

Abstract – Corrosion damage is a frequent cause of expensive aircraft structural repairs, and it is often hard to detect at early stages. Eddy Current Testing is often used to detect corrosion, but this type of testing depends on reliable standards. Students and faculty members of the Purdue Aviation Department have developed an innovative laboratory project to develop a standard that could be used to detect corrosion in aircraft skin lap joints. The Laboratory project consists of four parts: 1) fabrication of a skin lap joint consisting of two sheets of 2024T3 aluminum alloy and a hat section stringer of 7075 aluminum alloy, 2) creation of an exfoliation corrosion attack on the materials using a modified ASTM G-34 exfoliation corrosion immersion test, 3) corrosion detection and the calculation of material loss using Eddy Current testing procedures, 4) performing of a tensile test to determine the loss of strength due to the corrosion attack. The students will use the developed standard to detect corrosion on the skin lap joints of a Boeing 737 aircraft.