

safety bulletin

Inside this issue

2 Editorial

Honeywell and mid-air collision over Brazil

2 Erratum

A tendentious picture was published

3 Honeywell transponder issue

Another update

4 One operation

Safety Workshop

5-7 Lessons learned

*One Romeo
Density 0.79*

8 A principle for safety management

What is ETTO?



Dear Readers,

The safety bulletin is the main vector in our company to create communication about safety. As shows the picture on the title page (design museum, Copenhagen) safety is and will probably always remain related to a feeling, to apprehend safety in a more analytic way than an emotional one is a real challenge we are looking for.

The present issue represents the fourth full year of safety bulletins, the first edition was issued in march 2003! The bulletin for sure has its skyguide internal customers but definitely is also read all around the world as the little following story will explain to you.

In the safety bulletin issue n.11 of September 2005 the Honeywell transponder issue was presented. To briefly recap the story: aircraft were disappearing from controller's



screens and after some investigative efforts the fact was identified that some type of transponder could revert to standby mode after a too lengthy code change manipulation in the cockpit. This reversion to standby had the consequence to annihilate the last safety barriers which are STCA on ground side and TCAS on the airborne side. An

update about this issue was presented in the bulletin n.12 from December 2005. In the present issue you have the opportunity to read about the latest news concerning this topic.

As I said before the bulletin is read beyond skyguide borders. In the aftermath of the mid-air collision happened over Brazil recently (between a B7373 and a Bizjet) it was suspected that the Honeywell transponder equipping one of the aircraft could have been a contributing factor to the accident (note that the investigation is still on-going and the causes will be presented once the final report will be published). The safety bulletin being published on our internet site as well (www.skyguide.ch) a Brazilian journalist got in contact with an author of an article in the safety bulletin,

who appropriately diverted the demands to corporate communication, DC division.

The authors of articles showing their names do expose themselves a bit to the «world» and therefore might expect to have some reactions. It is the intent of the safety bulletin to be as transparent as possible, however if the writer of an article would like to remain anonymous then, as editor I will of course agree to that. The safety bulletin would like to focus on the content of an article rather than on the author.

Anyway I take the opportunity here to thank all people who contributed to elucidate the Honeywell transponder issue as clear follow-up measures were triggered at different levels to address this issue.

THOMAS NOVOTNY,
editor safety bulletin

Erratum

On the last page in the preceding edition of the safety bulletin, we showed two pictures of ATCOs at their working positions. We forgot to tell that the published pictures were both constructed situations. In the meantime a text explaining that has been added to the safety bulletin available on skyline. We apologise for any inconveniences.

This situation was definitely constructed, as it was not really understandable at first sight!




Constructed situation !!!

Another update on the Honeywell transponder issue

A short review: in the first months after having revealed the problem with the transponders, the Swiss aviation industry had problems identifying the impact such a malfunction could have on safety. In the process of identifying the potential risk

involved, skyguide got in contact with EASA (European Regulator of Air Traffic). After skyguide explained the severity of the problem, EASA reacted by issuing an AD (Airworthiness Directive)– the deadline for all updates or changes of Honeywell Transponders was May 2006.



The EASA is the centerpiece of the European Union's strategy for aviation safety. Its mission is to promote the highest common standards of safety and environmental protection in civil aviation. The EASA is developing close working relationships with counterpart organizations across the world including the International Civil Aviation Organization (ICAO), the Federal Aviation Administration (FAA) in the United States and the aviation authorities of Canada, Brazil, Israel, China and Russia.

On 28th September 2006, a GLF4 entered Geneva airspace via PIMOT. The pilot was instructed to change squawk (because of changing ORCAM region) and shortly after the label disappeared from the radar screen. The ATCO reacted and advised the GLF4 crew to check the transponder status. The pilot reported having a Honeywell transponder on board. The FOCA sent, on request from DSO/skyguide, a letter to the operator from the aircraft to advise them of the problem with Honeywell transponders. Due to the fact, that this aircraft is registered in the United States, the AD from EASA could not be applied. Therefore the FAA issued a similar



radar contact was lost and the ATCO instructed the crew to reset the squawk. After inquiry the pilot reported having a Honeywell transponder on board. As this aircraft is registered within Europe, the AD of EASA should have applied to it. The FOCA was again asked to advise the operator of the aircraft to check the transponder, as an update to solve this problem should have been implemented latest in May 2006.

AD with effective date: 17th October 2006. All operators of affected aircraft have to update their transponders within the next 18 month. In the meanwhile, the AFM (Airplane Flight Manual) had to be adapted according the FAA AD within 14 days after the effective date.

After the initial report to EASA about the loss of tracks, skyguide has been in regular contact with EASA and communicated about all reported incidents. In the meantime we got another update from EASA: within the EASA region 1563 transponders have to be updated with a new software. Presently 1062 have been updated. As operating a non-updated transponder equipped aircraft within the EASA region is forbidden, the left over should be operated outside the region.

Another loss of radar contact happened on 1st November 2006. An E145 entered Swiss airspace via OMETO and was instructed to change squawk. Shortly afterwards

ELKE SCHAFFER
DSO Geneva

One Operation: Safety Workshop

On 10 and 11 November, a One Operation: Safety Workshop was held in Geneva. This workshop, the first of a planned series of workshops, was held to bring together many of the safety specialists from throughout skyguide. Participants in the workshop included the Regional Investigation Teams from both Zurich and Geneva, the four Operations Domain Managers Safety, specialists from DS, and members of the Technical Safety and Quality section. The workshop was facilitated by Phil Faulkner from the Operations Safety Management Group, and topics covered included:

- A safe operation – what is it?
- Safety culture: an overview, what influences it and how it can be measured
- Where and how the safety experts fit within skyguide



«Initially the workshop was planned just for Ops Safety Managers to have discussions about safety issues with an intention to further the implementation of the One Operation concept within the Ops Department. However, with the new T Safety and Quality section in place, it seemed that there was an opportunity to extend the One Operation concept a step further by including in the workshop our most important partner in the management of a safe operation», says Phil Faulkner. «The

topics covered were also important from an overall skyguide perspective. People talk about a safe operation, but what is it and is it the same for everybody? So one reason for holding the joint workshop was to try and gain a common understanding, in effect to have a common safety language, within skyguide.»

«The coincident timing of the release of the skyguide safety culture questionnaire also gave us an opportunity to help the safety

specialists consider what issues may be identified in the results of the survey, and what might need to be considered when addressing them.»

«We hope that the participants got a greater safety awareness from the workshop - there was certainly a lot of discussion. We plan to conduct another workshop in autumn 2007».

If you would like more information about the safety workshop, please contact Phil Faulkner, and please feel free to review the presentations that generated the discussion on the Operations Safety Management Group website.

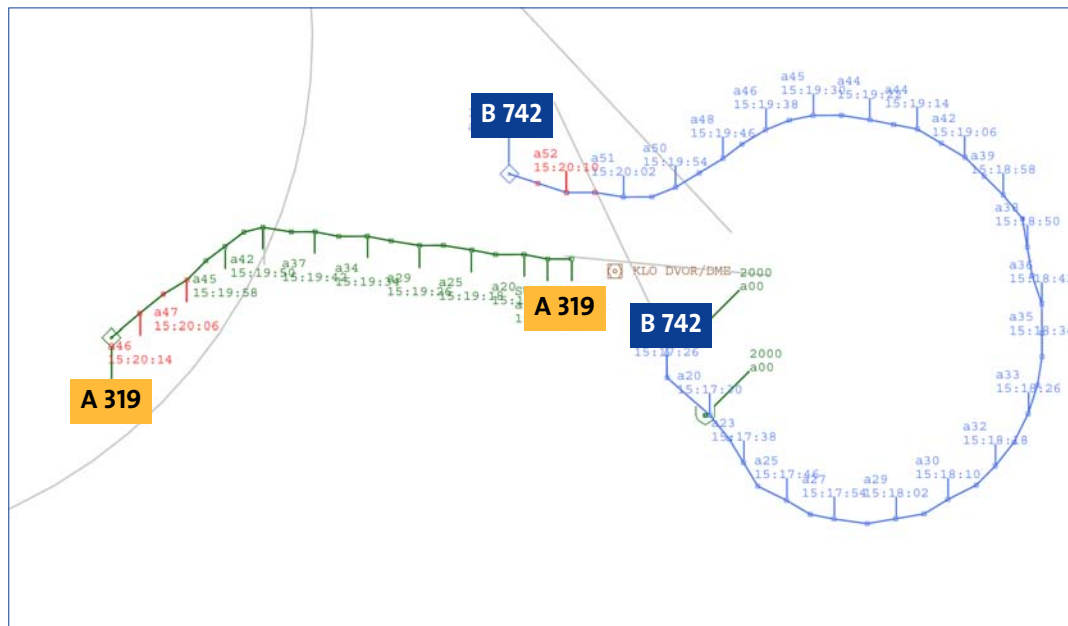
LISA DONNE
OPS safety management

One Romeo

Approximately 10 minutes before EOBT a Boeing 747-200 called on the Clearance Delivery frequency (CLD) to receive the clearance requesting runway 16 for departure. DEGES 1R SID (towards the East) was assigned to the B742. The rather hardly understandable read-back was «OK, information Quebec to destination, 1 Romeo, 3136 departure».

Zurich ADC transferred the airborne B742 to Zurich DEP where the flight crew made the initial call just when commencing the left turn after departure from runway 16. The aircraft was passing 2200ft and was cleared to climb to FL080. A few minutes later, an A319 started its take-off roll on runway 28, the aircraft was cleared DEGES 1W SID.

The B742 (passing 3900ft) was heading towards the North and as the radar showed the first movement of the aircraft to the left – instead of to the right as per SID – the Departure controller intervened by informing the flight crew and clearing them to climb to FL120 with a good rate. At that moment the A319 appeared on the radar screen showing 1700ft flying towards the West, in front of the B742. DEP instructed the B742 to



turn right onto a heading of 070°. The separation fell below the required minima. The controller instructed the A319 to stop the climb at 4500ft, the label was showing 4300ft and the one of B742 was showing 5000ft. A traffic information about the B742 was addressed to the flight crew of the A319. The pilot of the B742 said later on, that they had prepared and selected ALBIX 1R SID (non-RNAV).

going deeper...

The Boeing 747-200 (manufactured in 1976) was not RNAV approved. The ATC-Flightplan showed the letter code S (standing for «Standard NAV/COM/APR aid equipment for the route to be flown is carried»). This letter code S does not really say anything and in this case it might have inhibited the marking on the TACO-screen of CLD. Anyhow, Air Traffic Services have not the time to

check whether the assigned SID is adequate for the aircraft in question. Now, we do not know the facts from cockpit side. But what the pilots decided and how they interpreted cues probably made sense to them from their point of view under given circumstances.

CLAUDIO DI PALMA
DSO Zürich

Density 0.79

Fuel leak

Leak has many definitions in the dictionary but one of them might be the one which explains the best what happened on this Saturday 4th of November in Geneva with an Airbus 321 on its way to Djerba: an opening that allows light or substances to enter or go out, in our case kerosene.

On that Saturday of November, in the afternoon, the aircraft was taxiing towards holding point 05. While approaching the holding point, the crew reported on Tower frequency, 118.7 MHz, some troubles regarding a fuel leak. In fact, the leak was observed by a few passengers sitting on the right side who gave the alert to the cabin crew. They wanted to make a 180° in the holding bay in order to return to their parking position.



Picture 1

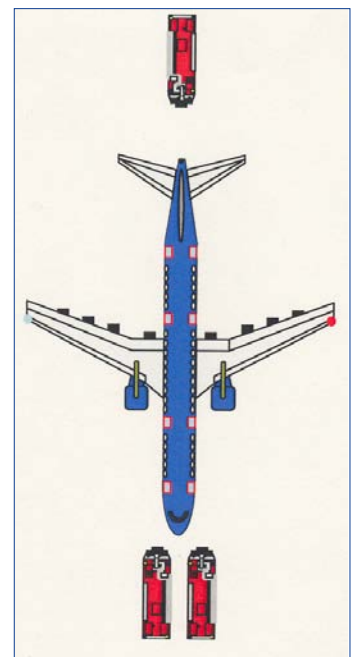
SSA(*) was alerted, holding bay 05 was closed but flight operations were still going on. Departing aircraft were taxiing up to Foxtrot taxiway to enter runway 05.

From the tower, we could see the fuel coming out below the right wing of the Airbus 321 (see picture 1). ADC(**) controller instructed the crew to shut down the engines and

to remain at its present position in order to wait for the fire brigade. The operations were directed by the SSA captain, in close cooperation with the Tower and the AIG(***)

The fire brigade came with 4 vehicles and 12 firemen (which represents the maximum number of firemen available per day), and

deployed themselves into a position called «India» around the aircraft (see picture 2). This means, vehicles in front and behind of the aircraft. The fire brigade captain decided to spread a foam carpet not just underneath the right wing but underneath the whole aircraft as the kerosene was slightly drifting below the Airbus to reach the other side of



Picture 2

► Density 0.79 ...

the aircraft due to the slight slope of the holding bay 05. He then boarded the Airbus 321 to ask a few questions to the crew.

On board ,132 passengers, one baby and 6 crews were waiting. The fire brigade decided to unload them via a ladder. The crew became worried about this unloading because of the slippery foam carpet which could be dangerous, according them, but that was SSA's decision and they had no choice (SSA says that it is not that slippery). The evacuation was done in a very calm way and everybody was taken back to the airport via buses by an handling company which took care of the passengers and later also towed the aircraft into position 85.

According to what the crew said to the SSA's captain, the exchange of flow between the two wings was not working because they had set one of the button on «manual» instead of «auto». That explains, still according to the crew, that one tank became overloaded and started to leak.



Airport security level degradation ?

SSA was still able to ensure security in case of an other incident or accident. In fact, to have the security level downgraded, it would have needed from the fire brigade to use more than what they did for this operation and we are not talking on the numbers of vehicles but on the amount of water and powder left to be used on the airport. As each rescuing vehicles used only 1/3 of their capacity, they still had enough water and powder to ensure the security at its maximum.

Lessons learned

Well, we've learned a little bit more about our fire brigade in Geneva. We know now that 12 firemen are available per day (which is a good amount of employee compared to most of the other European airports), we now can also say how the «India» positioning is, we've learned that security level on the airport is calculated regarding the amount of water and powder and not on the number of available vehicles and we've also learned that the Airbus 321 has lost about 700 kg of kerosene which represents,

according SSA, around 1000 Liters. After a quick search we've learned that kerosene density is 0.79, which correspond more or less to the numbers given by the fire brigade.

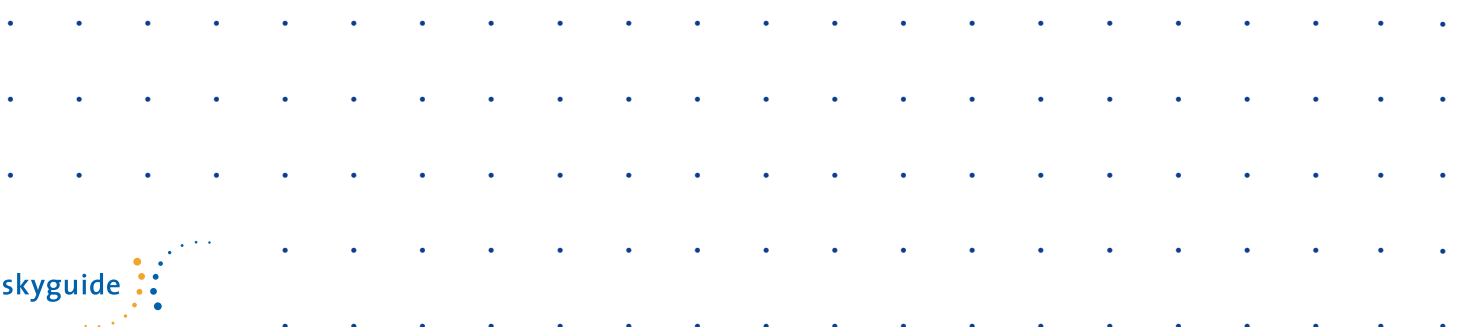
Special thank's to the SSA for their great work and for the shared information regarding this incident.

* SSA = *Service de sécurité aéroport / Airport security service*

** ADC = *Contrôle d'aérodrome / Aerodrome control*

*** AIG = *Aéroport International de Genève / Geneva International Airport*

XAVIER HENRIOD
DSO Geneva

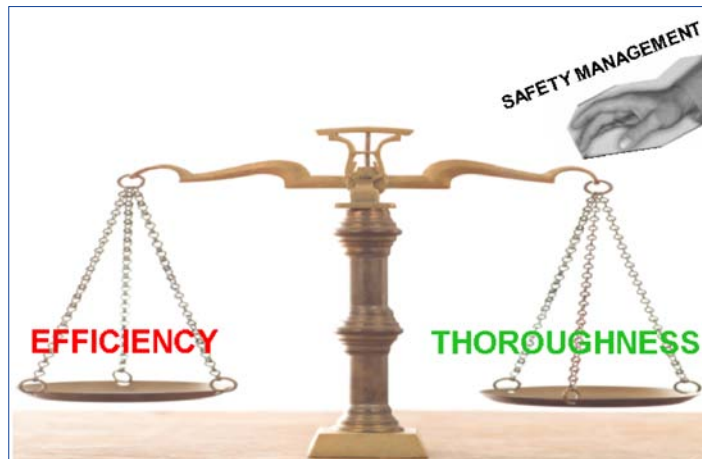


The efficiency-thoroughness trade-off (ETTO) principle

Experimental studies on human performance generally show that people make more mistakes when they respond more rapidly to a demand, and conversely that they tend to be more accurate when they take longer. People when trying to optimize their performance seem to make everything possible to achieve an acceptable balance between thoroughness and efficiency. Thoroughness means that they try as best they can to do the right thing in the right way, i.e., to choose the correct action and to carry it out as well as possible. Efficiency means that they try to do this without spending too much effort in order to meet the demands of the situation, regardless of whether these demands are imposed by an external source or of their own making.

This ETTO (efficiency thoroughness trade-off) seems to be a common feature of human performance that appears to play a role on the level of individuals and on the level of organizations alike. See the graph beside to have an idea of the typical ETTO manifestations on individual and organizational levels. These definitions are taken directly from the book of Erik Hollnagel (Barriers and Accident Prevention, 2004) but the question you can ask yourselves is whether you think these rules are applicable to your world or not?

Erik Hollnagel argues in his book that most people will easily recognize one or more of these ETTO rules and perhaps even have a recent experience with one of them? I definitely do.



A deduction from this ETTO principle is that we people normally try to be sufficiently efficient by however only being as thorough as we think is necessary. Think for example about the speed you drive your car on the highway. Are you driving it at 120 km/h as the limit requires or are you adding 5 or 10 km/h because you know it is still OK and that you will save a bit of time? Thinking about other examples will probably reveal to yourselves that ETTO is a principle that very much surrounds us in our everyday life.

It has to be said as well that people normally do not like to take unnecessary risks, but that sometimes the conditions make the risks seem necessary or adequate for the situation. Controllers are trained all over the world to expedite traffic (one of the goals of ATM, written in ICAO doc.), it is very true that many stakeholders (employees, management, customers, airports, authorities) expect from us to be an effi-

cient company. ETTO is, somewhat unsurprisingly, structurally forced into all levels of our company, if then something gets wrong it appears quite natural to blame the staff involved for having tried to be efficient while not thorough enough. In these cases we should rather ask ourselves the following question: is it reasonable to blame people for not having been enough thorough when in hindsight it was wrong to be efficient (as is by the way expected from them)?

Organizations and industries like air traffic control will never be liberated from having to balance efficiency and thoroughness. Here accidents help us to understand that it is some kind of drift towards efficiency that is an ingredient that comes into play in the mixture leading to mishaps. It is the role of safety management to warn the company when the balance has swung too far on the efficiency side.

It is to be noted here that company management can decide on the position it wants to have the foot of the balance, influencing the arm length on the thoroughness or efficiency side. If the arm length is longer on the thoroughness side then safety management's work is going to be much more successful.

THOMAS NOVOTNY
DS-S, safety management

Typical Individual ETTOs

- Looks OK
- Not really important
- It will be checked by someone else later
- It has been checked by someone else earlier
- Cannot remember how to do it
- It worked the last time

Typical organizational ETTOs

- Negative reporting (lack of information is interpreted as confirmation that everything is safe)
- Management double standards (typically the official policy puts safety first, but in practice people know that efficiency is more important)

(© ERIK HOLLNAGEL, 2004)