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Paper for the House Committee meeting on 2 November 2007

**Report of the Subcommittee on
Merchant Shipping (Prevention of Air Pollution) Regulation**

Purpose

This paper reports on the deliberations of the Subcommittee on Merchant Shipping (Prevention of Air Pollution) Regulation (the Subcommittee).

Background

2. The MARPOL Convention (“MARPOL”) is the main international convention adopted by the International Maritime Organization (IMO) for the prevention of pollution to the marine environment from ships. MARPOL was first adopted in 1973 and was modified by the Protocol of 1978 to deal with different types of pollution by ships. The combined instrument (Annex I and Annex II) entered into force in 1983, followed by other Annexes in later years. There are at present six Annexes to MARPOL. Annex VI, which relates to the emission of harmful substances from ships, was adopted in September 1997 at the International Conference of Parties to MARPOL held in London, and has come into force internationally since 19 May 2005. Subsequent amendments to this Annex VI adopted by IMO Resolution MEPC 132(53) have also entered into force since 22 November 2006 (hereafter referred to as MARPOL Annex VI).

The Regulation

3. The Secretary for Transport and Housing has made the Merchant Shipping (Prevention of Air Pollution) Regulation (the Regulation) under Section 3(2) of the Merchant Shipping (Prevention and Control of Pollution) Ordinance (Cap. 413) to implement MARPOL Annex VI in the Hong Kong Special Administrative Region (HKSAR). The key elements of the Regulation include:

- (a) imposing restrictions on the emissions of certain harmful substances from specified ships by imposing control on the emissions of ozone depleting substances (ODS), nitrogen oxide (NO_x), volatile organic compounds (VOCs) and sulphur oxide (SO_x); as well as control on shipboard incineration and the quality of fuel oil used on board;
- (b) requiring ships of 400 gross tonnage or above to have on board the International Air Pollution Prevention Certificates or the Hong Kong Air Pollution Prevention Certificates before engaging in international or non-international voyages as appropriate in order to ensure that the equipments of the ship is in full compliance with MARPOL Annex VI or the Regulation;
- (c) setting out general preventive controls on regulated Hong Kong ships by imposing survey and certification requirements including the application, issue and cancellation of relevant certificates, as well as the survey requirements before issuing the certificates;
- (d) specifying that parties who contravene the relevant requirements under the Regulation will commit an offence and will be liable on conviction upon indictment to a fine at level 6, and on summary conviction to a fine at level 3; and
- (e) providing that in any proceedings for an offence under the Regulation, it is a defence for the person charged to show that he had taken all reasonable steps to prevent the commission of the offence.

4. According to the Administration, the Marine Department (MD) will authorize Classification Societies to carry out the relevant survey and certification work but such services may still be rendered by Government surveyors. To provide the necessary legal backing to charge and collect fees for providing such services, a separate amendment to the relevant subsidiary legislation, i.e. the Merchant Shipping (Prevention and Control of Pollution) (Fees) Regulation (Cap 413L) (the Fees Amendment Regulation) will be introduced in due course. Upon the enactment of both the Regulation and the Fees Amendment Regulation, the Government will request the Central People's Government to notify IMO of the application of MARPOL Annex VI to HKSAR. The Administration expects that the two regulations would be implemented in mid 2008.

The Subcommittee

5. The House Committee agreed at its meeting on 5 October 2007 to form a Subcommittee to study the Regulation. The membership list of the Subcommittee is in **Appendix I**. Under the chairmanship of Hon Miriam LAU Kin-ye, the

Subcommittee held two meetings with the Administration to examine the Regulation and related issues.

Deliberations of the Subcommittee

6. Members of the Subcommittee support the Regulation in principle to bring vessel emission standards in Hong Kong on par with international standards promulgated by IMO. Nonetheless, during the scrutiny of the Regulation, members have identified a number of issues relating to the requirements and implementation of the Regulation which are of concern to the marine industry, as well as broader issues relating to air pollution caused by vessels in Hong Kong waters. The deliberations of the Subcommittee are summarized below.

Implementation of MARPOL Annex VI in Hong Kong

7. The Subcommittee notes that the purpose of the Regulation is to implement the requirements of MARPOL Annex VI for prevention of air pollution from ships in Hong Kong. Hence requirements specified in MARPOL Annex VI including prohibition of the release of ODS from ships, imposition of NO_x emission standards on diesel engines fitted in vessels and a 4.5% m/m cap on the sulphur content of fuel oil used on board ships, controlling VOCs emission from tankers etc, have been adopted in the Regulation. However, members note that in respect of the standard on SO_x, ocean-going vessels are in general supplied with fuel with sulphur content of around 3.8% m/m in Hong Kong while most local vessels are already using fuel with sulphur content of as low as 0.5% m/m. Members are concerned about the effectiveness of the 4.5% m/m sulphur content cap in enhancing improvement in air pollution in Hong Kong and has therefore suggested that consideration be given to lowering the cap.

8. The Administration's explanation is that the emission standards in NO_x and the sulphur content cap of 4.5% m/m are global standards set in MARPOL Annex VI. As an associate member to IMO, Hong Kong has to fulfill its international obligation to adopt the same standards for ocean-going vessels. The suggestion of imposing higher emission standards on such vessels may discourage them from coming to Hong Kong, thereby adversely affect the competitiveness of Hong Kong Port and Hong Kong's status as an international maritime centre. There would also be significant implications on Hong Kong's cargo throughputs and related trades.

9. The Administration also points out that as fuel oil whose sulphur content exceeds 4.5% m/m is still available on the market, there is a genuine need to legislate against the use of such fuel oil on board. Ships are required to comply with a more stringent sulphur content cap of 1.5% m/m when they are within SO_x emission control area (SECA). Currently the Baltic Sea and the North Sea are designated SECAs under MARPOL Annex VI. If Hong Kong and the neighbouring ports could satisfy the relevant requirements of a SECA, consideration could be given to applying to IMO to

set up a SECA in the Pearl River Delta (PRD) region. As regards the need to bring down the sulphur content cap of 4.5% m/m, the Administration further advises that IMO has commenced a review on the sulphur content requirements recently with a view to tightening the standards in this regard. One of the proposals is to gradually lower the global cap on sulphur content to 3% m/m in 2012 and 1.5% m/m in 2016.

10. As regards control of NO_x, the Subcommittee notes that MARPOL Annex VI standard is the international standard currently adopted in the world for the emission of NO_x from marine diesel engines. New engines available after 1 January 2000 on the market for local vessels are generally in compliance with MARPOL Annex VI standard. These new diesel engines complying with the requirements will reduce NO_x emissions by about 30% compared with existing engines. Technically, simply reducing NO_x emission will seriously affect other engines parameters, which will lead to a reduction of efficiency and thus emission of more carbon dioxide. While IMO is still discussing the new emission standards, it is not likely that engines with higher emission standard for marine applications will be available on the market. Hence, raising NO_x emission standard may not be technically feasible at this stage.

11. While appreciating that it might be inappropriate for Hong Kong to implement more stringent emission standards than those under MARPOL Annex VI, the Subcommittee has enquired whether the Administration would explore the feasibility of imposing higher standards on local vessels under the Regulation including ferries plying the harbour and those between Hong Kong and ports in PRD. The Administration acknowledges the need to enhance air quality in Hong Kong and emphasizes that measures on various fronts are being studied, such as encouraging the use of cleaner fuels in industrial and commercial processes, to pursue the objective. It nevertheless highlights the importance of as the first step at least in bringing the local standards in Hong Kong on par with the current international standards, which is exactly the objective of the Regulation. As an associate member of IMO, the HKSAR Government is keen to enact the Regulation as soon as practicable to implement the most up-to-date MARPOL Annex VI which has come into force since November 2006. So far, 43 members of IMO have signed up to Annex VI. In order to ensure that regulated ships will comply with the requirements set for fuel oil quality, the Regulation will require local fuel supplier to prepare a bunker delivery note recording the details of fuel oil and a representative sample of the fuel for the ship. Subject to the exemption given by the Director of Marine, owners or operators of ships will be required to keep on board such note and fuel sample for a certain period for inspection. Implementation of the Regulation would enable MD to check ships' compliance with requirements of fuel oil quality on board.

12. Whilst noting the Administration's view above, the Subcommittee has urged the Administration to examine the feasibility of tightening the emission standards on SO_x for local vessels in the long run having regard to local circumstances, as well as to study the need for establishing a SECA for PRD area. As far as reduction of emissions from ships is concerned, members are advised that the Chief Executive has undertaken in his Policy Address 2007-08 to study the feasibility of requiring all vessels plying the

harbour to use high-quality fuel. The Administration assures members that measures in this regards would help reduce emissions from ships and that the Administration would take forward the study seriously.

Regulation on emission of volatile organic compounds

13. In respect of emission of VOCs, some members have raised concern about the lack of regulation over VOCs emission from unloading of oil from tankers to depots and from bunkering of ships. The Administration has explained that control on VOCs under MARPOL Annex VI mainly relates to operations of loading of crude oil, petroleum products and chemicals from terminals or refineries to tankers. Hence, the Regulation has reflected the requirements in these aspects. It further advises that emission of VOCs from tankers has negligible effect in Hong Kong because Hong Kong is not an oil loading port. Nevertheless, the requirement would reduce the emission of VOCs from Hong Kong registered ships when loading cargoes of crude oil, petroleum products and chemicals in other ports of the world. On the regulation of VOCs emission during unloading of organic chemicals from oil tankers to the terminal, the Administration has advised that it is controlled by the floating roof and/or a vapour control system at the storage tanks under the licence conditions of the Environmental Protection Department. As to the concern about VOCs emission from bunkering of ships, the Administration assures members that a very low level of VOCs will be discharged during such operation.

Regulation on emission of nitrogen oxide

14. The Subcommittee notes that owners of local vessels have raised concerns about the requirements under the Regulation, in particular the requirements on existing marine diesel engines and the need of replacing the engines in order to meet the emission requirements on NO_x, as well as the requirements of newly-built vessels. To reflect views of the local marine industry and enhance communication with MD in this regard, the Subcommittee also notes that the local marine sectors have recently set up a Joint Conference of Hong Kong Marine Sectors (The Joint Conference) comprising fishermen organizations, cargo vessel traders' association, motor boat and tug boat association, machinery traders' association etc. The Joint Conference sees the need for MD to consult and brief the marine sectors on the requirements and implementation details of the Regulation.

15. The Administration advises that MD has started briefing the local maritime industry on the requirements of MARPOL Annex VI as early as 2005, and consulting the industry thereafter through the then Provisional Local Vessels Advisory Committee and other channels on the drafting and implementation of the Regulation. Details including the definition of "relevant diesel engines", relevant standards and the requirements for such engines are clearly provided in the Regulation.

16. In respect of the concerns about control requirements on emission of NO_x, the Administration explains that MARPOL Annex VI has specified that a diesel engine

with a power output of more than 130 kW which is installed on a ship constructed, or that the engine has undergone a major conversion, on or after 1 January 2000 has to comply with NO_x emission control requirements. However, under Annex VI, exclusion may be given to such diesel engines installed on a ship solely engaged in domestic voyages from the requirements provided that the ship is constructed, or the ship's diesel engine has undergone a major conversion before the commencement date of the Annex (i.e. 19 May 2005). In the Regulation, "relevant diesel engines" is defined as a diesel engine with a power output of more than 130 kW (equivalent to about 174 hp). As regards the cut-off date for relevant diesel engines installed on local vessels, the Administration has originally proposed to adopt the same date of 19 May 2005 for the Regulation. However, as reflected by the marine industry on the operational difficulty in meeting this date due to the industrial practice of having spare engines and the fact that some engines had been ordered or even installed on board after that day when the consultation was conducted, the Administration has eventually modified the requirement on relevant diesel engines in the Regulation by specifying that the "commencement date" refers to the commencement date of the Regulation instead of Annex VI. As a result, the relevant diesel engines installed on local vessels constructed before the commencement date of the Regulation and the engines that have not undergone a major conversion on or after that date are not subject to the emission standard of NO_x emission.

17. To address the concern about spare engines for local vessels, the Administration advises that MD has introduced through administrative means in early 2007 the voluntary registration of existing diesel engines for local vessels. Under the registration system, a shipowner may register one spare engine for each engine fitted on the vessel, including the main and auxiliary engines of over 130kW, such as generator engines, crane operating engines onboard non self-propelled vessels. The serial numbers and other particulars of spare engines should be submitted to MD for registration on or before the commencement date of the Regulation. Registered spare engines would be considered as existing diesel engines which could be used on board the concerned ship after the implementation of the Regulation. According to the Administration, some 40 spare marine diesel engines have been registered.

18. In view of the technical nature and complexity of the Regulation, the Subcommittee stresses the need for the Administration to brief and consult the Joint Conference on the requirements involved and detailed arrangements for implementation. They note that MD has held several meetings with the Joint Conference to explain these details, as well as promote the registration system. As a result, the local marine industry has reached a consensus on the registration system and reflected the views to MD. The Administration advises that at the last meeting on 22 October 2007, the Joint Conference was briefed on the latest proposal for implementing the Regulation and the details of the proposed registration system for existing diesel engines. All the representatives of the Joint Conference unanimously lent support to the implementation of the Regulation, and welcomed the registration system. MD and the Joint Conference have also reached a consensus on the details of the registration system including the maximum number of registered spare engines for

each vessel and the supporting document to accompany with the registration. Meanwhile, the Joint Conference agreed to facilitate the dissemination of all relevant information to the industry. Members call on the Administration to implement the registration system with flexibility in meeting the industry's practices and operation as far as possible. They also concur that the Administration should continue engaging the Joint Conference. They note that prior to the commencement of the Regulation, MD will meet with the Joint Conference on a regular basis to sort out the detailed arrangements for smooth implementation of the Regulation with the local marine sectors.

Concern about increase in compliance cost

19. The Subcommittee notes that owners of local vessels have expressed concern about the availability of cleaner fuels in Hong Kong catering for the bunkering need of ships and the need for ships to upgrade their engines in meeting emission standards on NO_x, thereby increasing the compliance cost of the industry. In this regard, members consider it necessary for the Administration to understand the type of fuel oil used by vessels and the readiness of fuel suppliers in providing cleaner fuels so as to strike a proper balance between increasing the compliance cost on the industry and preventing air pollution from ships.

20. The Administration points out that in order to monitor the worldwide average sulphur content of residual fuel oils supplied for use onboard ships, IMO has conducted a worldwide survey after the implementation of MARPOL Annex VI. Results indicate that the calculated average sulphur content of fuel oil used on board ships in 2006 is 2.59% m/m, and there is a ready supply of fuel that meets MARPOL Annex VI standard around the world to facilitate the smooth implementation of the current IMO emission standard. The Subcommittee also notes that local fuel oil suppliers have confirmed that they would have no problem to meet the new requirements. So far, 15 suppliers have confirmed their readiness to supply fuel in compliance with the Regulation. Regarding the concern about the need to replace existing engines, the Administration re-iterates that since relevant diesel engines installed on local vessels constructed before the commencement date, and engines that have not undergone a major conversion on or after that date are not subject to NO_x emission requirements of the Regulation, the enactment of the Regulation will not entail replacement or upgrading of existing engines. Furthermore, spare engines registered under the registration system will also be considered as existing diesel engines and allowed to be used onboard after implementation of the Regulation.

Publicity on the Regulation

21. As regards the publicity on the Regulation, members note that the Administration has issued MD notices to ship agents and operators, as well as informed the marine authorities in PRD region on the requirements and implementation of the Regulation. The Administration has taken on board the Subcommittee's suggestion to enhance publicity in this respect, in particular to relevant

parties outside Hong Kong, such as operators of Mainland river trade vessels, which may not be members of the Joint Conference. It will also consider sending notification to trade associations, shipowners associations and local shipping organizations.

Conclusion and recommendation

22. The Subcommittee has completed the scrutiny of the Regulation and raised no objection to it. Some members have indicated that they would address the Council on the Regulation at the Council meeting on 7 November 2007.

23. Regarding issues relating to policies and measures for improving the overall air quality in Hong Kong, such as the need for Hong Kong to implement higher emission standards in SO_x for local vessels, and the control of emissions of VOCs during ship bunkering, the Subcommittee considers it advisable for these issues to be followed up by the Panel on Environmental Affairs as appropriate.

Advice sought

24. The House Committee is invited to note the deliberations and recommendation of the Subcommittee.

Council Business Division 1
Legislative Council Secretariat
1 November 2007

**Subcommittee on Merchant Shipping
(Prevention of Air Pollution) Regulation**

Membership list

Chairman Hon Miriam LAU Kin-yee, GBS, JP

Members Hon SIN Chung-kai, SBS, JP
Hon WONG Yung-kan, SBS, JP
Hon CHOY So-yuk, JP

(Total : 4 Members)

Clerk Ms Connie SZETO

Legal Adviser Miss Kitty CHENG

Date 15 October 2007