

## A Biography Of Dr. Robert B. Abernethy

by H. Paul Barringer, P.E.Dr.

Robert B. Abernethy is known worldwide for his expertise in jet engine performance, measurement uncertainty analysis and Weibull analysis. "Dr. Bob", as he is affectionately known, has presented his



Dr. Robert B. Abernethy on his 73rd birthday  
July 12, 2003

Weibull Workshop in Australia, Canada, China, Japan, Germany, Spain, Sweden, Israel, The Netherlands, and the United States of America. More than 9,000 students have attended his seminars. More than 18,000 copies of his text [The New Weibull Handbook](#) have been distributed. (Dr. Bob provides free copies to university libraries around the world to encourage the

teaching of Weibull analysis.) The handbook is now in the 5th edition and Dr. Bob's research continues. A similar number of the original US Air Force Weibull Analysis Handbooks, AD A143100, 1983, were distributed worldwide by the US Government. The New Weibull Handbook was favorably reviewed by the Royal Statistical Society.

Dr. Bob graduated from Rensselaer Polytechnic Institute as a Navy scholar with a B.Sc.ME and in 1958 received his M Sc in Industrial Management. He served on destroyers during the Korean War[1] and joined Pratt & Whitney Aircraft in 1955. The picture to the left was taken at Pratt & Whitney in 1963 just before he left for England, doing Weibull analysis with a slide rule. He was the Fulbright Scholar for science and math to Great Britain where he obtained his DIC and PhD degrees in statistics from the Imperial College of Science in 1965. He retired from Pratt & Whitney Aircraft in 1987 after 32 years as Manager of Reliability, Safety, Maintainability, and Statistical analysis to teach Weibull analysis.

He has awards from [AIAA](#), [ASME](#), [ASQ](#), [ISA](#), and [SAE](#) for his work in Weibull analysis and measurement uncertainty. He is a fellow of [ASME \(2003\)](#), [SAE](#), [ASQ](#), [The Royal Statistical Society](#), and an Associate Fellow of [AIAA](#) for his development of Weibull technology, Weibayes methodology, failure forecasting, and the Weibull substantiation test designs. He founded and chaired both the [SAE G11 Reliability Division](#) and the [SAE E33 Committee](#)

**on Aircraft Performance Measurement.** He was Chief American delegate to ISO TC30 SC9, sponsored by ASME and ANSI. He chaired two ASME committees on measurement uncertainty.

[Dr. Bob](#) holds the patent on a feature of the J58 Pratt & Whitney engine that powers the world's fastest aircraft. His invention converts the afterburning turbojet into a partial ram jet at high Mach number. The J58 engine powers the supersonic [SR-71 "Blackbird"](#) that still holds all 17 world speed records even though his patent was submitted in October 1958. An SR-71 is located at the [Smithsonian Institute Aircraft Museum](#). On the final [USAF SR-71 flight](#), it cleared the measurement gate in 1990 at Oxnard, CA (west coast of the USA) and crossed the completion gate at Salisbury, MD (east coast of the USA) in just under 68 minutes to set a new USA coast-to-coast speed record of 2,124.05 miles per hour (not bad considering the afterburners were at part power!). NASA recently retired several Blackbirds used for supersonic research. Dr. Bob also holds patents on the F100 afterburner control system engine used in both the [F15 Eagle](#) and F16 Falcon fighters.

The Weibull distribution was invented by [Waloddi Weibull](#) (1887-1979) for which he received [ASME's 1972 Gold Medal](#). (By coincidence, Dr. Bob received ASME's 1988 Dedicated Service Award for his contributions to statistics and his name is shown third from the top of the [Dedicated Service Award Recipients](#)). Both Abernethy and Weibull were midshipman and officers in their respective navies, and both received support from Wright Patterson Air Force Base for Weibull research. Both were widowed and remarried. Dr. Bob had his 77rd birthday on July 12, 2007 and hopes he may follow Waloddi Weibull who lived to be 89. Dr. Bob may be contacted by [email](#), and he is available for Weibull consulting or problem solving by use of his [EagleEye<sup>SM</sup> Service](#).

Dr. Abernethy's successful development of improved methods for life data analysis has inspired others to do significant research as well, particularly Wes Fulton, Paul Barringer, and Carl Tarum. The New Weibull Handbook has contributions from many others. The Handbook is supplemented by the SuperSMITH software written by [Wes Fulton](#) of [Fulton Findings](#). Every method described in The Handbook is available in the software. The Fulton Findings software is [WinSMITH Weibull](#) for making Weibull probability plots and [WinSMITH Visual](#) for making Crow-AMSAA reliability growth plots.

Dr. Bob winters in North Palm Beach, Florida and summers on Lake Tellico, Tennessee, with his wife Sally. His hobbies are orchids, staghorn ferns, fishing and traveling. Sally and Dr. Bob have four children and eight grandchildren.