

1. Minimum equipment required for IFR flight (in some cases, for both single pilot and two pilot operations).

2.  $V_{\text{mini}}$  (minimum speed – IFR).

**NOTE–**

*The manufacturer may also recommend a minimum IFR airspeed during instrument approach.*

3.  $V_{\text{nei}}$  (never exceed speed – IFR).

4. Maximum approach angle.

5. Weight and center of gravity limits.

6. Aircraft configuration limitations (such as aircraft door positions and external loads).

7. Aircraft system limitations (generators, inverters, etc.).

8. System testing requirements (many avionics and AFCS/AP/FD systems incorporate a self–test feature).

9. Pilot action requirements (such as the pilot must have his/her hands and feet on the controls during certain operations, such as during instrument approach below certain altitudes).

g. It is very important that pilots be familiar with the IFR requirements for their particular helicopter. Within the same make, model and series of helicopter, variations in the installed avionics may change the required equipment or the level of augmentation for a particular operation.

h. During flight operations, pilots must be aware of the mode of operation of the augmentation systems, and the control logic and functions employed. For example, during an ILS approach using a particular system in the three–cue mode (lateral, vertical and collective cues), the flight director *collective cue* responds to glideslope deviation, while the horizontal bar of the “cross–pointer” responds to airspeed deviations. The same system, while flying an ILS in the two–cue mode, provides for the *horizontal bar* to respond to glideslope deviations. This concern is particularly significant when operating using two pilots. Pilots should have an established set of procedures and responsibilities for the control of flight director/autopilot modes for the various phases of flight. Not only does a full understanding of the system modes provide for a higher degree of accuracy in control of the helicopter, it is the basis for crew identification of a faulty system.

i. Relief from the prohibition to takeoff with any inoperative instruments or equipment may be provided through a Minimum Equipment List (see 14 CFR Section 91.213 and 14 CFR Section 135.179, Inoperative Instruments and Equipment). In many cases, a helicopter configured for single pilot IFR may depart IFR with certain equipment inoperative, provided a crew of two pilots is used. Pilots are cautioned to ensure the pilot–in–command and second–in–command meet the requirements of 14 CFR Section 61.58, Pilot–in–Command Proficiency Check: Operation of Aircraft Requiring More Than One Pilot Flight Crewmember, and 14 CFR Section 61.55, Second–in–Command Qualifications, or 14 CFR Part 135, Operating Requirements: Commuter and On–Demand Operations, Subpart E, Flight Crewmember Requirements, and Subpart G, Crewmember Testing Requirements, as appropriate.

j. Experience has shown that modern AFCS/AP/FD equipment installed in IFR helicopters can, in some cases, be very complex. This complexity requires the pilot(s) to obtain and maintain a high level of knowledge of system operation, limitations, failure indications and reversionary modes. In some cases, this may only be reliably accomplished through formal training.

## **10–1–2. Helicopter Instrument Approaches**

a. Instrument flight procedures (IFPs) permit helicopter operations to heliports and runways during periods of low ceilings and reduced visibility (e.g. approach/SID/STAR/en route). IFPs can be designed for both public and private heliports using FAA instrument criteria. The FAA does recognize there are non–FAA service providers with proprietary special criteria. Special IFPs are reviewed and approved by Flight Technologies and Procedures Division and may have specified aircraft performance or equipment requirements, special crew