

## **Exhibit 24-1(RN-1)**

**RON NIERENBERG**  
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### **OBJECTIVE**

Design, implement, manage and analyze wind energy assessment programs to optimize production from windfarm developments.

### **QUALIFICATIONS**

- \* 25+ years experience as wind energy meteorologist.
- \* Sited/assessed 1,000 MW of wind farms in 2001 & 2003, ~2/3 of U.S installations.
- \* Managed wind monitoring programs with aggregate value of \$3 million.
- \* Conceived and managed two DOE funded wind research projects.
- \* Developed software library for wind energy analysis.
- \* Conducted original wind study of the Altamont Pass.

### **ACHIEVEMENTS**

Designed and managed large federally funded wind turbine study. Analyzed energy production test data to determine causes of variability in turbine performance. Resulted in authorship of two DOE/NREL (SERI) reports. Achieved 99.9% data recovery rate.

Consolidated and analyzed wind data from entire Altamont Pass to explain multi-million dollar revenue losses due to macro-scale wake effects. Findings published in five journals.

Developed extensive software library, used exclusively for wind energy analysis, which can run on mainframes or advanced PCs.

Co-authored original wind resource assessment study of the Altamont Pass, published by California Energy Commission, which led to the installation of \$1 billion of wind turbines.

Designed and managed hundreds of wind monitoring programs for windfarm developments in California, and other states, as well as Canada, Latin America, China, India and the UK, to accurately assess economic viability of these projects.

## EXPERIENCE

Consulting Meteorologist,	DOE, FPLE, and other utilities, and every major U.S. wind developer	1982-Present
Meteorologist,	Howden Wind Parks Inc.	1986-1989
Director of Meteorology, Chief	NFC Energy Corp. Windfarms, Ltd.	1983-1984 1981-1982
Meteorologist,	Pacific Gas & Electric Co.	1978-1981
Meteorologist,	Oceanroutes	1977-1978
Researcher,	National Center for Earthquake Research	1975-1976

## EDUCATION

B.S.	Meteorology, California State University, San Jose	1976
B.A.	Geography, California State University, San Francisco	1971

## PUBLICATIONS

R. Nierenberg, Wake Deficit Measurements on the Jess and Souza Ranches, Altamont Pass, U.S. Department of Energy/SERI, April, 1990.

R. Nierenberg, Free-Flow Variability on the Jess and Souza Ranches, Altamont Pass, U.S. Department of Energy/SERI, March, 1989.

R. Nierenberg, Macro-Scale Wake Effects, American Wind Energy Association, September, 1989. Portions of this paper appeared in *Wind Power Monthly*, *Independent Energy*, *WindStats Newsletter* and *European Wind Energy Conference and Exhibition*, July, 1989.

R. Nierenberg, An Innovative Wind Measurement Program Using Fixed, Mobile and Kite Anemometers, American Wind Energy Association, October, 1983.

Davis, E. and R. Nierenberg, Wind Energy Prospecting in Alameda and Solano Counties, California Energy Commission, May, 1980.

## AWARDS

Special award "For making critical contributions to the development of wind energy in the U.S. and around the world", presented by the American Wind Energy Association, April 1998.