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**A GENERALIZED CURVE FITTING
TECHNIQUE FOR THE LIFE2
FATIGUE ANALYSIS CODE**

by

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ABSTRACT

The fatigue analysis of wind turbine components typically depends on the use of representative samples of stress histories to predict the fatigue load spectrum on the turbine during its lifetime. A generalized fitting technique, developed by Winterstein and Lange [1,2], has been shown to be particularly useful for matching the body of the distribution of fatigue stress cycles on a turbine component and for extrapolating the tail of the distribution to remove the artificial truncation of large amplitude cycles that is inherent in finite data samples. The numerical algorithms developed by Winterstein and Lange, with a series of pre- and post-processing algorithms, have been incorporated into the LIFE2 fatigue analysis code for wind turbines. This report describes the algorithms incorporated into the code and their numerical implementation. Example problems are used to illustrate typical inputs and outputs.

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