

Tpe331 Engine

The Code of Federal Regulations Title 14 contains the codified Federal laws and regulations that are in effect as of the date of the publication pertaining to aeronautics, air transportation / aviation (including large and small aircraft, such as commercial airplanes, helicopters, balloons and gliders), and space exploration, including areas overseen by the FAA and NASA.

This report on retirement-for-cause is based on the Garret TPE331/T76 turboprop engine second-stage turbine wheel. This second-stage turbine wheel is an integrally bladed wheel with continuous rim slots between each blade at the rim. The slot is ended with a circular hole. The slot and hole reduce thermal and centrifugal stresses existing at the heated outer rim and extend turbine low-cycle-fatigue life. This program was planned to develop criteria from examination and analysis of field service wheels that would allow the Air Force to define how much life remained in the wheel with an observed crack. The investigated wheel displayed significant scatter in cycles to initiate a given crack size. This scatter was traceable to the large variation in grain size at the rim of these cast integrally bladed wheels. Crack propagation analysis was able to predict the observed crack-growth rate. However, no correlation between crack initiation and usage could be identified during this program that would aid implementation of retirement-for-cause.

This landmark joint publication between the National Air and Space Museum and the American Institute of Aeronautics and Astronautics chronicles the evolution of the small gas turbine engine through its comprehensive study of a major aerospace industry. Drawing on in-depth interviews with pioneers, current project engineers, and company managers, engineering papers published by the manufacturers, and the tremendous document and artifact collections at the National Air and Space Museum, the book captures and memorializes small engine development from its earliest stage. Leyes and Fleming leap back nearly 50 years for a first look at small gas turbine engine development and the seven major corporations that dared to produce, market, and distribute the products that contributed to major improvements and uses of a wide spectrum of aircraft. In non-technical language, the book illustrates the broad-reaching influence of small turbines from commercial and executive aircraft to helicopters and missiles deployed in recent military engagements. Detailed corporate histories and photographs paint a clear historical picture of turbine development up to the present. See for yourself why *The History of North American Small Gas Turbine Aircraft Engines* is the most definitive reference book in its field. The publication of *The History of North American Small Gas Turbine Aircraft Engines* represents an important milestone for the National Air and Space Museum (NASM) and the American Institute of Aeronautics and Astronautics (AIAA). For the first time, there is an authoritative study of small gas turbine engines, arguably one of the most significant spheres of aeronautical technology in the second half o

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