



A Textron Company

INFORMATION LETTER

505-19-06

24 September 2019

TO: All owners and operators of Model 505 helicopters

SUBJECT: ENGINE REDUCTION GEARBOX OIL OVERFILLING EFFECTS

Bell has recently received reports of engine oil temperatures exceeding the published limitations. This overheat condition of the engine oil occurred shortly after engine start up.

This information letter is to share current findings from our ongoing investigation with the assistance of Safran HE, and to highlight some existing procedures in the Rotorcraft Flight Manual and Maintenance Manual.

It has been established that excess oil in the engine reduction gearbox will lead to the following conditions:

- High Fuel Flow to maintain Ng speeds (gas producer RPM),
- High MGT (measured gas temperature) due to increased fuel flow to maintain Ng speeds,
- High oil temperatures up to and beyond allowable limits, potentially resulting in damage requiring replacement of the engine.

It is important that the proper oil level is maintained in the engine reduction gearbox, and engine oil system, to avoid the conditions described above.

During periods when the engine is not operating, it has been observed that the engine oil can migrate from the oil tank to the engine reduction gearbox. Therefore, it may be required to dry motor run the engine to return the oil from the reduction gearbox into the oil tank prior to verifying the engine oil system for proper level. Depending on several aircraft and servicing factors, at least three dry motor runs may be required to ensure oil will sufficiently transfer from the reduction gearbox to the engine oil tank to a level where it is visible in the oil tank sight glass.

CAUTION

During engine DRY MOTORING RUN (BHT-505-FM-1, Section 2, paragraph 2-5-A), the STARTER limitations (BHT-505-FM-1, Section 1, paragraph 1-12-B) must be followed.

-NOTE-

The use of a ground power supply may be required to prevent depleting the helicopter's battery during repeated DRY MOTORING RUNS (BHT-505-FM-1, Section 2, paragraph 2-5-A).

During the helicopter PRE-FLIGHT CHECK (BHT-505-FM-1, Section 2, paragraph 2-3-B-2) and the ENGINE OIL SYSTEM (OIL LEVEL CHECK) (BHT-505-MM, [DMC-505-A-12-10-05-00A-369A-A](#)), if the engine oil level is observed to be low, perform DRY MOTORING RUN (BHT-505-FM-1, Section 2, paragraph 2-5-A).

1. Repeat the DRY MOTORING RUN procedure until the engine oil level is stabilized in the sight glass.
 - a. If following a DRY MOTORING RUN the engine oil has filled the sight glass, drain the engine oil to the ADD 1 QT line on the sight glass (BHT-505-MM, [DMC-505-A-12-10-05-00A-222A-A](#)) and repeat step 1.
 - b. If following three DRY MOTORS RUNS, engine oil is not visible in the engine oil tank sight glass, service the engine oil to the ADD 1 QT line on the sight glass (BHT-505-MM, [DMC-505-A-12-10-05-00A-212A-A](#)) and repeat step 1.
2. Once the engine oil level has stabilized in the sight glass following the DRY MOTORING RUNS, and the engine oil level is still low, service the engine oil to the ADD 1 QT line on the sight glass (BHT-505-MM, [DMC-505-A-12-10-05-00A-212A-A](#)) and repeat step 1.

CAUTION

If engine oil level is found to be high (sight glass full) during the helicopter PRE-FLIGHT CHECK (BHT-505-FM-1, Section 2, paragraph 2-3-B-2), the POSTFLIGHT CHECK (BHT-505-FM1, Section 2, paragraph 2-12), or the ENGINE OIL SYSTEM (OIL LEVEL CHECK) (BHT-505-MM, [DMC-505-A-12-10-05-00A-369A-A](#)), it is important not to start the helicopter until the engine oil has been drained to the proper level and oil level stabilization is achieved during DRY MOTORING RUNS, as it can damage the engine.

If during the helicopter PRE-FLIGHT CHECK (BHT-505-FM-1, Section 2, paragraph 2-3-B-2), the POSTFLIGHT CHECK (BHT-505-FM1, Section 2, paragraph 2-12), the ENGINE

OIL SYSTEM (OIL LEVEL CHECK) (BHT-505-MM, [DMC-505-A-12-10-05-00A-369A-A](#)), or following the DRY MOTORING RUNS highlighted above, the engine oil level is found high (fills the sight glass), drain the engine oil to the ADD 1 QT line on the sight glass (BHT-505-MM, [DMC-505-A-12-10-05-00A-222A-A](#)). Perform a DRY MOTORING RUN (BHT-505-FM-1, Section 2, paragraph 2-5-A) after the engine oil has been drained. Repeat the DRY MOTORING RUN procedure until the engine oil level is stabilized at the proper level in the sight glass.

The proper engine oil level, for the purposes of this Information Letter is to be slightly above the ADD 1 QT line on the sight glass (BHT-505-MM, [DMC-505-A-12-10-05-00A-369A-A](#)) as it provides a visual reference to acceptable oil level for flight operations with the helicopter.

-NOTE-

To prevent over filling and oil venting, it is recommended to verify the engine oil level and replenish oil within 15 minutes of engine shutdown while oil temperature is warm.

We encourage operators to check the engine oil level during the POSTFLIGHT CHECK (BHT-505-FM1, Section 2, paragraph 2-12), this providing an accurate engine oil level reading in the sight glass when the engine oil is warm.

Changes will be incorporated to the 505 Flight Manual and Maintenance Manual, at future revisions, to reflect the procedures included in this Information Letter.

Additional information may be found in the Information Letter 505-17-02.

For any questions regarding this letter, please contact:

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