

**Twenty Third Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/23)**

Santiago, Chile, 26-27 March 2009

Agenda Item 3: Review Relevant Work Conducted Since ISPACG/22

**UPDATE ON ACTIVITIES OF THE ASIA AND SOUTH PACIFIC INITIATIVE TO
REDUCE EMISSIONS (ASPIRE)**

(Presented by Federal Aviation Administration)

SUMMARY

The ASPIRE Partnership, initiated in February 2008, has progressed significantly since ISPACG/22. In the year since its inception, the initial ASPIRE partners, Airservices Australia, Airways New Zealand and the FAA have produced the ASPIRE Strategic Plan, executed a series of demonstration flights and initiated the development of shared performance metrics. The partners are looking towards expansion of ASPIRE to additional providers and progressing activities identified in the ASPIRE Work Program "A" through collaboration under ISPACG.

1. INTRODUCTION

- 1.1. The Asia and South Pacific Initiative to Reduce Emissions (ASPIRE) is a partnership of air navigation service providers focused on environmental stewardship in the region. The ASPIRE partnership was initiated by the signing of the ASPIRE Joint Statement of Purpose, by Airservices Australia, Airways New Zealand, and the Federal Aviation Administration at the Singapore Air Show on 18 February 2008. Unlike regional collaborations focused primarily on technology demonstration, the ASPIRE partnership is a comprehensive approach to environmental stewardship for the Pacific Rim. Under ASPIRE, current and future partners pledge to adopt and promote best practices that have demonstrated and proven success in the reduction of greenhouse gasses, as well as to the development of work programs to promote future gains for the environment.

2. DISCUSSION

- 2.1. On 4-5 June 2008, the ASPIRE Partners met in Auckland, New Zealand (NZ) to develop a shared approach to ASPIRE based on the principles established in the Joint Statement of Purpose. The ASPIRE Coordinators established a core set of goals for the partnership:
- a. Accelerate the development and implementation of operational procedures to reduce the environmental footprint for all phases of flight on an operation by operation basis, from gate to gate;
 - b. Facilitate world-wide interoperability of environmentally friendly procedures and standards;
 - c. Capitalize on existing technology and best practices;

- d. Develop shared performance metrics to measure improvements in the environmental performance of the air transport system;
 - e. Provide a systematic approach to ensure appropriate mitigation actions with short, medium and long-term results; and
 - f. Communicate and publicize ASPIRE environmental initiatives, goals, progress and performance to the global aviation community, the press and the general public.
- 2.2. This approach has been documented in the ASPIRE Strategic Plan, which was completed in October 2008. The Strategic Plan is a living document, which will be updated by the partners, at least annually.
- 2.3. There are three principle segments to the Strategic Plan.
- a. Recommended and proven best practices for segments of flight. (examples)
 - User Preferred Routing for Oceanic
 - Dynamic Airborne Reroutes
 - Performance-Based separation (Reduced Vertical Separation Minimum (RVSM), 30/30)
 - Optimized profile descents (Tailored arrivals, CDA's, area navigation (RNAV) enhanced approach)
 - b. Performance Measurement
 - Establish a baseline fuel metric for US to Australia/NZ flights using airline supplied gate-to-gate fuel data
 - Model benefits gained in the last decade from implementation of enhancements (e.g. RVSM, 30/30 separation, Dynamic Reroutes, User Preferred Routes [UPRs], lateral offset climbs)
 - Establish an "Ideal Flight" benchmark, based on projected fuel burn in ideal conditions
 - c. ASPIRE Work Programs
 - Developing and funded initiatives that have the potential to reduce emissions for the target ASPIRE segment (US to Australia/NZ)
 - Many identified ASPIRE work program initiatives are managed via ISPACG
 - Work programs include descriptions, target dates, principal ANSP, industry and airline partners, and participating work groups where appropriate (e.g. ISPACG)
- 2.4. The South Pacific ASPIRE Work Program, know as Work Program "A" consists of near-term and mid-term initiatives such as:
- Performance model for efficiency gains identifying and past performance gains in the South Pacific
 - Development of the Ideal-flight benchmark
 - Development of a South Pacific Performance Baseline (ISPACG)
 - ASPIRE-Flight demonstrations
 - Expansion of Dynamic Airborne Reroute Procedures (ISPACG)
 - Expansion of User Preferred Route availability (ISPACG)

- ADS In-Trail Procedures development (ISPACG)
- Analysis of separation reductions below 30/30
- Collaboration on Optimized Profile Descents such as CDA's and Tailored Arrivals

2.5. Between September 2008 and November 2008, the ASPIRE Partners collaborated with airlines and industry on a series of three green flights, or ASPIRE Flights designed to demonstrate the potential fuel and emissions savings from a) the harmonization of existing green procedures and technologies such as just-in-time fuelling, UPRs and Required Navigation Performance (RNP) reduced pair-wise separation and b) the best-case management of controllable constraints such as taxi delays and low altitude vectoring. The ASPIRE Flights conducted are:

- **ASPIRE-Air New Zealand:** successfully demonstrated on 12 September with a B777 from Auckland, NZ to San Francisco, CA.
- **ASPIRE-Qantas:** successfully demonstrated on 20 October with an A380 from Los Angeles, CA to Melbourne, Australia.
- **ASPIRE-United:** successfully demonstrated on 14 November with a B744 from Sydney, Australia to San Francisco, CA.

Sample Fuel Savings from an ASPIRE Flight (ASPIRE-Air New Zealand)

| | Fuel burn saved | | | |
|--|-----------------|--------------|--------------|---------------|
| | USG | litres | kilos | kilos CO2 |
| Fuel saved by reduced APU use | 60 | 227 | 182 | 574 |
| Fuel saved through 'just in time' refuelling | 68 | 257 | 206 | 650 |
| Fuel saved by use of Maximum climb power | 40 | 151 | 121 | 382 |
| Fuel saved by use of UPR (average) | 420 | 1,590 | 1,272 | 4,015 |
| Fuel saved by DARP (average) | 70 | 265 | 212 | 669 |
| Fuel saved by slower Cost Index | 90 | 341 | 273 | 860 |
| Fuel saved by Optimum Altitude | 135 | 511 | 409 | 1,291 |
| Fuel saved by use of Tailored Arrival | 200 | 757 | 606 | 1,912 |
| Fuel saved by 'delayed flap' | 80 | 303 | 242 | 765 |
| Fuel saved by reduced APU use | 10 | 38 | 30 | 96 |
| Totals | 1,173 | 4,440 | 3,552 | 11,214 |

2.6. Progress, performance and program updates will be reported by the ASPIRE partners on an annual basis via the publication of the ASPIRE Report. The Annual Report will be developed by the ASPIRE coordinators in the second quarter of each calendar year to provide status updates on work program initiatives and demonstrations, performance measurements and future plans for the ASPIRE partnership. The report will be distributed to appropriate members of the aviation community, including industry, media and global forums. The 2009 ASPIRE Annual Report is planned for a June publication.

2.7. The ASPIRE Partners have planned for a slow and deliberate expansion of ASPIRE across the Pacific. Service providers wishing to join in the ASPIRE initiative will be invited to prepare information detailing an approach to ASPIRE, including implementation of best practices, performance metrics, and future work programs.



3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
- a) Note the progress of ASPIRE since ISPACG/22.
 - b) Support and contribute to the ASPIRE initiative.