

ITEM FOR FINANCE COMMITTEE

HEAD 45 – FIRE SERVICES DEPARTMENT Subhead 603 Plant, vehicles and equipment

Members are invited to approve a new commitment of \$16,500,000 for procuring a replacement Crash Fire Tender.

PROBLEM

The existing Crash Fire Tender (CFT) R22 is reaching the end of its economic serviceable life after over 13 years of service. We need to replace it with a new vehicle with enhanced features to better meet the high safety standards of the Hong Kong International Airport (HKIA).

PROPOSAL

2. The Director of Fire Services (D of FS), on the advice of the Director of Electrical and Mechanical Services (DEMS) and with the support of the Secretary for Security, proposes to replace CFT R22 by a new CFT with enhanced fire-fighting and rescue capabilities.

JUSTIFICATION

Functions of CFT R22

3. Commissioned in 1995, CFT R22 is currently deployed at the Main Airport Fire Station located near the midfield of South Runway of HKIA. Its main function is to reach the site of aircraft accident speedily on and off paved surfaces in all reasonable weather conditions, and apply uninterrupted foam for protection of the passenger evacuation path.

/Maintenance

Maintenance Problems

4. DEMS advises that the normal life expectancy of that particular model of the existing CFT R22 is about eight years, after which it should be beyond economical repair. While we are able to prolong its use with regular maintenance, it has become increasingly difficult and costly to maintain the vehicle in good operating condition. With more than 13 years of service, CFT R22 is reaching the end of its serviceable life. Suitable spare parts for certain components of the engine and suspension system are difficult to find in the market. The annual maintenance cost has increased substantially in recent years from \$56,000 in 2004 to \$300,000 in 2007. Due to the need for a major overhaul, the availability of CFT R22 dropped below 84% in 2006 (i.e. total downtime of 60 days). Although its availability bounced back to around 97% in 2007 after the overhaul, replacement is imperative to avoid possible lengthy downtime for overhauling in the not too distant future.

The Proposed Replacement Vehicle

5. To better meet the high safety standards of HKIA and uphold the status of Hong Kong as a pre-eminent aviation hub, we propose to procure a replacement CFT with the following enhanced features –

- (a) a more powerful roof foam monitor with a longer flow range of 90 metres, which is in compliance with the recommended standards by the International Civil Aviation Organisation (ICAO) for fire-fighting vehicles deployed at Category 10 airports¹;
- (b) a dedicated engine for operating the fire pump, which can apply uninterrupted foam even when the CFT is in motion at speeds up to 80 kilometres per hour, enabling the vehicle to make speedier intervention at the fire scene;

/(c)

¹ The level of rescue and fire-fighting protection to be provided at airports should be appropriate for the largest aircrafts normally handled by them. To cater for the varying operation of airports around the world, ICAO defines ten different levels for the required rescue and fire-fighting protection on the basis of the overall length and the maximum fuselage width of the largest aircrafts to be handled. In anticipation of the introduction of the new Airbus 380 aircraft, the highest protection level was introduced in 2004, which applies to Category 10 airports handling aircrafts up to 90 metres in length and 8 metres in fuselage width. HKIA has complied with ICAO's requirements on rescue and fire-fighting protection for Category 10 airports since August 2006. Five of the existing fire-fighting vehicles (three Rapid Intervention Vehicles and two CFTs) deployed at HKIA are in compliance with the relevant standards recommended by ICAO.

- (c) 8x8 wheel-driven to allow for greater manoeuvrability in poor weather conditions and rough terrain; and
- (d) more environmental friendly Euro-III type engines².

Encl. 1

A table comparing the different features of the existing CFT R22 and the proposed CFT is at Enclosure 1.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

6. On the advice of DEMS, D of FS estimates that the non-recurrent cost of procuring a replacement CFT installed with the necessary fire-fighting and communications equipment is \$16,500,000. The detailed breakdown is as follows –

| | \$ million |
|--|----------------------|
| (a) Basic vehicle | 13.286 |
| (b) Fire-fighting and communications equipment on board the CFT | 0.464 |
| (c) Payment to Electrical and Mechanical Services Trading Fund (EMSTF) for project management and acceptance testing | 1.375 |
| (d) Contingency (10% of (a) and (b) above) | <u>1.375</u> |
| Total | <u>16.500</u> |

7. On paragraph 6(a) above, the expenditure of \$13,286,000 is for procuring the basic vehicle, including the roof foam monitor equipped with an independent engine.

/8.

² DEMS advised that, unlike common commercial vehicles, CFT is a specialised vehicle of which its chassis and engine are not readily available in the market as off-the-shelf products. The engine and chassis have to be purpose-built and integrated with each other. According to market research, there has yet to be any plans by manufacturers for introducing Euro-IV/V engine and chassis in CFT applications.

8. On paragraph 6(b) above, the expenditure of \$464,000 is for replacing the specialised fire-fighting and communications equipment on board, e.g. fire hoses, extinguishers, searchlights, break-in tools, mobile radio sets, etc., that have reached their normal serviceable lives after 13 years of service. The amount does not include the cost of equipment on board the existing CFT which is still in serviceable condition. Those equipment will be transferred to the replacement vehicle upon its commissioning.

9. On paragraph 6(c) above, the expenditure of \$1,375,000 is for payment to EMSTF for providing project management services, including the preparation of tender, evaluation of tender bids received, and performance of the acceptance test of the replacement vehicle.

10. The estimated cash flow is as follows –

| Year | \$ million |
|--------------|---------------|
| 2008-2009 | 1.650 |
| 2009-2010 | 4.950 |
| 2010-2011 | 8.250 |
| 2011-2012 | 1.650 |
| Total | 16.500 |

Recurrent Expenditure

11. The annual recurrent expenditure of the existing CFT R22 on maintenance and fuel was \$300,000 and \$26,000 respectively in 2007. D of FS estimates that the annual recurrent expenditure on maintenance and fuel for the new CFT will be \$100,000³ and \$35,000 respectively from 2011-12 onwards.

12. On paragraph 11 above, the expenditure of \$100,000 is for routine maintenance inspections and necessary repairs in case of vehicle failure, whereas the expenditure of \$35,000 is the fuel cost, which is expected to be higher than that of the existing CFT R22 mainly due to the use of an independent engine for driving its roof foam monitor.

/13.

³ In the long run, D of FS expects that the amount will increase with time by about \$15,000 each year. The aggregate recurrent expenditure over the vehicle's entire economic serviceable life will be largely comparable to that of the existing CFT R22.

13. D of FS will deploy the existing staff to man the replacement vehicle and no additional staff will be required.

IMPLEMENTATION PLAN

14. We plan to procure the replacement CFT according to the following timetable –

| Activity | Target completion date |
|--|-------------------------------|
| (a) Design and preparation of tender specifications | October 2008 |
| (b) Tendering | January 2009 |
| (c) Tender evaluation and award of contract | October 2009 |
| (d) Construction and delivery of vehicle | April 2011 |
| (e) Testing, training and commissioning of the vehicle | April 2011 |

PUBLIC CONSULTATION

15. We consulted the Legislative Council Panel on Security on 8 January 2008 by circulation of an information paper. Members have not raised any comments on the funding proposal.

BACKGROUND

The Airport Fire Contingent

16. The Airport Fire Contingent (AFC) of the Fire Services Department is responsible for fire-fighting and emergency rescue in aircraft accidents at HKIA and its surrounding waters and area. Currently, AFC's entire airport rescue and fire-fighting (ARFF) fleet comprises 14 fire-fighting vehicles, two ambulances and eight rescue vessels.

17. The 14 fire-fighting vehicles of AFC are deployed at two fire stations, namely the Main Airport Fire Station near the midfield of South Runway and the Sub Airport Fire Station near the midfield of North Runway. Each fire station is equipped with an identical fleet of fire-fighting vehicles, which includes two Rapid Intervention Vehicles, two CFTs, two Hose Foam Carriers and one Jackless Snorkel. Each type of fire-fighting appliances has its specific functionalities as set out at Enclosure 2.

Encl. 2

18. In case of an aircraft accident, ARFF vehicles from both airport fire stations will respond in the first instance. Support fire appliances and ambulances will be deployed from nearby fire stations and ambulance depots outside the airport control area, if necessary.

Security Bureau
May 2008

**Features of the existing CFT R22
and the proposed CFT**

| Feature | Existing CFT R22 | Proposed CFT |
|--|---|---|
| (a) Projection distance of extinguishing foam from the roof foam monitor | 75 metres | 90 metres |
| (b) Foam discharge rate | 6 500 litres per minute | 7 000 litres per minute |
| (c) Operating engine for the fire pump | Single engine for operating the vehicle and the fire pump. Foam can be discharged only when the appliance operates at a low speed of around 10 kilometres per hour. | Independent engine for operating the fire pump. Foam can be discharged even when the appliance is in motion at speeds up to 80 kilometres per hour. |
| (d) Vehicle chassis type | Three axles 6 x 6 wheel-driven | Four axles 8 x 8 wheel-driven |
| (e) Engine type | Pre-Euro | Euro III |

**Functionalities of the Airport Rescue and Fire-fighting Vehicles
in the Airport Fire Contingent**

(a) Rapid Intervention Vehicle

Rapid Intervention Vehicles (RIVs) are the primary fire-fighting vehicles within AFC with the capability of applying a large quantity of extinguishing agent to the aircraft accident scene within a very short period of time to put out an incipient fire and prevent the spread of the fire.

(b) Crash Fire Tender

CFTs can reach the accident site speedily on and off paved surfaces in all reasonable weather conditions, and maintain uninterrupted foam production while the vehicle is in motion at speeds up to 80 kilometres per hour. They supplement the RIVs in extinguishing the fire and protecting the evacuation path.

(c) Hose Foam Carrier

Hose Foam Carriers provide water and foam supplies to other fire-fighting vehicles, and carry a quantity of complementary extinguishing agents, such as dry powder or carbon dioxide gas.

(d) Jackless Snorkel

Jackless Snorkels are equipped with a nozzle which can pierce through the fuselage and discharge water spray, foam and dry powder to tackle fire in the cabin of the aircraft, including fire involving the auxiliary power unit or tail engine.
