Types of Risk	
Total Risk	The sum of identified and unidentified risks.
Identified Risk	Risk that has been determined through various analysis techniques. The first task of system safety is to identify, within practical limitations, all possible risks.
Unidentified Risk	Risk not yet identified. Some unidentified risks are subsequently identified when a mishap occurs. Some risk is never known.
Unacceptable Risk	Risk that cannot be tolerated by the managing activity. It is a subset of identified risk that must be eliminated or controlled.
Acceptable Risk	Acceptable risk is the part of identified risk that is allowed to persist without further engineering or management action. Making this decision is a difficult yet necessary responsibility of the managing activity. This decision is made with full knowledge that it is the user who is exposed to this risk.
Residual Risk	Residual risk is the risk remaining after system safety efforts have been fully employed. It is not necessarily the same as acceptable risk. Residual risk is the sum of acceptable risk and unidentified risk. This is the total risk passed on to the user.

Figure 1-4. *Types of risk.*

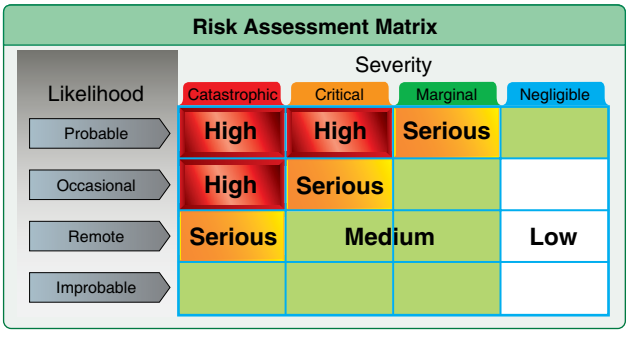

Figure 1-5. *Using a risk assessment matrix helps the pilot differentiate between low-risk and high-risk flights.*

an eager participant with a stake in the flight's execution. Another simple step is to ask three questions—is it safe, is it legal, and does it make sense? Although not a formal methodology of risk assessment, it prompts a pilot to look at the simple realities of what he or she is about to do.

Therefore, risk management is the method used to control, eliminate, or reduce the hazard within parameters of acceptability. Risk management is unique to each and every individual, since there are no two people exactly alike in skills, knowledge, training, and abilities. An acceptable level of risk to one pilot may not necessarily be the same to another pilot. Unfortunately, in many cases the pilot perceives that his or her level of risk acceptability is actually greater than their capability thereby taking on risk that is dangerous.

It is a decision-making process designed to systematically identify hazards, assess the degree of risk, and determine the best course of action. Once risks are identified, they must be assessed. The risk assessment determines the degree of risk (negligible, low, medium, or high) and whether the degree of risk is worth the outcome of the planned activity. If the degree of risk is "acceptable," the planned activity may then be undertaken. Once the planned activity is started, consideration must then be given whether to continue. Pilots must have viable alternatives available in the event the original flight cannot be accomplished as planned.

Thus, hazard and risk are the two defining elements of risk management. A hazard can be a real or perceived condition, event, or circumstance that a pilot encounters.

Consider the example of a flight involving a Beechcraft King Air. The pilot was attempting to land in a northern Michigan airport. The forecasted ceilings were at 500 feet with ½ mile visibility. He deliberately flew below the approach minimums, ducked under the clouds, and struck the ground killing all on board. A prudent pilot would assess the risk in this case as high and beyond not only the capabilities of the aircraft and the pilot but beyond the regulatory limitations established for flight. The pilot failed to take into account the hazards associated with operating an aircraft in low ceiling and low visibility conditions.

A review of the accident provides a closer look at why the accident happened. If the King Air were traveling at 140 knots or 14,177 feet per minute, it would cover ½ statute mile (sm) visibility (2,640 feet) in about 11 seconds. As determined in *Figure 1-1,* the pilot has 12.5 seconds to impact. This example states that the King Air is traveling ½ statute mile every 11 seconds, so if the pilot only had ½ sm visibility, the aircraft will impact before the pilot can react. These factors make flight in low ceiling and low visibility conditions extremely hazardous. Chapter 4, Aerodynamics of Flight, of the Pilot's Handbook of Aeronautical Knowledge presents a discussion of space required to maneuver an aircraft at various airspeed.

So, why would a pilot faced with such hazards place those hazards at such a low level of risk? To understand this, it is important to examine the pilot's past performance. The pilot had successfully flown into this airport under similar