

SACAA INTERIM REPORT ON AIRLINK GEORGE AIRPORT ACCIDENT

Midrand - Following an Airlink accident that took place at the George Airport on 07 December 2009, the South African Civil Aviation Authority's Accident and Incident Investigation Division has had to evaluate all possible factors that could have led to the accident. One of the factors that had to be considered was the effect, if any, that the runway surface could have played on the high speed friction coefficient of the runway. This was crucial because from the evaluation of the flight data recordings of the accident aircraft; it appeared that there was nothing wrong with the aircraft that could have led to the accident. The investigators then had to focus on evaluating whether the runway surface could potentially have been the problem.

In the meantime and in order to ensure safe use of the runway; the South African Civil Aviation Authority (SACAA) issued a NOTAM which restricted the use of the George Airport in wet conditions. Based on preliminary results of the tests conducted, the SACAA then reassessed the restrictions and decided that commercial operators will be allowed to use the runway in wet conditions, provided that the aircraft type can safely take off and land with a 30% reserve distance available for the existing runway length. This enables any aircraft equipped with fully functional thrust reverse and anti-skid braking systems to safely stop on the runway with minimum risk in the event that any adverse friction condition is encountered.

Follow up tests results, by Comair, were within limits (only +6% of the allowable +10%) for the landing distance required but exceeding the braking distance required for aborted take-off test by 28% from the calculated distance. Notwithstanding, the current NOTAM will remain effective until the runway friction and water drainage has been tested after completion of the resurfacing work by the Airports Company South Africa (ACSA).

In the meantime, the SACAA's Accident and Incident Investigation Division (AIID) has today (06 May 2010) released a second Interim Report on the investigation into the cause(s) of the accident.

Salient points from the Interim Report

The Report has unveiled that the prevailing weather conditions at the time of landing were overcast, with light rain. The landing was captured on aerodrome surveillance cameras. It was determined that the aircraft touched down in the area of the fourth landing marker.

According to the air traffic controller (ATC) on duty at the time, the landing appeared normal, however the aircraft did not vacate the runway to the left as per normal operation but instead veered to the right and went past the instrument landing systems localizer. At this stage the ATC realised that something was wrong and subsequently activated the crash alarm.

It has also been established that there was no communication or distress broadcast from the cockpit crew to indicate that they were experiencing a problem during the latter part of the landing roll.

In this case, the investigation focused on three aspects, namely:

1. Operational performance of the aircraft and crew;
2. Aircraft maintenance, certification and braking system;
3. Runway operational conditions.

The investigation has also established that the pilots involved had landed at George Airport in wet conditions many times before, but this was the first landing conducted by them in wet runway conditions since the rehabilitation project on runways 11/29 was completed. At the time of this accident it was the first time that the George area had received a proper rain shower following the rehabilitation of the runway, which was concluded on 6 November 2009.

In addition, review of the **digital flight data recorder** data and **cockpit voice recorder** audio did not indicate any significant deviation from standard operating procedures. The approved flight manual figures applicable to the landing weight did not indicate that the aircraft would not be able to stop in the distance available – the runway length was 2000 m with an upslope of 0.4%. According to figures provided by the manufacturer the aircraft should have been able to have come to a complete stop in a distance of 1895 m.

All indications to date are that the aircraft was serviceable and that the anti-skid braking system of the aircraft worked as it should have, but that due to the slippery surface, the system was unable to apply sufficient brake pressure to effectively stop the aircraft. Although pilots may be applying maximum braking, the system will limit the actual brake pressure to prevent the wheels from locking. Moreover, the tyres did display some evidence of aquaplaning. With this in mind the runway rehabilitation project received specific attention.

The most significant change had been the application of a bitumen emulsion - fog spray (SS-60 Stablemix Bitumen Emulsion) to the runway surface during October 2009. The application of fog spray could be considered as a relatively inexpensive way to extend the service life of a pavement surface against wear and ageing. Aquaplaning occurring on a wet runway can be due to various factors, including the presence of any standing water due to inadequate drainage and sloping of the runway surface, the macro and micro texture of the runway surface, as well as the friction coefficient of the surface. The primary function of macro-texture is to provide paths for water to escape from beneath the aircraft tyres. This drainage property becomes more important as the speed of the aircraft increases, the tread depth of the tyres decreases, and water depth increases. All three of these factors contribute to aquaplaning. The use of only friction measurements is no guarantee that aquaplaning will not occur.

Interim Conclusion(s)

In this case, the **digital flight data recorder** data confirmed the occurrence of aquaplaning, which is also verified by the damage observed on the aircraft tyres. Overall, it would appear that the application of the fog spray sealant extensively degraded the surface friction coefficient of the runway surface during wet conditions, thereby allowing the onset of aquaplaning and thereby inhibiting the application of adequate braking pressure by the anti-skid system to stop the aircraft within the certificated distance.

The use of the fog spray sealant can be considered to have been the primary probable cause of the occurrence of aquaplaning. In this regard it is considered imperative, in the interest of aviation safety, that the service provider (ACSA) improve the runway surface at George Airport and implement corrective actions to allow aircraft operations under wet conditions to return to normal.

Interim Safety Recommendations

The SACAA's AIID issued three interim safety recommendations to the Commissioner for Civil Aviation. These were implemented as deemed necessary. These recommendations were:

1. A NOTAM be issued restricting the use of runway 11/29 at FAGG by large transport aircraft (>5700kg) when the runway is wet;
2. The NOTAM to remain in force until such time as adequate friction/texture treatment, such as grooving, has been implemented over the entire runway length and width; and
3. ACSA be required to conduct a risk assessment with reference to the lack of an end safety area on runway 11 at George Airport and if found necessary, to incorporate some form of arresting mechanism.

Notwithstanding the abovementioned interim safety recommendations, it is recommended that the Director for Civil Aviation consider the following.

- The use of sealants on runway surfaces to be prohibited. In this regard it is considered imperative, in the interest of aviation safety, that the service provider (ACSA) improve the runway surface at George Airport and implement corrective actions to allow aircraft operations under wet conditions to return to normal.
- The certification status of runway 11/29 at George Airport to be reviewed with special emphasis on water drainage (proper grooving) and friction characteristics, as well as a macro and micro structure evaluation of the runway. This should be conducted in line with the minimum requirements as called for in ICAO doc 9137.
- The Aerodrome Department of the SACAA be strengthened to ensure adequate skills and knowledge to enable the comprehensive safety oversight over the certification of

aerodromes and the maintenance of certification standards. This should include the establishment of an office that deals primarily with runway safety.

- The revision of Part 139 of the Civil Aviation Regulations of 1997 and its associated CATS document to ensure compliance with the provisions as contained in Annex 14, Volume I and international best practice. This should include the development of appropriate guidance material for aerodrome operators.

The investigation is ongoing but nearing completion. A draft Final Report will now be completed. Should any new information become available, this will be incorporated into the report. This draft Final Report will then be submitted to the Accredited Representatives and their Advisors for a comment period of 60 days. Any comments received will either be incorporated into or appended to the Final Report. It is foreseen that a Final Report will be submitted to the Director by not later than September 2010.

Notwithstanding the above, the SACAA holds the view that runways in SA are generally in a good state and compliant with the ICAO physical requirements. The SACAA also wishes to reiterate that the objective of an accident investigation is to establish the cause(s) of the accident and to take steps to prevent a further occurrence. As such, the objective is not to apportion blame or liability. Moreover, the SACAA values accident reports as they serve as mechanisms that point to any shortcoming; and as such enables the Authority to continuously upgrade its oversight systems. In this regard, the SACAA will carefully study this Interim Report as well as the Final Report and where necessary introduce changes to address potential shortcomings.

-ENDS-

About the SACAA:

The South African Civil Aviation Authority (SACAA) was established on 1 October 1998 following the enactment of the South African Civil Aviation Authority Act, No.40, in September of the same year. The SACAA promotes and maintains a safe, secure and sustainable civil aviation environment, by regulating and overseeing the functioning and development of the industry in an efficient, cost-effective, and customer-friendly manner according to international standards.

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