For discussion
on 1 December 2015

Legislative Council Panel on Security

Marine Fire-fighting and Rescue Strategies of the Fire Services Department and Procurement of Two Fire Vessels

Purpose

This paper outlines the marine fire-fighting and rescue strategies of the Fire Services Department (FSD) and seeks Members' views on the proposed procurement of a fireboat and a fast rescue vessel.

Marine Fire-fighting Strategy of FSD

2. FSD reviews from time to time its overall marine fire-fighting and rescue strategies in Hong Kong as well as the related equipment. FSD conducts risk assessment for different water areas, taking into account factors including the distribution of vessels, utilisation of shipping channels, existence of high risk facilities at sea and along coastal areas etc., in deciding the location of fireboat stations and deployment of fire vessels (e.g. fireboats and fire speedboats). FSD reviews on a regular basis the inshore installations and all potential fire risks of different water areas, deployment of fire vessels and resources of fireboat stations as well as their operational strategies, and puts in place appropriate operational arrangements to meet the demand of specific areas or during special periods.

3. At present, FSD has a total of 21 deployable fire vessels, including major and medium fireboats, rescue launches, support vessel, command boats and speedboats. These vessels are respectively berthed at fireboat stations in Central, Aberdeen, North Point, Tsing Yi, Tuen Mun and Cheung Chau, Ngong Shuen Chau Diving Base as well as the East and West Sea Rescue Berths at the Airport, providing marine fire-fighting, rescue and ambulance services throughout Hong Kong. The information about the types, functions, major rescue and/or fire-fighting equipment and staff establishment of each vessel is set out at **Annex**.

4. Upon receiving a fire call relating to vessels in Hong Kong waters, the Fire Services Communications Centre will, having regard to the prevailing circumstances, dispatch the fireboats and fire speedboats nearest

the incident scene to handle the fire. At the same time, fire appliances will also be dispatched from nearby onshore fire stations to provide speedy support. To prevent and fight against fire at typhoon shelters, an arrangement under the contingency plan for joint operation has been put in place between FSD and the Marine Police. Land crews, when necessary, may board a police launch to set off immediately for fire-fighting and rescue operations. Besides, fire personnel may combat the fire using the fire-fighting equipment available on certain police launches or the portable fire-fighting equipment on hand according to the circumstances at the scene.

Enhancing the flexibility in handling fires at typhoon shelters

5. During peak seasons including the fishing moratorium and major Chinese traditional festive periods, fishing vessels return to berth at typhoon shelters. The fire risks of the typhoon shelters may consequently increase as fishing vessels are densely anchored therein. FSD will therefore step up patrol along the shipping channels within the shelters. Besides, FSD will distribute publicity leaflets to typhoon shelter users, broadcast messages on vessel fire safety and organise thematic talks for typhoon shelter users in different districts on a regular basis or upon request, with a view to enhancing their fire safety awareness. In addition, FSD will conduct fire drills in the shelters before the fishing moratorium and the Lunar New Year every year in collaboration with the Police and the Marine Department (MD), so as to enhance the efficiency in fire-fighting and rescue operations and strengthen the co-ordination among relevant departments in response to marine fires.

6. FSD has given full consideration to the suggestion that the Government should consider the provision of fixed fire service installations (FSIs) on the shore of typhoon shelters. However, the fire-fighting capability of FSIs at fixed locations can only cover a small number of vessels since vessels are not berthed at fixed locations and are dispersed throughout the typhoon shelters. These installations are therefore considered not effective in enhancing the fire safety standard of typhoon shelters. Even if fixed FSIs and other emergency equipment were installed at berthing points and on the shore of typhoon shelters, such equipment should only be operated upon arrival of the fire personnel and appliances on land in the event of fire or other emergency incidents. When fire appliances arrive directly at the coastal locations nearest the scene, on-board monitors can be used as fire-fighting equipment. Furthermore, the installation of FSIs with high pressure such as monitors on land could cause danger to the public if they were used by people without professional training. In contrast, fire appliances equipped with monitors can be deployed more flexibly to specifically target at the location of the vessel on fire and facilitate fire-fighting operations more effectively. To further enhance the

fire-fighting capability and flexibility in the typhoon shelters, FSD is actively considering the addition of fire-fighting equipment, such as portable fire pumps, at fire stations near typhoon shelters.

Marine Rescue Strategy of FSD

7. As an effective means to address maritime incidents, the Security Bureau laid down an inter-departmental "Contingency Plan for Maritime and Aeronautical Search and Rescue" (Contingency Plan). Under the Contingency Plan, MD acts as the Search Director to coordinate search and rescue operations within Hong Kong waters and to ensure their effective operation. Apart from coordinating the efforts of the participating departments, MD is responsible for the deployment of vessels best suited for the operation. On another front, FSD is mainly in charge of the search and rescue tasks involved in the operations, such as assigning ambulance personnel for providing emergency treatment to casualties, as well as conveying them to hospitals. During the incident, FSD may request support from other departments through the Maritime Rescue Coordination Centre.

8. Upon receipt of calls in relation to maritime rescue incidents, FSD will assign its fire and ambulance personnel to board the fire vessel or police launch dispatched for attending to the incident. The ambulance personnel will be equipped with first aid apparatus and medicine, e.g. oxygen regulator system, automatic defibrillators, asthma medication, etc., to attend to the casualties at the scene of the maritime incident. Upon rescue of the casualties, the ambulance personnel will conduct an initial assessment of the casualties' condition and stabilise their injuries on the fire vessel or police launch. The casualties will then be conveyed to the pier in the order of priority based on their injury conditions. While closely monitoring the casualties' conditions en route, the ambulance personnel will provide appropriate treatment to them. Upon landing at the pier, the casualties will be delivered to stand-by ambulances ashore and be transported to the accident and emergency department of hospitals under the ambulance personnel's care for further treatment. In the event that the casualties' conditions demand urgent treatment, FSD may request the Government Flying Service (GFS) to dispatch a helicopter for transporting them directly to the hospital from the scene.

9. FSD had conducted an in-depth study on the proposed introduction of dedicated ambulance launches and reviewed the current arrangements of maritime rescue operations. Some suggested that, after procuring dedicated ambulance launches, the ambulance personnel could board the launches upon receipt of calls and proceed to the incident scene as early as possible, attend

to the casualties on the subject vessel and convey them ashore using the ambulance launches. Nonetheless, this concept has no difference in principle from the current practice of FSD in discharging search and rescue operation in relation to maritime incident. Under the existing arrangement, the fire and ambulance personnel can attend to maritime incident by fire vessels or police launches and convey casualties ashore by the same means of transport. In fact, the fire vessels of FSD (except for speedboats) have all been equipped with ambulance equipment and / or medical room (see **Annex**). FSD will consider modifying the existing fire vessels with a view to better catering for the needs of ambulance personnel in handling casualties in maritime incidents. In order to enhance ambulance equipment on existing fire vessels and to better plan for the design of ambulance equipment on new fire vessels to be procured in future, FSD has formed a task force to examine and analyse different enhancement proposals. For example, FSD will install a multi-functional treatment room, with professional ambulance equipment, on the proposed new fireboat, which could comprehensively complement the ambulance service (see paragraph 17 below).

10. Taking into account factors including the expected overall benefits of the proposal to the handling of maritime incidents involving a substantial number of casualties and its implication on actual operation, as well as making reference to the practices of other cities, FSD considered that the existing maritime rescue strategy had already allowed a high degree of flexibility, mobility and responsiveness. There is no need to separately procure dedicated ambulance launches at the present stage. FSD will keep a watch on the development and needs of the society, and review current policies in a timely manner.

11. Looking ahead, FSD will, as far as maritime rescue service is concerned, continue with its commitment to the provision of effective, efficient and advanced maritime rescue and emergency ambulance services for the community.

Justifications of the proposed procurement of a fireboat and a fast rescue vessel

12. Having reviewed the maritime fire safety of the eastern waters of Hong Kong (including the waters in Sai Kung, east Lei Yue Mun, Tolo Harbour/Tai Po, northeast and southeast Hong Kong), FSD proposes to procure a major fireboat and a fast rescue vessel in order to enhance its fire-fighting and rescue capability in these waters on the following grounds:

Surge in fire/special services incidents in the eastern waters of Hong Kong

13. According to relevant statistics, the total number of emergency incidents in the eastern waters of Hong Kong has shown a rising trend in recent years, from 57 in 2011 to 93 in 2014, representing a sharp increase of 63%. However, FSD does not have dedicated long-term resources currently within the area for handling maritime emergency incidents. As such, it often takes a relatively longer time for FSD to deploy fireboats from the North Point Fireboat Station, which is the nearest to such waters, for handling incidents within the area.

14. To enhance its emergency response capability, FSD, in the daytime during Saturdays, Sundays and public holidays between every July and September, temporarily deploys a diving support speedboat and a diving team at the Sai Kung Marine Police Base, rendering services to the eastern waters during peak seasons for water sports. Nevertheless, this deployment arrangement is only made on an ad hoc, seasonal basis and can neither handle maritime incidents happened outside the period nor address surging demand for emergency services in the eastern waters.

Increasingly hectic marine traffic at the eastern waters

15. Since the commissioning of the three marine parks in the eastern waters of Hong Kong, namely Yan Chau Tong Marine Park, Hoi Ha Wan Marine Park and Tung Ping Chau Marine Park, there is an increasing number of visitors participating in guided tours, sight-seeing, diving or engaging in other aquatic activities in nearby waters. Hence, marine traffic in the vicinity of these marine parks becomes more hectic than before. Meanwhile, as large ocean-going container vessels and river trading vessels have to pass through the eastern waters of Hong Kong to reach nearby ports, the marine traffic is expected to get busier day by day. It is expected that there will be a continuous rise in demand for emergency services in such waters. Furthermore, during the winter, the average wind speed in Hong Kong's eastern waters is 40 kilometres per hour (may even reach 70 kilometres per hour) due to the northeastern tropical monsoon of South China, often leading to adverse sea conditions with big waves and undercurrents.

16. In view of the above, FSD, upon detailed examination of existing resources, considers it necessary to procure a major fireboat and a fast rescue vessel for stationing in Sai Kung waters to reduce the response time in deploying fire services resources from the Victoria Harbour to maritime incidents occurred in the eastern waters of Hong Kong, so as to enhance the overall efficiency of its fire-fighting, ambulance and emergency search and rescue operations.

Functions of the new fireboat and fast rescue vessel

17. When there is a maritime fire or incident, the new major fireboat can provide comprehensive fire-fighting and rescue services. Apart from having equipped advanced navigational equipment and communication facilities, the new **fireboat** would provide the following major functions and equipment:

(a) it will have a maximum speed of 25 knots, enabling a fast response to incident scene for fire-fighting and rescue operation;

(b) it will be able to attain endurance of 750 nautical miles and capable of withstanding the adverse sea condition under the influence of winter monsoon;

(c) it will be equipped with fire pump and water/foam monitor for fire-fighting;

(d) it will be equipped with salvage pumps for pumping out the water from the subject vessel;

(e) it will be equipped with thermal imaging camera for effective search and rescue at night;

(f) it will be equipped with professional ambulance equipment and installed with multi-functional treatment room to comprehensively complement the ambulance service;

(g) it will be equipped with a helicopter winching deck to facilitate airlifting by GFS helicopters;

(h) it will have a towing function for towing the subject vessel to safer waters for further rescue operation;

(i) it will be equipped with a daughter speedboat and a stern launching ramp, enabling the fire and ambulance personnel to approach incident scene at shallow waters; and

(j) both the fireboat and the daughter speedboat have the self-righting feature, which enables the boats to turn up-right after capsized in rough sea and provides further protection to the rescue crew.

18. When there is a maritime fire or incident, the fast rescue vessel can provide fast rescue services and support the fire-fighting operations. Apart from having equipped advanced navigational equipment and communication facilities, the **fast rescue vessel** would provide the following major functions and equipment:

(a) it will have a maximum speed of 40 knots (one of the fastest vessels of FSD), enabling a rapid response to incident scene for fire-fighting and rescue;

(b) it will be equipped with fire-fighting water monitor;

(c) it will be equipped with salvage pumps for pumping out water from the subject vessel;

(d) it will be equipped with diving hose to support divers;

(e) it will be equipped with bow thruster to assist in maneuvering in narrow or busy waters (such as typhoon shelters) and reduce the risk of collision with other vessels;

(f) it will be equipped with professional ambulance equipment and installed with a designated treatment and ambulance area to comprehensively complement the ambulance service;

(g) it will be equipped with rescue ramp for rescuing victims in water;

(h) it will have a towing function for towing the subject vessel to safer waters for further rescue operation; and

(i) it will have the self-righting feature, which enables the vessel to turn up-right after capsized in rough sea and provides further protection to the rescue crew.

Financial Implications

19. The estimated costs of the proposed procurement of the fireboat and the fast rescue vessel are $125 million and $40 million respectively. The amount would be reflected in the budget estimates of the relevant years.

20. The required cash flow is estimated as follows:

Year	Cost (in $'000)	
	Fireboat	**Fast Rescue Vessel**
2016-17	12,500	4,000
2017-18	87,500	28,000
2018-19	25,000	8,000
Total:	**125,000**	**40,000**

21. The estimated annual recurrent expenditures for the new fireboat and fast rescue vessel (including maintenance and fuel costs) are $3.3 million and $2 million respectively. The required recurrent expenditures will be reflected in the budget estimates of the relevant years.

Implementation

22. The project implementation plan of FSD is anticipated as follows:

Item	Activity	Estimated Completion Date
Procurement of fireboat	Preparation of tender specifications	May 2016
	Tendering, evaluation and award of contract	January 2017
	Construction and delivery of vessel	July 2018
	Training and commissioning of vessel	October 2018
Procurement of fast rescue vessel	Preparation of tender specifications	May 2016
	Tendering, evaluation and award of contract	January 2017
	Construction and delivery of vessel	January 2018
	Training and commissioning of vessel	April 2018

Consultation

23. Members' views are sought on the above proposal.

Security Bureau
Fire Services Department
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Annex

Information about fire vessels available for deployment by the Fire Services Department

Type of vessel	Number of vessels	Functions	Major rescue and/or firefighting equipment	Establishment
Major Fireboat	2	Major fireboats can be used as frontline command post for major maritime incidents, and for firefighting and rescue operation. At times (such as at an incident involving sunken vessel), the major fireboats are used as a rescue platform and the assembly point and triage point for casualties.	• Fire pump • Water/foam monitor • Fire hydrant • Diving cage (for conveyance of 3 divers to a depth of 60 metres) • Rescue speedboat equipped with fire pump and monitor • Survivors' cabin with lying spaces • Medical room • Ambulance equipment [1]	12-13 persons each
Medium Fireboat	4	Medium fireboats mainly carry out firefighting and rescue operations in incidents and fires occurred on small vessels, in shallow waters or onshore areas as well as waters where vessels are closely berthed, namely, typhoon shelters.	• Fire pump • Water/foam cannon • Fire hydrant • Rescue speedboat • Ambulance equipment [1]	7-10 persons each
Rescue Boat and Support Vessel	3	The design of rescue boats enables a higher cruise speed, a more stable rescue platform and a larger transport capacity. This type of vessel mainly renders assistance in	• Fire pump • Water/foam monitor • Fire hydrant • Inflatable boat • Ambulance equipment [1]	4 persons each

[1] **Ambulance equipment** includes automatic external defibrillator, oxygen regulator system, bag-mask resuscitator, first aid box, head immobilization device, long spine board with fastrap restraint, portable stretcher, structural aluminium malleable splint, cervical collar, electrical suction unit, First Responder kit and disposable burn kit, etc.

Type of vessel	Number of vessels	Functions	Major rescue and/or firefighting equipment	Establishment
		large-scale sea rescue operations. The support vessel is mainly responsible for conveying land-based FSD personnel or divers and equipment to incident scene or offshore incident scene for firefighting and rescue duties.		
Diving Support Speedboat	2	To provide diving rescue platform and convey divers and equipment to incident scene for firefighting and diving rescue operations.	• Fire pump • Monitor • Outlet	2 persons each
Command Boat	2	To carry out firefighting and rescue duties in waters within 5km from the Airport.	• Fire pump • Life-raft • Water/foam monitor • Fire hydrant • Inflatable boat • Survivors' cabin with lying spaces • Medical room • Ambulance equipment [1]	8 persons each
Speedboat	8	To carry out firefighting and rescue duties in waters within 5km from the Airport.	• 4 of the speedboats are each equipped with separate fire pumps, water monitors and fire hydrants	2 persons each