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Offshore Wind Turbines

Estimated Noise from Offshore Wind Turbine, Monhegan Island, Maine

Addendum 2

Environmental Effects of Offshore Wind Energy Development

P Aker
AM Jones
AE Copping

March 2011

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Abstract

As plans for deployment of offshore wind turbines on a floating test platform in the Gulf of Maine have become clearer, the test turbine choice has been widened, adding the Vestas V29 as a candidate for deployment, along with the Northwind 100 turbines. PNNL performed additional calculations to estimate the noise emanating from 2 Vestas V29-225 kW wind turbines sited in a location corresponding to the north east boundary of DeepCwind's proposed site center which is approximately 3 miles south of Monhegan Island, Maine. The same commercial software package and procedures as described in PNNL report 20015 were used to estimate the sound pressure levels that would be received at a location (1.5 m elevation, -69^{o} 19'06.68" East, 43^{o} 45'21.00" North) on the island's south shore regions. The noise parameters associated with the Vestas V29-225 kW wind turbine were obtained from a document provided by the University of Maine, which appears to a 1996 General Specification V29-225 kW report prepared by Vestas. Page 3 of the pdf document (which appears in the appendix) "Vestas_ISO_8_NE_Site_Octave" lists the relevant parameters used in the calculations.

Contents

Tables

1.0 Modeling Results

A) Noise Estimate for 2 Turbines Located at the Northeast Corner of the Site

In these calculations the turbines were located at (-69°19'11.99" East, 43°43'10.78" North) and (-69°19'14.79" East, 43°43'08.25" North). The distances between each turbine and the receiver were 4022 and 4102 m, respectively. Prior modeling calculations show that this location, as opposed to the proposed site center, gives a worse case estimate. Calculations were done only for a wind speed of 8 m/sec as the data on noise versus wind speed given in the document supplied by the client was too noisy to extract a meaningful trend.

Table 1. Noise Calculated for 8 m/sec Wind Speed Using Turbine Octave Band Data

Propagation Model	Distance (km)	# Turbines	Sound Level at Receiver (dBA)	Appendix
ISO 9613-2	4022, 4102	2	12.4	VESTAS_ ISO_8_NE_Site_Octave
Swedish 6241 Land (> 1 km)	4022, 4102	2	11.6	VESTAS_SLAND_8_NE_Site _ Octave
Swedish 6241 Water	4022, 4102	2	26.7	VESTAS_SWATER_8_NE_Sit e_Octave

Appendix **A**

Vestas_ISO_8_NE_Site_Octave Input Information

Appendix B

Model Outputs for Vestas 29 Noise Estimates

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