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**User's Manual for FAROW:
Fatigue and Reliability of
Wind Turbine Components
Version 1.1**

by

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ABSTRACT

FAROW is a computer program that assists in the probabilistic analysis of the Fatigue and Reliability of Wind turbines. The fatigue lifetime of wind turbine components is calculated using functional forms for important input quantities. Parameters of these functions are defined in an input file as either constants or random variables. The user can select from a library of random variable distribution functions. FAROW uses structural reliability techniques to calculate the mean time to failure, probability of failure before a target lifetime, relative importance of each of the random inputs, and the sensitivity of the reliability to all input parameters. Monte Carlo simulation is also available.

This user's manual is intended to provide sufficient information to knowledgeable run the program and meaningfully interpret the results. The first chapter provides an overview of the approach and the results. Chapter 2 describes the formulation and assumptions used in the fatigue life calculations. Each of the input parameters is described in detail in Chapter 3 along with hints and warnings on usage. An explanation of the outputs is provided in Chapter 4. Two example problems are described and solved in Chapter 5, one for the case where extensive data are available and the other with limited data where the uncertainty is higher. A typical input file and the output files for the example problems are included in the appendices.

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