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SWISS AIR TRAFFIC CONTROL
TECHNICAL ASSOCIATION

Member of IFATSEA

www.satta.ch

Midair Collision Überlingen

Lesson learned

IFATSEA Safety Commitment Day
21st September 2007 Brussels



Accident

- 71 Victims after mid air collision of Boeing B757-200 and Tupolev TU 154
- Collision over Germany in a control sector delegated to skyguide
- ATCO on duty was killed by a father and husband of 3 victims in 2004



Contributing Factors

- Single Man Operation as common practice at skyguide
- Unexpected approach to Friedrichshafen
- Ongoing technical modifications on several systems at the same time
- Unexpected technical problem at voice switch during maintenance intervention
- Incomplete technical information according the ATCO
- Neighbouring centers were not informed about degradation of the voice switch
- Etc...



Actions 2002 to 2007

- 2003 NLR¹ - Study ordered by the CH Minister of Transport: „Aviation safety management in Switzerland“
- Head of FOCA replaced (Swiss Regulator)
- German BFU report
- Swiss BFU report
- 2004 LUPO
- 2005 FOCA decided to introduce personal ATSEP License
- 2005 Swiss parliament alloed 70 new positions at FOCA
- 2006 NLR Followup Study
- German court sentenced Germany to be responsible (Civil Court Case)
- 8 skyguide Employees accused for multiple manslaughter (Criminal Court Case)
- 2007 process and verdict at “Bezirks-Gericht Bülach”

¹Nationaal Lucht- en Ruimtevaartlaboratorium



Verdict, Juristic View

- The verdict is based on swiss law.
- Judgment can only be given based on correct arraignment .
- The prosecutor has accused 8 individuals based on his investigation. (job description, involvement etc). The court case was limited to this 8 accused people.
- Causality has to be proved. That means: if some one is accused because of neglecting something it has to be proved that the accident wouldn't happened if the action was done correct.
- Accused have time till mid October to make an appeal including a written rationale. They had to announce their appeal within 10 days



Verdict, Details

- Three executive staff members (ATCO background) have been found guilty of multiple negligent manslaughter and punished with suspended jail sentences of 12 months on probation.
- A fourth staff member (ATSEP) found guilty, a project leader, was condemned by the district court to pay a fine of 90 daily rates of 150 CHF on probation for not informing the neighbor center about the planned degradation of the main voice switch.
- Four other accused (one project co-worker, one system manager, one air traffic controller and one supervisor) were acquitted with the following justification (amongst others):
 - "Single man operation" was common practice at those days with low traffic load exceptions
 - "Missing or insufficient information of the controller" could not be proven.



Verdict, Conclusion

- Single failures must not causing the system to fail (redundancy concept)
- Nobody is allowed to rely on other safety measures (diversification concept)
- The safety system has to be able to handle individual single faults or unexpected situations (expect the unexpected). Therefore the consequences of the accident cannot be charged to a single person who made the first failure in a chain of several ones.
- ANS is a complex system, a failure has to be seen rather in the context of a HRO (High Reliable Organization) than in individuals.
- Cost savings have to be in balance with safety



Hard and Soft Facts

Hard Facts

- Recommendations after situation analyze
- Policies, Directives, Rules and Regulations
- Controlling via assessment

Soft Facts

- Rules and regulation lived by the employees
- individual responsibility
- practicable processes in place
- safety culture / just culture / generative culture



Following a listing of hard facts divided in different topics and analyzation of dedicated soft facts

Topics

- Process
- Organization
- Individual
- Equipment
- Recommended by IFATSEA
- Open Items



Process Changes

- Single man operation during the night was stopped immediately
- Technical Intervention Process launched
- Introduction of Reporting System
- Obligation for SES compliance brought ESARRS



Organizational Changes

- Safety assessment team launched (technical and operational)
- 2005: 70 new posts at FOCA
- 7x24h Service for SMC is planned (GVA2008, ZRH 2009)



Individual Changes

- New top managers at skyguide and FOCA
- The 8 accused are suspended from begin of the process
- Sentenced (4) won't work in their jobs anymore



Equipment Changes

- 2007 introduction of Emergency Display System (initiated after total loss of display in ACC ZRH 2003)
- 2007 Introduction of quality process for configuration handling and SW development (ESARR6)
- etc...



Recommended Changes by IFATSEA

- Personal ATSEP License (ICAO Annex 1)
- Ground Equipment Certification
- Accident investigation include ATSEP (ICAO Annex 13)



Open Items

- Personal ATSEP License
- Ground Equipment Certification
- ATSEP (expert role) in accident investigation mandatory
- etc...



Conclusion¹

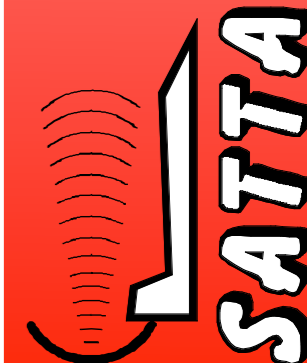
- Not possible to qualify: 5
- Not in place: 3
- Hard Facts reached: 7 out of 10
- Soft Facts reached: 2 out of 10

¹Conclusion based on individual view of SATTA executive board and not on a scientific study or investigation.



Lesson Learned, Conclusion

- A crisis should constitute a prime opportunity for learning. Was the opportunity to learn taken?
- Difficult to answer. Yes, general in swiss aviation but not true for every organization or part of organization within the system.
- The result of the hard- soft facts analyzation shows that there is still room for improvement. Beside the fact that being safe is a state of continuing improvement, lots of regulations are done but not deep seated in the culture.



Last Thought

“If we expect the unexpected, we are better equipped to cope with it than if we lay extensive plans and believe that we have eliminated the unexpected”¹

¹D. Drörner 1996 *The Logic of Failure: Recognizing and Avoiding Error in Complex Situations*

