

Precipitation Static

Precipitation static, often referred to as P-static, occurs when accumulated static electricity is discharged from the extremities of the aircraft. This discharge has the potential to create problems for the instrument pilot. These problems range from the serious, such as erroneous magnetic compass readings and the complete loss of very high frequency (VHF) communications to the annoyance of high-pitched audio squealing and St. Elmo's fire. [Figure 11-1]

Precipitation static is caused when an aircraft encounters airborne particles during flight (e.g., rain or snow) and develops a negative charge. It can also result from atmospheric electric fields in thunderstorm clouds. When a significant negative voltage level is reached, the aircraft discharges it, which can create electrical disturbances. This electrical discharge builds with time as the aircraft flies in precipitation. It is usually encountered in rain, but snow can cause the same effect. As the static buildup increases, the effectiveness of both communication and navigation systems decreases to the point of potential unusability.

To reduce the problems associated with P-static, the pilot should ensure the aircraft's static wicks are properly maintained and accounted for. Broken or missing static wicks should be replaced before an instrument flight. [Figure 11-2]

Aircraft System Malfunctions

Preventing aircraft system malfunctions that might lead to an inflight emergency begins with a thorough preflight

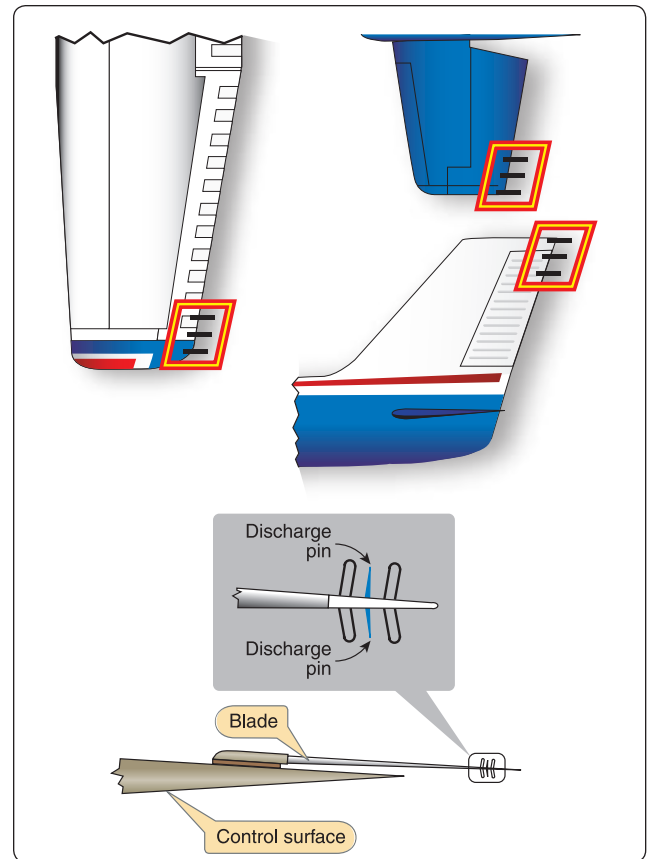


Figure 11-2. One example of a static wick installed on aircraft control surface to bleed off static charges built up during flight. This prevents static buildup and St. Elmo's fire by allowing the static electricity to dissipate harmlessly.



Figure 11-1. St. Elmo's Fire is harmless but may affect both communication and navigation radios, especially the lower frequencies such as those used on the automatic direction finding (ADF).