IACS briefing

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CLEANER SEAS

SUMMARY:

Safer ships reduce risk to the ocean environment. And of all the major transport modes, shipping already has the lowest impact in energy used and pollution created.

By comparison with other economic activities, the industry is one of the most responsible ocean users. The greatest threats to cleaner seas come from land-sourced pollution.

Together, manufacturing, agriculture, forestry, tourism and coastal economic and population development, reclamation and over fishing all pose greater hazards to environmentally healthy seas than world shipping.

Through continuing evolution of its regulatory structure, the maritime industry is working to minimise its impact even further. The main regulations for preventing pollution from ships are covered by IMO's MARPOL 73/78 - the International Convention for the Prevention of Pollution from Ships, which entered into force in October 1983. It has been continuously reviewed and amended as and when deemed necessary.

Currently, MARPOL 73/78 has five Annexes, which variously address the pollutants of: Oil (Annex 1); Noxious liquid substances (Annex 2); Harmful Substances (Annex 3); Sewage (Annex 4) and Garbage (Annex 5). Air pollution from ships will be addressed in Annex 6, the target date for entry into force being not later than 31 December 2003. Continuing IMO initiatives and processes for conventions to bring cleaner seas are focused through its Marine Environment Protection Committee - MEPC - established in 1973.

Shipping is also subject to various world wide and regional protocols, conventions and agreements - and to the increasing emphasis in national laws on protection of territorial waters.

The combined provisions of IMO's conventions and these additional regulations may increasingly be invoked by signatory states through their respective Port State Control (PSC) mechanisms. The developing strength and recognition of PSC is an important weapon in the campaign to minimise the risk and incidence of ocean pollution.

This Briefing notes specific opportunities and current industry initiatives to minimise the impact of shipping on the ocean environment - and thus help to maintain cleaner seas. These include:

- Developments in tanker operations and technology to further minimise oil pollution;
- Reduction in engine exhaust emissions to minimise air pollution;
- Development and mandatory use of non-toxic hull protective coatings;
- Greater environment consciousness in the handling of ballast water.

The challenge to health, safety and the environment posed by shipbreaking is also being considered.

2 OVERVIEW:

Of the major transport technologies, shipping arguably causes the least harm to the marine environment.

For example, according to the International Chamber of Shipping (ICS), the industry moves 80% of world trade by volume but generates less than 2% of global emissions into the atmosphere of carbon dioxide, the greatest single factor driving "global warming".

Shipping uses only 10% of the energy used by road transport; 20% of rail transport energy consumption - and has reduced its energy consumption over the past two decades by 30% in real terms.

Given the massive contribution which it makes to the international community, shipping is steadily reducing its environmental impact. The ICS estimates that, taking account of annual growth in seaborne trade, the shipping industry's carbon dioxide emissions per tonne-mile of cargo carried will, in 2000, be 86% of 1990 levels and 76% of that level by 2010. This will be a near-25% improvement in just two decades.

3 OIL SPILLS:

Oil spills from tankers are the most emotive form of ocean environment pollution associated with shipping. But the industry's record has dramatically improved in recent years.

According to INTERTANKO, accidental spills from tankers account for only about 5% of marine oil pollution - with land-based oil sources responsible for the greatest single cause in this category.

An Oil Spill Intelligence report in mid-1998 noted that, in 1997, worldwide spills totalled 49m. gallons in 136 marine and inland incidents - the lowest number since 1968. Pipeline spills during that year outnumbered those from tankers by 2:1 with pipeline, storage tank and other facilities accounting for a total spillage of just under 24m. gallons.

More recent incidents - such as the late 1998 North Sea accident involving the cargoship Pallas and the New Carissa grounding on the US West Coast early this year - have emphasised the environmental damage potential of bunker spills from non-tankers..

Regimes for escort tugs in some environmentally sensitive areas; mandatory fitment of emergency towing arrangements fore and aft (from 1 January 1999 for tankers of 20,000 dwt. and greater) and research in Japan into improved hull crash-resistance have been further developments towards safer tanker operations.

Meanwhile, IMO is to hold a conference in 2000 that will consider a new protocol in the response to marine pollution alerts that involve chemicals - notably hazardous and noxious liquids. A framework for international co-operation in combating incidents could require vessels to carry a pollution emergency plan.

4 EXHAUST EMISSIONS:

Relative to all other forms of transport, shipping has the lowest relative level of exhaust pollution. Systems to reduce NOx (nitrogen oxide); SOx (sulphur dioxide) and CO (carbon monoxide) exhaust emissions from marine diesel engines have been progressing since the 1980s.

Fuel injection technology improvements are said to have lowered NOx emissions by as much as 30% in some installations. Selective Catalytic Reduction (SCR) systems, fitted "downstream" from main propulsion and auxiliary machinery units, have proven able to reduce NOx output by a claimed 90%.

The MEPC has recently approved interim guidelines for the NOx Technical Code, which

establishes testing procedures for diesel engines to ensure compliance with the contemplated MARPOL 73/78 Annex 6. Under this Annex, newly-installed main propulsion and auxiliary engines will be subject to strict NOx exhaust ceilings.

However, the very latest pollution-reduction technologies are enabling engine builders to meet limits even stricter than those being considered at IMO by its Marine Environment Protection Committee (MEPC) - notably for ferries intended to operate in Scandinavian waters, and which must comply with strict national limits being imposed by Sweden and Norway.

To incentivise "cleaner ships", vessels failing to meet increasingly stringent emission limits are likely to be penalised through differentiated port and fairway dues, on the "polluter pays" principle.

Meanwhile, improved hull forms, and more efficient propellers and engines have also combined to reduce fuel consumption and thus engine exhaust emissions impact on the ocean environment from shipping operations.

5 HULL COATINGS:

The MEPC at IMO has recently (late 1998) called for a ban on the use of organotin compounds, including tributyltin (TBT), in anti-fouling paint systems.

The proposal will ban the application of organotin compounds from January 2003 and their presence on ships' hulls from 2008. In a draft Assembly Resolution, the MEPC noted that some anti-fouling systems posed a substantial risk of adverse impact on ecologically and economically important marine organisms.

With some estimates suggesting that three in every four ships will need new kinds of protective coating, the TBT ban will significantly reduce the environmental impact of the world's merchant fleet.

Most current anti-fouling products are based on TBT technologies - although some marine paint companies are well advanced in meeting the challenge of new products that can prevent marine growth without harmful environmental effects.

6 BALLAST WATER:

The world's merchant fleet handles an estimated 10 billion tonnes of ballast water each year. Water transfer on this scale may hazard the ocean environment because conditions in ballast tanks can nurture harmful aquatic organisms. Such organisms will be present in water ballast when on board in some parts of the world and could be harmful if de-ballasted later elsewhere.

On release in new locations during de-ballasting, these organisms may threaten local ecosystems, by harming fish stocks and rare species. IMO experts have warned that as ships travel faster, shortened voyage times increase the life expectancy of - and the threat posed by - toxic organisms. Mid-ocean ballast water exchange may reduce the problem but may not always be possible due to safety hazards involved. It therefore follows that other means of ballast water management should be seriously considered. Nevertheless, the USA and Australia have led calls for tough new regulations involving ballast water exchange at sea.

At IMO, a draft instrument regarding ballast water management could be ready for consideration in 2000 by the MEPC. This would succeed an IMO Guideline on ballast water and harmful alien species, introduced in 1991.

Port State Control is expected to play a major role in implementing any new ballast water management requirements - with potential denial of port entry to vessels unable to verify either an acceptable ballast water management plan, or compliance therewith.

7 SHIPBREAKING:

With over 35% of the world fleet now more than 19 years of age, demolition figures are widely expected to rise over the next few years. The trend has already begun: after three years of reductions, ship scrapping rose by 16% in 1998, to 9.1m. gross tonnes. Indications are that the figure will be matched or exceeded this year.

The Health, Safety and Environment (HS&E) issues associated with shipbreaking - especially at the industry's current centre, in India - have raised concerns. These have notably included focus on working conditions - and the specific health risks associated with the former common usage of, for example, asbestos and lead-based paints.

These hazards and considerations represent additional challenges to the maritime industry, and its shared responsibilities for best and safest practice through the total cycle of ship design, through-life maintenance and ultimate safe disposal.

IACS is concerned that hasty development and application of policies which impose constraints on shipowners' ability to scrap ships will lead to the continued employment of ships which would otherwise have been scrapped.

IACS is reviewing whether attention to the initial design of new ships can be used as a means to reduce end-life environmental impact. Members' consultancy services will be available to respond to requests for technical assistance regarding existing ships. Areas of potential service could include, for example, assessment of quantities of potentially toxic substances or environmental impact asssessments.

8 IACS' CONTRIBUTION:

IACS Members' class rules, requirements and guidelines to maintain a ship's structural "fitness for purpose" throughout life play a major role to minimise the impact of shipping on the oceans.

Class has been the technical partner in almost every major step forward in ship technology - the double-hull oil tanker being a prominent example in recent years. Together, IACS' Members invest more in ship structural design and engineering research and development than any other single organisation in commercial shipping.

As the technical foundation of Port State Control, class rules are equally in the forefront of operations to curtail and eliminate the operation of the sub-standard vessels that pose one of the greatest potential threats to clean seas.

IACS Members' technical consultancy and advisory services also play a key role in the safe and responsible operation of shipping and the offshore industries. With its unique fund of knowledge and experience, IACS is committed to a full role in the maritime industries' shared obligations to achieve safer ships and cleaner seas.

Dedicated to safe ships and clean seas, IACS makes an unique contribution to maritime safety and regulation through technical support, compliance verification and research and development.

More than 90% of the world's cargo carrying tonnage is covered by the classification design, construction and through-life compliance rules and standards set by the 10 Member Societies and three Associates of IACS.

IACS

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