Changi – The A380 Experience Starts Here

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Civil Aviation Authority of Singapore
Outline of Presentation

- One Year Since 25 Oct 2007
- Preparations for the A380
- A380 Lessons
Arrival of the A380

Touchdown: 17 Oct 2007, 6.40pm (+8 GMT)
One Year Since 25 Oct 2007

- 4 arrival and departure flights daily at Changi Airport
- Singapore-Sydney (SQ221)
- Singapore-London (SQ318 & SQ322)
- Singapore-Narita (SQ638)
Preparations for the A380
Preparations for the A380

• Total A380-ready gates = 19
  • 5 in Terminal 1, 6 in Terminal 2 and 8 in Terminal 3
• Main Modifications
  • Runway shoulder widening
  • Taxiway turning widening
  • Additional shielding
  • Gate holdroom expansion
  • Baggage claim belt extension

• Total investment = S$68 million
Preparations for the A380

• Widening of runway shoulders to provide additional paved area in case of aircraft veering off the runway and to protect aircraft engines against ingestion of foreign objects during take-off.
Preparations for the A380

- Taxiway pavement at turning junctions widened to provide additional safety distance between A380 outer wheels and taxiway edge.
Preparations for the A380

- Shielding provided along the sides of the bridges to contain the jet blast of A380 and protect road users below the bridges.
Preparations for the A380

- Gate holdrooms expanded by 30% for passengers’ comfort.
- 3 aerobridge arms for more efficient access.
Preparations for the A380

- Baggage claim belts lengthened to provide longer frontage for presentation of larger number of bags.
Preparations for the A380

• Pre-arrival equipment staging area enlarged by 30%.
• Fuel hydrant pits adjusted to suit A380 refueling inlets.
• Ground handlers acquired new equipment to service the upper deck directly.
• Aircraft docking guidance systems configured for A380 use.
Preparations for the A380

- New equipment purchased which include escape air stairs for evacuation of passengers seated on the A380 upper deck.
Preparations for the A380

Comprehensive integrated trials were conducted during each A380 visit to Changi Airport

- Rigorous tests were conducted in all areas from equipment compatibility tests to ground handling
- Over 450 participants were involved to test out boarding and de-boarding scenarios
Preparations for the A380

Minimum Ground Time (MGT) trial was conducted to finalise sequence of activities

- Loading and unloading of cargo containers
- Loading and unloading of catering equipment
- Docking of catering trucks
- Aircraft Interior Cleaning
- Baggage handling system
Loading & Unload  De-boarding Sequence

Pictures from the Trial
A380 Lessons

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Enjoy the experience
Docking Sequence of Passenger Loading Bridge

- Due to closeness of 2nd and 3rd arm, docking sequence SOPs was introduced for efficient handling of the three bridges.
Modification of PLB Cab Canopy:

- As the A380 aircraft fuselage profile is flatter than other aircraft types, PLB cab canopy was modified to ensure that it can fit all types of aircraft types.
A380 Lessons at Changi Airport

Cause of un-fitting & Modification Plan

[Diagram of cause and modification plans]
## A380 Lessons at Changi Airport

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Deck Catering Hi-lift (DUDC) at U1R</td>
<td>Upper Deck Door is very close to aircraft wing. DUDC faces difficulty in docking to door.</td>
<td>Provision of marshalling box so as to station Marshallers to guide DUDC.</td>
</tr>
</tbody>
</table>

- **DUDC Hi-lift docking to Door U1R**
- **DUDC hi-lift’s proximity to aircraft engine**
A380 Lessons at Changi Airport

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<td>Positioning of air-con trucks</td>
<td>In the event where the APU does not work, no provisions are made for air-con trucks.</td>
<td>2 locations on the port side were identified for positioning the air-con trucks.</td>
</tr>
</tbody>
</table>

Position of 1st air con unit  

Position of 2nd air con unit  

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### A380 Lessons at Changi Airport

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<td>JCPL at rear cargo door &amp; Catering Hi-lift at M4R</td>
<td>When Catering Hi-lift is at M4R door, the JCPL gets very close beside it and the transporter cannot align behind the JCPL.</td>
<td>Do not use M4R door for Catering Hi-lift.</td>
</tr>
</tbody>
</table>

![Image of A380 aircraft with equipment at M4R door](image-url)
A380 Lessons at Changi Airport

Revision of Radar Wake Turbulence Separation Minima

• The wake turbulence separation guidance for the Airbus A380-800 has been revised by ICAO following recommendations from the ad-hoc group of experts who were studying the wake vortex aspects of the new aircraft based on revised safety cases.

• The reduced separation minima would increase airspace/airport capacity without compromising safety.
## A380 Lessons at Changi Airport

### RADAR WAKE TURBULENCE SEPARATION MINIMA

<table>
<thead>
<tr>
<th>Preceding Aircraft</th>
<th>Succeeding Aircraft</th>
<th>Wake Turbulence radar separation minima (before revision)</th>
<th>Wake Turbulence radar separation minima (after revision)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A380-800 / non A380-800 HEAVY</td>
<td>A380-800</td>
<td>7.4 KM (4.0 NM)</td>
<td>Not required</td>
</tr>
<tr>
<td>A380 - 800</td>
<td>Non A380-800 HEAVY</td>
<td>11.1 KM (6.0 NM)</td>
<td>11.1 KM (6.0 NM)</td>
</tr>
<tr>
<td>A380 - 800</td>
<td>MEDIUM</td>
<td>14.8 KM (8.0 NM)</td>
<td>13 KM (7.0 NM)</td>
</tr>
<tr>
<td>A380 - 800</td>
<td>LIGHT</td>
<td>18.5 KM (10.0 NM)</td>
<td>14.8 KM (8.0 NM)</td>
</tr>
</tbody>
</table>
Thank You

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