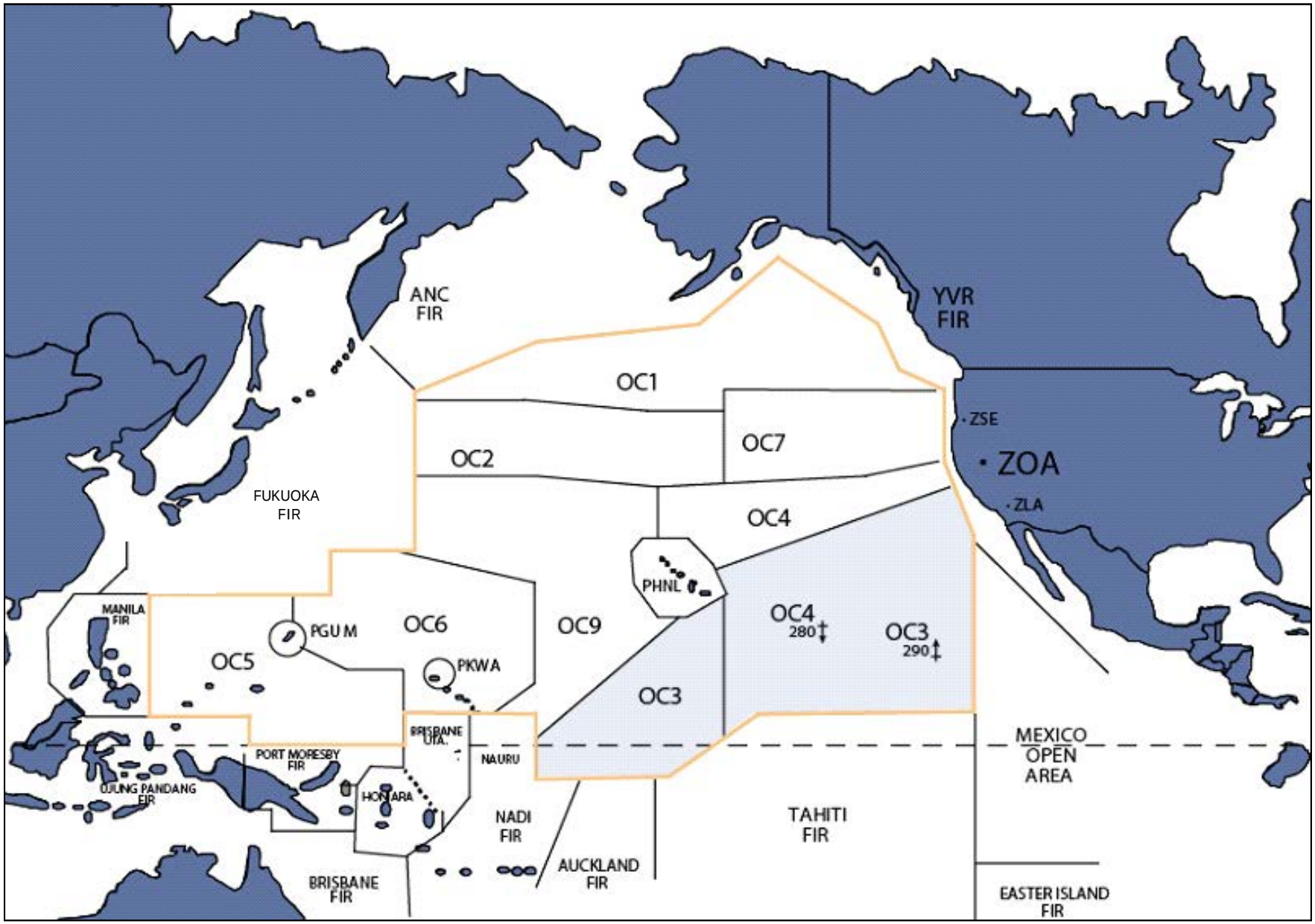
A Summary of the Airspace Characteristics Related to the Operational-Trial Use of 30-NM Lateral and Longitudinal Separation Standards in the Oakland Flight Information Region

Federal Aviation Administration

ISPACG/21
Auckland, New Zealand
5 - 9 March 2007

Introduction

- On 22 December 2005, the FAA implemented 30-nm lateral and longitudinal separation standards on an operational trial basis in Oakland Oceanic Sector 3 (OC3)
- The implementation followed all guidelines outlined in Annex 11 and the PANS ATM (ICAO Doc 4444)
- The operational trial, permits the FAA to evaluate the relevant performance of aircraft with suitable State approval for participation in the trial, as well as operation of the new Ocean21 oceanic automation system introduced into full-time operation at the Oakland ARTCC in October 2005


ANC
FIR
YVR
FIR
OC1
OC7
OC2
ZSE
ZOA
ZLA
FUKUOKA
FIR
OC4
PHNL
MANILA
FIR
PGUM
OC6
OC9
OC4
280
OC3
290
OC5
PKWA
OC3
BRISBANE
OCA
NAURU
MEXICO
OPEN
AREA
PORT MORESBY
FIR
UJUNG PANDANG
FIR
HONIARA
NADI
FIR
TAHITI
FIR
AUCKLAND
FIR
BRISBANE
FIR
EASTER ISLAND
FIR

Introduction

- As part of the operational trial, the FAA has formed a group of experts to evaluate performance of the various components of the system supporting the reduced separation minima
- This group has been termed the “30-30 Scrutiny Group”, more simply known as the scrutiny group. The scrutiny group is composed of representatives from various FAA organizations, members of the scrutiny group include:
  - Specialists in oceanic air traffic control and engineering operations from the Oakland Center,
  - As well as representatives from the following:
    - Headquarters air traffic services,
    - Headquarters oceanic program office,
    - The Flight Standards Service
    - The Aircraft Certification Service, and
    - The FAA Technical Center

Data Sources Available

- Ocean21 data reduction and analysis archives
- Enhanced Traffic Management System
- Technical Center archives of ZOA radar data
- FAA accident and incident databases
- NASA Aviation Safety Reporting System

Ocean21 Data Reduction & Analysis

- Ocean 21 System's Data Reduction & Analysis (DR&A) process provides a history of operational data

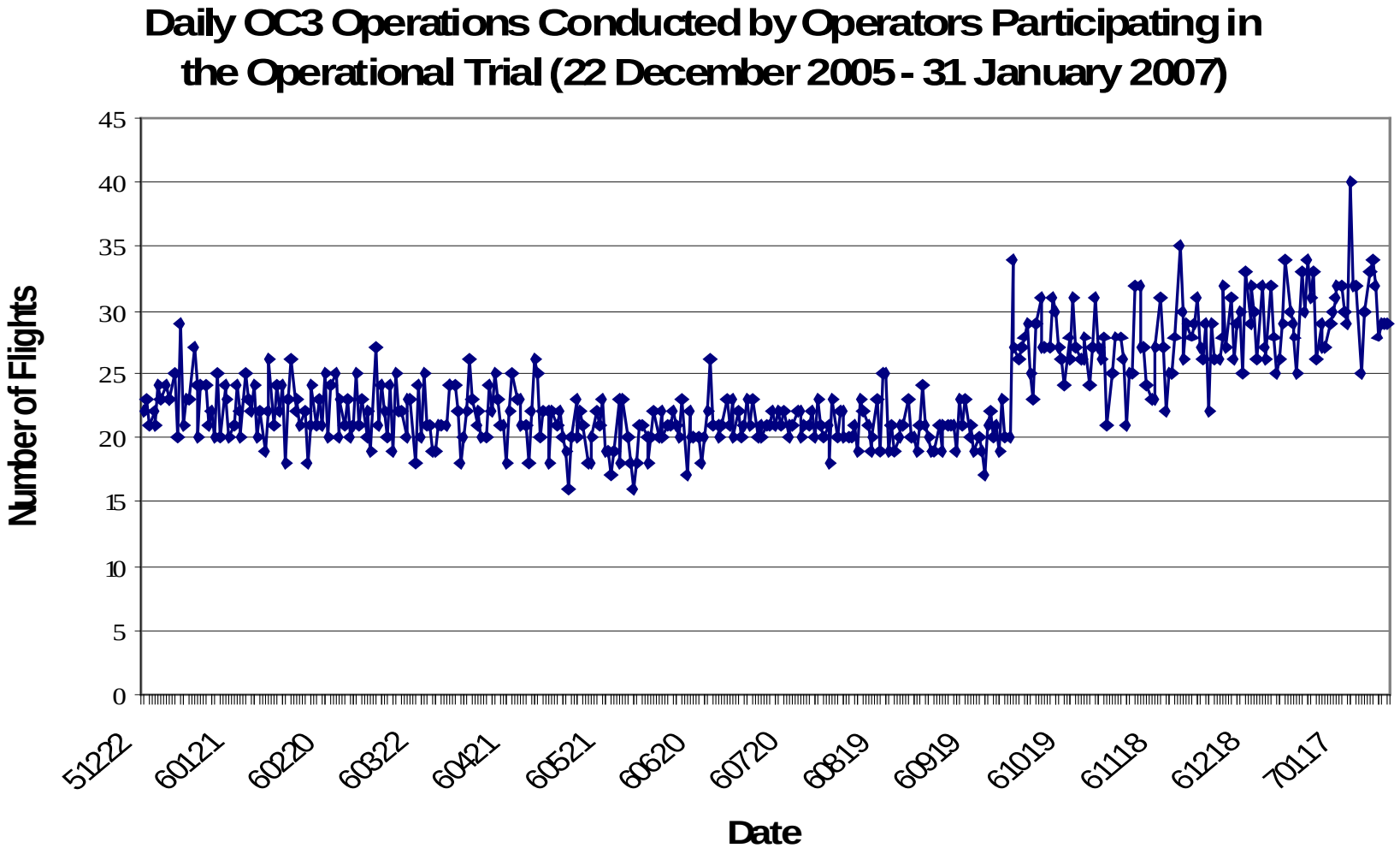
- These data are made available to the FAA Technical Center on a regular basis (approximately every 11 days) and include;
  - Automatic Dependent Surveillance-Contract (ADS-C) messages,
  - Controller-Pilot Datalink Communication (CPDLC) messages,
  - High Frequency (HF) radio messages, and
  - ICAO Filed flight plans

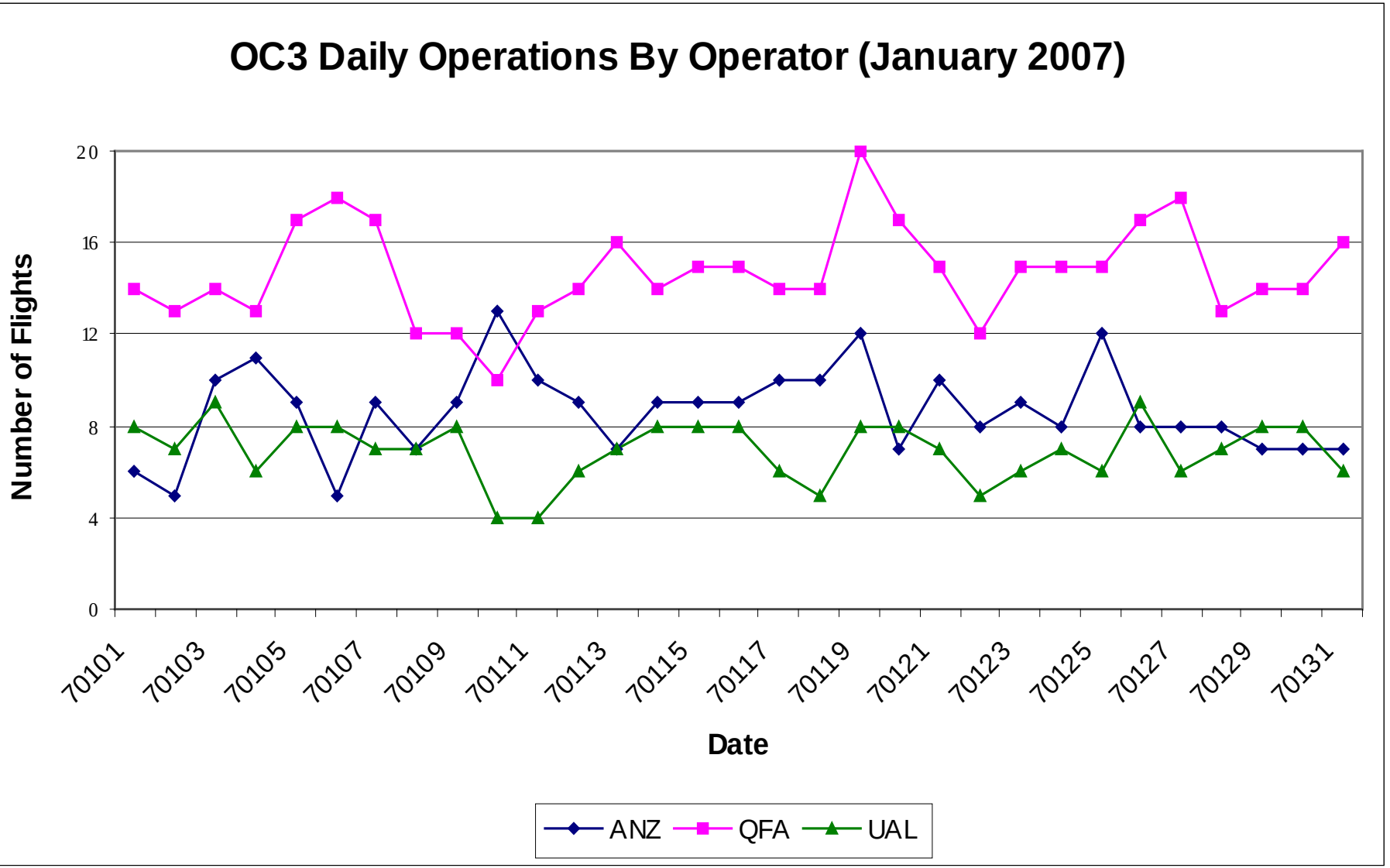
Background – OC3 Airspace

- Three operators participating in the operational-trial are ANZ, QFA, and UAL

- These operators account for approximately 23 flights per day in OC3 airspace

- The principle city pairs for these operators include:
  - Los Angeles/San Francisco (KLAX/KSFO) to/from Sydney (YSSY)/Brisbane (YBBN)/Melbourne (YMML), and
  - KLAX/KSFO to/from Auckland (NZAA)/Christchurch (NZCH)

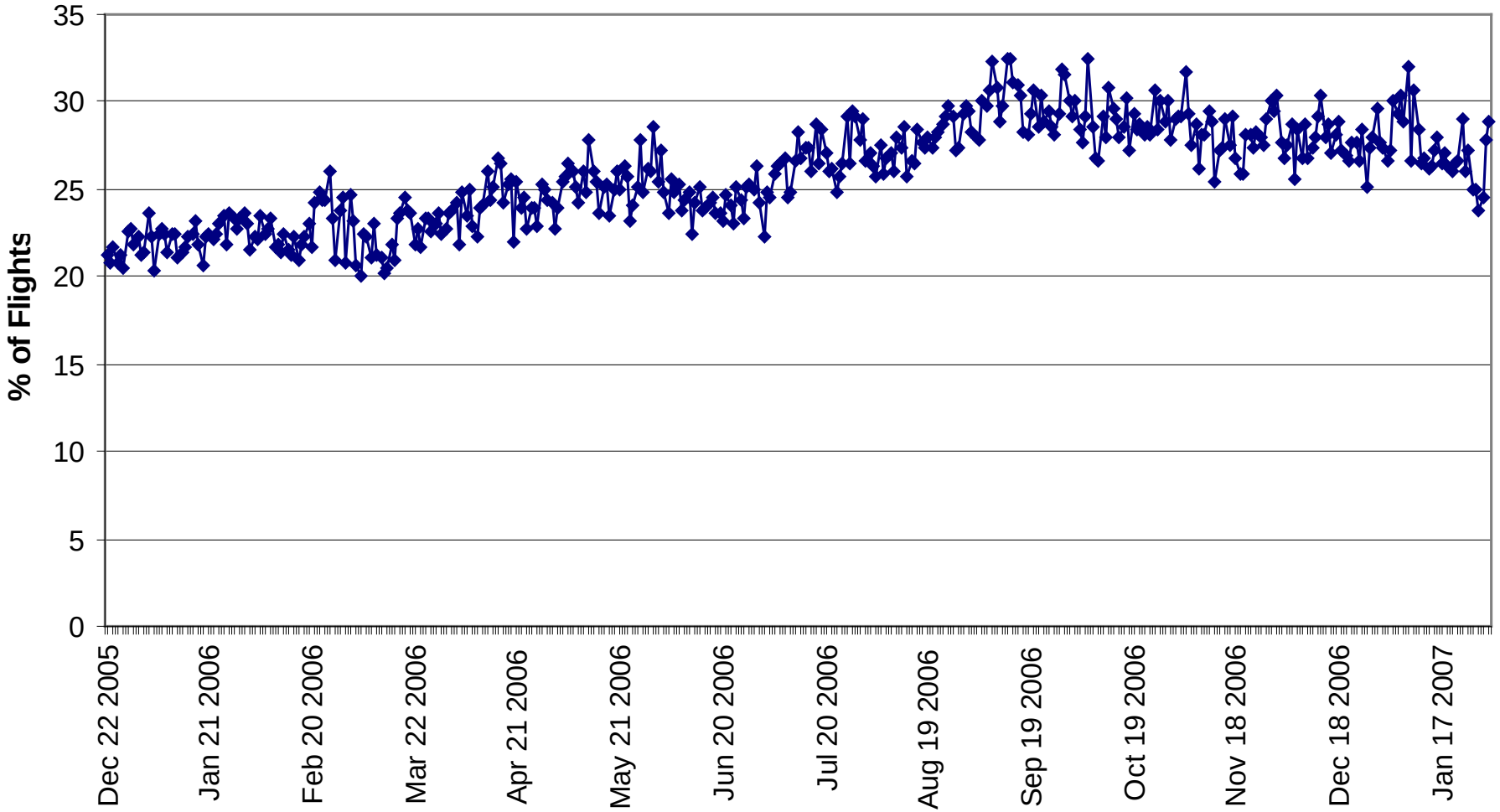

Daily OC3 Operations Conducted by Operators Participating in the Operational Trial (22 December 2005 - 31 January 2007)
Number of Flights
45
40
35
30
25
20
15
10
5
0
51222
60121
60220
60322
60421
60521
60620
60720
60819
60919
61019
61118
61218
70117
Date


OC3 Daily Operations By Operator (January 2007)
Number of Flights
20
16
12
8
4
0
70101
70103
70105
70107
70109
70111
70113
70115
70117
70119
70121
70123
70125
70127
70129
70131
Date
ANZ
QFA
UAL

Background – Oakland Oceanic Airspace

- The average number of flights per day within all of Oakland Oceanic airspace is 660
- Of these flights approximately 33.8 percent file ADS-C capable in ICAO flight plan
  - SXWDHIJRYZ/CD (sample)
  - /D denotes ADS equipped
  - J denotes satellite data link

Percent of Flights Using ADS-C in ZOA



Background – Oakland Oceanic Airspace

- In addition to the operators participating in the trial, three additional operators are filing flight plans indicating approval to participate in airspace where 30-NM lateral and longitudinal separation standards are applied (RNP4)

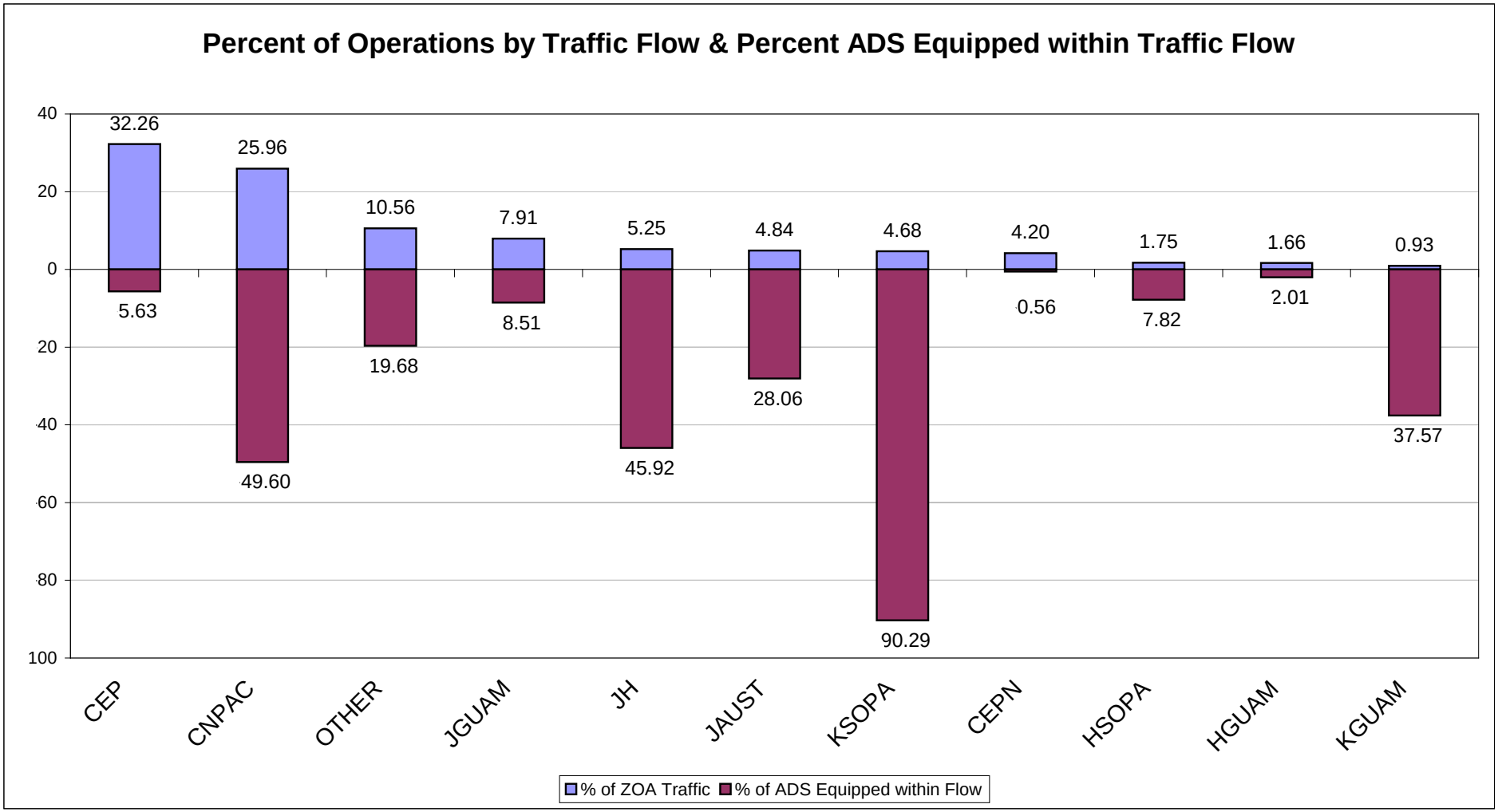
- These additional operators are: CPA, SIA, SQC - these operators do not currently conduct operations within OC3 airspace

Oakland Oceanic Airspace Traffic Flows

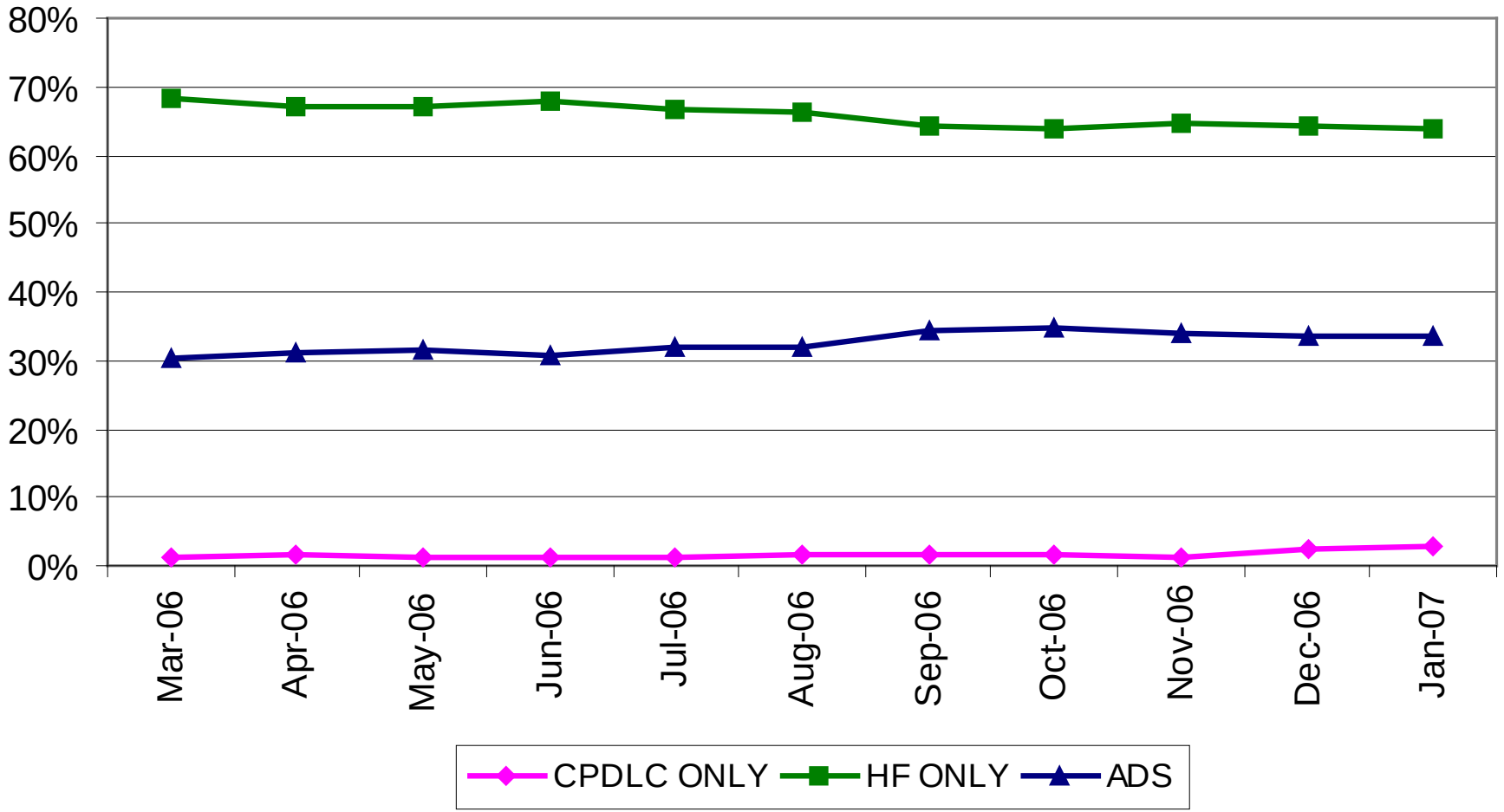
- The FAA Technical Center developed groupings of the traffic data in Oakland oceanic airspace by origin/destination pairings as a means of further categorizing the data

Oakland Oceanic Airspace Traffic Flows

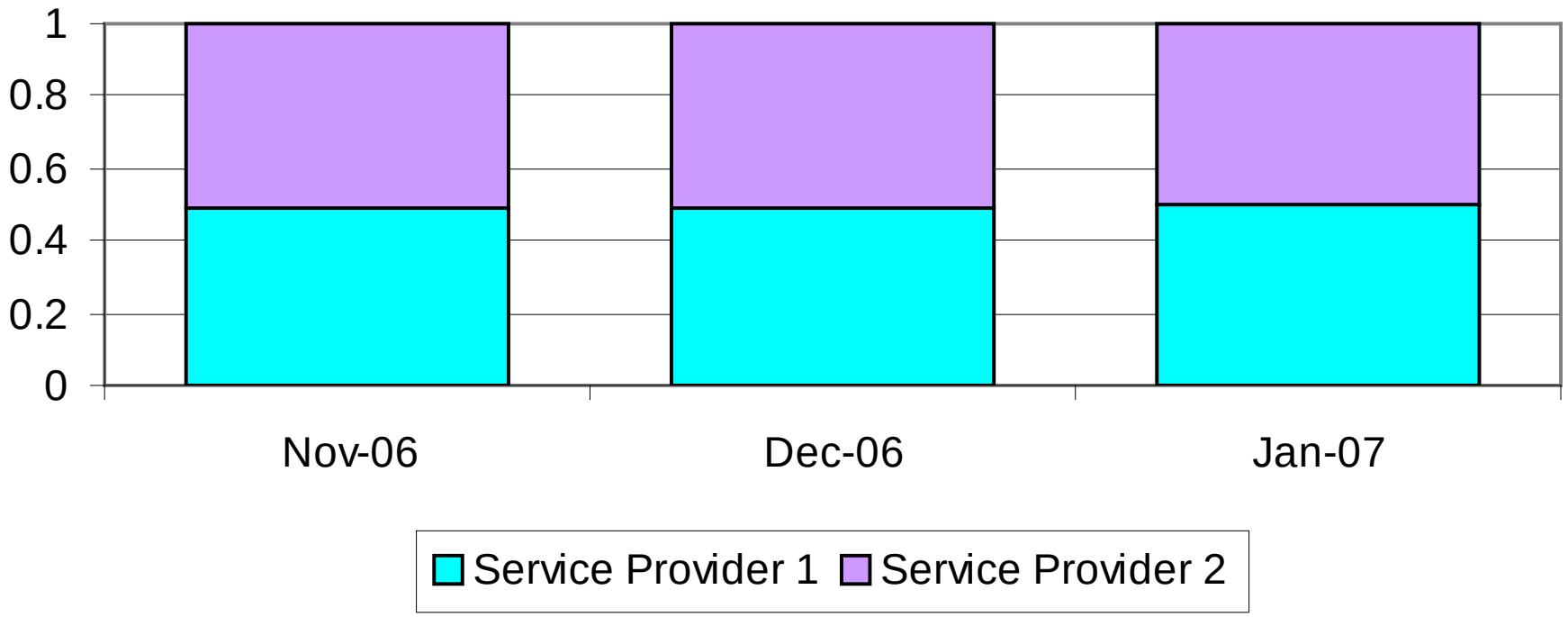
Flow Designator	Flow Name	Description of Flow
CEP	Central East Pacific	Hawaii to/from North American mainland to and from Hawaii
CEPN	Northern Central East Pacific	Hawaii to/from Northwest US/Canada/Alaska
CNPAC	Central Pacific	North American mainland to/from Japan/Korea/other Asian origins
HGUAM	Hawaii to Guam Area	Hawaii to/from Guam/Saipan/other proximate destinations
HSOPA	Hawaii to South Pacific	Hawaii to/from South Pacific
JAUST	Japan to South Pacific	Japan to/from South Pacific
JGUAM	Japan to Guam area	Japan to/from Guam/Saipan/other proximate destinations
JH	Japan to Hawaii	Japan to/from Hawaii
KGUAM	North America/Hawaii to Guam Area	North American mainland to/from Guam/Saipan/other proximate destinations
KSOPA	North America to South Pacific	North American mainland to/from South Pacific


Percent of Operations by Traffic Flow & Percent ADS Equipped within Traffic Flow
40
20
0
20
40
60
80
100
32.26
25.96
10.56
7.91
5.25
4.84
4.68
4.20
1.75
1.66
0.93
5.63
49.60
19.68
8.51
45.92
28.06
90.29
0.56
7.82
2.01
37.57
CEP
CNPAC
OTHER
JGUAM
JH
JAUST
KSOPA
CEPN
HSOPA
HGUAM
KGUAM
% of ZOA Traffic
% of ADS Equipped within Flow

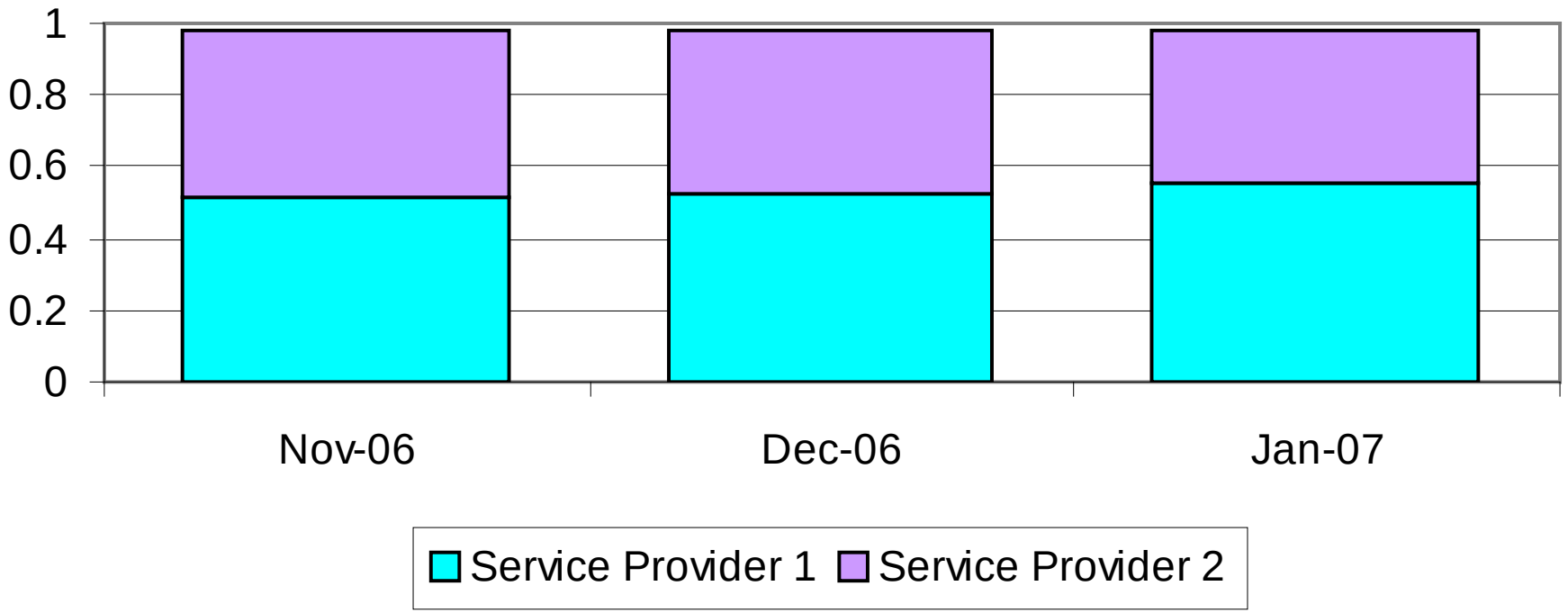
Percent of Flights Per Month By Report Method

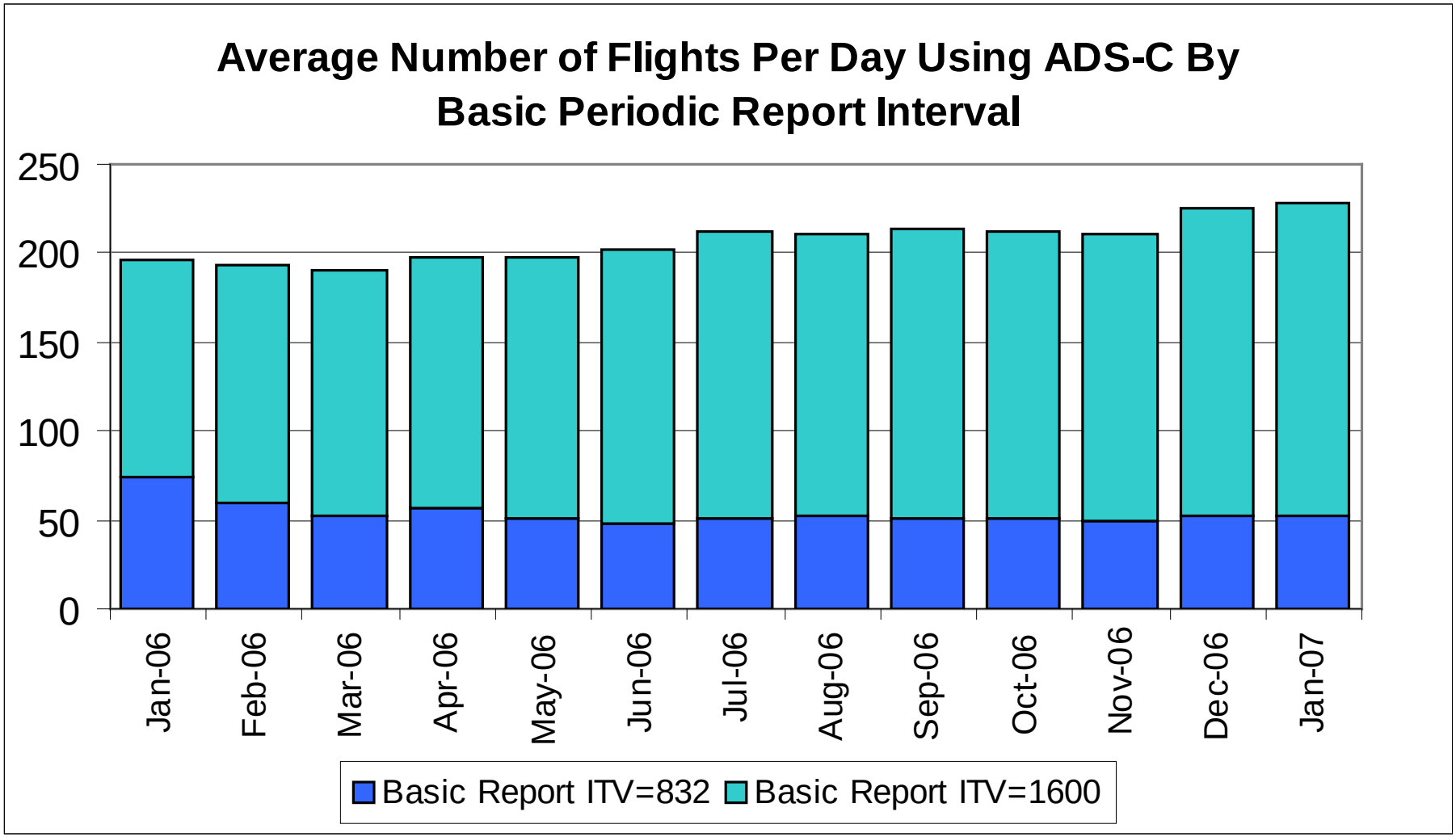


Proportion of Downlink ADS-C Message Traffic By Communication Provider

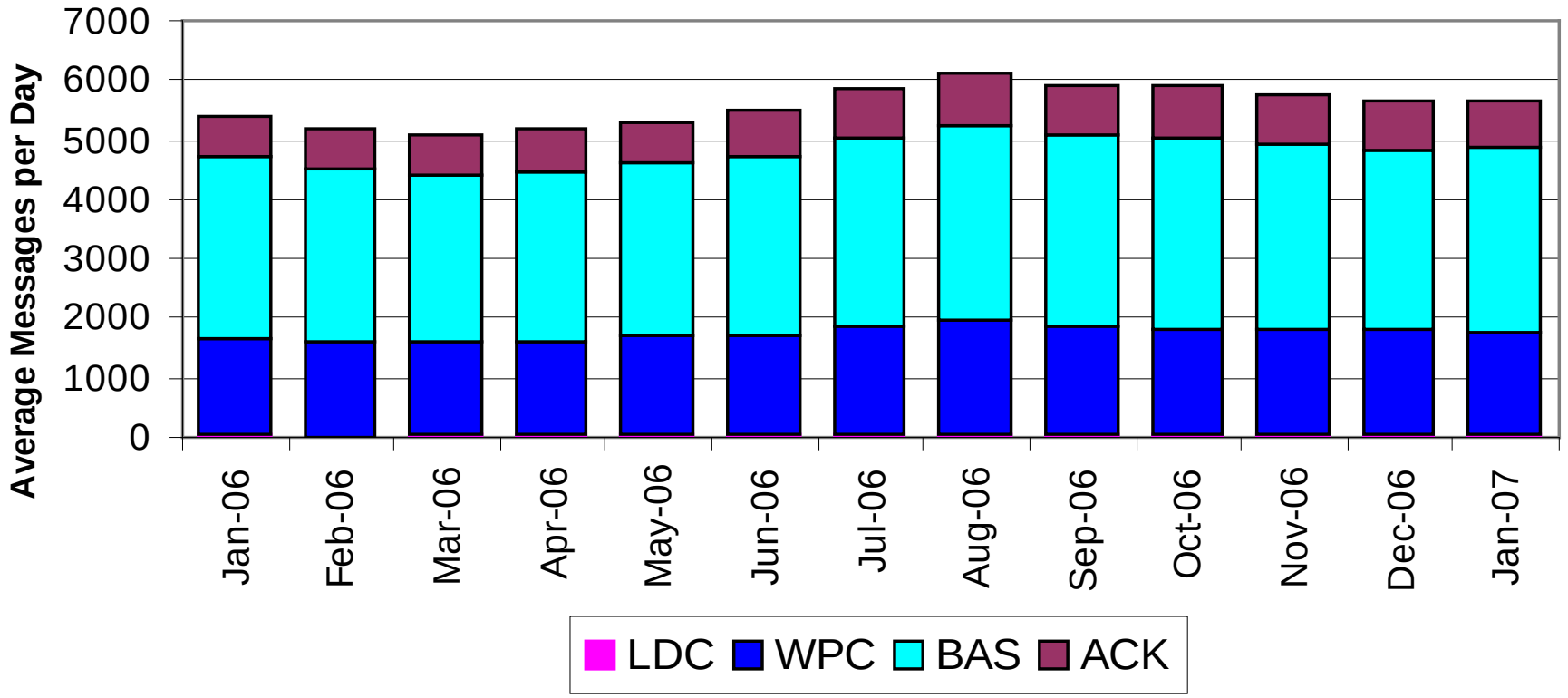


Proportion of Uplink ADS-C Message Traffic By Communication Provider

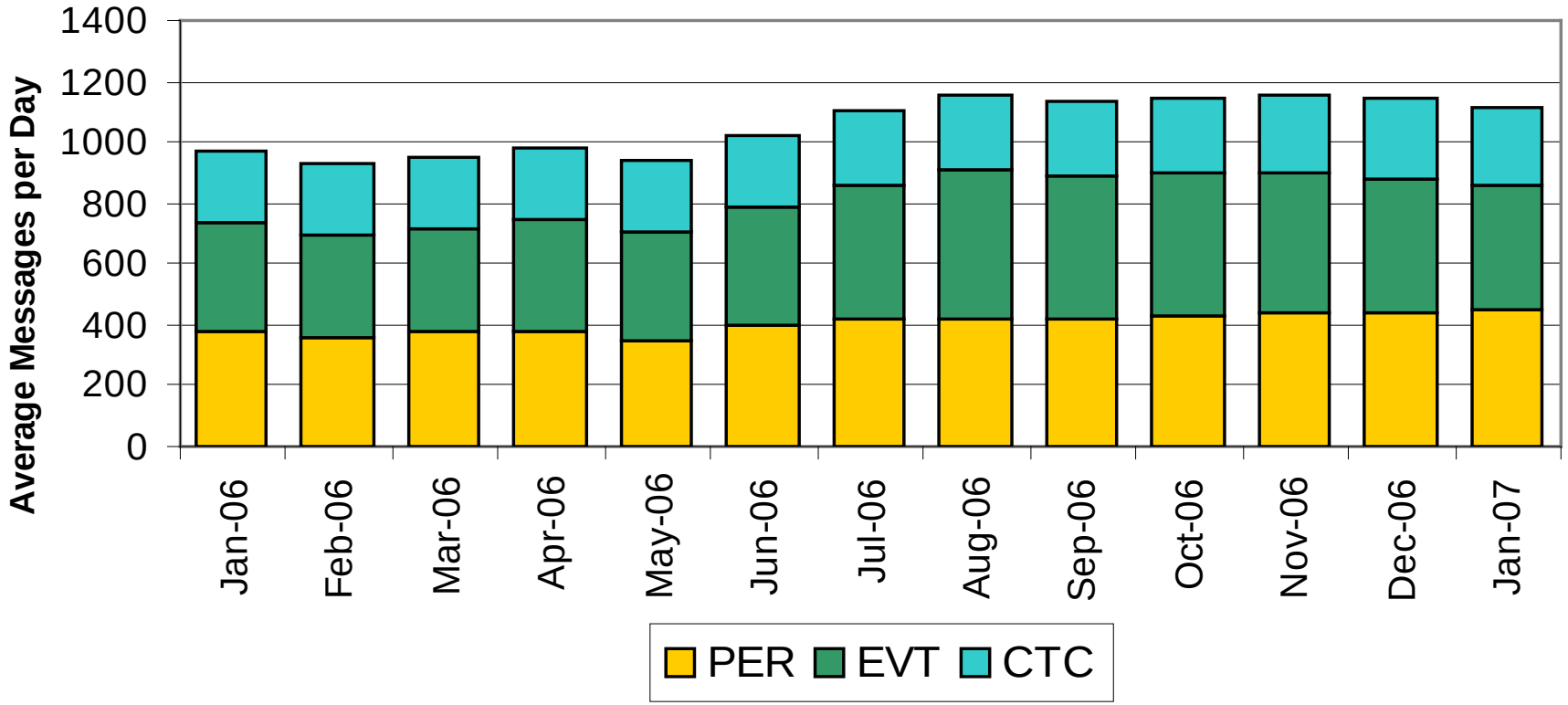



Average Number of Flights Per Day Using ADS-C By Basic Periodic Report Interval
250
200
150
100
50
0
Jan-06
Feb-06
Mar-06
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Basic Report ITV=832
Basic Report ITV=1600

Average Number of ADS-C Downlink Message Per Day By Message Type



Average Number of ADS-C Uplink Message Per Day By Message Type



Location of ADS-C Position Reports – 15 September 2006