How To Fly A Fully Coupled GPS Approach Using the GTN650 and KAP140 N97PD

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Background

- **The basic issue is that the KAP140 two-axis autopilot was designed and implemented before WAAS LPV approaches.**

- **On an ILS, the KAP140 is connected to the NAV receiver and when it is in APR mode and ALT hold, it detects the availability of the glideslope via a data line from the ILS receiver.**

- **APR mode and detection of a glideslope arms GS capture and the KAP140 is ready to enter GS mode when it intercepts the glideslope**

- **In order to get the KAP140 to follow the glidepath available in a WAAS LPV approach (or LNAV+V), Garmin navigators (530W, 430W, GTN750, and GTN650) activate autopilot output that tell the autopilot that it is going to fly a glidepath in a manner similar to the way it flies an ILS.**

- **The procedure is referenced in the GTN650 Pilot's Guide, section 6.14**

Summary of Approach Sequence

- Approach the Intermediate Fix (fix before the FAF) in ROL, HDG, or NAV mode for lateral guidance, and ALT for altitude hold. Do not use APR.

- When the Intermediate Fix is crossed and the FAF becomes active, the GTN650 will change from TERM to LPV mode (or LNAV+V).

- Shortly thereafter, the GTN650 will offer the pilot a message, and the pilot must press the MSG button to view and act upon it.

- An APR GUIDANCE AVAILABLE message is displayed, and the pilot is given the opportunity to "Enable APR Output" via the top left button.

- The pilot then uses that button to activate APR output from the 650 to the 140.

- After activation of APR output, the pilot then presses APR on the KAP140 autopilot. This annunciates APR as the lateral mode and causes GS ARM to annunciate.

- When the aircraft joins glidepath intercept, the vertical mode changes from ALT to GS and the aircraft starts the descent on the glidepath. The pilot should reduce power to maintain desired approach speed.

- Thereafter, the approach is flown the same was a coupled ILS approach.

- **The following slides illustrate flying the KTIW GPS 17 WAAS LPV approach from the Intermediate Fix, FAVDU, through the Final Approach Fix, TETGE**

- **Note cumulative Flight Time on the Transponder for a sense of time between pictures…**

The pilot selects "Enable APR Output" on the GTN650 and then selects APR on the KAP140. This arms GS capture

The aircraft will proceed to the airport with horizontal and vertical management by the autopilot, and generally both needles should stay perfectly centered. At the DA, the pilot disconnects the autopilot and then either lands or commences the Missed Approach procedure.

Questions ???

- Discuss with your CFI, or call Howard Wolvington for any clarification of this procedure
- **Howard's cell is 425-761-4729**