Twenty First Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/21)

Auckland, New Zealand, 6-8 March 2007

Agenda Item 4: **Review progress on Open Action Items**
Action item 17-11

Truncation of Flight plans by Air Traffic Service Units

(Presented by Airservices Australia)

SUMMARY

This working paper emphasizes the need for ATSUs to follow the correct procedures when truncating flight plans.

1. INTRODUCTION

1.1 Many Air Traffic Services Units (ATSUs) use automated flight plan processing systems to process flight plans (FPLs) received from airlines. The extent to which the route information in the flight plan is processed is limited by a number of factors, one of which is the contents of the ATSU's database containing waypoint and air route information.

1.2 From an air traffic services perspective, it is not always necessary to hold **all** waypoint and route information for the entire route of flight of the aircraft. For example, there is no need for Brisbane Centre to hold information concerning waypoints in the Los Angeles terminal area for a flight operating between Sydney and Los Angeles.

2. TRUNCATION OF FLIGHT PLANS

2.1 There are a number of reasons why a flight plan may need to be modified in order to be processed by the ground system, the most common one being due to the occurrence of a "duplicate waypoint". Duplicate waypoints have long been a source of problems with the automated processing of flight plans, especially for long-range flights.

2.2 From a TAAATS perspective, when processing a flight plan, once it has been determined that an aircraft has left our Area of Interest, TAAATS "doesn't care" what the remainder of the route of the aircraft is (unless it appears that the flight subsequently re-enters our airspace).

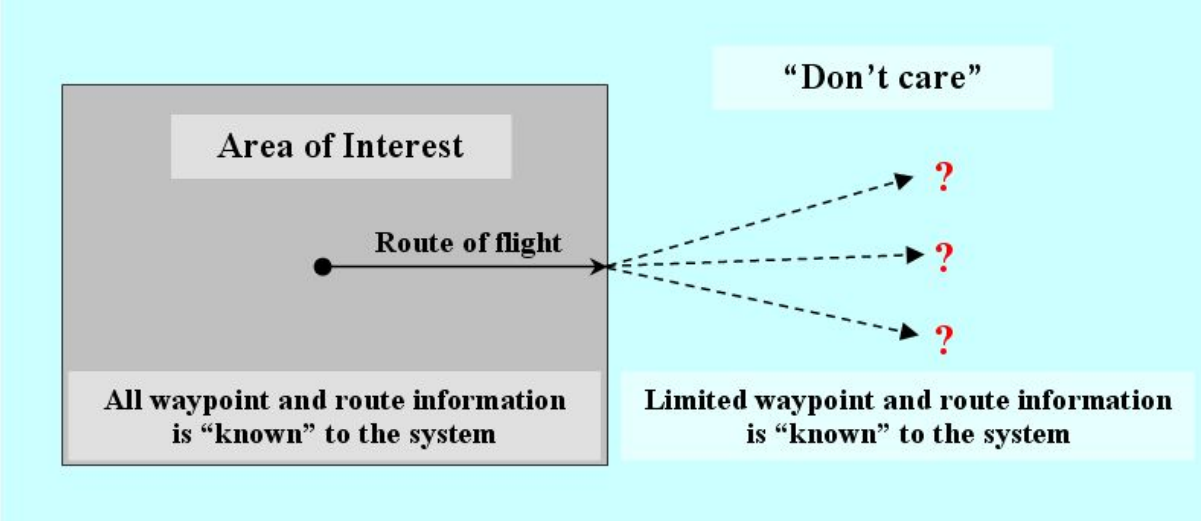

Figure 1. Simplified philosophy of an ATS flight data processor

2.3 A route processing problem can occur if, for example, the aircraft has flight planned via a waypoint located **outside** the Area of Interest that is also defined as a waypoint **within** the Area of Interest. Depending on a number of factors, receipt of such a flight plan would be rejected by TAAATS.

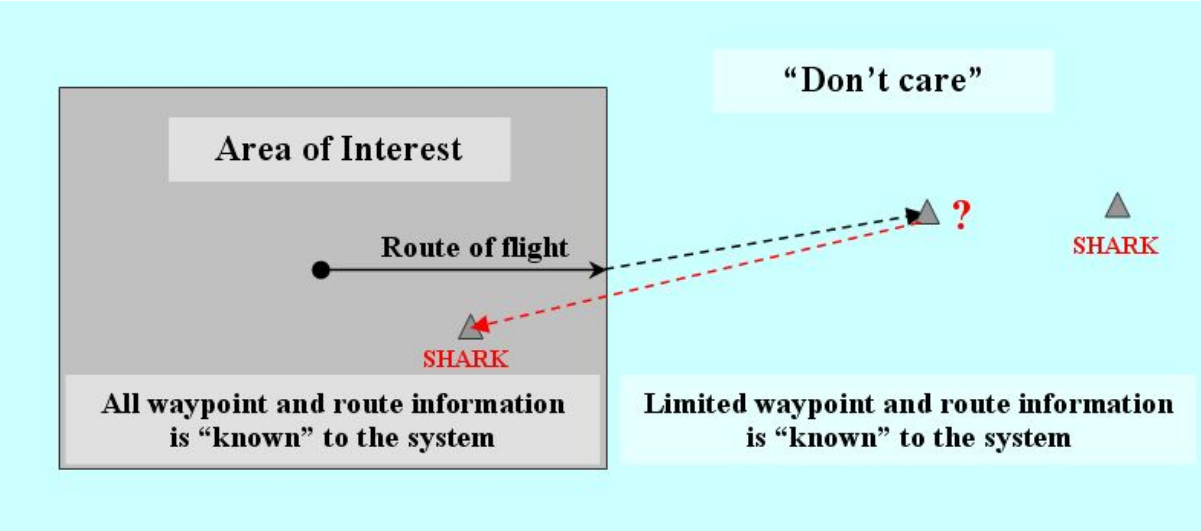

Figure 2. Duplicate waypoint

2.4 In the diagram above, the system is unable to construct a trajectory from an unknown waypoint outside the Area of Interest to the waypoint SHARK (which also happens to be a known waypoint within the Area of Interest). The flight plan needs to be modified so that it can be processed by the ATS system.

2.5 One method of modification involves the "truncation" of the flight plan, which requires the deletion of all route data from the "problem waypoint" onwards, and the insertion of a "T" (truncation indicator). The truncation indicator must follow a significant point (e.g. a waypoint) – it cannot be inserted after an ATS route designator.

2.6 There is a description of the Truncation indicator in PANS-ATM Doc 4444, Appendix 3, as well as in the AIDC ICD (ATS Interfacility Data Communications Interface Control Document).

2.7 When AIDC messaging is in use, the truncation indicator provides advice to the automation in the receiving ATSU that any route information contained in the AIDC message should be merged with the route in the existing flight plan, rather than simply over-writing it.

3. PROBLEMS

3.1 Since AIDC has been implemented, there have been a number of reported instances of flight plans not being truncated correctly. Errors that have been observed usually taken one of the following forms:

a) All downstream data from the 'problem' waypoint is deleted (i.e. with no truncation indicator inserted); or

b) The problem waypoint being simply deleted, and the remainder of the route left unchanged

3.2 Of the two errors described above, (b) is probably more insidious, and least likely to be detected. If the last 1000NM of waypoints have been deleted, there is a good chance that a controller will notice the omission. The deletion of a single waypoint may not be as obvious to the controller, especially when UPRs or other random routes are being used in the same airspace.

4. TRUNCATION PROCEDURES

4.1 A summary of the Australian procedures concerning the modification and/or truncation of flight plans is included below:

- Flight datas should always endeavour to maintain the integrity of the original flight plan. Modifications and/or Truncations should be kept to a minimum.

- When altering the route outside the FIR for OUTBOUND segments of a flight:

  a. terminate the route details at the farthest possible *flight planned point* outside the FIR, and enter "T" immediately following this;
  b. if insufficient flight planned points exist outside the FIR for truncation, insert the first point in the adjoining FIR and enter "T" immediately following it;
  c. the minimum acceptable truncation point must be at least the first point inside the adjoining FIR;
  d. every effort is to be made to truncate the route at least one point beyond adjacent FIRs

4.2 Example

The following is a flight plan that would be rejected by TAAATS.

(FPL-JST407-IS
-A320/M-SDIRWH/C
-YMML0650
-N0452F330 DCT ML Y260 ECKHO L508 OMKIN/M078F350 L508 CH DCT
-NZCH0313 NZWN
-EET/YBBB0043 NZZO0203 NZZC0236
REG/VHVQS SEL/FQBM PER/C RMK/TCAS EQUIPPED ACARS EQUIPPED ADSB
NAV/GPSRNAV RNP 10)

4.3 CH is defined in TAAATS data as Coffs Harbour, and so in this case the above flight plan would be rejected by TAAATS, because Coffs Harbour is not defined on airway L508.

4.4 The flight plan would be truncated by the flight data by the deletion of "CH" (and any following text), and the insertion of "KABIN" (the last known waypoint on L508 prior to "CH") followed by the single character "T". The final flight plan would look something like this:

(FPL-JST407-IS
-A320/M-SDIRWH/C
-YMML0650
-N0452F330 DCT ML Y260 ECKHO L508 OMKIN/M078F350 L508 ~~CH DCT~~ KABIN T
-NZCH0313 NZWN
-EET/YBBB0043 NZZO0203 NZZC0236
REG/VHVQS SEL/FQBM PER/C RMK/TCAS EQUIPPED ACARS EQUIPPED ADSB
NAV/GPSRNAV RNP 10)

Note. The identifier for the Coffs Harbour (CH) navigation aid will be changed to CFS during mid to late 2007.

4.5 If a flight plan is incorrectly modified by one ATSU (e.g. by the **deletion** of a waypoint, rather than truncation of the flight plan), it can have ramifications for downstream ATSUs, whose flight plans may subsequently be (erroneously) updated by AIDC messaging.

5. ACTION BY THE MEETING

5.1 The meeting is invited to note the importance for ensuring that flight plans are truncated correctly to prevent the potential for downstream ATSUs to hold erroneous flight plan information.

5.2 ATSUs are requested to ensure that:

a) appropriate procedures exist for dealing with the truncation of flight plans; and
b) appropriate staff training is conducted to ensure that controllers and assistants have the required knowledge and understanding to deal with the truncation of flight plans.