

Pilot Requirements

Although pilots in many other countries must have an instrument rating to fly at night, only a basic Private Pilot license under Visual Flight Rules (VFR) is required in the U.S. According to the Federal Aviation Regulations, specifically FAR 61.57, you cannot act as pilot in command (PIC) while carrying passengers from one hour after sunset to one hour before sunrise, unless you have made three takeoffs and landings to a full stop in the same category and class of aircraft within the preceding 90 days. Don't confuse these requirements (called "currency") with proficiency. They are only a minimum; additional training or practice may be required. If you are a student pilot, all of your night flights must be made with an instructor. (Note: yes I know the FARs allow a student pilot to fly at night with training and an endorsement, but there are no instructors in their right minds that will provide that endorsement)

Aircraft Requirements

In accordance with (IAW) FAR 91.205, for VFR night flights, in addition to the VFR day requirements, your airplane needs position lights: a green light on the right wingtip, a red light on the left wingtip and a white light on the tail; flashing anti-collision/strobe lights; a landing light if operated for hire; an adequate source of electrical energy to operate the required electrical and radio equipment; and spare fuses accessible to the pilot in flight.

Flight Operations

IAW FAR 91.151, for night VFR conditions, you must carry enough gas to reach your first point of intended landing and cover an additional 45 minutes at normal cruising speed. This is a minimum fuel reserve, not a goal to be reached. Prudent pilots always carry more than the minimum to accommodate potential problems.

IAW FAR 91.155, VFR visibility requirements in Class G airspace increase from 1 mile in daytime to 3 miles at night.

The only exception is for operations within 1/2 mile of a runway, in which case VFR pilots can operate with 1-mile visibility while staying clear of clouds. As Robert Rossier, a contributor to "AOPA Flight Training" magazine has said, "just because it's legal doesn't make it safe. Prudent pilots typically set higher weather minimums for night VFR flights."

IAW FAR 91.157, if operating under a Special VFR clearance at night, you must have an instrument rating, an instrument-equipped airplane, 1 mile visibility, be able to remain clear of clouds, and have a Special VFR clearance from air traffic control.

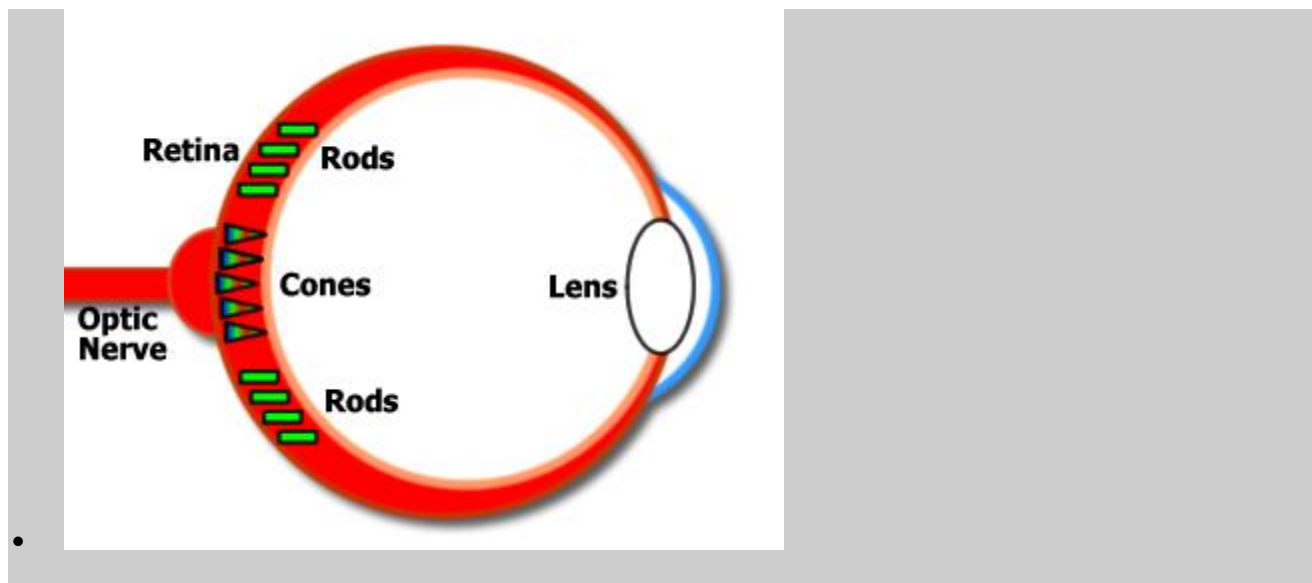
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IAW FAR 91.209, you must use position and anti-collision lights between sunset and sunrise, but this regulation says you can turn off the anti-collision lights for safety, such as when flying in precipitation.

Personal Equipment

A black pen or dark pencil (two or three are recommended). A red and a white light flashlight along with spare batteries. A backup flashlight is highly recommended.

Eye Anatomy



The anatomy of the eye is composed of rods and cones. The rods are more numerous, some 120 million, and are more sensitive than the cones. However, they are not as sensitive to color as the cones are.

The 6 to 7 million cones provide the eye's color sensitivity and they are much more concentrated in the central yellow spot known as the macula. In the center of that region is the fovea, a 0.3 mm diameter rod-free area with very thin, densely packed cones.

How to Prepare

To adapt your eyes for night flying, avoid bright white lights at least 30 minutes prior to your flight. The rods of your eye are least affected by red light, so use red cockpit lighting or a low-level white light and/or a red tinted flashlight. Rods are most affected by green

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and blue light. Some desensitizing of night vision can occur with bright green or blue light. During taxi operations avoid looking directly at green taxi lights and blue runway lights.

Due to the concentration and placement of cones in the fovea of the eye, you may experience a night blind spot at the center of your vision. Once you are airborne, the most effective methods for overcoming these night blind spots and looking for other aircraft are to slowly scan small sectors of the sky, and to use off-centering viewing-- looking 5 degrees to 10 degrees off center of the object.

Don't forget your diet and general health. Deficiencies in [vitamin A](#) will affect the eye's ability to produce visual purple, and smoking, alcohol and a lack of oxygen can greatly decrease your night vision. Also age will have an effect on your night vision.

Keys to Flying at Night

Preparation for night flight must be more intensive and comprehensive. Make your initial night flight preflight during the daylight. Check all internal and external lights. Double your fuel reserves. Mark charts with black pens. (You will not be able to see red marks under red light.)

All notes, including frequencies, should be written extra large for easy readability.

Weather makes a big difference. Weather changes can occur more quickly at night than at daytime.

Remember, you have the choice to take off, but landings, even at night, are mandatory. Part 2 of night flying will discuss landings, takeoffs, and other considerations.