

**BAYESIAN LIFE TEST PLANNING FOR THE WEIBULL
DISTRIBUTIONS WITH GIVEN SHAPE PARAMETER**

by

Yao Zhang and William Q. Meeker
Iowa State University

March 2002

ABSTRACT

This paper describes Bayesian methods for life test planning with Type II censored data from a Weibull distribution, when the Weibull shape parameter is given. Conjugate prior distributions are proposed, and criteria based on estimating a quantile of interest of the lifetime distribution, one from the credibility interval precision factor and one from the exact length of the credibility interval, are employed. Simple closed forms for the relationship between the sample size needed and the criteria are found in this given-shape-parameter Weibull distribution case, as well as the special case of the exponential distribution (shape parameter is equal to 1). Examples are used to illustrate the results.