

**For discussion
on 23 May 2013**

Legislative Council Panel on Security

**Replacement of Seven Helicopters and
Associated Mission Equipment of the Government Flying Service**

PURPOSE

This paper seeks the Panel's views on Government Flying Service's (GFS) proposal to replace seven new helicopters and the associated mission equipment.

BACKGROUND

2. GFS provides round-the-clock search and rescue (SAR) and air ambulance services, and supports the work of various Government departments. Helicopters are mainly responsible for SAR, air ambulance, internal security and hill fire fighting duties. GFS helicopter fleet comprises three large helicopters (Super Puma helicopters) and four small helicopters (Dauphin helicopters). To meet operational needs, the helicopter fleet is required to undergo modifications for installing mission equipment.

REASONS FOR THE PROPOSED REPLACEMENT

3. The existing Super Puma helicopters and Dauphin helicopters have been in service since 2001 and 2002 respectively. Up to now, the flying hours of the two types of helicopters have already exceeded 18 000 and 17 400 hours respectively. Based on GFS'

utilisation pattern and frequency, the service lifespan of these helicopters is generally about 13 to 15 years. In late 2011, GFS thoroughly examined the capability and safety condition of its helicopter fleet, and confirmed that the helicopters in the fleet could still meet the service demand for a few more years, but would reach the end of their service lifespan after 2017. As it takes time to procure a helicopter fleet, it is necessary to commence the procurement of replacement helicopter fleet in time to ensure continuous delivery of reliable and efficient flying services by GFS.

4. Besides, the existing helicopter fleet is also facing the following maintenance and repair problems :

- (a) Increasing repair frequency: GFS helicopters are required to operate in an environment of highly salt-laden atmosphere over the sea, and therefore are susceptible to varying degrees of corrosion. Corrosion accelerates the ageing as well as wear and tear of the airframe and certain components, thereby increasing the frequency of component replacement. GFS needs to conduct additional and more frequent repair and maintenance to maintain flight safety and services. If helicopters are not replaced in a timely manner and are used beyond their service lifespan, the structures of the helicopters may not be able to comply with the aviation safety requirements even with frequent repairs.
- (b) Increasing difficulty in securing spare parts for maintenance: Owing to the gradual ageing of the helicopter fleet, the frequency of scheduled and non-scheduled maintenance has increased over the past few years, expediting the replacement of the spare parts and components. Since the discontinuation of the production of Super Puma helicopters by the manufacturer in 2007, the time taken for GFS to procure spare parts from the manufacturer has increased from two or three weeks in the past to one to seven months. Since 2010, GFS has been procuring spare parts in bulk quantities from the manufacturer and spare parts suppliers, and purchasing spare parts from other Super Puma operators with a view to reducing the delivery time and increasing the

stock of essential spare parts. However, these measures did not resolve the problem. Meanwhile, the manufacturer and spare parts suppliers are not able to provide spare parts and components of the avionics and navigation systems of Super Puma helicopters immediately for replacement. Dauphin helicopters will also face the same difficulty in securing spare parts for maintenance in the coming five years. Therefore, a timely replacement of helicopters is necessary to ensure that the maintenance of the helicopter fleet will not be adversely affected by a lack of spare parts.

5. With the procurement of new helicopters, GFS will be able to further enhance the capabilities and services of its helicopter fleet in a number of areas, including:

- (a) Improving flight safety: A single model helicopter fleet will allow uniformity in operational procedures, hence enhancing flight safety.
- (b) Raising operational efficiency: At present, the two helicopter models can each be installed with its own specific mission equipment. However, the new helicopters can be installed with various kinds of mission equipment, enabling GFS to deploy helicopters for responding to emergency incidents with greater flexibility, effectiveness and efficiency, especially when a number of different emergency call-out requests are received simultaneously. Besides, all the new helicopters will be equipped with more advanced avionics and navigation systems, allowing the fleet to use the congested airspace in Hong Kong together with other aircraft more effectively, which in turn reduces delay.
- (c) Improving overall disaster response and counter-terrorist capabilities of Hong Kong: As all the new helicopters can be installed with various kinds of mission equipment, GFS will be able to deploy more aircraft at any one time for providing different disaster relief and SAR operations, such as large-scale maritime or air accidents. The fleet will also allow greater flexibility in responding to different

counter-terrorist and law enforcement operations, and will better serve the operational needs of the Hong Kong Police Force in promptly responding to potential threats.

- (d) Increasing cost-effectiveness: Given the synergy effect, a single model helicopter fleet requires stocking fewer spare parts, tools and equipment (different approved tools and equipment are required for repairing different aircraft models) compared with a double model helicopter fleet, resulting in a more effective use of resources.
- (e) Enhancing training: As flight crew and engineering staff will only need to familiarise themselves with the operation of one helicopter model, the training can be more focused on enhancing service quality and safety level. This will improve operational efficiency and cost-effectiveness.

REPLACEMENT PROGRAMME

6. GFS suggests using a single model of medium-sized helicopters to replace the current two-model fleet. The new helicopters will better meet the operational needs of GFS in terms of safety, capability, size and cost effectiveness when compared to the existing fleet, and the mission equipment will also be more advanced. The new capabilities are summarised as follows:

- (a) SAR capability: At present, there are only three Super Puma helicopters capable of undertaking night time and offshore SAR operations. However, all new helicopters will be equipped with the aforementioned SAR capability.
- (b) Capacity: The total number of passengers the fleet can carry will increase by about 19%, capable of more rapid and effective large-scale transfers, such as conveying a large number of law enforcement officers to specific destinations.

- (c) Avionics system: The new system will better comply with the aviation safety requirements, further enhancing GFS' safety and efficiency in carrying out SAR and law enforcement operations in the congested airspace and mountainous terrain in Hong Kong, especially during night time and in conditions of low visibility.
- (d) Mission equipment: Various new equipment (such as dual rescue hoists for rescue operations, additional external lighting for SAR and law enforcement operations, formation lights for night vision goggles, and encrypted digital communications system for the Unified Digital Communications Platform, etc.) will provide greater protection for crew members and better support for patients and other departments.
- (e) International safety standards: The new helicopters will comply with the latest airworthiness standards of the Federal Aviation Administration of the United States (US FAA) or the European Aviation Safety Agency (EASA)¹.
- (f) Anti-corrosion airframe structures: Thanks to the new anti-corrosion technology, the new helicopters will suffer from a slower rate of corrosion even though they have to operate in the hot and humid climate in Hong Kong and the salt-laden operating environment over the sea.
- (g) Guarantee of spare part supply: GFS will require the helicopter manufacturer to extend the guarantee period of spare parts and technical support so as to ensure the best support for the helicopter fleet during its service.

¹ Airworthiness standards FAR-29 of the US FAA and CS-29 of the EASA.

OTHER OPTIONS CONSIDERED

Modification of the Existing Helicopters

7. Taking into account the varying degrees of ageing of the helicopters in the fleet and the difficulty of securing spare parts, GFS considers that it cannot maintain the current service standard in the long run even with modification of the existing helicopters.

Phased Replacement of the Two Existing Helicopter Models

8. GFS has also carefully considered the option of retaining the mix of two existing models of helicopter and replacing them by phases. However, this option means that GFS has to continue to operate with two different helicopter models. GFS considers that this arrangement would not be the most efficient because flight crew would have to spend extra time in resolving coordination problems arising from operating two different models, and would not achieve the maximum cost-effectiveness. As mentioned above, a single model helicopter fleet will bring improvements in flexibility and efficiency for operations, and will make regular repair and maintenance more effective.

9. Besides, GFS has also carefully considered replacing the helicopters by phases. However, this option would extend the handover period of the new and old helicopters. During that period, GFS would have to continue to rely on the aged helicopters to provide rescue services, which is not desirable. In addition, the cost of procuring seven helicopters by one batch is lower than procurement by batches. In sum, phased replacement is not desirable in terms of flight safety and cost effectiveness.

FINANCIAL IMPLICATIONS

Non-recurrent Expenditure

10. GFS estimates that the replacement of seven medium-sized helicopters and associated mission equipment will incur a total non-recurrent expenditure of \$2,187.5 million. The breakdown is as follows:

Item	Total Cost (\$m)
(a) Seven medium-sized helicopters	1,456.00
(b) Mission equipment and modification work with certification	
◆ Dual rescue hoists and hoist cameras	74.10
◆ Emergency medical system kits and multiple stretchers installations	25.00
◆ Forward looking infra-red thermal detectors and mission consoles	84.20
◆ Radar system	95.10
◆ Other search and rescue equipment	37.50
◆ Equipment required for law enforcement operations	55.00
◆ Microwave data downlink system and encrypted digital communication system	42.00
◆ Equipment for fast conveyance of law enforcement officers	31.00
◆ External cargo hooks and fire buckets	19.50
◆ Digital aerial survey cameras and airborne laser scanning system	30.40
◆ Other supporting equipment	1.00

(c) Spare parts and tools	119.70
(d) Training for flight crew and engineering staff	12.40
(e) Evaluation and support	0.44
(f) Contingency [about 5% of item (a) to (e)]	104.16
Total	2,187.50

11. The estimated cash flow requirement is as follows:

Year	(\$m)
2013-14	0.25
2014-15	614.50
2015-16	614.71
2016-17	518.45
2017-18	439.59
Total	2,187.50

Recurrent Expenditure

12. GFS estimates that the annual recurrent expenditure of the new helicopter fleet will be similar to that of the existing helicopter fleet. In 2012-13, the relevant expenditure is about \$82 million. As such, this proposal will not incur additional recurrent expenditure. As GFS will deploy its existing staff to operate the new fleet, there will be no additional manpower requirement.

Sale of the Existing Helicopter Fleet

13. Upon the commissioning of the new fleet, GFS will, having regard to the handover and operation of the new and old helicopters, sell the existing helicopters by phases. However, it is not possible to estimate at this stage the sale price which will depend on the condition of the fleet and the market demand for these types of aircraft at the time of the sale.

IMPLEMENTATION PLAN

14. GFS plans to seek funding approval from the Finance Committee in June 2013. If the funding approval is obtained, GFS plans to implement the replacement programme according to the following timeframe:

	Activities	Timing
(a)	Preparation of tender specifications	June 2013 to April 2014
(b)	Tendering	May 2014 to September 2014
(c)	Tender evaluation and award of contract	September 2014 to June 2015
(d)	Training for flight crew and engineering staff	June 2016 to June 2017
(e)	Testing, acceptance and commissioning by phases	December 2016 to September 2017
(f)	Commissioning of the entire new fleet	October 2017

ADVICE SOUGHT

15. The Panel is invited to offer views on the above proposal.

**Security Bureau
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