For discussion on
3 January 2012

LEGISLATIVE COUNCIL PANEL ON SECURITY

Creation of an Assistant Aircraft Engineer Rank in the Engineering Section of the Government Flying Service

PURPOSE

This paper invites Members' views on the proposal to create a new rank of Assistant Aircraft Engineer ("AAE") in the Engineering Section of the Government Flying Service ("GFS").

BACKGROUND

2. The fleet of GFS[1] is deployed on a wide range of missions, including round-the-clock search and rescue ("SAR"), casualty evacuation and air ambulance services. It also provides assistance to various government departments in fire fighting, law enforcement operations, conducting aerial geographical surveys, and transporting personnel and equipment. The operations of GFS cover the Hong Kong Flight Information Region[2], the furthest extent of which could be some 700 nautical miles (around 1 300 kilometres) from Hong Kong. The unique operational requirements of GFS require extensive modifications to both the aircraft and specialised equipment on board. In 2011, the total number of flying hours of the fleet exceeds 6 000 hours. To ensure the safety of its operations and compliance with the statutory Hong Kong Aviation Requirements-145 ("HKAR-145")[3] stipulated by the Civil

[1] The fleet of GFS includes two types of aircraft, comprising seven helicopters and three fixed-wing aircraft.

[2] The Hong Kong Flight Information Region is an airspace covering a total area of 276 000 square kilometres extending over the South China Sea as assigned by the International Civil Aviation Organisation.

[3] HKAR-145 prescribes the requirements that need to be met by approved maintenance organisations conducting maintenance of the aircraft.

Aviation Department ("CAD") and internal engineering works procedures, GFS relies heavily on the technical and professional support provided by qualified and licensed aircraft engineers in its Engineering Section for regular maintenance, repair and overhaul services for the fleet and its equipment.

3. The Engineering Section of GFS comprises staff from the Aircraft Engineer ("AE") and the Aircraft Technician ("AT") grades responsible for aircraft maintenance and repair for the fleet. The AE grade is a professional grade, currently comprising the AE rank at the entry level and the promotion ranks of Senior Aircraft Engineer ("SAE") and Chief Aircraft Engineer ("CAE"), responsible for the formulation and certification of maintenance and repair work. The CAE is the head of the AE grade. The AT grade is responsible for inspection, maintenance and repair of aircraft and associated equipment to ensure the proper operation of aircraft and engineering facilities. An organisation chart of the current Engineering Section is at ***Annex A***. The major responsibilities of the AE and AT grades are at ***Annex B***.

PROPOSAL

4. We propose to create a new civil service rank of AAE in the Engineering Section of GFS to assist in the supervision and certification of aircraft and equipment maintenance, and to undertake on-the-job aircraft type training ("ATT")[4] with a view to gaining practical experiences in aircraft maintenance. The job description of the proposed AAE rank and the revised job description of the AE rank upon the creation of the AAE rank are respectively at ***Annexes C and D***. The organisation chart of the Engineering Section of GFS, illustrated with the proposed changes, is at ***Annex E***.

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[4] ATT includes courses on system design, construction and operation of individual types of aircraft.

JUSTIFICATIONS

I. Increased complexity of maintenance duties

5. Over the past decade, the maintenance duties handled by the AE grade have increased in terms of both scope and complexity. Some key factors contributing to the increasingly complex workload and portfolio of the grade are set out in the ensuing paragraphs, demonstrating the need to equip AE grade members with the necessary skills and training at the early stage of their careers to ensure that the high level of service provided by GFS will not be affected.

(a) The need for higher professional standards in aircraft maintenance

6. GFS was established in 1993 as a disciplined service to take over the functions of the former Royal Hong Kong Auxiliary Air Force ("RHKAAF"). With the changeover from RHKAAF to GFS, exemptions for the military were no longer applicable and GFS was required to comply with the statutory requirements in terms of aircraft maintenance. Taking into account the improvement in aircraft manufacturing, repair and maintenance technology and the rapid development of the aircraft industry, the relevant statutory requirements have been further raised and refined in the past decade with enhanced professional standards incorporated.[5] AEs are required to master additional technical knowledge covering areas such as the repair of composite material, advanced navigation system and safety management system.

7. Under the statutory regulatory regime, members of the AE grade are required to hold professional licences from CAD for the relevant aircraft type before they can be deployed for duties. In addition, they have to obtain certification authorisation from GFS after completing GFS ATT before conducting any certification of aircraft maintenance. The current licensing system for aircraft maintenance is much more complex and stringent when compared with that in the early 1990s.

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[5] As a result of harmonisation with the world aviation authorities with effect from 1 January 2002, the aircraft engineering licencing system was modified and migrated into the new system "Licencing of Maintenance Personnel" under the statutory Hong Kong Aviation Requirements, which prescribes the requirements that need to be met by the aircraft maintenance personnel for the grant of Aircraft Maintenance Engineer Licence.

(b) Increased work complexity arising from more advanced and diverse technology and equipment of the GFS fleet

8. To support the fleet in performing an increasingly diversified range of operational tasks, GFS has expanded in recent years its capability in preventive maintenance, regular restorations and defect rectifications through incorporation of advanced technology and procedures.[6] Further, to ensure the safe and efficient delivery of the wide range of operations even in adverse weather conditions, GFS has also added different types of advanced mission equipment[7] to the fleet and the crew in recent years. The increased number and types of specialised and advanced mission equipment, together with the modification works on GFS aircraft, require an increase in the number of maintenance checks and more skilled expertise in certifying the maintenance and repair activities.

(c) Complexity of ground support equipment maintenance

9. In addition to aircraft maintenance work, the Engineering Section of GFS has developed various ground support equipment systems to enhance the operations in the past few years. These systems include a microwave video downlink system for providing real time transmission from the operation area to the command centre and a digital map system for tracking real time locations of GFS aircraft for better deployment of aircraft to the scene of incident. To ensure interoperability of the specialised ground support equipment with the aircraft, as well as proper maintenance and ongoing development of these systems, new skill sets have to be developed.

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[6] These technology and procedures include-
(i) blade repair capability for the main and tail rotors of helicopters;
(ii) non-destructive test capability for detecting cracks in the aircraft, components and engines;
(iii) helicopter floatation system repair and servicing; and
(iv) helicopter usage and health monitoring system for health monitoring of dynamic components installed on GFS helicopters.

[7] These mission equipment include-
(i) more advanced emergency medical stations;
(ii) an aerial monitoring and tracking system for radioactivity levels;
(iii) a fire tank and GFS-developed foam tank system for fire fighting;
(iv) a meteorological measurement system for atmospheric data collection;
(v) an air command and control communication system;
(vi) a GFS-developed hoist camera system;
(vii) an automatic ship identification system; and
(viii) specialised communication equipment for SAR operations and support for law enforcement operations.

II. Training requirement of AE Grade Officers

10. AE grade officers are required to certify the maintenance work on both fixed-wing aircraft and helicopters. AE is the basic recruitment rank under the existing grade structure of GFS. Currently, new AE recruits receive the required training (including ATT) from GFS as there are no other local training institutions providing the training courses on the knowledge of aircraft systems and trade skills required for GFS aircraft maintenance given the unique aircraft types and functionality of the fleet.

11. With the more stringent statutory licensing requirements, the license endorsement and the certification authorisation training phase of an AE has increased from about 12 - 18 months to three years. In addition, new AE recruits who have not obtained licenses cannot be deployed to take up maintenance tasks until they have completed ATT. As such, the creation of the proposed AAE rank would enable a pool of officers to undergo the necessary training and be able to take up operational duties immediately when they reach the AE rank.

III. Smooth transition of AE Grade

12. At present, most of the AE grade officers were recruited during the early 1990s. By 2015-16, about 18 officers (or about 72% of the total number of AE grade officers) will have been retired or have reached the retirement age. Taking into account the training lead time for an AE to become fully operational and to ensure a smooth transition in the succession arrangements of the grade, it is imperative for GFS to prepare its fleet with a sufficient number of AE grade members with the necessary licenses, especially during the years from 2012-13 to 2014-15 so as to prevent the loss of the necessary aircraft maintenance knowledge and skills required. Therefore, GFS proposes to create the new rank of AAE to allow succession to proceed smoothly within the AE grade.

ALTERNATIVES CONSIDERED

13. GFS has critically examined the current situation and considered the feasibility of a range of alternatives, including the reshuffling of duties between AEs and CAT/ SAT as recommended by the Standing Committee on Disciplined Services Salaries and Conditions of Service in the Grade Structure Review ("GSR") in 2008. In view of the statutory civil aviation requirements, the current licensing system and the complexity of supervision and certification works for aircraft and specialised and sophisticated mission equipment, which all require extensive knowledge and skills and relevant licenses, GFS considers it more appropriate to continue to have AE grade members taking up the relevant work. In fact, during a staff consultation exercise conducted in 2009, members of the AT grade expressed strong resistance to any proposals to reallocate some of the certification duties from AEs to SATs/CATs, or to restructure the AT grade.

14. GFS has also studied the possibility of appointing AT grade staff as AEs. Based on the operational experience of GFS, it generally takes seven to nine years for an AT grade staff to acquire the necessary skills and obtain the relevant licenses required of an AE, and the supply of qualified AT grade staff for appointment as AEs is insufficient to fill the vacant AE posts arising from the retirement of AE grade officers in the coming years. The proposal to create an AAE rank should provide an additional channel for interested AT grade members who wish to pursue a career in the AE grade while the existing avenue for the in-service appointment of qualified AT grade officers to the AE rank would still be maintained. This would in turn improve the career prospects of the AT grade and enable GFS to retain skilled personnel for handling aircraft maintenance.

15. In addition, GFS has examined the feasibility of speeding up the training programme for AEs. Given the complexity and scope of the maintenance of GFS fleet in both helicopters and fixed-wing aircraft as explained above and the need for full compliance with statutory civil aviation requirements, the training programme could not be condensed and the three-year training timeframe is already a minimum requirement for new AE grade members.

FINANCIAL IMPLICATIONS

16. In determining the pay scale of the proposed AAE rank, GFS will make reference to the pay scales of the existing AE rank and AT grade, other civil service ranks with similar qualifications and experience, the entry pay for jobs requiring similar qualifications and experience in the private sector, and the special job factors in relation to its being a disciplined services rank. GFS will include the necessary provision in the 2012-13 draft Estimates and for the years after to meet the cost of this proposal.

STAFF CONSULTATION

17. GFS conducted staff briefing session on the proposal in December 2011 with members of the grades concerned. The members of the grades did not raise any adverse comments. GFS will continue to engage the staff concerned in discussions as necessary when working out the detailed implementation arrangements.

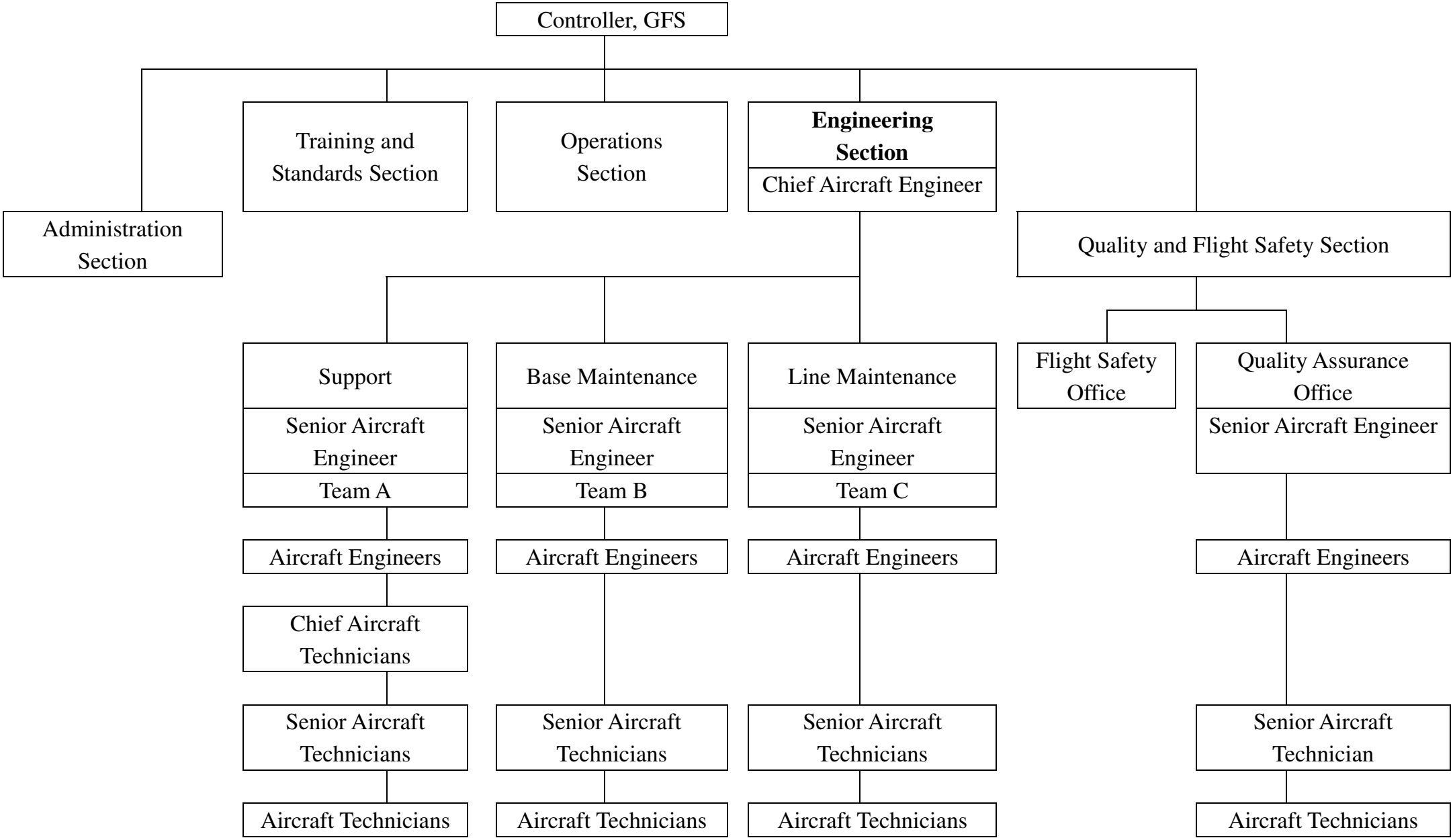
ADVICE SOUGHT

18. Members are invited to comment on the proposal. Subject to Members' support, we will submit the proposal to the Standing Committee on Disciplined Services Salaries and Conditions of Service for consideration before seeking approval from the Establishment Subcommittee of the Legislative Council Finance Committee.

Security Bureau
Government Flying Service
December 2011

Annex A

The Existing Organisation Chart of the Government Flying Service ("GFS")



Annex B

Major Responsibilities of the Aircraft Engineer and Aircraft Technician Grades in the Engineering Section

I. Aircraft Engineer Grade

Rank	Main Responsibilities
Chief Aircraft Engineer	▪ overseeing the maintenance of all GFS aircraft, engines and the related equipment for compliance with the statutory Hong Kong Aviation Requirements and safe and effective operation ▪ financial planning and management for the Section including the funds for fuel and aircraft component parts
Senior Aircraft Engineer	▪ accountable for all maintenance and servicing activities carried out on the aircraft including the high level technical defects rectification ▪ ensuring serviceability and reliability of the fleet ▪ designing and reviewing maintenance procedures ▪ handling quality assurance matters
Aircraft Engineer	▪ supervising and certifying aircraft maintenance work and other related engineering duties carried out on aircraft and equipment

II. Aircraft Technician Grade

Rank	Main Responsibilities
Chief Aircraft Technician	▪ carrying out high level of technical work ▪ planning and organising the work of a shift of technicians to cater for the timely completion of servicing, maintenance and repair activities
Senior Aircraft Technician	▪ checking and countersigning the work performed by ATs
Aircraft Technician	▪ carrying out aircraft maintenance and related support activities

Annex C

Main Duties and Responsibilities of the Proposed Assistant Aircraft Engineer

(a) To assist in controlling, organising and coordinating the daily engineering activities of the Engineering Section and to draw up the necessary daily manpower deployment to meet the operational requirements of GFS flying activities;

(b) To assist in formulating the major maintenance work packages and preparing the required aircraft spare and manpower resources for the scheduled maintenance;

(c) To undergo GFS aircraft type training for maintenance of the GFS aircraft;

(d) To carry out certification of maintenance work within his/her scope of authorisation;

(e) To provide advice and assistance to Aircraft Technician ("AT") grade members in diagnosis and rectification of aircraft and related equipment defects;

(f) To assist in supervising and monitoring the work carried out by AT grade members meeting the pertinent airworthiness, GFS engineering and industrial safety requirements;

(g) To provide theoretical and practical training to AT grade members; and

(h) To assist in liaising with the manufacturers, suppliers and agents for technical, provisioning and product support matters in respect of aircraft and related system equipment.

Annex D

Revised Main Duties and Responsibilities of the Aircraft Engineer ("AE") upon the Creation of the Assistant Aircraft Engineer Rank

(a) To assist Senior Aircraft Engineers ("SAEs") to control, organise and co-ordinate the engineering and staffing activities of Engineering Section;

(b) To develop plans for deployment of manpower resources to meet the scheduled maintenance and major servicing of the GFS aircraft;

(c) To liaise with SAEs and coordinate with members of the Engineering Section in formulating the major maintenance work packages and preparing the required aircraft spare and manpower resources for the scheduled maintenance;

(d) To carry out certification of aircraft maintenance tasks and all related work in accordance with the GFS authorisation system to the standard as required by the Hong Kong Airworthiness Requirements;

(e) To provide advice and assistance to Aircraft Technician ("AT") grade members in diagnosis and rectification of aircraft and related equipment defects;

(f) To supervise and monitor the work carried out by AT grade members meeting the pertinent airworthiness, GFS engineering and industrial safety requirements;

(g) To plan aircraft maintenance activities, update the technical record system, compile and update the content of aircraft maintenance schedules to meet the latest airworthiness requirements;

(h) To develop and compile modifications, improvement and other engineering design work in respect of fixed-wing aircraft and helicopters, ground facilities, avionics test set and survival equipment operated by GFS;

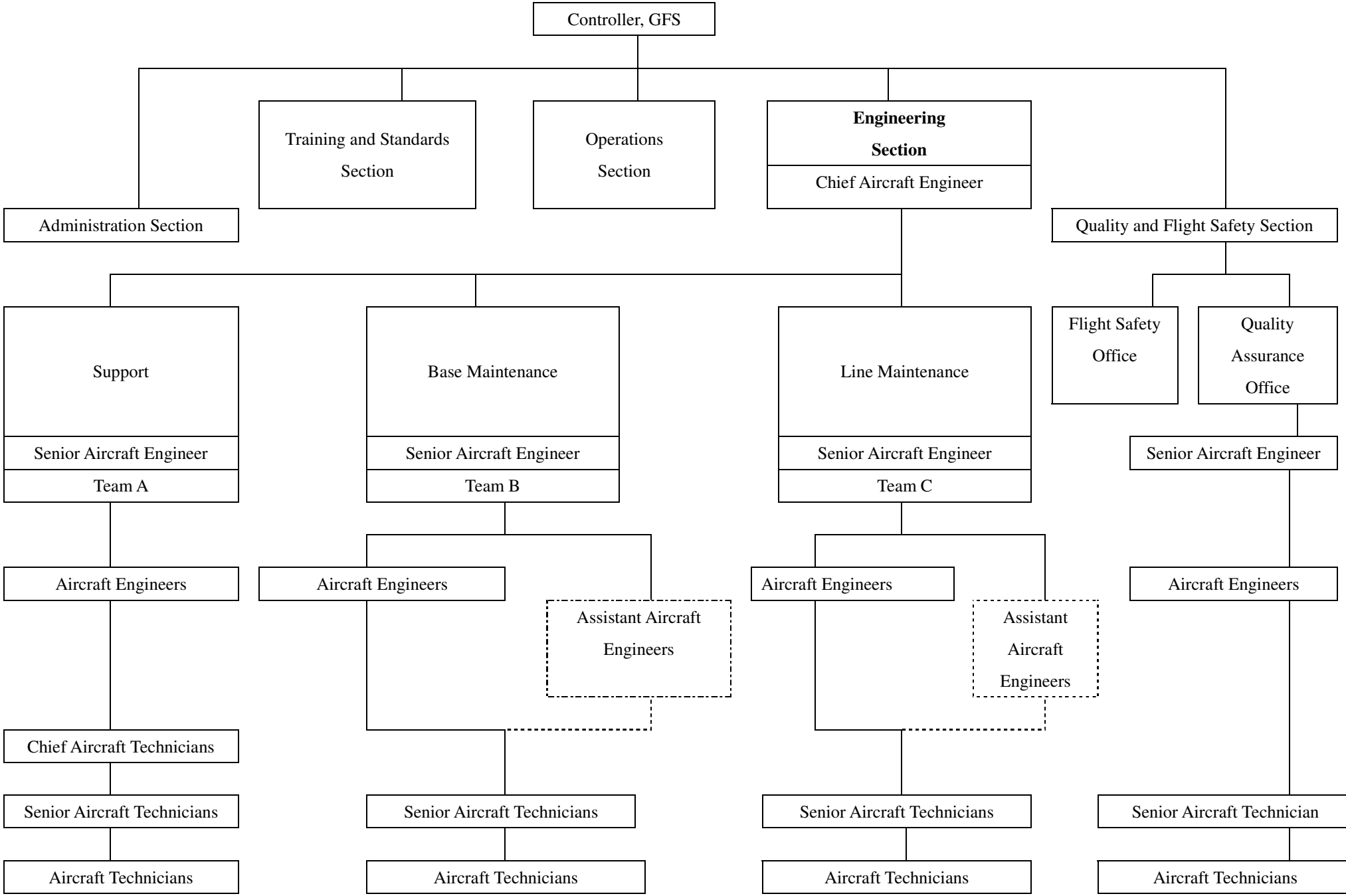
(i) To assess procurement requirements of aircraft support equipment, materials and spare parts and ensure that appropriate stock level is maintained to support the required maintenance of GFS fleet;

(j) To assess the technical competence of subordinates and make recommendations to SAEs for training and approval application; and

(k) To liaise with the manufacturers, suppliers and agents for technical, provisioning and product support matters in respect of aircraft and related system equipment.

Annex E

The Organisation Chart of the Government Flying Service ("GFS") after the creation of the Assistant Aircraft Engineer Rank



Remarks: The proposed creation of the Assistant Aircraft Engineer rank.