There are other considerations, too, such as potential for fire damage. And don't forget that not only must the ELT survive, but the antenna and connecting cable too if it is externally mounted. Therefore, it is recommended that the ELT have an attached and externally mounted antenna and the unit be located as far aft in the empennage as possible. Incidentally, 33% of all crashed aircraft end up inverted, so be sure the system is capable of functioning while inverted!

Common ELT-Related Problems

There have been definite ELT problems over the years. Probably the most common problem is inadvertent activation. The G switch can be activated by excessive vibration such as a hard landing. Where an ELT is installed in the aircraft may also lead to problems. Such common locations as baggage compartment and rear seat tend to make the unit more vulnerable to inadvertent activation. Bouncing bags or stretching arms have often caused ELTs to go off. Make sure the proposed location provides adequate protection but still permits easy access to the unit so it can be checked when necessary.

If accidental activation is a problem, so too is lack of activation at the appropriate time. Always use the proper batteries for replacement. Whenever replacing batteries with anything other than original equipment, contact the ELT manufacturer for approval. It really isn't a sales gimmick to talk you out of Brand X; tests have shown that many substitute batteries won't activate the ELT, especially when they get a little bit older. Don't let advertising or even a TSO number fool you; check with the original manufacturer. What happens is some batteries produce a passivation layer as they age; this is especially true for magnesium-type cells. What can happen is the layer can cause a delay of over one second before the cell achieves rated voltage. ELTs with electronic latching circuitry can be activated by a crash pulse of less than 0.1 second, but if battery voltage is too low, the unit simply won't activate. It is important to point out, however, that modern ELTs with such circuitry probably don't require maximum voltage to activate, but why take chances? The problem can be totally avoided by using alkaline (zinc-manganese dioxide) cell batteries or any battery the manufacturer approves. Incidentally, the reason why you might want magnesium batteries is because they have a longer shelf life and provide sustained high power for a longer period of time, especially in extreme cold.

If it sounds like there is a lot to worry about when considering batteries, you're right. The simple truth is that batteries are the most common cause of ELT problems, and you just can't take good enough care of them. For extended storage, batteries should be refrigerated. Cold slows normal battery deterioration, increasing their shelf life. There are some risks associated with refrigeration, though. When transferring the battery from cold to warm air, there is a chance of getting condensation within the cells or even within the entire battery pack. This leads to corrosion, premature battery depletion, and the formation of conductive paths between cells, which cause shorting and battery failure. Some manufacturers hermetically seal the cells to prevent such a possibility, but it is a good rule of thumb to always bring the battery to room temperature as slowly as possible and completely wipe it dry before installation in the ELT unit.