



## Self Diagnostic Accelerometer Testing on the C-17 Aircraft

By John D. Lekki

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The self diagnostic accelerometer (SDA) developed by the NASA Glenn Research Center was tested for the first time in an aircraft engine environment as part of the Vehicle Integrated Propulsion Research (VIPR) program. The VIPR program includes testing multiple critical flight sensor technologies. One such sensor, the accelerometer, measures vibrations to detect faults in the engine. In order to rely upon the accelerometer, the health of the accelerometer must be ensured. The SDA is a sensor system designed to actively determine the accelerometer structural health and attachment condition, in addition to vibration measurements. The SDA uses a signal conditioning unit that sends an electrical chirp to the accelerometer and recognizes changes in the response due to changes in the accelerometer health and attachment condition. To demonstrate the SDAs flight worthiness and robustness, multiple SDAs were mounted and tested on a C-17 aircraft engine. The engine test conditions varied from engine off, to idle, to maximum power. The SDA attachment conditions were varied from fully tight to loose. The newly developed SDA health algorithm described herein uses cross correlation pattern recognition to...



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