

# Elements Of Risk Assessment

Risk assessment must consider two elements, likelihood and severity. The joint impact of these elements will determine the overall level of risk. This is usually done by using a risk matrix, such as the one here,

| Risk Assessment Matrix |              |          |          |            |
|------------------------|--------------|----------|----------|------------|
| Likelihood             | Severity     |          |          |            |
|                        | Catastrophic | Critical | Marginal | Negligible |
| Probable               | High         | High     | Serious  |            |
| Occasional             | High         | Serious  |          |            |
| Remote                 | Serious      | Medium   |          | Low        |
| Improbable             |              |          |          |            |

from the FAA's *Risk Management Handbook* (FAA-H-8083-2). It defines the degrees of likelihood and severity as follows:

## LIKELIHOOD:

- **Probable:** An event will occur several times.
- **Occasional:** An event will probably occur sometime.
- **Remote:** An event is unlikely to occur, but is possible.
- **Improbable:** An event is highly unlikely to occur.

## SEVERITY:

- **Catastrophic:** Results in fatalities, total loss.
- **Critical:** Severe injury, major damage.
- **Marginal:** Minor injury, minor damage.
- **Negligible:** Less than minor injury, less than minor system damage.

You would be right to ask how one is supposed to precisely determine the levels of likelihood and severity, given the above somewhat subjective definitions. I believe it takes some risk management training and practice to do this accurately. With that in mind, this article's main text examines two specific examples.

Once you have determined risk likelihood and severity, it's time to consult the matrix again to determine the action you must take. This time, it's fairly simple and the guidelines are as follows for the "color" code in the matrix.

**RED:** Risk is high. Flight must not commence or proceed until risk is mitigated to a lower level.

**YELLOW:** Risk is serious. Flight should not commence or proceed until the need for mitigation is considered. NOTE: My own recommendation is to treat these as risks that should be mitigated before proceeding.

**GREEN:** Risk is medium. Flight may commence or continue. NOTE: Even here, risks should be mitigated if the mitigation is reasonable. Why take unnecessary risk?

**LOW:** Risk is low. Typically, these are risks that can be mitigated by simply following normal procedures, such as following the pre-landing checklist to avoid a gear-up landing.

Once you have gotten this far, it's time to deploy your mitigations to reduce the level of risk likelihood and/or severity. The "reds" and "yellows" should be eliminated after your risk mitigations are employed.