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Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region

ANALYSIS OF ATC TO ATC COORDINATION ERRORS BETWEEN AUSTRALIAN AND INDONESIAN AIRSPACE

(Presented by Australia)
(Prepared by R. Butcher and Z. Aleem)

SUMMARY

This paper presents the results of an analysis of ATC to ATC Coordination and Pilot Failure to Comply incidents located near the boundaries of Australian and Indonesian airspace where AIDC is not currently implemented.

1. Introduction

1.1. At RASMAG/12, Japan RMA provided information related to an assessment of large height deviations (LHDs) caused by ATC-unit to ATC-unit coordination errors which occurred to aircraft crossing the Fukuoka-Incheon FIR boundary via air route B576. The analysis concluded that the introduction of ATS Inter-facility Data Communication (AIDC) as a means of coordination between the two FIRs had shown a marked impact in reducing the number of coordination errors.

1.2 Australia has already introduced AIDC to facilitate coordination across FIR boundaries in a number of areas including the Tasman Sea/Pacific. While the number of coordination errors in that area has reduced markedly, other boundaries which do not currently have AIDC, such as that interface between Australia and Indonesia, continues to see significant ATC to ATC coordination errors. This paper presents a recent analysis of the coordination incidents observed along the Australian/Indonesian airspace boundary.

2. Discussion

2.1 As part of its safety assessment activity, the Australian Airspace Monitoring Agency (AAMA) has kept a focus on incidents and associated safety risks involving Australia's airspace boundaries and in particular with the two Indonesian Flight Information Regions (FIR); Ujung Pandang and Jakarta. The reason behind this is that the air routes spanning these boundaries carry the most significant amount of international traffic to and from the Australian FIRs and have provided the largest number of ATC to ATC coordination and pilot failure to comply incidents of any FIR interfaces relative to Australian airspace. Notably, AIDC as a coordination means has not been implemented between Indonesia and Australia. (See Appendix A)

2.2 This analysis is based on data extracted from the Airservices Australia Electronic Safety Incident Reporting (ESIR) database for the 6 month period between 1 January 2010 up to and including 30 June 2010. An initial review of the data identified 116 ESIR reports for the reporting period. Figure 1 shows the distribution of the Occurrence attribution over the reporting period.

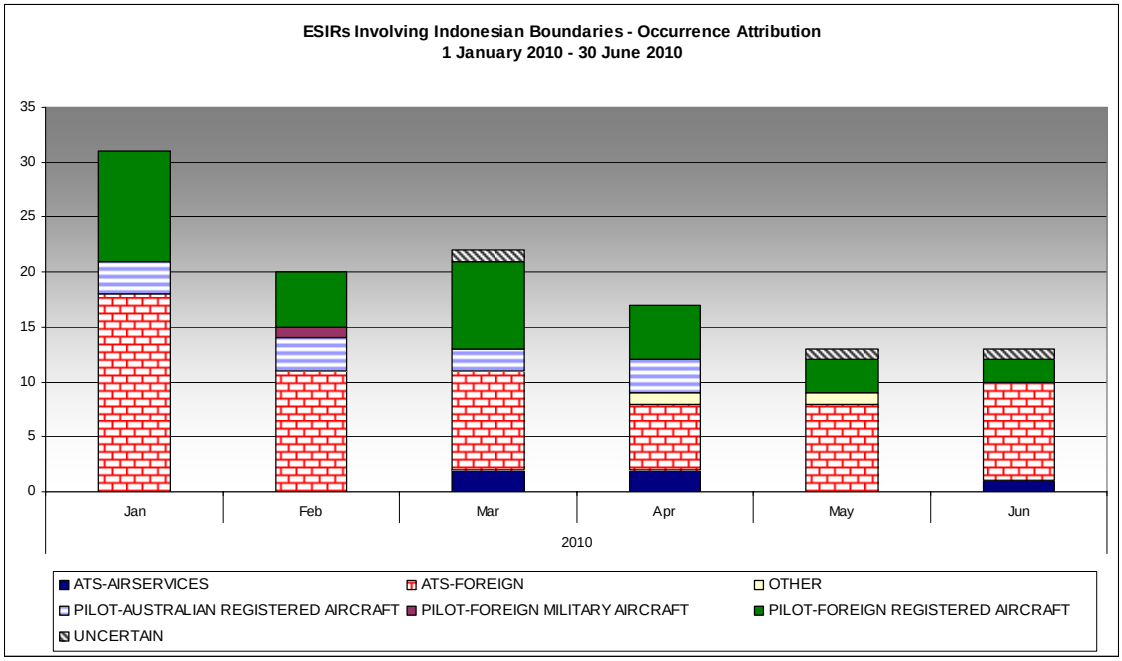

Figure 1: Occurrence Attribution for ESIRs involving boundaries with Indonesia.

2.3 Figure 2 shows a breakdown of Occurrence Attribution against Occurrence Type for ESIRs involving Indonesian boundaries.

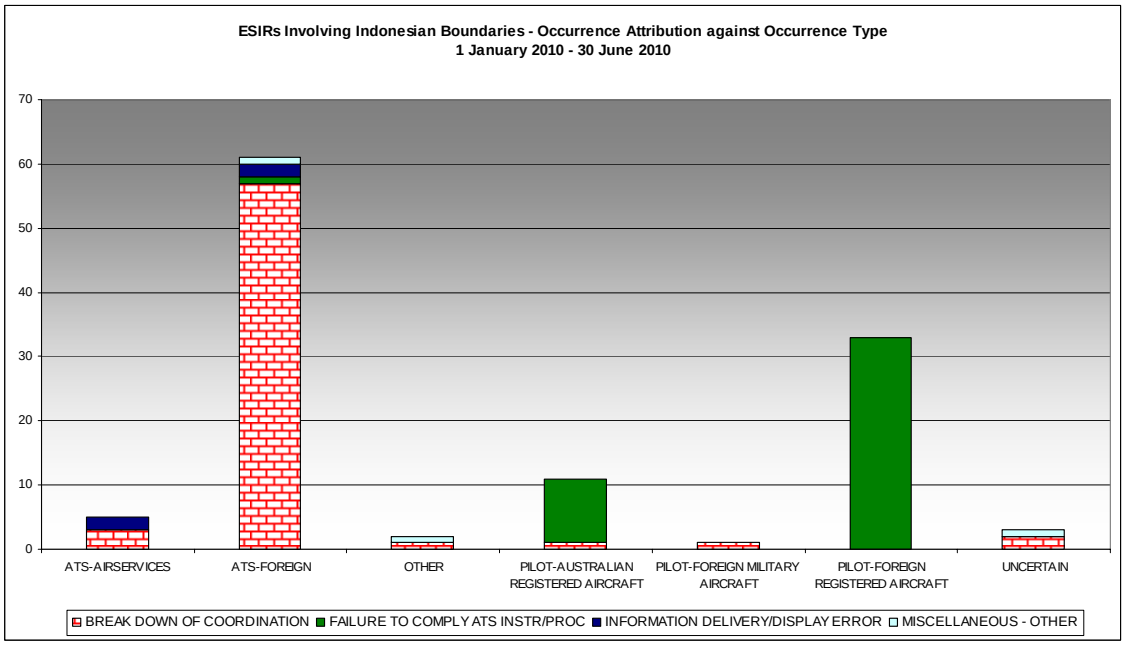

Figure 2: Occurrence Attribution against Occurrence Type for ESIRs involving boundaries with Indonesia.

2.4 Analysis of the Occurrence Attribution against the Occurrence Type shows:

- ATS–FOREIGN were attributed with 53% (n=61). This includes **57 reports categorised as BOC**, 2 reports as IDDE, and one each of; FTC and MISCELLANEOUS-OTHER.

- PILOT–FOREIGN REGISTERED AIRCRAFT were attributed with 28% (n=33). These reports were all filed as FTC.

- PILOT-AUSTRALIAN REGISTERED AIRCRAFT accounted for 9% (n=11) and include 10 reports categorised as FTC and one as MISCELLANEOUS-OTHER.

- ATS-AIRSERVICES were attributed with 4% (n=5) and include **3 BOC reports** and 2 categorised as IDDE.

2.5 Analysis of the remaining reports shows:

- Reports attributed to UNCERTAIN accounted for 3% (n=3) and includes two reports filed as BOC; one involving an aircraft not flying a published Flex Track and one where the flight details for an aircraft were incorrect. There was one report filed as MISCELLANEOUS-OTHER where Australian operational ATS staff were not made aware of changes to an ATS route name at the international FIR boundary.

- OTHER accounted for 2% (n=2) and includes one report categorised as a BOC where an off track aircraft entered Australian airspace from the Ujung FIR. There was one report filed as MISC – OTHER where an aircraft deviated further than cleared however the precise location is unclear.

- PILOT FOREIGN-MILITARY were responsible for 1% (n=1) of reports where a Foreign military aircraft arrived at the Melbourne FIR boundary without any coordination from Jakarta after flying in Class G airspace. This was categorised as a BOC.

2.6 Analysis of the 57 ATS-FOREIGN reports categorised as BOC show:

- 86% (n=49) of these reports were attributed to UJUNG PANDANG.

- 12% (n=7) of these reports were attributed to JAKARTA.

- There was one report attributed to the DILI FIR involving an aircraft departing DILI for Darwin where Ujung Pandang requested an amended clearance for direct tracking to Darwin.

2.7 A detailed analysis of the 56 reports attributed to Indonesian ATS shows:

- Coordination of Boundary Estimates and Levels were at error in 21 reports. Of these 15 were categorised as ‘Incorrect/Incomplete’; the remaining were either late coordination (n=4) or not coordinated at all where aircraft called at the boundary (n=2).

- A further 7 reports involved errors in the coordination of flight level. Of these, 6 reports were ‘Incorrect/Incomplete’ while in one report there was no coordination at all.

- The remaining 28 were categorised as 'Other'. Of these, there were; 16 'Incorrect/Incomplete' coordination; 13 of which involved errors in the route diversions. The remaining includes one report each of errors in level, revised estimate and flight plan coordination.

- There were 10 total failures to coordinate: track diversions (n=7); revised estimates for waypoints (n=2); and one report of an aircraft taxying for departure from Bali (as per Airservices' Letter of Agreement). The remaining two reports were of late coordination of aircraft entering the Australian FIR where notice of aircraft was received inside the prescribed 30 minute window.

2.8 A review of the 5 reports attributed to ATS-AIRSERVICES show:

- Three BOC reports of late estimates by Airservices for the boundary. A review of the severity shows 2 reports classed as SSI 4 and one as SSI 3.[1]

- Two reports categorised as IDDE; one where two similar callsigns were confused while issuing a climb instruction via datalink. This was the most severe of the ATS-AIRSERVICES reports and was classified as an SSI 2. The other involved the failure to display a weather deviation in the label and not informing the incoming controller during a handover, and was classified as an SSI 4.

2.9 Analysis of the 45 Pilot (Australian, Foreign and Military) attributable reports shows:

- There were 26 reports of aircraft off track without clearance. This includes 8 reports of weather related diversions.

- Aircraft not carrying High Frequency (HF) radio outside of Very High Frequency (VHF) range were found in 7 reports.

- Air crews providing incorrect waypoint estimates were found in 5 reports.

- Aircraft observed to be exceeding the coordinated diversion were found in 4 reports

- There was one each of; an incorrect level report; an aircraft entering the Australian FIR from Indonesian Class G airspace with out coordination (filed as a BOC); and a report of a difference in the diversion clearance held by the pilot and that coordinated by ATC.

2.10 Figure 3 identifies the occurrence waypoint for all incidents excluding the report from the DILI FIR. Of these 85% (n=98) involve waypoints in or on the border with the Ujung Pandang FIR. A further 11% (n=12) involve waypoints in or on the border with the Jakarta FIR. There were three reports where the incident occurred at waypoints within the Australian FIRs and one report where the waypoint was not identified.

[1] SSI is a taxonomy used by Airservices Australia to classify the extent to which the ATS system identifies and resolves an error. SSI 4 and SSI 3 classifications show errors managed within the Airservices system. SSI 2 shows errors that are identified by a pilot, another ATS provider or other industry participants. SSI1 classifications show errors which were either not captured at all or were identified by airborne system defences such as Ground Proximity Warning Systems or Traffic Collision Advisory Systems.

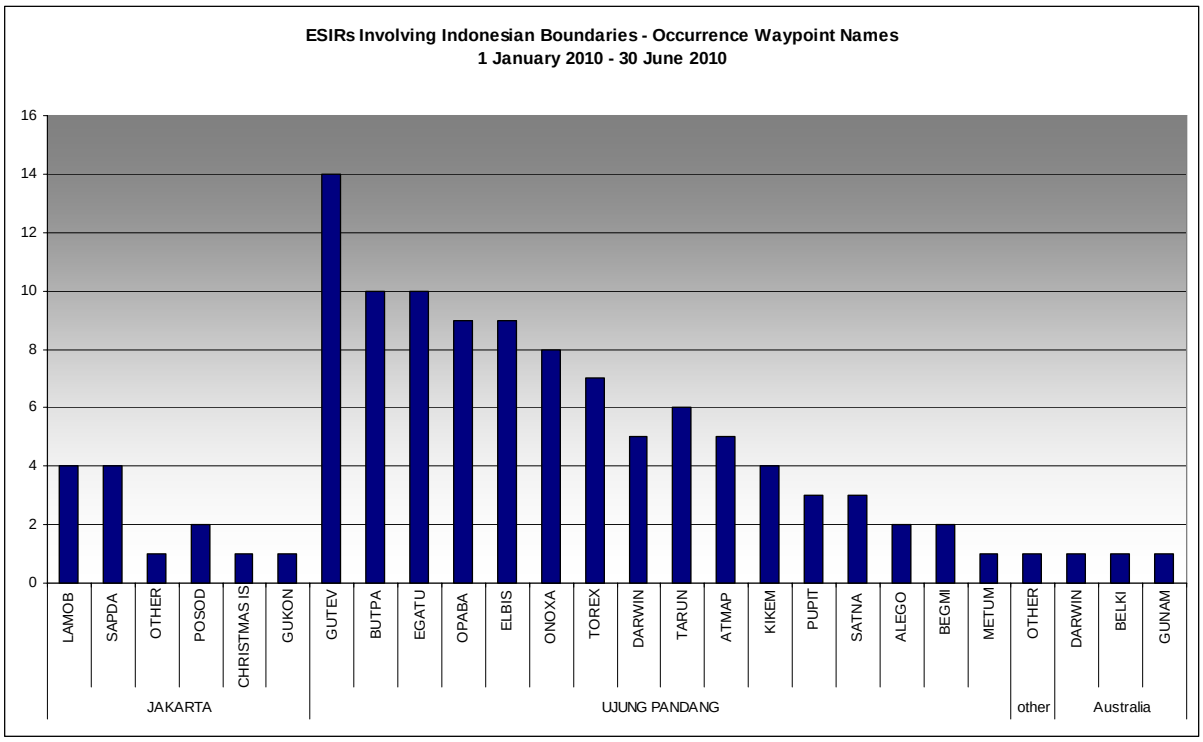

Figure 3: Occurrence waypoints for Incidents involving Indonesian ATC.

2.11 The additional workload for ATS operators in instances involving erroneous operations with the Indonesian border is difficult to measure. However, the nature of incidents highlighted in this report identifies some of the issues ATS operators face in the Australian-Indonesian FIR boundary environment. Moreover, the data does not reflect the significance of communication difficulties experienced during interactions between Australian and Indonesian controllers.

3. Summary

3.1 This report provides a high level analysis of some of the operational safety issues and associated risks Airservices Australia faces with our airspace boundaries with Indonesia. Of note are significant coordination issues attributed to ATS-FOREIGN where aircraft information related to track deviations, position estimates and levels upon entry to the Australian FIRs are not effectively communicated to Australian ATS. Additionally, pilot attributable reports of aircraft flying off track without clearance, providing incorrect estimates for boundary waypoints or not carrying appropriate radio equipment require increases in ATC workload.

3.2 The reliance on human interaction and communication is a source for many of the errors identified in the incidents in this review. The use of AIDC has demonstrated that automated coordination significantly reduces the opportunity for errors in coordination. Currently AIDC is being trialed between Airservices and the Indonesian service provider responsible for Ujung Pandang FIR. Airservices expects that full operational implementation of AIDC between Airservices and the Indonesian service providers will result in a significant reduction in the number of incidents reported. The AAMA will provide further data at future meetings that will measure any change to the number of coordination errors as a result of the implementation of AIDC. Additionally, the AAMA expects to see a marked decrease in the number of errors related to aircraft deviations as ADS-B becomes more widely fitted to

aircraft and the ADS-B data sharing between Australia and Indonesia enables enhanced surveillance capability across the FIR boundaries.

4. Actions by the Meeting

4.1 The meeting is invited to note and discuss the results of the analysis provided. a

Appendix A: Risk Bearing LHDs (in red) Relevant to RVSM Airspace in the Australian FIRs – May 2009 to April 2010