Dear reader,

Our latest Safety Newsletter is devoted to the Safety Management System at Zurich Airport, which is designed to keep the number of events, incidents and accidents in the airport’s operating areas as low as possible.

We all face various risks and dangers in our daily airport operations, from a departing aircraft rolling down Runway 28 at 300 kilometres an hour to the many apron vehicles that cross our taxiways as they go about their business. All these risks and dangers need to be identified, assessed and minimised.

It’s to keep the risks and dangers at Zurich Airport as small as possible that we have defined standardised workflows and procedures, which are all laid down in the Zurich Airport Manual. Our latest runway incursion, which occurred on 29 June, further underlines the vital importance of keeping to these procedures where runway work is involved.

In our “Expert Perspectives” feature, we ask various personnel at Zurich Airport for their view and understanding of what makes for a safety culture. And in “Safety Basics” we take a closer look at the Zurich Airport Manual and our Safety Management System.

As our “Accidents and Incidents” section reminds us, events can occur anywhere and at any time all over the world. And finally, our new “Safety News” offers an update on the latest publications, products and developments on the safety front.

I hope you enjoy reading our latest issue.

Daniel Huber
Auditor and Specialist Safety Officer
Safety Office
Zurich Airport
In brief
A runway incursion occurred at Zurich Airport at 23:33 local time on Monday 29 June. The incursion was by a maintenance vehicle belonging to a third party contracted company. The incident occurred as a Boeing 767-300 which had just landed on Runway 28 turned off the runway to taxi along Runway 16. At the same time, a maintenance vehicle had entered the southern part of Runway 16 without obtaining permission. Thanks to a timely intervention by the controllers concerned, the 767’s cockpit crew were alerted and a possible collision was avoided.

In detail
At 23:15 Zurich Tower gave the Construction Safety Service permission for maintenance vehicles to use Runway 16 north of its intersection with Runway 28 for their maintenance work. At 23:25 the controller withdrew this permission again in order (he later explained) to give a Boeing 767-300 on final approach to Runway 28 the option of performing a go-around if necessary with a subsequent landing on Runway 34. Five minutes after the controller had withdrawn his previous access permission, all maintenance vehicles had left Runway 16 north of Runway 28 via the Echo 5 (E5) and taxiways Bravo. Just after the Boeing 767 had landed on Runway 28, the Construction Safety Service officer on duty noticed that there was a maintenance vehicle on the southern part of Runway 16. The 767’s cockpit crew were informed, reduced their taxi speed and were able to visually identify the vehicle at the side of the runway. The aircraft then taxied past the vehicle at a safe separation distance. According to the cockpit crew, the risk of a collision remained extremely small.

Analysis
The Runway Incursion Investigation Team concluded in its analysis of the incident that:
• the driver of the maintenance vehicle had been told by his superior at the briefing prior to this night maintenance work that Runway 16 will be made available for maintenance work at 23:30;
• at this time, the driver proceeded to Runway 16 via Glattstrasse and Taxiway Romeo 7 (R7) to set up lighting for the work planned, without permission and without accompaniment by the Construction Safety Service;

“The runway will be available for maintenance work at 23:30...”
• the driver claimed to have seen further maintenance vehicles on the northern part of Runway 16 just before he entered the runway himself;
• just as the maintenance crew were about to start setting up their lighting, they noticed the 767 landing on Runway 28.

Findings
The following factors contributed to the incident:
• The driver of the maintenance vehicle was on Runway 16 without permission.
• The permission to perform maintenance work on Runway 16 north of Runway 28 was issued before the last aircraft of the day had landed.
• The briefing prior to the night work planned, and the fact that maintenance vehicles were on the northern part of Runway 16 at the time this work was planned to start, prompted the driver to act as he did.

As a result of this incident, Unique (Flughafen Zürich AG) has modified its procedures to ensure that work on Runway 16 may only commence after the last aircraft of the day has landed on Runway 28. It has also resolved that access for construction or maintenance purposes will no longer be granted on a part-runway basis. Further recommendations arising from the investigation are also being considered.

Conclusion
Any construction or maintenance work performed during airport operating hours must be accompanied by clear instructions and the strict observance of all safety regulations. The responsibilities and rules of behaviour here are clearly specified in the relevant work instructions. And the golden rule continues to apply: “Never enter a runway without obtaining permission!”

Source: Zurich Airport Runway Incursion Investigation Report 4/2009
An interview with five safety specialists

**Zurich Airport is committed to an open and transparent safety culture under its overall safety policy. What do “openness” and “transparency” mean here to you?**

**Rainer Hiltebrand**: My understanding of openness and transparency is that accidents or incidents get reported and we learn from these events. This learning component is vital if we are to prevent accidents occurring.

**Marco Müller**: I would explain my idea of openness and transparency in terms of SWISS’s four-pillar safety culture. Our first pillar is an informed culture: we want to be informed. What’s happened? What’s going on? What are other people doing? We also need to know what strategies our superiors are pursuing, with no hidden agendas. The second pillar is a reporting culture: we need reports, and we need to report. The third is a just culture – one in which people can make mistakes and admit to them, and where the emphasis is not on punishment but on learning from the experience. Here, though, we do need to make a clear distinction between mistakes that can happen in our daily work and those that are caused by gross negligence. It’s up to every line superior to strike the balance we need between punishment, disciplinary action, understanding and support. And the fourth pillar is a learning culture, where we learn from every incident and share our experiences.

**How important is “trust” to the safety culture at Zurich Airport?**

**Heinz Koch**: It’s crucial, within Unique and in our collaborations with our partners. And we’ll only have it and keep it if we handle reports and information as we say we should in our Safety Policy.

**Rainer Hiltebrand**: The emphasis has to be on what we call a “Fehlerkultur” in German – a culture in which we concede that mistakes will happen and put the prime emphasis not on punishing the person who’s made it but on finding out why it happened and learning from this. And it’s communications that can create the trust here.

**Marco Müller**: Trust is the foundation of any system. At Zurich Airport it means having the confidence to report an incident and admit a mistake. Everyone needs to feel they can report something without being punished. And the airline industry has come a long way here.

**What role do managers have in promoting a positive safety culture at Zurich Airport?**

**Hans-Peter Illi**: The safety culture has to come from the management, and it has to be actively communicated by them, too. Every case reported needs to be investigated, and the person who has reported it must be given feedback on it within a reasonable time. What’s also important, though, are the contacts with other safety bodies – at Zurich, for instance, that includes the Ramp Safety Culture Team and the Airport Safety Committee.

**Bernhard Fässler**: We need to see leadership by example: managers talking about their own mistakes, to show their staff they needn’t be fearful of the possible consequences of admitting to an error. The message that “You learn more from your mistakes than from your successes” is very important to me, too. This is how we can create the open and constructive dialogue we need.

**Heinz Koch**: I agree: managers have to set an example. They can’t expect actions and attitudes from their subordinates that they don’t practise themselves.

**Marco Müller**: Absolutely: it’s vital that managers don’t just preach but also practise what they expect of their people. Also, when it comes to safety, there’s no place for any power games or maximising profits among the airport partners.

**If it’s the fear of punishment that often inhibits people from reporting an incident or an accident, how can we take this fear away?**

**Bernhard Fässler**: We need to show them that the incident will be looked into with as much fairness and objectivity as possible: that we’ll talk to them at length and try to establish exactly what happened; and that in doing so we’ll be putting the emphasis not on blame and punishment but on analysing what happened to stop it happening again. What’s done is done: we can’t change it, but we can learn from it. In brief, we need to give them the feeling that
their reporting an incident can make things better for us all.

**Hans-Peter Illi:** The near-miss reporting that we have in place took people a while to get used to. All the reports go to Operations Management, and many people felt that anything they submitted might be used against them. I would like to stress that this is simply not the case – unless, of course, gross negligence is involved.

**Have any of you used our Occurrence Reporting System and found that a problem has been solved after you’ve done so?**

**Heinz Koch:** I’ve used it on a number of occasions. The last time was just a few days ago. I suggested – based on input I had received from our apron controllers – that the call signs of “Florian” (for the fire services) and “Orion” (for Ramp Safety) should be reconsidered. Over the radio, they can sound very similar, and there’s a real risk that an instruction or permission to use a taxiway or even a runway might be misconstrued. A collision between an aircraft and a vehicle would have huge consequences, of course. I got a confirmation straight away that my input had been received, and they’re currently looking into the matter with the units concerned.

**Hans-Peter Illi:** I’ve used the system once so far. We had a day with a lot of snow when one of our tanker drivers had to drive out to the Midfield terminal. The problem was that the drivers have to use the Runway 28 bypass road. But there was so much snow on the ground that this was impossible to make out. It was also night, visibility was far from ideal, and a number of taxiways had to be crossed. The airport authority couldn’t accompany him either, because they were fully occupied with clearing the snow. The whole issue was taken up and discussed; but the solution arrived at was only satisfactory at best.

**What’s your biggest personal concern when it comes to a safety culture and the reporting that goes with it?**

**Heinz Koch:** I think it’s very important that anyone who submits a report gets feedback that it’s been received and an initial word of thanks for their action. They also need to know that their input will be carefully considered. Not every idea or suggestion can be implemented; but anyone who submits a report has the right to some feedback within a reasonable time. So if looking into it takes longer than expected, the submitter should be given a progress update, too. If they don’t get feedback of this kind, people will soon feel there’s no point in reporting incidents and submitting ideas, and they’ll be more reluctant to do so.

**Rainer Hiltbrand:** A good culture is tremendously important to me. We must have an effective exchange of information among all personnel. And we shouldn’t just act when something has happened; we need to be proactive. People are incredibly valuable, and we must keep them safe. That’s why reporting is so crucial. Whenever we notice a deviation from the standard process, we must report this, to prevent accidents happening.

**Hans-Peter Illi:** I think the airport has made a lot of progress in this whole area in the last two or three years, and I’m very happy with the way things currently stand. The meetings we hold are very useful in sharing our experiences.

**Marco Müller:** One major thing that’s important to me is that we pay due regard to other companies’ cultures. As an airport or an airline, you can’t just expect other firms to adopt exactly the same safety culture and rules that you observe yourselves. That’s why all the partners involved have to maintain a constant safety dialogue and align their actions accordingly. And if I have one wish, it’s that the managers concerned are fully and consistently aware of the responsibility they also bear – through the decisions they take – for maintaining a safe airport system.

**Bernhard Fässler:** On the whole, I am very satisfied with our present reporting culture. The main thing for me is that any faulty or damaged vehicles, equipment and similar are always reported immediately.
“Safety” is a word we hear all over Zurich Airport. Safety means ensuring our systems’ technical and operational stability, by identifying dangers and reducing risks. This is achieved partly by establishing and maintaining standardised work and safety processes, which are all laid down in the Zurich Airport Manual. It is also achieved through our Safety Management System, which helps Zurich Airport to implement safety throughout its organisation and determine whether the requisite safety processes are all being observed. Safety will only ever prevail, however, provided everyone involved adopts the airport’s values and basic safety philosophy, and provided they have all received the appropriate training and instruction.

The Zurich Airport Manual
The International Civil Aviation Organisation (ICAO) has laid down binding provisions for all safety-relevant airport operating processes. Among their various safety duties and obligations, airports must define their operating processes and safety measures and specify these in an airport manual. The information demanded here includes, for instance:
• how the data required for safe flight operations are communicated;
• how the responsibilities and work processes for the fire services are regulated;
• how the runways and taxiways are managed, monitored and checked.
This airport manual is constantly updated and expanded, and is regularly inspected by the Swiss Federal Office of Civil Aviation (FOCA).

The Zurich Airport Safety Management System
Zurich Airport’s Safety Management System or SMS is a comprehensive systematic process for managing safety risks. The SMS consists of four prime elements:

I. Safety Policy and Objectives
Safety Policy lays down the basic approach to Safety at Zurich Airport. This policy is itself in two parts:
• the factors in ensuring safe operations;
• Flughafen Zürich AG’s safety management system principles.

II. Safety Risk Management
The aviation industry’s approach to safety in the past tended to focus on actively investigating accidents: a major accident would happen, and lessons would be learnt. Today, near-accidents and even minor incidents are also analysed, and operational data are routinely recorded and evaluated. This allows trends to be identified and actions to be proactively taken to prevent incidents occurring.
It’s an “iceberg” approach. The tip of the iceberg, visible above the water, represents the fatal accidents that occur – few in number, but spectacularly presented in the media. Beneath the surface, yet all but invisible, are the “unsafe situations” which account for the vast number of safety-relevant moments and incidents in Zurich Airport’s daily operations. Analysing these unsafe situations can help us detect weaknesses in the existing system and identify risks in good time.
III. Safety Assurance
If safety is to be maintained at Zurich Airport, everyone involved must abide by the prescribed work and safety processes at all times. These processes are also critically reviewed on a regular basis through audits and inspections. If any system shortcomings are detected, actions must be found to eliminate them. The system also produces a number of key indicators that monitor the airport’s safety performance. One example of these is shown below: the number of cases in which equipment was damaged during aircraft handling between 2001 and summer 2009.

IV. Safety Promotion
Needless to say, the findings from the first three elements of the SMS must also be communicated to the personnel who work at Zurich Airport. Safety Promotion does this, to ensure that staff are adequately trained in safety and sensitised to dangers and risks.

A personal SMS checklist:
What do I need to know about safety?
- The Zurich Airport Safety Management System contains a Safety Policy which presents the airport’s basic approach to safety and safety issues.
- The SMS is based on the Zurich Airport Manual, which documents the airport’s operating and safety processes. I need to be aware of and abide by the rules and requirements here in all my daily work.
- The prime focus of the SMS and its elements is on investigating accidents and incidents, identifying dangers and risks in airport operations and taking appropriate action in response. To help achieve this, I must report any incidents or unsafe situations.
- Safety-relevant information is communicated to all personnel. It is my superior’s duty to keep me accordingly informed.

A brief glossary
International Civil Aviation Organisation (ICAO): ICAO sets binding standards and issues recommendations for the air transport sector on matters such as traffic rights, infrastructure and similar.
Federal Office of Civil Aviation (FOCA): The FOCA is Switzerland’s air transport regulatory and supervisory authority, responsible for issues such as pilots, aircraft, infrastructure and similar.
Danger: A danger is a situation, condition or process that could lead to an accident.
Risk: A risk is a combination of the likelihood that the accident resulting from a danger will actually occur and the possible scope of the damage if it did.
Audit: An audit is an examination of processes and procedures in terms of their fulfilment, their requirements and their observance of the relevant guidelines.
Occurrences at Zurich Airport

Heavy braking after right-of-way overlooked
While crossing Taxiway Mike, a vehicle came dangerously close to an aircraft being towed. Only through the quick reactions of the vehicle driver and heavy braking by the tow tractor driver collision was avoided. The vehicle driver had turned into the taxiway after making a 90° turn on Werkhofstrasse and, by his own admission, had failed to see the aircraft. The tow tractor driver had noticed the vehicle, but had assumed it would stop short of the taxiway. The severe braking caused extensive damage to the aircraft’s nose gear, and the aircraft had to be withdrawn from service for several days for repairs.

The Safety Office adds
Increased vigilance is called for whenever a taxiway has to be crossed. At “hidden” or “blind” locations in particular, and on routes involving multiple taxiways, the situation should be regularly reappraised. Care must also be taken to ensure that you are not distracted by radio or conversations. Minimum separation distances (see Article 31 of the Ground Traffic Regulations and the Ramp Safety Flyer) must be maintained at all times.

Manual baggage cart collides with aircraft wing
A manual baggage cart collided with the leading edge of the right wing of a Fokker 100 while the cart was being manoeuvred. The handler involved said that he had been under sizeable time pressure when the accident occurred, and had paid insufficient attention to the baggage cart’s height.

The Safety Office adds
Always work safely, even under time pressure. And always be aware of your own performance limits!

Passenger airstairs collide with aircraft’s wing
A set of passenger airstairs collided with the wing of a parked Avro RJ100 while the stairs were being repositioned. The stairs had been incorrectly prepositioned near the rear (and not the front) door of the aircraft. So when the aircraft had come to a halt, they had to be rapidly relocated. When doing so, the driver paid due regard to the safety cone on the ground that was intended to indicate the extent of the aircraft’s wing. But this cone had been wrongly positioned and, as a result, the stairs collided with the aircraft’s left wing.
Collision with aircraft’s wing after wrongly estimating vehicle height

After completing his uplift, and finding his obvious route away blocked by a baggage belt and dollies, a catering truck driver decided to drive away beneath the aircraft’s right wing. In the process, the top of the vehicle collided with the winglet. The driver had underestimated the height of his vehicle, and had also paid inadequate attention to the winglet. As a result of the accident, the winglet had to be subjected to an extensive examination of its structural integrity.

The Safety Office adds

Even if the route beside the aircraft is blocked, apron vehicle drivers may not drive under an aircraft’s wing. If the direct route cannot be taken, a longer alternative must be taken instead. And if no alternative at all exists, the vehicle must simply wait where it is until it can safely move.

Vehicle brake failure causes engine damage

After completing its fuelling, an aircraft fuelling vehicle suffered a brake failure and rolled into the engine of an Avro RJ100. The collision caused extensive damage to the engine and to the vehicle’s front windscreen.

The Safety Office adds

All apron vehicles must have their prime functions regularly checked. Doing so, and duly reporting any problems, is the responsibility of the vehicle’s driver. Non-fully-functioning vehicles may not be used in airport apron areas.
Occurrences worldwide

Collision during pushback
A Boeing 757-300 of Northwest Airlines collided with a Boeing 737-800 of Delta Air Lines during a simultaneous pushback at Seattle-Tacoma Airport in the USA on 28 December 2008.
The 737, which was at gate Alpha 11, was cleared by Apron Control to push back to the north. The ground crew confirmed that they would perform a normal pushback onto the taxiway.
At the same time, the 757 received clearance to push back south from gate Sierra 6. At the time, the 757’s wing-walker was walking sideways, and was located close to the aircraft’s left wing. He did not notice any other aircraft at any time.
The 737 tractor driver noticed a Northwest aircraft being pushed back from the Sierra gates, but did not think anything of it. Shortly afterwards, the collision occurred. Both aircraft were severely damaged, but there were no injuries to any persons involved.
A subsequent discussion with the apron controller revealed that he had mistakenly thought the 737 was on gate Alpha 14.

Maintenance vehicle causes runway incursion
As a US Airways Airbus A320 was taking off from Boston Airport’s Runway 15R on 18 June last, a maintenance vehicle crossed the runway on Taxiway M. The vehicle had no permission to do so from Apron Control, and was not in radio contact with the tower. The Airbus crew noticed the vehicle when the aircraft was only 500 feet from the runway/taxiway intersection.
Construction work was being performed on Taxiway M at the time, resulting in the closure of Runway 15R at certain times, with appropriate signage provided. Since the runway was active at the time of the incident, however, this signage had been removed. These signage arrangements had also been communicated to the personnel concerned.
The vehicle driver stated that he did not know the runway was active. The aircraft was able to take off without incident and proceed on its flight to Phoenix.

Near-collision during takeoff manoeuvre
A near-collision occurred at Berlin Schönefeld Airport on 31 July 2007. When they had reached a speed of 120-130 km/h on their takeoff roll along Runway 25L, the crew of a Nuremberg-bound Boeing 737 noticed a maintenance vehicle approaching the runway from the south at around 100 km/h. Since they were already travelling too fast to abort, the crew were forced to continue their takeoff. Fortunately, the vehicle stopped around 50 metres from the runway’s edge, and the aircraft took off without incident.
Work had been proceeding on the taxiways around Runway 25L for an extensive period prior to the incident. But the runway was active at the time.
Near-collision with a grass mower
A further near-collision occurred at Dublin Airport in the night of 29 May last, and involved a worker on a ride-on grass mower who was supervising other grass-mowing staff. The rider was driving along Runway 10, a few metres within the runway edge lighting. He had neither rear lights nor a flashing beacon, nor did he have a VHF radio for monitoring tower communications. With visibility deteriorating, a Boeing 757-200 of Thomson Airways of Canada landed on Runway 10. After landing, the cockpit crew noticed that something had been parked to the right of the runway. At first they thought it was a piece of ground equipment, but soon realised that it was a vehicle. The aircraft was able to roll past the vehicle without incident. The occupant only noticed the aircraft after it had passed him.

Safety News

This section is designed to keep all personnel at Zurich Airport abreast of the latest safety-related products, drives and developments of the last few months.

New documents
• The Zurich Airport Manual has been revised, and is now available to all Unique employees in the DMS under http://dms / Operations [O] / Safety Office [OF] / Flughafenhandbuch. It can also be obtained in paper or CD-ROM form from occurrence@unique.ch.
• Zurich Airport’s Safety Policy has been updated. A detailed PowerPoint presentation explaining the policy is available on the intranet. The policy is included in the Zurich Airport Manual; and copies can also be obtained from the Safety Office.
• The Runway Safety Team has produced a Runway Incursion Prevention DVD. The new publication is intended for flight crews, and is available free of charge from the Safety Office.

Upcoming dates
• Recertification audit, 21–24 September 2009: Zurich Airport’s Safety Management System became the first in Switzerland to receive ICAO certification three years ago. The airport is regularly re-audited by the FOCA to retain its certificate’s validity. These audits include sample comparisons of the Airport Manual with the processes concerned, and careful studies of these processes and their safety credentials.
• Next Runway Safety Team meetings: 8 December 2009, from 09:00 to 12:00.
• Next Airport Safety Committee meetings: 25 September and 11 December 2009, from 09:00 to 12:00.
• Next Ramp Safety Culture Team meeting: 16 November 2009, from 13:30 to 16:00.
The Occurrence Reporting Form

Uncertainties and “near-misses” should never be left unaddressed. We encourage everyone at Zurich Airport to communicate any ideas or observations they may have regarding the safety of flight operations to the Unique Safety Office using the form below.

Zurich Airport Occurrence Reporting Form

1. Basic details
   Date
   Time □ day □ night □ dawn □ dusk
   Weather □ clear □ cloudy □ overcast □ rain □ fog
   Visibility □ good □ moderate □ poor
   Surface conditions □ dry □ wet □ snow □ slush □ ice
   Location

2. Description (what happened?)

3. Causes [why might this have happened?]

4. Proposals [what could be done to prevent this kind of thing happening again?]

5. Personal assessment
   a. How likely do you think it is that this might happen again?
      □1 □2 □3 □4 □5
      very unlikely □  □  □  □  very likely
   b. How serious do you think such an occurrence and its consequences could be?
      □1 □2 □3 □4 □5
      harmless □  □  □  □  disastrous

Any information you give above will be used to help further enhance safety at Zurich Airport. You can decide for yourself whether you wish to provide your own personal details. If you do, we will cut off and dispose of this section once we have received your form, but will take the liberty of contacting you if we have any follow-up questions or if anything is unclear. None of the information you provide will be passed on without your express consent. When you have completed the form, please mail it or fax it to:

Unique (Flughafen Zürich AG), Safety Office, P.O. Box, CH-8058 Zurich Airport,
fax +41 (0)43 816 83 63, occurrence@unique.ch

Thank you in advance for playing your own active part in keeping our airport safe.

Last and first name (optional)

Company (optional)