

## SUMMARY

The accident occurred in connection with landing after a flight from Tullinge, south of Stockholm to Åre Östersund Airport.

The pilot received permission to land at FATO<sup>1</sup> A and then hover to the helicopter pad “Mitt” outside the hangar of the company Storm Heliworks. After landing, the pilot was directed by a person on the ground to hover in for touch down in front of the hangar. The area of the apron where the helicopter was to touch down inclines approximately 4 degrees towards the hangar, and the helicopter was to touch down transverse to the incline with the left side downwards.

In conjunction with the first contact with the ground, the helicopter began to bounce uncontrolled between the skids. The pilot aborted the touch down, increased the collective lever displacement markedly and quickly lifted off from the ground with a low nose position, after which an uncontrolled situation arose. The helicopter lifted and rotated two turns counter clockwise before it hit the ground. The impact was first with the tail rotor and then with the main rotor blades. After having rotated another turn, the helicopter came to rest standing on its skids in an upright position. A fire broke out in the engine bay, but was extinguished by personnel from an adjacent helicopter company. The pilot received help to evacuate from the helicopter and was taken to hospital by ambulance. The helicopter sustained substantial damage.

Extensive examination of the helicopter including the power plant system shows that all systems were operating as per design until the impact. However, the investigation shows that the touch down of the helicopter was made on a rigid and unforgiving surface that sloped to the left with a hovering position that inclined to the right. The investigation further shows that the helicopter neither touched down and unloaded nor hovered free from the ground in conjunction with the touch down and that the manoeuvring quickly went to an overcompensation of the steering displacements, which increased the helicopter's movements. When the decision to abort the landing was made, control was already on its way to being lost. The large collective lever displacement that was given at this stage, in combination with the absence of compensatory steering displacements using pedals, led to the situation becoming uncontrolled.

The accident was caused by the fact that the sloping and hard surface at the touch down site made the degree of difficulty of the touch down too high in relation to the pilot's experience of the helicopter type and his current flight proficiency.

Regarding the rescue operation, the investigation shows that the alerting service and collaboration between units involved functioned well from an overall point of view, but that it took a relatively long time for the airport's first fire fighting vehicle to get to the accident site. Admittedly, the response time was within the requirements for non-commercial air traffic. However, the airport's rescue services must be designed to also meet the requirements for commercial operation. It is noted that the present rescue routes are primarily designed to facilitate operations at the main runway. The investigation shows that the sharp turns on the response routes mean that the drivers must maintain a very low speed in the turns. SHK is therefore of the opinion that Swedavia should consider to take measures to assure that they can meet the existing response time requirements of three minutes, e.g. should the rescue

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<sup>1</sup> FATO – Final Approach and Take off area.

routes be redrawn with smoother turns or, alternatively, be supplemented with direct rescue routes in order to facilitate response with heavy fire fighting vehicles to FATO A.

The analysis further shows that there may be reason to investigate whether personnel should have the task of assisting in engine start of passenger aircraft and on the same time be on duty as a firefighter. If both tasks are still to be handled at the same time, the emergency functions should, according to the SHK, be supplemented so that they can be clearly observed from all locations. In such a case, there may also be a need for instructions on how to cancel an engine start of a passenger airplane in case of an alarm.

The investigation shows that since the accident occurred Swedavia has begun the process to of reviewing the functions that should be manned by employees while in the same time serving as fire fighters. Therefore SHK refrain from issuing any safety recommendation to Swedavia. It is expected that The Swedish Transport Agency will follow up on this work in its oversight and will ensure that Åre Östersund airport complies with the prescribed response time requirements for rescue services.

It is noted that deficiencies identified in the investigation have not been acted on in the Swedish Transport Agency`s oversight role. The Swedish Transport Agency is therefore recommended to evaluate how well this type of deficiencies can be identified in the Agency's oversight process.

### **Safety recommendations:**

#### **The Swedish Transport Agency is recommended to:**

- Evaluate their oversight process for airports. *(RL 2017:07 R1)*
- Assure that Åre Östersund airport complies with the Swedish Transport Agency`s regulation and general advice (TSFS 2010:29) regarding preparedness for rescue and emergency services at airports. *(RL 2017:07 R2)*