

- This Teaching Guide is meant to assist COWG Instructor Pilots transitioning pilots into aircraft equipped with the GFC-700 autopilot and to provide a reference for Check Pilots performing Form 5 checkrides.
- Ensure your student understands the relationships between the AP, the FD, and the MET. Explain that the FD tells the AP what to do, then the AP makes pitch and roll changes through servos controlling the ailerons, elevator, and MET.
- Explain to your student the importance of studying and understanding the Automatic Flight Control System (AFCS). Refer them to Section 6 of the G1000 Cockpit Reference Guide and ask them to also watch the CAP video in AXIS, *GFC-700 Autopilot Hazard Alert Training*.
- Point out to your student that pitch inputs by the pilot against the autopilot can result in an out-of-trim condition after the AP is disconnected.
- Ask your student to explain the differences between FLC and VS climbs on the AP and describe the stall hazards associated with each.
- For instrument pilots, ask your student to describe how they would set up the AP to fly a published departure procedure and instrument approach at a local airport.
- Be sure your student understands when the GFC-700 is not to be used. (takeoffs and landings, <70kts, >150kts, <200' on IAP, <800' VFR, fuel imbalance >90lbs, audio panel inop, on MAP until sufficient rate of climb, without pilot in left seat, Cat II or III apchs)
- Ensure your student understands differences between NXi and non-NXi G1000 operation of the GFC-700 (fully coupled IAP GA with NXi, release the control wheel if AP engages under ESP)
- Before flying, while sitting in the aircraft, ask your student to identify the many ways the AP can be disconnected in flight. (AP buttons, AP/Trim Disconnect button, MET switches, AP CB, GA button, CWS button, Master Switch)
- Ask your student to describe the immediate checklist items to overcome an errant AP when a malfunction is suspected. (Grasp wheel firmly, press and hold AP/Trim disconnect, adjust trim manually, pull AP CB, release AP/Trim disconnect, do not re-engage AP)
- During the Before Takeoff checks, explain to your student that the amount of control input needed to overpower the AP is not indicative of the much greater control input required to overcome an out-of-trim condition when flying.
- Ensure your student properly disconnects the AP during the Before Takeoff check by pressing the AP/Trim Disconnect button on the control wheel and turns off the FD before takeoff.
- Ensure your student understands which G1000 component failures will impact GFC-700 operations. (PFD, AHRS, ADC, Magnetometer, Audio Panel)
- During flight, when selecting AP modes on the panel, stress the importance of checking the AFCS Status Box on the PFD every time a new AP button is pressed.

- **During flight, demonstrate how quickly an out-of-trim condition may develop by making pitch inputs while the AP is attempting to maintain level flight, then disconnecting the AP.**
- **Explain to your student that it only takes about six seconds for the AP to run the pitch trim to full up or down when starting from a cruise trim setting.**
- **Demonstrate how control forces required to overcome an out-of-trim condition are much greater at faster airspeeds.**