

List of Scientific Reports and Conference Lectures
prepared under U.S. Air Force contracts by
Waloddi Weibull

Contract AF 61(514)-1208. (1 Feb 57 - 30 Mar 61)

Annual Summary Reports

No.1, Feb 1958.

No.2; Apr 1959: "Statistical evaluation of data from fatigue and creep rupture tests", issued as WADC-TR-59-400, May 1959.

No.3, Feb 1960.

Scientific Reports

No.1: "An appraisal of five methods for estimating location and scale parameters of the Weibull distribution", May 1960.

No.2: "Further appraisal of the methods of moments and of maximum likelihood", July 1960.

No.3: "Extension of the t-test to an arbitrary distribution", July 1960.

No.4: "Efficient estimation of Weibull distribution parameters", Feb 1961.

Conference Lectures

No.1: "Comments on the statistical evaluation of data from fatigue tests", presented at the Meeting of the OEEC Group of Experts on the Fatigue of Materials, Paris, 17 Oct 1958, and at the Meeting of the Fatigue Committee of the Structures and Materials Panel, AGARD, Copenhagen, Denmark, 24 Oct 1958.

No.2: "The efficiency of a fatigue test", presented at the 6th ICAF Conference, Amsterdam, Holland, June 1959.

No.3: "Statistical aspects of acoustical fatigue", presented at the WADC-Minnesota Acoustical Fatigue Conference, Beecher's Resort, Minn., Sep 1959.

No.4: "The fatigue damaging effect of a random load", presented at the ASTM Symposium on Acoustical Fatigue, Philadelphia, Pa., June 1960.

No.5: "Efficient methods for estimating fatigue life distributions of roller bearings", presented at the General Motor's Symposium on Rolling Contact Phenomena, Warren, Mich., Oct 1960.

Contract AF 61(052)-522. (1 Apr 61 - 31 Jan 69)

Scientific Reports

- No.1:"The effect of size and stress history on fatigue, crack propagation", Sep 1961, issued as ASD-TDR-62-785, Aug 1962.
- No.2:"Outline of an algebra of stochastic quantities", Aug 1962, issued as ASD-TDR-63-63, Jan 1963.
- No.3:"A new method of estimating distribution parameters, called the Uniformity Method", July 1963.
- No.4:"The amount of information provided by a random sample from the Weibull population", Dec 1963.
- No.4a:"Numerical evaluation of the integral $\int_0^{\infty} \log^m t \cdot t^x \cdot e^{-t} dt$ ", Mar 1964.
- No.5:"List of references on the theoretical properties, estimation of parameters, and practical applications of the Weibull distribution", Dec 1963.
- No.6:"Moment estimators for Weibull parameters and their asymptotic efficiencies", June 1964, issued as AFML-TR-69-135, Apr 1969.
- No.7:"Moments of the Weibull distribution and their derivatives", Sep 1964.
- No.8:"Composition and decomposition of bounded variates with special reference to the Gamma and the Weibull distributions", Dec 1964, issued as AFML-TR-67-88, Mar 1967.
- No.9:"Extremal products, geometric ranges, and extremal quotients of Weibull samples and their use for estimating parameters", Feb 1965.
- No.10:"Moments about smallest sample value", Apr 1965, issued as AFML-TR-67-375, Dec 1967.
- No.11:"Some non-linear order statistic estimators", Sep 65.
- No.12:"Estimation of distribution parameters by a combination of the best linear order statistic method and maximum likelihood", Feb 1966, issued as AFML-TR-67-105, Apr 1967.

Conference Lectures

- No.1:"Size effects on fatigue crack initiation and propagation in aluminum sheet specimens", presented at the ICAF-ACARD Symposium on Fatigue, Paris, May 1961.
- No.2:"The effect of size and stress history on fatigue crack initiation and propagation", presented at the Crack Propagation Symposium, Cranfield, England, Sep 61.
- No.3:"A theory of fatigue crack propagation in sheet specimens", presented at the International Conference on Mechanisms of Fatigue in Crystalline Solids, Orlando, Florida, Nov 1962.

- No.4:"Further investigations into fatigue crack propagation in sheet specimens", presented at the Third ICAF-AGARD Symposium, Rome, Apr 1963.
- No.5:"Initiation and propagation of fatigue cracks", presented at the Annual Meeting of the Swedish National Committee for Mechanics, Stockholm, May 1963.
- No.6:"Genesis, theoretical properties, and practical applications of the Weibull distribution" and
- No.7:"Initiation and propagation of fatigue cracks, invited lectures at the Hungarian Academy of Sciences, Budapest, June 1963.
- No.8:"Crack propagation" and
- No.9:"Analysis of fatigue test results", invited lectures at the First Seminar on Fatigue and Reliability, Columbia University, New York City, Nov 1963.
- No.10:"Theoretical properties and practical applications of the Weibull distribution", invited lecture at the Lewis Research Center, NASA, Cleveland, Ohio, Jan 64.
- No.11:"Genesis, theoretical properties, and practical applications of the Weibull distribution", invited lecture at the AFML, Wright-Patterson AFB, Ohio, Jan 64.

Contract AF 61(052)-943. (1 Feb 65 - 31 Jan 69)

Scientific Reports

- No.1:"References on methods for estimating Weibull parameters", May 1966.
- No.2:"The efficiencies of unbiased, linear estimators for scale and location parameters composed of one, two, or three order statistics", Apr 1966, issued as AFML-TR-69-134, Apr 1969.
- No.3:"The order statistics $y_i = \log(z_i^m)$, their properties and use for parameter estimation", Jan 1967, issued as AFML-TR-67-161, June 1967.
- No.4:"Approximations of best linear, unbiased order-statistic estimators", Apr 1967, issued as AFML-TR-67-198, June 1967.
- No.5:"Estimation of parameters from large samples arbitrarily censored or truncated", May 1967, issued as AFML-TR-67-197, June 1967.
- No.6:"A useful modification of the linear, minimum-variance shape parameter estimator", July 1967.
- No.7:"A method for analysing a mixed population, illustrated by application to size distributions of craters", June 1968.
- No.8:"A general method for estimating distribution parameters", June 1968, issued as AFML-TR-69-136, Apr 1969.

No.9:"A criterion for the acceptability of assumed distributions",Jan 1969, issued as AFML-TR-69-124, Apr 1969.

Conference Lectures

- No.1:"The stochastic nature of static and dynamic strength properties of materials as specified by distribution functions" and
No.2:"Stochastic behaviour of structural elements and structures and reliability of mechanical, electro-mechanical and electronic devices" and
No.3:"Methods for analysing composed distributions with particular reference to reliability theory".

These three papers were presented at a NATO Symposium on Engineering Applications of Statistical Extremes at Faro, Portugal, Sep 1967.

No.4:"The statistical theory of strength of materials; why, when, and how it started", presented at the University of California, Berkeley, Nov 1968.

No.5:"New aspects on the statistical evaluation of test data", presented and discussed at the following institutions during the fall of 1968:

Southern Research Institute, Birmingham, Alabama,	20 Nov
Boeing Scientific Research Laboratories, Seattle,	22 Nov
University of California, Berkeley, Cal.,	25 Nov
AFML, Research and Engineering Division, WPAFB,	1 Dec
Air Force Institute of Technology, WPAFB,	2 Dec
University of Dayton, Dayton, Ohio,	3 Dec
Industrial Mathematics Society, Detroit, Mich.,	5 Dec
University of Toronto, Institute for Aerospace Research, Toronto, Canada,	6 Dec

Contract F 61052-69-C-0029. (1 Feb 69 - 31 Jan 71)

Scientific Reports

- No.1:"High-fidelity approximations to median percentage points of order statistics", Oct 1969, issued as AFML-TR-69-317, Nov 1969. Co-author: Göran W. Weibull.
No.2:"Tables of the medians of the order statistics x_i , y_i , and z_i ", Apr 1970. Co-author: Göran W. Weibull.
No.3:"Outline of a theory of powerful selection of distribution functions", Feb 1971, issued as AFML-TR-71-52, Mar 1971.

Contract F 44621-71-C-0111. (1 Feb 71 - 31 Aug 71)

Scientific Reports

- No.1: "Study of the fatigue data derived from the AFML/ Boeing KC-135 structural reliability program".
Under preparation.
- No.2: "Study of the specific structural component fatigue data described in AFML-TR-70-157". Under preparation.

Conference Lectures

- No.1: "A new principle of estimating the distribution underlying a given set of observations", presented at the Annual ASTM Meeting, Atlantic City, N.J., June 1971.
- No.2: "The new theory of powerful selection", presented and discussed at the School of Engineering, New York University, N.Y., June 1971.

Contract F 44620-72-C-0028. (1 Sep 71 - 31 Aug 72)

Scientific Reports

- No.1: "The Eks-square test of goodness-of-fit - an improvement of the Chi-square test", Feb 1972.
- No.2: "A new test operator, VJ , based on class frequencies", May 1972.
- No.3: "The concept of pseudo-standardized variable and its use as elements of shape operators", June 1972.
- No.4: "The concept of score of a random sample", Aug 1972.

Scientific Reports under Preparation

- No.1: "An improved rank-sum test".
- No.2: "Some new tests of homogeneity".
- No.3: "Test statistics with parameter-free sampling distributions".
- No.4: "Testing the hypothesis that the location parameter is equal to zero or to any other arbitrary value".
- No.5: "The sample score with individual class limits".
- No.6: "A new concept of measure of information provided by a random sample".

Lausanne 31 January 1973

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