MFIX, we adjust this curve for actual NCV using the FO_LOSS field.

We also adjust for expected weather and current by leg using the SPD_ADJ fields.

This curve serves as an achievable target. If we don't meet it after properly adjusting for NCV and weather, then something is wrong and we must find out what and fix it.

We must not lower our standard.

In almost all T/C's, this curve will be too optimistic since it will be warranted up to Beaufort 5. But for T/C purposes we want to over-specify the ship.

When the potential charterers run our warranted curves through their algorithms to get equivalent unit ($/t) transport cost, they will find that they can pay us a higher T/C rate than if we gave then a more conservative curve.

Most long term charterers must go with the ship that gives them the lowest equivalent unit cost.

We will get more business at a higher TC rate. Of course, we will give some of that back in claims but the give back is always much less than the additional T/C revenue.

A classic case was the *Embassy* and *Empress des Mer* with Vela in 1990. The former using a conservative curve got $39,000 per day and paid no penalties, while the latter using a ridiculously optimistic curve got $41,000 per day and ended up paying $250,000 in penalties.

The additional T/C revenue over the 4.5 year charter was about $3.3 mill. Later the *Empress* finessed another ULCC *Grand* out of a one year KPC charter that, in a falling market, we desperately wanted. The brokers told us that the *Empress* was in at (from memory) $26,000 per day and firm. So we went slightly lower and firmed.

The business went to the *Empress* at the higher TCE. Later I found out from KPC that the competitor had over-specified the ship by more than a knot over calm water speed. We had only over-specified the *Grand* by using calm water.

The KPC chartering manager told me that the *Empress*' speed-fuel curves were "really sexy".

We too have to be 'really sexy'. The memo goes on to further berate the poor recipients for not meeting our fuel consumpton targets.

The point of course is that term charterers know that for the length of the term charter they will be the effective owner of the ship and they want the cheapest ship for the fuel cost they expect to pay during the T/C.[5] Owner shenanigans aside they will do their damndest to get her.

Fuel cost - a weak driver

DNV, the Bahamas, and much of the IMO hierarchy agree that fuel costs have been a disappointingly weak driver for fuel efficiency. But in my career as an owner, fuel costs have not only been a strong driver, they were the driver. We adjusted our steaming speeds almost weekly on the basis of the current spot rate and our BFO costs.

When the market was in boom, we were blasting along as fast as we could. When the market was in slump, we were going as slow as we could. We instituted all sorts of procedures to monitor fuel consumption, spent all kinds of time tuning the plants, hasseling the chief engineers when we were unhappy, etc and on occasion firing them.

The single biggest question we asked ourselves in specing new vessels is what was the BFO price going to be? One thing we did not worry about was whether or not the ship was going to be term chartered. In fact, in all the voluminous correspondence leading up to an eight ship, half-billion dollar programme in 1999/2000, the subject never came up. For we knew any efficiency we could gain would be reflected in the T/C rate.

Herein lies the fallacy in the Bahamian claim that the fact that savings in costs eventually get passed on to shippers, means that owners have little motive to economise. But this competing away of savings only happens after the great bulk of the owners have implemented the savings. At that point, any owner who has not kept up will go broke.[6] Survival is very strong motivation for most people.

In the course of my career BFO went from $50 to $250 per tonne. And over that 30-year period, fuel consumption almost halved. The first ships I operated were 390,000 dwt ULCCs built in the late 1970's. They had a full speed fuel consumption of around 210 tonnes at 16 knots. The last ships I operated were 440,000 dwt ULCCs, which burned 121 tonnes at the same speed. The relative improvement at slow-steaming speeds was even higher.

The latter ships were designed in 1999/2000 to a BFO cost of a little over $100 per tonne. If I were building a ship today, I'd use a design fuel cost of at least $500 per tonne and probably higher, maybe as high as $750, depending on what I thought IMO was going to do. Like every owner, I would invest in any fuel reduction measure that I thought was going to improve my bottom line at that price.

In our 1999/2000 newbuilding programme, we surveyed all the possibilities. And we ended up installing 'over-sized' engines and generators at the cost of close to $2 mill per ship, in part because it allowed us to move down the engine's SFC curve toward the minimum SFC point (about 70% of MCR).[7]

We went through all the hydrodynamic devices, pre-swirl, post-swirl, etc. I became entranced with something called a propeller boss fin. The vendors claimed it would save 2% to 3% or more. You'll see the same numbers or higher in IMO documents.[8] The device only cost $40,000 so even at $150 per tonne, all I had to do was save 300 tonnes of fuel to pay for it, less than three days MCR steaming for the ULCC. It seemed to me it might work, so I studied it carefully. However, the more I got into it the less support I found for the claims.

At the end of the day, I couldn't be sure if the gadget was going to save me fuel, or cost me fuel. We didn't invest in the boss fin, but it wasn't because we were stupid or lazy, or we were going to pass the cost of the fuel on, or the ship was going to be timechartered. If the device gave us a competitive advantage, we would get the savings.

So we have a disconnect. I claim owners will jump on anything that they think will make them money. IMO and others believe the owners are "unresponsive to economics".

There are two reason for this dichotomy:

1) The potential savings are grossly exaggerated.

Much of the savings that some IMO studies point to simply don't exist, or are unproven, unsafe or not economic even at today's BFO price. Take all the propeller flow modification devices. Most of them have been around for 20 years or more.

The problem is separating vendor claims from actual performance. Model tests are indicative but not quantitively reliable for these devices both because of scale effects and the artificial conditions in the towing tank. Full scale tests are even harder.

If a device does save a percent or two, it will be almost impossible to see in any but long term, carefully monitored experiments. Speed goes as power to the 1/3 or less. So a 3% saving will show up as less than a 1% increase in speed at a given power. This is difficult to measure under the best of conditions. But to make matters much worse, we almost never have the best of conditions. The savings, if they exist, will be dominated by all sorts of other variables, including loading pattern, hull and propeller condition, and weather. To do the necessary experiments to really determine the savings would be a very expensive proposition; so they are simply not done. We are left with vendor claims and anecdotal evidence.

Despite this, in something of a leap of faith, owners are investing in some of the more promising devices. Some 80 vessels have been built with the Kawasaki rudder bulb system, a post-swirl device. Others have fitted pre-swirl devices. If these gadgets really work, the word will get out and the owners will be happy to pay for them. But if the savings were anything like what IMO studies sometimes claim, this would already be obvious.

Other technologies that are offered as evidence of owner unresponsiveness are either imprudent, or unproven.[10] Contra-rotating props fall in the imprudent category at least for single screw ships. There is little doubt that a properly designed contra-rotating propeller could save at least 8% on most ship

types. For a VLCC the extra initial cost will be around $2 mill, for a payback of less than a year at full power. Unfortunately, contra-rotating props require complex epicyclic gearing and inter-shaft bearings.

They are inherently far less reliable than a standard VLCC shaft and propeller and would be a maintenance nightmare. No prudent owner could spec contra-rotating props on a single screw tanker. Yet most IMO studies blithely include contra-rotating props in their lists of potential savings, usually with a number like 12%, or 14%. Clearly, unproven technologies, such as air cavities, are also included in most lists, often with an unsubstantiated savings of 15%.[10]

When you take a realistic look at fuel savings measures, as owners must, the savings are far smaller than IMO thinks and more expensive. greenship.org, a group that generally takes an optimistic view of the potential for vessel emissions reductions, studied a 35,000 dwt drybulk carrier to which they fitted just about every device applicable and ended up with a 7% decrease in CO2 emissions.at an additional cost of about $5 mill, or 20% of the current newbuilding price.[12]

When Green Ship repeated this exercise for an 8,500-TEU containership, they came up with a savings of 11% to 14% at a cost of €10 mill (about 10% of current newbuild price).

2) The 10 to 20 year newbuilding lag.

Much of the prudent, feasible, economic savings that do exist have a 10 to 20 year lag before they are fully implemented in the fleet.

For example, advanced waste heat recovery (WHR) is now clearly economic on a large tanker. For an investment of about $1.3 mill, it is possible to extract enough energy from the cooling water and stack gas to support a 1,000 kW generator. For a VLCC the savings in fuel is four or five tonnes per day. At $500 per tonne, a pay back period of less than two years.

Systems installed

Owners are now flocking to install these systems on their newbuildings. In August, 2010, Wärtsilä counted 81 large vessels, including 33 VLCCs that have ordered Wärtsilä 's version of WHR.12.

The problem is that this sort of investment only works for newbuildings. The really big jump in BFO prices took place in 2005 through 2007, which means that the effect will not start showing up in the fleet afloat until 2007 to 2009 and will take 20 plus years before the fleet is fully made up of VLCC's with advanced WHR. To put in another way, much of the negative abatement cost reductions identified by DNV and others actually do exist; but only since the big BFO price jump starting in 2005. Owners are responding to this jump in fuel cost about as quickly as they can.

The polite bureaucratese talks about "lack of responsiveness to economic conditions" and the like. Of course, what they are really saying is charterers and owners are too stupid to run their enterprises in an intelligent manner. I ran big tankers for 25 years. I know term charterers are not stupid; they know the difference between a fuel efficient ship and one that is not. I know owners aren't stupid. I know they try to search out every fuel saving that makes sense.

Hero or villain?

As an employee, you want to be a hero to a shipowner? Save him some fuel and marry the owner's daughter. We can have a valid debate about the best way to regulate CO2 emissions from vessels. But that debate must not be based on misconceptions. The belief that owners and charterers are unresponsive to fuel cost is a misconception. TO

This is an extract from a paper written by Jack Devanney of the Center for Tankship Excellence. The full paper can be found at http://www.c4tx.org/ctx/pub/

Footnotes:

1. Need and Purpose of an MBM, GHG-WG 3/2, 2010-12-22, submitted by the Bahamas, page 1
2. i bid, page 2
3. Second GHG Study 2009, MEPC 59/24/Add. 1, 2009-04-09, page 10
4. Det Norske Veritas, Pathways to Low Carbon Shipping, 2009-12-15
5. Another misconception that sometimes surfaces at the IMO is that a term chartered ship won't slow steam as much as a ship in the spot market, especially if the TC rate is high. It turns out that a term charterer faces exactly the same short-run optimization problem in minimising transport costs as a spot owner does in maximising profits. See 2. The Impact of Bunker Prices on VLCC Rates for a proof. From the point of view of the charterer's speed decision, the TC hire is a sunk cost.
6. This is the core reason competitive markets are efficient. The Bahamian statement shows little understanding of how competitive markets work. The same thing can be said of much of IMO's deliberations on CO2 reduction.
7. EEDI will effectively prohibit owners from doing this.
8. Second IMO GHG Study 2009, page 172 says 4%.
9. Stangely the most exciting and impactful recent technology is almost never mentioned, and that is the switch from camshaft to electronically controlled main engines. Not only does this result in a flatter SFC curve but more importantly allows ships to operate down to 20% power continuously. Camshaft controlled engines can only operated down to about 50% power. For tankers, this means that, when the market is in deep slump, we will have the entire fleet operating at 9 knots, rather than 75% of the fleet operating at 12 knots, and the other 25% laid up.
10. Most such lists also include "speed reduction" as a CO2 abatement measure, often with a 25% savings number. Slow-steaming is not a measure; it is a reaction. The reaction depends on the current fuel cost, spot rate and the ship's speed/fuel curve. It's happening all the time. If you want more of it, simply increase the owner's fuel cost.
11. Schack, C, Green Ship of the Future, Asia-Pacific Maritime, Singapore, March, 1010.
12. Antonopoulos, D, Ship Power Merchant, August, 2010.

Piracy - the biggest threat to shipping in the 21st century

Are we now on a war footing? Some shipping people say that the time has come to fight fire with fire as the threat of piracy escalates.

Opinions are divided on just how far the shipping industry needs to go to protect their assets and the lives of their crew. Some say put armed guards on the vessels, while others urge the industry to take a more cautious view.

The IMO's stance is that it is up to the individual flag states to decide whether the hiring of professional armed guards is the appropriate form of deterrent. There are many security firms offering all manor of advice and even hardware to protect vessels and the industry associations have produced what they call the 'industry best management practice'.

Recent events in the Indian Ocean, Gulf of Aden and off the Horn of Africa has made everybody sit up and take notice of the dangers lurking in the area. And it is not only this area that is affected. West Africa has always been a hot spot for political activity aimed at the oil majors and others and this continues unabated.

The pirates themselves are becoming more sophisticated in their day-to-day operations with the use of 'mother ships' the latest threat. The use of 'mother ships' gives the pirate gangs a greater range in which to operate. As a result, they have ventured ever closer to the Indian sub-continent and to the southern area of the Indian Ocean.

One disadvantage of using 'mother ships' is that they should be easier to trace than small skiffs, or small fishing vessels, given the number of coalition warships and attendant aircraft operating in the area. However, like the allies found with the Atlantic Ocean in World War II, it is a huge area to patrol.

The IMO recently launched an action plan to promote the 2011 World Maritime Day theme: "Piracy: orchestrating the response". At the launch, UN Secretary-General Ban Ki-moon said that the piracy situation was "completely unacceptable and requires an urgent and co-ordinated response."

Speaking at IMO's London headquarters, the secretary general welcomed the decision of IMO to pay special attention to piracy during the year ahead. "This is a timely and important initiative," he said.

IMO has been combating maritime piracy for some time and a series of measures, developed with the co-operation of the littoral States and the support of the industry, helped significantly reduce piracy in the hot spots of the late 1990s and the early 2000s: the South China Sea and the Straits of Malacca and Singapore.

IMO secretary general Efthimios Mitropoulos said; "Piracy and kidnapping have blighted the maritime community for too long and it is seafarers who bear the brunt." He added, "We believe that we can use the experience gained and the successes achieved in reducing piracy elsewhere to good effect in the current arena as well, but to do so requires a well orchestrated response."

The two secretary generals were joined at the launch by Ms Josette Sheeran, executive director of the World Food Programme (WFP); Yury Fedotov, executive director of the United Nations Office on Drugs and Crime (UNODC); Robert Lorenz-Meyer, president of BIMCO, representing the shipping industry; and David Cockroft, general secretary of the International

UN secretary general Ban Ki-moon addresses the IMO.

Transport Workers' Federation (ITF), representing seafarers.

All echoed their support for this latest IMO initiative. Fedotov said, "It is clear that the only viable long-term solution to the Somali piracy problem is to restore law and order in Somalia, including in its waters. It is also clear that this solution is some years off and will require concerted and co-ordinated international effort. UNODC's counter-piracy programme focuses on supporting regional prosecutions and on rebuilding Somalia's criminal justice capacity."

Ms Sheeran focussed on the humanitarian aspect of the problem. Acknowledging the success of naval escorts in protecting food aid for Somalia, she also highlighted new challenges created by the worsening situation. "The presence of Somali pirates in an ever expanding area is of great concern because they threaten not just food bound for directly for Somalia, but our food transiting through the ports of Mombasa (Kenya), Dar es Salam (Tanzania) and Beira (Mozambique) for vital operations in Zimbabwe, the Democratic Republic of Congo and other places with great humanitarian needs."

Speakers at the launch of IMO's action plan also pointed out the economic cost of piracy. Ban said, "ransom payments adding up to hundreds of millions of dollars have created a 'pirate economy' in some areas of Somalia that make them more resistant to efforts to develop alternative livelihoods. Economies throughout East Africa and beyond are experiencing the fallout."

Representing the shipping industry, Lorenz-Meyer said, "The attacks are not only attacks on ships, but also attacks on the global supply chain in one of the world's most vital sea lanes. They threaten a supply line of vital interests to the international community."

'This is a timely and important initiative' - Ban Ki-moon.

Cockroft said many crew members were at breaking point because of the stress of passing through the area frequented by pirates. "If the risks cannot be eliminated, then seafarers will demand not to sail into the area at all and responsible shipowners will support them," he said.

Mitropoulos said IMO's action plan aimed to make some genuine inroads into what, to date, has been an escalating problem.

"In the past 12 months alone", he said, "there have been 286 piracy-related incidents off the coast of Somalia. They have resulted in 67 hijacked ships, with 1,130 seafarers on board – while, at present, 714 seafarers are being held for ransom on board 30 ships scattered at various points of the country's extensive coastline."

Six point plan

IMO's action plan for 2011 has six prime objectives:

- Increase pressure at the political level to secure the release of all hostages being held by pirates.
- Review and improve the IMO guidelines to administrations and seafarers and promote compliance with industry best management practice and the recommended preventive, evasive and defensive measures ships should follow.
- Promote greater levels of support from, and co-ordination with, navies.
- Promote anti-piracy co-ordination and co-operation procedures between and among states, regions, organsations and industry.
- Assist states to build capacity in piracy-infested regions of the world, and elsewhere, to deter, interdict and bring to justice those who commit acts of piracy and armed robbery against ships.
- Provide care for those attacked, or hijacked by pirates and for their families.

Among other things, during 2011, IMO will focus on promoting further co-operation between and among states, regions and organisations in reducing the risk of attacks on ships through a variety of mechanisms, including information-sharing; co-ordination of military and civil efforts; and development and implementation of regional initiatives, such as the IMO-led Djibouti Code of Conduct.

The IMO said that its action plan would build on efforts to tackle the problem that have been underway for some time. For example, through the Djibouti Code of Conduct, information-sharing centres are being established in Yemen, Kenya and Tanzania, as well as a regional training centre in Djibouti. In partnership with the UNODC, IMO is helping to develop the legal framework necessary to prosecute pirates.

Mitropoulos unveiled a six-point plan.

Ban took the opportunity to emphasize where the real source of the piracy problem lies. "Although piracy manifests itself at sea," he said "the roots of the problem are to be found ashore. This is a complex issue. But in essence, piracy is a criminal offence that is driven by economic hardship, and that flourishes in the absence of effective law enforcement.

"The only truly successful way to address the problem in the long term," said Ban, "is through a strategy that focuses on deterrence, security, the rule of law and development. Our common goal must be a sustainable solution."

In conclusion, Mitropoulos said: "This year, we are resolved to redouble our efforts and, in so doing, generate a broader, global response to modern-day piracy. More needs to be done if the ultimate goal of consigning piracy to the realms of history is to be achieved. We hope that our choice of theme for 2011 will provide an appropriate rallying point around which all those who can make a difference can focus their efforts."

Following the 3rd February launch, it has been widely reported that several large tankers, including VLCCs, have been targeted, with the result that at least two have been hijacked. This problem will not go away until the whole world sits up and takes notice. TO

The economic cost of piracy

At the end of 2010, around 500 seafarers from more than 18 countries are being held hostage by pirates. Piracy clearly affects the world's largest trade transport industry, but how much is it costing the world*?

Oceans Beyond Piracy has completed a study on the economic cost of maritime piracy. The project set out to analyse the cost of piracy to three regions: (1) the Horn of Africa; (2) Nigeria and the Gulf of Guinea; (3) the Malacca Straits.

The focus has inevitably been on the costs of Somali piracy as this is the region where contemporary piracy is most highly concentrated and is the greatest source of current data and information. The project primarily analyses direct costs, but also considers some secondary (indirect) costs. The project is designed to be a collaborative effort, and Oceans Beyond Piracy said that it would welcome any data sources, comments, or other suggestions that interested stakeholders might have.

Ransoms

Over the past five years, ransoms paid to Somali pirates have increased from an average of $150,000 in 2005 to $5.4 mill in 2010. The largest known ransom payment was for the South Korean VLCC, *Samho Dream*. This vessel was ransomed for a record $9.5 mill in November 2010. By the end of 2010, approximately $238 mill was paid in ransoms to Somali pirates in that year alone.

Shippers purchase four main types of insurance as indemnity against piracy - war risk, kidnap and ransom (K&R), cargo and hull. The most significant increase in premiums has been in 'war risk' and K&R. The Gulf of Aden was classified as a 'war risk area' by Lloyds Market Association (LMA) Joint War Committee in May 2008, and is therefore subject to these specific insurance premiums.

The 'Cost of Piracy' model calculates the additional cost of insurance to the shipping industry by using a lower bound estimate (10% of ships purchasing these insurance premiums) and an upper bound estimate (70% of ships). From these calculations, it is estimated that total excess costs of insurance due to Somali piracy are between $460 mill and $3.2 bill per year.

Navy forces

By the publisher's calculations, around $2 bill is spent each year on naval operations off the coast of Somalia. The cost of naval presence comes in two forms:

1 The cost of each contributing naval vessel. These costs are calculated using approximations of the cost of deploying a ship per steaming day, and multiplying this number by the number of vessels deployed each year - currently around 43.
2) The administrative and staffing budgets of the 'big three' naval operations - Operation Atalanta, Operation Ocean Shield, and Combined Task Force 151.2.

Prosecuting piracy

Over 750 Somali piracy suspects have either been tried for piracy, or await trial in more than 11 countries. To calculate the cost of piracy prosecutions, the number of prosecutions held in three regions was taken into account: Africa and the Indian Ocean, Europe, and North America. This number was then multiplied by an approximation of the average cost of prosecutions for piracy or similar crimes in each region. The project estimates that the cost of piracy trials and imprisonment in 2010 to be around $31 mill.

A number of intergovernmental organisations are dedicated to working towards a solution for maritime piracy. These funds represent operating costs as well as established trust funds. The total budget of these organisations is around $24.5 mill.

Re-routing ships

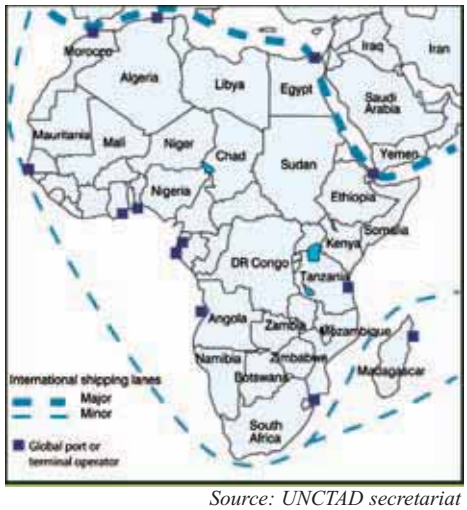
For some vessels, especially 'low and slow' moving ships, which are at the greatest risk of piracy attack, avoiding risk zones altogether may be a safer or cheaper option. Total excess costs of re-routing to those ships is estimated to be between $2.4 to $3 bill per year.

Shipowners may attempt to protect their property and crew from piracy attacks by

Organization	Funds
Contact Group on Piracy of the Coast of Somalia	$3.7 million
IMO Djibouti Code	$13.8 million
Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP)	$2 million
UN Office of Drugs and Crime (UNODC)	$5 million
Total Cost of Counter-Piracy Organizations	**$24.5 million**

Cost factor	Cost
Ransoms: (excess costs)	$148 million
Insurance Premiums	$460 million to $3.2 billion
Re-Routing Ships	$2.4 to 3 billion
Security Equipment	$363 million to $2.5 billion
Naval Forces	$2 billion
Prosecutions	$31 million
Anit-Piracy Organizations	19.5 million
Cost to Regional Economies	$1.25 billion
Total Estimated Cost	**$7 to $12 billion per year**

Country	Main Cost Factor	Loss Per Year
Egypt	Loss of revenue from Suez Canal fees (as ships re-route away from the Gulf of Aden)	$642 million
Kenya	Trade Impact	$414 million
Yemen	Trade Impact	$150 million
Nigeria	Losses to oil and fishing industry	$42 million
Seychelles	Losses to fishing and tourism industries	$6 million
Total Macroeconomic Costs		**$1.25 billion**



Source: UNCTAD secretariat

The alternative routes will add substantial costs.

preparing their ships with security equipment and/or guards prior to transiting a high-risk zone. The total cost of this equipment is between $363 mill and $2.5 bill per year.

Total costs

From the above calculations, the 'Cost of Piracy' project estimated the total cost of piracy in 2010 to be between $7 bill and $12 bill. This figure is not a definitive result, but an approximation. It should also be noted that like all economic assessments, these estimates reflect the current economic environment. It is worth remembering that as the international economy rebounds from the present economic recession, these numbers could be expected to change substantially.

UN Secretary General, Ban Ki-moon stated in November 2010: "Piracy... has had an immense impact on the economies of East Africa and also the wider world... International trade routes are threatened and goods in the region as well as Somalia are becoming more expensive." The table above shows just some of the costs different countries suffer, as a result of piracy.

Note that determining the macroeconomic impact of piracy is especially challenging because it is difficult to assess which costs result directly from piracy, and which costs are associated with general political or financial instability.

One Earth Future (OEF), a private foundation, is committed to seeking effective solutions to emerging governance challenges. OEF's first project was a strategic commitment to the Oceans Beyond Piracy project. Oceans Beyond Piracy seeks to engage and mobilise stakeholders to develop a global response that deals comprehensively with deterrence, suppression, and prosecution of piracy. TO

**This is an extract from a paper published by Oceans Beyond Piracy – www.oceansbeyondpiracy.org*

SharpEye™ radar performance improves pirate threat detection

The value of being able to detect small vessels approaching in any weather conditions, and automatically identify potentially hostile behaviour, is highlighted by a report of piracy in 2011's first edition of 'Maritime Feedback' (issue 28), a newsletter from CHIRP*.

"Thick low clouds and rain may provide a hiding place for pirate craft," warned a CHIRP report about an incident in the South China Sea. While passing the Anamabas Archipelago in the middle of the night, an officer of the watch noticed two small unidentified targets on the radar, and thick low clouds forming and developing in their direction.

The targets became lost in rain clutter. Some time later he received a distress call from a tanker in the vicinity advising that it had been boarded by pirates.

The 'lesson learned' was that a careful radar watch should be kept on areas of thick low clouds and rain, adjusting range and rain clutter accordingly, the watchkeeper concluded. "While this is good advice, the truth is that, in these conditions, most commercial marine radars will struggle to detect the type of small craft favoured by pirates," said Spike Hughes, Kelvin Hughes' commercial business director

"However, not all radars are the same. Our SharpEye™ solid state technology is exceptionally effective in detecting small targets, especially in high levels of rain and sea clutter and can prove a valuable tool in the early detection of pirates.

"Furthermore, SharpEye™ can help to take the strain off radar watchkeepers by automatically alerting them to craft displaying hostile behaviour patterns. Pirates typically use boats with very small radar cross-sections and approach their intended victims on a direct track, most often from astern and frequently at night.

"SharpEye's optional doppler processing means it can extract targets showing certain velocity characteristics. The detection process is completely autonomous of the display system and can be used to drive a MantaDigital display's second PPI. All targets meeting the velocity filter characteristics will be displayed, with a warning/alarm if required," Hughes said.

Better detection

SharpEye™ provides better detection of small targets than a conventional magnetron radar both because of its improved performance in clutter and by using doppler processing. These two factors combine to provide SharpEye with the best possible threat detection, approaching that of multi-million-dollar military systems, and gives a ship time to take appropriate counter-measures, Hughes claimed. TO

**Confidential Hazardous Incident Reporting Programme (www.chirp.co.uk).*

Anti-piracy – are weapons the answer?

This paper is intended to help inform the debate on the use of arms, in particular, armed 'sea marshals', in the protection of vessels conducting commercial business*.

A better understanding of the factors that will affect the maritime adventure with the introduction of weapons to vessels is required. The following is a summary of those factors.

The underlying motivation to arm vessels is a genuine desire to protect crews, ships and cargo. However, the debate currently seems to be driven more by the following: fear induced pressure on the stakeholders; the questionable authority of some proponents of arming ships; frustration throughout the industry at the apparent ease with which pirates can gain access and control of ships.

There is also much confusion on the subject of arming vessels, with the polarised views of the absolutely 'NO' lobby and the definitely 'YES' lobby, an uncertain legal environment, the effects of competing interests and the absence of real direction. The argument for arming ships increasingly relies on the use of the strap line "No ship with armed escorts has been taken." There are many equally true statements such as, "ships with particular funnel markings have not been taken".

In our view, the real debate should not be as to whether armed 'sea marshals' are appropriate for defense of vessels, but how to better protect shipping on a global basis. However, within the scope of this paper we will focus only on the issue of arms in protecting a maritime adventure.

In our view, the employment of armed guards does not, and should never allow the delegation of responsibility for their actions, or the accountability for the consequences from the employer.

Risk assessment

The starting point in the decision making process as to whether to employ armed support should be based on a full understanding of the risks that must be mitigated. In the context of this paper this is piracy, or perhaps more accurately, the unauthorised access to a vessel of unknown persons with a view to detaining the crew, ship and cargo for ransom of some kind, or the removal of cargo and/or possessions of value. (This covers situations globally).

It is fundamentally important to understand the modus operandi of pirates and their training and equipment; indeed, without an understanding any decision is likely to be flawed. Also, and in relation to Somali pirates, the debate as to whether they are actually pirates or terrorists, in the context of defending against them, is purely academic and has more to do with political agendas than providing a solution to the problem, and has no place in the threat assessment other than help define their motivation.

In any risk assessment, it is advisable to look at the situation from the attacker's perspective. It is also important to understand the three elements that are necessary for any successful attack.

1. Motivation: This is clearly a commercial proposition with large sums to be made.
2. Opportunity: This is provided by the target market, ie ships; and in the case of transiting the Gulf of Aden it is fundamentally important to understand the opportunity a vessel presents to any potential attacker.
3. Capability: This is the resource, expertise and the training required by pirates to be able to take advantage of any opportunity presented to them.

With regards to motivation, if we are successful in removing the opportunities that exist and restrict the capabilities of the pirates it will become a less rewarding enterprise for pirates and in doing so we attack their motivation.

A brief example of this may be that if 20,000 plus ships transit the Gulf of Aden each year, this provides 20,000 possible opportunities. While other obvious factors will remove some of these transiting vessels from the 'opportunity' category many more vessels could remove themselves from it if their masters and crew understood and were confident in the defensive capabilities of their vessels.

Size, speed and freeboard are characteristics that, if supported by good procedures, should require no additional security and, properly utilised, will put many ships beyond the capabilities of the pirates. In principle, the identification and removal of as much opportunity as is possible-without affecting the commercial enterprise- and the restriction of the pirates' capability to effectively deploy

Proper consideration should be given when thinking of arming vessels. Photo credit - Kelvin Hughes.

their resources combined with good procedures and their effective application will substantially mitigate the risk and will reduce the threat to shipping in general.

Of fundamental importance is that to achieve their aim, pirates must gain access to the controls of the target vessel. Gaining access to the deck alone need not necessarily provide access to controls. In any attack, we need to look at it from the pirate's perspective and the problems confronting them in achieving their objectives. They must come alongside the target vessel; they must climb the vessel to gain access to the deck; they have to traverse the deck and companionways to gain access to and take over the controls. They must make a transit to a safe port and then carry out the rest of their activities.

Difficulties that will confront pirates are; sea states, bad weather, height and difficulty of freeboard to climb, speed of target vessel, wash and manoeuvring, as well as weapons effectiveness (they do not have the weapons with the capabilities of stopping the majority of ships unless their intimidating image prevails!). A stationary vessel in a calm sea is a considerably easier prospect than one that is manoeuvring at speed.

From considerable experience in shooting, training and developing shooting techniques, we can testify to the difficulties experienced by most professional soldiers in achieving hits over 100, 200 and 300 m, when firing from a stable ground platform against a stationary target fixed to a stable platform in a benign range environment.

When you apply any movement at either end, the difficulty increases dramatically and when movement is at both ends, accuracy is replaced by luck. The chances of anyone firing from a moving skiff and hitting what they are aiming for, is very low. A hit with even an RPG7, to do any serious damage, would have to be luckiest shot in the world, and would certainly not be the result of deliberate aimed shot at a specific point on the vessel.

The use of weapons to counter piracy needs to be carefully thought through. The application of weapons should be a staged approach with the first being deterrence. For deterrence to be effective, knowledge of the weapon systems presence must be with the pirates. It must also be in their minds the fact that the weapon systems on board the vessel are more powerful than their own otherwise any deterrent effect is diminished.

To achieve this, the weapons systems on board have to be prominently displayed at least at the point of danger.

GAC Solutions provides security services.

The next stage where deterrence has failed is to effectively neutralise an attack. The weapons must either be able to put down sufficient fire power as a demonstration to clearly convince pirates that further attack would not be in their interest; or be of sufficient accuracy to disable the power units of pirate vessels; ideally without endangering any of the occupants of the pirate vessel.

This requires a category of weapons that can be described as 'specialist'. Weapons such as pistols, shotguns and single shot rifles are not capable of providing a deterrent. Neither are they capable of effectively stopping a determined armed attack. Of equal importance is the expertise of those handling the weapons systems on board ship and this is an area where the shipping industry will find it most difficult to determine.

Having served in any branch of any military for any length of time will not, on its own, illustrate the capability of security personnel with any weapons system. There is no effective system of accreditation for security companies in the world. Some of the companies who have signed up for latest Swiss generated protocols have dubious histories in relation to application of standards and there is no way of effectively policing whether or not a company complies with what it has signed up for.

When the risks are fully understood, the appropriate weapons systems have been identified and are manned by those of requisite experience so that the advantage and control of situation clearly lies with the ship and its security there needs to be clear rules of engagement to cover every situation.

Perhaps two of the most difficult areas within the rules of engagement are:

1. Who has control of the situation?
2. What actually constitutes a risk to life whereby, pirates would be engaged with lethal force?

It is our view that in all circumstances the Master must have control (and this is probably the legal position), supported and advised by the head of security. What constitutes a risk or a threat to life will, in many cases, be subjective and dependent on the experience of those security operatives involved and this could increase dramatically the potential for criminal error.

Summary

To achieve and then maintain control, the industry needs to institutionalise a better understanding of the actual risks confronting it. It must also have the means to communicate this knowledge to individual ships' Masters, officers and crews, so that all can and do understand the actual risks and how to mitigate them. In situations where it is considered appropriate to have weapons on board vessels, there needs to be a clear understanding of what constitutes appropriate weaponry that will effectively provide deterrence, and where deterrence fails be capable of effectively neutralising an armed and determined attack.

Where weapons are deployed, it is absolutely critical that those employed to operate them have the appropriate skills and experience and are also current in weapon use. Finally, rules of engagement need to be appropriate and have to be realistic; and there must be absolute clarity as to who has control.

The legal ramifications of this practical consideration are likely to be extensive.

Without proper consideration of the factors above, the deployment of weapons on vessels will do nothing to reduce the risk of piracy to shipping and could in fact perversely add further and unnecessary risks to the industry at considerable extra cost. TO

**This is an extract from a paper written by: Andrew Kain, CEO and Ric Filon, director maritime services, AKE Ltd. AKE acknowledges an interest through its support to GAC Solutions in the provision of maritime security services and support to maritime clients.*

Shipping's stance on armed guards

The International Chamber of Shipping (ICS) - whose executive committee comprising representatives of national shipowners' associations from over 30 countries met in London recently - has decided to clarify its stance on the use of private armed security guards.

ICS said that there is a ' vital need' for the military to disable the hijacked 'motherships', which the pirates are now using to launch attacks throughout much of the Indian Ocean.

Chairman, Spyros Polemis, explained: "ICS has had to acknowledge that the decision to engage armed guards, whether military or private, is a decision to be made by the ship operator after due consideration of all of the risks, and subject to the approval of the vessel's flag state and insurers. The consensus view amongst shipping industry associations remains that, in normal circumstances, private armed guards are not recommended and are a clear second best to military personnel.

"However, in view of the current crisis in the Indian Ocean - with over 700 seafarers held hostage and, most recently, a seafarer being executed – ship operators must be able to retain all possible options available to deter attacks and defend their crews against piracy. Many shipping companies have concluded that arming ships is a necessary alternative to avoiding the Indian Ocean completely, which would have a hugely damaging impact on the movement of world trade.

"The eradication of piracy is the responsibility of governments. Frustratingly, politicians in those nations with the largest military navies in the region show little willingness to increase resources to the extent that would be necessary to have a decisive impact on the problem of piracy. Western governments, at least, appear to give the impression that this otherwise unacceptable situation can somehow be tolerated. Sadly, until we can persuade governments otherwise, the use of armed guards by ships is very likely to continue increasing," he concluded.

'The use of armed guards by ship is very likely to continue increasing,' Spyros Polemis.

ICS advises that the shipping industry will meanwhile be looking at all possible options, including alternative routes, which could have a very dramatic effect on transport costs and delivery times. If increasing numbers of ships decide to divert around the Cape of Good Hope, this will almost certainly have a major impact on inventories and costs throughout the whole supply chain and, most particularly, on the cost of oil. It could also greatly damage the economies of Africa and the Middle East at this very politically delicate time.

Commenting on the situation, leading parcel tanker owner Stolt Nielsen (SNSL) said that the company will first and foremost do what it takes to protect its crews and, in so doing, the ships and their cargoes.

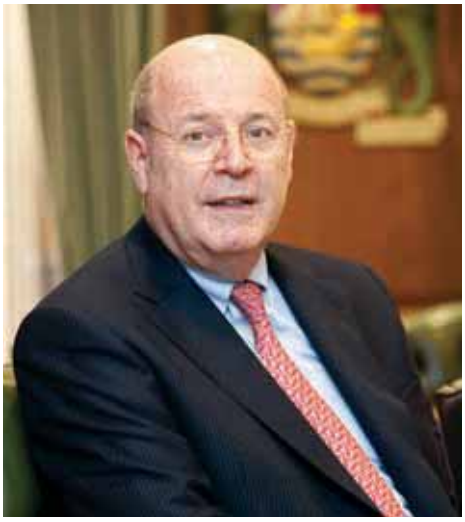
SNL said that it supports outside government intervention to stabilise Somalia, as shipping industry organisations have been urging for some time. Anarchy on land enables anarchy at sea.

It is unrealistic to expect an end to piracy without establishing some form of government order in Somalia. Furthermore, the company fully supports industry calls on governments for more - and broader - naval protection. The piracy situation is not improving, it is escalating. Governments collectively need to step up to the challenge by taking action now and not wait and hope that the problem will disappear, the company said in a statement.

In view of the current crisis in the Indian Ocean, ship operators must be able to retain all possible options available to deter attacks and defend their crews against piracy. When the company has no alternative it will continue the use of armed guards, which has proved to be effective as a deterrent.

SNL stressed that the risk assessment and mitigation measures deployed have been shared fully with flags, insurers and major customers - and that the company is in full compliance with all of their requirements.

Speaking at the UK annual Chamber of Shipping dinner in February, outgoing chairman Shell's Jan Kopernicki said; "The sudden deterioration over the last two months in the security of shipping off Somalia and throughout the Indian Ocean is a cause of major concern – for its spread and for the increasing levels of violence threatening our seafarers despite very good support from governments and military alike.



'This is a military problem and now needs enhanced military responses,' Jan Kopernicki.

"This is a time when political, military and industry responses must now be increased, as we work together to implement urgent solutions before the situation develops yet further out of hand. We welcome the profile given to piracy by its designation as the theme for this year's IMO World Maritime Day.

"This is no longer just a local Somali problem. This is an industrialised activity, with mother ships marauding right up to the Indian coast. I won't venture into a discussion about whether to arm merchant ships, but I will say that the current mother ship menace, the execution of seafarers and the increased aggression of attacks will only be subdued by focussed military action in the next two to three months.

"This in turn means that politicians need to give their military, whether in the UK or elsewhere, the freedom to take more explicit measures. The unofficial arming of merchant ships has not prevented the development of the current situation, nor will it, or a legalised version of it, provide the solution.

"This is a military problem and now needs enhanced military responses. And the industry fully understands the risks and difficulties involved, so I don't make these observations lightly, " he concluded. TO