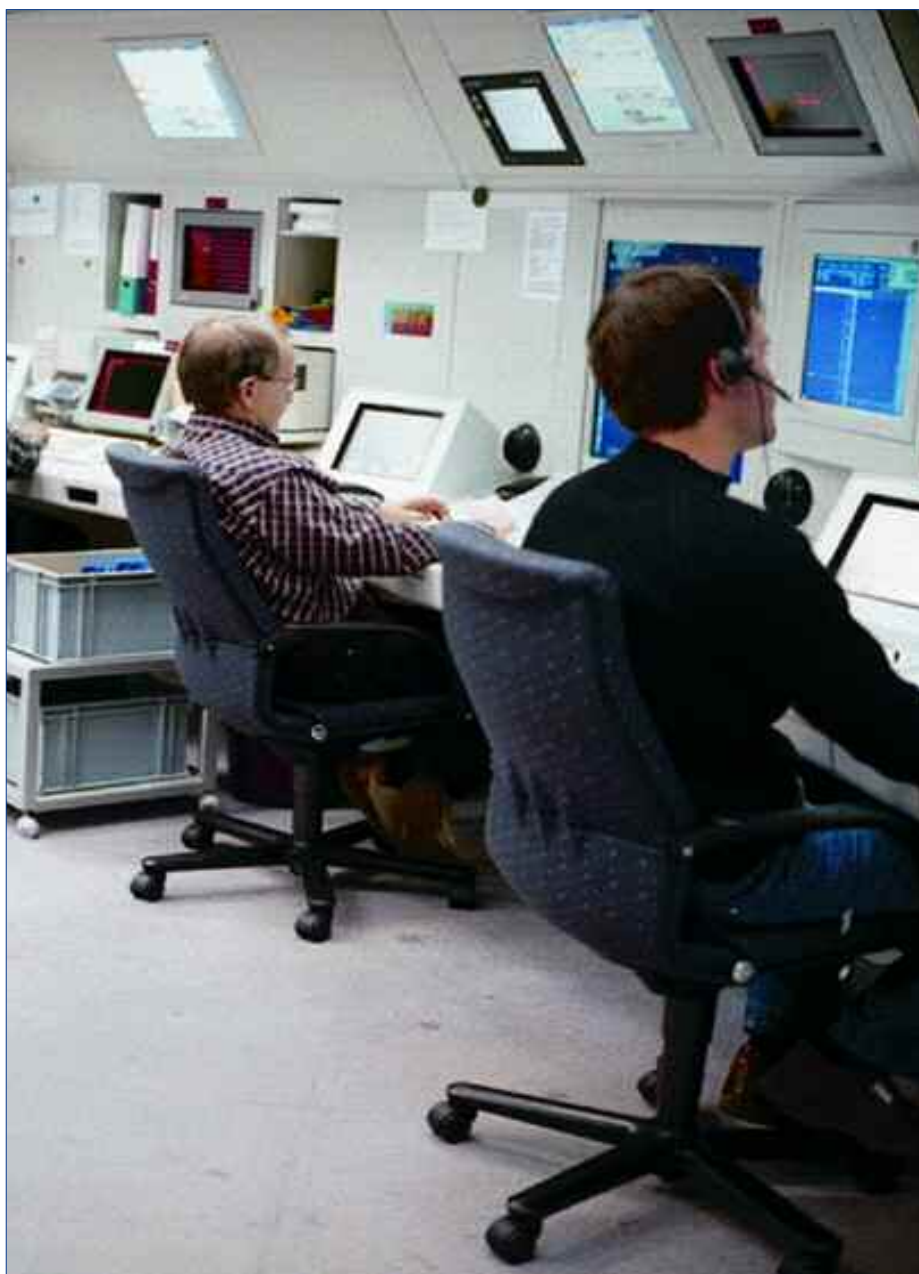


safety bulletin

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Systems Safety Management

Who are we and what do we do ?

Almost three years ago, the skyguide «Center of Competences» under the responsibility of Fritz Moor endorsed the responsibility to define, implement and further develop an ESARR4 management System within the company. For that purpose, Stéphane Barraz has been appointed «Risk manager» and began alone the long and winding road towards certification. In between, things have drastically changed: the powerful and motivated Systems Safety Management unit is now in charge to push skyguide towards Safety excellence. Hereunder, some words about us and our daily activities ...

At the present time, Eurocontrol Safety Regulatory Requirements (or ESARRs) are widely discussed within the company, especially due to the fact that an official certification is a mandatory condition for skyguide to pretend in participating actively in the construction of the Single European Sky.

The compliance with Risk Assessment and Mitigation requirements as described in ESARR4 will be reached by skyguide once the following Safety objective is met:

«Within the overall objective of ensuring Safety, ATM service providers shall ensure that the Risks associated with Hazards in the ATM-System are systematically and formally assessed and managed within Safety levels, which as minimum, meet those approved by the designated authority»

In other words, skyguide has to



The Systems Safety Management team (DMS)

From left to right: Hansueli Glauser, Fabrizio Balda, Stéphane Barraz, Jean-Marc Bory and Marc Vettovaglia.

ensure that all the changes foreseen on the ATM-System that lies within its managerial control are addressed in such a manner that a formal Risk assessment and mitigation process is systematically followed.

For that purpose, **the Systems Safety Management team (DMS)** has been created within the Safety and Quality management department and is officially led by Stéphane Barraz since 1st of July 2004. Based on the practical experience we acquired in participating to many internal Safety Assessments, we are currently trying to establish, in close cooperation with our National Regulator, the rules and guidelines that will allow skyguide to fully integrate a Safety

approach into its internal change cycles. To do so, we are driven by our mission statement which has been defined as follow:

For those elements of the ATM-System and supporting services that are lying within skyguide managerial control, the Systems Safety Management unit is expected to ensure that:

1. ESARR4 Safety Assessment procedures are in place and systematically applied each time a change affects an element.
2. Confidence is re-established by formally analysing the situation each time the Safety of any element is questioned.

It is obviously a difficult daily task for us to avoid being within the company «those in charge to perform Safety Assessments» so the way to a reasonable and efficient partnership with project managers is understandably one of our main concerns at the present time. On the other hand, we continue to develop our experience and help to address specific Safety issues. The outcomes of the VISTA Safety Assessment described in the following pages is a good example.

STÉPHANE BARRAZ
Head of Systems Safety Management

What is actually going on?

The following table provides a short overview of the main activities that are running in the Systems Safety Management domain. For any question you may have or for deeper details on the subject, please contact directly the Project Manager in charge of the related Safety Assessment

ATM-System		Project Manager	Safety Manager	Status
DF LSZB	New directional finder for Bern airport	J.Goecke	JM.Bory	Requested
CEWAM	Multilateration detection systems	H.Schmied	M.Vettovaglia	Requested
VISTA – part 2	New radio and Telephone switch for Zürich	L.Chevalley	S.Barraz	Requested
e-strip VIGIE GVA	Introduction of electronic strip for tower Geneva	M.Mendoza	S.Barraz	Requested
KLODUB	ACC transfer from Kloten to Dübendorf	J.Erisman	HU.Glauser	Initialized
SEPAZ	Takeoff/Go around constellations in ZRH	J.Haenni	HU.Glauser	Initialized
ZECAT/TACO/FDP	ECAT tools and electronic strip and new FDP in ZRH.	Ph.Waecker	M.Vettovaglia	Initialized
FAB	Functional Airspace Block with France	D.Reynaud	M.Vettovaglia	Initialized
NOT-TWR ZRH	Emergency tower airport Zürich	N.Jahn	M.Vettovaglia	Initialized
EMRA-DUB	Emergency radio system Dübendorf	J.Büchi	M.Vettovaglia	Initialized
NAPP-1	Curved North approaches in Zürich	H.Wipf	HU.Glauser	Running
COMOS	Deployment of Mode S radars	P.Kuenzli	JM.Bory	Running
P-RNAV	Precision area navigation in Switzerland	T.Buchanan	M.Vettovaglia	Running
UAC-CH	Creation of a stripless Swiss upper airspace	Y. Le Roux	F.Balda	Running
DVO3	Transfer of holding patterns over Swiss territory	W.Vogt	HU.Glauser	Closed
SAMOPS – level 1	Introduction of new airport surface guidance systems	G.Bailue	M.Vettovaglia	Closed
VISTA – part 1	New radio and Telephone switch for Geneva	L.Chevalley	S.Barraz	Closed
ASR-10 GVA	Lack of primary radar detection Geneva TMA.	Ph.Chauffoureaux	S.Barraz	Closed

Requested: First contact with Safety department established. Need and scope for a Safety Assessment under discussion.

Initialized: Safety Relevance Analysis running : definition of what has to be done to demonstrate that the System is Safe.

Running: Safety Program Plan validated. Safety activities integrated in the project planning and allocated to appropriate resources.

Closed: Safety Case Document delivered and Safety Decisional Paper released. Mitigation measures under implementation.

Safety Assessment VISTA

To split or not to split?

The VISTA Safety Case Document has finally been submitted to the skyguide Safety Steering Group. The decision of our directors to split the proposed technical architecture is a clear step towards an increase of Safety, even if reduced mitigation measures were also possible.

VISTA is an ambitious project which aims to renew the current ATC radio and telephone switches on both Geneva and Zürich skyguide sites. After two years of intensive work, the project team proposed a powerful solution provided by Frequentis and based on a pseudo-combined technical architecture. This architecture allows synergies between the radio and telephone services while keeping extremely low the risk of a combined loss at all positions that may result from a failure of common elements:

Due to the well known high criticality of radio and telephone services in the ATM business, this has been an excellent starting point for a well structured Safety discussion. Even if a full ESARR4 approach would have requested an early start in the project life cycle, it has been decided to initiate a corrective Safety Assessment approach with a scope of work restricted to the following questions:

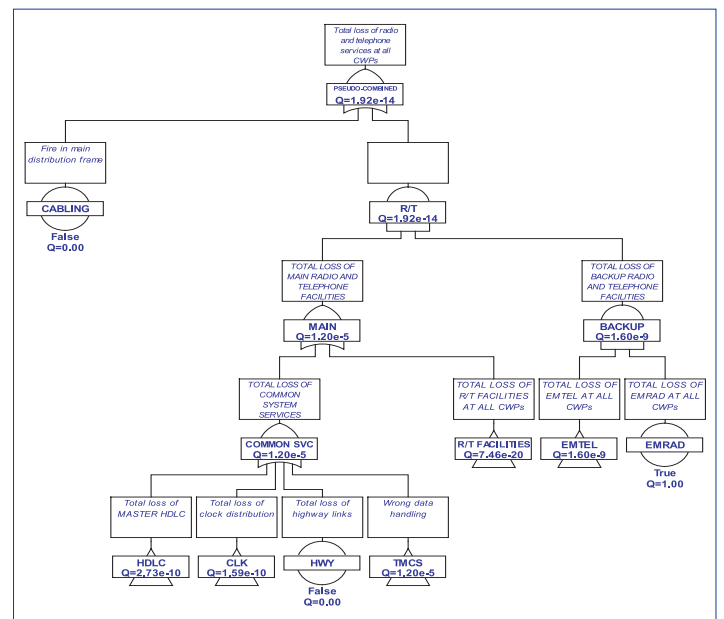
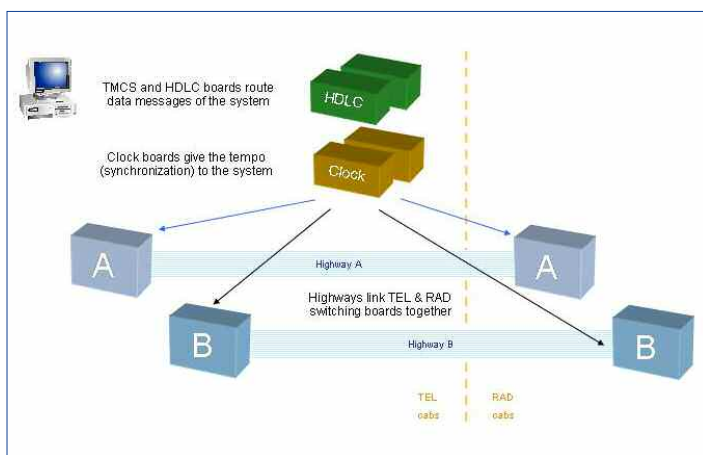
- **System architecture analysis:** under which conditions and how often may the proposed pseudo-combined architecture lead to a total loss of main radio and telephone services?
- **Degraded modes analysis:** in case of total loss of main radio and telephone services, are we able to ensure Safe operations, especially during the specific period of time that is necessary to take appropriate contingency measures?
- **Regulatory framework analysis:** is the proposed solution compliant with ICAO/Eurocontrol Safety-related requirements and/or recommendations that are applicable to Voice Communication Systems?

The system architecture analysis was based on the fact that four critical system components may be a common cause of failure for both radio and telephone services.

For these specific components, a Failure Mode Effect and Causes Analysis (FMECA) has been conducted and resulted in the identification of six mitigations measures expected to reduce the probability of failure occurrence. In parallel, a Fault Tree Analysis (FTA) has been performed and demonstrated a high level of availability that fully lied within the Eurocontrol Safety guidelines applicable to voice communication systems procurement:

fully within acceptable limits: indeed, with a technical availability¹ of 99.9999999568%, a total failure is approximately expected once every 10'000 years!

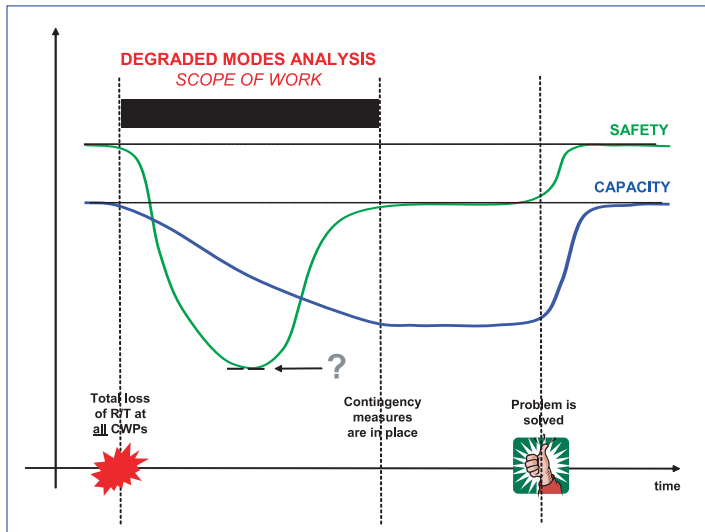
However, no one can guarantee that such an event will never occur. For that reason, a **degraded modes analysis** has been performed in close cooperation with operational experts and active controllers in order to make sure that the emergency situation resulting from a combined loss of main radio and telephone services has acceptable consequences on Safety of operations.



The conclusion of the system architecture analysis is that the Risk of a total loss of radio and telephone services due to the proposed pseudo-combined architecture can be reduced as low as reasonably practicable and may be considered being

¹ The technical availability is computed without taking into account human errors and environmental catastrophes like fire or water.

► Safety Assessment VISTA



The conclusions of the analysis focused on the expected capabilities of emergency systems in case of total loss of main radio and telephone services. Indeed, the reduced emergency radio coverage affecting especially the future UAC low border regions may result in a loss of airplanes expected to be caught back by additional telephone coordination tasks. In that case, the technical capabilities of the emergency telephone (EMTEL) *may be* insufficient to guarantee Safety of operations². The better way to address the problem would be to significantly increase the radio coverage of emergency systems where deemed necessary and thus avoid additional telephone coordination tasks.

Finally, the **regulatory framework analysis** addressed the compliance with Eurocontrol requirements applicable to Voice Communication Systems procurement and highlighted that:

- Technical systems are not physically dispersed in modules secured against common environmental catastrophes.

- Both radio and telephone emergency systems are not located in a different room: radio emergency Systems are delocalized but emergency telephone (EMTEL) is located in the vicinity of the main system.

However, the project team agreed about the fact that those non-conformities are common to most of our technical systems and are not addressable with reasonable measures.

So now it's time to decide...

As usual, the final results of the VISTA Safety Assessment have been submitted to the skyguide Safety Steering Group and widely discussed during the 15th of February session. The decision to invest more than half a million Swiss francs to split the architecture proposed by VISTA while also requesting a medium-term improvement of emergency radio systems coverage is a clear demonstration of our management's willingness to «keep skyguide on

the Safe side». Indeed, the Safety Assessment clearly showed that the sole improvement of radio coverage would have been sufficient but due to the time needed to implement such measures and the uncertainty of the results to be expected, it has been decided to immediately reduce the probability of occurrence of a total loss of main radio and telephone services by splitting the proposed architecture.

In conclusion, I'd like to take the opportunity to sincerely thank all the people involved in that very demanding and interesting Safety Assessment. Their high level of competence, constant availability and intensive cooperation made our common work very efficient and valuable. In particular, special thanks to the project manager Luc Chevalley who always considered Safety as a major concern in his project.

STÉPHANE BARRAZ
Head of System Safety Management

2 It is to be mentioned here that even if a formal demonstration was very difficult to establish, it has been recognized by the operational experts who took part to the debate that the expected increase of coordination will certainly result in an overload of the current EMTEL capabilities.

More reading

HINDSIGHT

This very new Eurocontrol publication has for unique goal to share lessons learned from air navigation providers all over Europe. «Early warning messages» and safety reminders are presented as well a short introduction to the Eurocontrol safety enhancement business division (SAF).

Find the full electronic document under:
SWAN/management/safety/safety bulletin



Yes SIR - No SIR

Happy end for a SIR at BERN TWR

At a slightly elevated site in a natural reservation, this building offers you a tremendous panoramic view over the alps and the Jura mountains. With a sunny disposition from sunrise to sunset, it is the ideal place for your swimming pool.

No, this is not an advertisement for a 1.8 Mio Sfr. Villa, but the site description of the TWR of Bern airport.

Up to 17 hours of sun daily, pointing more or less exactly in the ATCO's face, is far from ideal for an ADC controller.

Obviously the TWR is equipped with sun blinds, unfortunately the model installed is a more or less solid sun blind which one is not able to see through.

From around 2 o'clock in the afternoon until sunset all the blinds facing in a SW direction have to be lowered almost completely in order not to be blinded by the sun. As luck would have it, our RWY's and the main traffic patterns are also on the west side of the TWR. Consequently, during the period of sunshine, from a window 3.5m high we are left with a slit of 30cm. (pic 1)

This reminded me always a bit back at the times of brave Adrian von Bubenberg and the battle of Murten. It became very difficult to sight airplanes and the constant change between watching out the bright slit and looking down on the working surface with all its reflections was very tiring for the eyes.

To reach a maximum of synergy the APP/DEP working place in Bern is also ideally located in the TWR cab, so unfortunately most of the problems applied as well for the radar position.

As an ADC not seeing airplanes was determined by me as safety relevant, I decided during the hot 2003 summer to fill in a SIR concerning our sun blinds.

The SIR was accepted and forwarded quite rapidly to O-OZ-and OZT, our unit manager. The original wording was the following:

Problem:

When using sun-shades, specially in the afternoon, the visibility of the ADC controller is reduced by more than 90%.

Recommendation:

Take measures that the ADC controller has a 100% visibility.

Well the safety manager did his job – and the unit manager what should he do now?

Write a service order not to use the sun shades anymore? Case handled? Safety improved?

You probably notice that I was not very satisfied with the current result. Shortly after, I heard that my name

was associated openly with this SIR (confidentiality?) and lots of people in our management were quite amused about my logical problem; shades down=no view; shades up=view...so where is the problem?

Firstly, I was glad that I could provide some fun to some people, who do not always have a funny job, and secondly, I do not really care to make statements with my name on it.

But somehow I felt challenged and contacted our safety manager to explain to him that so far the SIR process seemed not very convincing to me.

As apparently nobody had capacity to have a on-site look (Bern is far away) at the problem, we decided that I would explain the problem once more, in a more detailed way.

My second approach contained some pictures and different options for solutions.

Among the solutions I mentioned a see-thru-shade which I found in the Internet and which was advertised with «**FAA mandatory safety equipment, installed in more than 150 TWRs worldwide**», what an argument for a SIR and some of you can probably imagine the smile on my face...

After lots of work of the T department and trials by our local PEKO, (thanks to everybody involved!), in

January 2005 the new equipment was installed and I am sure that it will increase safety as well as comfort.

To make a long story short, file SIR whenever you feel something is not ideal. But do not forget that your unit managers and the safety manager are very busy people and your SIR is probably not the only problem they have to handle at this time.

So if you file a SIR explain it in a positive and detailed way, give options for possible solutions and try to convince people – we are once more back to communication!

For the happy end report

A. SCHÜPBACH
OZTB

Pic 1 –before



Pic 2 –after



Loss of tracks in the South of the Alps and transponder anomalies

In the last few years, a series of radar tracks losses from the controllers' screens has been reported in the area South of the Alps, over Italy but within the skyguide controlled airspace. These track drops are caused by a simultaneous loss of detection from all (secondary) radars, in general for a duration of 30 seconds up to 2 minutes.

TDA engineers spent from the beginning lots of efforts trying to identify the causes. Suspect sources of electromagnetic interferences, disturbing the frequencies of radar and aircraft transponders, were initially discovered. The Italian authorities intervened by removing these emitters, improving but not completely resolving the situation (see Safety Bulletin #4, December 2003).

In early 2004, an increasing number of these losses induced TDA to resume the investigations and to establish new contacts with the Italian ATC administration (ENAV), trying to get support in the identification and removal of the origins of these problems. From previous experiences, the attention was put once more on possible new radio interferences.

The Italian Inspectorate of Telecommunication (a branch of the Ministry of Telecommunication) was contacted too, which started a new measurement campaign in the regions of «Valle d'Aosta», «Piemonte» and «Lombardia».

The campaign allowed the removal of new spurious frequency emissions from some radio-TV links, and

though improvements could be observed, there still remained few cases of radar loss a week. Each of these events was therefore thoroughly examined and classified.

From the analysis, it came out that all these disappearing targets squawked a different Mode-A code, before and after the radar loss. Listening to the voice communication recordings, it appeared a clear cause-effect relationship between

radar loss and transponder code change.

By collecting systematically the events into a database, we discovered that most of them involved flights from the same operator. Moreover, the examination of the flight plans revealed the reoccurrence of the same type of aircraft, the Embraer ERJ-145/135. Other cases, from different operators, involved also this model.

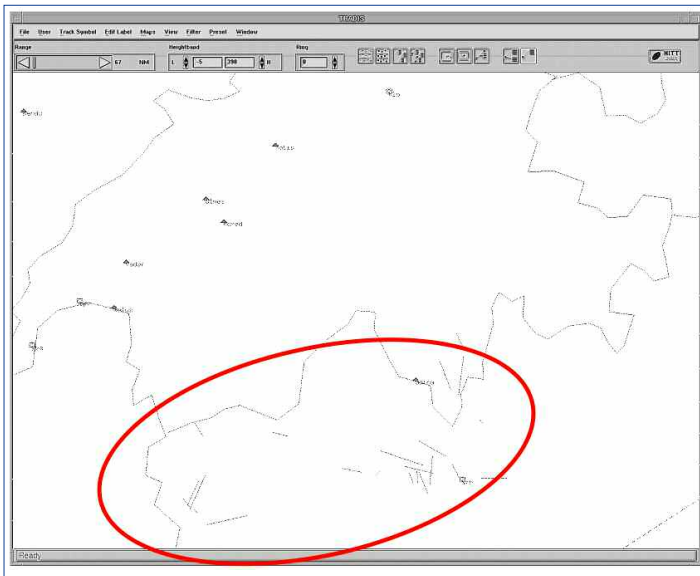


Figure 1 - segments representing cases of track drops, within the affected area



Figure 2 - Embraer ERJ, parked on stand in Geneva

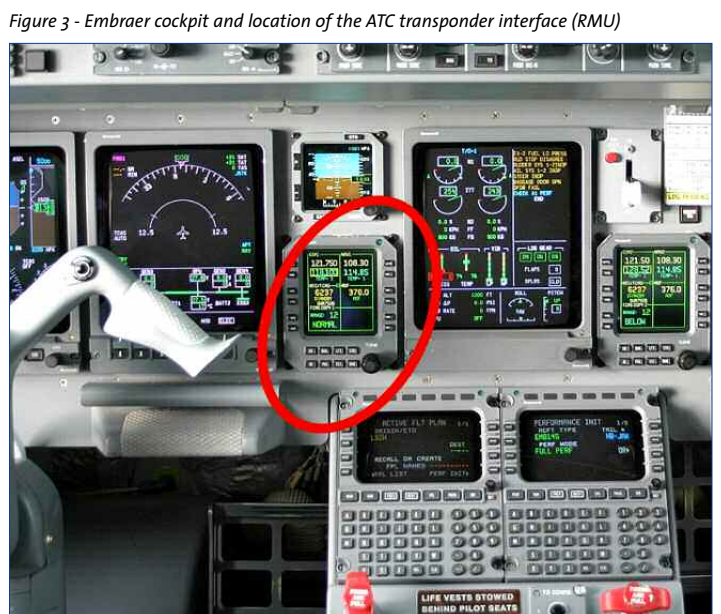


Figure 3 - Embraer cockpit and location of the ATC transponder interface (RMU)

► Loss of tracks and ...

At this point, some ERJ-145 crews operating in Geneva were inquired about the functioning of the ATC transponder on this specific aircraft type, and about the typical procedures applied during a Mode-A code change.

Though most of the crews did not report any particular problem on this operation, in one occasion one of them found, during their flight to Geneva, that the transponder switched into «STAND-BY» mode after selection of a new code. This behavior could be reproduced on ground.

The most involved airlines were then immediately contacted and informed about the situation. Shortly, their avionics specialists could confirm that such behavior was actually affecting some new models of Mode-S transponder, being retrofitted into the Embraer.

As a final proof, a recent technical bulletin from the transponder manufacturer informed that certain models revert spontaneously into «STAND-BY» mode, if the code selection, using the turning knob, takes more than 5 seconds.

The consequence is that the transponder becomes inoperative not only to radar interrogations, but also to TCAS.

To restore the expected operation, the pilots shall then re-select manually the right mode. In several cases, this action was executed only after ATC controllers reported a «radar contact lost», which retained crews' attention to the transponder mode.

The reason that all the radar loss occur only in a specific area, is a con-

sequence of the fact that the Italian and Swiss airspaces belong to two different ORCAM (Originating Region Code Assignment Methodology) zones: aircraft crossing the borders of these airspaces must change their Mode-A code. Flights which on the other hand remain within the same ORCAM area (e.g. central Europe, UK, France, Germany, etc..) are in principle not exposed to this phenomena.

Since the situation proved to be unsafe and unsatisfactory, the first immediate mitigation was to ask the different companies to inform and keep their pilots particularly aware of the transponder mode, after a code change. Some of them quickly established operational procedures for their crews.

Despite this mitigation, such particular transponder behavior still remains, and would not be solved in short term, since manufacturer

expects resolution only with the availability of a next transponder generation for Enhanced Mode-S, by summer 2005. To this time schedule, additional period should be considered, until the full retrofitting into the fleet is completed.

The analysis concluded also that the problem is not limited only to the Embraer-ERJ145/135, but involves other models, in particular private executive jets (e.g. LearJet, Gulfstream IV, Cessna Citation, etc..). Unfortunately it was not possible, nor in our competences, to address and inform the different owners of these aircraft as well.

Besides, the Swiss civil aviation authority (FOCA) and EUROCONTROL have been informed. A Mode-S «Transponder anomaly report» was raised and distributed to different operators, and national air service providers. By February, the major European commercial airlines

operating ERJ-145/135 have been informed (Swiss, Lot Polish, Luxair, BMI Regional).

Since then, other events have been observed, which still remind us that the information and mitigation is still not sufficient to avoid a temporary loss of radar contact for these aircraft.

To conclude, this issue shows - through all its complexity - the impacts on safety, deriving from the three typical factors composing an ATM «system»: equipment, human and procedures.

From the «equipment» side, the transponder behavior. From the «human» side, the awareness and interactions of pilots and/or controllers. From the «procedures» side, the Mode-A code change required across adjacent ORCAM zones.

Only thanks to a continuous and dedicated investigation work, involving a number of people, and to a multi-disciplinary approach, it was possible to identify a major cause of this longtime discussed problem.

However, it is foreseeable that the issue will persist in the near future, until further actions are addressed to definitively resolve such transponder behavior.

ANDREA MOTTA
TDA - Geneva

Figure 4 - Detailed view of the transponder code and mode, and the selecting knob



I wish to express particular thanks to the staff and crews of Air France Regional and Alitalia Express for their valuable and kind support.

AIRPROX statistics

To compare apples with oranges

«Statistics on AIRPROXs are available but it is nearly impossible to compare them between different countries. Therefore the comparison

between countries should not be considered as reliable. The classification of AIRPROX is quite subjective and reporting procedures vary from State to State.» This has been written in our first Safety Bulletin exactly two years ago. And in this year's Performance

Review Report from Eurocontrol can be read? «There are no reliable key performance indicators for ATM safety. The quality, quantity and severity classification criteria of published safety data are extremely variable across States. States/ANSPs do not

apply the same severity definitions, classification schemes and practices. This makes it impossible to compare absolute figures across States at this time, as shown in Figure below.»

Country	FR	DE	UK	IT	CH	NL	BE
Total serious AIRPROX	93	13	7	4	44	13	13
Cat. A	39	5	1	0	28		4
Cat. B	54	8	6	4	16		9
Controlled Flight Hours (000)	1972	1190	1158	1022	302	151	108

Figure 1: Serious AIRPROX (2002) - Figures are not comparable across States

Another example is given in this report. «Reporting rates are also variable over time. One State reported 1 runway incursion in 2002 and 120 in 2003. This indicates a growing awareness of underlying issues, which is to be welcomed. However, it is impossible to identify ATM safety trends on the basis of such variable information.»

A further problem that has been identified in the report was that «Incident reporting is at the moment mostly based on voluntary human reporting. Only a fraction of all occurrences are reported, as can be seen from experience in ANSPs who sys-

tematically examine all losses of separation detected by automated tools.»

Eurocontrol's proposed way forward

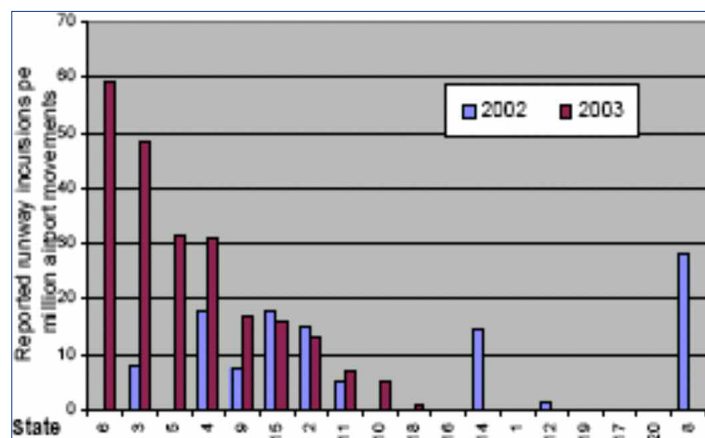
The Performance Review Commission (PRC) is working with interested parties to develop key performance indicators for ATM safety and to submit detailed proposals by October 2005. Switzerland (Skyguide, FOCA and AAIB) has been invited together with UK, France, Germany, the Netherlands and FAA Safety Department to par-

ticipate in this task force. The first bilateral meeting (PRC/skyguide) will already be held in March this year.

Let's hope this task force will succeed to find more reliable indicators to measure safety. Because for the time being skyguide's key performance indicator for safety (how skyguide is measured by our shareholder, the Swiss Confederation) is still directly related to the unreliable number of AIRPROXs.

MARTIN PROBST
DM

Figure 2: Runway incursion reporting rates



A new concept is born at skyguide

What does WAC stand for?

WAC stands for «Work on ATM, AIM, CNS & Infrastructure Equipment».

In this article, ATM (air traffic management) is used to refer to the whole set of ATM, AIM, CNS & Infrastructure Equipment.

Why WAC?

1. Gone are the days of good old «mechanical» air traffic control equipment. Formerly ATM equipment consisted mostly of hardware and each technical domain had its own independent equipment with very few interfaces to equipment of other domains. Responsibilities and roles were apparent and clearly defined. Consequences of technical interventions on equipment were «easily» foreseeable and coordination less demanding. Technicians of the same group possessed practically all of the know-how related to their ATM equipment.

Nowadays ATM equipment is highly digitalized and consists of a great deal of software. Almost all equipment of all domains is interlinked with complex interfaces to form logical chains and allow efficient information flows. The consequence is that a simple technical intervention on an equipment of a specific domain may cause considerable impact on an equipment of another domain. The huge know-how characteristic to this vast area has become

split up into several digestive slices divided amongst an increasing number of people.

Coordination, communication, interface competences and flow-management have therefore become important disciplines.

2. In the fatal night of the Überlingen crash on 1 July 2002 planned technical interventions were being executed on ATM equipment at sg adding to the complexity of air traffic controllers work. Thus the German BFU, charged with the investigation of the accident, requested the amelioration of the process of planned technical interventions on ATM equipment. It was demanded to produce to the air traffic controller a clear picture of the state of ATM equipment while it was undergoing planned technical interventions. The coordination and communication of all those involved during these interventions especially between Operations and Technics was to be enhanced and formalized. Immediate actions were taken at sg. Based on the existing procedure AAF (Aussergewöhnliche Arbeiten an Flugsicherungsanlagen) the process PWAE (planned work on ATM equipment) was elaborated and implemented under the leadership of Peter Sempert.

3. What's more, Swiss BAZL/BFU analysis of the urgent corrective intervention following the ZRH Radar break-down on 11 Nov. 2003 revealed the need to formalize in clear procedures urgent corrective interventions on ATM equipment. The need for a general concept

comprising all types of technical interventions on ATM equipment became apparent.

The time had come for WAC.

What is WAC made of?

WAC is an assembly of work instructions comprising four mandatory top level procedures and several specific coordination meetings, covering all types of technical interventions on skyguide ATM equipment. WAC procedures:

1. PWAE, planned work on ATM equipment. The procedure for all planned interventions that are not simple and repeatable enough to be a LAP.
2. LAP, lightweight authorized procedure is a light version of PWAE for a set of defined interventions that can be administratively «fast tracked» because risk and degradation have already been addressed and mitigated.
3. IHP, incident handling procedure. This procedure analyzes and characterizes technical incidents and immediate intervention calls. It is used to decide whether a LAP, PWAE or NAS procedure will give the least risk of an intervention.
4. NAS, non anticipated situation procedure. Used to handle corrective interventions that cannot be handled with a PWAE or LAP. The IHP procedure must be used before the NAS. For any immediate intervention, a situation assessment is made and appropriate actions taken. The goal of the NAS procedure is to minimize the overall risk of an

intervention and to ensure that those involved have the required situation awareness.

WAC meetings:

- **TISM:** Technical Interventions Scheduling Meeting. Each Head of Division (TD, TC, TN, TG and TZ etc.) assigns a competent representative to attend the TISM. All aspects of interventions are to be discussed (PWAE, LAP and IHP). The main functions of the TISM meetings are to schedule interventions, assign responsibilities and monitor progress of preparation work for PWAEs and LAPs
- **TOSM:** Technics/Operations Scheduling Meeting. This meeting is part of a weekly Operations meeting. The Head of Infrastructure presents the schedule and list of interventions created at TISM for validation. For each PWAE and LAP, the key person responsible for the Operations is validated. Communications with external entities are addressed. The TOSM is the preferred channel for Operations to communicate with Technics about day to day matters.
- **NBEH:** Night Briefing Equipment Handover. This is a mandatory daily communication prepared by SYMA and then published and distributed to the Operational units. This briefing is a synthesis of all inputs (Degradation Announcements, Notifications and any other relevant technical information) prepared for Operations units. The Night Briefing Equipment Handover includes all work scheduled for the night, and states whether technicians

► A new concept is born...

and/or SYMA will be present for each intervention.

WAC tools

- **Tech Log:** Logging application used to record all incidents and interventions on ATM equipment
- **Swiss Technical Diary:** Microsoft Outlook tool to schedule interventions on ATM equipment and store documents (tracking forms, pointers to PWAE documentation etc.)
- **Defect tracking:** A new tool to be introduced at sg in near future to allow defect tracking through to resolution.

What is WAC made for?

WAC provides the mandatory procedural guidelines on how to proceed corrective and preventive intervention or any modification on ATM equipment.

WAC

- provides a method to choose the appropriate procedure for each intervention on ATM equipment
- defines the actions to be taken prior, during and after an intervention on ATM equipment
- provides instructions for unexpected system failure or degradation during technical intervention on ATM equipment
- explicitly addresses the risk associated with any intervention on ATM equipment
- brings structure and overview into complex and ramified working processes
- ensures that roles and responsibilities of all participants are well defined and understood
- ensures coordination and communication with all concerned parties

- ensures that procedures and processes are complete, efficient and documented in a clear and consistent manner
- ensures that all interventions and procedures are in compliance with ESARR
- improves the quality and consistency of the work executed
- harmonizes practice and quality level in GVA and ZRH

What does WAC look like?

Who's affected by WAC?

- Logistics support: Manage and progress assigned PWAEs, LAPs and NAS.
- SYMA: 1st level support, write & publish Night Briefings. Grant permission to execute intervention. Tech log entries.
- Technicians and Engineers: Work execution, Tech Log entries and second level support.
- OPS Experts: Coordination with Technics, grant permission to execute intervention.

- DOM: Verbal night briefing to ACC and APP ATCOs. Grant permission to execute intervention.
- ATCO: Read and sign Degradation Announcements, Notifications and Night Briefings.
- All ATM equipment

Who made WAC?

The skyguide safety steering committee has mandated a team of specialists under the leadership of Andreas Plattner to elaborate WAC. Amongst others, Stephen Anders, a proven specialist in this domain, has provided considerable contribution to WAC.

When will WAC be put into operation?

The planned date of clearance for operation for the WAC concept is set for 1st of June 2005. It will naturally only take place after all concerned staff has undergone extensive training courses on the subject.

WAC points of contact at sg:

- Andreas Plattner, Steven Anders, Technical Training TET

WAC Reference

E4Wl003E Planned Work on ATM, AIM, CNS and Infrastructure Equipment (PWAE) Work Instruction

Abbreviations & Terms

AIM Equipment (Aeronautical Information Management) equipment includes tools supporting CRM, and static and dynamic data operations.

ATCO Air Traffic Control Officer or Air Traffic Controller

ATM Equipment All engineering systems, facilities or devices that have been operationally released to be used either by air-space users (e.g. ground navigation facilities) directly, or are used in the provision of operational air traffic management services. (Origin/Reference: Eurocontrol SRC ATM)

BAZL Bundesamt für Zivilluftfahrt

BFU Federal Bureau of Aircraft Accidents Investigation

CNS Communication, Navigation and Surveillance. CNS equipment includes A/G and G/G communication systems (both voice and data), LAN and WAN (upper layers), AFTN, radar sensors and navigation aids.

DOM daily operations manager

Infrastructure equipment

Infrastructure equipment includes any equipment providing a service essential to the provision of ATM, AIM or CNS such as power, air-conditioning, and data network (lower layers) etc.

SYMA System Management. The technical support team monitoring and controlling ATM, AIM and CNS equipment.

