



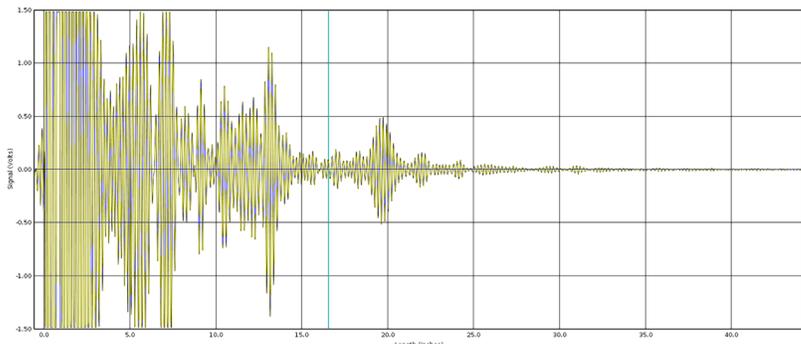
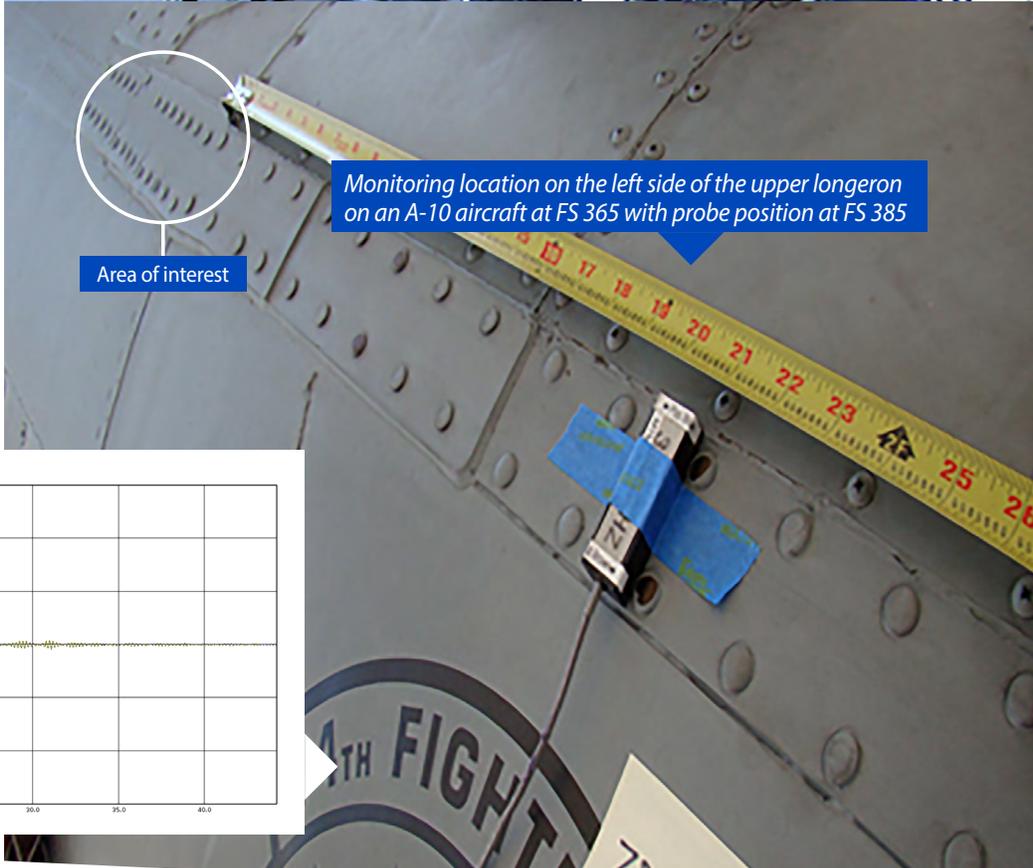
SOUTHWEST RESEARCH INSTITUTE



# Aircraft Structural Health Monitoring Using MsS Technology

Today's aging aircraft fleet is flying far longer than originally designed. Consequently, new technology is needed to assess health and flight safety for many types of aircraft structures without incurring additional maintenance costs. Southwest Research Institute® (SwRI®) has developed and adapted magnetostrictive sensor (MsS) technology for aircraft structural health monitoring. MsS technology has been used in the oil and gas pipeline industries for many years, but recently has been modified for use on aircraft. Tests conducted on simulated aircraft structure and full-scale aircraft fatigue tests have shown good results in detecting structural defects including cracking and corrosion.

The fifth-generation MsS3030R-AF instrument has been designed for aircraft monitoring. SwRI has installed 10 MsS sensors on five F-16 aircraft for monitoring a CsC aluminum laminated repair on the bulkhead at FS 479 as part of the U.S. Air Force Aircraft Structural Integrity Program (ASIP) for structural health monitoring and validation of MsS sensor technology. Monitoring data is collected periodically with SwRI's new probe design.

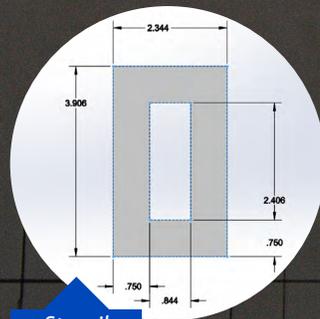
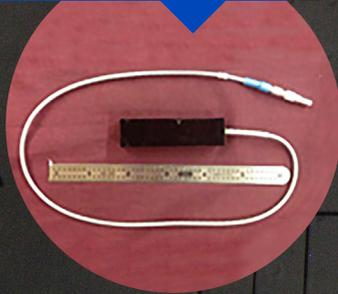


SwRI has designed a new probe which requires no modification to the aircraft other than the placement of a stencil to locate the initial probe position for baseline data collection. Subsequent MsS data is then compared to reference data obtained earlier to detect changes in the condition. SwRI and USAF are currently monitoring 75 A-10 aircraft at six locations on the upper longerons at five bases.



Concept illustration of the re-design for the new MsS aircraft probe

Final fabrication of the prototype MsS aircraft probe



Stencil



USAF NDI technician collecting MsS data on A-10 aircraft

We welcome your inquiries.  
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## SOUTHWEST RESEARCH INSTITUTE

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