"Your safety is our mission"

How Europe is enabling airport operators to tackle runway safety with a harmonised approach

by Sarah Poralla

On Thursday, 25 February 2010 at 3.19pm in the afternoon, a serious aircraft incident took place at Oslo's Gardermoen airport. An Airbus A320 aircraft of Aeroflot (AFL212) made a taxiing mistake and took off from taxiway M instead of runway 01L. There were three pilots, four cabin crew members and sixty passengers on-board...

The three pilots had not been aware that they had taken off from the taxiway until informed of this by the air traffic controller after take-off. The flight continued as planned to Moscow after the incident. Some serendipitous circumstances had prevented a more serious outcome of this serious incident. Under the prevailing conditions, taxiway M was by chance long enough for the aircraft to take off. The taxiway was at the time of the incident also free of other traffic and obstacles.

The Oslo incident serves as a case-study to illustrate that runway safety must be at the forefront of all actors in the system. The fact that such incidents still happen in this day and age underscores the importance to harmonise the appearance and management of manoeuvring areas. This is, because aerodromes are not (just) an assembly of static infrastructure and equipment permitting flight crews to collect and deliver passengers, but are dynamic systems themselves where different actors interface to deliver a safe service under varying environmental (visual and weather) conditions.

In 2005 the European Commission announced the inclusion of the safety of aerodromes and ATM/ ANS into the remit of the European aviation system and in 2009 the EASA Basic Regulation was changed to mandate EASA to develop the detailed rules and certification specifications for these areas. From 2010 to 2013 the Agency, together with NAAs and industry did just that. In formulating its safety regulations for aerodromes, Europe has adopted material from a number of ICAO source documents and Annexes in order to define aerodrome design and operating requirements. Additional material – best practice – from a wide range of global national aviation authorities has also been assessed and, where

applicable absorbed into the EASA rules. Care was taken in that process to not exceed or dilute the overarching ICAO material.

The resulting Regulation 139/2014 containing the Implementing Rules, the accompanying acceptable means of compliance and material, as well as the certification specifications for aerodrome design, came into effect this March. The rules contain a wide range of regulatory requirements, but for the purposes of this article I will focus on the fairly narrow element of those requirements under the generic term "runway safety". This in itself opens the door on a wide range of activities – aerodrome design, implementation and operations – which affect and require input from ANSPs, aircraft operators and operators (use of vehicles, etc). To add some spice to this melange, there are rules specifically aimed at the prevention of runway incursions and excursions taken from the best practices in the known European Plans. Additionally, the Agency is undertaking studies for runway friction measuring and reporting and future use of novel runway surfacing materials which will be included into the European rules in the future.

But for now, back to the basic scenario, our raison d'être, to ensure safe operation of aircraft and aerodromes. In simple terms the objective is to prevent (or minimise the possibility) of aircraft inadvertently leaving the paved surface of the runway or taxiway, to prevent aircraft or vehicles inadvertently entering a runway or taxiway occupied by other aircraft or vehicles including aircraft making an approach to land or take off. It should be evident that the ANSP plays a major part in this process, and equally evident that aerodrome design – the visual cues given to pilots and drivers – should complement instructions from air traffic controllers.

It would be accurate to say that the latter case, involving universally recognised markings, lights and signs (that's the ICAO part of the equation), has a significant input in maintaining aerodrome users' situational awareness, particularly in poor weather when LVPs are activated. Moreover, and this demonstrates the holistic approach to safety, the visual elements should not only be standardised (in compliance with the ICAO SARPs), but well maintained, visible in all meteorological conditions, functioning (lit signs, serviceable AGL) and above all appropriate to the needs of aerodrome operations. At the same time it is equally important that the aerodrome operator publishes runway safety information to aerodrome users (AIP, NOTAM, hotspot charts, safety bulletins etc.) in a timely and reliable manner and that the aerodrome operator leads safety programmes and committees to continually improve the safety performance of the aerodrome.

So for EASA's part, the rules are intended to ensure standardisation of aerodrome design and operations across the EU, while at the same time recognising that there may be unavoidable local variations, and accommodating those deviations by a variety of mechanisms, such as: demonstrating an equivalent level of safety (ELOS); producing a deviation acceptance and action document (DAAD) which could recognise that a future action plan is needed to address the deviation; introducing a special condition (SC) to ameliorate by procedural means an immutable scenario, for example where local topography prevents application of a regulatory requirement. The aim of safe operations can be maintained even when this fairly wide range of flexible options is proportionately applied. ▸▸

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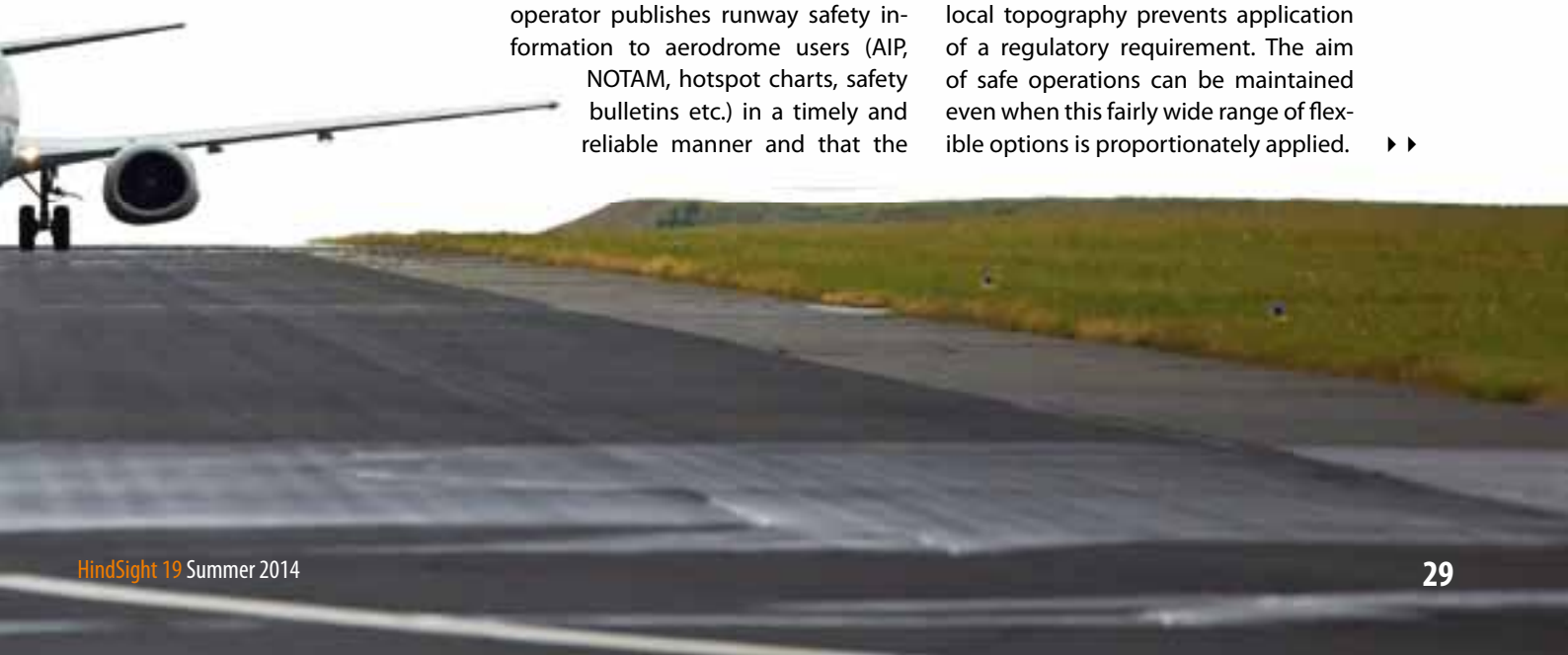

Runway with yellow markings in Norway. The Norwegian CAA have decided to ask Avinor to phase these markings out and to mark the runways white by 2017 at the latest[2] (Photo by Avinor)

Using the Oslo incident as an example we can illustrate how EASA rules are being applied to achieve a standard measure of safety:

The investigation by the Norwegian AIB[1] revealed several causes for the crew's taxiing mistake and take-off from the taxiway. The factors which contributed to the event can be found with the all the parties involved, i.e. the airline, the control tower and the airport.

However, among the contributory airport-related factors uncovered were the unusual runway marking colour in Norway - yellow instead of white - which were not compliant with ICAO (and EASA) standards but before the incident were believed to be more appropriate in winter conditions.

Furthermore, the relevant part of the manoeuvring area where the confusion took place had not yet been published as a "hot spot" in the AIP charts (although it would have been imminent in the AIRAC cycle) and that the runway Safety Team (LRST) had not foreseen this incident scenario of an aircraft taxiing to an intersection take-off point on the runway and that therefore there was inadequate signage.

This incident therefore demonstrates a need for the commonality and standardisation of runway safety management for which EASA's rule structure has created.

- In the EASA Aerodrome Design Certification Specifications there are many --specifications that are intended to minimise the risk of runway incursions in terms of marking and lighting of hot spot areas, requiring stop bars, runway guard lights, taxiway centreline and lead on lights.

- In terms of aerodrome operations, the European implementing rules require Aerodrome's Safety Programmes which include the establishment of Local Runway Safety Teams (LRST) as an appropriate means to bring together the operator, aerodrome users, vehicle drivers and the ANSP to study the aerodrome from different vantage points and to improve it jointly.

In the coming years the aerodrome section at EASA will update and improve its rules for aerodrome safety mirroring the ICAO requirements, but also enhancing them with the best practices from around the world, while also giving guidance on the standardised introduction of new technologies.

Taxiway M at Oslo's Gardermoen airport from which an Aeroflot Airbus A320 aircraft took off from instead of runway 01L (reproduced from the AIBN Investigation Report)

The aerodrome safety rules can be accessed via the EASA website:
http://www.easa.europa.eu/easa-and-you/aviation-domain/aerodromes?page=relevant-legislation-for-aerodromes

The team at EASA can be contacted by email using: aerodromes@easa.europa.eu

1- http://www.skybrary.aero/index.php/A322,_Oslo_Norway,_2010_(RE_HF)
2- The next issue of the Norwegian AIP will say the following: 5.2.1.4: Norway is changing the colour of runway markings from yellow to white. In a transition period until 31.12.2017 some runways will still have yellow markings.