HGC ENGINEERING

Howe Gastmeier Chapnik Limited
2000 Argentia Road, Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044

November 28, 2018

VIA E-MAIL TO: Denton.Miller@ontario.ca

Denton Miller
Senior Noise Engineer
Ministry of the Environment, Conservation and Parks
135 St. Clair Ave W
Toronto, ON M4V 1P5

Re: Grand Bend Wind Farm REA #5186-9HBJXR, Information Request
Grand Bend Wind Farm

Dear Mr. Miller,

The following points address the email sent to Mr. Jim Mulvale, on November 22, 2018, requesting supplemental information to support the Immission Audits of the Grand Bend Wind Farm.

(1) Two letters confirming the turbines were parked during ambient (off) conditions in both the spring and fall measurement campaigns can be found in Appendix A.

(2) The Environmental Noise Impact Assessment Report included 48 proposed wind turbine generators for the site. Eight of the proposed turbines were alternates and only 40 turbines were constructed. Wind turbines T4, T10, T15, T24, T28, T36, T40 and T47 were not installed. The updated sound level predictions include only the 40 constructed turbines, which results in lower predicted sound levels at most receptor locations.

The discrepancy in the predicted sound level at receptor R258 between the Spring and Fall Immission Audit Reports is due to a typographical error made in the Fall Immission Report, dated March 10, 2017. The correct predicted sound level of 38.4 dBA for R258 appears in the Spring Immission Report, dated September 26, 2018.

(3) As requested, the Cadna file will be provided to the MECP.

(4) The anemometers follow a 24 month calibration schedule. Both anemometers were calibrated again in February of 2017. The new calibration certificates for the anemometers can be found in Appendix B.

(5) The distance correction was determined using the following formula:

$$distance\ correction = 20 * \log\left(\frac{D_{monitor}}{D_{receptor}}\right)$$

The mean distance correction for the three closest turbines, T18 (0.4 dBA), T21 (0.9 dBA) and T22 (1.4 dBA) was used to yield a distance correction of 0.9 dBA. The distance correction is independent of the predicted sound levels found in Table 1.

We trust this information is helpful. If you have any questions or concerns, please do not hesitate to contact us.

Yours truly,
Howe Gastmeier Chapnik Limited

Nathan Gara, C.E.T. Ian R. Bonsma, PEng

APPENDIX A

November 26, 2018

SUBJECT : Statement of Operation - Fall Immissions Audit - Grand Bend Wind Farm

To whom it may concern,

This letter is to confirm that the wind turbine generators at the Grand Bend Wind Farm were operating normally during the post-construction acoustics audit, conducted between October 25, 2016 and February 1, 2017. Additionally, this letter confirms that the relevant turbines were parked for ambient (OFF) condition measurements

Yours Truly,

Ben Becking,

Site Supervisor
Grand Bend Wind Limited Partnership
2 Parkside Ave.
Zurich, Ontario
N0M 2T0

NORTHLAND POWER

November 26, 2018

SUBJECT : Statement of Operation - Spring Immissions Audit - Grand Bend Wind Farm

To whom it may concern,

This letter is to confirm that the wind turbine generators at the Grand Bend Wind Farm were operating normally during the post-construction acoustics audit, conducted between March 9, 2017 and July 21, 2017. Additionally, this letter confirms that the relevant turbines were parked for ambient (OFF) condition measurements.

Yours Truly,

Ben Becking,

Site Supervisor
Grand Bend Wind Limited Partnership
2 Parkside Ave.
Zurich, Ontario
N0M 2T0

APPENDIX B

SOH Wind Engineering LLC
141 Leroy Road · Williston, VT 05495 · USA
Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

NRG8
#6
Feb 9 2017

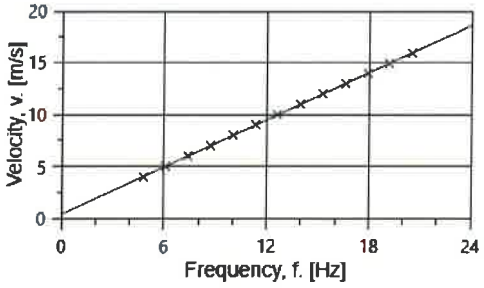
CERTIFICATE FOR CALIBRATION OF CUP ANEMOMETER

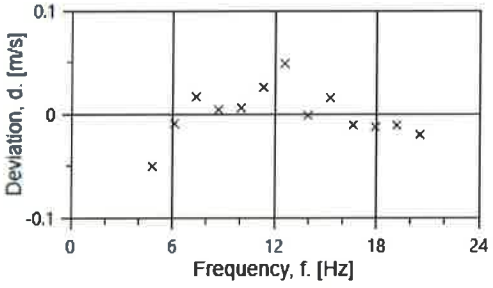
Certificate number: 17.US1.01491 **Date of issue:** February 06, 2017
Type: RNRG 40C Anemometer **Serial number:** 179500244813
Manufacturer: Renewable NRG Systems Inc, 110 Riggs Road, Hinesburg, VT 05461, USA
Client: HGC Engineering, 2000 Argentia Road, Plaza One, Suite 203, Mississauga, ON L5N 1P7, Canada
Anemometer received: February 03, 2017 **Anemometer calibrated:** February 03, 2017
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2005(E) Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

Calibration equation obtained: v [m/s] = 0.75963 · f [Hz] + 0.36998

Standard uncertainty, slope: 0.00188 **Standard uncertainty, offset:** 0.05239
Covariance: -0.0000258 (m/s)²/Hz **Coefficient of correlation:** ρ = 0.999981
Absolute maximum deviation: -0.050 m/s at 3.971 m/s
Barometric pressure: 1005.2 hPa **Relative humidity:** 13.1%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Frequency, f. [Hz]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.29	23.6	26.2	3.971	4.8065	-0.050	0.025
4	14.68	23.6	26.2	4.991	6.0955	-0.009	0.026
6	21.15	23.6	26.2	5.991	7.3783	0.017	0.027
8	28.76	23.6	26.2	6.986	8.7045	0.004	0.030
10	37.64	23.6	26.2	7.992	10.0257	0.006	0.033
12	47.76	23.6	26.2	9.003	11.3304	0.026	0.036
13-last	58.77	23.6	26.2	9.987	12.5955	0.049	0.038
11	71.00	23.6	26.2	10.977	13.9650	-0.001	0.041
9	84.65	23.6	26.2	11.987	15.2722	0.016	0.045
7	99.35	23.6	26.2	12.987	16.6232	-0.011	0.048
5	115.18	23.6	26.2	13.984	17.9385	-0.013	0.051
3	131.29	23.6	26.2	14.929	19.1810	-0.011	0.054
1-first	149.62	23.6	26.2	15.937	20.5190	-0.020	0.057





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SOH Wind Engineering LLC
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Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

NRG 9

CERTIFICATE FOR CALIBRATION OF CUP ANEMOMETER

NRG
Feb 9 2017

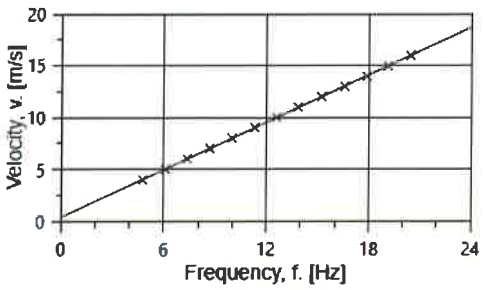
Certificate number: 17.US1.01493 **Date of issue:** February 06, 2017
Type: RNRG 40C Anemometer **Serial number:** 179500244824
Manufacturer: Renewable NRG Systems Inc, 110 Riggs Road, Hinesburg, VT 05461, USA
Client: HGC Engineering, 2000 Argentia Road, Plaza One, Suite 203, Mississauga, ON L5N 1P7, Canada
Anemometer received: February 03, 2017 **Anemometer calibrated:** February 03, 2017
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2005(E) Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

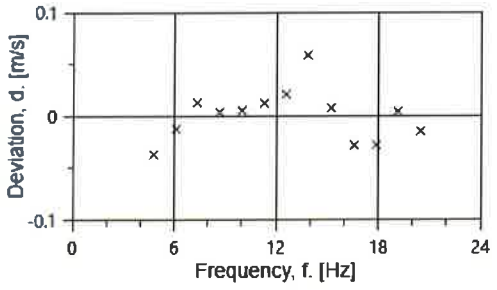
Eric Jeffrey

Calibration equation obtained: v [m/s] = 0.76309 · f [Hz] + 0.35260

Standard uncertainty, slope: 0.00196 **Standard uncertainty, offset:** 0.05745
Covariance: -0.0000283 (m/s)²/Hz **Coefficient of correlation:** $\rho = 0.999979$
Absolute maximum deviation: 0.058 m/s at 10.986 m/s
Barometric pressure: 1004.9 hPa **Relative humidity:** 13.1%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Frequency, f. [Hz]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.26	23.6	26.2	3.965	4.7834	-0.037	0.025
4	14.67	23.7	26.2	4.991	6.0955	-0.013	0.026
6	21.07	23.7	26.2	5.980	7.3582	0.013	0.027
8	28.71	23.6	26.2	6.981	8.6820	0.003	0.030
10	37.55	23.6	26.2	7.984	9.9937	0.005	0.033
12	47.65	23.6	26.2	8.994	11.3084	0.012	0.036
13-last	58.71	23.6	26.2	9.984	12.5942	0.021	0.038
11	71.09	23.6	26.2	10.986	13.8583	0.058	0.041
9	84.60	23.6	26.2	11.985	15.2349	0.007	0.045
7	99.19	23.6	26.2	12.978	16.5833	-0.029	0.048
5	114.93	23.6	26.2	13.971	17.8834	-0.029	0.051
3	131.68	23.6	26.2	14.954	19.1298	0.004	0.054
1-first	149.86	23.6	26.2	15.952	20.4625	-0.015	0.057





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