NET*ALERT* NEWSLETTER

It's time for action

ENSURING THE EFFECTIVENESS OF SAFETY NETS

October 2007

Short Term Conflict Alert: tool or safety net?

Should STCA (Short Term Conflict Alert) contribute solely to ATM safety, and can it also be used as a capacity enhancement tool?

And should we measure its contribution to safety as part of, or in addition to, that provided by the ATM system?

These questions have now been answered by EUROCONTROL's Safety Regulation Committee (SRC) in their action paper "SRC Policy On Ground Based Safety Nets" bringing much needed clarity to an issue that has generated heated debate over the years. Safety Nets are part of ATM with the sole objective of contributing to safety. Following a recent policy review the SRC acknowledges that:

- Ground based Safety Nets by themselves should have the sole objective to contribute to safety and not be relied upon for separation assurance in the provision of Air Traffic Services
- Ground based Safety Nets are considered as part of the ATM system and contribute positively to its safety.

ICAO has the final word

In line with this review, the ICAO PANS-ATM (Procedures for Air Navigation Services-Air Traffic Management) 15.7.2, Note 1 is changing for Short Term Conflict Alert (STCA). The words "[STCA assists the controller] in maintaining separation between controlled flights" have been accepted as superfluous. Deleting these words can be interpreted as moving away from viewing STCA as an assistance tool for controllers. It is now clear that STCA is not expected to be optimised for maintaining separation. This amendment is due to become applicable in November 2007, such that:

"The generation of short term conflict alerts is a function based on surveillance data, integrated into an ATC system. The objective of the STCA function is to assist the controller in preventing collision between aircraft by generating, in a timely manner, an alert of a potential or actual infringement of separation minima."

What does this mean in practice?

1. STCA is now clearly defined as a ground based Safety Net used for the sole purpose of contributing to safety by providing alerts of a potential or actual infringement of separation minima. STCA should not be used as a conflict probe.

2. STCA is now classified as being part of the ATM system, consequently its contribution to the effectiveness of the overall ATM system should now be regularly assessed. As a result, STCA will fall within the scope of ESARR 4 (Risk Assessment and Mitigation in ATM) and require hazard identification, risk assessment and mitigation. Relevant additions to ESARR 4 guidance material are expected later this year.

Additionally, the SRC emphasises that in order to ensure correct and effective use of Safety Nets:

3. Users must be appropriately trained in understanding the purpose and function of ground based Safety Nets

4. The technical availability and operational status of the ground based Safety Nets must be indicated to controllers.

WELCOME

NET*ALERT* is a new four-monthly news update for people working in airlines, air traffic control centres and in the organisations that support them.

Written by EUROCONTROL's Safety Nets team, NET*ALERT* aims to increase awareness of how safety nets work, how they interact, and what is being done to help with implementing and enhancing them.

Thank you for lending your support to this initiative by reading NET*ALERT* and passing it on to others in your organisation affected by the contents. We are keen to receive your feedback on this new publication and will do our best to develop it further to meet readers' needs.

You can find our contact details on the back page.

INSIDE

Experts address interaction issues between ACAS & STCA

Earlier this year, the STCA & ACAS (Airborne Collision Avoidance System) Interaction and Interoperability Workshop took place in Dübendorf, Switzerland. Organised by the Swiss Federal Department of the Environment, Transport, Energy and Communication (DETEC) and EUROCONTROL, the workshop brought together 36 representatives from industry, ANSPs and professional organisations for two days of dedicated discussions on ACAS and STCA.

Obey the controller or ACAS?

The most significant issues for ACAS and STCA related to unwanted interactions between them. Experts pointed out that both STCA and ACAS are technological answers to safety concerns and that they were developed independently. A presentation given during the workshop highlighted a number of differences between ACAS and STCA.

Action needed on warning times

There was strong consensus that actions should be taken to eventually increase the distance between warning times of STCA and ACAS where possible.

Contrary to expectations STCA may trigger simultaneously with (and possibility later than) ACAS in specific situations. The resulting ATC instruction can negatively influence the required pilot's response to the Resolution Advisories (RAs). This is a typical example of problem areas that are real and have been factors in serious incidents and even accidents.

Specific short term actions included training and awareness creation; particularly the need to cross-fertilise awareness between controllers, pilots, technical, safety and management staff. Increased monitoring was also proposed, to provide more data for developing long term actions. In the longer-term a strategy is required in the context of SESAR.

EUROCONTROL's ATC domain manager and workshop co-chairman Martin Griffin said: *"The workshop was an important step forward and will hopefully lead to a future when the combined behaviour of STCA and ACAS is predictable and understood by all concerned. The Swiss authorities are the first in Europe to have created awareness in this area and the EUROCONTROL Agency will continue to progress the necessary initiatives without delay."*

	STCA	ACAS
Standardisation	Standardisation is under progress.	Standards and Recommended Practices are defined at ICAO level.
Deployment	Not mandatory, but deployed in several States with a wide range of implementation choices.	Carriage is mandatory worldwide and there is a single ACAS-compliant equipment (i.e. TCAS II version 7).
Control loop	Longer than the ACAS control-loop as it includes an intervention buffer for controller decision, action and communication to the pilots.	
Data source	Uses ground-based surveillance data which is also used for separation provision.	Independent from the primary means of separation provision, except for the use of barometric altitude.
Alerting thresholds	Implementation dependent. Estimates the remaining time until implementation dependent separation thresholds are violated.	Fixed. Estimates the remaining time until reaching the closest point of approach for comparison with fixed alerting thresholds.
Action on alert	In the event of an STCA alert the controller shall without delay assess the situation and if necessary take appropriate action.	In the event of an RA, the pilot shall "follow the RA" (even if there is a conflict between RA and ATC instruction to manoeuvre).

The workshop report and presentations may be downloaded from :
http://www.eurocontrol.int/safety-nets/public/standard_page/Swiss_WS.html

See also: TCAS AND STCA – NOT JUST ANAGRAMS by Stan Drozdowski published in the July 2007 issue of HindSight:
http://www.eurocontrol.be/safety/public/site_preferences/display_library_list_public.html#3

STCA Specification:

Official consultation underway

The formal EUROCONTROL Notice of Proposed Rule-Making consultation process is now underway on the draft Specification for Short Term Conflict Alert (STCA). States, stakeholders and interested parties had until 5 September 2007 to express their formal views on the document. When the consultation process is successfully completed the Specification becomes an agreed EUROCONTROL Specification, ready for incorporation in the SES regulatory framework. The STCA Specification is already being used in the context of the European Convergence and Implementation Plan which mandates ECAC-wide compliance with the Specification by December 2008.

Behind the scenes

The development of the Specification began after a number of aviation accidents and serious incidents in 2001 and 2002. A task force was established comprising 11 ANSPs, 5 Industrial suppliers and EUROCONTROL. Called SPIN (Safety nets: Planning Implementation and eNhancements) Task Force, together they not only produced the draft Specification currently under review but also a comprehensive package of supporting guidance material. The STCA Specification includes comprehensive guidance material aimed at staff with responsibility for overall management of STCA.

The guidance material is available on the webpage: [A] see below.

EUROCONTROL's head of DAP/ATS responsible for the consultation is Pascal Dias. He says *"We consulted widely and listened hard to everyone's views during the development of this Specification. And that is its strength. It gives ANS Providers the tools they need to improve the effectiveness of STCA and should result in real safety benefits".*

A consultation workshop was held on 3 October 2007. The final Specification document is expected to be notified to the Provisional Council in November 2007. Further information on the consultation, can be found at [B] see below.

The guidance material includes:

- General Guidance material on lifecycle, organisational, procurement, validation, tuning and training aspects
- A reference STCA System
- Safety Assurance material: Safety Argument, Generic Safety Plan and Outline Safety Case for STCA System
- Cost Framework for the Standardisation of STCA
- Case Study for ATCC Semmerzake
- Optimisation of STCA
- Functional Hazard Assessment of STCA

[A] http://www.eurocontrol.int/safety-nets/public/standard_page/stca_01.html

[B] http://www.eurocontrol.int/safety-nets/public/standard_page/ENPRM_STCA.html

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MSAW:
Up and coming

MSAW (Minimum Safe Altitude Warning) is a ground-based safety net that helps prevent controlled flight into terrain (CFIT) accidents. MSAW does so by generating alerts of potential or actual infringement of a minimum safe altitude related to the position and speed of an aircraft. It is intended to function in the short term, providing warning times of up to 2 minutes – and it is the current focus of the SPIN (Safety nets: Planning Implementation and eNhancements) Task Force.

MSAW Specification presents fresh challenges

The SPIN Task Force has been developing a draft Specification that provides minimum requirements for the development, configuration and use of MSAW by all Air Navigation Service Providers (ANSP) in the ECAC area. The materials produced will be similar to those produced for STCA (see centre spread).

However, whereas STCA was already in widespread use, MSAW is not – and this presents fresh challenges. MSAW functionality is a standard component in many new commercial systems, but its use is limited to a very small number of States. Ben Bakker, EUROCONTROL Safety Nets Project Manager explains: "While ANSPs strive to maintain the highest standards of safety, interestingly the objectives of air traffic control service do not include prevention of collision with terrain. Clearances issued must respect minimum safe altitudes, but there is no requirement for ATC to observe adherence to clearances as regards minimum altitudes. So our job with MSAW will be twofold; firstly to demonstrate to ANSPs the value of using MSAW, particularly to those that do not operate in mountainous terrain, and secondly that it makes sense for any implementation to follow the EUROCONTROL Specification."

Swiss Case Study

A key element to the development of the MSAW Specification is a case study to verify the practical usability of the material. Once again, co-operation is taking place with Switzerland, this time with its ANSP Skyguide. Skyguide uses QinetiQ's MSAW test bed to investigate optimising the performance of its current MSAW system as well as testing the feasibility of extending the MSAW application in Swiss airspace. Skyguide's project manager for the case study, Isa Alkalay explains that this collaboration has benefited both parties: *"Skyguide's current MSAW system is applied around the Geneva and Zurich final approach areas. We were already looking to improve and expand our MSAW system when we heard about the SPIN Task Force's request for an ANSP case study on optimising MSAW."*

Results are expected later this year.

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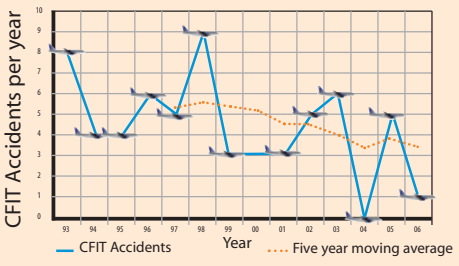
CFIT, the biggest killer in aviation

At least five, and possibly seven, of the fatal airline accidents in 2006 were controlled flight into terrain (CFIT). The final verdict will depend on facts yet to be determined by the investigations. None of the aircraft involved were fitted with terrain awareness warning systems (TAWS). The previous year there were seven fatal CFIT accidents. Director of technical programmes at the Flight Safety Foundation Jim Burin points out that there has only ever been one year - 2004 - in which there were no CFIT accidents involving commercial jet operations, so this killer is still undefeated despite efforts over the past 15 years to train pilots and airlines to recognise and deal with CFIT risk, and to persuade carriers to equip aircraft with TAWS. (Flight International, 9 January 2007)

Western-built Commercial Jet CFIT Accidents 1993 - 2006



Source: Flight Safety Foundation (http://www.flightsafety.org/cfit1.html)