

ADMINISTRATION OF THE AIR TRAFFIC CONTROL AND RELATED SERVICES

Executive Summary

1. The Civil Aviation Department (CAD) is committed to a safe, efficient and sustainable air transport system. The Air Traffic Management Division (ATMD) of the CAD is responsible for the provision of air traffic control (ATC) services for aircraft arriving/departing the Hong Kong International Airport (HKIA) and aircraft overflying within the Hong Kong Flight Information Region. From 1998-99 (the commencement of the HKIA's operation at Chek Lap Kok) to 2013-14, the air traffic handled by the CAD had increased by 113% for HKIA traffic and 217% for overflying traffic. The Air Traffic Engineering Services Division (AESD) of the CAD is responsible for the planning, provision and maintenance of ATC facilities, including the ATC system and radar systems. The CAD has about 580 staff working in its ATMD and AESD. For 2014-15, their estimated expenditure totalled \$668 million. The Audit Commission (Audit) has recently conducted a review of the CAD's administration of the ATC and related services, and in particular the implementation progress of the Air Traffic Management System (ATMS) contract, with a view to identifying issues that warrant attention and the key challenges ahead.

Management of the new ATC system project

2. In 2007, the CAD obtained funding of \$1,565 million to replace its ATC system. According to the Finance Committee paper, the existing ATC system would be approaching the end of its usable life by 2012 and the new ATC system was targeted for commissioning in December 2012. The CAD implemented the new ATC system project through eight major contracts. While seven of the eight contracts were substantially completed within their scheduled times, there was delay in implementing the ATMS contract. To-date, the ATMS contract had two contract variations totalling \$89 million. The Factory Acceptance Tests of the ATMS contract initially scheduled for completion in July 2012 were accepted in June 2013, on the condition that the then 127 outstanding deficiencies/observations would be followed up during the Site Acceptance Tests of the ATMS contract. Since then, a significant number of comments were submitted by users during user's training

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and testing sessions. As at June 2014, there were still 76 outstanding deficiencies/observations and 420 comments from users to be followed up. The Site Acceptance Tests of the ATMS contract only commenced in mid-August 2014. As a result, the new ATC system was not yet in operation as at October 2014 and the latest estimate was that the new system would only be ready for operation in 2015. Meanwhile, the existing ATC system was operating above its planned capacity, with frequency of surveillance data display problems increasing since 2011 (paras. 2.1, 2.3, 2.4, 2.12 to 2.15, 2.17 to 2.19 and 2.20).

Management of the precision runway monitor project

3. In June 1996, the CAD obtained funding approval from the Finance Committee to procure a precision runway monitor (PRM) radar. The Finance Committee was informed that the PRM radar was required for independent mixed mode of operation of the two runways of the HKIA with a view to maximising the utilisation of their capacity. The PRM radar costing \$101.4 million was commissioned in 2000. Audit found that before funding approval was sought, the CAD had been made aware of the constraints in adopting independent mixed mode of operation by two consultancy studies in 1990 and 1994, (i.e. the International Civil Aviation Organization's requirements on independent mixed mode of operation could not be met due to terrain obstructions, south and northeast of the HKIA). However, the CAD proceeded with the PRM project in the belief that there might be advancement in technology to permit simultaneous independent operations and the PRM radar could then support independent mixed mode of operation. In the event, the expected changes in technology did not happen. As a result, the PRM radar was only put into use for purposes other than supporting the independent mixed mode of operation of the HKIA's runways. Such other uses also turned out to be supplemental and were discontinued after some 20 months to 4 years. The PRM radar has been put into standby mode since 2005 (paras. 3.2, 3.3, 3.6(c), 3.9(a) and 3.13).

Administration of ATC service related charges

4. Under the Government's "user pays" principle, the full cost of providing ATC services is to be recovered through the ATC service charges for aircraft using the HKIA and en-route navigation charges for aircraft using the Hong Kong airspace only. Since the setting of the en-route navigation charge at \$4.8 per nautical mile flown in 2000, the CAD completed four reviews of the charge level. However,

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Audit found that after implementing the en-route navigation charge level as recommended in each fees and charges review, the CAD had not reviewed the implementation results to ensure that the charge level is conducive to achieving full-cost recovery. Audit also found that the amount of overdue en-route navigation charges had increased since 2009-10. There is a need to implement measures (such as security deposit) to provide coverage against revenue loss in default cases (paras. 4.3, 4.6 to 4.8, 4.10 and 4.13).

Administration of the mandatory occurrence reporting scheme

5. Safety has always been a top priority in the civil aviation industry. To improve the level of flight safety, the CAD has monitored hazardous or potentially hazardous incidents through a mandatory occurrence reporting (MOR) scheme. MOR cases are required to be reported within four days of occurrence. The CAD uses a database to capture information from receipt of reports to closure of the cases. Audit has found that there is a need to strengthen the management of the MOR database to ensure that it can provide accurate and up-to-date information to support MOR case management and trend analysis of significant aviation safety issues. Audit has also found that there is room for improving the timeliness of reporting MOR cases, and closer monitoring of the progress of long outstanding MOR cases (paras. 1.9, 1.12, 5.3(a), 5.7, 5.10, 5.11 and 5.21).

Way forward

6. From time to time, the CAD has to undertake major procurement projects to upgrade/replace its ATC equipment in order to provide safe, reliable, effective and efficient ATC services. The problems identified in the projects for procuring the new ATC system and the PRM radar indicate the need for conducting post-completion reviews to draw lessons for the benefit of future similar projects (para. 6.6).

Audit recommendations

7. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has recommended that the Director-General of Civil Aviation should:**

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- (a) in conjunction with the ATMS contractor, expedite action in rectifying the outstanding deficiencies/observations in the ATMS and closely monitor the remaining contract work to minimise further project delay (para. 2.23(a));
- (b) continue the efforts to deal with the issues of operating the existing ATC system until the new ATC system is available (para. 2.23(c));
- (c) strengthen project appraisal to ensure that all uncertainties/risks impacting on project viability are fully evaluated in a cost-benefit analysis before making procurement decisions (para. 3.16(a));
- (d) conduct a review after implementing the en-route navigation charge level recommended in each fees and charges review to ensure that the charge level is conducive to achieving full-cost recovery (para. 4.17(a));
- (e) take effective measures to prevent the loss of revenue in default en-route navigation charge cases (para. 4.17(c));
- (f) strengthen the management of the MOR database to ensure that it can support the monitoring of follow-up actions on reported MOR cases (para. 5.22(a));
- (g) closely monitor the timeliness of reporting MOR cases and take targeted action in warranted cases such as cases of frequent and long delay in reporting (para. 5.22(b));
- (h) closely monitor the long outstanding MOR cases to ensure that timely follow-up actions have been taken and properly recorded (para. 5.22(f)); and
- (i) conduct post-completion reviews of major procurement projects undertaken by the CAD (para. 6.7).

Response from the Administration

8. The Administration agrees with the audit recommendations.