SUMMARY IN ENGLISH

A pilot from Blekinge Wing (F 17) in Kallinge conducted a training flight in a military aircraft of the type JAS 39 C Gripen when the aircraft collided with a flock of birds. The pilot reported the bird strike to the air traffic control at Ronneby Airport and requested return for landing.

Initially all screens in the cockpit went out, but the emergency instruments returned shortly thereafter. The pilot began a turn to return to the airport, but the aircraft lost height and the pilot experienced control difficulties and that the engine did not respond to the throttle. He then decided to eject from the aircraft with the aid of the plane's rescue system.

The pilot received only minor wounds that occurred in connection with the launch and landing. The aircraft crashed altogether.

The investigation shows that the birds were of the specie great cormorant. This bird is considerably larger than the engine is designed to handle. The damage to the engine was also so extensive that the engine stopped immediately and was not possible to be restarted.

According to the investigation, the altitude and speed at the ejection were so low that only small margins remained for safe use of the rescue system. SHK finds that the checklists for restarting the engine are not adapted to low altitude conditions and that they should be reviewed and coordinated to simplify the decision making for the pilot after a bird strike that results in an engine failure. Furthermore, in view of the time required for a full engine restart, the checklist should include an ejection decision earlier in the checklist and possibly also a minimum height for ejection as a general rule.

The investigation also shows that the Air Force currently lacks a bird alert system to reduce the risk of bird collisions. According to SHK, the Armed Forces should investigate the need for and the possibilities of introducing any such system.

The analysis of the rescue operation shows a need for improved communication and coordination on operations and that there is a need for guidance for the rescue services in order for them to be able to assess and protect themselves against the risks arising from aviation accidents.

The investigation also shows that there is a need for the Armed Forces to improve the preparedness and routines for handling the environmental consequences of an aircraft accident.

SAFETY RECOMMENDATIONS

The Armed Forces are recommended to:

- Investigate the need for, and if such need exists and it is considered appropriate, develop and implement a function for information on hazardous bird occurrence in connection with the airports from which the Armed Forces operate. *(RM 2019:02 R1)*
- Investigate the need for and if appropriate determine a minimum height for ejection in the event of engine failure. *(RM 2019:02 R2)*
- Develop a routine for handling soil- and environmental damage and decontamination after an air accident and ensure that the routine is known within the Armed Forces and its units. *(RM 2019:02 R3)*

Saab AB is recommended to:

- In consultation with the Armed Forces and other operators, simplify and adapt the emergency checklists to engine failures at low altitude. *(RM 2019:02 R4)*
- Investigate whether an advanced APU logic with longer running time in connection with take-off and pre-landing, or other function in support of faster re-start, may improve flight safety. *(RM 2019:02 R5)*

The Swedish Civil Contingencies Agency, MSB, is recommended to:

- As soon as possible, complete the work on investigating the risks with burned and broken carbon fiber composite, and provide guidance for action in the event of an emergency where rescue personnel risks to be exposed to such materials. *(RM 2019:02 R6)*
- Also map the risks with other hazardous substances, which rescue personnel run the risk of coming in contact with after aircraft accidents, and provide guidance for the action in such accidents. *(RM 2019:02 R7)*
- Map the need for a developed coordination and management of aviation accidents. *(RM 2019:02 R8)*
- On the basis of the results of the above-mentioned survey, initiate and lead a work in which relevant actors such as the Maritime Administration, SOS Alarm, the Swedish Civil Aviation Administration and other air traffic management suppliers, the Police, the Swedish Armed Forces, representatives for municipal rescue services and prehospital medical care participate in joint efforts to ensure a coordinated and jointly rehearsed handling of air accidents. *(RM 2019:02 R9)*