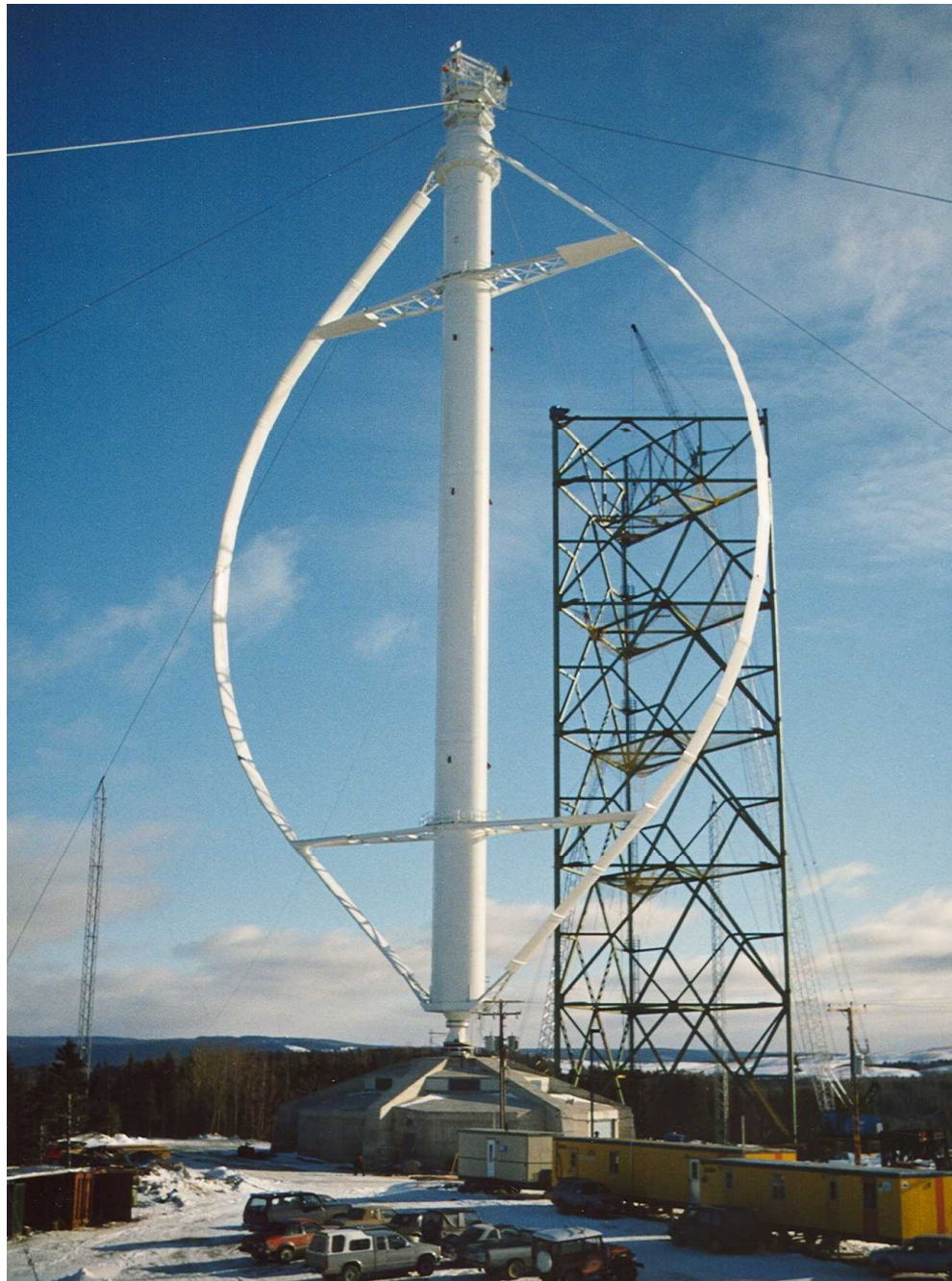


Wind Turbine Photos Provided for IMAC Luncheon Presentation Sandia National Laboratories

Presentation by Prof. Carlos E. Ventura
University of British Columbia









Modal Frequencies from Step Relaxation, Wind Excitation, and from Finite Element Predictions

MODE SHAPE DESCRIPTION	STEP RELAXATION (Hz)	WIND EXCITATION NExT/OMA (Hz)	FINITE ELEMENT MODEL (Hz)
FIRST TOWER OUT-OF-PLANE	0.63	0.63	0.63
FIRST TOWER IN-PLANE	0.74	0.73	0.75
SECOND TOWER OUT-OF-PLANE	0.93	0.94	0.92
BLADE FLATWISE ANTI-SYMMETRIC	1.30	1.30	1.27
BLADE FLATWISE SYMMETRIC	1.32	1.34	1.29
SECOND TOWER IN-PLANE	1.38	1.39	1.42
BLADES BENDING OUT-OF-PLANE	1.55	1.55	1.61
THIRD TOWER OUT-OF-PLANE	1.79	---	1.76
ROTOR TWIST (DUMBELL)	1.93	1.94	1.96
SECOND FLATWISE SYMMETRIC	2.24	2.25	2.20
SECOND BLADE OUT-OF-PLANE	2.33	2.33	2.34
SECOND BLADE ANTI-SYMMETRIC	2.40	2.39	2.38

