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THE CONTROLLER

October 2015
Volume 54 Issue 3 – ISSN 0010-8073

Cover photo: A.Jeuland @ armee de l'air

In this issue

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IFATCA ROCKS!

But is our Federation ready for the next level?

The more productive and visible IFATCA becomes, the more time is required to tackle the workload.

by Patrik Peters, IFATCA President & CEO

Writing this foreword, I am sitting in our Montreal office together with Tatiana, our office manager. I am using these last few hours before heading back home after a very successful IFATCA Technical & Operations Committee (TOC) meeting hosted by ICAO in their headquarters.

The last few days and weeks have again shown how well our IFATCA family works together in the various committees, amongst officers, within the Executive Board and with our stakeholders. I've had the opportunity to participate in the recent Professional & Legal Committee (PLC) and TOC meetings and of course our Executive Board meeting and team building exercise. I believe it's fair to say that the current spirit amongst all officers is outstanding. The motivation and dedication towards our common goals is unprecedentedly high. Working papers for conference are on track and at a very advanced stage.

The Executive Board held its first face-to-face meeting since conference and discussed the way forward – where do we want to be in 15 years? Are we successfully fixing problems or are we only good at identifying them? What can be done to give directions and lead our members? Do we have the required resources, both financially and with regards to manpower?

Focusing at bringing the Federation to the next level, we will need to find ways to improve our budget and funding – do we therefore increase our membership fees or do we want to turn towards the industry for funding?

We identified the following ways of funding: Membership subscriptions, corporate memberships, donations, consultancy work and training. Another possible way to increase funds could be crowd funding for certain projects.

The EB agreed that there is a need to interact more actively with industry partners. The fact that we are often mistaken for unions shows the lack of understanding and the need for information and education.

Besides financial constraints, we increasingly face manpower problems. The more productive and visible we become, the more time is required to tackle the workload. Other organizations, for example CATCA, NATCA (USA) and IFALPA today already employ staff on a full time basis. At the current rate of popularity and requests for collaboration, we are closing in on the limits of what is digestible for an organization based on volunteer work.

Offering and holding training and information seminars would demonstrate to industry (for example: airlines) the advantages our Federation can bring to their businesses. This would also improve our corporate membership. Member association would benefit from tailor made workshops held at regional level – besides those given at regional meetings. Enlarging our standing committees would cater for additional assistance to the Executive Board beyond the elaboration of their work packages and papers for conference. We will produce small sample CBT sessions and informative tutorials to improve the understanding of our work, the set-up of the Federation and to show the potential of modern media. As a first step, it has been decided to create an IFATCA one-on-one training presentation explaining who we are and what we do. A two-day training seminar on Just Culture and Voluntary Reporting for the Africa & Middle East region will be set up for January 2016, another one for the Asia Pacific region is planned for June. Several short tutorials on CISM, Just Culture, TCAS and an IFATCA 101 will provide first – easy to digest – education.

As you can see – you keep us busy. We are listening to you about what you told us you wanted; we are planning to deliver these things in the foreseeable future, and we need YOU! We always need more volunteers in all areas. We know our members have an incredible range of skills, so if you feel you can contribute to our exciting future, step up!! And it is your support and your dedication that drives this Federation to the next level. IFATCA rocks!

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JUST CULTURE MILESTONE

Declaration is a beginning, not the end!

by Philip Marien, Editor

On October 1st 2015, 16 major aviation industry stakeholders and the European Commission signed the European Corporate Just Culture declaration in Brussels. Though not legally binding, the signing is a major step forward in European aviation safety. Applying the principles of Just Culture has time and time again proven` to actually improve safety. Not by just encouraging reporting, but by inviting everyone to openly discuss safety events. This raises awareness and makes people working in our industry become more resilient and safety conscious.

Fair and objective investigations and Just Culture at an individual level are still a long way away.

Everyone needs to realise that this is not an overnight process. It will take years to build enough trust and faith in the system for people to open up entirely. There are cultural differences to account for. And it is a very fragile system that takes a lot more to build up than to destroy… But eventually, those brave enough to commit and persist will reap the benefits!

There is a dark cloud in the Just Culture sky however: a number of prominent players have chosen not to sign. Perhaps the least surprising of those is the European Low Fares Airline Association. The members of this association represent an increasing portion of Europe's air traffic and it would seem that some of them – not all fortunately – consider themselves above anything and anyone. One cannot help the feeling that – again some of them – are afraid to let the reporting cat out of the bag, which might force them to chance a few things (read: spend money). Airbus is also noteworthy in its absence from the signatory list. It's extremely unfortunate, given the company's influence and reach in European aviation manufacturing. Their commitment could have helped to convince other manufacturers to subscribe to the ideas of Just Culture. One can only wonder whether their reasoning is based on the advise of their legal department or whether they fear a such a commitment would be commercially disadvantageous. Or perhaps both? In any case, it would be interesting to hear their reasoning...

It illustrates that there is a lot of work left to convince Europe, and the world, that Just Culture is a good thing. If one needs a further illustration: as I am writing this, the chairman of the Dutch transport safety board is presenting their report on the crash of Malaysian 17 over the Ukraine last year. Over the past 16 months, most authorities have been bending over backwards not to name the responsible party – though everyone knows. Compare this to the witch-hunt in the Germanwings crash: the co-pilot was labelled as the culprit within hours of the crash – including a number of details not hindered by any verification of accuracy or truth.

If governments, law-makers or even companies are involved, it seems that we cannot be careful enough: one wrong word and it might affect a contract, an investment or a trade deal. Or you will get sued by an oversized and overpaid legal department. For the moment, it seems that these considerations trump Just Culture…

Signing this declaration is a major achievement, as long as everyone involved realises it is just one small step for European Aviation. Fortunately, the most solid changes come from small steps, rather than from giant leaps...

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✈ *IFATCA PCX & CEO Patrik Peters signs the European Corporate Just Culture declaration as EU Commissioner for Transport, Mrs. Violeta Bulc watches on.*

Photo: © European Union, 2015 / Source: EC - Audiovisual Service / Photo: Creemers Lieven

COLLISION OVERHEAD SENEGAL

More questions than answers

by Philippe Domogala, Deputy Editor &
Christophe Gilgen, IFATCA Liaison

On September 6th 2015, a number of online media reported an accident involving a Senegalese business jet. The previous day, a Hawker Siddeley 125 went missing off the Senegalese coast, with 7 people on board. A search and rescue effort was reportedly underway, but it was unclear what sort of problem the aircraft had encountered.

Statement

Fairly soon after, stories emerged that the aircraft might have been involved in a collision, but very little information substantiated those accounts. Eventually, on September 10th, the French accident investigation body BEA produced the following statement on their web site:

Following the accident on Saturday 5 September 2015, at the end of the afternoon, to a Hawker-Siddeley HS-125 registered 6V-AIM, the Senegalese BEA requested assistance from the French BEA to conduct the Safety Investigation, in accordance with the terms of the international cooperation agreement between the two organisations.

The HS-125 from the Senegalair airline, which was undertaking a medical evacuation flight from Ouagadougou (Burkina Faso) to Dakar (Senegal), collided in mid-air with a Boeing 737-800 and crashed into the sea. On board the aeroplane were a French patient and three crew members – two Algerians and one Congolese – as well as a doctor and two nurses from Senegal.

The Boeing 737-800 belonging to the CEIBA airline, which was flying the Dakar (Senegal) – Cotonou (Benin) route as flight CEL 071, diverted and landed at Malabo (Equatorial Guinea) with limited damage.

A team of three investigators from the BEA, accompanied by a technical adviser from the French DSNA (Direction des Services de la Navigation Aérienne) is travelling to Dakar tomorrow, Friday 11 September 2015.

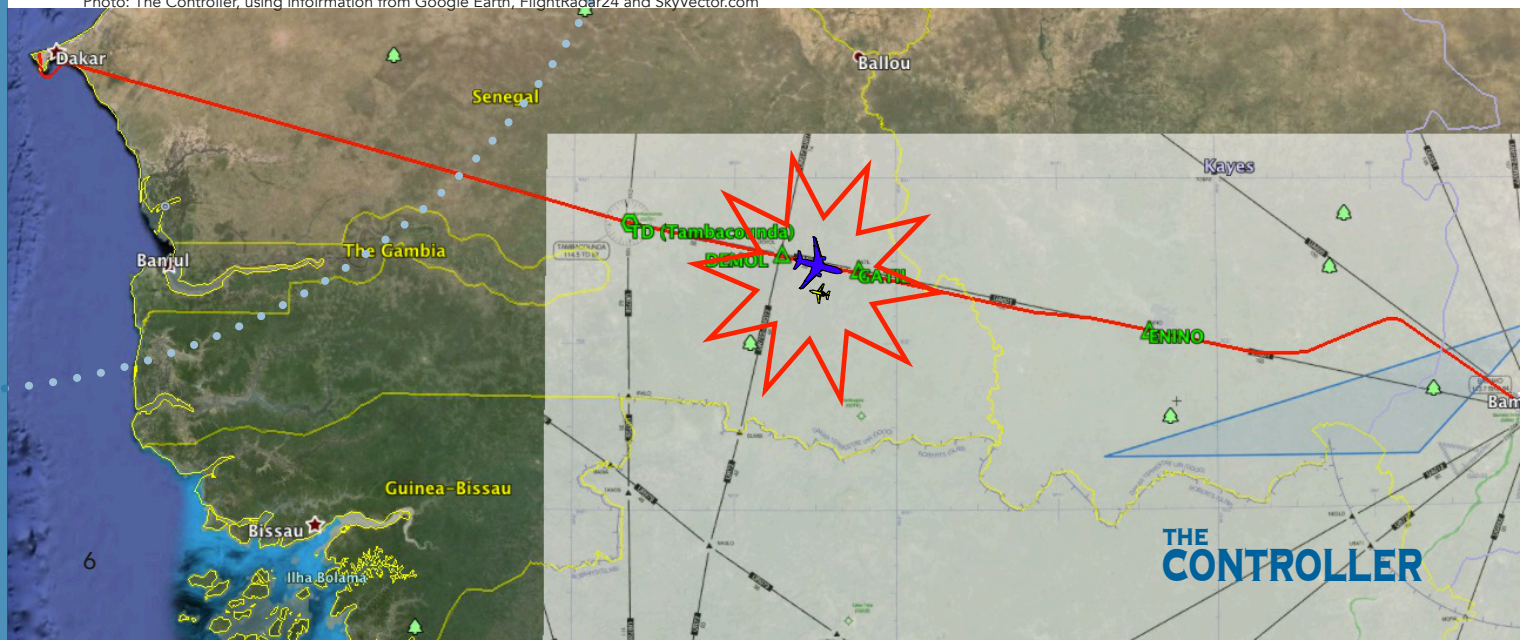
While this confirmed that a collision had taken place, no additional details were offered by the Senegalese authorities or from ASECNA, who is the Air Navigation Service Provider in the countries involved - Senegal, Mali and Equatorial Guinea. We reached out to ASECNA for more information, but so far we've not heard anything back from them. The BEA declined to comment as the investigation is formally conducted by their Senegalese counterpart.

Media Reports

Meantime, bits and pieces of the story continue to emerge via the media and internet discussion boards. While it is clear that these online sources are not a substitute for the actual investigation, they include an interview with the pilot of the Ceiba 737 as well as passenger accounts.

The collision apparently happened in the Dakar FIR, close to the border between Mali and Senegal. The westbound HS-125 had been on a Bamako (Mali) frequency. The B737-800 was at FL350 but on an

The suspected location of the collision, near the Senegalese-Malinese border [aircraft are not to scale, obviously].
Photo: The Controller, using infoirmation from Google Earth, FlightRadar24 and SkyVector.com



✈ *The Ceiba Intercontinental Boeing 737-800.*
Photo: (cc) Andrew W.Sieber via Flickr

✈ *Damage to the right winglet of the Boeing 737-800.*
Photo: Internet

opposite, eastbound track. Although the collision occurred in Senegal airspace, at this moment it is not clear whether the aircraft was still in contact with Dakar ACC at the time. Some suggest that the aircraft had already been instructed to contact a Bamako frequency or that it had gone out of range of the Dakar VHF transmitters.

Despite efforts by our Africa/Middle East EVP, we currently have no news from the controllers involved in the event.

All indications are that there is no radar coverage in the area. Controllers use a display which shows them flight progress based on flight plan data only. That implies that any deviation from a clearance – be it assigned level or route – would not have been visible to the controllers. If such a deviation resulted in a collision, it would also have been impossible for the controllers to detect it.

Outside IFBP Area

It's also worth noting that the Dakar FIR and the affected part of Malinese airspace are outside the IATA In-Flight Broadcast Procedure (IFBP) area. In this area overhead central Africa, pilots announce their flight level and position to each other on an agreed frequency to ensure maximal situational vawareness.

It is so far unclear if and why the HS-125 was at the same level as had been assigned to the Ceiba Boeing. A number of newspaper articles indicate there were certification issues, notably with the altimeter. Despite this, the Senegalese authorities had issued an airworthiness certificate to the aircraft.

Pilots flying in the area reported that the HS-125 did not respond to any calls. It continued past Dakar towards the Atlantic Ocean. After about 40Nm, the transponder's mode C indicated a descent: the last radar return showed it some 60 Nm west of the mainland passing FL325. ANACIM, the Senegalese aviation authority issued two press releases, stating they had launched a search and rescue operation around a point 111 km from Dakar – this coincides with the 60Nm mentioned elsewhere. The search included 4 aircraft and 1 surface vessel. At time of writing, no debris from the aircraft has been found and we understand that the search has been called off at the time of writing (end of September). It is not known whether the last known position of the HS-125 coincides with the range limit of the Dakar radar, though the fact that the aircraft was reportedly passing FL325 when (radar) contact was lost may well indicate that it crashed further west.

Diversion

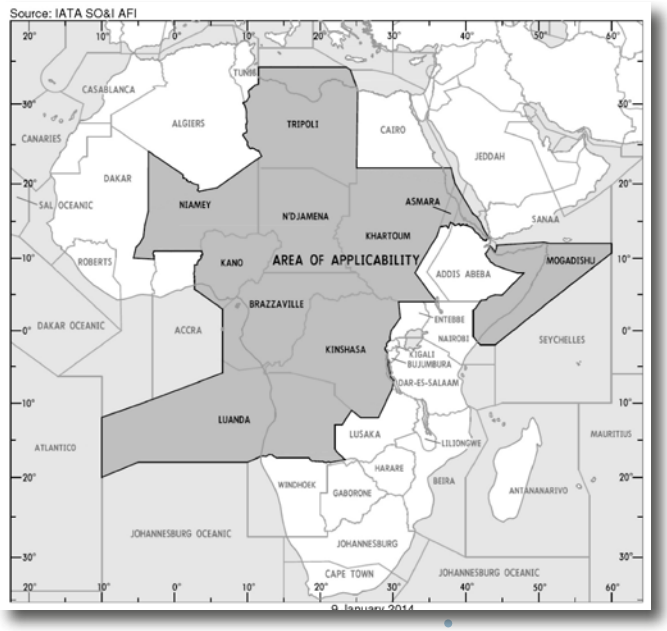
The crew of the other aircraft apparently notified Bamako ATC that they might have hit something. They later announced that for "security" reasons, they would not land in Cotonou (Benin), but would directly continue to their final destination and home base, Malabo (Equatorial Guinea). After landing, it was found that a piece of the right winglet was missing. Passengers reported having felt a strong bump between 45 minutes and one hour after take-off from Dakar. After several weeks, a photograph of the winglet appeared online. This shows the top 50-75 cm of the right side winglet missing. At the time of writing, the involved Boeing 737, registration 3C-LLY, appears still to be on the ground in Malabo.

Despite efforts by our Africa/Middle East EVP, we currently have no news from the controllers involved in the event. Their associations stated that the matter is under investigation and that they were not in a position to provide further comments.

Authorities

As indicated earlier, the Senegalese bureau of investigations is in charge of coordinating the investigation. Interestingly, this only seems to have been setup recently – in May 2015. Its director was only nominated on 6 September, the day after the collision. According to local media, one of his first official actions was to formally request the assistance of the French BEA. A secondary investigation, by a French judiciary, is also underway as one of the passengers on board the missing hospital flight was a French National. As part of

✈ *The HS-125 that went missing over the Atlantic Ocean west of Dakar.*
Photo: internet



Senegal is not in the area in which IATA requests operators to use the In-flight Broadcast Procedure.

this inquiry, French gendarmes were sent to both Dakar and Malabo to investigate.

The Senegalese press also reported on possible financial difficulties for Senegalair, the operator of the HS-125. As a result, the aircraft reportedly had a number of technical shortcomings and the press was quick to point fingers at both the airline and the government for a lack of oversight. At the moment, it doesn't seem possible to determine whether such issues played any role in the accident.

Tracking sites on the internet show the Ceiba 737 on September 5th – see the screenshot using data from FlightRadar24. A Mode-S transponder with ADS-B Extended squitter would be standard equipment on the B737-800. Given that the HS-125 is not visible on the same site would indicate it did not have an ADS-B capable transponder. But if the reports from Dakar that they saw the aircraft at FL350 and later FL325 are accurate, would mean that it had at least a functioning mode C transponder. Based on their MTOW, both aircraft needed to be equipped with TCAS, so one of the pressing questions for investigators is why the system appears to have not been able to avert a collision. As such, the event appears to have a number of things in common with the 2006 mid-air collision overhead Brazil.

Another puzzling issue is why the Ceiba crew decided to continue flying for over 3,5 hours rather than landing at the nearest airport. The Senegalese media continue to speculate on the lack of oversight when it comes to aircraft maintenance and on possible shortcomings from the service provider when it comes to VHF and radar coverage especially in combination with the application of RVSM separation in the area…

Perhaps these issues explain the disturbing lack of transparency from the various authorities involved in this accident, though the total lack of interest from the international press in this event is equally worrying. IFATCA will continue to closely monitor any developments and insist on a fair and impartial investigation in line with international standards. As always, such an investigation should not about finding scapegoats but about addressing systemic issues in order to make the entire aviation system safer for everyone involved.

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Similarities with 2006 Brazil Collision?

On 29 September 2006, a Gol Transportes Aéreos B737-800 collided in midair with an Embraer Legacy 600 business jet over the Brazilian state of Mato Grosso. All 154 passengers and crew aboard the Boeing 737 died when the aircraft broke up in midair and crashed into an area of dense jungle, while the Embraer Legacy, despite sustaining serious damage to its left wing and tail, landed safely with its seven occupants uninjured. The accident was the deadliest in that country's aviation history at the time. It was also the first crash of a Boeing 737-800, and the deadliest aviation accident involving a Boeing 737 at that time.

About one hour before the collision, the transponder of the Embraer ceased operating. ATC initially also lost secondary radar contact with the Embraer, and later lost primary contact as well. Attempts to contact the aircraft were also unsuccessful. The investigation found that the Traffic Collision Avoidance System (TCAS) system had not triggered on either aircraft, though both had been equipped. It was later determined that the Embraer's transponder had ceased operating almost an hour before the collision, thereby rendering it invisible for the TCAS of the Boeing 737.

The accident, which triggered a crisis in Brazilian civil aviation, was investigated by both the Brazilian Air Force's Aeronautical Accidents Investigation and Prevention Center (CENIPA) and the U.S. National Transportation Safety Board (NTSB), with a final report issued on 10 December 2008. CENIPA concluded that the accident was caused by errors committed both by air traffic controllers and by the American pilots on the delivery flight of the Embraer Legacy, while the NTSB determined that all pilots acted properly and were placed on a collision course by a variety of "individual and institutional" air traffic control errors.

The left winglet of the Embraer sliced through the wing of the B737.

ACCURATE WIND INFORMATION

Essential information to crews on final approach

by Serge Tchanda, Regional Editor
Africa/Middle-East

Controllers and pilots complement each other and should have aligned views on many issues, including separation standards, navigational concepts and communication procedures. To help such alignment, it is often essential that controllers provide certain things: this includes information on specific airport procedures and services available, as well as meteorological conditions. Provision of accurate and complete meteorology is becoming an issue at many airports in Africa. Sometimes, the wind direction and speed given by the Approach Controller as part of the landing clearance is not what the pilot experiences on final.

Types of weather information

Controllers provide various type of meteorological information to crew depending on the phase of flight. This includes SIGMET, for significant weather that directly affects safe aircraft operations; METAR, a standard form of providing weather observations; and MET REPORT, a specific set of meteorological data provided to the crew on arrival through ATIS (Automatic Terminal Information Service) or directly by voice. It includes wind, visibility, cloud data, temperature, altimetry pressure (QNH) and trends. Even though this information can be provided at an early stage of the arrival, specifics on wind, visibility, temperature and QNH are only valid within a radius of 20Nm of the airport.

Surface Wind

The wind information given by the Approach Controller to a crew on final is usually referred to as "surface wind". It is therefore only valid up to 10m AGL. At least in Africa, most airports are not (yet) equipped with wind profilers, which can help to detect specific wind patterns such as wind shear at higher altitudes. Generally crew are therefore advised to exercise caution when they are on final as they may face a wind direction and speed different from that given by approach controllers, especially at those airports located in mountainous areas.

Feedback

Controllers have to be aware of the importance of providing accurate information to the crew. Equally important is that they provide feedback of any reported wind shear to the meteorological office and to subsequent arrivals. At least until wind profiler equipment is installed at all airports in sub-Saharan African countries, air traffic controllers should explicitly state the word "surface" when providing wind information to a landing aircraft. This will help crews understand that the information is limited to the wind on final below 10m above ground. This should help avoid approaches becoming non-stabilised, which in turn should avoid go-arounds and even runway overruns/ excursions.

If there is any uncertainty in the information provided, both pilots and controllers should always seek clarity from each other. This will avoid misunderstandings and will result in smoother and more efficient traffic handling.

Improvement Plans

Air Navigation Service Providers and Aviation Authorities should also take action to provide vital equipment such as the wind profiler in their improvement plans as a priority. This is clearly stated as a recommendation in ICAO's Global Air Navigation Plan & Aviation System Block Upgrades B0-105, Meteorological Information Supporting Enhanced Operational Efficiency and Safety.

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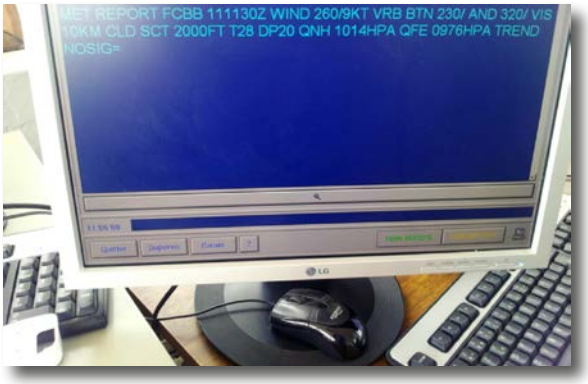
Crews [...] may face a wind direction and speed different from that given by approach controllers



Example of a MET REPORT

Wind and pressure indicator in the tower.

All photos: ST

JOHANNESBURG ATC

Diverse environment and busy traffic create complexity

by Philippe Domogala, Deputy Editor

The Guild of Air Traffic Controllers of South Africa (GATCSA) invited IFATCA to hold the Federation's Fall Executive Board meeting in Johannesburg. This gave me the opportunity to discuss the particularities of ATC in South Africa with some of their board members.

South African airspace has 3 Flight Information Regions (FIRs): Johannesburg in the north, Capetown in the south and an oceanic FIR (which ranges from 10 west to 75 east and borders Australian airspace to the east and Antarctica to the south). The air traffic is controlled from two air traffic control centres, 20 main towers and 7 radar approach sectors. They have around 330 controllers in the country, and although there is some localized small understaffing in some units, this has not (yet) led to overtime.

The Area Control Centre in Johannesburg is divided up into two separate areas, or pools. In the main pool, only half of the controllers are fully validated on all sectors. The others only hold validations for 2 sectors. While they are being trained for the other two, it making rostering extremely complicated. The other pool, which covers the central part of the country, is divided up into 3 sectors.

The airspace is very complex and as mostly elsewhere in Africa, traffic increases significantly each year, adding to the workload. Apart from the procedurally controlled Western sector and Oceanic part, the rest of the airspace is covered by radar, using a Thales Eurocat system.

Of the 4 radar sectors in the Johannesburg ACC, the northern ones, near the famous Kruger Park, are particularly complex due to the combination of heavy traffic, military airspace and the countries to the north requiring procedural handovers. During peak periods, they have frequent holding in this complex airspace. A large portion of the traffic is what they call "Bush" traffic: IFR traffic coming from or going to uncontrolled airfields. And there is of course also the VFR traffic to cater for.

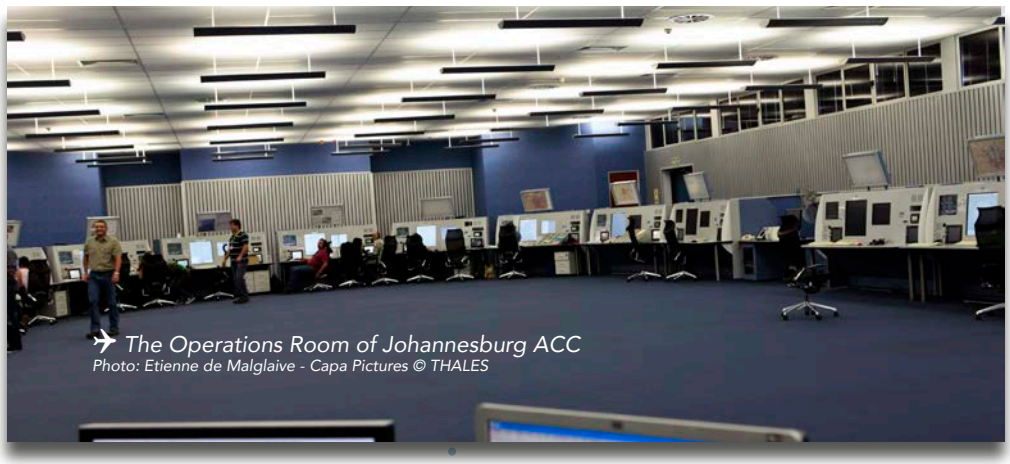
Photo: DP

The GATCSA Executive Board, from left to right: Poovendran MOODLEY, Peter VAN ROOYEN, Brendan PROCTER, Whitney STONE and Megan EVANS

On the radar positions, they currently do not apply a 4-eyes principle: there's only one controller on the position with a multi-sector planner/assistant covering 2 or more sectors. On radar sectors, this person is also a radar controller but on non-radar sectors, it is often a Flight Data Assistant.

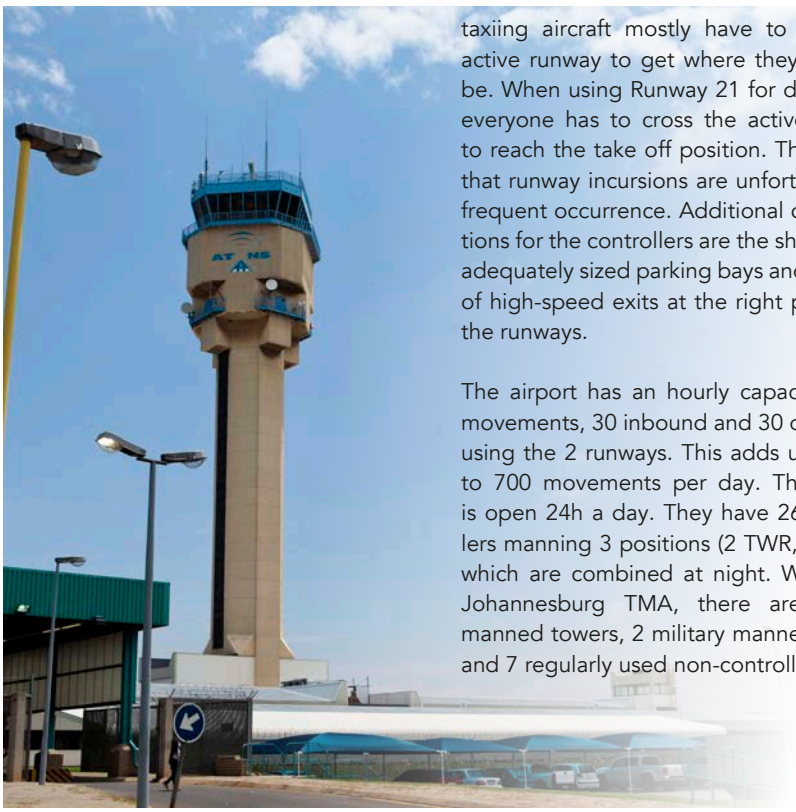
Common to all sectors is the large amount of verbal coordination needed, especially with the neighbouring, non-radar sectors. This includes all South Africa's neighbouring ACCs. This also means having to transition from procedural to radar separation and vice-versa all the time.

With two parallel runways, the main airport in the country is O.R. Tambo International in Johannesburg (ICAO: FAOR). As it lacks a central terminal,



The Operations Room of Johannesburg ACC
Photo: Etienne de Malglaive - Capa Pictures © THALES

This also means having to transition from procedural to radar separation and vice-versa all the time.



taxiing aircraft mostly have to cross an active runway to get where they need to be. When using Runway 21 for departure, everyone has to cross the active runway to reach the take off position. This means that runway incursions are unfortunately a frequent occurrence. Additional complications for the controllers are the shortage of adequately sized parking bays and the lack of high-speed exits at the right places on the runways.

The airport has an hourly capacity of 60 movements, 30 inbound and 30 outbound using the 2 runways. This adds up to 600 to 700 movements per day. The airport is open 24h a day. They have 26 controllers manning 3 positions (2 TWR, 1 GND), which are combined at night. Within the Johannesburg TMA, there are 5 civil manned towers, 2 military manned towers and 7 regularly used non-controlled strips.

Fortunately, this very complex environment for the area and airport controllers in Johannesburg seems to be supported by a decent ATS system and what seems to be a supportive employer, ATNS. Working conditions and salaries have been improved recently to a more competitive level and everyone seemed to be relatively well off. They expect a new ATS system – again from Thales – and the introduction of Performance Based Navigation at most regional and satellite airports. This will help the controllers overcome some of the difficulties in this booming aviation environment. ✈

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FLYING VFR IN SOUTH AFRICA

Great facilities, tricky weather

by Philippe Domogala, Deputy Editor

General aviation (GA) is very well developed in South Africa. There are plenty of possibilities to fly using one of the numerous flying schools or aero clubs. There are many small airfields and private airstrips spread around the country. Combine this with the low price of fuel – AVGAS costs less than 20 Rand or 1,20 euro/liter, around half of what it is in Europe – and it easy to consider it general aviation paradise.

But as convenient and easy as this may sound, for the average non-African pilot the weather is the main concern and challenge. Not only are the temperatures generally higher, but there's also CBs to take into account. These are frequent and massive in comparison to what we get in Europe, especially seen from a tiny VFR aircraft! Throw in a few mountains and turbulence and you get the picture.

✈ *The RV12, with its pitot tube (left) and glass cockput (right)*

All photos: DP

Graham, a controller from Johannesburg (JNB) owns a homebuilt RV12 and offered to take me along from nearby Springs airfield (FASI). The uncontrolled airfield, some 20 NM East of JNB, is rather large with a 1400m asphalt runway. All aircraft are parked in hangars due to weather and security reasons. Graham's RV12 is a brand new and extremely nice double seater. Its metal construction is powered by a 100 HP Rotax engine. One striking feature is its pitot tube, which sticks out of the propeller cone, a bit like the gun on a German WWII Messerschmitt 109! The cockpit has two Dynon displays and looks just like a mini Airbus!

While visibility was superb on the day we picked, there were Cbs lurking in the North. Taxiing was no problem and the afternoon temperature was a very mild 22°C. That meant that the airfield's elevation, 5350 ft, wasn't much of a factor but air density can be an issue during hot summer months.

During our take-off run, a local truck who was obviously not monitoring the frequency was slowly crossing the other end of the runway. Fortunately, we managed to get airborne well before that became an issue, but it was a nice reminder that things are always a little different in this part of the world.

Soon after take-off, we noticed that the Cbs on the horizon were getting darker and more threatening by the minute. So we decided to remain near the airport. Handling the aircraft was superb, like almost all RVs I've flown. The ailerons, in fact flaperons, occupy the whole wing, just like on an aerobatic aircraft. The roll rate is impressive, controls are very reactive, a pleasant aircraft to fly.

Watching and keeping the parameters on the Dynon display needs a bit of getting used to for me flying with good old clocks, but it looks simple enough.

The aircraft being so light makes it very sensitive to turbulence, (frequent here, especially in the afternoons), making long fights not so attractive. The aircraft is equipped with an electric auto pilot, but it often disconnects in turbulence, so Graham tells me that most of his flights are 1 to 1,5 hour around his base.

The cockpit has two Dynon displays and looks just like a mini Airbus!

Reading some South African Aviation magazines, one see that that pure VFR operations are a problem with many accidents due to VFR flights accidentally entering IMC conditions . In fact most GA pilots in SA are IFR rated.

In a nutshell: wonderful possibilities to fly, but be wary of the weather and turbulence. Try and fly early in the morning and remember, this is a different part of the world!

dp@the-controller.net

All photos: DP

JOHANNESBURG BOEING BAR

The only pub in the world with an original Boeing 747 cockpit

by Philippe Domogala, Deputy Editor

Overlooking the threshold of runway 03R at Johannesburg's O.R. Tambo International Airport is a pub. While the terrace has an excellent view, as it is less than half a mile away from the airport, it has an even more striking feature: the nose section of a Boeing 747 with full cockpit instrumentation is the centre piece of the establishment.

The walls are decorated with South African aviation photos and memorabilia. Loudspeakers broadcast live ATC communications from the nearby airport. One of the tables even allows you to have a drink while operating the trust levers of a Boeing 737.

But it's of course the cockpit of the Boeing 747 that draws the most attention. The airframe sacrificed for this was ZS-SAL, the very first B747 delivered to South African Airways back in 1971. It was finally withdrawn from service in 2004, after 32 years of service. The nose and cockpit instrumentation were rescued from being scrapped. A group of volunteers rebuilt it for the pub. Initially it was outside, but to protect it from the elements a cover was added covering it.

The owner of the pub is a retired captain from South African Airlines (SAA). The pub is called Hi-Flyerz and is located a few minutes from JNB O.R. Tambo airport, on the other side of the terminal area. As it is open every day, it is definitely worth a visit if you find yourself in Johannesburg someday.

All photos: DP

SPANISH ATC: 5 CRISIS YEARS LATER

The continuing aftermath of the 2010 Royal Decrees

by Ignacio Baca, Contributing Editor

Air traffic controllers in Spain have lived in very unusual and unpleasant circumstances over the last five years. Their situation has drawn interest and support from our fellow controllers abroad. Some of the questions I have had at international gatherings of air traffic controllers include: How did everything begin? What is the actual situation? How are you dealing with it? How do you think it will evolve? Though there are no easy answers, I will try to give you an overview.

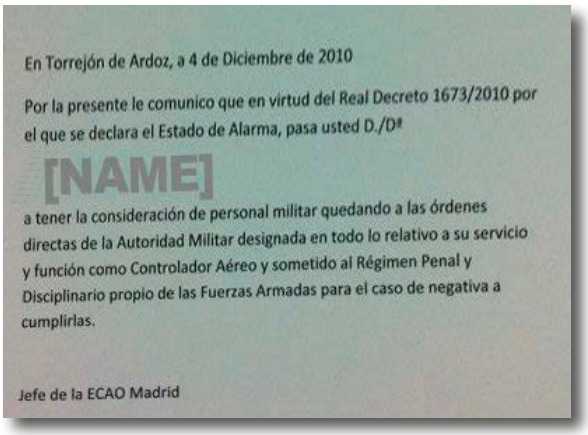
How everything began

Traditionally, Spain used overtime to deal with air traffic controller shortages. Spanish service provider AENA and the controllers' union routinely agreed on overtime arrangements. In April 2010, one of such agreements was set to expire, so everyone expected either a new agreement, or at least an extension of the old one. But the situation was different from previous years: the number of flights was dwindling and a project to privatise some or all of the Spanish airports would likely face opposition from the controllers' union. The deadline for a new agreement, April 1st, was also the beginning of Easter holidays so there was a lot of pressure to reach an agreement to ensure sufficient control staff was available after this date.

Some form of pressure is not unusual during negotiations, but this time tension was unusually high: the ANSP had launched a media campaign, in which they critically accused the controllers of being privileged workers with high salaries, responsible for all air traffic delays. Initially, it looked like some dirty tactic to increase pressure on the controllers, but the impact of it became clear on February 5th: a government decree cancelled the collective agreement between the service provider and the controllers' union and imposed new conditions. Many reacted with disbelief, as the Spanish Constitution protects labour bargaining as a fundamental right. Despite this, the media campaign and a political system that practically allows a Government to abuse power in this made such a measure a reality.

The 2010 crisis

The decree was the beginning of a never-ending amount of changes for controllers. The yearly maximum working time was increased by 45%. Controllers became subject to an absurd working system that could summon them to work with less than 24 hours notice. As any expert In Human Factors would have predicted, fatigue and stress took their toll and safety clearly suffered as a result. Not surprisingly, 2010 set a new record with 47 class A incidents. Rather than safety, productivity became the paramount objective. But nothing was enough to cover the incompetence of a management that was unable to understand how air traffic control works and what is really needed to provide the service. By November, it was evident that many controllers at various facilities were reaching the maximum allowed working yearly time as defined in the government decree. The first unit that faced a shortage of controllers was Santiago de Compostela, where controllers perform Tower and Radar Approach duties. "Imaginative" solutions, like trying to



En Torrejón de Ardoz, a 4 de Diciembre de 2010

Por la presente le comunico que en virtud del Real Decreto 1673/2010 por el que se declara el Estado de Alarma, pasa usted D./Dª

[NAME]

a tener la consideración de personal militar quedando a las órdenes directas de la Autoridad Militar designada en todo lo relativo a su servicio y función como Controlador Aéreo y sometido al Régimen Penal y Disciplinario propio de las Fuerzas Armadas para el caso de negativa a cumplirlas.

Jefe de la ECAO Madrid

Convocation letter sent to controllers in December 2010

In 2010, a media campaign targeted controllers.
Photo: DP

Fatigue and stress took their toll and safety clearly suffered as a result.

have both services performed by a single controller at the same time, were rejected by controllers. This resulted in disciplinary measures against them. As December approached, it was evident that facilities like Santiago or Madrid ACC would no longer be in a position to provide air traffic services due to staff shortages.

The same managers that had advocated the need for the February decree, were in November calling for an amendment to increase the number of working hours. The State's Legal Services were however opposed to such a change. The management had no more space to manoeuvre and the government's extreme measures to "ensure an uninterrupted air traffic control service" were about to backfire: air traffic control in Spain was on the verge of collapsing.

To describe every detail of what happened on December 3rd is not possible here, mainly because the matter is still subject to a legal battle. The government issued another royal decree, effectively placing air traffic control under military rule. Such an extreme measure was difficult to explain to the public. To justify it, the airspace was closed for 24 hours and the blame was completely placed on the controllers, who supposedly had left their positions. They carried this farce as far as decreeing a "State of Alarm", legally only possible for a natural disaster. The State Public Attorney even declared that controllers were guilty of sedition under a law Issued by the late dictator Francisco Franco - such a law was supposedly no longer applicable after the enactment of the Spanish Constitution in 1978.

The current situation

Despite the efforts of the controllers' union USCA, the old labour agreement was not reinstated, but replaced by a binding "award" worked out by an arbitrator. Since then, the controllers' union has had to frequently file complaints about the employer not adhering to these provisions. This despite the fact that the arbitrator's stipulations matched the wishes of the ANSP very closely...

Air traffic control services were privatised at 12 towers, where FerroNATS or Saerco* won the contracts. Controllers that were working in such towers before privatisation were transferred to ACCs.

Controller recruitment also dramatically changed: in the past, applicants had to pass a very demanding selection process to be trained at the provider's expenses. Today, new controllers are expected to pay up to €48,000 to obtain a licence without any guarantee of being hired. This seems to be part of the bigger plan, as outlined by the responsible Minister at the time. He said that the solution to have a cheaper air traffic control service was to have 3.000 unemployed controllers to pick from... The controllers hired for these 12 towers work under a labour agreement signed by non-controller unions. Some of the provisions of this "agreement" are unheard until now to say the least: for example, controllers can't leave their job unless they give seven months notice.

✈ *Protest signs on controller working positions.*
Photo: DP

Controllers that were on a late or night duty on 3rd December 2010 or on a morning shift of 4th December 2010 were charged with sedition or abandoning of a public service/function. During the following years, every court of instruction has exonerated the controllers. A notable exception was Madrid, where the investigation has passed from one judge to another. An unprecedented 9 judges in a row have now reviewed it. The last one has issued a ruling to put some 130 controllers on trial.

For controllers who have been exonerated by the legal system, worries continue: they face what can only be described as harassment from the management. In Barcelona, 62 controllers, who were first indicted and then exonerated by the judicial system, have been subjected to disciplinary measures. Their employer suspended them for one month as soon as it became clear they would not be convicted in court. The union had no other option but to call for a strike to protest this treatment. The government forced controllers to provide a minimum service whereby 70% of controllers would have to work. To ensure this 70%, 100% of the operational controllers were requisitioned to work. The only ones allowed to go on strike were the non-operational controllers, in management positions for example.

It is obvious that it is the legal issues continue to be the greatest worry for the union. Fortunately, some court rulings have given us confidence about the future. For example: the disciplinary measures for refusing to work both tower and radar approach control at the same time in Santiago de Compostela were challenged in court. The ruling was in favour of the controllers. It's worth mentioning that IFATCA was asked to provide a technical report, which was presented to the judge. One of the Santiago controllers was also fired for other reasons. He also won his case in court, but he has yet to be reinstated, which obviously also remains a high priority for the union.

The future

It is obvious that the current situation is bad for everybody: controllers and management are still at very much at odds. The situation is likely to remain deadlocked while a controller is still not reinstated, the suspension of 62 others is reversed and legal action against 130 others continues – in spite of more than 20 judges throughout Spain ruling otherwise.

Recently, a new CEO took over as head of the service provider. One of his first actions was to issue a conciliatory letter. But controllers are very weary and want to see actions rather than words. It is clear this is about more than social conflict: tensions led to 47 class A incidents in 2010. No one has measured the effects of what has happened to controllers over the past 5 years, especially on those 130 who've had to work everyday knowing they would have to endure a long legal battle.

The key to solve such an irrational situation is to try and establish mutual respect and trust between controllers and management. But in the current circumstances, this appears to be very complicated if not impossible to achieve... ⊛

ignacio.ifatca@gmail.com

* not to be confused with Serco

FREE ROUTE AIRSPACE

Helping the push forward in Europe

by Razvan Bucuroiu, Head of Operations and Planning, Network Manager Directorate, EUROCONTROL.

FRA stands for Free Route Airspace, a key priority for the Network Manager. Since 2008, EUROCONTROL has been coordinating the development and implementation of FRA through a cooperative partnership approach involving civil and military experts in airspace design, ECAC member states, air navigation service providers (ANSPs), airspace users, flight planner organisations and relevant international bodies.

The Network Manager sees FRA as making a major contribution towards overcoming efficiency, capacity and environmental challenges, as well as an intermediate step on the road to SESAR business trajectories and 4D profiles. By the end of 2014, almost half of the 64 European ACCs had implemented various steps of Free Route operations, reducing flying distances by approximately 7.5 million nautical miles – that's 45,000 tons of fuel saved, reduced emissions of 150,000 tons, and €37 million in savings.

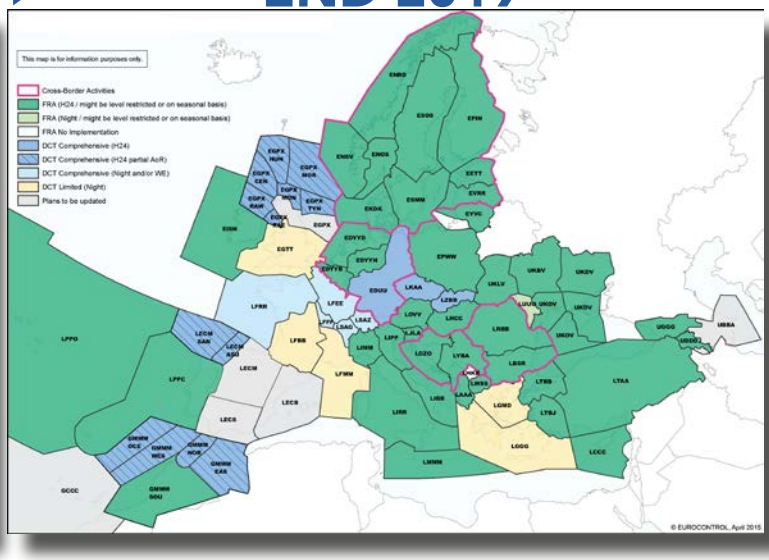
The EUROCONTROL Experimental Centre (EEC) in Brétigny, near Paris, plays a major part in driving airspace design, and in particular FRA, forward through our world-class simulation and validation facilities, where we regularly host ANSPs, individually or collectively, keen to conduct fast-time simulation evaluations of workload and capacity, or run large-scale real-time simulations (RTS).

The latest successful RTS was with AVINOR, the Norwegian ANSP, when we conducted an RTS over a two-week period in January 2015, enabling them to complete their validation activities and confirm that they are ready to implement FRA in Norway. As a partner of both NEFAB (North European Functional Airspace Block) and NEFRA (North European Free Route Airspace Programme), AVINOR needed to ensure implementation readiness complied with the relevant Concept of Operations and Network Plans agreed by all partners.

"*The RTS activities conducted with EUROCONTROL allows us to go forward with confidence towards implementation (planned to start in October 2015), it has permitted us to satisfy safety requirements and fine-tune our airspace design, our sector realignment proposals and our rules and regulations. We have identified specific training areas in preparation for implementation and requirements for ATC system support tools enhancement for the immediate and medium-term future.*" explained Helge Bjertnaes, FRA Project Manager (AVINOR).

"*The RTS was realistic and convincing;*

SUMMER 2015 ⇨ **END 2019**



All the required elements are fully in place to continue with the further implementation of cross-border free route airspace in Europe.

it created ATCO understanding and buy-in. Our thanks to the EEC team who were very professional, flexible and reactive to our needs" said Kjetil Berakvam, Avinor FRA Core Team Leader.

Another very large Real-Time Simulation is scheduled In October-November in the EEC; the main objective is to test whether the Free Routes planned are implementable cross-border between Romania and Bulgaria.

Cross-border FRA fully mature to progress implementation

The Cross-border Free Route Airspace Implementation workshop organised by the Network Manager on 29-30 June 2015 enjoyed an unprecedented level of participation with more than 250 participants from 43 different States, European and worldwide.

The expectations were fully met and the workshop delivered the road towards seamless Free Route Operations for the airspace users and for the entire European ATM network; a harmonised way forward on a number of operational issues and the identification of those additional aspects that require further work.

Together with the participants, we have concluded that all the required elements are fully in place to continue with the further implementation of cross-border free route airspace in Europe. We have addressed a number of additional improvements through fine-tuning and we have also agreed to further improve the link between NM systems, local ATM systems and aircraft operators' flight planning systems. As Network Manager, we will continue to facilitate the implementation of Free Route Airspace across the European ATM network.

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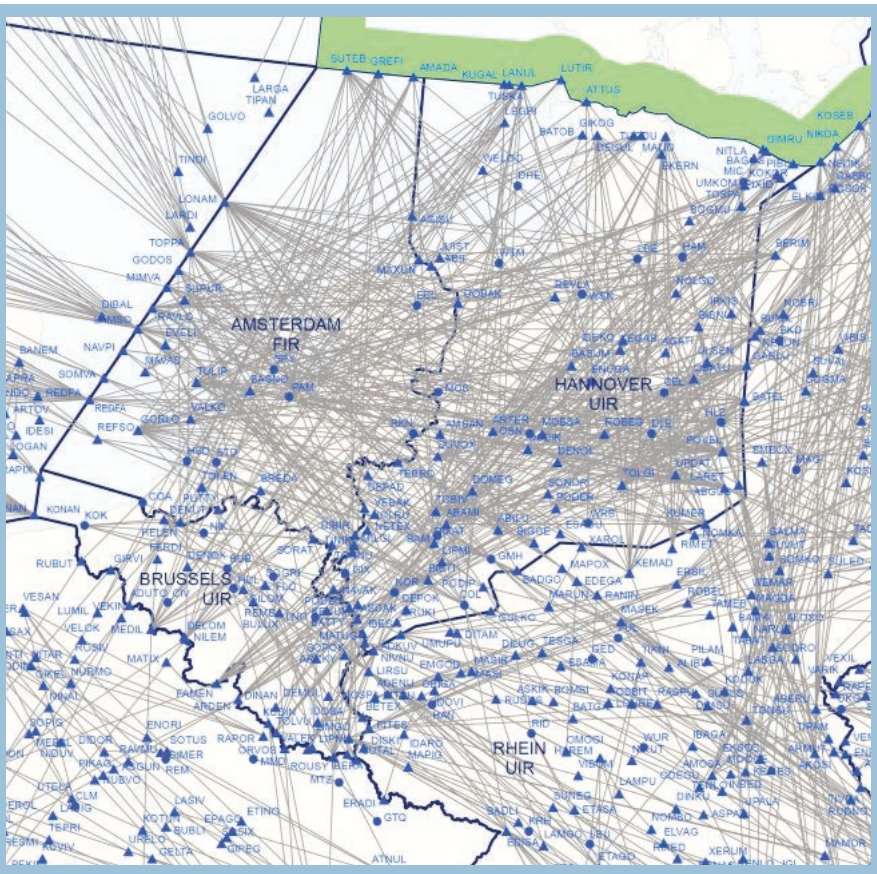


An example of Free Route Airspace in the core area of Europe

The Free Route Airspace Maastricht and Karlsruhe project spanning the airspace over Belgium, Germany, Luxembourg and the Netherlands has been commended for saving tonnes of CO_2 emissions and has been included in the Aviation Climate Solutions, a collection of one hundred examples of how the aviation industry is collaborating to help reduce its impact on climate change.

This project offers a network of 466 cross-border direct route options. Using these routes, airlines can benefit from an annual reduction of route length of 1.5 million nautical miles which corresponds to a reduction of 30,000 tonnes of CO_2 emissions. All in all, 9,000 tonnes of fuel can be saved.

Up to 80 percent of aircraft that can fly the direct routes actually use them. With these routes, airlines can plan more efficiently, less fuel has to be taken on board, and there are fewer deviations from flight plans.

The network was established in 2014 by the German air navigation service provider DFS Deutsche Flugsicherung in partnership with EUROCONTROL's Maastricht Upper Area Control Centre (MUAC) and Lufthansa. The project was co-funded by the SESAR Joint Undertaking.

More information

http://www.eurocontrol.int/articles/free-route-airspace

GNSS BASED ALTIMETRY

The need for and advantages of increased precision

by Bill Holtzman, IFATCA Technical & Operational Committee

The history of aviation is filled with incredible innovations for pilots and air traffic controllers. Technologies like VOR, ILS, radar, Mode C, RNAV and RVSM were huge improvements to the airspace system. Each delivered dramatic benefits to users; each provided one very distinct advantage over previous methods: increased precision.

Some provided more precise data, some more precise position information and some enabled more precise communications between controllers and pilots. But all added precision. This has been the theme of aviation technologies since the Wright Brothers. What will be the next big improvement in precision? Obviously, Datacomm and ADS-B are on the way, but what is beyond those?

Barometric Altimetry has been a bedrock of aviation since Jimmy Doolittle flew the first blind flight on September 24, 1929 from Mitchel Field on Long Island.

Paul Kollsman, a German engineer, supplied the barometric altimeter for that flight. The device, which we still use today, contains a wafer that expands and contracts with external air pressure. These changes turn a rod that makes the needles in the gauge turn. The device is nothing more than a pressure sensor calibrated to show altitude. It's a beautiful instrument, but what's most amazing is its longevity. In our technology-addicted world, this device has lasted for an incredible 87 years.

✈ *Jimmy Doolittle made the first "blind flight" on September 24, 1929.*
Photo: NASM Archives, Smithsonian Institution

It seems natural to expect that at some point, such an ancient technology would become a hindrance to progress. In today's demanding, high altitude, high performance and high precision environment, the use of this 87-year old device is indeed a major hassle. We don't realize it because we're so accustomed to using it and never had an alternative. So take a step back and consider what we endure every day.

Diminishing precision

Since it really measures air pressure, the barometric altimeter must assume a specific correlation between pressure and altitude – the Standard Atmosphere. Standard Atmosphere pressure changes less at higher altitudes, where barometric altimetry becomes less precise. This is why the vertical separation standard increases to 2000' at FL 410.

Height Monitoring Units

The same 2000' standard existed above FL 290 before RVSM. Methods of insuring altimeter accuracy are required in RVSM however, including the regular monitoring of performance from ground-based Height Monitoring Units – HMUs. Maintenance and use of HMUs are a significant resource burden in the support structure of barometric altimetry. Graph 1 shows how an HMU identified an issue with an aircraft's pressure sensors. Only the tedious, costly monitoring of altimeters makes RVSM possible.

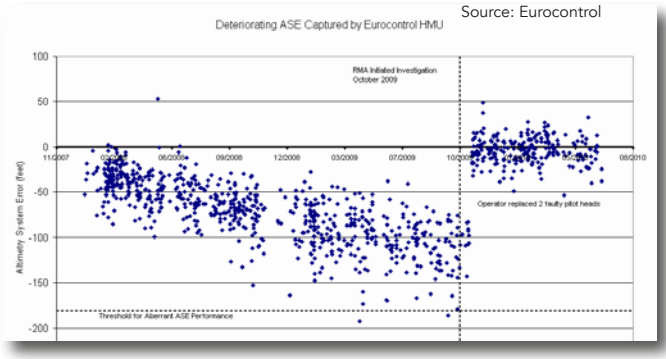
Barometric Altimetry has been a bedrock of aviation since [...] 1929

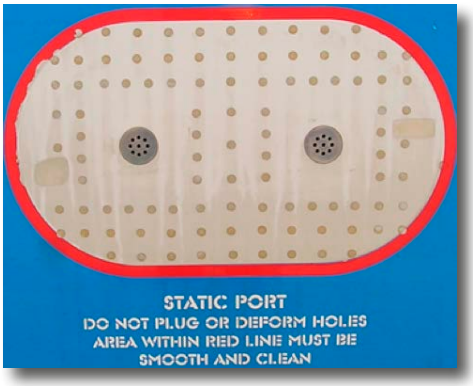
Altimeter settings

Aircraft below the transition altitude require a local altimeter setting. The infrastructure needed to support the hourly measurement and dissemination of this data is vast and expensive. A lot of radio frequency time is required of controllers to issue the settings individually to each pilot. A further issue involves aircraft passing each other but using different settings because they are in contact with different controllers. Altimeter setting errors by pilots are as easy as turning a dial too far or transposing a digit but can be catastrophic:

- ✈ 12 Nov 1995 - AAL 1572. Pilot entered the wrong setting and this led to an unstable approach in which trees were clipped and the aircraft crash-landed at Hartford, CT.
- ✈ 10 Apr 2010 - Polish Air Force TU-154. A crew member set the standard atmospheric setting, causing the altimeter to read 170 m high and silencing the Terrain Awareness and Warning System. Amongst the 96 victims were the President of Poland, Lech Kaczynski, and his wife.

✈ *Graph 1: Height Monitoring Unit are used to detect inaccurate altimeters.*





✈ *Static ports on an aircraft fuselage.*

Inspection and design

Tiny objects and organisms can literally destroy the integrity of the barometric altimeter. The safety of the aircraft rests on these little holes remaining clear of debris, paint, bugs and dirt, as well as the avoidance of any distortions in the 500 knot airflow sweeping past. AF 447 fell out of the sky partly because one of these holes froze over. Pilots must inspect their aircraft with incessant and tiresome vigilance.

Other Limitations:

- ✈ Very cold temperatures distort the Standard Atmosphere correlation between pressure and altitude.
- ✈ Depending on the atmospheric pressure, airspace is wasted around the transition level/altitude.
- ✈ Cruising at constant barometric pressure as we do today, aircraft climb and descend reference the Earth's gravitational field, requiring power changes.
- ✈ Separation standards between aircraft and with terrain include large buffers because of the imprecision of barometric altimetry.
- ✈ Whether FL 350 is actually 35,000 ft above mean sea level does not matter for separation between aircraft, since they all use a common reference. But there are other concerns in today's world of trajectory-based operations (TBO).

Modern PBN procedures give aircraft the ability to choose customized climb and descent paths. On graph 2, the green trajectory is the ideal, with idle engines all the way down to landing. The red is typical of today. Barometric altimetry is not a friend of these methods because of its imprecision.

A paper on this topic states[3]:

"*The use of barometric altimetry…reduces the potential of the trajectory based operations capabilities. However, geometric altimetry could be used to improve…these aspects.*"

And:

"*Today's continuous descent approaches, with close to idle engines regime, is not practicable mainly due to the lack of FMS defined geodetic flyable trajectories for vertical profile.*"

The potential energy of the aircraft in cruise – and therefore the optimum descent profile - depends on geometric height, not pressure-derived height.

This discussion begs the question, why do we even use 1000 feet for separation? This standard is almost as old as the barometric altimeter. In today's world the standard has been "reverse-engineered" using collision modeling and probabilities, but in its day it was something of a wag, a guess. It's easy to say, easy to understand, and provides large buffers. The allowable error under RVSM is 245 feet, a massive percentage of the total relative to modern tolerances. What if we could find a more precise way to measure height and reduce that?

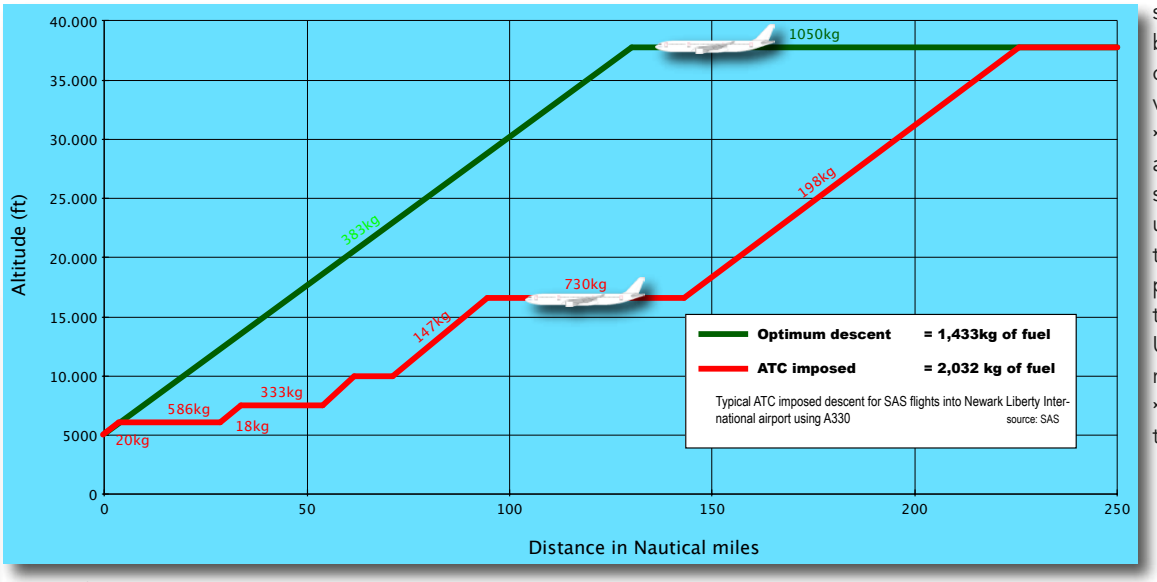
Increased precision

The experience of transitioning to RNAV and RVSM environments taught modern controllers and the aviation community the tremendous value of increasing the precision of lateral and vertical measurement. RVSM helped barometric altimetry survive, but when will it be time to finally replace this antiquated technology?

Today's Global Navigation Satellite Systems (GNSS), such as GPS, offer us a glimmer of hope that there is a legitimate alternative to barometric altimetry for the first time in history. Satellite systems are not only able to determine your position on the surface of the Earth, they can determine your altitude as well.

GNSS-based altimetry is actually already in use in aviation.

- ✈ Terrain Awareness and Warning Systems provide protection against controlled flight into terrain. A 1998 Allied Signal description of their Enhanced Ground Proximity Warning System says, "Since no single sensor can provide an accurate geometric altitude through all phases of flight and atmospheric conditions, the EGPWS computes an estimated average altitude using Pressure and GPS Altitudes, aircraft position, and the internal runway and terrain databases."
- ✈ GNSS landing systems, which use satellite signals to create a virtual ILS path, use some elements of GNSS-based altitude.
- ✈ The ADS-B Out message can include GNSS-based altitude and also can include GNSS-based vertical rate.
- ✈ The ICAO Separation and Airspace Safety Panel strongly encourages the use of GNSS-based altitude ADS-B data to replace the previously mentioned Height Monitoring Unit, which is limited in range to 40 nm.
- ✈ Paragliders use GPS altitude in competitions.



✈ *Graph 2: Advantage of Continuous descent profiles*

✈ *Google's Solara high altitude drone and Loon Balloon.* Photo: Google

- The transponders of Google Loon balloons being tested in Australia report GNSS-based altitude. These balloons operate above 50,000' and provide internet to remote areas.

Does it really matter that barometric pressure fails us at higher altitudes? We don't have much traffic up there, right? Wrong. The Loon balloons are up there, Virgin Galactic and other space ventures are going up there, and Google and Facebook both are building unmanned vehicles intended to patrol the stratosphere above 50,000' for years powered by solar energy. More and more commercial air traffic is venturing into this space as well.

Operational use?

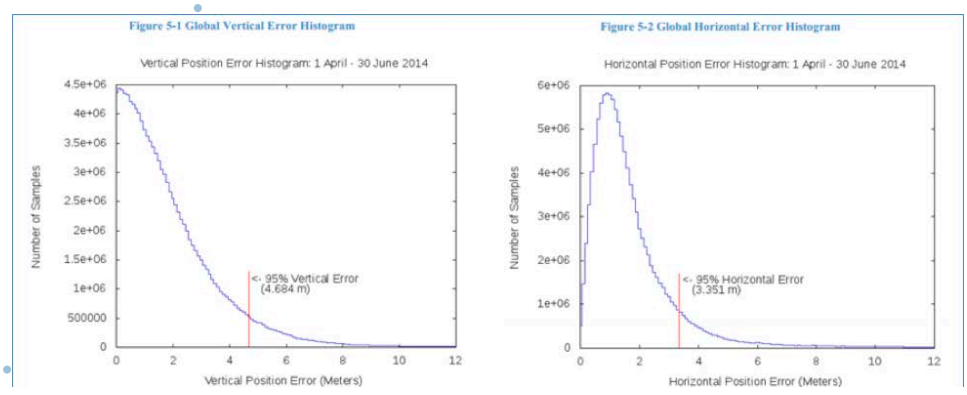
So why don't we use GNSS-based altimetry today? The plain answer is it isn't ready. Position determination requires four or more satellites in view. It is calculated based on the time required for a radio signal to reach the receiver from each satellite. But the determination of a GNSS-based altitude is more problematic, and depends on having not only enough satellites in view but also having some of them at lower angles in the sky.

Receiver autonomous integrity monitoring (RAIM) is a GPS technology in which the aircraft performs self-contained fault detection of satellite data. RAIM compares each satellite measurement to other available satellite measurements to detect the presence of a faulty satellite within those in-view. But RAIM only supports lateral navigation, not vertical. The vertical accuracy of a GNSS-based receiver is typically 50% worse than the horizontal accuracy. Some GNSS receivers do not compute a vertical integrity limit.

To mitigate these issues, satellite-based augmentation systems such as the US WAAS and the European EGNOS use a network of ground stations to collect GNSS satellite data, determine corrections and broadcast those corrections through satellites to the users. This enables vertical integrity with today's GNSS, as shown in the graphic published by the FAA Tech Center[4].

But satellite-based augmentation systems are regional not global. For a global solution to improving vertical integrity, additional GNSS constellations are needed. While the Russian GLONASS is operational, it does not provide enough coverage. With a second constellation of adequate coverage, advanced RAIM (with vertical integrity) is possible with vertical guidance for precision approaches.

In 2010, the FAA GNSS Program Office performed a simulation analysis on historical data and found that, with a second GNSS system such as the European Galileo in place, "ARAIM would have provided adequate integrity performance throughout 2008 and 2009."[5]



✈ *WAAS enables GNSS vertical position performance comparable to lateral.*

✈ *Galileo satellite launch.* Photo: ESA

Galileo just launched two more satellites in March 2015 and expects to be fully operational by 2020. This could provide the second constellation needed to support vertical navigation.

A 2010 agreement between the EU and US ultimately aims to provide ILS-like guidance into every airport in the world using a multi-constellation concept. If achieved, it could then become feasible for GNSS-based altimetry to become the primary means of measuring altitude in aviation.

While air pressure can always be measured by any participant of the air traffic system or any aviator, GNSS-based altimetry is entirely electronic and all electronic systems are vulnerable to system-wide outages. In 2014, the Russian GLONASS system had a major outage lasting 10 hours.

Individual satellites will require maintenance and some will fail. When enough are out of service, the constellation loses its integrity and its services will be degraded. This is a threat to any GNSS-based system. Another major threat is interference. The

GNSS signal is extremely weak by general radio standards, as it comes from 12,000 miles away and reaches the user at the same level as background noise. It can be easily overwhelmed by other transmissions on the same or close frequency, solar activity, ionospheric storms, and intentional jamming.

Interference can be mitigated by the use of multiple frequencies. The original GPS used just one frequency for civilian applications, L1. Newer GPS satellites are equipped to provide frequency diversity with L5 and L2C signals.

The century-old trend of increasing precision in aviation systems will continue into the future. Fundamentally, the majority of increases to air traffic safety and efficiency have relied on increased precision in aircraft navigation, position and altitude information. The use of GNSS-based altimetry as the primary means of separation of aircraft and terrain will bring huge benefits similar to the introduction of GNSS-based navigation in the lateral realm. GNSS-based altimetry is the natural step forward in the evolution of the world's air transportation systems.

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If you're planning to attend the 2016 IFATCA Conference in Las Vegas, start thinking about your visa requirements NOW. To attend a Conference, US regulations state that you need to apply for a BUSINESS Visa – not a Tourist one. If your country is not one of the ones that participate in the Visa Waiver program for the USA, then **the process to get a visa can take several months**.

The website of the 2016 Organising Committee, www.ifatca2016.com, has links to all the necessary information: go to the tab "Plan your visit", then "Travelling to the US". This will re-direct you to the USA Government Visa website, where each country is listed. If you need a visa, the procedure to apply for one is also there.

There is a 160 USD non-refundable application fee, a visit to a US embassy or consulate is mandatory in most cases. As indicated before, the time to process your application can take up to 6 months. **Since the Conference takes place in March, there is no time to waste!**

It's also worth noting that this is not something IFATCA, or the Organising Committee, can influence or change. This has been made clear to us by the US immigration authorities that exemptions or special rules will not be made, so there is no point in contacting the OC or IFATCA office for exemptions.

Philippe Domogala, IFATCA Conference Executive

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UAV, UAS, RPAS, drones, Pope Francis and the future...

by Marc Baumgartner, IFATCA SESAR/EASA Coordinator &
Dr. Anthony Smoker, IFATCA ATM Research

On 15th of September the FAA published a **press release** inviting those persons planning to attend the visit of Pope Francis in the US to leave their drones at home. No drone zones were established. Who would have imagined that a papal visit would foster an understanding of the potential risks drones could pose to the public; highlighting security issues related to this new technology, never heard of before. From a PR point of view a lot of very good material has been made available by the FAA. The popularity of drones comes along with a regulator struggling to find a correct approach to this new technology and in particular highlights the challenges of a completely new approach to air traffic management.

New business models

The proliferation of civil drones poses a new challenge for the regulation of aviation. Drones offer the potential for new services in aviation and the potential to have reach far beyond aviation. They are developing into a new field of aviation that bears prospects for growth both in manufacturing and service provision. This innovation that drones have the potential to unleash comes in large part from a community who have no knowledge or understanding of the rites, rituals and history of aviation. What aviation assumes is a given in terms of safety is not with this community. The business models of drone start-ups will be different from those that aviation commonly has seen. The appetite and understanding of risk will be different.

Integration

There are, however, a number of risks that regulation needs to address. At the European level it has to be assured that regulation for drones is integrated into the existing system of aviation safety regulation and air traffic management in a way that is proportionate to the risk entailed by the different ways in which drones are operated. There is potentially an extremely varied use of drones: they are used for private as well as commercial purposes ranging from sport events to infrastructure inspection in the energy sector and possibly for the delivery of small cargo in the future. Apart from the immediate safety risk (mid-air collision with aircrafts, harm to people and damage to property and critical infrastructure), there are other public interests concerned such as privacy and security of citizens.

European regulators have started to address the issue, as drones have entered the European Commission's agenda. Also, EASA have proposed an approach that defines three categories of operations in order to strike a balance between safety and proportionality. This is an important first step, but regulation on drones will need to be developed further and this process needs to keep pace with the rapid development of the industry.

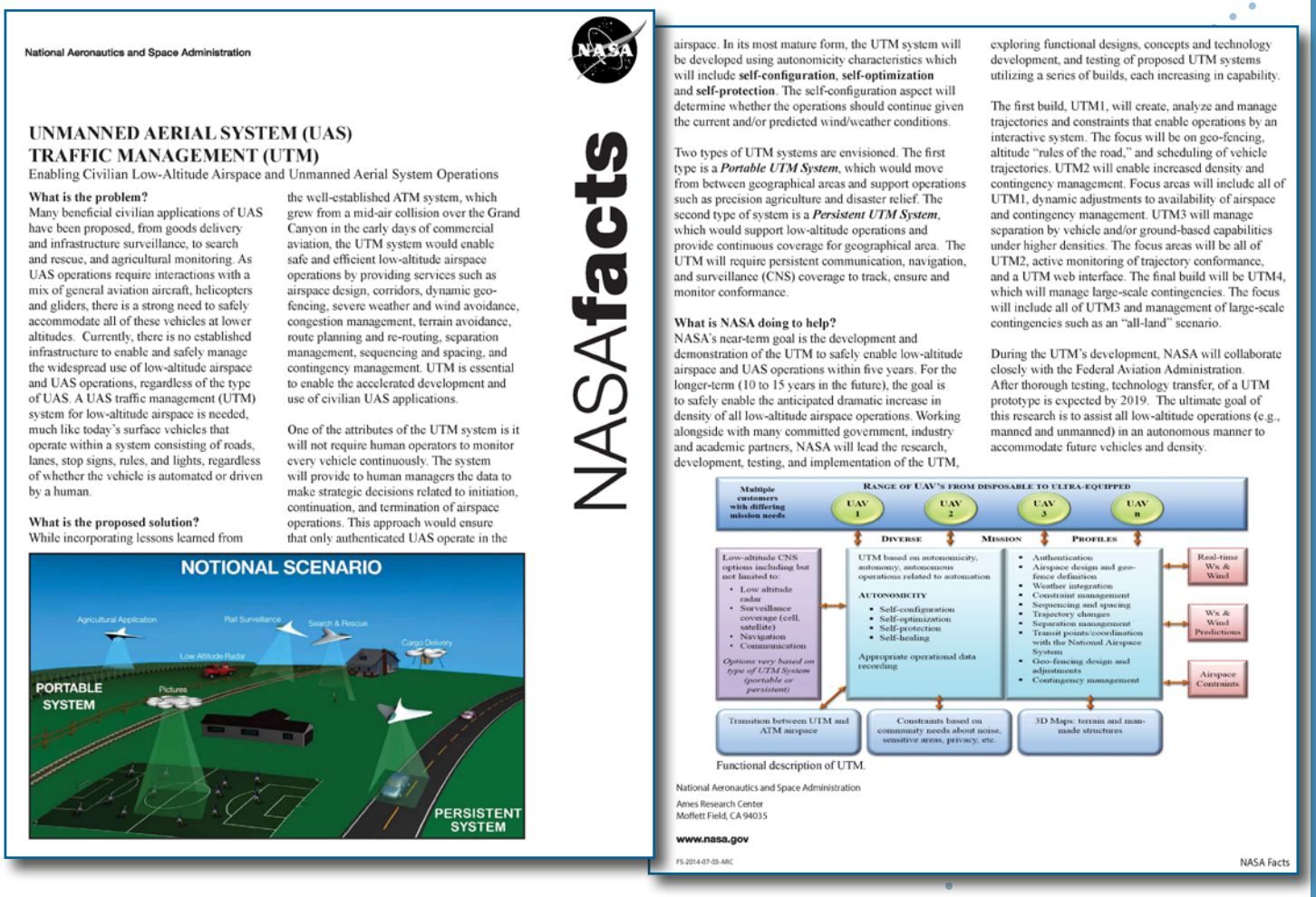
Seminar

Within this challenging context the Florence School of Regulation organised a one day seminar in Fiesole (Italy) during which 30 decision makers mainly from Europe gathered to discuss some of the current best practices and issues pertaining to this topic.

Presentations from Air Navigation Service Providers, EASA, the European Commission, Eurocae, Eurocontrol, national aviation authorities and the industry (manufacturer and Industry Consultation Body) managed to portray the challenges from a institutional European point of view. The FAA presented their approach to regulation and in particular the communication campaign linked to drones (see above) and the 'think before you fly'. Swiss Post shared their experience with the first applications of the use of drones to deliver parcels from one point to another and the representative of a new community (the UAS, UAV, drone users) informed the audience about Unmanned aerial system (UAS) Traffic Management (UTM) and the 1 million drones having been sold to date (versus approximately 40'000 registered commercial aircraft around the globe).

Urgency

The conclusion of the workshop identified a few salient points. Regulations are needed and it is with a sense of urgency that the participants reached a consensus on this point. The Regulators on both sides of the Atlantic have to take the lead as the reality and the technology might not wait for the regulations to be ready. One major point of discussion is the categorisation and the



National Aeronautics and Space Administration

NASAfacts

UNMANNED AERIAL SYSTEM (UAS) TRAFFIC MANAGEMENT (UTM)

Enabling Civilian Low-Altitude Airspace and Unmanned Aerial System Operations

What is the problem?

Many beneficial civilian applications of UAS have been proposed, from goods delivery and infrastructure surveillance, to search and rescue, and agricultural monitoring. As UAS operations require interactions with a mix of general aviation aircraft, helicopters and gliders, there is a strong need to safely accommodate all of these vehicles at lower altitudes. Currently, there is no established infrastructure to enable and safely manage the widespread use of low-altitude airspace and UAS operations, regardless of the type of UAS. A UAS traffic management (UTM) system for low-altitude airspace is needed, much like today's surface vehicles that operate within a system consisting of roads, lanes, stop signs, rules, and lights, regardless of whether the vehicle is automated or driven by a human.

What is the proposed solution?

While incorporating lessons learned from the well-established ATM system, which grew from a mid-air collision over the Grand Canyon in the early days of commercial aviation, the UTM system would enable safe and efficient low-altitude airspace operations by providing services such as airspace design, corridors, dynamic geo-fencing, severe weather and wind avoidance, congestion management, terrain avoidance, route planning and re-routing, separation management, sequencing and spacing, and contingency management. UTM is essential to enable the accelerated development and use of civilian UAS applications.

One of the attributes of the UTM system is it will not require human operators to monitor every vehicle continuously. The system will provide to human managers the data to make strategic decisions related to initiation, continuation, and termination of airspace operations. This approach would ensure that only authenticated UAS operate in the airspace. In its most mature form, the UTM system will be developed using autonomicity characteristics which will include **self-configuration**, **self-optimization** and **self-protection**. The self-configuration aspect will determine whether the operations should continue given the current and/or predicted wind/weather conditions.

Two types of UTM systems are envisioned. The first type is a ***Portable UTM System***, which would move from between geographical areas and support operations such as precision agriculture and disaster relief. The second type of system is a ***Persistent UTM System***, which would support low-altitude operations and provide continuous coverage for geographical area. The UTM will require persistent communication, navigation, and surveillance (CNS) coverage to track, ensure and monitor conformance.

What is NASA doing to help?

NASA's near-term goal is the development and demonstration of the UTM to safely enable low-altitude airspace and UAS operations within five years. For the longer-term (10 to 15 years in the future), the goal is to safely enable the anticipated dramatic increase in density of all low-altitude airspace operations. Working alongside with many committed government, industry and academic partners, NASA will lead the research, development, testing, and implementation of the UTM, exploring functional designs, concepts and technology development, and testing of proposed UTM systems utilizing a series of builds, each increasing in capability.

The first build, UTM1, will create, analyze and manage trajectories and constraints that enable operations by an interactive system. The focus will be on geo-fencing, altitude "rules of the road," and scheduling of vehicle trajectories. UTM2 will enable increased density and contingency management. Focus areas will include all of UTM1, dynamic adjustments to availability of airspace and contingency management. UTM3 will manage separation by vehicle and/or ground-based capabilities under higher densities. The focus areas will be all of UTM2, active monitoring of trajectory conformance, and a UTM web interface. The final build will be UTM4, which will manage large-scale contingencies. The focus will include all of UTM3 and management of large-scale contingencies such as an "all-land" scenario.

During the UTM's development, NASA will collaborate closely with the Federal Aviation Administration. After thorough testing, technology transfer, of a UTM prototype is expected by 2019. The ultimate goal of this research is to assist all low-altitude operations (e.g., manned and unmanned) in an autonomous manner to accommodate future vehicles and density.

Functional description of UTM.

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www.nasa.gov

FS-2014-07-03-ARC

NASA Facts

identification of what we are talking about. In trying to come up with a system of categories which would be open, specific and regulated, EASA has developed a single categorisation. The open categories themselves are differentiated according to defined operating scenarios. It has been mentioned several times that small UAVs (or toys) can be a danger for sensitive areas (such as airports, drivers of cars or the Pope). The issues are that it is not always possible to get hold of the operator(s) of these particular categories. There was a consensus that, from a regulatory point of view, the regulated RPAS would not be the real issue – as it will take another 10 to 15 years before they can be integrated in a sensible way into the ATM system. Where it is not clear are the more specific and open categories of UAV or UAS. It is worth noting that RPAS are structurally different than UAV or UAS. A drone is not just a drone. It is also worth noting that 'integration' issues may well surface in class G airspace. What value is the see and be seen concept of collision avoidance for example.

The current A-NPA will result in a "technical opinion" issued by EASA for the European Commission. The European Commission will then decide how to proceed.

From a technological point of view the interesting issues are that the open and specific categories might create a new environment from which ATM might be influenced or even inspired. Meaning that the disruptive entrance of new technology for Air Traffic Management might come from the handling of the UAV/UAS operating in this environment, which NASA calls the UMT. If a fully automated system for UAV/UAS drones is created which is basically doing automated air traffic control – the spin off in technology might be adopted by the current "classical" Air Traffic management environment.

The FAA seems to have a less prescriptive approach than the Europeans and a lot of efforts were put in place to educate any operator and or person operating a drone. ✈

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IFATCA 2015 Policy on UAS (Technical & Professional Manual)

HOW TO MANAGE PROFESSIONALS? DON'T!

Rules & Guidelines versus Shared Values

by Akos van der Plaat,
Unit Manager Operations at LVNL

The world of Air Traffic Control as I know it has changed. Obviously technology and new procedures have had their impact. But the biggest evolution by far is found in safety culture, professionalism and the influence and awareness of the 'outside world'.

Safety culture & professionalism

The safety culture has seen significant changes in the past twenty years. From a closed culture in which safety occurrences were not openly discussed to one where all incidents are investigated by colleagues with the purpose of learning from them. The perception of professionalism has changed too, maybe not so much from within the ATC world, but more so from the perspective of the 'outside world'. To illustrate this, this is what a former Dutch public prosecutor said: "Air Traffic Controllers are professionals and professionals do not make mistakes". I guess that we are the first group of professionals that do not make mistakes.

Transparency

The 'outside world' increasingly has access to all sorts of information, including details of our profession. They rarely have the full story and often things are taken out of context to fit a certain purpose. "Fact finding" through online resources, e.g. where live streams of radiotelephony and sites such as Flightradar24, is quite common these days. The world is getting more and more transparent and Air Traffic Control nowadays also lives in a glass-house. It is safe to conclude that technology has led to large changes in our profession, but also in our day-to-day life. In some countries answering a call on a cell phone in a meeting is quite normal, while this is highly inappropriate in others. Younger generations consider it completely acceptable to post pictures of basically everything and anything on social media. For older generations, this is hard to understand and might actually be considered as unwise. As society changes, so do our values. As technology is here to stay, the only solution is to cope with it through dialogue.

Distractions

Distraction at operational positions has been a subject for as long as I am a controller. It started with discussions about getting up to get a cup of coffee, but also about reading newspapers and other reading material. While the first cell phones had a major impact on the ATC environment, this was nothing compared to the immense changes that smartphones brought. The speed at which this happened was unimaginable, especially for what is generally considered to be a conservative group of professionals. Very quickly, we were confronted with some excesses of smart phone use while working live traffic. Even though values were changing, the general opinion was that this behaviour was unacceptable and that it should change. Our operational management at that stage decided to prohibit the use of cell phones on operational positions. This was accompanied with an explanation why and the Supervisors were made responsible to enforce the rule.

Ineffective

Colleagues were disappointed at the lack of appreciation for their professionalism and the level of adherence to the rule was mixed. It led to sneaky use of phones, also with supervisors setting a bad example. Worryingly, the only motivation for not-using the phone was the rule that was prohibiting its use. No one seemed to have an understanding of the risks, a sense of responsibility or any other intrinsic motivation for not using such a device. In addition, the discussion focussed on smart phones, while newspapers, tablets and walking away from an operational position were not addressed. Surely any form of distraction should be considered in such a discussion. Our rule prohibiting the use of cell/smart phones was not generating a broad discussion. Nor was it successful as phones were still used, often in a sneaky manner.

I guess that we are the first group of professionals that do not make mistakes.

Photo: © Georgejmclittle | Dreamstime.com

Interestingly, we also had several colleagues telling the management that the rule should be enforced by punishing individuals that were violating it. Interesting thought of punishing somebody in an environment where we have collectively been fighting hard to achieve a just safety culture.

A Different Approach

About two years ago, I accepted a position as Unit Manager Operations. As such, I was confronted with this failing policy from a management side. To my colleague managers and myself, the path of strict enforcement was not an option. Insight and inspiration on how to deal with the situation came from two sides. Firstly, ATC the Netherlands (LVNL) recently embarked on a major safety programme called 'Duidelijkheid in Veiligheid', which translates as 'Clarity in Safety'. One of the objectives of this programme is to make all employees of our company aware of their role in the safety chain. The framework of the Programme is a Basic Operating Policy (BOP) which lists a number of key values that we respect while we maintain and develop the ATM System, and while we deliver ATC. The pillars on which the framework rests are centred on safety through four topics: organisation; means – as in training, procedures, and systems; performance – including complying with regulations and performance standards in terms of safety, efficiency and environment; and humans.

✈ *Schiphol tower*
Photo: Håvard Kvalvik Berge

Not surprisingly, the most relevant pillar for the subject of distractions is the one of 'humans', which is centred on good controllership and considers tasks, rules & regulation and professional insight in unforeseen circumstances. Responsibility is the foundation on which the controller operates.

Organisation Types

The second source of inspiration was a Dutch university professor, Mathieu Weggeman. The title of this article is inspired by one of his books. Professor Weggeman focuses on the advantages that he sees in a model based on Rhine Capitalism over the Anglo-Saxon model. I will briefly try to explain the relevant essence of the differences. An organisation according the Anglo-Saxon model is coordinated through rules and guidelines, focus on planning & control and is a 'money-making-machine'. Management consists of trained managers and the expertise is the sole responsibility of the individual. In a model based on Rhine Capitalism, the organisation is coordinated through shared values, is based on a collective drive in an open culture and is centred on specialists and content. Managers are recruited from the group they manage and expertise is a shared responsibility of the company and the individual. Other pillars of that model are trust, responsibility and autonomy. There are plenty of examples of both types of organisations, and I wholeheartedly share the opinion of Professor Weggeman that the model based on Rhine Capitalism is the best road to success for organisations like the one I work in.

Our Safety Programme, together with the insights of Professor Weggeman, strengthened my belief that enforcing a rule that was prohibiting the use of phones would never be successful. Within the management team, we reached a consensus though only after some tough discussions. The result was

Enforcing a rule that was prohibiting the use of phones would never be successful.

that we discarded the rule that was prohibiting the use of cell/smart phones. At the same time, we put focus on making the controllers aware that they should always consider the safety of air traffic when doing anything on operational position besides their primary task of providing ATC. This broadened the scope to include other distractions such as newspapers, tablets but also chats and discussions while on position. The responsibility to act wisely, from an intrinsic motivation, lies primarily with the controllers. We expect our controllers, highly trained professionals, to take responsibility, to show 'good controllership' and not to betray our trust in them.

Culture Change

Now, this does not mean that there are no situations in which a colleague finds certain behaviour of another colleague unacceptable. As I wrote earlier: we are changing, so are our values, and the only solution is to stay in dialogue about these changes. Creating an open culture in which colleagues can provide feedback and discuss (changing) values is an important enabler. This has our focus, but is not an easy path, as it requires change in culture. The initial finding of our change in approach to distractions is in my view an improvement but the work is not done. We will all still see situations in which we consider a colleague crosses the line of 'good controllership' and in which other colleagues do not feel the liberty to bring the subject up. For me, this is not a reason to choose a different approach. I am also fully aware that there are a large number of ANSP's that see their rule prohibiting cell phone use as effective. The path we have chosen does not give any guarantees for success, is not free of risks, and is not easy. But our profession will always have a degree of risk, and in my position as Manager, this is no different. I'm proud that we have decided to follow this approach, not because it is an easy option, but because I strongly believe that it is the one with the highest chances of success.✈

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ELECTRONIC DISTRACTIONS

Personal Electronic Devices on Position

by Phil Parker, Asia/Pacific Regional Editor

I was originally going to write about 'Cell' or 'Mobile' phones in the ATC workplace, however, I soon realized that apart from smartphones, controllers are also using tablets, laptops and even the Apple Watch at work. We therefore need to look at all Personal Electronic Devices (PEDs), when discussing their use. The key word here is personal, as more and more communication devices are becoming part and parcel of the every day equipment we use to do the job.

In August 2009, a series of pilot errors and a distracted controller led to a tragic mid-air in New York City that took the lives of nine people when a private plane and a helicopter collided. The investigation revealed that one of the contributing factors was that the controller involved was making a personal phone call whilst on duty.

Rules & Regulations

Many Civil Aviation Regulators and ATM Service Providers around the world have already put in place regulations to ban the use of personal electronic or communication devices in ATC Centres and Towers. Some others feel there's no point trying to stop the flood of devices, and do nothing. In general, most Asian ATS Managers seem to have taken the latter course. Hong Kong has banned mobiles in operational areas while working, but not because of Human Factor reasons. They did it because it interfered with radio system electronics. Supervisors don't always police the rule however, and many controllers just leave them on.

Multitasking

These days PEDs are the primary way people communicate. Some controllers believe that it is their right to have and use their PEDs in the workplace. I have discussed the matter with some of these controllers who have this view. They point out that, as a controller, they are very good at multitasking and their PED is just another addition to a myriad of electronic devices they use to do their work every day. What's the big deal? As a controller, you may never have given much thought to the fact that because you are exposed every day to many distractions, how can one or two more, such as a personal phone call or text, possibly have a detrimental effect on your performance?

Some controllers believe that it is their right to have and use their PEDs in the workplace.

In Air Traffic Control, it's virtually a requirement to multitask under pressure. In fact it's part of the job description for recruitment in ATC all around the world. Air Traffic Controllers are cited all the time as 'Masters of Multitasking', yet according to Clinical Psychologists, nobody can effectively do more than one remotely complicated thing at a time. As controllers however, we seem do it all the time. But are we? What in fact we're actually doing and are very good at, is prioritizing the next task and then 'task switching' very quickly and efficiently.

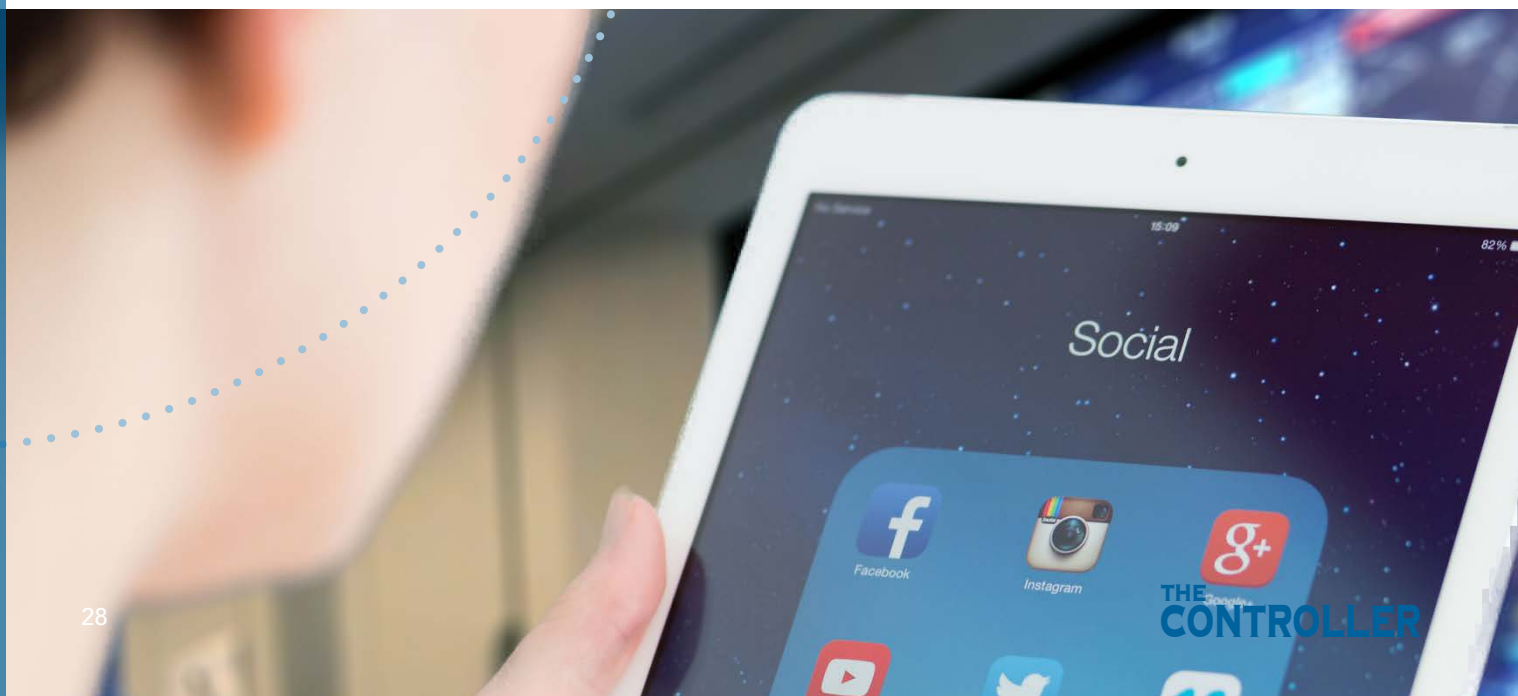

Photo: © bloomua

Lapse

As well as reducing your metal workload capacity, distractions create breaks in thought and procedural processes, which can cause lapses. Lapses are a type of skill-based error (Tsang & Vidulich, 2003). A lapse occurs when a person unintentionally fails to complete a task or action. A distraction occurring in the middle of an Air Traffic Control process disrupts the normal thought flow. When you resume the process at another point, it can be at a different stage of this mental process, meaning that you may miss out a critical task.

Lapse type errors are highly resistant to detection, as there is often no immediate indication that the action has not been carried out. This makes this error type a major threat to controllers. It has been proven that when distractions occur, it causes a disproportional increase in perceived mental workload compared to the real increase in workload associated with the distraction (Smolensky & Stein, 1998).

Mental Capacity

In addition, distractions require mental effort to disregard, resolve or eliminate. The amount of mental effort varies depending on the duration and intensity of the distraction. Research shows humans have a finite amount of mental capacity to allocate between tasks (Smolensky & Stein, 1998) and as controllers we are in fact rapidly switching tasks all the time. The use of a PED while working can cause this sort of distraction, and for that reason they should not be part of our ATC workplace.

The most important point to take from this is that distractions like PEDs, are a THREAT to our working environment and their use could have dangerous repercussions. We have all learned in Threat and Error management training, that the best way to minimize safety risks associated with distractions is to identify them, and, by liaising with management, implement methods of eliminating them. In this regard, PEDs at a working position are a major threat and should be removed.

Proactive & Professional

What else can we do to eliminate this THREAT in our workplace? I've already said that many Civil Aviation Regulators and ATM Service Providers around the world have already put bans on their use in our work environment. What about the rest of the world where no such bans are in place? Let's face it. The use of these devises is a threat in the work place, not just to the safety of the system, but to fellow controllers who could also suffer a distraction from their use.

The only way forward I can think of, if management are not going to regulate the use of PEDs, it is for controllers themselves to be proactive and professional.

- ✈ Work teams could get together and agree on a commitment to turn their PEDs off at work and advertise the fact that their particular team are being ATC professionals by doing so.
- ✈ Individuals could promote their professionalism with a small placard on their working position or wearing a T-shirt declaring that they have their mobile/cell phone off.
- ✈ The local ATC Association could take the lead in liaising with management that the banning of PEDs is a safety issue, and should be put in place immediately.
- ✈ If the Air Traffic Service Provider won't do anything, the Association should go to the Regulator and express their concerns that the use of PEDs at work is a Safety issue.
- ✈ The use of these devices should form part of Human Factors and Threat and Error management training.

If you can get the majority of controllers committing to being professional by having their devices turned off, peer pressure should take care of the rest. By doing so, you are inferring that that those individuals are not being professional controllers if they use PEDs while working.✈

If management are not going to regulate the use of PEDs, it is for controllers themselves to be proactive and professional.

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PARIS AIR SHOW 2015

✈ *Qatar Airways dominated the static display.*
Photo: Adrien Daste/gifas

by Philippe Domogala, Deputy Editor

The bi-annual Paris Air Show still remains one of the major events that gives us a glimpse of what the future holds for aviation and space technology. This edition was held at le Bourget airport last June. In all, over 350.000 people attended, which is some 14% more than the 2013 edition. There were some 2300 exhibitors from 48 countries all over the world showing off their products and services.

Stealing the show this time was Qatar Airways: they managed to have almost all the passenger aircraft on static display shown in their colours. They even managed to have a Boeing 787 standing in between the Airbus A320, A350 and A380 - all in Qatar Airways livery!

Drones and pseudo-satellites

Also very prominent this time were Unmanned Aerial Vehicles, drones, Remotely Piloted Aircraft and remote controlled flying objects in various shapes, sizes and configurations. It's as if they keep coming up with more variations. One type new type, at least to me, were the so-called pseudo-satellites. These can best be described as something between a drone and a satellite. They climb and hover at an altitude of around 20 km, keeping roughly the same position for months. They can do the same things as conventional satellites (i.e. telecommunications, surveillance, weather monitoring, …) at a fraction of the cost. One model developed by Airbus is called Zephyr. It looks like a mini Solar Impulse aircraft and can carry a payload of just 5 to 10 kg. More sophisticated is the Stratobus developed by Thales-Alenia. At 70m long and 20m wide, it looks more like a an airship. Capable of carrying a payload of 200kg, it can remain in the air for more than one year. Plans are to have them up roaming the skies within the next 5 to 7 years.

Rafale for Canada?

Since IFATCA is located in Montreal, my press badge said THE CONTROLLER - CANADA. And as Dassault is in the running to replace the Canadian Air Force's F-18s with their Rafale, I received a surprise invitation for a chat with one of their Vice Presidents. This included a private close-up with the aircraft. It was interesting to see how much automation is integrated into its cockpit. In fact, it looks like it is made of iPhones and iPads: switches and dials have been replaced by touch displays. Not only is the aeroplane controlled by a side stick, but a joystick has also replaced the traditional dual fuel levers that control the two jet engines (on the left in the photo). Should one of the engines fail, the computer reconfigures the performance of the remaining one. The way in which the trust is controlled remains the same for the pilot. According to

✈ *The Stratobus, developed by Thales-Alenia can stay airborne for more than one year.*
Credit: MIP/Thales Alenia space

✈ *The Rafale cockpit.*
Credit: Dassault Aviation-Alex Paringaux

✈ *The E-FAN, the first mass-production electric aircraft.*

Photo: Airbus

the manufacturer, the whole thing is very intuitive and the automation allows the pilot to concentrate on his mission rather than on flying the airplane. Dassault says it took 20 years to fine tune, putting them ahead of the competition. Of course the Rafale is marketed as "combat proven", having been deployed in Afghanistan, Libya, Mali and now Iraq. They consider their main competitor, the Lockheed Martin F-35, as still in the early stages of development. And with the Euro is almost on par with the US Dollar, the Rafale is very competitively priced. So perhaps we'll see French aircraft in the Canadian skies soon!

E-FAN

Airbus demonstrated what they refer to as the first commercial electric aircraft to be produced and sold in, hopefully for them, large numbers. I happen to know some of the people that helped design it, as they are based at an airfield close to my hometown in France. It looks quite good and seems to fly well: it can do 160 km/h for 45 minutes to an hour on one battery charge. The battery takes around one hour to recharge, at a cost of around 2 USD per flying hour - compared to 50 or even 60 USD for a conventional 100 HP engine. It's estimated to cost about the same as a conventional 2-seater aircraft in the same category, so between 150 and 200.000 USD. Because of its capabilities and short range, it's mainly aimed at pilot training, aerobatics, glider towing, banner towing over noise sensitive areas, etc. A big challenge, but definitely interesting to keep an eye on.

THALES SHAPE consoles

First shown in Madrid earlier this year, Thales presented a refined and neater version of their controller console, Shape. They describe it as an 'innovative and immersive Controller Working Position'. Two catching features the eye tracker and a large iPad-like touch screen replacing mouse/keyboard inputs.

The eye tracker accurately follows what you're looking at on the screen, highlighting the labels on the display as you look around. While that has been tried many times before, this actually works, even with glasses on. The inputs are done by hand on the flat touch screen, which is intuitive and very ergonomic: left-right, up-down. You don't have to look at the touch screen, as the info is presented in front of you.

Of course, it also has an advanced conflict detection system, which also proposes fast and easy solutions. Stereo headphones recognize the location of calling aircraft. Using surround sound, they will give you an aural hint to where the aircraft is on your screen. While it looks fantastic in a demonstration, one concern I have is how much controllers will start relying on these tools? If controllers come to rely on them, will they be able to cope when they fail? It might need some very sophisticated backups as well...

✈ *Thales' conflict detection & resolution system.*

Photo: DP

The civil world above-100-seat fleet is forecast to double in the next twenty years

Air transport growth

Congestion is coming (again!) Both Boeing and Airbus sales projections show very similar figures. Boeing forecasts that some 38.000 new aircraft will be bought in the next 20 years (2015-2034). They estimate 70% of these will be in the "smaller" Boeing 737/ A320-range. The bulk of the others will be in the B787/A350 sizes. The biggest B747/A380s would count for less than 1%.

Still according to Boeing, over 1/3 of these will be for the Asian market. Around 8000 for North America, 7300 for Europe, 3000 for Latin America, 1200 in Africa and 1100 in Russia/CIS. To put this in perspective: the civil world above-100-seat fleet is forecast to double in the next twenty years: from around 21.000 airframes today to 43.600 by 2035!

Airbus has a slightly lower prediction of around 32.600 aircraft for the same period. They foresee an annual passenger growth of around 4,6%. They anticipate that mega-cities will continue to expand, leading to an explosive demand at some airports. They predict that this will make the A380 indispensable in certain regions for years to come. Because of this, they estimate the A380 will make up around 5% of their sales.

But whether it's A380s or some smaller aircraft, it looks like things will get even busier for controllers in the years to come…

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CHARLIE'S COLUMN

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♪♫ It's like rain.... ♪♫

Last May, in Levittown, Pennsylvania in the USA, a family was celebrating their daughter's 16th birthday. As the weather wasn't great, they had garden party tents out in case it started raining. And sure enough, it wasn't long before they saw drops falling from the sky. Except it wasn't rain…

"It looked like thousands of birds flew overhead and decided the relieve themselves at the same time", said the father. Rather than birds, it was an aircraft that emptied its waste tanks, presumably by accident. Flight radar showed 5 aeroplanes passing overhead at the time and the FAA has opened an investigation. A family member remarked that the event "gave a bitter taste to our party". We just hope it wasn't the cake that tasted funny.

✈ *Fortunately, the guest were a little bit sheltered.* Credit: Youtube screenshot

Things dropping from plane reminded me of an (old) story in England a few years ago. A pilot was fined for failing to untie a concrete block from his plane before he took off from Newcastle Airport. Shortly after he got airborne, it plummeted hundreds of feet to the ground. The block landed close to a tennis club where some schoolchildren were playing. The pilot was fined £1000 for failing to carry out a pre-flight check before flying his Piper Cherokee. Taxiing must have been a bit slower than normal and the pilot did not notice this either.

while it could have ended a lot worse, it shows a lot for the way Piper built their aircraft, if it's able to take-off with a concrete block attached.

Trumped

By now, everyone has heard of eccentric billionaire Donald Trump, who's taking a shot at becoming the next President of the USA. To say that the man is afraid of controversial statements would be an understatement. But some of his remarks have consequences for aviation: after his anti-immigrant remarks, the Federal Aviation Administration announced that it will be changing the names of three navigation points on the SIDs for Florida's Palm Beach International Airport, DONLD, TRMMP and UFIRD. The points were suggested by a since-then-retired air traffic controller while a television show featuring Trump was at its most popular. The last point refers the phrase "You're fired!" in The Apprentice. "We actually have had reports of people refusing to fly these departures because they are so offended by the fact that Trump has been memorialized," said an official shortly after the names were adopted. Well now they are removed. Hopefully, he won't become president, or they might have to name a whole airport after him...

Up, up and away!

A man in a hot air balloon realized he was lost. He reduced altitude and spotted a woman below. He descended a bit more and shouted, "*Excuse me, can you help? I have no idea where I am.*"

The woman below replied, "*You are in a hot air balloon hovering approximately 30 feet above the ground. You are 32 nautical miles due east of waypoint XYB.*"

"*You must be an air traffic controller,*" said the balloonist.

"*I am,*" replied the woman, "*How did you know?*"

"*Well,*" answered the balloonist, "*everything you told me is probably correct, but I have no idea what to make of your information. Frankly, you've not been much help so far as I am still lost.*"

The woman below responded, "*You must be a manager.*"
"*Why yes,*" replied the balloonist, "*but how can you tell?*"

"*Well,*" said the woman, "*you don't know where you are or where you are going. You have gotten to where you are thanks to a large quantity of hot air. And you expect people below you to solve your problems. And you're still lost, but somehow, you've managed to blame me for it!*" ✈

OVERHEARD ON THE FREQUENCY

Rubbing it in

TWR Controller to a tail wheel aircraft that had just ground-looped on the runway : "Foxtrot Tango, do you require assistance or would you just like a little music?"

Best of Oshkosh R/T

Pilot : "Oshkosh, this is Papa Tango , what's my number for landing?"
Controller :"Fly North to the gravel pit, find the last aircraft and get behind him."

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