



CONCEPT OF OPERATIONS FOR FLEX TRACKS OTS

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Table of Contents

TABLE OF CONTENTS	2
1. INTRODUCTION.....	3
2. HISTORY	3
3. CONCEPT	3
4. OPERATIONS	3
5. ASSUMPTIONS	4
6. PROPOSAL.....	4
7. METHODOLOGY	4

1. INTRODUCTION

The Australian Air Traffic Management Strategic Plan (AATMSP) refers to Flex Tracks as Stage 2 of User Preferred Trajectories (UPT). Flex tracks provide cost saving opportunities for airlines and benefits to the environment through significant reduction in fuel burn and prior knowledge of traffic flows for ATC.

MATS Chapter 10 describes Flex Tracks as: "A non-fixed ATS route calculated on a daily basis to provide the most efficient operational flight conditions between specific city pairs."

To achieve ATC safety requirements and efficiencies, Flex Tracks should be arranged in an Organised Track Structure (OTS) thus controlling the relationship or interaction between tracks. Flex Tracks are displayed on the air situation display ensuring situational awareness in the same manner as traffic presented on fixed routes.

2. HISTORY

Flex Tracks have been used for USA-Australia flights and flights between Asia and South Africa. They are currently used in the North Pacific and Atlantic Oceanic areas and for flights between Dubai and Australia. The north Pacific Flex Tracks operate on a structure created by air traffic controllers using the FAA DOTS+ system with methodologies to enhance separation. The current fixed route system is an organised system of tracks that has remained relatively static since the Upper Air Route Review in 1995 and is an integral part of the system defences of ATC.

3. CONCEPT

A Flex Track OTS is predicated on the daily generation of tracks arranged in a manner that enhances separation assurance for the controller while simultaneously allowing airlines to obtain benefits from forecast wind conditions that cannot be obtained using the fixed route structure. Primarily, the OTS will be designed for return flights between S.E. Asia and the Australian east coast yet is not restricted to these city pairs. The process is also applicable for most Australian transcontinental long haul east-west flights. Flex Tracks will be created between waypoints on the external FIR boundary and waypoints appropriate for connection to the fixed route structures of Melbourne, Sydney & Brisbane.

4. OPERATIONS

The OTS must be designed and constructed to be safe and efficient; enabling the application of current separation standards on flexible tracks prepared to stakeholder agreed rules such as;

- Distance between tracks for lateral separation, both Flex to Flex and Flex to fixed.
- Crossing/converging or diverging tracks between Flex and fixed.
- Agreed and defined flight level for the aircraft model. (eg B747 at FL360)
- Type of tracks created. (min time or min fuel etc)
- Known and common points such as Waypoints, Nav aids or Lat/Longs.
- Airline route preferences notified by Preferred Route Messages (PRM)
- Priorities eg aircraft on Flex have priority over aircraft on fixed routes.
- Validity times of the Flex Tracks and specific times that they will be published and available for use.
- Defined city pairs.

5. ASSUMPTIONS

- The Lat-C tool will be utilised by non-radar sectors.
- Flex Tracks will provide benefits to airlines, air traffic control and the environment.
- All operators will utilise the Flex Track OTS when generated and applicable.
- On some occasions a Flex Track generated as part of the OTS may be slightly less efficient for a specific airline's particular aircraft type than a fixed route option. However to maintain the separation assurance integrity of the OTS all operators will continue to plan via the OTS with the knowledge that the longer term benefits outweigh minor negatives.
- It is recognised that without a suitable ATC Decision Support Tool (DST) the introduction of Flex Tracks will also be limited to areas or times where traffic densities and complexities can be safely managed utilizing current ATC tools eg. Lat-C and system alerts.
- As ATC experience increases it is expected that the number of daily flex tracks forming the OTS will increase and eventually be replaced by User Preferred Routes UPRs when conflict recognition/resolution tools are available.

6. PROPOSAL

The FAA DOTS+ system, a demonstrated OTS generation system is in daily use and operated by ATC personnel for tracks across the Pacific. The FAA can provide a DOTS+ system capable of producing configurable laterally separated fuel efficient tracks for industry. Current capabilities of the DOTS+ system include:

- Optimised flexible track systems.
- Oceanic traffic situation display.
- Integrated track advisory function to identify and propose resolutions to solve capacity issues.
- Generation of Track Definition Messages (TDM) for industry advice and ATC system display.

7. METHODOLOGY

Implementation will follow normal project methodologies including risk assessment and mitigation. The following steps are an indicative incremental process;

1. Evaluation of the DOTS+ system capabilities demonstrated by FAA contractor CSSI using Australian data.
2. Installation and evaluation of the DOTS+ system within the Australian environment.
3. To prototype the procedures and technical requirements necessary to the production of relevant OTS.
4. To identify knowledge gaps and train staff who will be responsible for maintenance and operation of the equipment.
5. To work with airlines in prototyping, developing, and baselining rules and parameters of use.
6. Paper trial of the DOTS+ system to produce OTS and evaluate benefits.
7. Trial between specific city pairs.
8. Live trial of night time inbound traffic.
9. Live trial of afternoon outbound traffic.
10. Evaluation and trial expansion of DOTS+ system to a daily system.
11. Evaluation of domestic long distance tracks.
12. Trial of domestic long distance tracks.
13. Expansion trial of domestic long distance tracks.
14. PIR to confirm operational use.
15. Development and adoption of PIR recommendations.
16. Commissioning of DOTS+