

ICAO RNP2/GNSS Separation Rules

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SM Oceanic Airspace and Procedures

March 2, 2015



Federal Aviation
Administration

ICAO Doc 4444 5.4.1.2.1.6.e

5.4.1.2.1.6 *Lateral separation of aircraft on parallel or non-intersecting tracks or ATS routes.* Within designated airspace or on designated routes, lateral separation between aircraft operating on parallel or non-intersecting tracks or ATS routes shall be established in accordance with the following:

a) for a minimum spacing between tracks of 93 km (50 NM) a navigational performance of RNAV 10 (RNP 10), RNP 4 or RNP 2 shall be prescribed;

b) for a minimum spacing between tracks of 55.5 km (30 NM) a navigational performance of RNP 4 or RNP 2 shall be prescribed;

c) for a minimum spacing between tracks of 27.8 km (15 NM) a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. **Direct controller-pilot VHF voice communication shall be maintained** while such separation is applied;

d) for a minimum spacing between tracks of 13 km (7 NM), applied while one aircraft climbs/descends through the level of another aircraft, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed. **Direct controller-pilot VHF voice communication shall be maintained** while such separation is applied; and

e) for a minimum spacing between tracks of 37 km (20 NM), applied while one aircraft climbs/descends through the level of another aircraft whilst using other types of communication than specified in d) above, a navigational performance of RNP 2 or a GNSS equipage shall be prescribed.

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- **Almost 60% of Oakland Oceanic Traffic is RNP4 equipped.**
 - 36% chance that two aircraft will both have RNP4 capability for 30nm lateral separation.
- **95% of Oakland Oceanic flight plans contain GNSS equipment “G” in field 10a of the FPL.**
- **No new equipage is required. Most aircraft already flight plan GNSS capability in the Oakland FIR.**

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- **FAA potential uses:**
- **Oceanic Enroute traffic with 20nm lateral separation requesting an altitude change to be above or below blocking traffic.**
- **Oakland conducted a study of a heavy traffic day where 229 aircraft were advised UNABLE to an altitude change request.**
- **Each UNABLE advisory was manually examined to see if GNSS 20nm lateral separation could have been used to approve an altitude change.**

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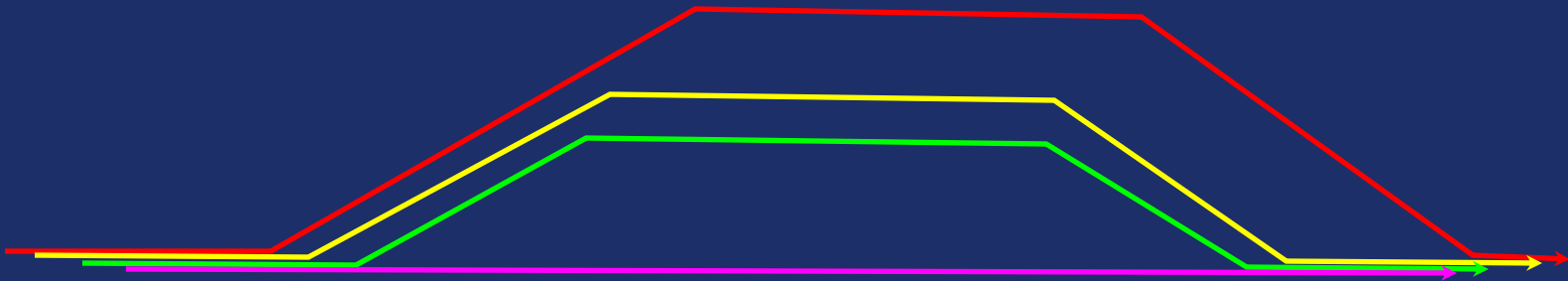
- On January 3, 2015, 229 times Oakland ATC advised aircraft **UNABLE** when an altitude change was requested.
 - Small data sample so results may be skewed
- 18 times of the 229 requests (7.86%), the potential existed for the **GNSS 20nm lateral separation rule to be applied.**
- **Oakland received about 270,000 altitude requests in 2014.**
- **About 17.4% of the time aircraft are advised UNABLE.**
 - About 46,476 UNABLE advisories a year
- **If the January 3 data sample is representative; 3,653 times, GNSS 20nm lateral separation could have been used in 2014 in the Oakland FIR.**

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- 20nm offset clearances could be used to climb aircraft through blocking traffic instead of 30nm or 50nm offset clearances

Extra distance flown

- GNSS 20nm: 11nm
- ADS-C 30nm: 16nm
- RNP10 50nm: 27nm



20nm lateral climb through in 50nm Route systems

- 30nm or 50nm offset may not be possible due to adjacent traffic.
- A 20nm offset to climb thru traffic provides lateral between two adjacent tracks.

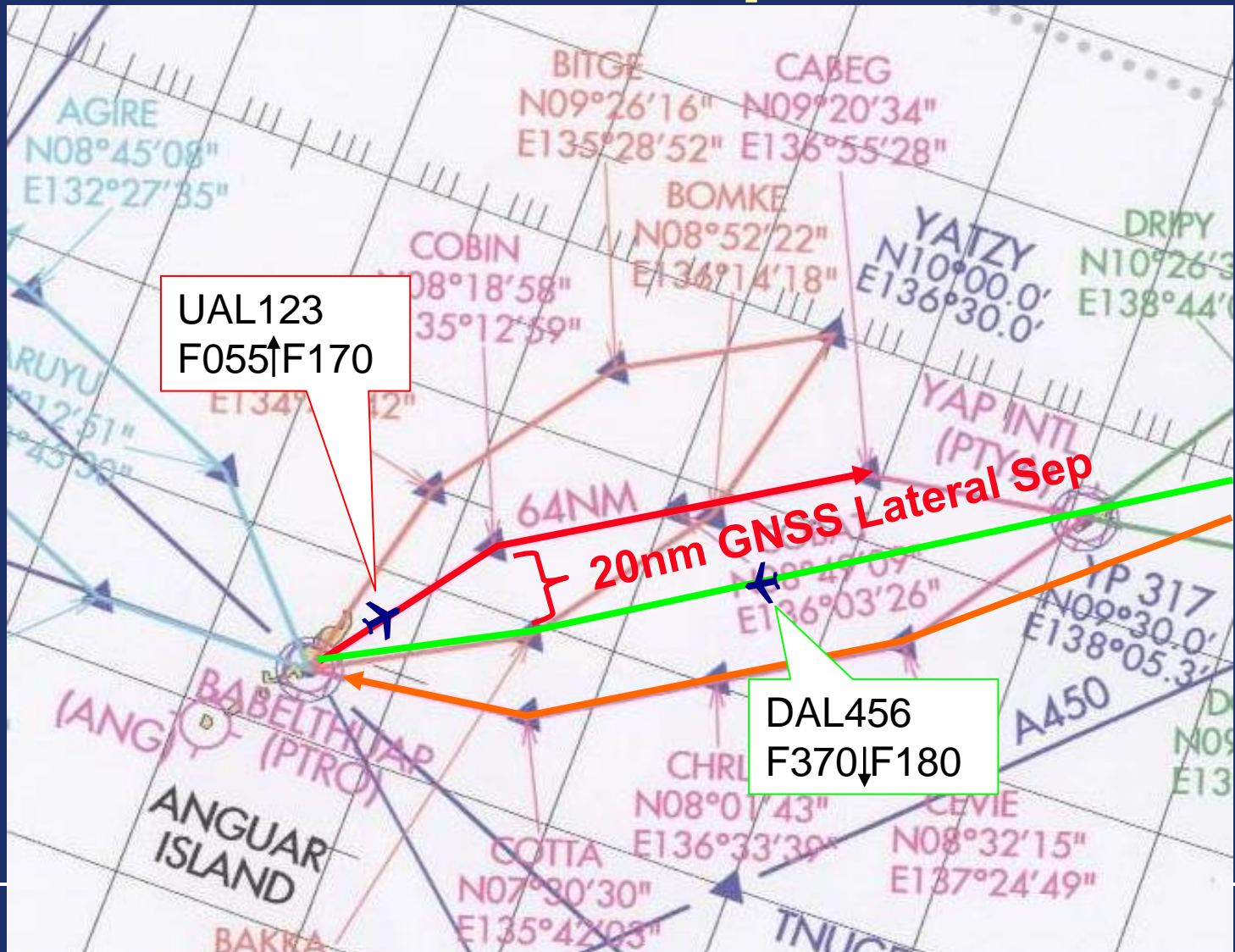
UAL123
F360

ANZ789
F350

DAL456
F360

Pacific Island Possible New GNSS/RNP2 Lateral Separation

- Island Aircraft 89% "G" Equipped



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- **FAA is investigating the potential use of GNSS/RNP2 lateral separation rule to climb or descend an aircraft through the altitude of blocking traffic.**
- **Use of the rule would require careful safety study to ensure use of the rule would maintain the TLS for FAA airspace.**
- **Ocean21 software changes**

