For Discussion on 24 November 2015

Legislative Council Panel on Transport

Emergency Traffic Arrangements after the Closure of Kap Shui Mun Bridge

Purpose

This paper informs Members of the contingency arrangements taken by various departments after the full closure of the Kap Shui Mun Bridge for about two hours upon impact by a vessel on the evening of 23 October 2015. It also sets out the measures to prevent similar incidents from happening again in the future.

Background

2. A Ship Impact Alarm System connecting the Vessel Traffic Centre (VTC) of the Marine Department (MD), TIML MOM Limited¹ (the Management Company) and the MTR Corporation Limited (MTRCL) is installed at the Kap Shui Mun Bridge. At about 7:38 p.m. on 23 October 2015, the ship impact alarm inside the VTC was activated. The duty officers of VTC immediately reported the incident to the relevant departments in accordance with its operational guidelines and assigned MD's patrol launch to carry out site investigation. The Management Company also correspondingly activated the emergency response mechanism leading to the closure of the Bridge to facilitate comprehensive inspection.

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As in the case of the management of other government tunnels and toll roads, TIML MOM Limited was selected by the Government through open tender and operates in accordance with the "management, operation and maintenance" contract. It is responsible for operation and management of Tsing Ma Bridge and Kap Shui Mun Bridge. It is monitored by the relevant government departments including the Transport Department, Highways Department, Electrical and Mechanical Services Department and the Architectural Services Department.

3. Upon arrival at the scene, the MD's patrol launch could not identify any vessels suspected to have crashed the Bridge. However, the closed-circuit television footage provided by the Management Company revealed that a tug boat and barge was passing under the Bridge at the same time. The MD and the Marine Police traced the subject vessel at once and identified the vessel suspected to have involved in the collision at around 10 p.m. that night. The MD and Police are currently conducting follow-up investigation.

Contingency Arrangements

4. Upon notification of the incident, the relevant departments of the SAR Government immediately triggered the established contingency procedures and made arrangements according to the mechanism. A chronology of events is at **Annex**.

Marine Department

- 5. When the Ship Impact Alarm System of the Kap Shui Mun Bridge at the VTC of the MD was activated at around 7:38 p.m. on the day of the incident, the duty officers of VTC immediately notified the Transport Department (TD), the Highways Department (HyD) and the Hong Kong Police Force (the Police) in accordance with the operational guidelines. They also dispatched patrol launch of the MD to the site for investigation.
- 6. At around 8:30 p.m., the VTC received confirmation from the Management Company that a vessel had been suspected to have crashed the Kap Shui Mun Bridge. To facilitate inspection of the Bridge and for the sake of safety, the VTC closed the Kap Shui Mun Fairway temporarily at 8:45 p.m. that night. It also broadcast navigational safety message to vessels via Very High Frequency radio and dispatched patrol launches to the site to maintain order of marine traffic. In the meantime, the MD also worked with the Marine Police to investigate the vessel involved in the incident (see paragraph above).

TD

7. At 7:38 pm on the night of the incident, the Emergency Transport Coordination Centre (ETCC) of the TD was informed by the MD that the alarm system of the Kap Shui Mun Bridge had been activated. As activation of the alarm system was extremely rare and unusual, the ETCC instantly contacted the Management Company at 7:40 pm and enquired if

it was checking out the matter. The ETCC had also made many contacts with the Airport Authority Hong Kong (AA) and the Management Company for information exchange on the related arrangements.

- The MTRCL subsequently announced the service delays of the Airport Express and the Tung Chung Line. The ETCC then immediately issued a press release on the delays of the MTR service so as to inform the public of the news as soon as possible. Meanwhile, the ETCC also liaised with three bus companies and informed them of the The bus companies were asked to make situation concerned. announcements and display notices at bus stops as soon as possible to inform affected passengers and make arrangements to adjust their bus Afterwards, the ETCC issued a press release on the closure of services. the Lantau Link. When disseminating the information, the ETCC first contacted the three bus companies at that time in the hope of letting public transport operators know the full closure of the Lantau Link so that they could make appropriate contingency arrangements promptly, such as suspending the departure of airport bus services from the termini to avoid aggravating road congestion and deploying more staff at the termini to inform the affected passengers and maintain order. Thus, the affected people at the scene could be handled in the first instance.
- 9. The ETCC subsequently issued four other press releases to update the public on rail services, traffic situations and alternative transport service arrangements, etc. Apart from issuing the press releases, the ETCC also uploaded the information to the website of the TD and the Government Mobile Apps "GovHK Notifications". Moreover, the TD spokesman had made a number of announcements through the radio and TV. At the same time, the ETCC also made use of Variable Message Signs (VMS) installed at highways to disseminate the information to the public on the road. The ETCC also conveyed the message to other tunnel operators and bus companies and requested them to display the information on the VMS in the vicinity of tunnels and on the LED displays at public transport interchanges.
- 10. As regards the provision of emergency alterative transport services, the ETCC had liaised with ferry operators. On one hand, the ETCC requested the Discovery Bay ferry operator to enhance the frequency of services between Central and Discovery Bay which had carried a total of about 4 500 passenger trips and to strengthen the bus feeder service between Discovery Bay and the Airport/Tung Chung. On the other hand, based on the emergency ferry services agreement signed between the TD and Hong Kong & Kowloon Motor Boats & Tug Boats Association Ltd

(MBTA), the TD requested the MBTA to have the first boat arrived within two hours to take passengers pursuant to the agreement. MBTA later confirmed that they were able to provide at least four sailings (i.e. two sailings each time) of emergency ferry services between Tsuen Wan West Pier and Tung Chung Development Pier at 10:00 p.m. and 10:30 p.m. with a total carrying capacity of around 700 passengers. At the same time, the ETCC also liaised with the bus companies operating bus services at the Airport and Tung Chung to prepare for the enhancement of the bus services connecting Tung Chung Development Pier, the Airport and the town area of Tung Chung to facilitate passengers to convert to the existing or emergency ferry services for travelling between the Lantau Island and the urban areas. However, since the Lantau Link had re-opened at around 9:40 p.m. that night, the planned emergency ferry services were no longer needed. The ETCC had therefore not informed the public of the emergency ferry services arrangements.

HyD

- 11. Upon receipt of the report from MD's VTC and the Management Company at around 7:50 p.m. that night, the HyD immediately dispatched staff to understand the situation and arranged engineering staff to inspect the Bridge's structure in order to ascertain the location of collision and if there were any damages to its main structural elements. Having ascertained the safety of the Bridge's overall structure, the HyD immediately notified the relevant department to arrange re-opening of all the Bridge's carriageways. It also arranged follow-ups for the damages to the non-structural parts after its re-opening to facilitate the return of affected traffic to normal as soon as practicable.
- 12. The next day (24 October), HyD carried out a detailed inspection of the collided part of Kap Shui Mun Bridge, including the use of a bridge inspection vehicle (i.e. an engineering truck equipped with an extendable arm specifically designed for the inspection of long-span bridges) by lowering its extendable arm to the underside of the Bridge for the engineering personnel to undertake close visual inspection of the structural components at the Bridge's soffit and to determine the damage condition. The detailed inspection was completed in the afternoon. The results indicated that the overall structural condition of the Bridge was satisfactory. Only the six rails for supporting the inspection platform near the mid-span of the Bridge, which are non-structural installations attached to the Bridge's soffit, were found damaged by the collision. Some bolts near these rails were found missing and this did

not affect the structural safety of the Bridge. The HyD had instructed the Management Company to complete the repair of damaged components as soon as possible, including the damaged optic fibres, the rails of the inspection platform and the missing bolts. The HyD will keep on closely monitoring the bridge's condition and the repair works undertaken by the Management Company to ensure road safety.

13. According to established safety practice, a comprehensive safety inspection must be conducted for the Bridge after impact by a vessel in order to ascertain its structural safety. As for the feasibility of re-opening of some carriageways afterwards, this can only be determined on a case-by-case basis after careful assessment of the actual extent and degree of the damage to the Bridge.

The Police

- 14. At around 8 p.m. that night, the Police received a report from the Management Company, reporting that the alarm system of the Kap Shui Mun Bridge was activated. A vessel was suspected to have left the scene after knocking against the Kap Shui Mun Bridge in Tsing Yi. In response, the Marine Region Headquarters Command and Control Centre of the Police took immediate contingency actions, including:
 - (i) deployment of divisional command launches and small boats to assist the MD in closing the Kap Shui Mun Fairway;
 - (ii) retrieval of data from radar navigation systems to track down vessels which might have been involved in the incident; and
 - (iii) rendering continual assistance to the MD in directing and diverting sea traffic in the vicinity of Kap Shui Mun, upon confirmation that the Kap Shui Mun Bridge remained structurally intact.
- 15. At the same time, in addition to deploying officers from various units, such as Railway District, Airport District, Traffic Wing and Marine Region, to the scene and affected areas to conduct immediate crowd, land transport and sea freight management, the Police aided in the administering of the contingency measures undertaken by relevant government departments and other organisations, including the AA and MTRCL.

MTRCL

- 16. The alarm system of Kap Shui Mun Bridge is connected to the Operations Control Centre (OCC) of the MTRCL. When the alarm is activated, the system will transmit signals automatically to the OCC. The signalling system of the MTRCL will then automatically suspend train services passing through the section on Kap Shui Mun Bridge to ensure safety. The MTRCL will contact the Management Company immediately to confirm if there is any incident occurred at the Bridge and its impact on train services.
- 17. On the night of the incident, the OCC received signals from the alarm system of the Kap Shui Mun Bridge at 7:39 p.m. Train services of the MTR Airport Express and Tung Chung Line passing through the section on Kap Shui Mun Bridge were then suspended instantly. MTRCL contacted the Management Company right away for details in order to assess the disruption to be caused to train services. to the MTRCL's initial assessment, it would take some time for train Therefore, public announcements were made services to resume normal. at MTR stations and on trains that extra travelling time would be expected for trains of the MTR Airport Express and Tung Chung Line. Announcements were also made via the smart phone application "Traffic News". Subsequently, the Management Company confirmed that the Kap Shui Mun Bridge had to be closed for urgent inspection. MTRCL hence made an announcement through the "Traffic News" again, informing passengers that train services between Hong Kong Station and AsiaWorld-Expo Station of the Airport Express and those between Tsing Yi Station and Tung Chung Station of the Tung Chung Line were suspended; train services would be provided at an interval of six minutes between Hong Kong Station and Tsing Yi Station of the Tung Chung Line, and In-town Check-in service was also suspended. Meanwhile, the MTRCL also made use of other channels including the passenger information display system in stations, public announcement systems in stations and on trains, as well as taking the initiative to contact the media for dissemination of train services information. At the same time, the MTRCL deployed additional staff to the stations affected to provide information and assistance to passengers. At 9:38 p.m., the MTRCL was informed that the inspection was completed. After arranging two not-in-service trains for safety inspection, the services of the Airport Express and Tung Chung Line were resumed normal gradually starting from 9:53 p.m. The MTRCL increased the train frequency of the Airport Express and Tung Chung Line to relieve congestion after resumption of services.

- 18. At around 8 p.m. on the day of the incident, upon notification from the Management Company, the AA made immediate arrangements in response to the incident accordingly and notified the airlines, the ground handling agents, the Police and the government departments at the airport of the situation and activated the Airport Emergency Centre at 8:30 p.m.
- 19. The AA also activated a crowd management contingency plan at the airport to coordinate flight arrivals and departures with the Civil Aviation Department (CAD), the Immigration Department, the Customs and Excise Department and the airlines, and provide assistance to affected passengers. In addition, the AA also disseminated emergency information to passengers through various channels including customer service counters, customer service hotlines, airport information display system, the airport public address systems, electronic media, the airport's website and the mobile app "HKG My Flight" by appealing them to pay attention to flight arrangements and those for public transport services to and from the airport. As the incident caused delays to passengers' arrival at the airport, the AA also worked with the airlines for appropriate arrangements in adjusting the time of departure of their flights. result, the departure times of a total of about 90 flights were postponed on To facilitate affected passengers, the AA deployed additional staff at key positions of the airport to provide the latest information and assistance to passengers. In addition, the AA made request to the dining facilities at the airport to strengthen their services and also to other business partners and service providers to strengthen their manpower.
- 20. At 8:45 p.m., the AA was prepared to activate the "full apron" contingency plan to vacate the frontal parking stands as far as possible for contingency purposes by towing those planes with no departure schedules to the remote parking stands and coordinate with the Air Traffic Control Centre of the CAD in coordinating air traffic flow. Between 9:30 p.m. and 10:25p.m., air traffic flow control was implemented for arrival flights from seven airports, including Shanghai Pudong, Shanghai Hongqiao, Xiamen, Fuzhou, Manila, Taipei and Kaohsiung.
- 21. When services of both the traffic lanes on Tsing Ma Bridge and the Airport Express resumed normal, the AA finished handling the majority of the passengers at around 11:30 p.m.. During the incident, about 6 000 to 7 000 passengers were waiting for public transport services at the airport at its peak. Affected by the incident, 89 passengers were unable

to take their flights on schedule. Subsequent arrangements for alternative flights were made with the coordination between the AA and the airlines.

Inter-departmental meeting

22. To comprehensively review the contingency plans in response to the incident, and consider measures for preventing recurrence of similar incidents, the Secretary for Transport and Housing chaired an inter-departmental meeting on 29 October. Attendees included representatives from the MD, TD, HyD, CAD, Information Services Department, Home Affairs Department, Police, AA and MTRCL. Director of the Chief Executive's Office was also in attendance. meeting not only discussed the closure incident of Kap Shui Mun Bridge/Tsing Ma Bridge on 23 October, but also reviewed the coordination and interfacing among the contingency plans of different Another focus of deliberation was ways to enhance departments. contingency and communication work in case of recurrence of similar The meeting also examined work to minimise the safety risks of the Bridge, and long-term transport options for the overall development of Lantau Island.

Improvement Measures

- 23. To sum up, the SAR Government will adopt multi-pronged measures to prevent recurrence of similar incidents and to handle such incidents should they happen. These measures include:
 - (i) Firstly, it is necessary to "strengthen internal communication". We will adjust the alarm system so that key departments and organisations, including the MD, TD, HyD, AA and MTRCL etc. will be notified concurrently, and will be aware that when the bridge alarm is activated, full closure of the bridge would be required for emergency inspection. The TD and HyD will also review with the Management Company the contingency arrangements and notification mechanism when the alarm system is activated.

The HyD has liaised with relevant departments to assist its personnel to arrive at the incident site when land traffic is blocked, and is considering to deploy additional manpower in order to enhance its emergency response ability.

As to the TD and AA, they have been carrying out regular drills to test their contingency plans in dealing with possible emergencies. Various government departments and organisations will keep conducting and strengthening such drills to ensure fast and smooth coordination by parties concerned in response to any incidents.

- (ii) Secondly, need to "strengthen and improve we communication with the public" by informing as early as possible the public and relevant stakeholders of the background of the incident, potential impact on traffic, etc. so as to facilitate Should similar incidents happen in future, transport planning. the ETCC of the TD will, at the same time, inform the public of the road closure, liaise and coordinate closely with public transport operators and the AA. When making the announcements, the TD will also let the public know that contingency plans have been activated by the Government, including arranging emergency ferries to provide limited service, and reminding the public to consider adjusting their journey and to keep abreast of the latest information. To further improve the channel of information dissemination, the TD is considering putting in place a mobile phone application for dissemination of special traffic news so that the public can get hold of the latest situation directly and immediately. will also explore ways to use the existing mobile phone application to enhance dissemination of related information to airport users.
- (iii) Thirdly, we will consider "strengthening traffic relief measures", including, if possible, further enhancement of arrangements for waterborne transport services, and the feasibility of using the SkyPier at the airport and other relevant facilities for diversion of passengers when necessary. addition, depending on the actual circumstances (including the resource deployment by operators, time of incident and its duration, etc.), the TD will ask ferry operators to endeavor to enhance the existing ferry services, especially for the service between Central and Discovery Bay. The TD and MBTA have also explored the feasibility of providing emergency ferry services between Tsuen Wan West Pier and Tung Chung Development Pier as soon as practicable. The external transport links of Lantau Island and the Airport mainly rely on

two land-based mass transit carriers, namely the railway and franchised buses. In case of full closure of land links, the role of waterborne transport, as an alternative, is rather limited. We will, nevertheless, conscientiously study the feasibility of strengthening waterborne transport services as a mitigation measure in response to emergencies.

- (iv) Fourthly, we will **strengthen the control to minismise the risks of similar hit impact on the bridge.** At present, the Lantau Link and Airport Express is the only land links connecting Lantau and other parts of Hong Kong. In case of full closure of land links, the relevant contingency measures have their limitations. In response to this incident, the MD temporarily deployed one additional patrol launch² to the Kap Shui Mun Bridge area. In the longer term, it would seek to secure resources to strengthen the marine patrol at the height restriction areas of the bridges, and also step up educational and publicity efforts targeting operators and crews of local working vessels so as to enhance the awareness of safe navigation of the trade in complying with the height restriction of 41 metres of the Kap Shui Mun Bridge.
- (v) Lastly, we will enhance **external connectivity between**Lantau Island and the Airport Island. Upon commissioning of the Tuen Mun-Chek Lap Kok Link (TM-CLKL) (see attached map) which is now being constructed, it will provide another route to connect Lantau, including the Airport, with urban areas. Besides, we will seek necessary resources to proceed with a feasibility study of Route 11, which will link up North Lantau and Yuen Long, in the light of the future traffic demands of Lantau developments and Northwest New Territories. According to the current idea of Route 11, the project will provide the third access to Lantau Island in addition to Tsing Ma Bridge and TM-CLKL, in order to enhance the

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At the night of the incident, to facilitate inspection of the bridge and for the sake of safety, the VTC closed the Kap Shui Mun Fairway temporarily and dispatched two patrol launches to the site to maintain order of marine traffic and direct vessels to use the Ma Wan Fairway. The Kap Shui Mun Fairway was reopened at the night of 27 October for navigation. When the marine traffic was resumed, a patrol launch has been temporarily deployed by MD to station around the Kap Shui Mun area.

robustness of the road network connecting to the airport.

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Transport and Housing Bureau November 2015

Ship Collision Incident at Kap Shui Mun Bridge Chronology of Events

Time (At night on 23 October)	Event
7:38 p.m. to 7:59 p.m.	• At 7:38 p.m., the alarm system of Kap Shui Mun Bridge in the Vessel Traffic Centre (VTC) of the Marine Department (MD) was triggered.
	• The Transport Department (TD), Highways Department (HyD), Hong Kong Police Force, MTR Corporation Limited (MTRCL) and Airport Authority Hong Kong (AA) were informed of the incident through their own notification mechanisms and procedures within that period.
	• At 7:53 p.m, the MTRCL issued information via the smart phone app "Traffic News" to inform the public that:
	 (a) Extra travelling time was expected for the trains of the Airport Express and Tung Chung Lines; and (b) The time limit for In-town Check-in service had been advanced from 90 minutes to 120 minutes before flight departure time until further notice.
	• At 7:56 p.m., the Emergency Transport Co-ordination Centre (ETCC) of the TD issued the first press release to inform the public of the above information.
	• The ETCC informed the franchised bus companies that the alarm system of Kap Shui Mun Bridge had been triggered and the MTR services had been disrupted to facilitate them to make appropriate

	arrangements, inform the affected passengers and adjust their services to divert passenger flow.
8 p.m. to 8:20 p.m.	• Services of the Airport Express were suspended; services between Tung Chung Station and Tsing Yi Station of the Tung Chung Line were suspended; train services between Hong Kong Station and Tsing Yi Station of Tung Chung Line were changed to 6-minute intervals; In-town Check-in service was suspended.
	• All lanes on Tsing Ma Bridge (Kowloonbound) were closed.
	 All traffic lanes (airport-bound) on the Tsing Ma Bridge were closed.
	• The AA activated a crowd management contingency plan for the airport and in collaboration with the Civil Aviation Department (CAD), Immigration Department, Customs and Excise Department and airlines, co-ordinated arrangements for arrival and departure flights and provided assistance to the affected passengers.
	• The ETCC notified the franchised bus companies of the full closure of the Lantau Link, so that they could make appropriate contingency arrangements and deploy more staff to the airport bus termini to alert the affected passengers and maintain order there.
	• At 8:20 p.m., the ETCC issued the second press release to inform the public that:
	(a) due to an unexpected incident, both bounds of Tsing Ma Bridge were fully closed; and

	/L)	since there was serious to ff:
	(b)	since there was serious traffic congestion on both bounds of Tsing Ma Bridge, drivers should exercise patience and pay attention to traffic news on television and radio.
8:21p.m. – 8:40p.m.	press an in requi	8:21 p.m., the ETCC issued the third release to inform the public that since espection of Kap Shui Mun Bridge was red, road traffic and railway services were suspended:
	(a)	train services of the Airport Express between Hong Kong Station and Asia World-Expo Station were suspended;
	(b)	train services of the Tung Chung Line between Tsing Yi Station and Tung Chung Station were suspended; and
	(c)	train services of the Tung Chung Line between Hong Kong Station and Tsing Yi Station would be provided at an interval of six minutes.
	abov app '	:24 p.m., the MTRCL disseminated the e information through its smart phone 'Traffic News'', and also announced that -town Check-in service was suspended.
	Cent to pa mobi passe arran for th	AA activated the Airport Emergency re and disseminated urgent information assengers through its website and the le app "HKG My Flight", requesting engers to pay attention to flight agements and public transport services he airport. The media was also notified e same time.
	from Area	VTC of the MD received confirmation the operator of the Tsing Ma Control that Kap Shui Mun Bridge had been k by an unidentified vessel.

	The ETCC arranged the Harry Variation
	• The ETCC approached the Hong Kong and Kowloon Motor Boats and Tug Boats Association Limited (MBTA) to arrange emergency ferry service between Tsuen Wan West and Tung Chung.
8:41 p.m 9:10 p.m.	• The VTC of the MD commenced temporary closure of the Kap Shui Mun Fairway and broadcasted navigational safety notices via the Very High Frequency radio system to alert vessel operators. MD patrol launches were deployed to maintain marine traffic order at the waters concerned.
	• The AA prepared to activate the "full apron" contingency plan, and liaised with the Air Traffic Control Centre of the CAD to co-ordinate air traffic flow.
	• The TD's spokesman liaised with radio and television stations to give sound bites.
	• The ETCC requested Discovery Bay (DB) public transport operator (PTO) to increase the frequency of the ferry service between Central and DB and the bus services of DB.
	● DB PTO informed the ETCC that ferry service would be enhanced (from 30-minute intervals to 20-minute intervals). The MBTA confirmed that the emergency ferry service could be provided at Tsuen Wan West from 10 p.m. onwards.
9:11 p.m 9:30 p.m.	DB PTO informed the ETCC that two additional bus trips of route DB03R (between DB and Sunny Bay) had been arranged.
	• The ETCC confirmed that the DB ferry operator had enhanced the frequency of its ferry service from 30-minute intervals to 20-minute intervals.

- The ETCC issued the fourth press release at 9:25 p.m., notifying the public that they might consider making use of the ferry service between Central and DB and then interchange bus services travelling between DB and Tung Chung/the Airport.
- The MBTA confirmed that two sailings of the emergency ferry service could be provided at 10 p.m., and two more urgent sailings could be provided at 10:30 p.m. (the total carrying capacity of these four sailings was about 700 passengers).
- TD's spokesman contacted radio and TV stations to give sound bites, suggesting members of the public to consider making use of DB ferries and buses.

9:31 p.m. – 9:50 p.m.

- The Management Company informed MTRCL and the ETCC that inspection to Kap Shui Mun Bridge was completed and confirmed that the Bridge was structurally safe.
- At 9:40 p.m., the Lantau Link was re-opened. Upon confirmation by the Management Company that all traffic lanes on Tsing Ma Bridge were re-opened, the ETCC issued the fifth press release, notifying the public that:
 - (a) all traffic lanes of Tsing Ma Bridge were re-opened;
 - (b) train services of the Airport Express and Tung Chung Line between Tsing Yi Station and Tung Chung Station were still suspended.
 - MTRCL arranged not-in-service trains for

	safety inspection.
9:51 p.m. – 10:10 p.m.	 Services of the Airport Express and Tung Chung Line resumed normal gradually from 9:53 p.m. MTRCL increased train frequency of the Airport Express and Tung Chung Line, in order to relieve congestion.
	 Using its smart phone app "Traffic News", MTRCL notified members of the public that the services of Airport Express and Tung Chung Line were gradually returning to normal through its smart phone app "Traffic News".
	• The ETCC informed the AA and the franchised bus companies that MTR services had resumed normal.
	• At 9:55 p.m., the ETCC issued its sixth press release, notifying the public that the services of Airport Express and Tung Chung Lines, and In-town Check-in service were gradually returning to normal.
Around 11:30 p.m.	The AA finished handling the majority of passengers at the Airport.