



Service Letter SL-0008

Technical Portions FAA Approved

Epic Aircraft, LLC ♦ 22590 Nelson Road ♦ Bend OR 97701
Phone: 541-318-8849 ♦ Fax: 541-382-5125 ♦ Web: www.epicaircraft.com

Subject: S-TEC 2100 RNAV Approach Interruption

ATA-Code: 22-00

Labor: N/A

Effectivity: K004-K010

Affected Model(s): E1000

Due: —

Compliance: Advisory

Recurrence: No

1 BACKGROUND AND PURPOSE:

An interruption in the vertical guidance from the G1000 during an RNAV approach has been discovered. When the S-TEC 2100 Digital Flight Control System (DFCS) is coupled to an RNAV glidepath in GPSV mode, there is a momentary interruption in vertical guidance from the G1000 that causes the 2100 DFCS to revert to ALT HOLD mode. In many cases, the DFCS immediately recouples to the glidepath in GPSV mode. However, in some cases, the DFCS remains in ALT HOLD mode, and in other cases, the DFCS may remain in a descending CAP mode, both of which may require pilot response.

2 REFERENCES:

N/A

3 WARRANTY:

N/A

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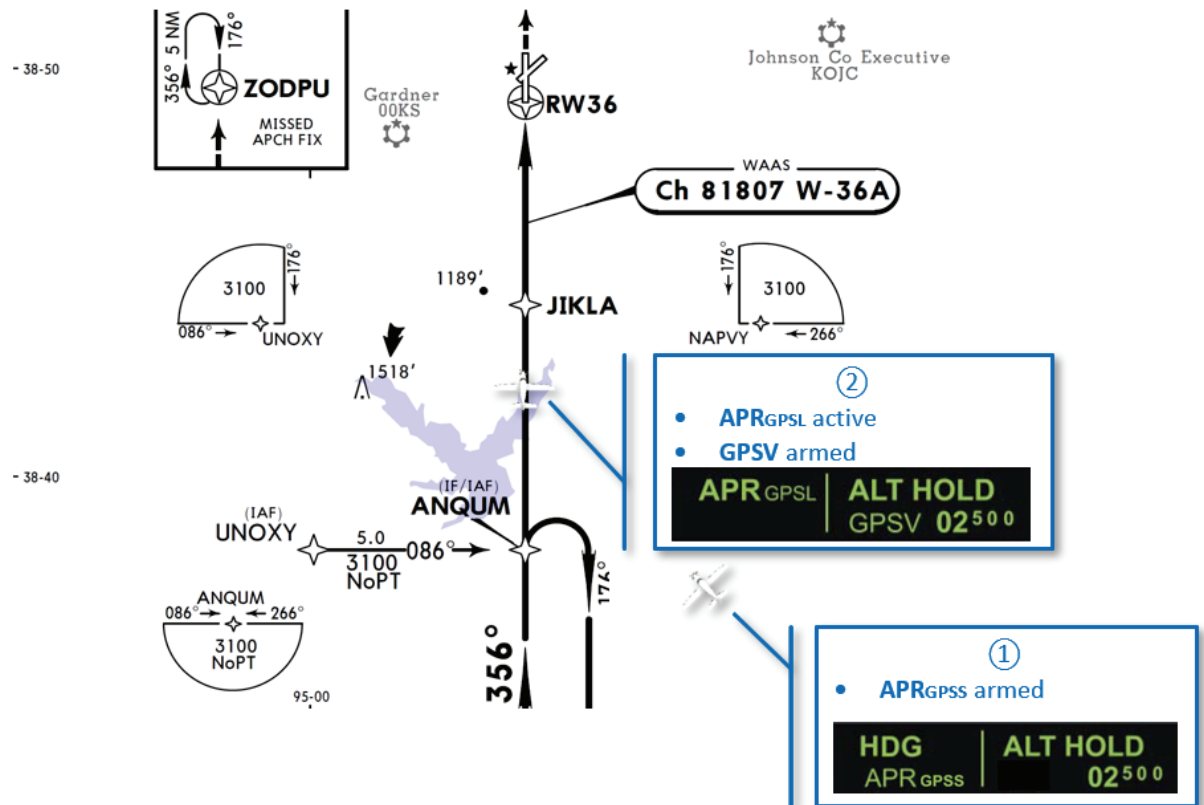
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4 INSTRUCTIONS:

A. Normal DFCS Mode Behavior

When coupled to an RNAV approach with vertical guidance is **APR_{GPSL}** (GPS lateral) and **GPSV** (GPS vertical).



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To capture the vertical glidepath, the DFCS performs the following sequence: **arm**, **intercept**, and **track**.



Figure 1: Glidepath Armed



Figure 2: Intercept VDI within 25% of GP (CAP)



Figure 3: Track VDI within 5% of GP or 10 seconds elapses (GPSV)

NOTE: It is common for 10 seconds to elapse before the airplane completely intercepts the glidepath and the GPSV mode activates.

Once tracking the glidepath in GPSV mode, the autopilot pitches to keep the vertical deviation indicator (VDI) centered.

B. Failsafe

The 2100 DFCS autopilot is designed to fail safe in the event of interrupted navigation signal. If there is an interruption of the glideslope signal when coupled to a glideslope (**GS** mode) or RNAV glidepath (**GP** mode), the DCFS will revert to **ALT HOLD** mode and stop descent.

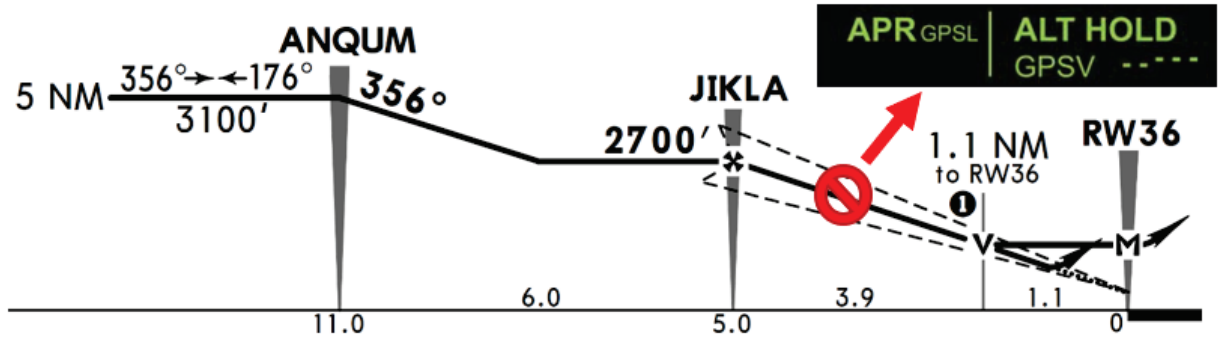
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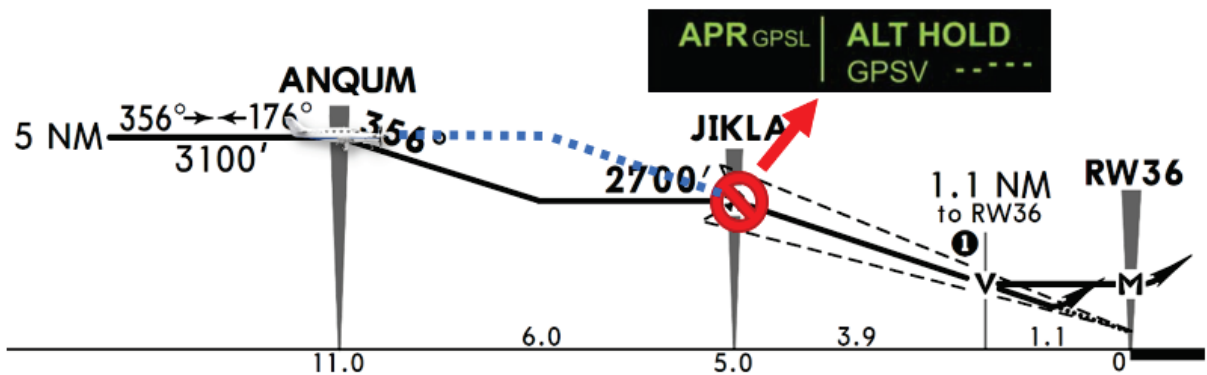
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C. The Interruption

There is a momentary interruption of the vertical navigation signal during waypoint passage caused by the current software installed in the E1000 Classic. For example, the DFCS will enter ALT HOLD mode as it crosses the Final Approach Waypoint (FAWP).



In *most* cases, this interruption triggers recapturing the glidepath without the pilot's awareness. The entire capture sequence must restart, but this usually occurs within 10 seconds:

APR GPSL | ALT HOLD
GPSV -----

APR GPSL | CAP +400
GPSV -----

APR GPSL | GPSV

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In *some* cases, the DFCS will not recapture the glidepath, and the autopilot remains in **ALT HOLD** mode:

APR_{GPSL} | ALT HOLD
GPSV -----

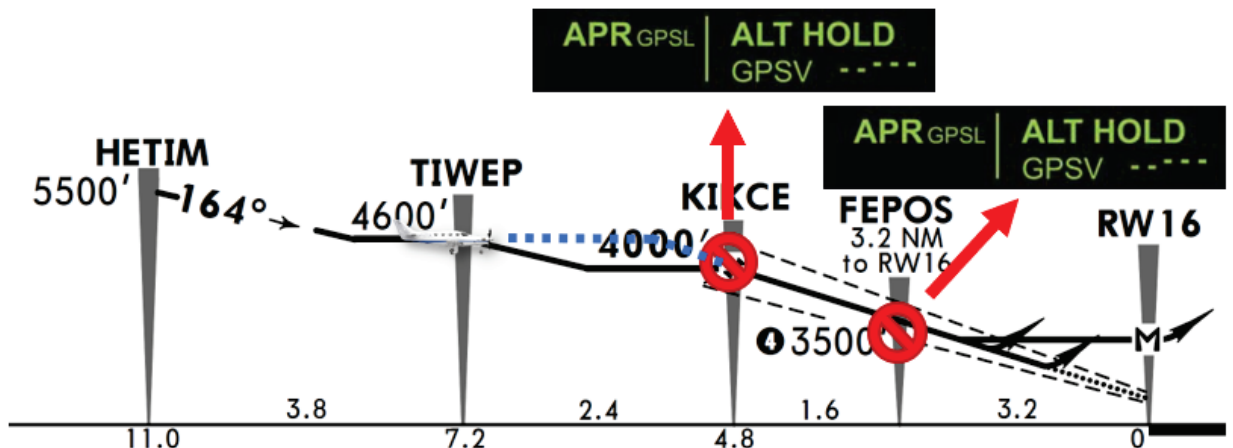
In either case, the pilot will notice pitch increasing and airspeed decreasing. To respond, check the DFCS mode annunciators to determine if the DFCS will recapture on its own. If so, allow it to finish recapture. If not, then perform the ALT HOLD recovery procedure described below.

In some other cases, after the interruption, the DFCS will attempt to recapture the glidepath but remains stuck in the CAP mode, descending away from the glidepath.

APR_{GPSL} | CAP ↓400
GPSV -----

To respond, perform the ALT HOLD recovery procedure described below.

CAUTION: The ALT HOLD interruption can occur more than once on approach. If there is a step-down in the procedure, the waypoint passage of the step-down triggers vertical guidance interruption.



NOTE: It is imperative the pilot monitors the DFCS mode annunciations during waypoint passage in GPSV mode to determine whether the DFCS successfully re-couples to the glidepath, and to execute the ALT HOLD recovery procedure if it does not.

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D. ALT HOLD Recovery Procedure

The following procedure can be performed to guide the DFCS to recapture the glidepath:

1. Disconnect the autopilot and turn off the flight director.
2. Hand fly the remainder of the approach by reference to raw navigation data.

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5 WEIGHT AND BALANCE:

N/A

6 PUBLICATIONS AFFECTED:

N/A

7 RECORD COMPLIANCE:

N/A

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