Teaching The Backup System

- Consistent with airplane equipment, recurrent instruction should include the full range of autopilot-coupled flight, flight director-guided hand-flying and raw data hand-flying. Autopilot failure modes, instrument failures and the effect each instrument failure can have on autopilot function needs to be part of initial qualification training and regularly included in recurrent flight training.
- The wise instructor in airplanes with all-electric trim will safely simulate (in visual conditions) trim failure and out-of-trim maneuvering from takeoff and/or cruise through approach and landing. The instructor must be extremely careful to control this demonstration, and ready to permit use of the electric trim in a pre-briefed go-around procedure should conditions reach the edge of pilot capability.
- The wise pilot will remain proficient in hand-flying all maneuvers in case of automation failure, including practice flying with degraded systems and an out-of-trim airplane if the aircraft does not have a manual back-up system for controlling trim.
- Practice autopilot disconnects at the missed approach point to get a feel for forces needed when transitioning to hand-flying for either a landing or the missed approach climb. Autopilots can hold a certain amount of control force without changing trim, so commonly the aircraft is slightly out-of-trim at the moment you disconnect the autopilot.
- Never let the autopilot take you anywhere you cannot immediately take over and complete by hand, with the possibility (in all-electric trim designs) of a radically out-of-trim airplane.