GO AROUND ACCIDENT & INCIDENT REPORT REVIEW

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CAUTION!

- The data used in this analysis was, like some other data assembled to help get this initiative under way, **not** gained from a random stratified sample
- The analysis itself uses a degree of subjectivity
- So - the findings are **indicative** rather than conclusive

AND….

- Whilst it gives some insights into the possible differences between go arounds that proceed normally and that do not, the source data from the events in the sample varied in depth
- So that:
  - Although comparisons within the sample should be treated with caution and their potential voracity considered on a case-by-case basis
  - In some cases, findings that factors appear linked to go around safety would still be valid even if all the missing data indicated the opposite
  - But apparent causal links may be misleading since a similar association may exist for events not externally investigated

THE REPORTS

- Covered 66 go arounds during the period 2000 - 2012 which were either the subject or the consequence of Annex 13 or AIRPROX investigations
- These go arounds included 10 fatal accidents **in which 614 people died**
- Only Reports published online were included with a bias towards reports available in English/Official English translation
- Only looked at events on Public Transport flights operated by multi engine aircraft

ANALYSIS METHODOLOGY

- Two Stages of data simplification:
  - Each event 'tagged' from a selection of 185 – around 12000 cells available! Blend of objective-factual/subjective-judgemental with no taxonomic basis
  - Review of this data to characterise each event against a range of criteria of potential interest
- Using this summary, an informed but subjective division of the 66 events into:
  - High Risk : 19 events
  - Moderate Risk : 25 events
  - Non risk-bearing : 22 events

SIX GO AROUND SAFETY ISSUES AND THEIR OUTCOME RISKS

- Crew initiation of go around ineffective [LOC, CFIT]
- Crew control of aircraft not subsequently maintained [LOC]
- Crew fail to fly required track [CFIT]
- Traffic Separation not maintained [MAC]
- Significant low level wind shear [LOC]
- Wake turbulence hazard to another aircraft created by the go around aircraft [LOC]

SOME HEADLINES

- Crew performance issues were the cause of all 10 fatal go around accidents and of 77% of the other 34 risk-bearing go around events
- LOC was the most common outcome risk – especially in High Risk events
- Go arounds initiated by ATC were unlikely to be risk bearing
- None of the go arounds made because of Runway Incursions (6 events) were risk-bearing

GO AROUND DECISIONS

- Out of all decisions to make a go around which became risk-bearing (44):
  - 45% (20) were made because of an unstabilised approach prior to the landing phase - but only 3 of these decisions were made at a formal challenge point (i.e. at DA/MDA or SApp Gate)
  - A further 18% (8) were made because of a mishandled landing attempt at or below 100 ft agl (including when on the ground) but only one of these was preceded by an unstabilised approach
- 74% of the 'ad hoc' go around decisions were made below 500 ft agl (other than at DA/MDA)
- 14% of the decisions which were followed by risk-bearing go arounds were made >1000ft agl - half of them because of an unstabilised approach

SOURCE OF GO AROUND RISK

- Out of the 44 risk-bearing go arounds examined, the following origins of go around risk could be identified (5 events involved both types of crew failure):
  - 57% - crew fail to effectively initiate the go around
  - 34% - crew fail to aviate/navigate once established
  - 18% - controller misjudgement or error
  - 2% - microburst effect on climb rate

WHO WAS PF?

- In the 10 fatal accident go arounds:
  - the PIC was PF prior to 6 of them and remained so as the go around was initiated
  - in just one of the other 4 in which the Co Pilot was PF up to the go around decision did the PIC then take over as PF
- Ad hoc change of PF at or soon after the point of go around was nearly twice as common in moderate risk and non risk-bearing go arounds as in high risk ones

IMC/VMC & MANUAL/AP
[HIGH RISK GO AROUNDS]

- Slightly more of those go arounds where crew performance was the cause appeared to have been initiated in IMC than in VMC
- Similar numbers of these crew-caused go arounds were flown by day and by night regardless of whether instrument flying was necessary
- Most of these go arounds were flown manually and over half were already being flown manually when the go around decision was taken

NON COMPLIANCE/VIOLATION

- Significant procedural non compliance (SPNC) was much more likely to precede High Risk go arounds (74% of such events) than all others (30% of such events)
- **Significant violation of approach minima was a precursor to 50% of the 10 fatal go around accidents. T**hese approaches were usually stabilised but all were followed by failure to initiate the go around properly
- 'SPNC' occurred prior to all five cases where approach minima were violated prior to a fatal go around accident

CREW EXPERIENCE

- 'Low Experience' pilots figured disproportionately in unsafe go arounds - the crew included at least one low experience pilot in 12 of the 19 High Risk events and in 8 of the 10 fatal go around accidents reviewed:
  - In 3 (including 1 fatal accident outcome) only the PIC was low experience
  - In 5 (including 3 fatal accident outcomes) only the Co Pilot was low experience
  - In 4 (all were fatal accident outcomes) both pilots were low experience

CROSS MONITORING

- 5 of the 10 fatal accidents not involving training were preceded by a delay in the go around decision where violation of landing minima occurred with the tacit acceptance or declared intention of the PIC
- In 4 out of these 5 cases, the forward visibility had deteriorated from that anticipated; three of these violations occurred with the Co Pilot as PF and two with the PIC as PF
- In all 5 cases the Co Pilot was 'low experience'
- In the two cases where the violation occurred with the PIC as PF, both PIC and Co Pilot were 'low experience'

CONCLUSION!

Whilst these findings cannot provide the sole justification for any action to improve go around safety at a time when more go arounds are likely to be encouraged, they include some interesting pointers for risk mitigation

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