The sole objective of safety investigations is the prevention of future accidents and incidents.

The Commission does not apportion blame or liability. The investigation is independent and separate from any judicial and administrative proceedings.

Any use of the final report for any purpose other than the prevention of aviation accidents and incidents may lead to wrong conclusions and interpretations.

FINAL REPORT

of the State Commission on Aircraft Accidents Investigation

of 10 July 2026

2025-0023

OCCURRENCE NUMBER

Konner s.r.l, Konner K1-S19, SP-HTMS
Stopin near Sierpc, 10 May 2025

LOC-I: Loss of control – in-flight

This Final Report was issued by the State Commission on Aircraft Accidents Investigation on the basis of information available on the date of its issue.

This Final Report presents the circumstances of the aviation occurrence concerned, as well as its causes, contributing factors and safety recommendations, if issued.

State Commission on Aircraft Accidents Investigation
ul. Puławska 125, 02-707 Warsaw

Correspondence address:
ul. Chałubińskiego 4/6, 00-928 Warsaw

kontakt@pkbwl.gov.pl

24-hour emergency phone: +48 500 233 233

https://www.pkbwl.gov.pl

1. Course of the events

On 10 May 2025, at approximately 10:00 hrs,[1] the ultralight helicopter Konner K1-S19 with the registration mark SP-HTMS took off from the Witolub helipad for a flight to the airfield in Kępa near Płońsk (EPPN), where the 6th Helicopter Rally was scheduled to take place that day. At 12:03 hrs, the helicopter landed at EPPN. After landing, during engine shutdown, the instrument panel displayed the yellow message "FLOW CLOGGED-BYPASS FLOW OPEN." Moments later, the engine shut down.

According to participants of the occurrence, after a pre-flight inspection prior to the departure from the EPPN, no warning messages appeared on the instrument panel when the helicopter's master switch and ignition switch were turned on, so at around 15:08 hrs the pilot proceeded to start the engine. The first attempt failed as the engine did not start, only started to smoke black. The attempt was stopped at 15:09 hrs. It was only during the next attempt, at 15:27 hrs, that the engine was successfully started, and at 15:31, the helicopter flew to the petrol station in Sochocin, where 140 L[2] of diesel were refuelled. At 16:09 hrs, after refuelling, the helicopter flew off towards Sierpc. The pilot, together with the helicopter's owner, were on board. During the flight, at an altitude of approximately 1,300 ft[3] (according to the pilot's statement), the pilot heard loud knocks coming from the engine compartment. The instrument panel displayed the red message "LOW RPM MAIN ROTOR"; the sound coming from the engine compartment changed and the helicopter deviated to the right. According to the pilot's account, he determined that the engine had shut down and therefore he proceeded to autorotation landing by moving the collective lever to the full down position and setting the main rotor RPM above 95% and an airspeed of 65 KIAS.[4] The pilot selected an off-airfield landing site in an open area into wind. At 16:33 hrs, the helicopter touched down on both skids, in a run-on landing, with a landing roll of approximately 3 metres. During the final phase of the landing roll, the right skid dug into the ground, after which the helicopter nosed over and rolled onto its left side. The helicopter sustained significant damage. The pilot and passenger exited the helicopter under their own steam. The fuel tank did not leak and no fire occurred.

The police, fire brigade, and the emergency medical team arrived on the scene. Participants of the occurrence were examined and no injuries were found. The pilot's sobriety test revealed no alcohol in the exhaled air.

After disconnecting the battery and implementing fire safety measures, the wreckage was, with the assistance of the fire brigade, righted onto its skids. Once

[1] The times in the report are given in the LMT. On the day of the occurrence, LMT was UTC+2 h.
[2] Litre.
[3] Foot/feet.
[4] Indicator Air Speed in knots.

PKBWL arrived at the scene, a fuel sample was taken from the helicopter's tank. The wreckage was relocated to a secured parking facility.

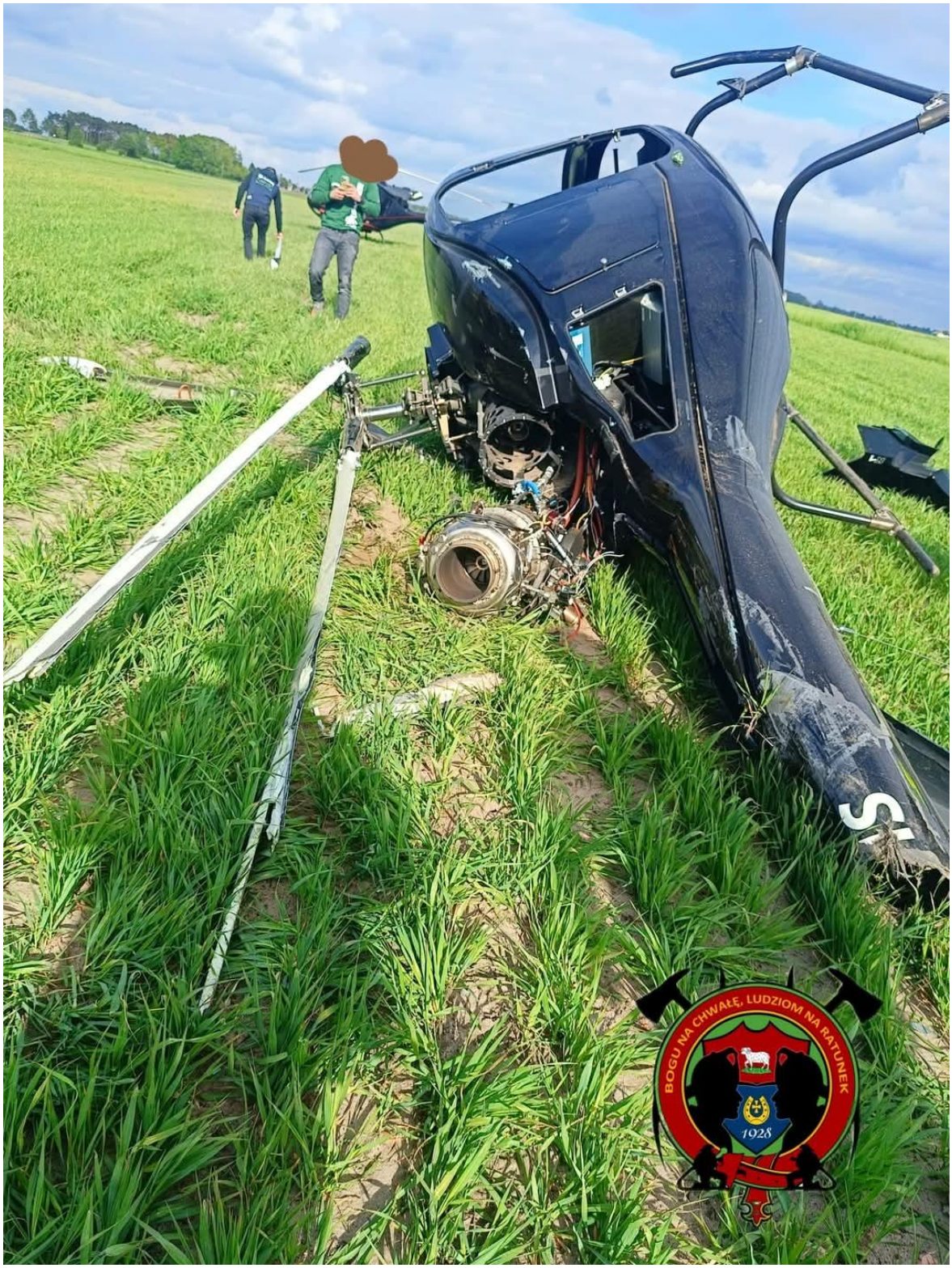

Fig. 1. SP-HTMS helicopter after landing in Stopin near Sierpc [source: OSP Rościszewo]

2. Relevant information

2.1. Injuries to Persons

Injuries	Crew	Passengers	Total on board the aircraft	Others
None	1	1	2	-
TOTAL	1	1	2	-

Table 1. General summary of injuries

2.2. Crew qualifications

Pilot: male, 57 years old, held a CPL(H)[5] with R44 ratings (until 28 February 2025) and an unrestricted aero-medical certificate – within the validity period. Total flight time: 2550:52 h,[6] type flight time: 56 h, flight time in the last 24 hours: 2:31 h, in the last 7 days: 6:16 h, in the last 90 days: 56 h. During the occurrence, the pilot occupied the right-hand seat and acted as commander.

At the time of the occurrence, the pilot's licence was beyond its expiry date.

2.3. Aircraft

2.3.1. General information:

(1) Ultralight helicopter of composite construction with skids; a single-rotor helicopter with the tail rotor powered by a turboshaft engine.

(2) Manufacturer: Konner s.r.l., model: Konner K1-S19, factory no.: 0010, year of manufacture: 2024, registration mark: SP-HTMS, number of seats: 2, MTOM:[7] 600 kg,[8] flight time from the beginning of operation: 43 h according to the UL[9] logbook (86 h according to the hourmeter).

(3) Engine: Konner TK-250, manufacturer: Konner s.r.l., flight time from the beginning of operation: 43 h according to the UL logbook (86 h according to the hourmeter).

(4) Main rotor and tail rotor – manufacturer: Konner s.r.l., operating time: 43 h according to the UL logbook (86 h according to the hourmeter).

(5) Registration Certificate dated 6 December 2024 – valid on the date of the occurrence.

(6) Flight permit dated 10 December 2024 – valid for one year after the UL inspection (the UL logbook contains an incorrect validity date of 9 December 2024).

[5] Commercial Pilot License– Helicopter.
[6] Hour.
[7] Maximum Take-Off Mass.
[8] Kilogram.
[9] Aircraft (Polish: *Urządzenie Latające*).

(7) Maintenance records – the UL logbook contains no information on the maintenance performed.

(8) Airworthiness directives – none.

2.3.2. Fuel

(1) Recommended – Diesel Fuel or Jet Fuel.

(2) Used in flight – Diesel Fuel.

(3) Amount on board (according to the owner's statement) – approx. 140 L.

(4) Distribution on the deck – in the aft fuselage tank.

2.4. Owner and operator (user)

Owner/User: Europejski Fundusz Leasingowy S.A. / private individual

2.5. Meteorological information

On 10 May 2025 at 16:33 hrs in the area of Sierpc at 1500 ft AMSL,[10] conditions were VMC,[11] wind direction: 010º, wind speed: 12 kt,[12] visibility: above 10 km,[13] ambient temperature: 4.5℃,[14] isotherm 0 ℃ at 3,500 ft AMSL, pressure: QNH[15] 1014 hPa.[16]
There were single, isolated *cumulus congestus* clouds with a lower base of 3,000 to 4,000 ft AMSL.

Meteorological conditions did not affect the course of the occurrence.

2.6. Information on the wreckage and the occurrence

2.6.1. Damage to the aircraft

The helicopter sustained significant damage following its landing and rollover. The tail boom fractured (at mid-span) together with the shaft driving the tail gearbox, and both the tail rotor and the main rotor were destroyed. The engine broke free from its mounts, separating from the helicopter. In addition, the right cabin door, the left-hand baggage compartment door, and the right-hand access panel door were torn off. The cockpit glazing on the left side was damaged.

2.6.2. Place of occurrence:

The helicopter nosed over after an off-airfield landing in Stopin.
Site coordinates: 52° 55' 32.34"N, 19° 43' 49.439"E.

[10] Above Mean Sea Level.
[11] Visual meteorological conditions.
[12] Knots.
[13] Kilometre.
[14] Degrees Celsius.
[15] QNH – Altimeter sub-scale setting to obtain elevation when on the ground.
[16] Hectopascal.

2.7. Occurrence analysis

The occurrence analysis is based on the statements of the participants in and witnesses to the accident, visual inspection of the aircraft, its records, photographic documentation, engine tests, and FADEC[17] records secured by PKBWL.

2.7.1. Visual inspection of the wreckage

During a visual inspection of the helicopter wreckage on 19 May 2025, the following was checked:

- Kinematic continuity of the main rotor control via collective and power levers and cyclic control was maintained.
- Kinematic continuity of tail rotor blade angle control system was maintained.
- Fuses in the electrical system – no comments.

Within the scope of the visual inspection, no malfunction or failure of the aircraft was identified that could have contributed to the accident.

During the visual inspection, the engine, FADEC, and instrument panel were secured for possible further examination.

2.7.2. FADEC data

The FADEC reading was performed by the aircraft manufacturer under the supervision of PKBWL and an accredited representative of ANSV.[18] PKBWL was provided with the downloaded files. Based on these, a helicopter flight analysis was conducted on 10 May 2025, revealing the following significant events:

(1) Upon landing at EPPN at 12:03:14, the pilot switched the engine control lever from FLY to STOP contrary to the procedure 4.11 POH[19] (according to this procedure, the lever should be switched from FLY to IDLE and then to STOP after EGT[20] has stabilised for 1 minute). FADEC reduced the fuel flow to 0.04 L/min and, as a consequence, the turbine speed dropped to 1,696 rpm. After the pilot has noticed the error, he switched the engine control lever from STOP to IDLE (12:03:17). FADEC opened the fuel valve and nozzles causing the engine to restart abruptly. An error was recorded indicating that the fuel filter bypass was open (“FLOW CLOGGED-BYPASS FLOW OPEN”). Moments later (12:03:25), a manual shutdown (MAN SHUT OFF) occurred and the engine shut down.

[17] Full Authority Digital Engine Control. Also referred to as ECU – Engine Control Unit.
[18] Agenzia nazionale per la sicurezza del volo – Italian aviation accident investigation body.
[19] Pilot’s Operating Handbook, No. K1-232-R5 rev 5 MAR 2023.
[20] Exhaust Gas Temperature.

The parameters recorded by FADEC did not indicate EGT, turbine rpm or main rotor rpm exceedances during engine shutdown after landing at EPPN.

(2) Before landing in Stopin.

Figures 2 and 3 show graphs prepared based on FADEC data showing the sequence of consecutive events ending in a helicopter accident. For ease of reference, vertical auxiliary lines are introduced to connect certain diagram points with each other:

(a) Line 1 (16:33:00) – stable flight parameters recorded for the last time. The forward speed recorded in the FADEC data was 97 KIAS.

(b) Line 2 (16:33:01) – EGT reaches a minimum value of 379°C; turbine speed decreases to 2,220 rpm, while main rotor speed decreases to 511 rpm, with the main rotor collective pitch at 64%. FADEC increases fuel flow to 1.25 L/min and fuel pressure to 30.0 bar. A low main rotor speed alarm is activated for 3 seconds.

(c) Line 3 (16:33:02) – EGT increases to 436°C, fuel flow to 1.52 L/min, and fuel pressure to 45.7 bar. Engine speed decreases to 2,044 rpm and main rotor speed drops below 89% to 480 rpm. Main rotor collective pitch at 64% – this is most likely a point at which the pilot decides to make an autorotation landing.

(d) Line 4 (16:33:03) – the main rotor speed reaches its lowest value of 477 rpm, while the turbine speed reaches its lowest value of 2,031 rpm. The position of the collective lever is changed to 32%. EGT is rising.

(e) Line 5 (16:33:04) – a warning is activated for 2 seconds that the fuel metering valve is open above 95% (fuel metering valve fully open). The turbine speed increases with the rotation of the main rotor. This was the result of FADEC reacting by opening the fuel valve to full flow in order to maintain the engine speed. The position of the collective lever is changed to 16%.

(f) Line 6 (16:33:07) – the main rotor speed exceeds 108%, triggering the main rotor overspeed warning: “HIGH RPM MAIN ROTOR.” The collective lever is lowered to the minimum. Fuel pressure peaks and the exhaust gas temperature exceeds 650°C reaching 666°C. Turbine speed increases to 2,647 rpm. After 2,500 rpm is exceeded, the “ERROR OVERSPEED PROTECTION” alarm is recorded for 2 seconds.

(g) Line 7 (16:33:08) – turbine speed peaks at 2,700 rpm, with rotor rpm exceeding 109% and also peaking. FADEC reduces the opening of the fuel metering valve to protect against overspeed, while ensuring that the turbine does not shut down until it returns to the correct parameters. The position of the collective lever is changed to 4%. The forward speed increases to 113 KIAS.

Fig. 2. Graph of EGT (*ECU EGT*), main rotor speed (*MR SPEED*), and the collective lever position [source: FADEC].

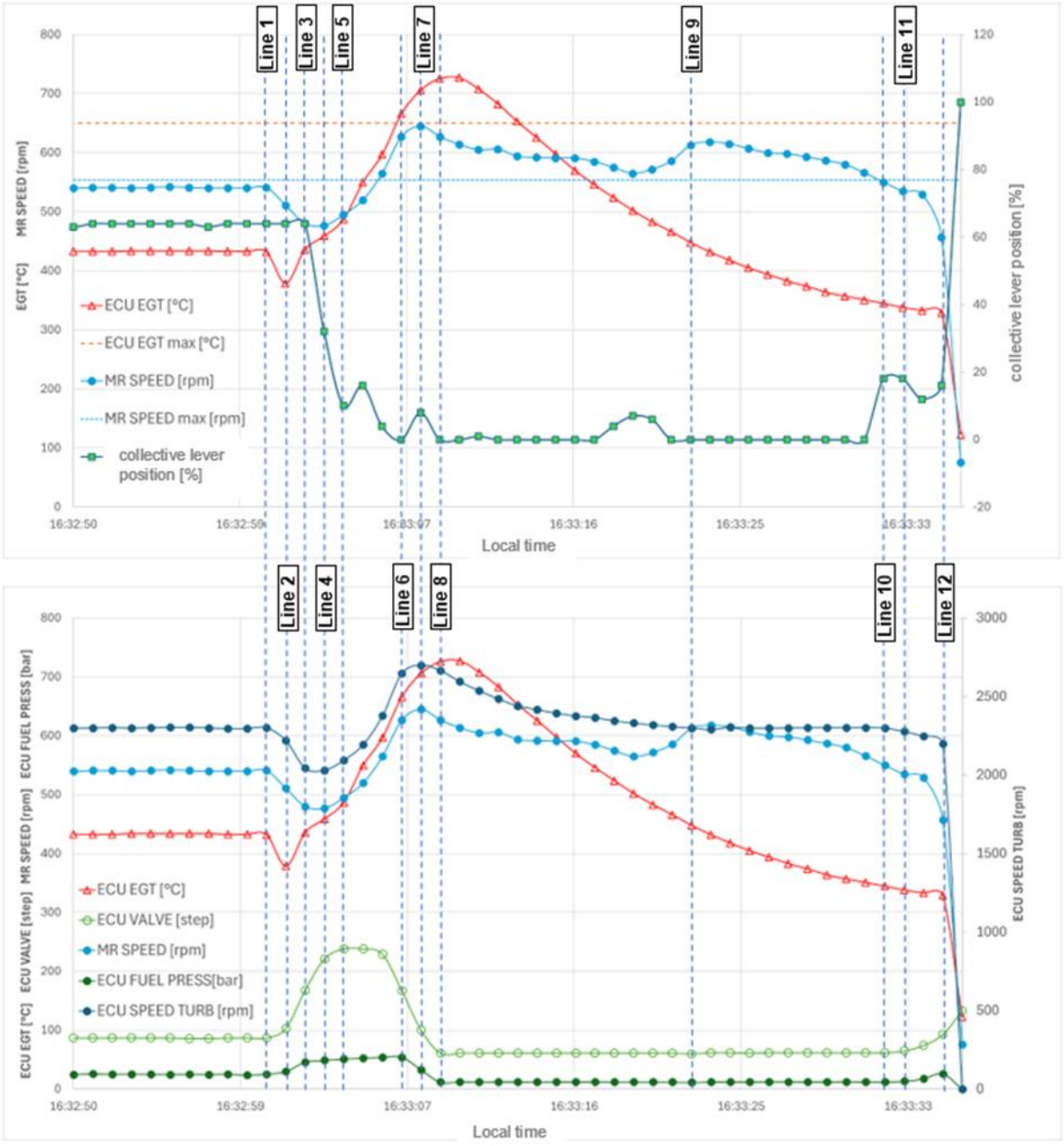

Fig. 3. Graph of EGT (*ECU EGT*), fuel metering valve opening (*ECU VALVE*), main rotor speed (*MR SPEED*), fuel pressure (*ECU FUEL PRESS*), and turbine speed (*ECU SPEED TURB*) [source: FADEC].

(h) Line 8 (16:33:09) – EGT reaches a maximum value of 727°C, main rotor speed is still above 109%. The collective lever is lowered to the minimum. The forward speed exceeds 115 KIAS increasing to 117 KIAS over the next 3 seconds. After 1 second, the warning “EGT overheating protection” is activated. For 4 seconds, the ECU takes action when the 710°C EGT threshold is exceeded, reducing the opening of the fuel valve while ensuring that the turbine does not shut down.

(i) Line 9 (16:33:23) – turbine speed goes back to the normal value of 2,300 rpm. The high main rotor speed warning is still active.

(j) Line 10 (16:33:32) – the position of the collective lever is changed to 18%, the main rotor speed stabilises.

(k) Line 11 (16:33:33) – parameters are stabilised: the main rotor speed is 535 rpm and the turbine speed is 2,278 rpm. The position of the collective lever is still 18%. The forward speed is 28 KIAS and the descent rate is 454 ft/min.

(l) Line 12 (16:33:35) – the position of the collective lever is changed to 12%, the fuel pressure increases to 17.7 bar, and the engine speed drops to 2,254 rpm. This is the moment of the touchdown.

2.7.3. Pilot's Operating Handbook (POH) and Owner's Maintenance Manual (OMM)[21]

(1) According to POH (pages from 3 to 15), the yellow message "FLOW CLOGGED-BYPASS FLOW OPEN" displayed on the instrument panel means that the flow through the fuel filter has been clogged and the bypass is opening. This occurs when the engine control lever is set to IDLE, the turbine speed is 1,800 rpm, and the fuel flow is 24 L/hour. It is noted that when this warning appears, the pilot should „continue flight, upon landing, have maintenance personnel check the issue."
The analysis of OMM indicated that checking the issue signalled by such a message consists in inspecting the "fuel distribution system" as described in section 9.1 of OMM. This is one of the tasks of the 100-hour ("100HR") periodic inspection which, according to the ENG-4 Service Note, requires the following: "Inspect the fuel distribution system. Check the metering valve, fuel nozzles and fuel filter for leaks, dirt buildup, and corrosion. Manually move the fuel control valve to ensure it is free to move along its entire excursion."
(2) POH does not include a procedure for "cold" engine start, for example in the event of an abnormal engine shutdown accompanied by a yellow message "FLOW CLOGGED-BYPASS FLOW OPEN" displayed on the instrument panel.
(3) Section 3.3 of POH describes how a loss of power is indicated, which may include, among other things, low main rotor speed warnings, a sudden change in noise level, and a sudden right yaw.
(4) Section 3.4 of POH describes the actions to be taken once a loss of power has been identified, namely:
(a) Collective lever – LOWER IMMEDIATELY to maintain a minimum of 95% main rotor speed;
(b) Tail rotor – YAW ADJUSTMENT;

[21] Doc. K1-233-R5 Rev 5 -April 2023.

(c) Cyclic adjustment – STABLE FLIGHT POSITION;
(d) Speed – 65 KIAS;
(e) Collective lever – ADJUSTMENT to maintain a minimum of 95% main rotor speed;
(f) Landing site – SELECT;
(g) Landing direction – INTO WIND;
(h) Engine reignition attempt – with stable autorotation;
(i) Reignition impossible – turbine switch: STOP;
(j) Fuel shut-off valve – OFF;
(k) Cyclic adjustment – LOWER SPEED at 50 ft;
(l) Flight position – HORIZONTAL flight at 10 FT;
(m) Touchdown – with a collective pitch adjustment.

2.7.4. Engine examination

A preliminary assessment of the Konner TK-250 engine was performed by the helicopter manufacturer under the supervision of a PKBWL representative. An expert examination was then conducted, revealing the following damage:

(1) Turbine stator (Fig. 4) – numerous cracks, deformations, and bending of the vane edges, with evidence of overheating and localized material burn-through. The damage is thermal in nature and is consistent with exposure to high temperatures.

Fig. 4. SP-HTMS helicopter turbine stator [source: PKBWL].

(2) Turbine shroud (Fig. 5) – wear of the internal surfaces and material spalling. The damage is typical of contact between the turbine blades and the casing, caused by blade elongation due to excessive temperature.

Fig. 5. SP-HTMS helicopter turbine shroud [source: PKBWL].

(3) Turbine rotor (Fig. 6) – the blades were partially melted and deformed. The damage clearly indicates turbine overheating and significant exceedance of the permissible parameters (EGT, rotational speed).

Fig. 6. SP-HTMS helicopter turbine rotator [source: PKBWL].

The damage found during the visual inspection – melted turbine blades, shroud spalling, stator deformation – is consistent with FADEC data indicating prolonged exceedance of turbine speed and EGT.

2.7.5. Discussion

The Commission found no evidence that the fuel distribution system of the helicopter was checked after the “FLOW CLOGGED BYPASS FLOW OPEN” message was activated upon landing at EPPN.

The actions taken by the pilot on the flight from Sochocin after the loss of power had been detected were correct. The pilot interpreted that an engine shutdown had occurred and as such, proceeded to an autorotation landing. However, the FADEC data indicate that the engine ran continuously from the moment the red low main rotor speed warning appeared on the instrument panel (Line 1 in Figs. 2 and 3), through the autorotation phase, until the touchdown. The Commission did not determine what had caused the drop in engine power evident in the FADEC records at 16:33:01 (drop in EGT, in turbine speed, and in main rotor speed). No contamination was found on the fuel filter, and the injectors were clean and worked properly. In addition, no water precipitated in the fuel samples.

After the loss of power, the pilot decided to perform autorotation. The collective lever was fully lowered, so that while still running, the engine was not loaded. This caused an increase in the turbine speed and an increase in the main rotor speed. The forward speed during autorotation exceeded the recommended range of 60–70 KIAS reaching 117 KIAS.

This resulted in:

- increase in main rotor speed above 109%,
- significant increase in turbine speed,
- exceeding EGT up to 727°C, which led to the thermal destruction of the turbine blades and to the stator damage.

Two seconds before the touchdown, the forward speed was 28 KIAS and then decreased, while the descent speed was 454 ft/min, indicating a correct alignment manoeuvre before landing.

3. Conclusions

3.1. Findings

(1) At the time of the occurrence, the pilot’s licence was beyond its expiry date.
(2) The pilot’s aero-medical examinations were valid.
(3) The breath alcohol tests of the pilot were negative.
(4) The Commission did not determine what had caused the drop in engine power.
(5) The aircraft had a valid flight permit.
(6) No malfunction or failure of the aircraft was identified that could have contributed to the accident.

(7) The helicopter's engine ran continuously from the moment the low main rotor speed message appeared on the instrument panel until the touchdown.
(8) Meteorological conditions did not affect the course of the occurrence.

3.2. Causes and contributing factors

(1) Incorrect assessment of the power unit operation during the flight.

(2) Unjustified decision to perform an emergency landing (autorotation) instead of a precautionary landing (with engine running).

4. SAFETY RECOMMENDATIONS

The investigation of the occurrence involving the Konner K1-S19 helicopter and the POH analysis showed that in the event of an abnormal engine shutdown, no "cold" engine start procedure was provided to rid the combustion chamber of excess accumulated fuel. As a result, the next engine start may be significantly hampered or impossible, and may lead to damage to the engine and its components. Such a situation potentially jeopardises flight safety and thus requires immediate action as described below.

4.1. Recommendation 2025-0023-1

The Commission recommends that the helicopter manufacturer Konner s.r.l. examine the appropriateness to develop and implement a "cold" engine start procedure in POH.

Investigator-in-charge

Signature on the original

.....