LC Paper No. CB(2)1689/00-01(05)

For discussion
7 June 2001

Legislative Council Panel on Security

Replacement of Fireboat

Purpose

This paper seeks Members' views on the proposal to procure a new fireboat with upgraded features to replace the existing Fireboat No. 6 for Fire Services Department.

Background and Justification for Replacement

The existing fireboat fleet

2. The existing fireboat fleet comprises two major fireboats, three medium fireboats, one personnel carrier, two speedboats, one maintenance reserve fireboat, and one reserve catamaran rescue boat. Each fireboat carries out a specific role to provide water-based fire and rescue services in Hong Kong waters.

The existing Fireboat No. 6

3. Commissioned in 1981, Fireboat No. 6 is one of the two purpose-built, steel-hulled major fire fighting vessels. It has on board fire pumps, fire monitors, foam-making equipment, salvage equipment and two rigid-hulled speedboats for use as workboats in shallow waters. It is currently deployed at Tsing Yi Fireboat Station to provide maritime fire cover to vessels berthed or anchored in the harbour. It also supports fire fighting operations along the coastline of Hong Kong, particularly for the oil farms and potentially hazardous installations on Tsing Yi Island and container terminals at Kwai Chung. Moreover, it provides diving support to underwater rescue operations and serves as an on-site command post and as a casualty collecting point during major incidents.

4. The Director of Marine (D of M) advises that the estimated life expectancy of a steel-hulled vessel in the Government fleet is normally about 20 years after which the vessel will be beyond economic repair. Fireboat No. 6 has been in service for 20 years and is reaching the end of its economic serviceable life.

5. Due to ageing, Fireboat No. 6 is in poor condition and its performance has deteriorated. Certain parts of the hull are corroded badly. The auxiliary engines are ageing and they are unable to support simultaneous operation of the ventilation system, hydraulic system, lighting system and fire fighting equipment when performing emergency tasks, hence hampering operational efficiency. Although only minimum repair was effected to maintain the safe operation of the vessel, its annual average maintenance downtime in the past three years was 59 days, which was 25% higher than the average annual maintenance downtime of 47 days normally allowed for a vessel of the Government fleet. The long downtime has constrained operational readiness and efficiency.

6. In addition, the D of M has identified some major defects with the vessel in a recent routine annual overhaul and anticipated maintenance problems. If the vessel is not to be replaced in time, it is necessary to effect substantial renewal or replacement in respect of various parts of the vessel including its hull plating, superstructure, two auxiliary engines, piping for fire fighting and cooling systems, some ancillary equipment etc. Subject to the availability of suitable spare parts and alternative equipment in the market, it will cost about $8 million and six months to complete such major renewal and replacement works. It will cost an additional $12 million and some extra three months for complete overhaul to the hull structure and renewal of the electrical fitting and fixtures on board. As some engines and equipment installed on Fireboat No. 6 are of obsolete models, it will be difficult to obtain suitable spare parts and alternative equipment and enormous efforts will be required to restore and realign the engines and equipment. As it is no longer cost-effective and acceptable to continue to maintain the vessel beyond its economic serviceable life, we plan to replace it by end 2003.

<u>The proposed Fireboat No. 6 Replacement</u>

7. The design of Fireboat No. 6 is outdated. It cannot fully meet current operational requirements due to its intrinsic limitation of restricted fire fighting

capacity, poor sea keeping capability[1] and inadequate working and accommodation area. To meet the more sophisticated operational requirements nowadays, the replacement vessel will be provided with enhanced and upgraded features as summarised below -

(a) The replacement vessel will have a bow thruster for maintaining the vessel in position in fire fighting operations and three fire pumps, each with output capacity four times as large as the existing one's;

(b) The provision of larger fuel and oil tanks will enable the vessel, with all fire fighting equipment in operation at maximum capacity, to sustain operation for not less than 96 hours as compared to 54 hours' operation time for the existing one;

(c) The foam tank for the replacement fireboat will be about twice as large as the existing one, which is essential for fighting fires involving vessels carrying flammable liquids;

(d) The throw range of the fire monitor will be 150 metres, which is twice that of the existing one, for tackling fires on ocean going vessels with high freeboard and superstructures (such as large oil tankers, containers vessels and cruise ships);

(e) The replacement fireboat will be able to accommodate a maximum of 100 casualties instead of the present capacity of 57;

(f) To provide suitable safety protection to Fire Services divers as laid down in the 'Code of Practice-Safety and Health at Work for Industrial Diving' issued by the Labour Department and to enhance the efficiency and effectiveness of diving rescue operations, an on-site two-compartment decompression chamber will be provided. The decompression chamber will also facilitate the treatment of maritime casualties suffering from decompression sickness. The decompression chamber to be provided is intended for serving the entire harbour and Hong Kong waters.

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[1] Sea keeping capability is the ability of a vessel to remain stable and reduce the seasickness of the crew and passengers on board under rough sea conditions.

Cost Estimation

8. The estimated non-recurrent cost of the replacement fireboat with the necessary fire fighting, rescue and communications equipment, and on-site decompression facilities is $70.75 million. A detailed breakdown is at **Annex**.

9. The existing annual recurrent expenditure is about $2.4 million. It is estimated that the net additional annual recurrent expenditure arising from the proposed replacement will be around $1.6 million. This is to cover additional maintenance cost for the basic vessel with enhanced fire fighting and rescue capabilities, decompression chamber and new typhoon mooring buoys, and to defray additional fuel cost.

10. The Director of Fire Services (D of FS) will deploy existing staff to man the replacement vessel. No additional staff is required.

11. The estimated costs given at paragraphs 8 and 9 above are indicative only. They are being critically reviewed by the Administration for inclusion in the coming funding submission to the Finance Committee.

Implementation plan

12. Details of the implementation plan are as follows –

	Activity	Time Table
(a)	Preparation of tender specifications	July 2001 to September 2001
(b)	Tendering	October 2001 to December 2001
(c)	Tender evaluation and contract award	January 2002 to April 2002
(d)	Design, construction and delivery	May 2002 to October 2003

13. Subject to Members' views, we will seek funding support for the proposal from the Finance Committee on 6 July 2001.

Interim Measure

14. Prior to the commissioning of the replacement vessel in end 2003, Government Dockyard will carry out minimum repairs to the existing Fireboat No. 6 to extend its service at an acceptable standard. To maintain an acceptable level of maritime fire protection and rescue service, the D of FS will temporarily deploy a maintenance reserve fireboat to stand in during the downtime of Fireboat No. 6. The D of M will reshuffle and shorten the docking schedules of other fireboats, if required.

Security Bureau
June 2001

Annex

Detailed breakdown of the non-recurrent cost for procurement of the replacement fireboat

			$ million
(a)	Basic vessel		48.45
(b)	Spare parts :		10.80
	(i) Spare main engine set, gearbox, electricity generator units, pump engine, pump unit	7.60	
	(ii) On board running spare parts	2.50	
	(iii) Electronic spare parts, testing equipment and tools	0.70	
(c)	Decompression chamber		6.00
(d)	Payment to the Electrical and Mechanical Services Trading Fund (EMSTF) for project management		0.65
(e)	Typhoon mooring facilities		0.45
(f)	Contingency		4.40
	Total		**70.75**

Explanatory notes

As regards (a), the estimate of $48.45 million is to cover the costs of the basic vessel, navigational equipment, electrical installations, radiotelephony equipment, external fire fighting system, water spray system, one work boat, diving moon pool, diving cage cum winch, hydraulic crane, four life rafts and survivor cabin.

2. As regards (b), the estimate of $10.8 million is required for purchasing the necessary initial spare parts so as to keep the downtime of the fireboat to the minimum. These spare parts will remain as optional items at the tender stage. If the finally selected machinery and equipment are similar to those currently used in the Government fleet and if suitable spare parts are available in the stock of Government Dockyard, procurement of these spare parts can be reduced and the cost estimate will be reduced accordingly.

3. As regards (c), the estimate of $6.00 million is required for the provision of a decompression chamber. The decompression chamber will provide suitable safety protection to Fire Services divers at work and enhance the efficiency and effectiveness of diving rescue operations. The chamber will also facilitate the treatment of maritime casualties suffering from decompression sickness.

4. As regards (d), the estimate of $0.65 million is to defray the project management fee to be charged by EMSTF, which is based on the standard charging rates.

5. As regards (e), the estimate of $0.45 million is required for laying two new mooring buoys as the replacement vessel is larger and heavier. The existing mooring buoys will be re-deployed by Marine Department for use by other vessels.

6. As regards (f), the estimate of $4.40 million is for project contingency. The sum is to accommodate the price fluctuation in the shipbuilding market, which is about 8% per annum.