Performance Based Communication and Surveillance

30 NM Lateral, 30 NM and 50 NM Longitudinal Separation Minima in the New York Flight Information Region (FIR)

Presented to: NAT PBCS Workshop
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Contents

• FAA experience in other oceanic airspace
• Review of communication requirement for distance-based longitudinal separation minima
• Plan for implementation in New York FIR
• Review proposed changes to NAT Doc 7030/5
  – Operator flight plans
  – Aircraft and operator requirements
Use of 50 NM Longitudinal, 30 NM Longitudinal, and 30 NM Lateral Separation Minima in FAA Controlled Oceanic Airspace

<table>
<thead>
<tr>
<th>Separation Standard</th>
<th>Implementation in Oakland Oceanic Airspace</th>
<th>Implementation in Anchorage Oceanic Airspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>50NM longitudinal</td>
<td>November 2005</td>
<td>October 2008</td>
</tr>
<tr>
<td>30NM lateral</td>
<td>December 2005</td>
<td>November 2012</td>
</tr>
<tr>
<td>30NM longitudinal</td>
<td>December 2005</td>
<td>November 2012</td>
</tr>
</tbody>
</table>

- The application of the reduced horizontal separation minima is accomplished ad hoc between pairs of eligible aircraft, it is not planned prior to oceanic entry
Pacific Airspace
Distance-based Longitudinal Separation Minima

- Procedures and procedural separation minima for use in the separation of aircraft in the en-route phase of operation are contained in Chapter 5 of ICAO Doc 4444
- Longitudinal distance-based separation minima in an RNP RNAV environment using ADS-C (paragraph 5.4.2.6.4 in ICAO Doc 4444)
  - Provides maximum ADS-C periodic report interval and RNP type for 50NM and 30NM longitudinal separation
Communication Allowances for Distance-based Longitudinal Separation Minima

- Communication allowances for ATC intervention assumed in the safety analyses completed during the development of these separation standards are provided in ICAO Doc 4444 (paragraph 5.4.2.6.4.3.2)

<table>
<thead>
<tr>
<th>Communication Scenarios for ATC Intervention</th>
<th>ATC Intervention Time Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS-C report received, ATC uses normal means of communication (CPDLC) for intervention</td>
<td>4 minutes (or 240 seconds)</td>
</tr>
<tr>
<td>ADS-C report received, CPDLC communication fails, ATC uses HF for intervention</td>
<td>10 ½ minutes</td>
</tr>
</tbody>
</table>
Communication Allowances for Distance-based Longitudinal Separation Minima (continued)

- Communication allowances for ATC intervention when ADS-C report is overdue by 3 minutes is provided in ICAO Doc 4444 (paragraph 5.4.2.6.4.3.3)

<table>
<thead>
<tr>
<th>Communication Scenarios for ATC Intervention</th>
<th>ATC Intervention Time Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS-C report not received, ATC uses HF for intervention</td>
<td>13 ½ minutes</td>
</tr>
</tbody>
</table>
Plan for Reduced Horizontal Separation Minima in New York Oceanic Airspace

<table>
<thead>
<tr>
<th>Separation Standard</th>
<th>Planned Implementation in New York Oceanic Airspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>50NM longitudinal</td>
<td>December 2013</td>
</tr>
<tr>
<td>30NM lateral</td>
<td>December 2013</td>
</tr>
<tr>
<td>30NM longitudinal</td>
<td>December 2013</td>
</tr>
</tbody>
</table>
New York Oceanic Airspace
Planned Implementation of Reduced Horizontal Separation Minima in New York Oceanic Airspace

• In preparation for the implementation of the reduced horizontal separation minima in New York oceanic airspace, the FAA is proposing changes to the NAT Regional Supplementary Procedures (NAT Doc 7030)

• Summary and highlights of these proposed changes follows
Operator Filed Flight Plans

• New York oceanic airspace will identify eligible aircraft operations from filed flight plans

• Item 10:

  - J#: Appropriate descriptor (J2 through J7) indicating FANS 1/A interoperable equipment
  - P2: CPDLC RCP 240 approved aircraft use the P2 descriptor
  - R: PBN approval, must file PBN/ in Item 18
  - D1: ADS-C aircraft use the D1 descriptor in Item 10b to indicate FANS 1/A capabilities
## Item 10 - J# Definitions

<table>
<thead>
<tr>
<th>J Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>CPDLC FANS 1/A HFDL</td>
</tr>
<tr>
<td>J3</td>
<td>CPDLC FANS 1/A VDL Mode A</td>
</tr>
<tr>
<td>J4</td>
<td>CPDLC FANS 1/A VDL Mode 2</td>
</tr>
<tr>
<td>J5</td>
<td>CPDLC FANS 1/A SATCOM (INMARSAT)</td>
</tr>
<tr>
<td>J6</td>
<td>CPDLC FANS 1/A SATCOM (MTSAT)</td>
</tr>
<tr>
<td>J7</td>
<td>CPDLC FANS 1/A SATCOM (Iridium)</td>
</tr>
</tbody>
</table>
Operator Filed Flight Plans (continued)

• Item 18:

• All RNP 4 / RNP 10 approved aircraft (file ‘R’ in Item 10)
  – RNP 10 aircraft: use PBN/A1… in Item 18
  – RNP 4 aircraft: use PBN/L1… in Item 18

• All ADS-C RSP 180 approved aircraft include RSP 180 after the SUR/ indicator
  – Example: SUR/RSP 180
Performance Based Communications (PBC)

- **Required Communication Performance (RCP)**
  - Aircraft and operator shall be approved to the RCP 240 allocations, by the State of the Operator or the State of Registry
  - ANSPs will measure the communication performance against the RCP 240 specification
Performance Based Navigation (PBN)

- RNP 10 is required for 50 NM longitudinal separation minimum
- RNP 4 is required for 30 NM lateral and 30 NM longitudinal separation minimum
Performance Based Surveillance (PBS)

• **Required Surveillance Performance (RSP)**
  
  – Aircraft and operator obtain RSP 180 approval from State of the operator or the State of Registry
  
  – ANSPs will measure the communication performance against the RSP 180 specification
Air Traffic Services

• 30 NM Lateral separation within the control area of the New York Oceanic FIR
  – Navigation: RNP 4
  – Communication: CPDLC with RCP 240
  – Surveillance: ADS-C with RSP 180
  – Proportion of flight time spent 15 NM or more from cleared track < 5.44 x 10^{-5} (e.g. < roughly 70 hours of flight time spent 15 NM or more from cleared track in an airspace with 1.3 million annual flying hours)
  – Proportion of flight time spent between 24 and 26 NM from cleared track < 1.01 x 10^{-5} (e.g. < roughly 13 hours of flight time spent between 24 and 26 NM from cleared track in an airspace with 1.3 million annual flying hours)
Air Traffic Services

• 50 NM Longitudinal separation within the control area of the New York Oceanic FIR
  – Navigation: RNP 10
  – Communication: CPDLC with RCP 240
  – Surveillance: ADS-C with RSP 180

• 30 NM Longitudinal separation within the control area of the New York Oceanic FIR
  – Navigation: RNP 4
  – Communication: CPDLC with RCP 240
  – Surveillance: ADS-C with RSP 180