EASA Safety Information Bulletin

SIB No.: **2008-79**
Issued: **19 August 2008**

Subject: **Unintended Single-Engine Take Off**

Ref. Publication: Eurocopter Deutschland GmbH (ECD) Alert Service Information (ASI) EC135-A110 dated 15 July 2008.

Description: ECD has published the referenced advisory document (attached as pages 2 through 5 of this bulletin) to inform owners and operators of EC135 and EC635 series helicopters of an increase in reports of unintended single-engine take-off events. The advisory is published to help all pilots to avoid such a situation by explaining some cockpit indications, helping them to identify a single engine situation before the takeoff and by reminding them of the existing and well-proven Flight Manual (FLM) procedures.

An unintended single-engine take-off may cause substantial damage to the operating engine. In addition, during the manoeuvre to recover rotor RPM, the helicopter might be in danger of hitting obstacles near the takeoff site. The EC 135 T2/P2 and EC 135 T2+/P2+ helicopters have a comparably high OEI (one engine inoperative) power, which allows safe OEI flight after an engine failure has occurred. Despite the fact that this high OEI power provides single-engine operation capability to the helicopter, intentional OEI take-offs are not authorised. The proper application of the necessary checks in accordance with established FLM procedures should avoid any single-engine takeoff events.

After reviewing the available information, EASA concurs with the ECD advisory and fully supports the recommendations contained therein. This SIB is published to ensure that all owners and operators of the affected helicopters are aware of these recommendations.

Applicability: EC 135 and EC 635 helicopters, all models, all serial numbers.

Contact: For further information contact the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA; E-mail: ADs@easa.europa.eu.

ALERT SERVICE INFORMATION

Subject: Unintended Single Engine Takeoff

To all holders and pilots of the EC135 !

After an increase in the number of reported single engine takeoff events, ECD wants to help all EC135 pilots to avoid such a situation by explaining some cockpit indications, helping them to identify a single engine situation before the takeoff and by reminding them to the existing and well proven FLM procedures. Additionally, if the worst has occured, this Alert Service Information suggests how to proceed in the event of an unintended takeoff with only one engine in FLIGHT (see page 4).
Eurocopter would like to emphasis on the fact that an unintended single engine takeoff will not only lead to substantial damage to the engine. The crew is also put at risk as during the manoeuvre to recover rotor RPM the aircraft might be endangered by obstacles near the takeoff site.
The EC135T2/P2 and EC135T2+/P2+ have exceptionally high OEI power, which allows safe OEI flight after an engine failure has occured. This high OEI power, however, also allows the aircraft to a single engine takeoff. Therefore, pilots should pay special attention to the following existing pre-takeoff and takeoff checks i.a.w. FLM Sec. 4 and Pilot's Check List, in order to avoid a single engine takeoff:

CAUTION CHECK THAT THE ADJUSTMENT OF THE INTERCOM MASTER VOLUME REGULATOR GUARANTEES AUDIBLE SIGNALS.

EFFECTIVITY All EC135 (**CDS**).

Pre-takeoff check:

N_{RO} / N_2	– Check ≈ 97%
Engine and XMSN instruments	– All indications within limits
All WARNING, CAUTION and CDS indications	– Check
All doors	– Closed
Cyclic stick	– Check centered, centering device secured
Collective pitch	– Unlocked

Takeoff check:

Hover flight	– Perform
Torque or ΔN_1	– Check synchronized
Engine and XMSN instruments	– Re-check
All WARNING, CAUTION and CDS indications	– Check

ALERT SERVICE INFORMATION

EFFECTIVITY All EC135 (**CPDS**).

Pre-takeoff check:

N_{RO} / N_2	– Check ≈ 97%
All WARNING, CAD and VEMD indications	– Check
All doors	– Closed
Cyclic stick	– Check centered, centering device secured
Collective pitch	– Unlocked

Takeoff check:

Collective pitch	– Check if starting triangles disappeared, if not, perform small input (≈ 30%)
Hover flight	– Perform
N_{RO} / N_2 instruments	– Check ≈ 100%
FLI needles	– Check matched at the same partameter
All WARNING, CAD & VEMD indications	– Check

EFFECTIVITY All EC135 **P2+** and EC135 **T2+**.

Pre-takeoff check:

N_{RO} / N_2	– Check ≈ 97% (HIGH NR not activated) **Before takeoff with gross mass > 2835 kg:** Check ≈ 100% and HIGH NR illuminates
All WARNING, CAD and VEMD indications	– Check
All doors	– Closed
Cyclic stick	– Check centered, centering device secured
Collective pitch	– Unlocked

Takeoff check:

Collective pitch	– Check if starting triangles disappeared, if not, perform small input (≈30%)
Hover flight	– Perform
N_{RO}/N_2 instrument	– Check ≈ 100% **If gross mass > 2835 kg:** check ≈ 103%
FLI needles	– Check matched at same parameter
All WARNING, CAD & VEMD indications	– Check

ALERT SERVICE INFORMATION

Indications during takeoff check with both engines in FLIGHT:

1. Position of both engine main switches in FLIGHT.

2. FLI needles matching, first limit to be checked TRQ.

3. FLI free of IDLE indication.

4. CAD free of cautions.

5. Triple RPM indicator check for N2 and rotor RPM to be matched.

Indications during takeoff check with one engine in IDLE:

1. One engine main switch in IDLE.

2. FLI needle split.

3. FLI indicates IDLE.

4. CAD indicates IDLE.

5. Triple RPM indicator needle N2 and rotor RPM split.

ALERT SERVICE INFORMATION

Suggestion how to proceed in case of an unintended single engine takeoff:

- In case of OEI detection **before** Take Off Decision Point (TDP):

Collective Lever	**– Adjustment to OEI limits or below Maintain N_{Ro} 97%–103%**
Ground Speed Prior to touchdown	**– Reduce**
Landing attitude	**– Establish**
Collective lever	**– Raise as necessary to stop descent and cushion landing**

- In case of OEI detection **after** Take Off Decision Point (TDP):

Collective Lever	**– Adjustment to 30 sec. power Maintain N_{Ro} 97%–103%**
Speed	**– Acceleration to V_{TOSS} (40KIAS)**
Climb	**– Initiate with V_{TOSS}**
2nd engine	**– Switch to FLIGHT**

As long as the aircraft is flying single engine (OEI), the pilot should not attempt to reduce power to OEI “Maximum Continuous Power” (MCP) or below unless the aircraft is on the ground or has reached a safe altitude.

ECD point out of the fact that all pieces of information given in this Alert Service Information are both regarding form and content only explanatory complements to the effective FLM. The obligatory document for the aircrew is and remains the current FLM that is approved for the respective helicopter model.