

## **SUMMARY IN ENGLISH**

The incident occurred on a flight between Arlanda and Vilhelmina on the 5<sup>th</sup> February 2016. During the first part of the approach towards Vilhelmina, the crew observed a caution for pitch trim system. The crew decided to disengage the autopilot, which resulted in an abrupt nose-down motion. The approach was abandoned due to the relatively large force necessary to control the aircraft in pitch. A holding pattern was entered with the purpose of trying to solve the problem. This was not possible and the weather minima were below the required for approach and landing, hence the crew decided to divert to Umeå airport. The destination was later changed to Skellefteå airport.

Also on the approach for Skellefteå both pitch trim systems were stuck in the nose-down position when the autopilot was disengaged, hence indicating that the systems were inoperative. The crew decided to land with flaps retracted so as not to alter the balance of lift. With effort one of the pilots held the nose up on the approach while the other pilot was ready to help if necessary. However a normal landing was carried out.

A verification of the event was made in a calibrated full flight simulator which showed that the steering forces were high but manageable. This conclusion is also confirmed by the fact that the co-pilot did not have to take help of the commander to manage column forces. The simulation also showed that it would have been much easier to land with extended flaps instead of retracted.

However, it is noticed that neither the abnormal nor the emergency checklists gave the pilots any guidance for how the aircraft should be configured for landing in this situation. A specific checklist for the situation where both pitch trim systems are inoperative was not available in the type certificate holder's operative manuals. Such a checklist could of course be helpful for the planning of a safe landing. Given that it is extremely rare that both the normal trim system and the standby system becomes inoperative, and since it is considered to be a problem that can be managed and therefore not to be considered as serious enough from a safety point of view, the Commission refrains from issuing a safety recommendation.

The cause of the erroneous pitch trim systems has not been established with certainty. However, it has been established that the wear damages on a relay has been a contributing factor. The low reliability of the trim actuators has probably also been a contributing factor.

### **Safety recommendations**

None.