PBCS Monitoring for Application of Performance-Based Separation Minima

June 2025



Agenda



Post implementation PBCS monitoring framework

Challenges associated with application of performance-based separation minima

Limitations of post implementation PBCS monitoring

Sharing of exploration of PBCS live monitoring in Singapore



Post Implementation PBCS Monitoring Framework

Post Implementation PBCS Monitoring



- Monthly compilation of rolling 3-monthly performance
- Verification of PBCS filing for non-performing aircraft
- Follow up with monitoring agency for non-performing aircraft filing PBCS
- Monitoring agency work with other regional monitoring agencies to notify airline of poor performance for rectification
- Investigate reasons for poor performance where possible
- Submit problems report to Central Reporting Agency where further analysis required





- Application of performance-based separation minima is immediately impacted during poor performance or outages
 - Immediate actions required to effect alternate forms of separation to ensure safety of aircraft
 - Immediate reduction in capacity due to inability to apply performance-based separation minima
 - Assignment of sub-optimal flight levels that differs from planned cruising level



- Late notification/detection of poor performance and datalink outages
 - Delayed notification of outages by CSP
 - Datalink outage indicators generally only detect ATMS-datalink interface issues
 - ATCO only made aware of CPDLC issues when they receive no response or late response when needing to communicate to aircraft



- Need for quick assessment of area affected and the impact
- Wide variety of possible causes of datalink outages
 - SATCOM outages
 - Aircraft onboard equipment failure
 - Datalink interface connection issues
 - Time synchronization issues arising for GNSS RFI



Limitations of Post Implementation PBCS Monitoring

Limitations of Post Implementation Monitoring of PBCS Performance



- Poor performance only flagged after the flight in monthly report
- Unable to fully ensure non-performing aircraft not file PBCS for subsequent flights within the month and occasionally even for subsequent months

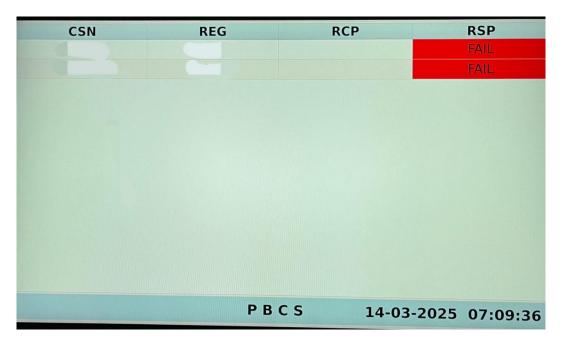


Sharing of Exploration of PBCS Live Monitoring in Singapore

Sharing of Exploration of PBCS Live Monitoring in Singapore



- Singapore explored live monitoring of PBCS performance to better detect datalink outages and poor performance
- Integrates and processes information from various systems
 - Flight plans AMHS
 - Datalink messages ACARS
- Displayed on Interactive Auxilliary Display
 System at controller working position since
 26 December 2024
- Used to provide additional situational awareness to controller on potential poor performance or outages when applying performance-based separation minima



Sharing of Exploration of PBCS Live Monitoring in Singapore



- Key considerations
 - Mimics current calculation of performance in post implementation monitoring except number of messages
 - Adjustable configuration of parameters to cater for tuning of sensitivity
 - Number of messages to constitute failure for flagging
 - Filtered display to only show information of concern to controllers
 - Flights that have filed PBCS indicators
 - Flights that have failed performance configured in the system
 - Adjustable configuration of calculation of RCP/RSP for future RCP and RSP standards