




Business Continuity Manual

Business Continuity Plan: C1 Baggage Handling System

		Signature	Revision	Effective Date
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A. Airline DCS and CUTE GATEWAY Failure

1.0 Background

1. AA's CUTE GATEWAY is the most important message transmission system interface between Airline DCS and the BHS.
2. Once the BSM is generated by the airline DCS, the BSM that contains passenger data such as, flight number, passenger name, class and baggage tag number will be sent to the BHS via CUTE GATEWAY for baggage sorting inside the BHS and other baggage handling process. This chapter covers the contingency measures for BHS when BSMs are not received e.g. during the failure of AA's CUTE GATEWAY / or Airlines' DCS failure.

2.0 Scope of Impacts

1. During the failure of CUTE GATEWAY or Airlines' DCS, no BSM for all flights or flights of particular airlines will be sent to the BHS sorting system.
2. Both check-in and transfer baggage which enters the BHS after the failure will be diverted to manual coding stations for manual coding before going to NATL carousels.
3. Subsequently, sorters will become congested due to the bottle neck effect of manual coding stations. In addition, the NATL carousel will become overcrowded with NATL baggage.
4. The aforementioned impacts may cease after re-booting the CUTE GATEWAY where BSM can be received again. By experience, the normal baggage flow will resume in 30 minutes.
5. If the BSM flow cannot resume after re-booting CUTE GATEWAY or the cause is due to Airlines' DCS, BMO will activate the contingency procedure and set lateral mode for affected flights deployed with 512-bit PECTAB to stop sorting baggage to NATL carousel.
6. The system congestion will begin to release after the activation of contingency procedure. However, the bag flow will not resume fully because most of the transfer baggage without using 512-bit bag tag will be sorted to manual coding station for manual processing. Thus, some overflow baggage will still go to problem late area and overflow carousels due to the overflow of MCS at primary sorter.
7. When the receipt of BSM resumes to normal, BMO will deactivate the contingency procedure. However, if the suspension of BSM is caused by the failure of airlines DCS, it will take time for the clearance of the historical BSM upon the resumption of the airline DCS and the time length will depend on the volume of BSM queued.

3.0 Contingency Measures

3.1 STAGE1: BSM Outage Observed

1. BMO shall:

- a. Confirm no BSM receive for all or particular airlines; and
- b. Inform SOCC, ABRS team for follow up

2. SOCC shall:

- a. Perform health check on CUTE GATEWAY server;
- b. Contact ARINC to check system status;
- c. Reboot CUTE GATEWAY servers; and
- d. Update BMO for the progress and the findings.

3.2 STAGE2: BSM Still Not Receive For All or Particular Airlines After Rebooting of CUTE GATEWAY Servers and confirm the cause is due to Airlines' DCS

1. BMO shall:

- a. Activate contingency procedure in Section A 3.3 or 3.4 in accordance with the real time situation;
- b. Configure all affected flights deployed with 512-bit PECTAB to "Lateral Mode";
- c. Remind RHO to collect baggage from NATL carousel and switch off all RF readers at lateral/Stack@Ease when performing manual bingo;
- d. Inform AVSECO to perform manual bingo at MS01, MS02, RTF & T1 Midfield Concourse (T1M);
- e. Activate the north and south overflow carousel contingency manual handling area and deploy BHO to assist manual baggage sorting;
- f. Deploy patrol staff to Level 7 check-in islands to monitor the real time situation; and
- g. Inform AVSECO to handover bags at NATL carousel to RHO (including ATL and NATL bags). NATL return line will be suspended to deliver bags back to the baggage handling system.

3.3 BSM Disruption for Selective Airlines i.e. DCS Failure (Only particular airline(s) are affected)

1. BMO shall:

- a. Inform Airport Duty Manager, Baggage Duty Manager and IAC-TOD the affected airlines. IAC-TOD inform AOC to disseminate the message to particular airlines;

- b. Inform the corresponding airline handling agents listed in Appendix 3;
- c. Set all affected flights deployed with 512-bit PECTAB to “Lateral Mode”; and
- d. Inform the corresponding airline handling agents when BSM resume to normal.

2. IAC-TOD shall:

- a. Inform AOC about the incident; and
- b. IAC-TOD deploy patrol staff to Level 7 check-in islands to monitor the real time situation.

3. SOCC shall:

- a. Carry out 2nd Level investigation;
- b. Co-ordinate with corresponding airlines;
- c. Co-ordinate with ARINC to perform troubleshooting;
- d. Perform system health checks or system switch-over;
- e. In case of suspected cyber-attack, SOCC shall inform Risk & Cybersecurity Section of ITD for further investigation; and
- f. Inform BMO of the services status updates.

4. AVSECO shall:

- a. Pass all NATL baggage to RHO for further action.

5. Ramp Handling Operator (RHO) shall:

- a. Switch off all RF readers at Stack@Ease before performing manual bingo for particular airlines;
- b. Conduct manual bingo for particular airlines at laterals;
- c. Collect all bags from NATL and ATL carousels to laterals; and
- d. Deploy manpower to north and south overflow carousel contingency manual handling area to collect overflow baggage.

3.4 Major BSM Disruption i.e. CUTE GATEWAY failure (All airlines are affected)

1. BMO shall:

- a. Inform Airport Duty Manager, Baggage Duty Manager and IAC-TOD the affected airlines. IAC-TOD inform AOC to disseminate the message to all airlines;

- b. Inform the corresponding airline handling agents listed in Appendix 3;
- c. Set all affected flights deployed to 512-bit PECTAB to “Lateral Mode”; and
- d. Inform the corresponding airline handling agent when BSM resume normal.

2. IAC-TOD shall:

- a. Inform AOC about the incident; and
- b. IAC-TOD deploy patrol staff to Level 7 check-in islands to monitor the real time situation.

3. SOCC shall:

- a. Carry out 2nd Level investigation;
- b. Co-ordinate with corresponding Airlines;
- c. Co-ordinate with ARINC to perform troubleshooting;
- d. Perform system health checks or system switch-over;
- e. In case of suspected cyber-attack, SOCC shall inform Risk & Cybersecurity Section of ITD for further investigation; and
- f. Inform BMO of the services status updates.

4. AVSECO shall:

- a. Pass all NATL baggage to RHO for further action; and
- b. Perform manual bingo at MS01, MS02, RTF & T1 Midfield Concourse (T1M).

5. Ramp Handling Operator (RHO) shall:

- a. Switch off all RF readers at Stack@Ease before performing manual bingo for all flights or particular airlines;
- b. Conduct manual bingo at laterals;
- c. Collect all bags from NATL and ATL carousels to laterals; and
- d. Deploy manpower to north and south overflow carousel contingency manual handling area to collect overflow baggage.

B. SAC Failure Contingency Procedure

1.0 Background

1. When SAC fails and the expected recovery time will be more than an hour, Lite SAC will then be activated to serve as a replacement of SAC. Lite SAC has the same function as SAC, except it is semi-automated and thus in comparison with SAC, the sustainability is comparatively lower.
2. Since both systems share the same network IP, Lite SAC is incapable of always-on standby. To activate the Lite SAC, 10 minutes will be required for startup, including shutting down of SAC server, CUTE GATEWAY and SAC LAUs, reloading flight schedule and restoring BSM for all baggage.
3. The sorting function and bag flow will resume normal when Lite SAC is in place.
4. When the SAC recovers, the BHS needs to revert back to SAC from Lite SAC and the process will need approximately 1 hour. The switch back to SAC process will be conducted at non-operating hours, i.e. after the last flight departed, to minimize any impact to the operation.

2.0 Scope of Impacts

1. Before the Lite SAC and related system is ready, local joining baggage shall be delivered via OOG routing while transfer baggage shall be diverted to manual sorting facilities for sortation.
2. The stoppage of sorter is caused when CSC servers together with Lite SAC are updating the baggage sort table, respective sorter will be suspended from operation and all baggage will be diverted to other available sorters to handle.
3. During the course of SAC failure and before the Lite SAC is put into operation, the BSM transmission process will be suspended. After the Lite SAC is put into operation, the recovery of BSM is required.
4. During the activation process of the Lite SAC, the EBS records will be purged. As such, the EBS system needs to be temporarily suspended and those stored early bags will be released from the storage lanes and be reassigned after the Lite SAC is activated.
5. Manual flow control on EBS baggage releasing is necessary to prevent system overflow thus simultaneous release action needs to be prevented.
6. The EBS system will resume normally after all stored baggage is released. However, the completion time for releasing all stored EBS baggage will be subjected to the volume of baggage that were stored in the system before the SAC failure.
7. Normally, the EBS system will not resume in service within 2 hours after SAC failure. All EBS baggage will be sorted to 11A and 41A carousels for manual handling when the EBS system is out of service.

8. To maintain the bag flow at check-in counters during the activation of contingency, service contractors will be arranged to divert the local joining baggage to Baggage Hall through OOG routing.
9. However, transfer baggage would require manual coding, thus causing congestion within the BHS. In view of such, RHO needs to divert part of transfer baggage to RTF, MTF and hot transfer facilities.
10. All baggage flow will resume normal once all BSM retrieval have completed as per stated in Section B 3.0, which system can sort baggage automatically by BSM.

3.0 Contingency Measures

3.1 STAGE1: Contingency Activation of Lite SAC

1. BMO shall:

- a. Inform Airport Duty Manager, Baggage Duty Manager, IAC-TOD and airlines of contingency activation;
- b. Inform RHO of contingency and suspend CTF in-feed lines until further notice;
- c. Inform MTRC of contingency and suspend ITCI in-feed until further notice;
- d. Inform BHO of contingency and request BHO to gear up manpower;
- e. Stop all sorters IUs from MICS in order to stopping in-feed to sorters for bags clearing;
- f. Activate the north and south overflow carousel contingency manual handling areas and deploy BHO to assist manual baggage sorting;
- g. Manual input flight-lateral information to CSC for lateral mode (disregard if the situation has already escalated to Stage 2); and
- h. Deploy staff to Level 2 for activation of contingency procedure and bag flow management.

2. IAC-TOD shall:

- a. Inform AOC and airlines of the contingency arrangement; and
- b. Deploy patrol staff to check-in counters.

4. SOCC shall:

- a. Startup Lite SAC;
- b. Switch CGW from SAC to Lite-SAC; and
- c. In case of suspected cyber-attack, SOCC shall inform Risk & Cybersecurity Section of ITD for further investigation.

5. BHO shall:

- a. Switch off motor of each EBS lane with baggage; and
- b. Mobilize manpower at each no-read MCS (prepare for large volume of baggage).

6. RHO shall:

- a. Divert transfer baggage to RTF, T1M and hot transfer facilities;
- b. Deploy manpower to north and south Problem and Late contingency areas for manual baggage sorting and loading; and
- c. Deploy manpower to north and south overflow carousel contingency manual handling areas to collect overflow baggage.

3.2 STAGE 2 : Lite SAC (On-Line)

1. SOCC shall:

- a. Reboot CGW; and
- b. Reboot all CSCs.

2. BMO shall:

- a. Stop sorters by turn for baggage clearance;
- b. Restore today's flight information to Lite SAC; and
- c. Activate flight schedule in Lite SAC.

3. BHO shall:

- a. Manually clear baggage on sorters.

3.3 STAGE 3: Flight Schedule Activated on Lite SAC

1. SOCC shall:

- a. Extract BSM, startup CGW and restore BSM for Lite SAC.

2. BMO shall:

- a. Activate "Lateral Mode" through Lite SAC;
- b. Set all flights to "NO EBS" mode or manually assign heavy load flight to lane type EBS;
- c. No flight to be assigned into T1A EBS;
- d. Resume all sorters IUs; and
- e. Redeploy manpower standby at P/L carousel for handling overflow baggage.

3.4 STAGE 4 : Fallback to SAC (after last flight departed)

1. SOCC shall:

- a. Shutdown Lite SAC;
- b. Stop CGW;
- c. Startup normal SAC;
- d. Logout SACLAU;
- e. Reboot all CSC;
- f. Start CGW; and
- g. Restore BSM.

2. BMO shall:

- a. Disable “Lateral Mode” by Lite SAC; and
- b. Inform IAC-TOD.

3. IAC-TOD shall:

- a. Deploy patrol staff to Level 7 check-in islands to monitor the real time situation.

C. MICS Failure Contingency Procedure

1.0 Background

1. When MICS has failed, LMCC can be served for fault identification and fault reset for departure conveyors as MICS does, except for sorters and arrival conveyors.
2. These exception areas need to be reset manually at the MCC panels in case of any stoppage or bag jam.
3. In RTF and T1M, when MICS has failed, manual reset at MCC panels will be required.

2.0 Scope of Impacts

1. When MICS fails, the real time BHS performance and healthiness will not be reflected. In case of bag jams, BMO will not be able to receive the system alert for conveyor belts failure, sorters stoppage, ICS stoppage and e-stop activation.
2. Monitoring of sorters and Automation Arrival Baggage Delivery (AABD) shall be done via SCADA (Primary sorters), CSC (Secondary sorters) and BBIT (AABD) by manning 6x SCADA, 8x CSC servers, 2x BBIT and resetting the servers. E-stop activation shall be monitored and reset via respective E-Stop center.
3. Apart from the LMCC in BMO, all SCADA servers, CSC servers, BBIT and E-stop centers require extra manpower deployment. Counting from the MICS confirmed downtime; at least 20 minutes will be needed to complete the manpower deployment on manual reset of SCADA, CSC servers, BBIT and E-stop panels by ITD and TSS respectively. Part of the BHS may stop up to 20 minutes before the manpower deployment is completed.
4. With the respective manpower positioned at the dedicated panel to conduct the manual reset function, degraded performance of the BHS will be expected.
5. The whole arrival system has to be monitored and reset on the spot by BHO.
6. If any E-stop activation occurs during this stage, the whole sub-zone will be by-passed at the E-stop MCC panels. Thus, part of the BHS may not be operated with E-stop provisions.

3.0 Contingency Measures

3.1 STAGE 1 : LMCC activation

1. **BMO shall:**
 - a. Inform Airport Duty Manager, Baggage Duty Manager, IAC TOD, RHOs, BHOs, and TSS for contingency;

- b. Monitor and reset fault at primary sorters via SCADA, secondary sorters via BG Fusion, conveyor faults via LMCC and AABD faults via BBIT; and
- c. Deploy staff to Level 2 for activation of system overflow contingency procedure in accordance with Appendix 1.

2. IAC-TOD shall:

- a. Inform AOC regarding the system fault and contingency arrangement; and
- b. Deploy patrol staff to check-in counter for bag flow management.

3. SOCC shall:

- a. Try to recover MICS by restarting MICS servers in the following sequence, (A+C+E+G and B+D+F+H). If fail, inform BMO and go to next step;
- b. Monitor status of Leonardo servers and CSC servers; and
- c. In case of suspected cyber-attack, SOCC shall inform Risk & Cybersecurity Section of ITD for further investigation.

4. TSS shall:

- a. Mobilize the onsite maintenance contractor to E-stop centers, to monitor E-stop activation signal at E-stop MCC panel;
- b. Report BMO for any E-stop activation, and bypass the E-stop sub-zones as instructed by BMO;
- c. Report BMO for any activated E-stop sub-zones is cleared; remove the bypass as instructed by BMO; and
- d. Monitor and reset at primary sorters local SOPs when SCADA fails.

5. BHO shall:

- a. Deploy manpower to manually move baggage between check-in aisles at Level 7 and deliver normal size baggage via 4 OOG lifts if necessary to relieve the backlog baggage;
- b. Deploy manpower to perform fault monitoring and reset for arrival conveyors;
- c. Set up problem and late area;
- d. Deploy manpower to manually move baggage between delivery lines at Level 6;
- e. Deploy manpower to stand by at inductions for quicker fault handling response; and
- f. Use tubs properly at AABD unloading docks and CTF infeed lines.

6. RHO shall:

- a. Deploy manpower at north and south contingency exit areas;
- b. Deploy manpower at problem & late areas and problem carousels;
- c. Use tubs properly at CTF infeed lines; and
- d. Ensure loading laterals are not full.

3.2 STAGE 2 : Fallback to MICS

1. BMO shall:

- a. Perform MICS functional tests;
- b. Inform Airport Duty Manager, Baggage Duty Manager, IAC TOD, RHOs and BHOs system to resume normally;
- c. Deactivate LMCC, SCADA, BG Fusion and BBIT monitoring; and
- d. Inform TSS to revert by-passed E-stop to normal mode.

2. IAC-TOD shall:

- a. Inform AOC BHS resume normal.

3. TSS shall:

- a. Remove all by-passed E-stop and inform BMO; and
- b. Check any fault and abnormality on E-stop centers.

4. SOCC shall:

- a. Startup MICS servers in the following sequence (A+C+E and B+D+F);
- b. Conduct system health check on MICS servers and restart MICS workstations; and
- c. Perform MICS functional tests.

D. Typhoon Contingency Handling

1.0 Background

1. Arriving or departing flight movements may be affected by Typhoon or aftermath. In cases where no flight is arriving to Hong Kong, check-in services may be suspended. Thus, transfer baggage will also be affected.
2. Upon the recovery of arrival and departure flight movements, baggage load will upsurge in a short period. In order to maintain the baggage flow, baggage for major affected ports or regions will be sorted by destination, rather than by flight.

2.0 Scope of Impacts

1. During the course of Typhoons, numerous prolonged-delay flights carrying large volumes of too late baggage will arrive at HKIA. For such baggage, their original connecting flights information will overdue in the BHS sorting system. As such, excessive transfer baggage with no valid BSM will congest the BHS seriously. MCSs, Problem areas and NATL carousels will face baggage congestion problems.
2. Subsequently, system capacity will sharply reduce, which will in turn affect the check-in process. In this respect, contingency measures aim to enable auto sorting of too late transfer baggage in order to reduce the loading of MCS.
3. Another aim is to divert too late transfer baggage to designated laterals for sorting by designation or carriers, so as to reduce the loading of problem areas and NATL carousels. However, in doing so, shortage of laterals for real time operation is expected.
4. In addition to baggage handling, contingency mode for FIDS displays for both arrival flights will be activated to accommodate more flight information on the FIDS displays.

3.0 Contingency Measures

3.1 STAGE 1: Yellow Stage – Arrival

If a Typhoon affects real time flight operations, AA will activate contingency plans as follows:

1. SOCC shall:

- a. Change the infotainment setting to display extra arrival flight information (up to 10 flights) at each reclaim carousel; and
- b. Switch BO3 to display 38 rows screen format to display more arrival flights at customs hall.

2. IAC-TOD shall:

- a. Set up 4 projectors with screen (movable roll boy) at L5 baggage reclaim hall at reclaim belt 5/6, 8/9, 13/14 and 16/17 for additional arrival flights.

3. BHO shall:

- a. Deploy sufficient manpower at L5 baggage reclaim hall for arrival OOG baggage delivery and collect empty tubs from carousels.

3.2 STAGE 2: Yellow Stage – Departure

1. BMO shall:

- a. Laterals will be assigned according to FRCS arrangement. RHO shall liaise with BMO for the plan;
- b. Co-ordinate with RHOs to spare out laterals for overnight misconnected baggage for major carriers i.e. CX, HX, UO and CI. Designated flights will be set to “Lateral Mode” in the baggage handling system;
- c. Release NATL carousel 31A for other carriers’ overnight misconnected baggage and all NATL baggage will be diverted to 61A and inform SSBC, RHOs and AVSECO;
- d. Report lateral full messages to RHOs once MICS displays lateral full message;
- e. Request AVSECO ABRS and MADES team to operate additional facilities such as, MS01 and MS02, RTF, MTF and CTX if applicable;
- f. Create fallback list for MCS staff to manually sort the misconnected bags to laterals so as to allow more efficiency;
- g. Activate contingency plan at the contingency manual handling area in accordance with Appendix 1;
- h. Inform AVSECO ABRS team that system is changed to “RF Degrade Mode” (if applicable); and
- i. Make emergency call to maintenance contractors to prepare sufficient manpower during the course of the Typhoon.

2. IAC TOD shall:

- a. Inform AOC that the yellow stage typhoon contingency is activated;
- b. Remind TSS and cleaning contractor to ensure that all ditches at basement are unobstructed. All construction works need to be temporarily suspended until further notice;
- c. Generate updated delay flights information and request airlines to add suffix “D” for delayed flights. Regular update of flight information status needs to be communicated with BMO; and
- d. Inform SOCC to change infotainment setting to display flight information, switch BO3 to display 38 rows screen format and update typhoon information at all laterals in L2 baggage hall.

3. Airlines shall:

- a. Provide regular updated flight information to BMO and confirming the BSM date of delayed overnight flights; and
- b. Deploy representatives to monitor their misconnected baggage at the baggage hall.

4. BHO shall:

- a. Provide sufficient manpower to handle the baggage of the reactivated flights;
- b. Deploy staff to cordon off the road between 11A and 31A, 41A and 61A as the temporary baggage staging areas and deploy staff to 31A to 41A for system overflow handling in accordance with Appendix 1; and
- c. Deploy sufficient manpower to activate north and south problem areas.

5. RHO shall:

- a. Provide sufficient containers and manpower for baggage handling;
- b. Avoid laterals becoming full so as to reduce baggage being sorted to problem carousels;
- c. Deploy representatives to coordinate with AA representatives at BMO;
- d. Coordinate with BMO to assign designated laterals for misconnected baggage;
- e. Conduct manual bingo or use Hand Held Terminal (HHT) during baggage loading into ULD if the selected departure flight setting is changed to lateral mode;
- f. Deploy manpower to collect system overflow, mis-connected baggage from 11A and 41A in accordance with Appendix 1;
- g. Deploy representatives to major area such as P/L area, ATL and NATL carousels to clear baggage being sorted to the aforesaid areas. Make sure that there are sufficient places for sorting misconnected baggage;
- h. Ensure wet bags are put into plastic tubs before feed in from CTF area and feed bags with reasonable window between bags, so as to reduce system stoppages; and
- i. Fully make use of the provided additional facilities e.g. MS01, MS02, RTF and T1M.

6. TSS's Maintenance Contractor shall:

- a. Deploy standby staff at L3 baggage handling system for operation support; and
- b. Deploy representatives to BMO for coordination.

7. SSBC / AVSECO shall:

- a. Re-deploy manpower to operate additional screening facilities i.e. MS01 and MS02;
- b. Deploy additional manpower to man the 5th CTX X-ray machine; and
- c. Deploy extra BRD staff to planeside for manifest work.

8. TSI (FRT) shall:

- a. Ensure all ditches at basement are unobstructed and remind all contractors that their construction works in baggage hall areas need to be temporarily suspended until further notice.

9. TSS (Baggage Handling System) shall:

- a. Deploy representatives to BMO for coordination.

10. SOCC shall:

- a. Display footer message at L2 laterals updating typhoon information.

3.3 STAGE 3: RED STAGE

AA will activate this contingency plan, when the BHS is still congested after the implementation of all contingency measures in yellow stage.

1. AA shall:

- a. Stop all transit baggage in feeds;
- b. Stop all AEL baggage in feeds;
- c. Arrange RHO to divert transit baggage to MS01, MS02, RTF and T1M if applicable;
- d. Set up staging areas at North for (Menzies CNAC Air Terminal Services Limited and SATS) and South (for HAS) down ramp;
- e. Ensure RHO is responsible for manually sorting transit baggage at their staging areas and perform security screening at MS01, MS02 and contingency chutes; and
- f. Reserve ITCI de-stuffing hall for overflow areas of north and south staging areas.

E. Contingency Procedure for Automated Arrival Baggage Delivery (AABD) System

1.0 Background

1. The AABD system is installed at North DCV tunnel for arrival/ transfer baggage delivery from T1M and RTF, and it links with the Baggage Handling System at T1. The length of the NDCV Tunnel between T1 Baggage Hall and T1M Baggage Hall is approximately 2,170m.
2. In normal operation, arrival/ transfer baggage will be transported toward T1 from RTF & T1M using a high-speed Individual Cart System (“ICS”) housed mainly within the BHS Tunnel. Any oversized baggage will be transported by manual tractor or AET at apron level.
3. Total 4x unloading docks are located at T1M and 3x unloading docks located at RTF for baggage infeed. The exit area at T1 of AABD is conveniently connected to arrival reclaim belts 6, 7, 15, 16, or central transfer system at T1 Baggage Handling System (BHS).

2.0 Scope of Impacts

1. The failure of AABD could be caused by different scenarios, such as equipment faults, power failure, fire incident or conveyors breakdown. The arrival/ transfer baggage flow between T1M and T1 will be affected as a result.
2. Alternative facilities are to be used for facilitating the contingency situation.

3.0 Contingency Measure

Expected prolong suspension of AABD operations

1. BMO shall:

- a. Inform TSI/TSS to attend the fault;
- b. Inform TOD and AOC representative at IAC of expected delay of arrival / transfer bags that stranded in the system (with flight no. and tag no. if available);
- c. Trigger contingency delivery arrangement. Liaise with RHO for delivery using manual tractor and using AET to support delivery of arrival / transfer bags from T1M stands and MBHA;
- d. Inform Airport Duty Manager and Baggage Duty Manager;
- e. Timely update TOD and AOC representative the expected resumption time; and
- f. Coordinate onsite with related parties for the contingency arrangements.

2. AOC representative shall:

- a. Inform the affected airlines for potential delay in delivery of arrival / transfer bags and to take care of passengers as and when needed.

3. IAC-TOD shall:

- a. Make PA in Baggage Reclaim Hall to inform passengers about a potential delay in delivery of arrival bags in case the AABD cannot be resumed within 20 minutes;
- b. Make PA in Baggage Reclaim Hall and coordinate with airlines to arrange home baggage delivery services for affected passengers in case the AABD cannot be resumed within 40 minutes; and
- c. Arrange provision of water and food to affected passengers if needed.

4. RHOs shall:

- a. Use manual tractor to deliver arrival bags from T1M to T1 Baggage Hall directly and hand over to AA baggage service contractor to unload onto relevant reclaim belt or transfer infeed during the initial 30 minutes of the contingency period; and
- b. Tow arrival bags to AABD queuing point at Midfield Baggage Handling Area (MBHA) for subsequent delivery by AET.

5. WFS (AET) shall:

- a. Arrange AET transportation from T1M to T1 for baggage delivery.

F. Contingency Procedure for Baggage Handling System at SkyPier Terminal

1.0 Background

1. SkyPier Terminal at Hong Kong International Airport (HKIA) is owned and managed by Airport Authority Hong Kong (AAHK). The facility provides Sea-to-Air (STA) and Air-to-Sea (ATS), Bridge-to-Air (BTA) and Air-to-Bridge (ATB) transfer connection between ports around the Pearl River Delta and HKIA. The overall management of the facility and the operations is under Landside Department (LD) of AAHK.
2. The detailed end to end operation of the STA and ATS, BTA and ATB baggage is covered in the Terminal and Landside Procedures Manual (TLPM/086). For Baggage Handling System at SkyPier Terminal and baggage transportation between SkyPier Terminal and Terminal 1 Baggage Hall, it is managed by APM and Baggage Department (ABD).

2.0 SkyPier Terminal Baggage Handling System consists of the following equipment:

1. Transport Conveyor
2. Queue Conveyor
3. Crossover Unit
4. Vertical Sort/Merge Unit (VSU/VMU)
5. Dual Merge Unit
6. Weighing Scale Conveyor
7. Labelling Conveyor
8. Induction Conveyor
9. Tipping Device
10. Tub Return Conveyor
11. Reclaim Carousel
12. Gravity Roller Conveyor
13. Curve Conveyor
14. Merge Conveyor
15. Continuous Vertical Conveyor (CVC)
16. Fire/Security Shutter

3.0 Scope of Impacts

1. The failure of BHS could be caused by different scenarios, such as equipment faults, prolong fault restore, power failure, fire incident or conveyors breakdown. The baggage flow between SkyPier Terminal and Terminal 1 will be affected as a result.
2. Alternative facilities are to be used for facilitating the contingency situation.

4.0 Contingency Measures

4.1 All non-tag through STA and BTA & tag through BTA bag flow blockage

1. BMO shall:

- g. Inform TSI/TSS to attend the fault;
- h. Inform Airport Duty Manager, Baggage Duty Manager;
- i. Inform LD contingency arrangement will be activated;
- j. Inform FHA, BHA and ABD contractor to use lift for baggage delivery from Level 3/ Level 5 to Baggage Hall; and
- k. Coordinate onsite with related parties for the contingency arrangements.

2. FHA and BHA shall:

- a. Collect and clear stranded bags on the check-in counter conveyor belt; and
- b. Deliver the checked-in bags to lift and send down to Baggage hall.

3. ABD contractor shall:

- a. Clear stranded bags in the system;
- b. Follow BMO's instruction for fault reset;
- c. Collect checked-in bags from lift;
- d. Deliver the bags to make-up area and load onto containers; and
- e. Send the containers to T1 Baggage Hall.

4. TSS shall:

- a. Conduct technical inspection to diagnose the problem.
- b. Conduct repairing to resume the system in operation.

4.2 All ATB bag flow blockage

1. BMO shall:

- a. Inform TSI/TSS to attend the fault;

- b. Inform Airport Duty Manager, Baggage Duty Manager;
- c. Inform LD contingency arrangement will be activated;
- d. Inform BHA and ABD contractor to use lift for baggage delivery from Baggage Hall to Level 4; and
- e. Onsite coordination with related parties for the contingency arrangements.

2. BHA shall:

- a. Collect checked-in bags from lift at Level 4; and
- b. Deliver the bags to carousel for passenger reclaim.

3. ABD contractor shall:

- a. Clear stranded bags in the system;
- b. Follow BMO's instruction for fault reset; and
- c. Deliver the check-in bags to lift and send to Level 4.

4. TSS shall:

- a. Conduct technical inspection to diagnose the problem.
- b. Conduct repairing to resume the system in operation.

G. Check-In Hall Baggage Overflow Contingency Handling

1.0 Background

1. The intermittent stoppage of baggage conveyors at Check-in is normally attributed to the bag jam / E-stop inside the BHS or the stoppage of sorter(s).
2. This will subsequently cause die back from in system to baggage in feed area e.g. check-in counters.
3. The major causes of bag jams are due to lots of reasons but the improper positioning of baggage at infeed points by check-in agents or operators is one of the key factors.
4. By observation, it has been noted that whenever the conveyors are reactivated during the intermittent stoppage, the check-in agents would ignore the baggage positioning guidelines by lumping the checked bags on to the conveyors without reasonable windows between bags to ease the baggage condition at L7.
5. Such malpractice would cause more bag jam incidents and further worsen the BHS condition.
6. Prolonged activation of E-stop that failed to be reset would subsequently cause stoppage on all baggage collector lines for both north and south check in halls.
7. Approximately 15 minutes will be required for the technical contractor to rectify the problem.

2.0 Scope of Impacts

1. Prolonged intermittent stoppage of conveyor belts will result in check in baggage being piled up at check-in counters, which might cause baggage delays.
2. The contingency handling procedure needs to rely on on-site situations including the location of the affected conveyor(s), the impact on Airlines baggage check-in process etc.
3. Different situations will need to react with different contingency handling processes e.g. the stoppage on one collector line or on the collectors of the same isle etc.

3.0 Contingency Measures

1. In case any of the collector lines is found congested, check-in baggage shall be moved manually to the opposite collecting lines from the congested collecting lines.
2. Extra manpower shall be deployed at collecting lines for baggage repositioning to ensure enough space is allowed between each piece of baggage.

3. In case both collector lines on the same aisle are congested, i.e. major sorter stoppage or E-stop activation, extra manpower shall be deployed at the check in counters to collect check-in baggage with tight connecting time i.e. less than 1 hour, and deliver them through OOG lifts at T1 Level 7 to the baggage hall.
4. BMO shall re-assign baggage routing to other serviceable sorters and the maintenance contractor shall bypass the E-stop zone or switch the defective E-stop center to back up center.
5. **BMO shall:**
 - a. Liaise with maintenance contractor to conduct repair work with minimum impact to the implementation of contingency measures;
 - b. For stoppage caused by E-stop without exact location being indicated in MICS, BMO shall inform the maintenance contractor to by-pass the related E-stop zone or switch the defective E-stop center to back up center;
 - c. Alert Airport Duty Manager, Baggage Duty Manager and IAC TOD AM for corresponding action;
 - d. Inform AVSECO on the activation of contingency arrangements;
 - e. If the scenario is not caused by the activation of E-stop center, the MICS operator shall re-assign baggage routing; and reduce maximum circulation of sorters to keep the bag flow at check in counters. Activate emergency chute at L2 if necessary to relieve the congestion inside BHS;
 - f. Deploy one BMO staff to T1 Level 7 for bag flow monitoring;
 - g. BMO on-site staff shall coordinate with IAC TOD and on-site staff on the implementation of contingency arrangements; and
 - h. BMO on-site staff shall coordinate with BHO on-site staff on the implementation of contingency arrangements.
6. **IAC – TOD shall:**
 - a. Alert AOC of the contingency arrangements;
 - b. Deploy IAC-TOD staff to T1 Level 7;
 - c. Request for additional manpower via MSCC;
 - d. IAC-TOD on-site staff shall coordinate with BMO on-site staff on the implementation of contingency arrangements; and
 - e. IAC-TOD on-site staff shall coordinate with contractor's on- site staff on the implementation of contingency arrangements.
7. **BHO shall:**
 - a. Redeploy manpower to T1 Level 7 for baggage repositioning at collector lines or deliver check in baggage to baggage hall through OOG lifts under the instruction of BMO;
 - b. Ensure the efficiency of tub circulation at T1 Level 7; and

- c. Redeploy manpower to T1 Level 6 for manually re-diverting baggage between delivery lines.

8. Airlines / Handling Agents shall:

- a. Cooperate with IAC-TOD / BMO on the contingency arrangements for check-in baggage;
- b. Shall not manually infeed check-in baggage into collector lines when the collector line is stopped; and
- c. Maintain proper positioning of check-in bags with enough spacing between each bag.

9. AVSECO shall:

- a. Cooperate with BMO on the contingency arrangements for check-in baggage.

10. TSS's Maintenance Contractor shall:

- a. In case the E-stop cannot be reset, the maintenance contractor shall bypass the related E-stop zone or switch the defective E-stop center to back up center in 10 minutes.

H. Contingency Procedure for Baggage Handling System at Midfield Transfer Facilities

1.0 Background

1. T1 Midfield Concourse (T1M) is a passenger concourse building at the west passenger apron of the Airport.
2. The baggage handling system at MTF is an additional facility provided for RHO to handle intra terminal transfer baggage (arrival and departure at T1M).

2.0 Baggage Processing Facilities

1. 2 baggage docks for offloading bags (MT01 & MT02).
2. 2 automatic in-line Level 1 & Level 2 X-ray screening lines.
3. 1 automatic Level 3 X-ray screening line.
4. 1 stand-alone security X-ray screening line (MT03).
5. 1 stand-alone C&ED X-ray screening line.
6. 3 departure baggage make up loop comprised of belt conveyors.

3.0 Scope of Impacts

1. The failure of BHS could be caused by different scenarios, such as power failure, fire incident or conveyors breakdown. The transfer baggage flow will be affected.
2. Alternative transfer facilities to be used for facilitating the contingency situation.

4.0 Contingency Measures

Scenario 1: Make up loop breakdown

1. BMO shall:

- a. Inform TSI/TSS to attend the fault;
- b. Inform RHO to use the stand-alone security X-ray screening line (MT03);
- c. Inform AVSECO on the activation of contingency arrangements;
- d. Inform BHO to activate contingency arrangements; and
- e. Onsite coordination with RHO for the contingency arrangements.

2. BHO shall:

- a. Clear stranded bags in the system; and
- b. Follow BMO's instruction for fault reset.

3. TSS shall:

- a. Conduct technical inspection to diagnose the problem; and
- b. Conduct repairing to resume the operation.

Scenario 2: BHS total breakdown

1. BMO shall:

- a. Inform TSI/TSS to conduct inspection;
- b. Inform Airport Duty Manager, Baggage Duty Manager and IAC-TOD;
- c. Inform RHO to use other transfer facilities RTF, CTF and MS of T1;
- d. Inform AVSECO on the activation of contingency arrangements;
- e. Inform BHO to activate contingency arrangements; and
- f. Onsite coordinate with RHO for the contingency arrangements.

2. BHO shall:

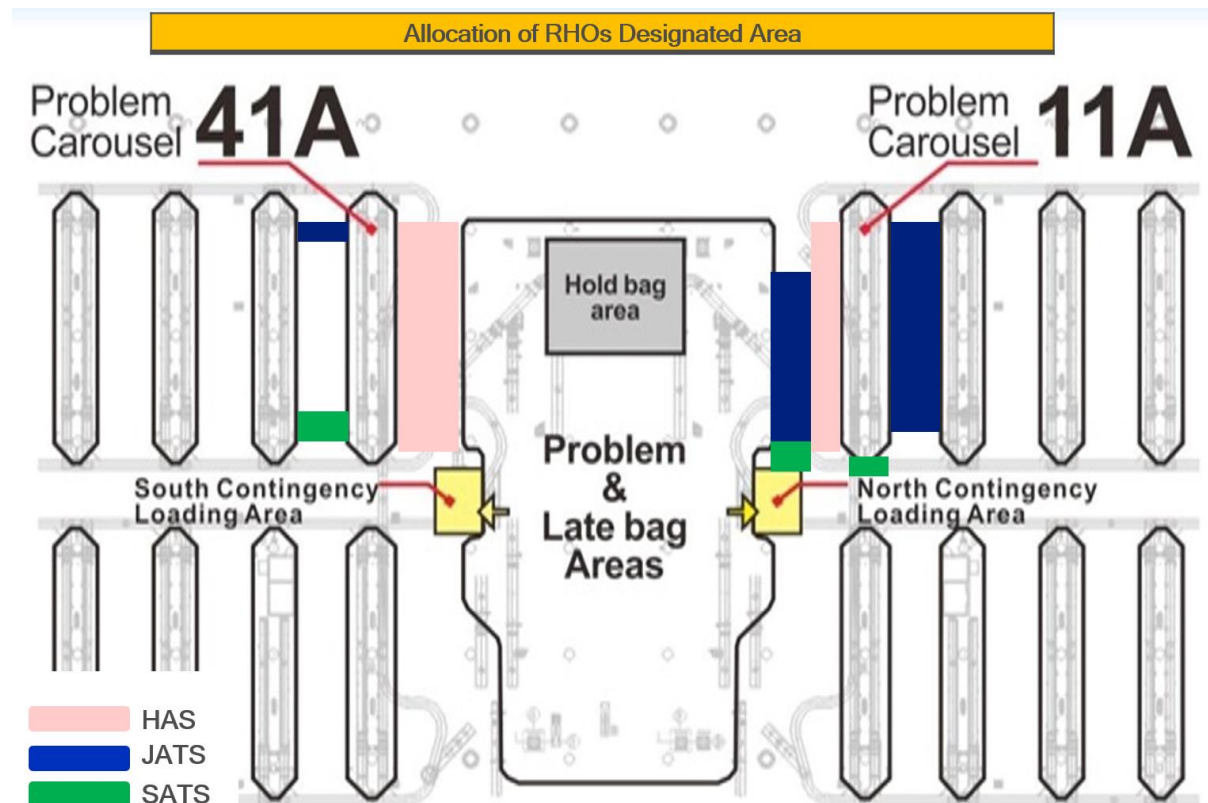
- a. Clear stranded bags in the system; and
- b. Follow BMO's instruction for fault reset.

3. TSS shall:

- a. Conduct technical inspection to diagnose the problem; and
- b. Conduct repairing to resume the operation.

Appendix 1

Contingency Manual Handling Area at Problem & Late Bag Areas, North & South Problem Carousel (11A and 41A)



Appendix 2

Abbreviations

AA	Airport Authority
ABRS	Automatic Baggage Reconciliation System
ABD	APM & Baggage Department
AET	Autonomous Electric Tractor
AOC	Airport Operator Committee
ATB	Air-to-Bridge
ATL	Authorization To Load
ATS	Air-to-Sea
AVSECO	Aviation Security Company Limited
BBIT	Baggage Based IT
BHS	Baggage Handling System
BHO	Baggage Handling Operator
BMO	Baggage Management Office
BRA	Baggage Reclaim Assistant
BRD	Baggage Reconciliation Division
BSM	Baggage Source Message
BTA	Bridge-to-Air
C&ED	Customs and Excise Department
CGW	Cute Gateway
CSC	Crisplant System Controller
CTF	Central Transfer Facility
CUTE	Common User Terminal Equipment
CVC	Continuous Verticle Conveyor
DCS	Departure Control System
EBS	Early Baggage Storage
FMIC	Flight Movement Information Centre
FRCS	Flight Rescheduling Control System
GTC	Ground Transportation Centre
HHT	Handheld Terminal
ITCI	In-Town Check-in
IU	Induction Unit
LD	Landside Department

LMCC	Localized Motor Control Centre
NATL	No Authorization To Load
MBHA	Midfield Baggage Handling Area
MCS	Manual Coding Station
MICS	Management Information and Control System
MTF	Midfield Transfer Facilities
OS	Operating System
OOG	Out Of Gauge
PECTAB	Parametric Tables
P/L	Problem / Late
PM	Planned Maintenance
RF	Radio Frequency
RHO	Ramp Handling Operator
RTF	Remote Transfer Facility
SAC	Sort Allocation Computer
SACLAU	Sort Allocation Computer System Lateral Allocation User-interface
SCADA	Supervisor Control And Data Acquisition System
SSBC	Safety, Security and Business Continuity
STA	Sea-to-Air
T1	Terminal 1
T1M	T1 Midfield Concourse
TOD	Terminal Operations Department
TSI	Technical Services Infrastructure Department
TSS	Technical Services Systems Department
VSU	Vertical Sort Unit
VMU	Vertical Merge Unit

Appendix 3

Contacts of Concerned Parties

AVSECO – ABRS	2182 2394
AVSECO – MADES	2182 5363
BMO	2182 5769
CI Baggage Services	2769 7738
CX Station Control	2747 7688
HAS	2928 0233
IAC-TOD	2181 8110 / 9388 1340
IAC-LD	2181 8118 / 9150 3037
Menzies CNAC Aviation Services Limited (MCAS) Flight Control	2216 1221 / 2216 1400
Menzies CNAC Air Terminal Services Limited (MCAT)	2216 1799
JL Operation Centre	27697506
KE Baggage Services	2769 7511
MTRC	2261 1489
SATS	2116 8736
SOCC	2182 0030
TOD – ARRIVAL	2182 2064
TOD – DEPARTURE	2182 2065
TOD – OIC	2183 3351
TSI	2183 6888
TSS	9668 3152
UA Flight Control	2122 8197 / 2122 8198
UO Flight Control	6197 1795

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