



A Textron Company

INFORMATION LETTER

429-21-16
2 September 2021

TO: All owners and operators of Model 429 helicopters

SUBJECT: 429 COUPLED FLIGHT DIRECTOR PERFORMANCE

This Information Letter is a reminder why variability in coupled flight director performance may be experienced.

During coupled flight director ILS/VOR approaches, the Bell 429 flight control computer utilizes a distance estimator algorithm to adjust the AFCS response to track the lateral navigation signal of an ILS/VOR. To optimize the performance of the distance estimator it is recommended to select APPR mode when the localizer needle is near full scale deflection. The 'S' turn flight profile during capture of the localizer is used by the flight control computer to augment the distance estimator computation.

It is possible that selection of APPR mode with the localizer at full deflection may not arm the G/S or the initial arming of the G/S may be dropped. With the LOC armed, a re-selection of the APPR mode arms the G/S. Capture of the G/S can only be made from below the glidepath.

To optimize coupled flight director VOR signal tracking, it is recommended that a VOR station be selected at least 30 seconds prior to arming the NAV mode and to use a course intercept of more than 10°.

Rotation of the CRS knob during NAV (VOR) or APPR mode while armed or captured and not being within the zone of confusion, can lead to degraded tracking performance due to the possibly of triggering a false sensing of VOR station passage. Pilots must do the following to perform any course change, other than at station passage, during NAV (VOR) or APPR modes while armed or captured:

1. Temporarily deselect the mode,
2. Reset the new course and intercept heading,
3. Re-arm for capture.

Additionally, restrictions in the travel of the flight controls due to friction, cyclic/collective flight control dust boot interference, or inadvertent pilot interference may result in an out-of-detent condition in the pitch, roll or yaw axis. An out-of-detent condition prevents the flight director from responding to the out-of-detent axis until the affected flight control axis is back in detent which may result in degraded coupled flight director performance.

Furthermore, intermittent navigation signal strength due to ground traffic violating the signal beam or poor helicopter antenna reception may also affect the quality of the navigation signal and associated coupled flight director performance.

Finally, the 429 AFCS has a fly-through feature which permits the pilot to override the coupled flight director to achieve, if necessary, the desired tracking performance without the AFCS dropping offline.

For any questions regarding this letter, please contact:

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