For information
on 28 June 2004

Legislative Council Panel on Economic Services

Power Disruption Incident at the Hong Kong International Airport

Introduction

On 10 June 2004, a power disruption occurred in the southern part of the Passenger Terminal Building of the Hong Kong International Airport (HKIA). Members asked that a paper be submitted on the incident for their information.

Background

2. Immediately following the power disruption incident at the HKIA, the Government has requested the Airport Authority (AA) to provide a detailed report on the incident, including an account of the power disruption incident, the cause of the power disruption, as well as measures recommended to prevent recurrence of similar incidents. The Government would study the report as soon as it is available.

3. Upon the request of Members, the AA has submitted a paper on their preliminary findings at **Annex** for Members' reference.

Annex

Economic Development and Labour Bureau
June 2004

香港機場管理局 AIRPORT AUTHORITY HONG KONG

PRELIMINARY FINDINGS ON THE POWER INTERRUPTION IN THE PASSENGER TERMINAL BUILDING OF HKIA ON 10 JUNE 2004

BACKGROUND

A disruption to the high voltage (11,000 volt) power distribution system occurred at 1900 hours on Thursday, 10 June 2004. Power was lost to all levels of the southern part, i.e. one third of the Passenger Terminal Building (PTB). Power was restored in phases. By 1901 hours, power was restored to half of the affected areas (see **Diagram 1**) , with full restoration to all the affected area by 1935 hours. As power was gradually restored, airport systems, for safety reasons, required inspection and re-setting before resuming normal operations. By 2045 hours, all airport operations were restored.

2. During the interruption, the following contingency procedures were implemented :

- Public announcements were made every five minutes.
- All immigration and security processes were shifted to the North Hall.
- Duty staff and ambassadors were dispatched to strategic locations to provide assistance to passengers.
- Check-in bags were manually handled.
- Affected airlines were re-allocated to the unaffected check-in aisles.
- All bags were diverted to the north part of the baggage handling system (BHS).
- Airport Emergency Centre (AEC) was activated.

3. With the support of the airport community, all these contingency measures were implemented in an orderly and timely manner thus minimizing the impact on the operations of the airport. No injury to passengers was reported, nor were there any security incidents. During this period, 2 out of 46 flights were delayed, 77 out of 4800 bags were short shipped, and 4 persons were trapped in the lifts during the power outage, they were released within 15 minutes.

PRELIMINARY FINDINDS

4. A task force consisting of Airport Authority (AA) and its high voltage power distribution system maintenance contractor, China Light & Power Engineering (CLPE) personnel immediately commenced an investigation into the cause of the incident. Electrical and Mechanical Services Department personnel also visited the airport and reviewed the emergency power supply and distribution systems on 12 June 2004.

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5. The initial findings of the task force revealed that at 1900 hours of 10 June, the High Voltage Supervisory Control and Data Acquisition (HV SCADA) system received a false “no CLP power” signal from the PTB substation ‘B’. As a result, it initiated the power transfer sequence to obtain power from PTB substation ‘H’. It was able to complete half of the transfer operation before receiving another faulty signal which stopped the operation. As a result, power to the remaining one sixth of the PTB had to be restored manually. In compliance with the high voltage regulatory safety practices for manual operation, this took another 30 minutes.

6. The cause of this false signal was traced to the premature failure (life expectancy of 10 years) of the communication processing card in the remote terminal unit (RTU) of the HV SCADA (see **Diagram 2**). The HV SCADA is a central computerized control system used to monitor, manage and control the high voltage power distribution network of PTB and in the event of a CLP power disruption, initiate the emergency back up power supply. **During the incident, the power supply from CLP was normal, and therefore the emergency generator was not activated.**

7. This faulty card has subsequently been replaced, and the HV SCADA operation has resumed normal. As a precautionary measure, all similar cards will be replaced.

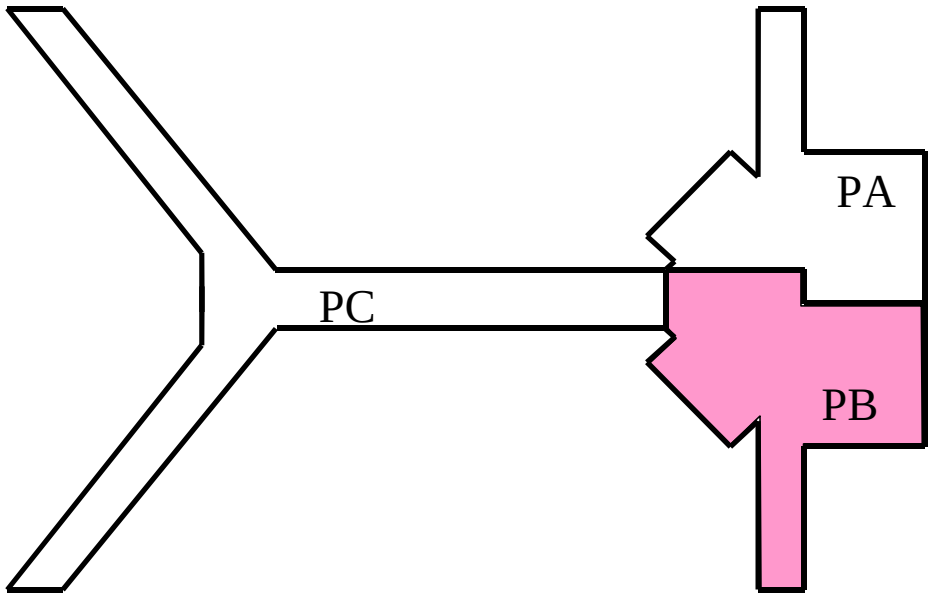
ENHANCEMENT

8. To enhance the reliability and robustness of the system and to prevent the re-occurrence of a similar incident, AA will enhance the HV SCADA system by introducing a validation process to check and ensure that the signal is correct before transmission from the RTU. This enhancement will be implemented as soon as possible.

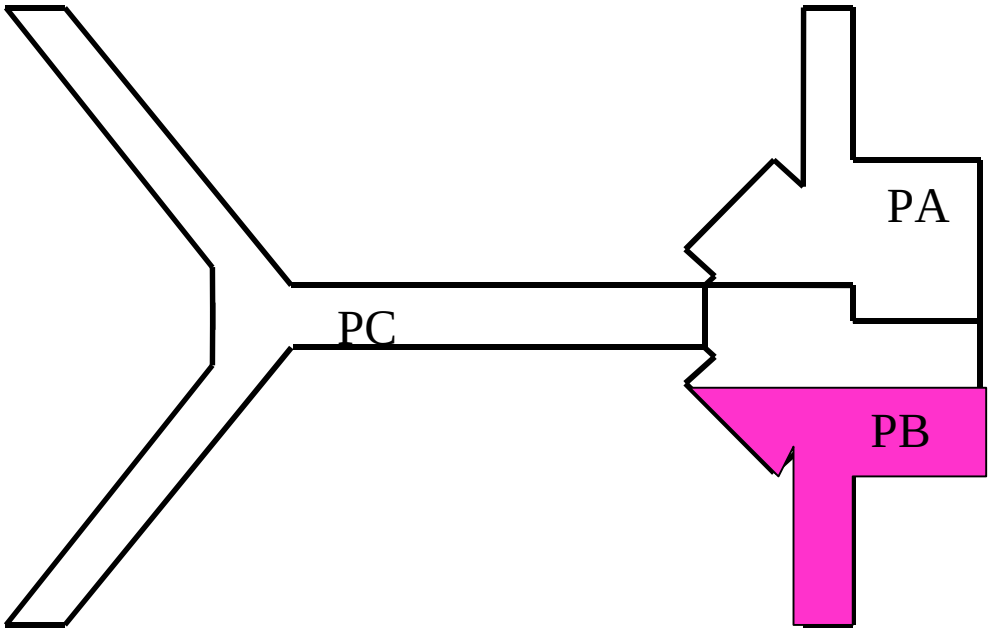
9. To further reduce the risk of any other power incidents, AA will apply the lessons learned from this incident to a comprehensive review of the total power distribution and emergency power generating system.

AIRPORT AUTHORITY HONG KONG
JUNE 2004

Diagram 1 – PTB Affected Areas



Affected area at 19:00



Affected area at 19:01

Diagram 2 – HV SCADA Systems