



**THE FORTY-FOURTH MEETING OF THE
INFORMAL PACIFIC ATC CO-ORDINATING GROUP
(IPACG/44)**
(Honolulu, Hawaii, 22 & 23 August 2018)

Presented by: Federal Aviation Administration

Performance-based Communication and Surveillance (PBCS): Post-implementation



**Federal Aviation
Administration**



Overview

- FAA PBCS Implementation Updates
- Post-implementation assessment
 - Filing rates of RCP240/RSP180 by airspace and top data link operators
 - Trends in altitude clearances
 - Trends in climb/descend procedure (CDP)



U.S. RCP240 / RSP180 Approvals

(as of 14 August 2018)

1. **~XX%** of all data link communications authorized aircraft have been authorized RCP240 / RSP180 (~33% on 5 Jun 2018):

	5 June 2018	14 Aug 2018
• Part 91	~ 49%	
• Part 91K	~ 1%	~ 1%
• Part 121	~ 31%	~ 57%
• Part 125	~ 33%	~ 38%
• Part 135	~ 29%	

2. **Percentages expected to increase**

- Part 121 – As Boeing testing results released, applications pending
- Part 91 - deadline for compliance is 30 September 2018



U.S. RCP240 / RSP180 Approvals

(as of 14 Aug 2018)

Part 121 Operator	PBCS authorized Fleets (* Denotes partial fleet)
Alaska	A320; A321
American	A330; B757*; B767; B777; B787
Atlas / Polar	None
Delta	A330; A350; B737*; B757*; B767*, B777*
Fedex	B777*; B757*
Hawaiian	A321; A330; B767*
Hillwood	B737
Jet Blue	A320; A321
Kalitta Air	None
Omni	B777
Southern Air	None
Southwest	B737 pending
United	B767*; B777*; B787; B757 pending
UPS	B757 & B767 pending



PBCS approval challenges

Operator

- New application paradigm places more emphasis on operator providing proof of compliance
- Difficulty of understanding requirements
- “Do we need it?”, “I’m going to wait until things settle down”
- Latency timer implementation challenges

OEM

- Legacy aircraft capabilities/testing (e.g. SoC availability)
- Latency timer implementation challenges

Inspector

- Workload - large number of applications in a short period of time

Boeing 777 AIMS-2

- **B777 AIMS2 BP17A does not meet required transaction times for RCP240 and RSP180 due to a known architectural flaw in AIMS1 that was built into AIMS2**
 - Discovered when trying to determine why AIMS1 BP16 testing failed
 - Downlinks in the SATCOM and HF modes will be delayed by up to 10 seconds
 - Software fix identified, programmed and will be available with BP17B scheduled for 1st Quarter 2019
- **FAA and Boeing developed alternate means of compliance**
 - B777 AIMS2 fleets must currently pass demonstrated performance as shown in the Jul-Dec 2017 monitoring analysis
 - Must continue to pass future demonstrated performance monitoring analyses
 - Operators must install BP17B within 8 months of its release
 - Based on BP17B being released on time. Delays will automatically trigger a review and could be a cause for revoking the PBCS authorization.
- **Unusual circumstances represented a unique case**
 - Evidence Boeing provided plus known software fix and timeline were keys in the affirmative decision
- **B777 AIMS2 operators should include a copy of the FAA approval letter (dated 23 March 2018) as evidence for SoC when requesting PBCS authorization**



Tracking global approvals

- **Need to track RCP240/RSP180 approvals to verify approval status in filed flight plans**
- **This activity is conducted by regional monitoring agencies (RMAs) for RVSM approvals, who coordinate with their States and global RMA network to maintain global approvals database**
 - Intention to expand existing database to include RCP240 and RSP180 approval information
- **The ability of the RMAs/EMAs to maintain the records for RCP and RSP approvals/authorizations is dependent upon the relevant data being provided by the States**



Provision of RCP240 and RSP180 authorization records to RMAs

- **In accordance with Annex 6, States of Registry required to ensure aircraft under their responsibility meet the relevant RCP and RSP conditions**
 - No requirement for a specific approval to be issued
 - Expected that State authorities will review evidence of compliance provided by operator before providing authorization for RCP240 and/or RSP180
- **In the process of issuing an authorization/approval for RCP and/or RSP, a State Authority should provide a record of authorization/approval for aircraft that have been authorized per the Annex 6 requirements for RSP180/RCP240 to their designated RMA**
- **The records should include:**
 - RSP180 compliant (Y/N)
 - Date of applicability for RSP180
 - RCP240 compliant (Y/N)
 - Date of applicability for RCP240



Special considerations for fleet approvals

- Special consideration should be made for authorizations issued to an operator fleet rather than an individual airframe
 - Fleets with mixed equipage can result in differences in performance and ability to meet the safety and performance requirements for RCP240/RSP180
- In the case of authorizations/approvals for an operator fleet, specific airframes that are not included in the approval must be clearly identified

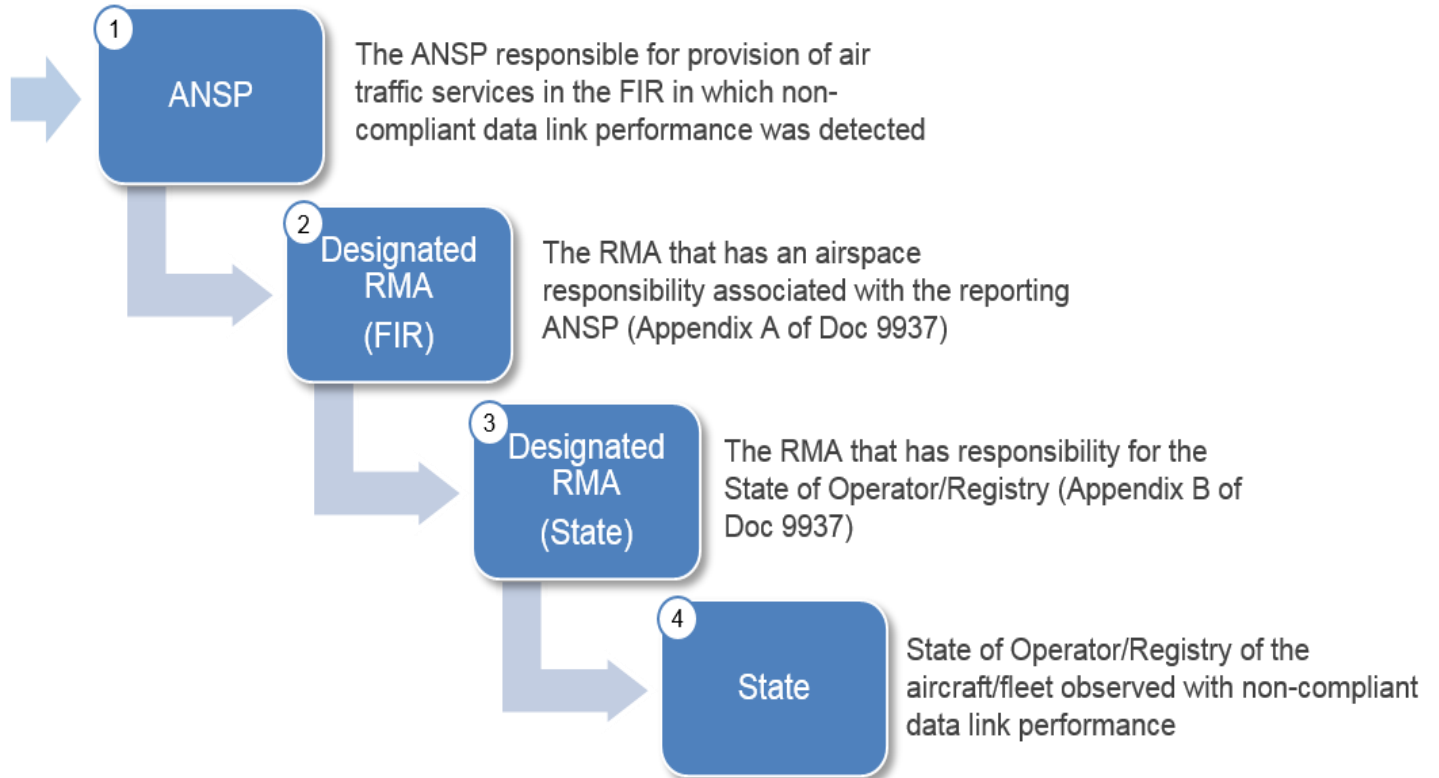
Handling non-compliance

- **Now – ANSPs working with FANS CRA through problem reports**
- **In progress – regional monitoring agencies (RMAs) will provide support by receiving reports of noncompliance from ANSPs under their responsibility and transmitting to RMA associated with State of Operator**
 - Similar to RVSM with cases of detected altimetry system error (ASE)



Handling non-compliance

ICAO SARPS



PBCS Airspace – Applicable RMAs

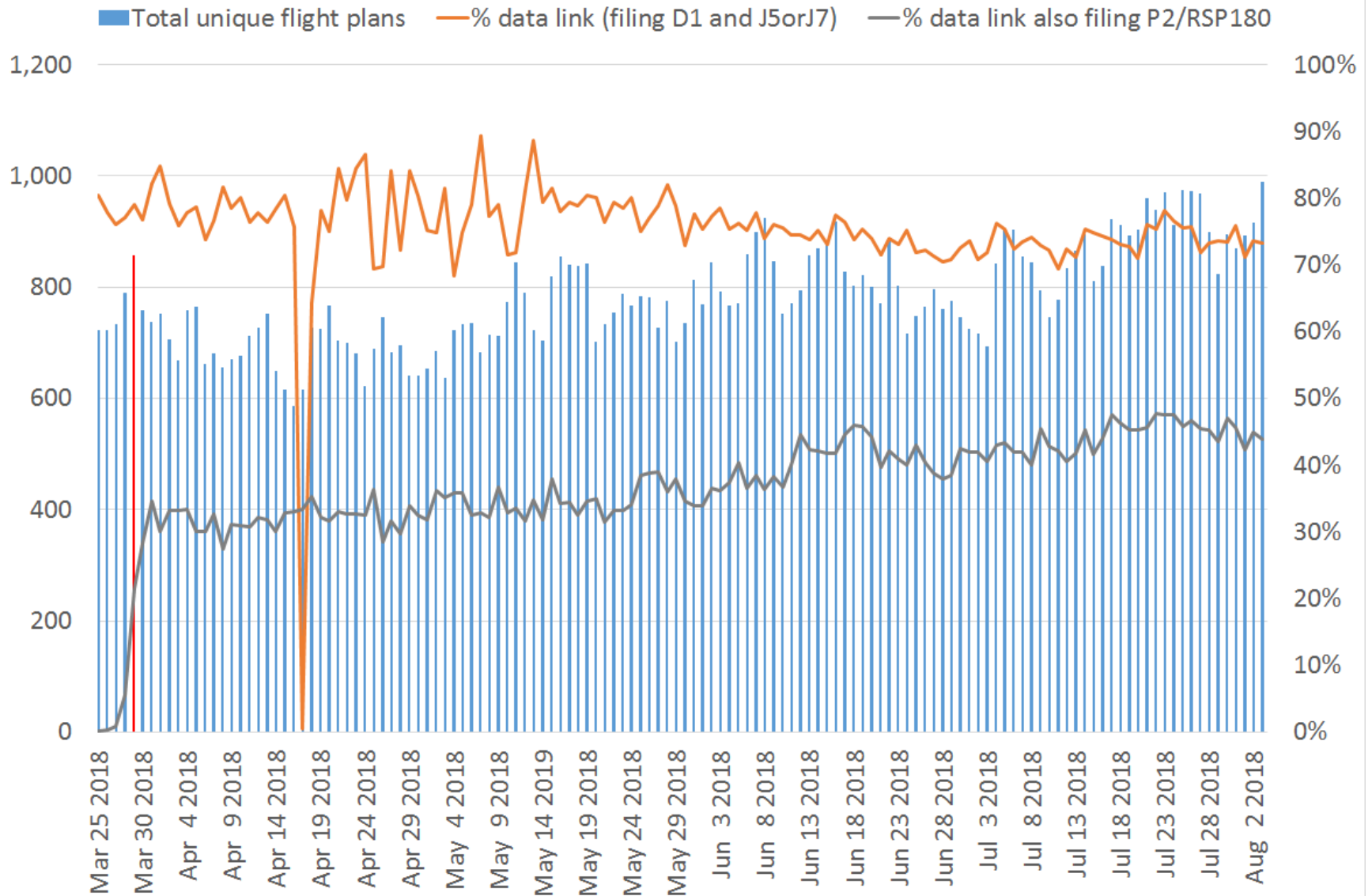
FIR	Region	ANSP	Designated RMA
Gander	Atlantic	NAV Canada	NAT CMA
Shanwick	Atlantic	UK NATS	NAT CMA
New York East	Atlantic	FAA	NAARMO
New York West	Atlantic	FAA	NAT CMA
Reykjavik	Atlantic	Isavia Ltd	NAT CMA
Santa Maria	Atlantic	NAV Portugal (Navegação Aérea de Portugal)	NAT CMA
Anchorage Oceanic	Pacific	FAA	PARMO
Auckland	Pacific	Airways New Zealand	PARMO
Fukuoka	Pacific	Japan Civil Aviation Bureau (JCAB)	JASMA
Nadi	Pacific	Fiji Airports	PARMO
Oakland Oceanic	Pacific	FAA	PARMO
Singapore	Pacific	Civil Aviation Authority of Singapore (CAAS)	MAAR
Tahiti	Pacific	Direction Générale de l'Aviation Civile (DGAC) Tahiti	PARMO



POST-IMPLEMENTATION IMPACT ASSESSMENT

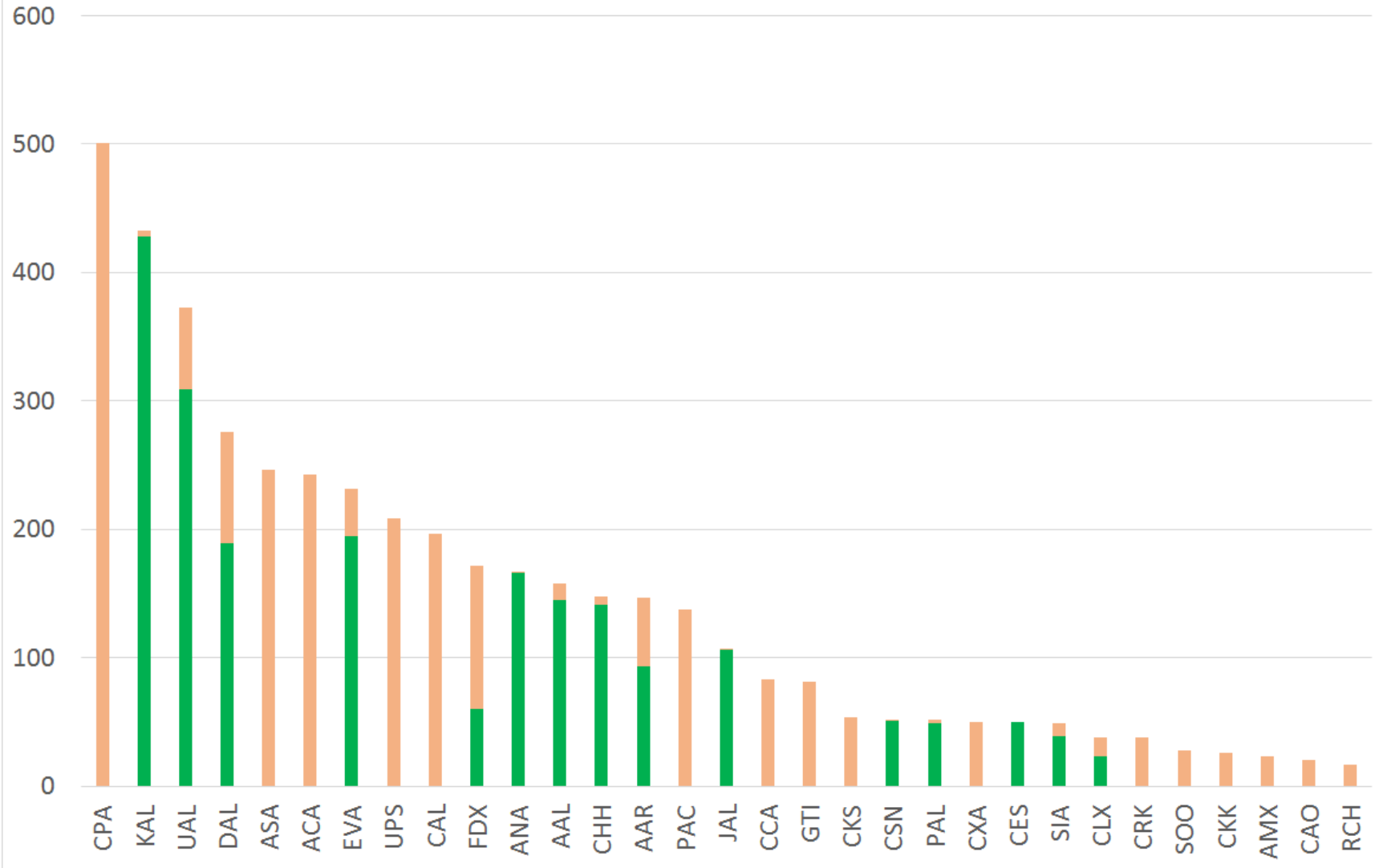


Anchorage Unique Flight Plans and Data Link/PBCS Equipage filing

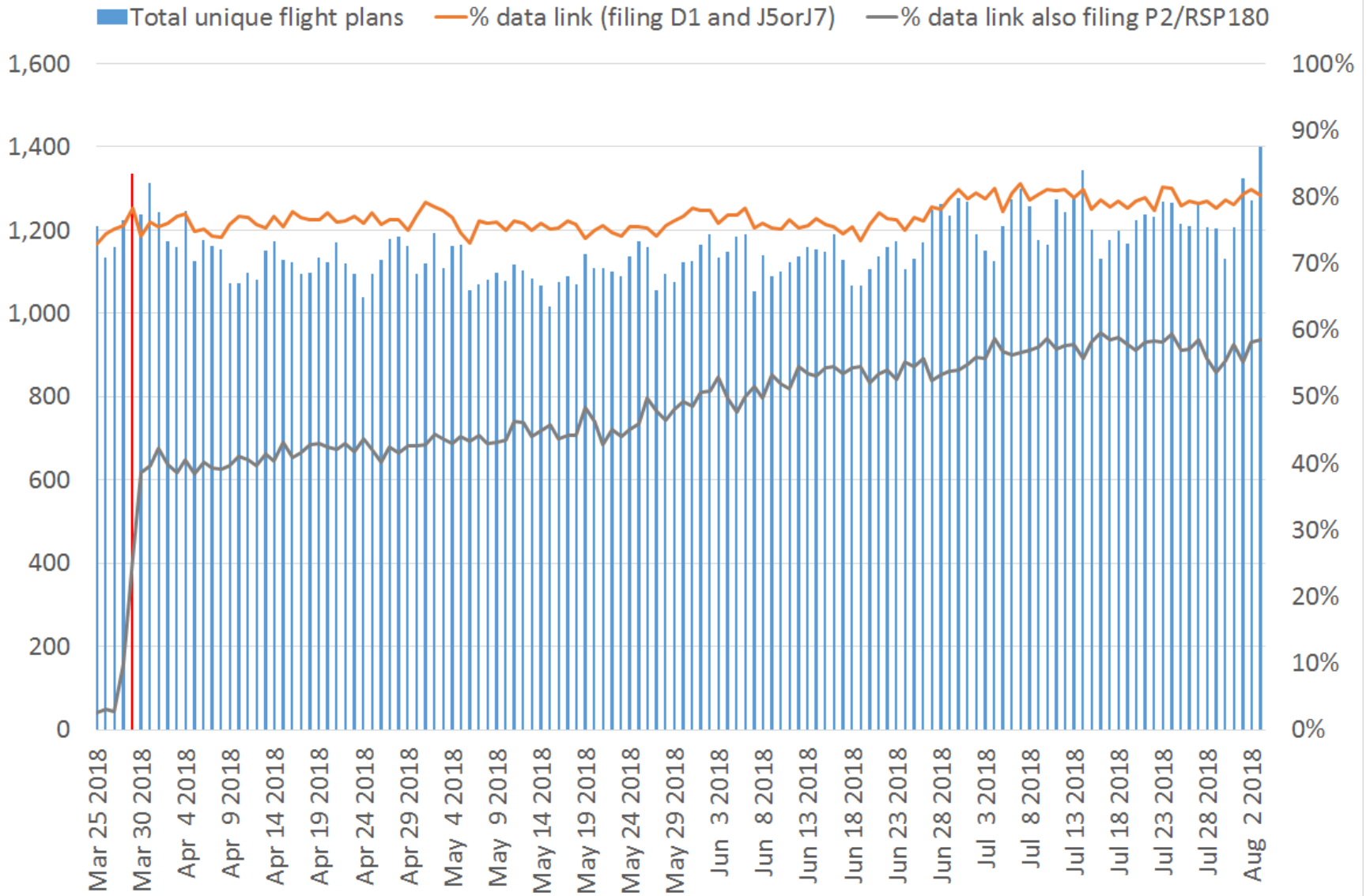


Anchorage Top Data Link Users - PBCS Equipage filing (Jul 28 - Aug 3)

■ D1 and J5orJ7 and P2 and RSP180
 ■ D1 and J5orJ7 but no P2, RSP180

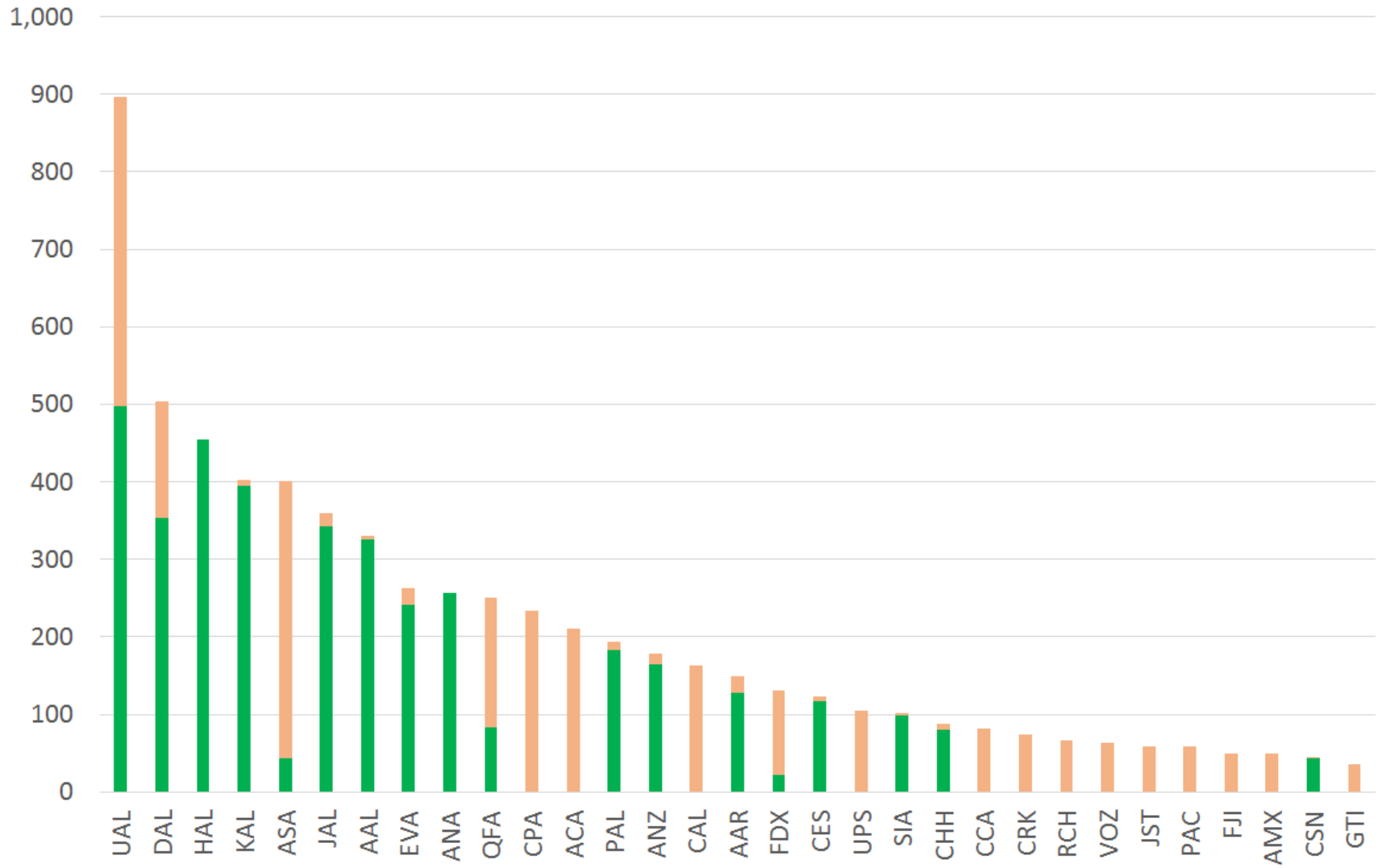


Oakland Unique Flight Plans and Data Link/PBCS Equipage filing

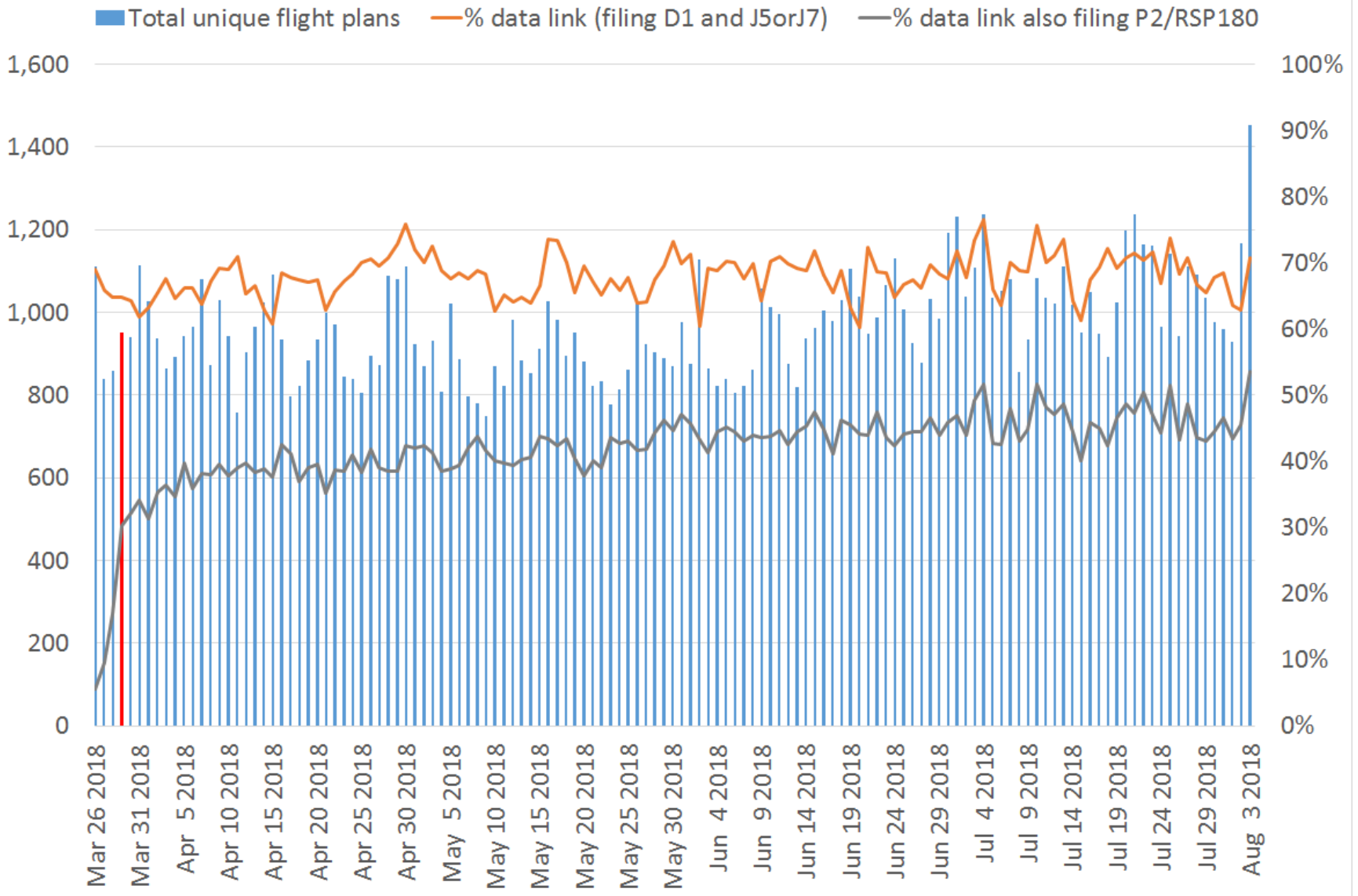


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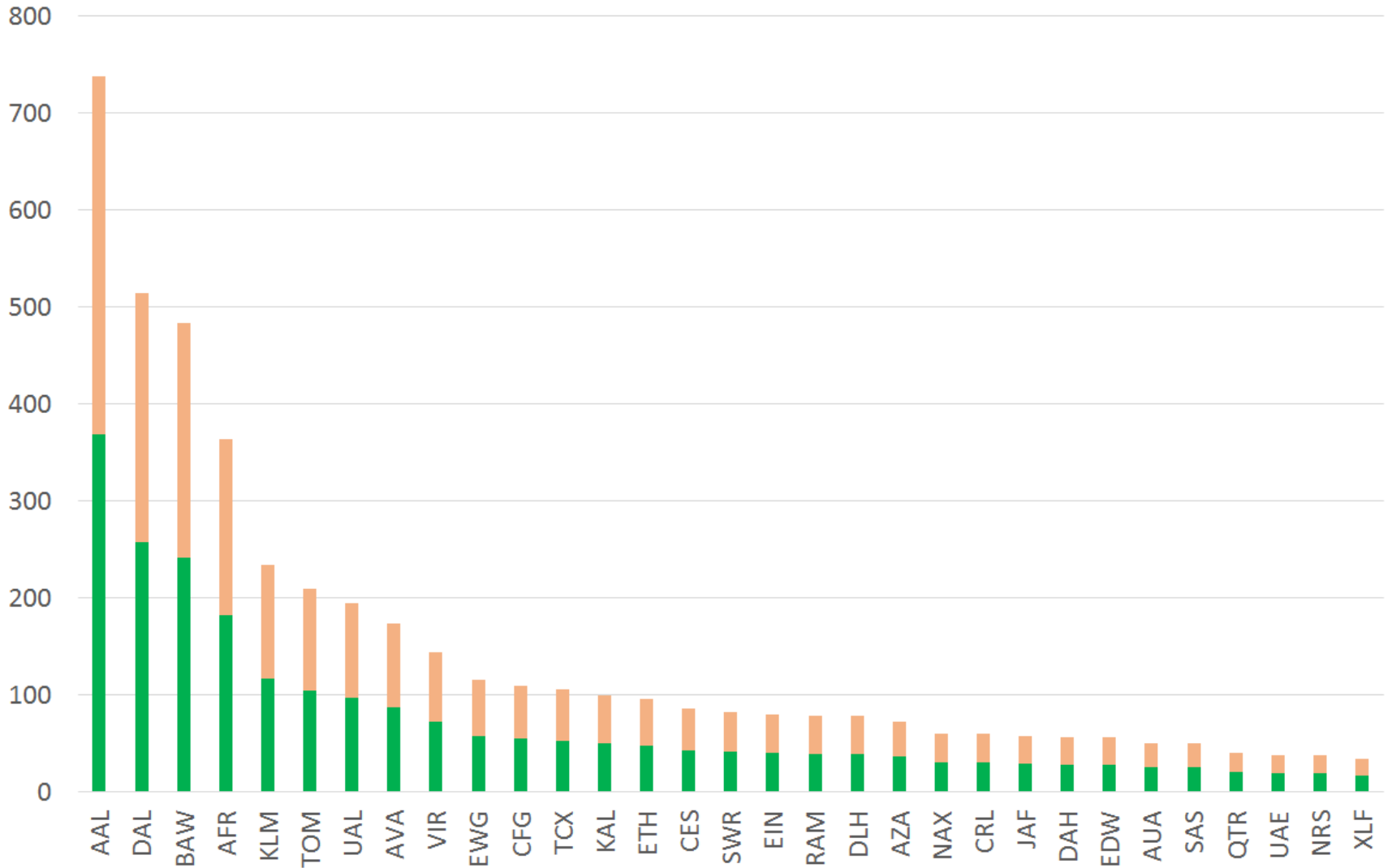


New York - Unique Flight Plans and Data Link/PBCS Equipage filing



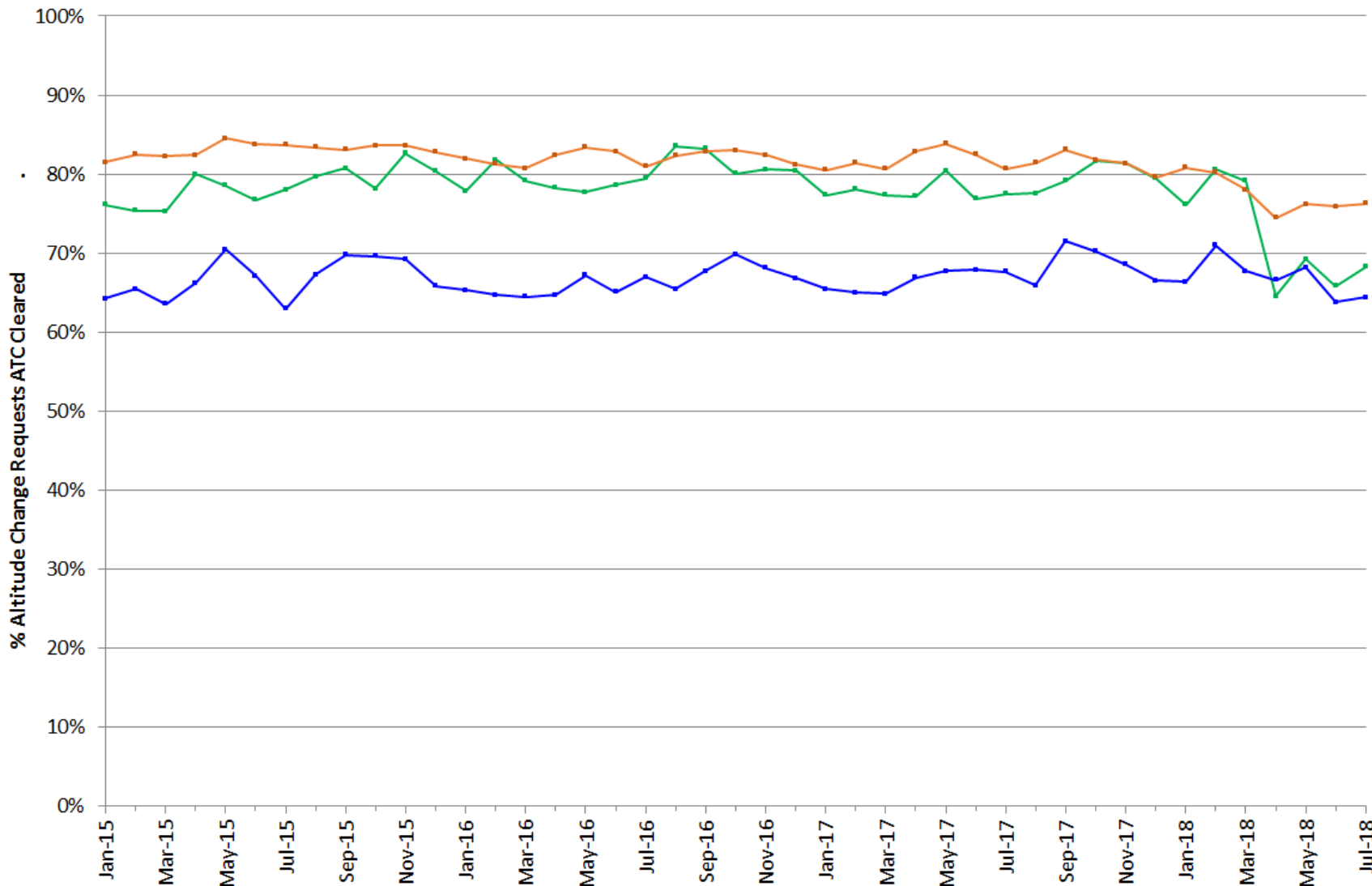
New York Top Data Link Users - PBCS Equipage filing (Jul 28 - Aug 3)

■ D1 and J5orJ7 and P2 and RSP180
 ■ D1 and J5orJ7 but no P2, RSP180



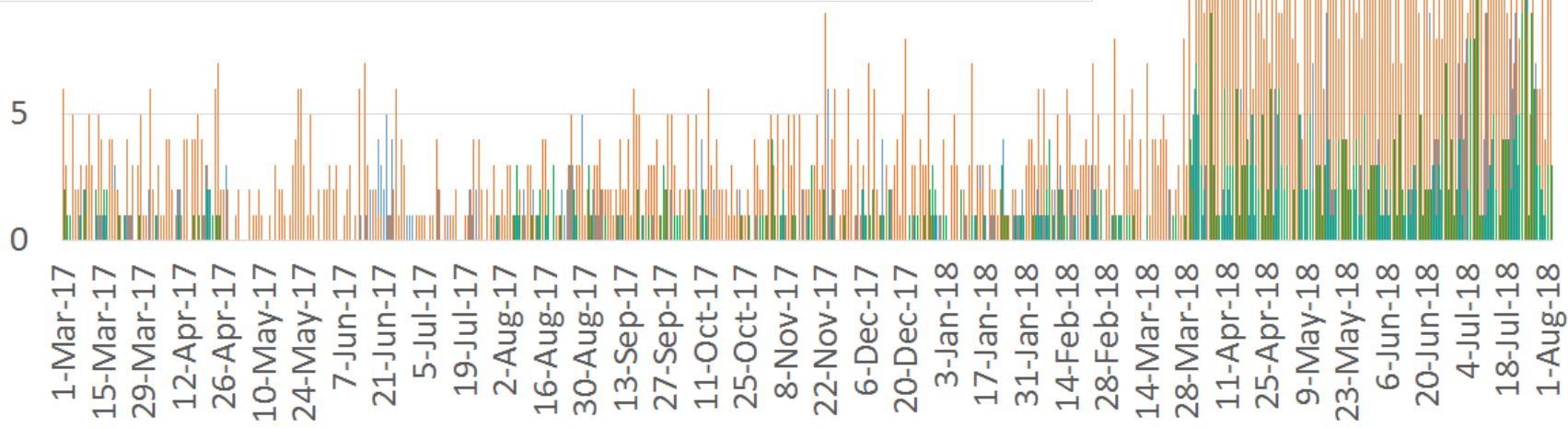
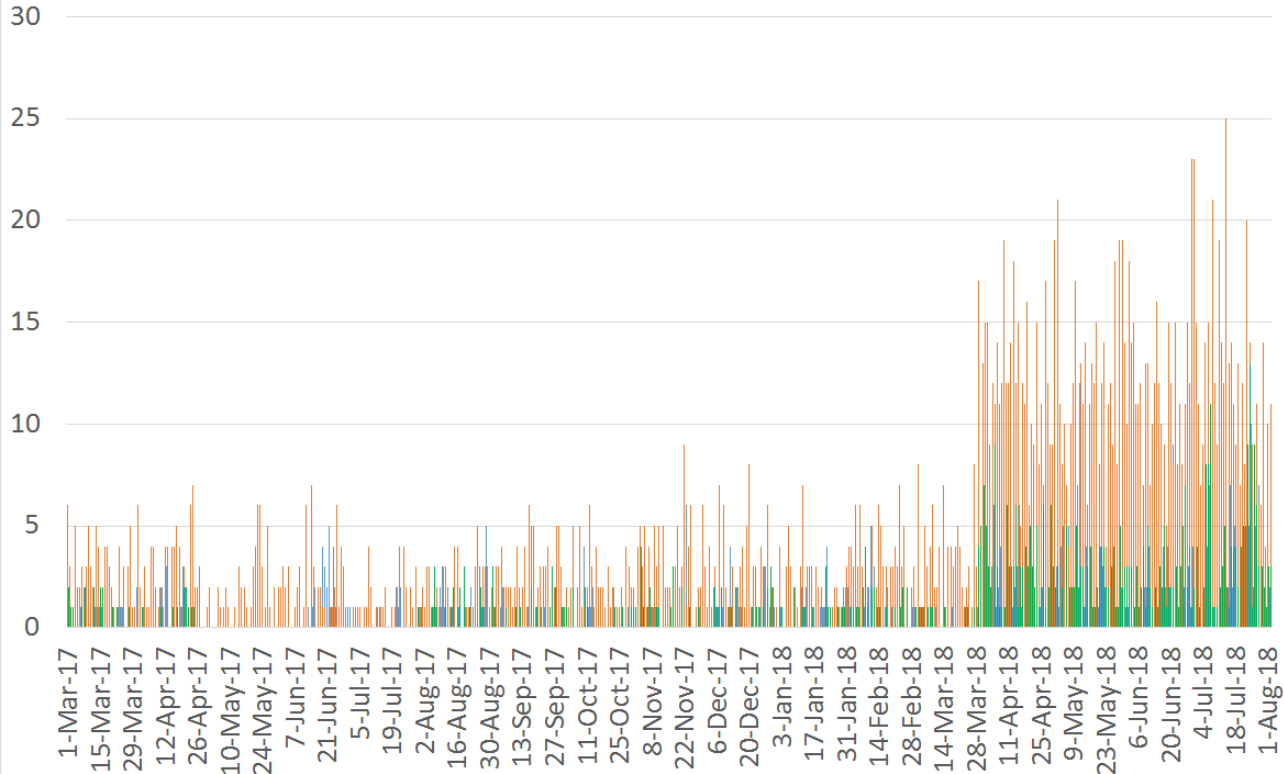
% Altitude Change Requests ATC Cleared

ZAN ZNY ZAK



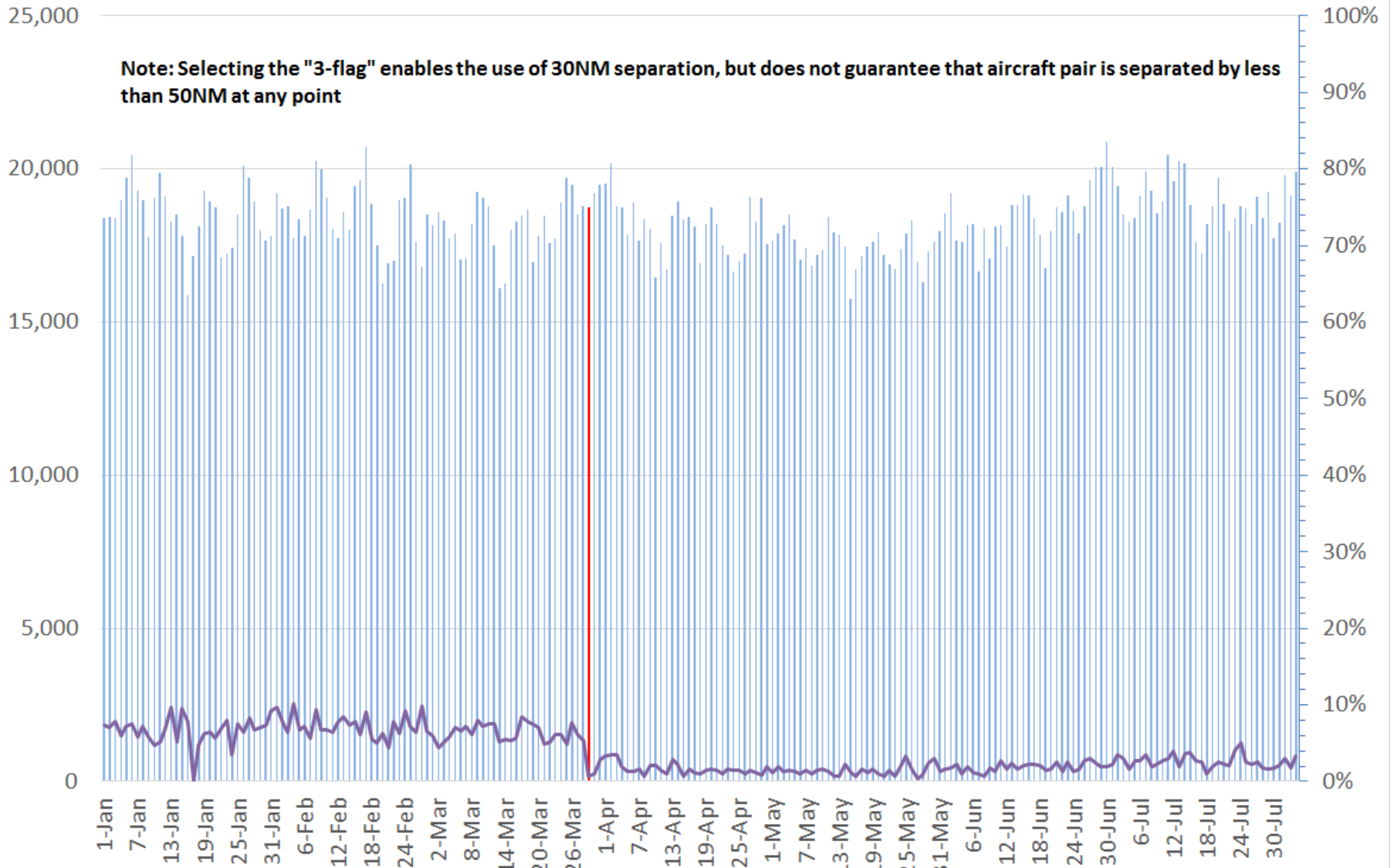
CDP Usage

■ New York ■ Oakland ■ Anchorage



Oakland FIR - 2018 - Percentage flights with "3-flag" selected

■ Total ADS-C flights — % 3-flg selected



Note: Selecting the "3-flag" enables the use of 30NM separation, but does not guarantee that aircraft pair is separated by less than 50NM at any point

