

IATA Incident Review Meeting - 26/27 OCT 10 –Cathay Pacific City, Hong Kong
UKFSC CE Meeting Summary Notes

UKFSC MEMBERS Please note that the information reflected in these Notes were provided on the basis of strict confidentiality. The information may be applied by Members of the UKFSC to their own organisations in the interests of aviation safety, **BUT** no reference can be made to the specific companies involved in the incidents **NOR** that the information was gained from an IATA Incident review Meeting.

Day 1

Industry Anti-Competition and Confidentiality Rules were explained before discussions began

IATA Safety Update - IATA Ops Group Director – Gunther M

- IATA remains fully committed to safety and has budget approval for major safety initiatives for 2011
- Hot safety topics for IATA
 - SMS and fatigue management – this must be done properly or it could cost airlines a lot of money
 - Needs to be more practical for small airlines
 - ICAO Assembly agreement reached on information sharing and action
 - Auditing - IOSA and ISAGO
 - From next year, any funds from audits will be returned into funding safety initiatives around the world (to retain non-profit status)
 - EASA wants PCO – code share auditing – If IOSA is to be accepted as the auditing standard then this will have to be certified by EASA
 - ISAGO is moving along well – 240 audits so far
 - IGOHM is taking shape and will be finished in about a year.
 - But it will need to be widely accepted and implemented!
 - The aim must be for just one way to do turn rounds!
 - Lufthansa technik is audited 240 times each year!

Accident Update for 2010

- West built ac – this year worse than last year by 2% for IATA Members
- The focus for the increase in accidents is south of equator
- 65 accidents – 673 fatalities – many accidents occurred with fully serviceable ac

UPS Incident Feedback

- GCAA is looking at the crew's inability to handle fire in the cockpit and the subsequent smoke and the comms probs they were encountering
- Smoke on the flight deck – Boeing has issued advice plus review of smoke checklist – see UKFSC website – Safety Alerts
- Line training lacks any real focus on smoke fire events
 - Reluctance noted amongst crews to put on masks even in simulators with numerous examples of inability to communicate between pilots and the ATC when masks are donned!

Inflight Fire Event – B747 Cabin Fire

- B747 – 400 en route - 30 mins out from Curacao to Amsterdam
- Passenger spotted a glow in the panel area in the passenger cabin – a cabin sidewall lights electrical short caused by corrosion and damp weather conditions
- Immediate turn back and dump fuel – uneventful land back at Curacao
- The cabin crew had problems pulling the halon extinguisher wire pin and a passenger had to do it instead!
 - Investigation revealed that cabin attendants were not all trained to pull the extinguisher pins – only 1 in 10 cabin crews practice this pull.
- Once the fire was controlled and out, the brace instruction for the landing was still mandatory but was seen as intimidating and unnecessary for the passengers – change of policy for the Captain to use his discretion
- Lighting connectors had not been replaced in accordance with the Boeing advice in 2007.
- The meeting discussed how many emergency states each airline had:
 - Some airlines use 2, others had 3 stage emergency states – normal/abnormal/emergency where abnormal offers the flexible option
- The meeting then discussed the situation where there may be as many as 100 laptops in the cabin – are they disconnected to preserve power in electrical emergencies as a matter of routine?
 - The UKFSC CE mentioned the safety implications with the use of personal laptops and other devices on charging points in the cockpit

Oven Fire – B767

- An in-flight oven fire on a B767 was quickly brought under control but pax moved to accommodate the fire
- Emergency landing at Beijing – aircraft taken out of service
- Investigation showed that the oven temp control and overheat protect was u/s – fire resulted
- No sign of similar problems on any other ovens in the fleet
- Lessons from this incident:
 - Beijing ATC response was excellent – MAYDAY handling went well

- Flightdeck coms with cabin crew was poor – ATC on speakers while cabin crew were on interphone which was poor quality
- Cabin crew member communicating with flight crew suffered smoke effects
- CRM between Captain and crew was inadequate
- A cabin crew/pilot debrief is now mandated for post emergency situation
- UKFSC CE briefed on a series of oven fires caused by a meal wrapper change which was a commercial decision which had not been risk assessed beforehand

Loss of Cabin Pressure in Cruise

- Malpensa to Vienna - a B737-600 suffered a decompress event
- No pressurisation on left hand pack at 34000 and second pack insufficient to maintain pressure due to a bleed valve fault
- Several masks did not drop in the cabin
- Oxygen generators did not operate in some cases
 - Additional friction within firing mechanism had stopped deployment
- Muscle pressure dual bleed level line on LH engine had broken
 - This was due to the line being fitted incorrectly with tension – subsequent vibration caused it to fail
- Meeting was asked : Do your crews have flight crew procedure for zero duct pressure?
 - On the B737, the duct pressure is not monitored – no warnings or caution indications when duct pressure goes to zero

MIDAIR - COLLISION

Near Miss in Anchorage

- Incident occurred on 21 May 10 at Anchorage – Investigation conducted by the NTSB after the event came to light via the media some 6 days later
- Stevens Airport has 3 RWs – 140 and 250R and L
- Wind from south – nil cloud
- B744 bound for Chicago cleared for immediate take off on 25R
- Did not go immediately – after reminder to expedite take-off, the B744 rolled after a couple of minutes
- A319 was landing on RW14 from a visual approach(which means the missed approach is not published and ac depends on the tower for instruction)
- A319 started a go round from an unstable approach at 600', turning right and transited directly through the 25R climb out path twice
- Ac passed each other missing by 1200' and then again at 200'
- During the take-off, the B744 changed from tower to departure at wrong stage and the A319 changed from approach to tower

- If B744 had changed at published point ATC would have turned him south – making the likelihood of collision even worse
- Investigation also showed co-ordination problems between TWR, APP and DEP

A319 Altimeter Discrepancy Incident

- GA ac climbing to FL270 under military ATC
- A319 at F290 in good weather at 450TAS
- Both ac were preparing for arrival at destination
- Near mid-air collision occurred through loss of separation due to altimeter doubts
- On the A319 – alt reading difference of 26980 for captain with 28980 on co-pilot due to a small pneumatic leak on one system
- Difference in mil and civil ATC radar readout also an additional problem
 - Note a GPS readout is available on the FMS to provide the correct altitude
 - TCAS also may not resolve the problem
- ANSP Immediate Actions for such altitude/altimeter problem are :
 - ATC must take immediate lateral separation
 - Request Mode C to be switched off
 - STCA used to confirm the right altitude
 - Inform all other sectors involved
 - Suggest A7700 and seek military intercept

Near Miss B777 with a GA on approach to Schipol

- Wx was fine. A B777 was on base turn at 2000' when the crew encountered a small ac on the nose by a visual pick-up
- At Schipol, GA below 1200' could fly with TMZ off – allowed due to radar clutter
- Estimated 30 metres near miss after a pull by the B777 pilot
- Declutter system is now available on the Schipol radar which automatically detects and displays those ac flying above 1500' in Schipol terminal area

Eurocontrol EVAIR Air Ground Communication Workshop Feedback

- Lasers attacks – semi blinding attacks now being encountered
- Need to have co-ordination with ground ATC and police to act to arrest the attackers
- EVAIR Safety Bulletin contains details of the statistics gained from EVAIR reports
 - Air ground communication problems of all types seen in the conduct of aviation operations:
 - Pilot/controller spoken word – not obtaining a clear understanding the situation between each other
 - Majority of mistakes occur during the approach phase of flight
- Several problems reported which result from pilot/ATC misunderstandings:
 - Landing on the wrong runway in LVPs

- Change of runway in use
- Frequency selection error
- High workload in cockpit
- ATC operating in 2 languages
- No landing clearance
- Assuming mistakenly that a clearance is for them
- Busy frequency
- Typical Event - Loss of communication with ATC at medium level
 - At set FL, procedure is for the crew to contact a set freq
 - Normal comms are then heard on this freq
 - But no specific calls for the callsign are heard until crew requested descent
 - ATC controller sounds surprised
- When an ac is asked by tower to 'Take next left'
 - How does a controller know if an ac can slow sufficiently by the next left?
- Landing without landing clearance
 - Dual runway and dual language
 - Controller forgot one of the landing ac
 - Pilot assumed comms loss and carried on to land without clearance
 - ATC asked why did the ac not go around?
- UKFSC CE raised the issues of abuse of the emergency frequency and problems with some ATIS and VOLMET transmissions

LOSS OF CONTROL

- 9 IATA LOC accidents last year and caused the highest fatalities

Amsterdam Accident Update –

- Turkish Airline B737-800 landing on RW18R by a line supervised FO
- At 2000', FDM showed left Rad Alt problem, although right was OK
- Auto throttles go to idle for 105 secs and drop out due to rad alt problem
- For 75 seconds, throttles are at idle as ac intercepts glide from above
- At Vref -36, stick shaker – captain takes over, advances to half throttle but too late

Revised Boeing Stall Recovery Procedures

- The Boeing goal to reduce the nos of stall related accidents which are still occurring too often
- Boeing have developing enhanced stall recovery procedures but wanted to gain world-wide consensus on enhanced stall training
- An industry wide effort has been agreed between Airbus, Boeing, Bombardier, ATR and Embraer to identify a single generic solution to stall recovery training
- Obstacles with the current training method:

- Non recognition of stall by pilots
- Inappropriate stick shaker reactions
- Causes of obstacles
 - Flight crews have limited training exposure to stall
 - Limited stall experience
 - Throughout their careers, pilots fly airplanes from various ac manufacturers
 - Manufacturers have their own preamble to stall recovery trg
- The method selected was to:
 - Modify Boeing stall approach and recovery trg
 - Influence FAA to introduce the revised generic stall training package
 - Apply the technique from first indication of airspeed low
 - Loss of altitude during the recovery procedure is highly probably
 - Rationalise a common approach and have commonalities of procedure for all airplanes
 - To be used by current and future ac manufacturers
- Processes used in the past
 - Upset recovery training aid
 - Stabilised approach
- The new procedure for Stall and Approach to Stall consists of 6 steps
 - Disconnect automation
 - Push - decrease AOA - may need to trim
 - Bank – re-align to nearest wings level
 - Thrust – as required
 - Speed brake retract
 - Return to desired flight track
- In addition, the HF elements like the Startle factor associated with stalls will also need to be addressed.

Uncommanded Pitch Down Event – A330 in Oct 08

- A330_ in transit at FL300+ suffered an ADIRU failure
- First uncommanded pitch down caused a loss of 800 feet
- 2nd pitch down loss of 400 feet
- Multiple ECAM messages
 - Stall warnings and overspeed warnings
 - ECAM warnings
- Diversion to nearest div due to injuries caused
- AoA spikes in the ADIRU caused the primary attitude to accept the value and the autopilot took the correct action
- Airbus found 2 other similar instances
 - Both had been detected by ADIRU flicker but immediate corrective action taken

- Only theories so far and investigation remains open whilst cause of the ADIRU misbehaviour still unknown
- Safety Actions taken by airline so far
 - Airbus FCPC software fix prevents further pitch down
 - The ADIRU Manufacturer has done nothing to the L101 ADIRU
 - Airline changed its ADIRU manufacturer as a reputation builder

Dual Loss Of Thrust Control – Emergency Landing

Confidential! Still under Investigation –A330 Incident

- EPR fluctuations on ECAM, QRH FCOM taken and maintenance advice obtained
- Flt continued – under maintenance advice
- At top of descent, the following occurred:
 - No2 stalled and then stayed sub idle throughout
 - No 1 fluctuating then stalled at 8000'
- After 2 minutes, No 1 engine recovers slowly to 64% then hung at 74%
- Ac landed at 230 knots – bounced and stops at end of runway with hot brakes
- Manual landing undertaken with one thrust reverser only
- Miscommunication between Fire Chief and pilot – hence evacuation instigated
- Nacelle damage on 1 eng due to landing
- Cost is \$28M
- Evidence could have been lost in a ditching or overrun
- Many diversion runways in the region would not have been long enough
- Previous day on the same route, small fluctuations occurred on No 1 having used the same fuel at Subaiya in another aircraft the day before
- Abnormal amount of contamination was found in 2 ac
- Contaminants found in both, but not identical
 - Salt water and Super Absorbent Polymer mix
 - Source external to the ac – not from within ac systems
- The hydrant system at Sub had just been recommissioned 3 days before the accident – possibly before final approval of the system
- Actions taken so far:
 - Fuel uplift was suspended at Sub following an audit.
 - Tankers used to undertake fuel uplift
 - Information shared with other airlines
 - Crew actions in case of EPR fluctuations
 - Airbus was asked but answer awaited
 - Looking at loss of thrust control through early crew recognition
 - Stabilise the situation
 - Find a safe level to fly to minimise the effects of thrust loss
- How to combat fuel contamination?
 - No regulation or consistency among nations
 - No contaminant found upstream from the dispensing hydrant
 - Fuel filters have SAP content – one distorted filter was found

- How to better understanding a new threat!!
 - Oversight of fuel quality
 - Certification of the engine
 - Filtering at the aircraft and engine
 - ICAO SARP – fuel quality and safety – and training and standards
 - Filtering and fuel equipment manufacturers
 - No evidence from the ac pre-flight check fuel check on either ac

CFIT Incidents

Typical CFIT Incident

- Potential CFIT – Wx was fair – daytime
- Short change of runway for quick taxi
- Captain accepted but left little time to arrange approach plan
- Speedbrake during descent at 4000' at 240 kts
- High ground at 1657' on approach to Hiroshima
- The major problem was the speed in the descent rather than height
- GPWS warning twice during procedure
- ATC made RW too late
- Crew refused ATC help to lose altitude
- Too fast on approach
- No verbal comms between crew and ATC on these issues

FEDEX LOC Accident – Narita – March 2009

- Similar to another FEDEX incident at Newark
- Firm first touchdown
- Throttle advance affected spoiler deployment
- Ac bounced 5 feet followed by a rapid de-rotation
- Both pilots perceived a second touchdown
- Unloading the ac after the bounce – undercarriage was overstressed and collapsed due to heavy g landing
- Perception issues
 - Pilot eye height makes touchdown difficult to assess
 - Rough runway surfaces can feel the same as a bounced landing
 - Long distance between gear and cockpit
- Narita Incident
 - Clean aircraft and not especially heavy
 - Approach and land on 34L
 - Wind sheer advisories were noted
 - Max cross wind was 14 kts in METAR
 - Gusty winds in fact
 - 164 kts approach speed for MD11

- Stable at 500' - autopilot was dropped at 231' (possibly a little late)
- Bounces 16' hi de-rotation rate and lands at 3.2G with 7 degrees nose down
- Lessons
 - Keep the ac loaded at least 1G throughout
 - No rapid de-rotation
 - Use power not attitude to adjust vertical speed
 - Go round, if need be
- Runway safety programme has been introduced into the MC-11 fleet pilots
- Report is still to be issued

MD-11 Accident Cargo Crash at Riyadh

- Under investigation still
- Crew did not declare an emergency
- The ac did not turn over as in the Narita crash
- Frankfurt to Riyadh. Landing at 1143 – CAVOK wind down the strip
- Landing 33L bounced 3 times , 2G, 3g and 4.3 G - fuselage broke up
- Cargo fire – both crew survived
- Did not realise that they were airborne again!

FMS Data Entry/Performance Calculation Errors

- The problem revolves around the need for several data inputs from many different sources
- Currently there are insufficient protections for data error inputs
- There needs to be a formal cross check of settings externally
 - How do we do this electronically outside of the flight deck cross check?
- Recent Examples of Errors
 - Puerto Rica
 - A B777 crew used the 9000' RW calculation but used an 7500 intersection
 - Airport diagram errors compounded the problem
 - No mention in the crew briefing of the variation on the taxi intersection for that runway
 - Embraer Event No 1
 - Wrong fuel figure in EFB used for reduced thrust take-off by putting arrival fuel instead of departure fuel – became obvious on take-off
 - Several external distractions contributed towards the incident
 - Embraer Event No 2
 - EFB already turned on up by old crew – against the SOP which says it is turned off whenever crews change
 - A new EFB (a 175 not a 190 EFB) had been fitted beforehand by mistake
 - The new crew did not know and only during the failure to climb on rotation was the problem spotted

- Another B777 Event
 - Dry weight instead of full fuel weight used for take-off performance and was only noticed when the acceleration was poor.
 - Only just cleared the runway obstacles

Runway Closure – Tailstrike

- B777-300 Good weather at night. Wind light
- Stable approach but a bit of a sink at the last minute – used power but bounced gently
- PIC took over and went for go around by applying power and selecting 8 degrees nose up
- N1 took time to spool up
- Tailstrike on rotation – eventually got airborne after lowering the nose to gain more speed sufficient for getting airborne
- Main lesson being the delayed time to take over by the monitoring pilot (Captain)

B777 Landings Above 1.9G – Boeing Investigation into G Measurement

- Boeing philosophy is that the pilot reports heavy landings although the 777 has a method of measuring in the forward electronics bay
- Heavy landings were on the increase on the 777 so some touchdown severity analysis has been carried out by Boeing
- 2G can mean a sink rate of between 3 to 11 ft per sec on touchdown
 - Uncertain correlation between sink rate and G
- Sink rate should be more accurate and more reliable indicator of landing severity
- Review of heavy landing events undertaken which showed:
 - Disconnecting the autopilot early enough is the key to a normal landing
 - Many flares are lower than they should be
 - High sink rates with column push after touchdown
- Review Recommendations
 - Select vref plus 10 for gusty conditions
 - Fly stable approach and It is OK to go around!
 - Maintain a proper aim point
 - Do not allow the pitch up on landing
 - Do smooth and gentle flare
 - Fly nose wheel to runway smoothly
 - Do not hold the nose wheel off
- Crew generally know when a landing is heavy
- 1.9G plus landings are not good indicators of a need for expensive inspections
- Algorithms to measure sink rate are being modified to help get a better indicator of heavy landings- including roll rate
- This methodology will be available from Boeing by the end of this year

B747 Hard Landing Event

- Manila to Narita RW16L landing – 8000' length which had only been recently cleared for use for the B747
- Gusty conditions required a crabbed approach with correction in the flare
- A engine pod strike occurred on landing due a gust – but FDM showed the wrong right hand down stick input on landing
- Approach was stable but crew uncertain about:
 - The crosswind factor logic they applied
 - Why they went below glide slope at 100 feet
 - That 7 knots factor was insufficient for the conditions
 - Overcompensation of controls by the crew for the gust
- The flight manual will increase information on pod strike criteria
- Boeing data shows 4 pod strikes in 4 years – 3 in gusts (Meeting agreed that they have been several more pod strikes than that!)

Tyre Burst – Delaminating Causing Flaps to Lock

- Flaps lock message on take-off
- Delaminated tyre found – pressure was checked beforehand and found OK
- A deep cut was found in the casing of the tyre
- The tyre had been through remanufacture for retread prior and the cutting process had gone through too many layers on the original casing
- The retread company has improve its inspection techniques and inspector training

Runway Excursions

- Most common accident type but lowest rate of fatality
- 594 accidents in the STEADES database with 500 fatalities
- 2010 -77 REs
- EMAS is making a sign contribution to safe outcomes
- ICAO and IATA are doing RE workshops
- Global Runway Safety Conference to be held in 2011
- IATA to launch new RE workshop programme in 2011

CAT II/III Approach to a MD 80 Wing Strike Event

- MD 80 flying from DFW to Charlotte flight into a 1400 RVR situation which was well briefed beforehand
- Captain decided to do the landing and disconnecting the automatics at 230'
- Regional jet took off just prior to their approach
- On cloud breakout, the captain saw the RW edge lights not the runway

- Corrections on the approach were made but the ac had a right wing slap prior to touchdown – 10ft damage to the wing
- The Captain had decided to fly a CAT III approach but was in fact CATII conditions
- There were two solid opportunities for a go round during this approach, both of which the FO/PM failed to call
- Training introduced to emphasise procedural compliance
- Crews instructed not to conduct CATII/III autolands to runways which do not provide reliable rollout guidance

Kingston B737 RE – still ongoing investigation!

- Miami to Kingston – regular route and familiar to crew
- Winds reported as 10 knots+ - 15 kt tail wind limit on the ac
- Elected to do a tail wind land due to ILS available on RW
- Landing guidance is offset ILS and PF used a hud
- Landing was 143 kts = 163 gs
- Floated landing in the ball park of 4000' with 8900' total available
- Runway markings obscured due to heavy rain
- Tailwind increased by 7 knots in the last 200'
- Autobrake 2, full reverse thrust and spoilers for max braking
- Left the runway at 63 knots and jumped a ditch – saving the crew
- No fatalities
- Max fuel on landing due to distant alternate – one approach only
- Ac broke into 3 pieces
- Actions
 - Both crews put in an ASAP – which was accepted
 - Crews will be back flying
- Smart landing system Honeywell may prevent this type of accident

Incidents caused by Chicago O'Hare Rw 28 Threshold Relocation

- WIP changed to 1 day earlier. A CRJ went into the construction area on roll out
- MD 80 landed and rolled through the construction zone, being unable to stop
- MD 80 landed on the displaced threshold
- Intersection take-off using the full runway performance figures just cleared the blast fence – missed the blast fence by inches
- B747 on take-off and just cleared the blast fence. ATC had briefed ac to use full RW length – hence they did so!
- QUESTION – Is the current NOTAM system effective and are NOTAMs prioritised to highlight these amongst a plethora of other information?

Rich Jones
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29 November 2010