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Subject matter:	**Jelinak WF**
Test program:	**Unsupervised noise levels monitoring in environment of wind farm „Jelinak"**
Order number and date:	**Contract number 2012-A-022 from 2013-03-28**
Test date:	**2013-07-01 do 2014-06-30**
Number of pages:	**44**

NOISE MONITORING IN MUŠTRE AND ČUDINE

FINAL REPORT

MARK: 2014-AI-031

ENGLISH TRANSLATION OF CROATIAN LANGUAGE DOCUMENT

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1. CONTENT

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2. GENERAL CONDITIONS OF TEST IMPLEMENTATION

2.1. Legal framework of test implementation

- Law on Amendments of Noise Protection Act (Official Gazette "Narodne Novine" no. 153/13, 55/13; 30/09)
- Ordinance on maximum permitted noise levels in environment where people work and live (Official Gazette "Narodne Novine" no. 145/04)
- Rules on activities which are necessary to determine the measures for noise protection (Official Gazette "Narodne Novine" no. 91/07)
- Ordinance on the preparation and content of noise maps and action plans, and the manner of calculating the permissible noise indicators (Official Gazette "Narodne Novine" no. 30/09)

2.2. Normative framework of test

- HRN ISO 1996-1:2004 - Acoustics - Description, measurement and assessment of environmental noise -- Part 1: Basic quantities and assessment procedures
- HRN ISO 1996-2:2008 - Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of environmental noise levels

2.3. Measurement equipment and software package

- System for noise level monitoring at location Muštre (hereinafter NMT 1) consists:
  - NMT stations including frame, casing, power supply, battery power supply, serial number: 6344
  - integrating sound level meter Brüel & Kjær 2250 (Type 1), serial number: 2681959, with a software BZ7222 version 4.1
  - Set for external microphone B&K 4952, serial number: 2821499 including microphone preamplifier, microphone extension cable and an external casing
  - Software BZ 5298
  - Noise Sniffer v.1.4.5
  - Router ZM-0073-100
- System for noise level monitoring at location Čudine (hereinafter NMT 2) consists:
  - NMT stations including frame, casing, power supply, battery power supply, serial number: 6343
  - integrating sound level meter Brüel & Kjær 2250 (Type 1), serial number: 2681958, with a software BZ7222 version 4.1
  - Set for external microphone B&K 4952, serial number: 2821423 including microphone preamplifier, microphone extension cable and an external casing
  - Software BZ 5298
  - Noise Sniffer v.1.4.5
  - Router ZM-0073-100

2.4. Technical and other relevant details of testing

Test date and time: from 2013-07-01 00:00 till 2014-06-30 23:59

Test locations:

- Measuring point 1 on location Muštre with station for continuous unattended noise levels monitoring
- Measuring point 2 on location Čudine with station for continuous unattended noise levels monitoring

3. NOISE MONITORING PURPOSE

According to Decision from Ministry of Environmental Protection, Physical Planning and Construction (Class: UP/I-351-03/07-02/63; Reg.no. 531-08-1-07-09-15 from 2009-01-09), Section B.3 - environmental monitoring during operation phase, purpose of monitoring is to determine total noise exposure level at noise measurement locations for monitoring noise levels, and in accordance with results of measurements to assess noise immision impact caused by noise source, Jelinak WF with which manage Vjetroelektrana Jelinak Ltd. At location of villages' Čudine and Muštre, in order to determine, if noise levels exceed the permitted noise levels for conditions of day, evening and night in accordance with the regulations set out in section 2.1.

4. DESCRIPTION OF NOISE MONITORING IMPLEMENTATION

Measuring stations for unsupervised noise levels monitoring are located in villages Muštre (hereinafter NMT 1) and Čudine (hereinafter NMT 2). Each NMT is completely autonomic for continuously noise level monitoring with sound recording above a certain noise level. In first phase of noise level monitoring, system have been set up to automatically record all sounds if it measured equivalent noise level during 5 minute interval exceeds setup threshold. Coordinates of NMTs (HTRS 96/TM coordinate system) are showed in Table 1, while the position of NMTs compared to 20 WTGs of Jelinak WF is showed on Figure 1.

Table 1 NMTs description with coordinates

seq.no.	NMT description	Name	X	Y
1	Muštre	NMT 1	475247	4824925
2	Čudine	NMT 2	472920	4824949

Vjetroelektrana Jelinak Ltd. operates with 20 WTGs type AW82/1500 class IIa T80m tower height 80 m, positions of WRGs are shown on Figure 1. Detailed coordinates of WTGs (HTRS 96/TM coordinate system) are shown in Table 2

Detailed technical specifications including noise values and tierce spectrum at rated wind speed of 7 m/s are shown in the appendix to this report (see section 6.1).

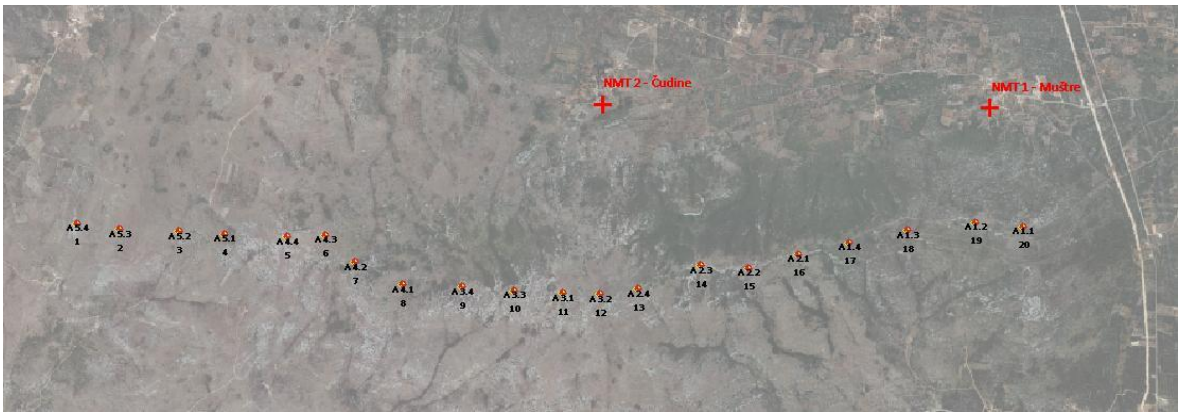


Figure 1 Display of locations of NMT and wind turbines on the Jelinak WF

Table 2 Description of WTGs with coordinates

seq.no.	X	Y	Z	Mark
1	469770	4824238	398	A 5.4
2	470027	4824201	386	A 5.3
3	470384	4824190	362	A 5.2
4	470655	4824173	399	A 5.1
5	471033	4824158	486	A 4.4
6	471260	4824167	491	A 4.3
7	471440	4824005	472	A 4.2
8	471720	4823873	469	A 4.1
9	472080	4823859	505	A 3.4
10	472387	4823837	528	A 3.3
11	472679	4823820	549	A 3.1
12	472904	4823814	574	A 3.2
13	473134	4823848	533	A 2.4
14	473510	4823985	535	A 2.3
15	473793	4823971	529	A 2.2
16	474090	4824052	496	A 2.1
17	474395	4824124	464	A 1.4
18	474748	4824197	446	A 1.3
19	475152	4824243	510	A 1.2
20	475437	4824218	513	A 1.1

In order to achieve more accurate assessment of potential noise impact on total noise exposure level at the NMTs locations, wind power operator has submitted operation data for each turbine during current month with data of production, as well as data of speed and wind direction.

An example of production data is shown in Table 3, where for each five-minute interval for each wind turbine is submitted data of production. During analyze of data is adopted a rule that the WTG is in operation if production was greater than zero.

Table 3 Example of production data

Date	A1.1	A1.2	A1.3	A1.4	A2.1	A2.2	A2.3	A2.4	A3.1	A3.2	A3.3	A3.4	A4.1	A4.2	A4.3	A4.4	A5.1	A5.2	A5.3	A5.4
01.06.2014 0:00	722	333	0	99	508	485	530	635	599	779	672	458	446	399	646	821	963	881	885	1092
01.06.2014 0:05	736	223	8	148	863	488	368	405	602	774	536	312	315	383	497	781	968	928	989	857
01.06.2014 0:10	739	234	22	159	860	495	378	407	602	774	535	317	317	382	494	774	951	915	981	858
01.06.2014 0:15	741	246	36	169	857	501	388	409	601	774	535	322	320	380	492	768	934	902	973	859
.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Example of wind speed data for each WTG is shown in Table 4, where for each five-minute interval for each wind turbine is submitted wind speed data in m/s. During analyze data were analyze in a way that first was calculated arithmetic mean of wind speed for all WTGs in one five-minute interval, and then from all five minute samples during the current month, was conducted essential statistical analysis for calculation of wind contingency.

Table 4 Example of wind speed data

Date	A1.1	A1.2	A1.3	A1.4	A2.1	A2.2	A2.3	A2.4	A3.1	A3.2	A3.3	A3.4	A4.1	A4.2	A4.3	A4.4	A5.1	A5.2	A5.3	A5.4
01.06.2014 0:00	9,5	7,6	2,3	5,2	8,2	8,5	7,4	8,1	9,3	10,0	9,0	8,8	8,2	7,9	8,1	10,3	10,8	10,0	10,9	10,3
01.06.2014 0:05	9,3	6,7	5,3	6,1	9,2	7,7	6,2	7,3	9,0	10,5	8,6	7,9	7,2	8,2	7,3	8,8	9,9	10,1	10,2	8,7
01.06.2014 0:10	9,3	6,7	5,4	6,1	9,2	7,8	6,3	7,3	8,9	10,4	8,6	7,9	7,2	8,2	7,3	8,8	9,8	10,1	10,2	8,7
01.06.2014 0:15	9,3	6,8	5,4	6,2	9,2	7,8	6,4	7,3	8,9	10,4	8,6	7,9	7,2	8,2	7,3	8,7	9,8	10,0	10,2	8,7
.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Example of wind direction data at each WTG is shown in Table 5, where for each five-minute interval for each wind turbine is submitted wind direction data in degrees. During analyze data were analyze in a way that is for all WTGs during the current month is conducted essential statistical analysis for calculation of wind contingency.

Table 5 Example of wind speed direction

Date	A1.1	A1.2	A1.3	A1.4	A2.1	A2.2	A2.3	A2.4	A3.1	A3.2	A3.3	A3.4	A4.1	A4.2	A4.3	A4.4	A5.1	A5.2	A5.3	A5.4
01.06.2014 0:00	354	344	323	339	1	352	1	5	352	1	326	358	9	0	5	350	15	8	1	3
01.06.2014 0:05	349	338	336	350	2	353	12	6	345	2	326	353	10	1	5	343	15	8	1	3
01.06.2014 0:10	342	331	337	342	2	346	13	6	338	2	327	346	10	1	6	337	16	9	1	3
01.06.2014 0:15	335	325	337	335	2	339	13	7	331	3	327	339	10	2	7	330	16	9	1	4
...	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

All above mentioned data will be used for detailed analysis of possibilities of WTGs noise impact on overall level of environmental noise at monitoring station location.

Given to the scope of monitoring noise levels and the amount of information provided, with computer is determent what WTGs affect dominantly each NMT. A computer model include accurate information about location and acoustic characteristics of WTG, position measurement stations, acoustic characteristics of the cover and digital terrain model, which was submitted by Contractor. Summary calculation results are shown in Table 6.

Table 6 Results of noise immision calculation

NMT	WTG mark	*L*w / dB(A)	*d*/m	Attenuation because of the distance /dB	Attenuation because of absorption cover and meteorological conditions /dB	Attenuation in the air during the period night /dB	meteorological correction *c*met/dB	Share in total noise immision, day/ dB(A)	Share in total noise immision, night / dB(A)
NMT 1 - Muštre	A 1.1	102	831	-69.4	-0.8	-1.7	0.0	22.7	22.7
	A 1.2	102	790	-69.0	-0.7	-1.7	0.0	23.9	23.9
	A 1.3	102	937	-70.4	-1.0	-1.7	-0.1	16.9	17.0
	A 1.4	102	1216	-72.7	-1.0	-2.4	-0.5	17.7	18.2
	A 2.1	102	1494	-74.5	-0.8	-3.3	-0.8	17.9	18.6
	*L*r / dB(A)							27.8	27.9
NMT 2 - Čudine	A 2.1	102	1495	-74.5	-0.4	-3.7	-0.8	22.6	23.3
	A 2.2	102	1341	-73.6	-0.4	-3.3	-0.7	24.0	24.6
	A 2.3	102	1167	-72.3	-0.4	-3.0	-0.5	25.8	26.2
	A 2.4	102	1157	-72.3	-0.4	-2.8	-0.5	26.0	26.4
	A 3.1	102	1194	-72.5	-0.4	-3.0	-0.5	25.6	26.0
	A 3.2	102	1182	-72.5	-0.4	-2.9	-0.5	25.7	26.1
	A 3.3	102	1265	-73.0	-0.4	-3.2	-0.6	24.8	25.3
	A	102	1400	-73.9	-0.4	-3.5	-0.7	23.5	24.1
	Lr / dB(A)							33.9	34.4

During calculation phase, it is assumed that there are always favorable conditions for propagation of noise (Eng. "favorable propagation conditions") during 7 m/s wind speed and therefore is used for sound power level $L_{W,A}$ = 102 dB(A).

Based on results it was concluded that measuring station NMT 1 is predominantly affected by WTGs from group A.1, while on overall noise level measured by measuring station NMT 2 is equally affected by WTGs from group A.2 and A.3. Impact of WTGs from group A.3, A.4 and A.5 on overall noise level on NMTs is negligible.

Overall display of noise level indicator L_{night} during operation of Jelinak WF is shown in Figure 3 of this test report. On graphics display noise indicator L_{night} is presented with grades of equal noise level. Between adjacent grades equal noise levels is specified by color (Figure 2) are marked zones with a width of 5 dB(A) starting from 35 dB (A) to levels above 80 dB(A).

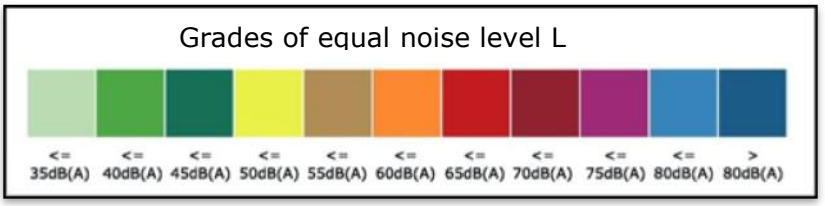
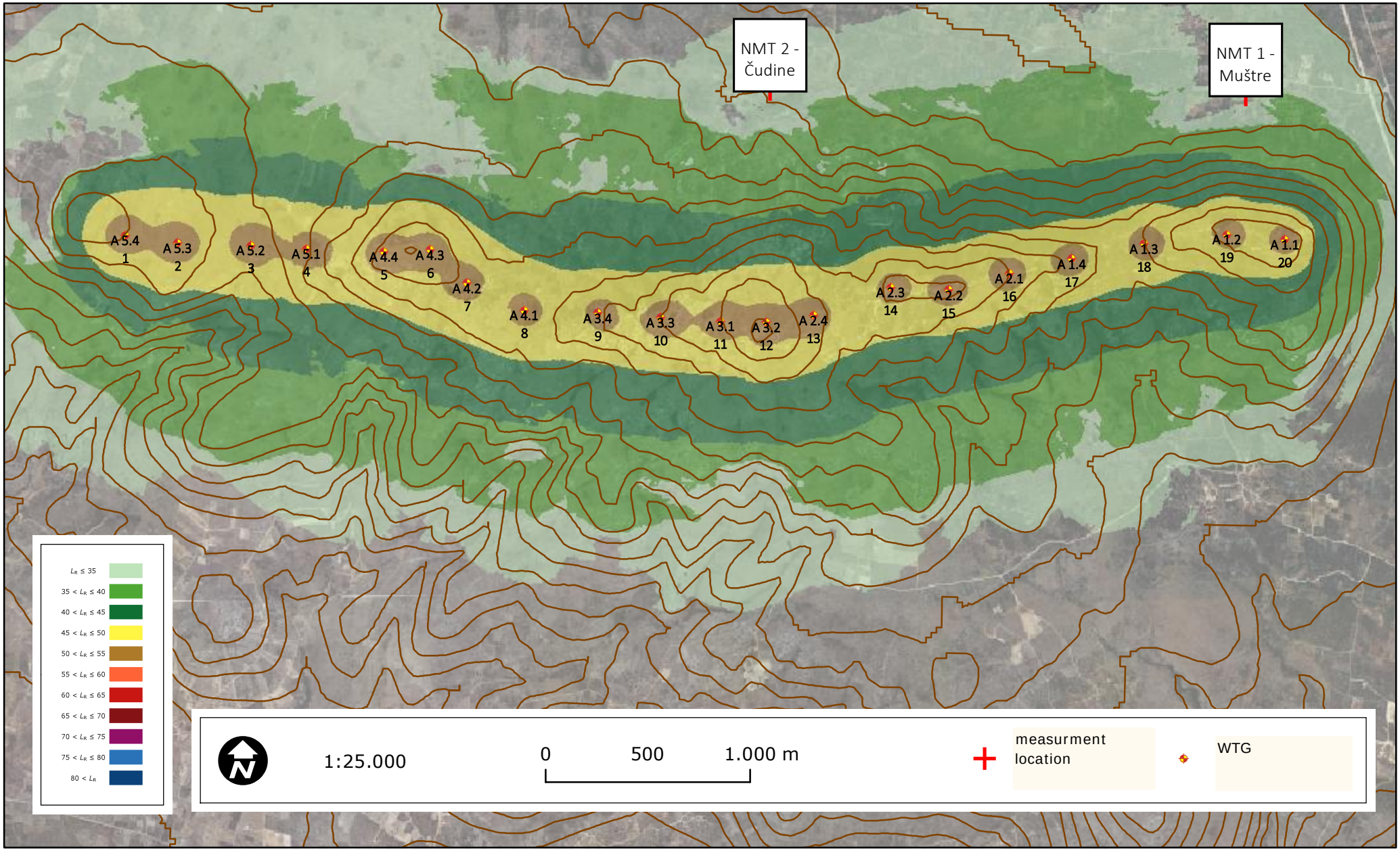


Figure 2 Graphical presentation of noise zone width of 5 dB



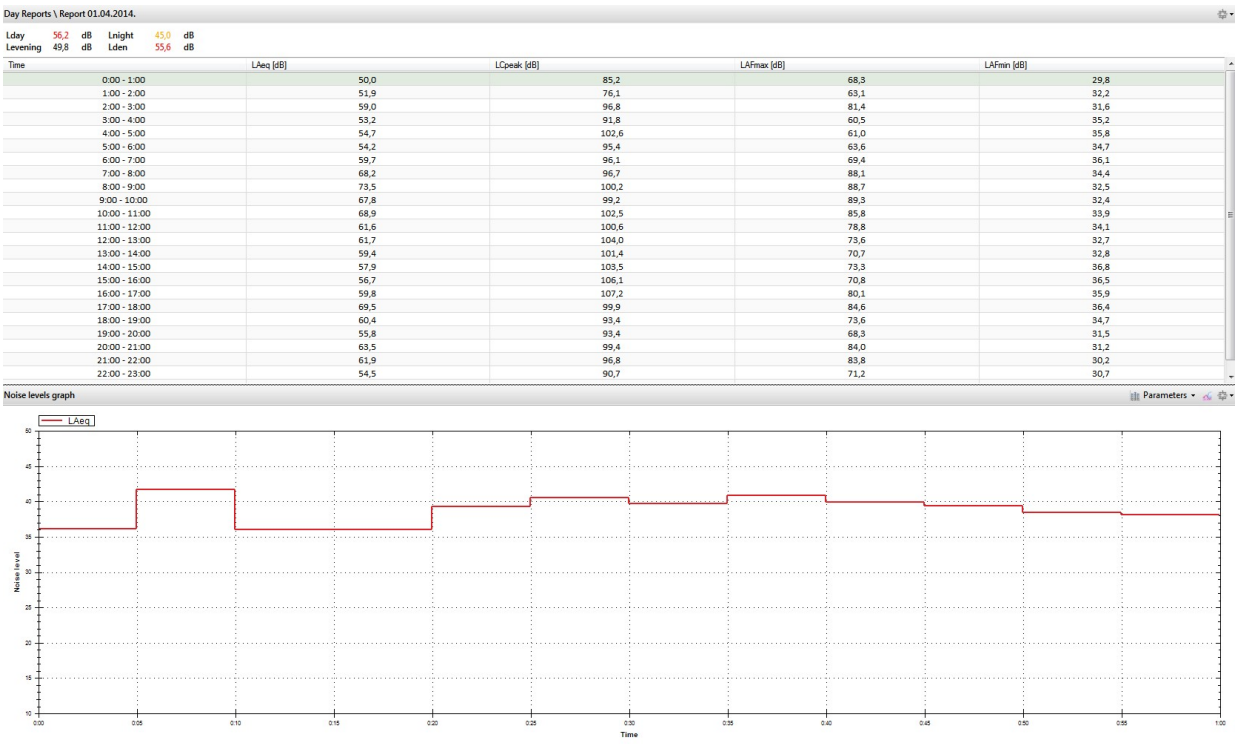
Noise indicator Lnight during Jelinak WF operation L_{night}

5. ANALYSIS OF MEASURED DATA

Measuring stations are initially set to continuously monitoring level of noise, thereby every 5 minutes is stored series of acoustic size data. If during five-minute interval is exceeded noise level designated as critical, it is conducted sound recording, and automatically measuring such pattern marked with a tick in the "sound recording".
Based on measured values at the end of the measurement day (after 23:59:59) system automatically calculates the following values:

- The equivalent A-weighted noise levels, $L_{Aeq,\ T}$ = 1 h, during the measurement interval T = 1 h,
- Maximum C-weighted peak value of noise level, L_{Cpeak}, during the measurement interval T = 1 h,
- Maximum peak value of noise level, $L_{AF,\ max}$, during the measurement interval T = 1 h,
- Minimum peak value of noise level, $L_{AF,\ min,}$ during the measurement interval T = 1 h.

Characteristic overview of analyzed results for one day is given in Figure 4.


Day Reports \ Report 01.04.2014.

Lday 56,2 dB Lnight 45,0 dB
Levening 49,8 dB Lden 55,6 dB

Time	LAeq [dB]	LCpeak [dB]	LAFmax [dB]	LAFmin [dB]
0:00 - 1:00	50,0	85,2	68,3	29,8
1:00 - 2:00	51,9	76,1	63,1	32,2
2:00 - 3:00	59,0	96,8	81,4	31,6
3:00 - 4:00	53,2	91,8	60,5	35,2
4:00 - 5:00	54,7	102,6	61,0	35,8
5:00 - 6:00	54,2	95,4	63,6	34,7
6:00 - 7:00	59,7	96,1	69,4	36,1
7:00 - 8:00	68,2	96,7	88,1	34,4
8:00 - 9:00	73,5	100,2	88,7	32,5
9:00 - 10:00	67,8	99,2	89,3	32,4
10:00 - 11:00	68,9	102,5	85,8	33,9
11:00 - 12:00	61,6	100,6	78,8	34,1
12:00 - 13:00	61,7	104,0	73,6	32,7
13:00 - 14:00	59,4	101,4	70,7	32,8
14:00 - 15:00	57,9	103,5	73,3	36,8
15:00 - 16:00	56,7	106,1	70,8	36,5
16:00 - 17:00	59,8	107,2	80,1	35,9
17:00 - 18:00	69,5	99,9	84,6	36,4
18:00 - 19:00	60,4	93,4	73,6	34,7
19:00 - 20:00	55,8	93,4	68,3	31,5
20:00 - 21:00	63,5	99,4	84,0	31,2
21:00 - 22:00	61,9	96,8	83,8	30,2
22:00 - 23:00	54,5	90,7	71,2	30,7

Noise levels graph

Parameters

Figure 4 Display of one-day sample within the software package Noise Data Viewer

Noise level $L_{Aeq, T}$ = 1 h, during the current month on NMT 1 is shown on Figure 5

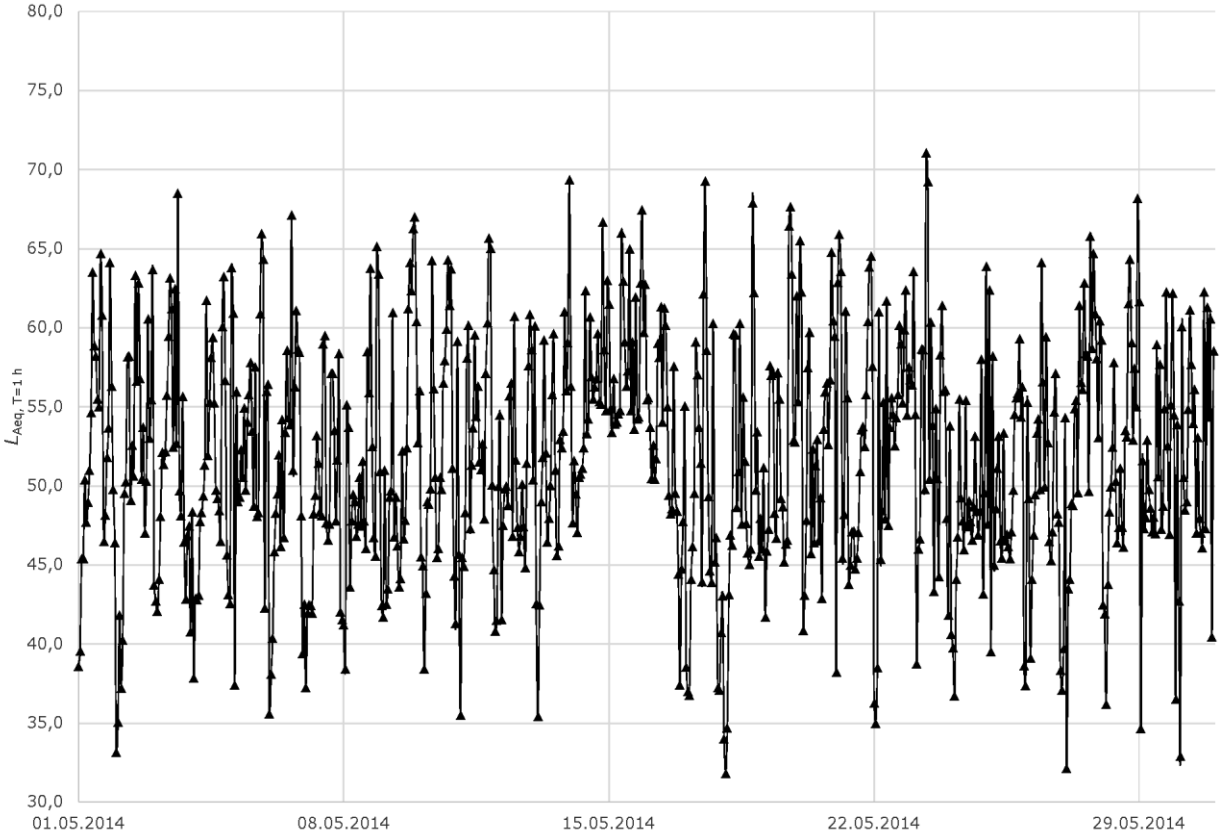


Figure 5 Results $L_{Aeq, T = 1\,h}$, during the current month on the NMT 1

Based on the measured values are calculated values of equivalent noise level:

- L day = LAeq, T = 12 h, equivalent noise level, the total duration of the day (7:00 to 19:00 h) in terms of the Law on Noise Protection (Official Gazette ˝Narodne Novine˝ no. 153/13, 55/13, 30/09)
- Levening = LAeq, t = 4 h, equivalent noise level, the total duration of the evening (19:00 to 23:00 h) in terms of the Law on Noise Protection (Official Gazette ˝Narodne Novine˝ no. 153/13, 55/13, 30/09)
- Lnight = LAeq, T = 8 h, equivalent noise level, the total duration of the night (23:00 to 07:00 h) in terms of the Law on Noise Protection (Official Gazette ˝Narodne Novine˝ no. 153/13, 55/13, 30/09)

5.1. Results of monitoring of environmental noise levels at NMT 1

Summarized results of monthly monitoring noise levels measured at NMT 1 is shown chronologically from Table 7 to Table 18

Measurement intervals with values colored red indicate that the overall level of environmental noise including traffic, agricultural activity, constant human presence, nature sounds, noise-induced by wind blowing and observed source of noise exceed permitted levels determinate by certain regulations mentioned on page 4 of this test report.

Mentioned fact must not be identified with exceeding of permitted noise level of observed source of noise (in this case Jelinak WF).

Table 7 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-07

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.7.2013	65,9	5	39
2.7.2013	-	-	-
3.7.2013	49,9	4	46,2
4.7.2013	55,9	4	45,4
5.7.2013	46,9	5	46,6
6.7.2013	47,2	4	47,9
7.7.2013	50,8	4	48,4
8.7.2013	54,5	4	47,1
9.7.2013	49,5	4	44,8
10.7.2013	51,4	4	44
11.7.2013	62,1	5	44,7
12.7.2013	51,3	5	43,3
13.7.2013	54,5	4	44,3
14.7.2013	54,2	4	44,8
15.7.2013	54,3	4	43,8
16.7.2013	-	-	-
17.7.2013	-	-	-
18.7.2013	-	-	-
19.7.2013	-	-	-
20.7.2013	-	-	-
21.7.2013	-	-	-
22.7.2013	-	-	-
23.7.2013	-	-	-
24.7.2013	-	-	-
25.7.2013	-	-	-
26.7.2013	-	-	-
27.7.2013	-	-	-
28.7.2013	-	-	-
29.7.2013	59,8	5	52,1
30.7.2013	60,6	5	50,1
31.7.2013	57,8	4	52,1

Table 8 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-08

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.8.2013	59,3	54,7	48
2.8.2013	59,2	51,1	45,7
3.8.2013	59,7	52,3	47,8
4.8.2013	58,8	53,6	48,4
5.8.2013	58,8	52	45
6.8.2013	58,6	54,2	45,2
7.8.2013	59,1	53,7	51,3
8.8.2013	56,6	50,1	45,5
9.8.2013	57,7	50	46
10.8.2013	54,4	-	47,5
11.8.2013	-	-	-
12.8.2013	57,3	48,2	41,5
13.8.2013	57,2	53,1	46,2
14.8.2013	56,6	53,4	45,4
15.8.2013	58,4	53,5	46,3
16.8.2013	55,4	51,6	44
17.8.2013	52,1	52,1	43
18.8.2013	49,8	51,4	44,9
19.8.2013	49,2	50	44,5
20.8.2013	50,9	53,2	45,2
21.8.2013	50,9	51,6	51,4
22.8.2013	51	51,6	46,8
23.8.2013	50,1	48,7	43,4
24.8.2013	47,3	49,1	44,5
25.8.2013	63,8	54,8	46,8
26.8.2013	50,1	47,6	48,2
27.8.2013	49,6	56,3	44,5
28.8.2013	47,4	47,1	39,8
29.8.2013	45,6	46,3	40
30.8.2013	46,4	50,7	43,3
31.8.2013	46,5	47,8	46,3

Table 9 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-09

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.9.2013	51,8	46,2	41,5
2.9.2013	47,7	48,3	43,8
3.9.2013	49,4	47,7	43,7
4.9.2013	59	48,3	42,1
5.9.2013	48	52	43,9
6.9.2013	50,3	50,3	40,8
7.9.2013	46,8	56,7	42,5
8.9.2013	55,9	48,1	43,3
9.9.2013	48	47,4	43,5
10.9.2013	49,3	49,8	44,7
11.9.2013	48,8	53,1	47,6
12.9.2013	-	-	-
13.9.2013	49,4	-	39,8
14.9.2013	-	-	-
15.9.2013	-	-	-
16.9.2013	43,2	47,8	58,3
17.9.2013	55,1	46,8	44,6
18.9.2013	47,5	41,8	40,1
19.9.2013	49,4	47,2	44,5
20.9.2013	48,7	42,9	43,1
21.9.2013	48,1	43,2	38,9
22.9.2013	49,6	-	47,9
23.9.2013	-	-	-
24.9.2013	51,1	42	42,2
25.9.2013	50,9	44,7	39,8
26.9.2013	45,8	39,8	39,4
27.9.2013	49,8	45,5	41,7
28.9.2013	48,4	43,1	42
29.9.2013	53	57,7	41,3
30.9.2013	49,7	41	40,7

Table 10 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-10

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.10.2013	52,2	64,3	57,7
02.10.2013	52,1	52,8	56,8
03.10.2013	47,4	42	46,4
04.10.2013	49,6	42,5	40,8
05.10.2013	51,9	49,1	43,5
06.10.2013	48,9	46,4	45,6
07.10.2013	53,2	49	46,6
08.10.2013	54,6	45,2	49,4
09.10.2013	49,4	45,1	55,8
10.10.2013	48,1	53,5	44,4
11.10.2013	50,1	45,9	47,9
12.10.2013	49,8	47,1	41,1
13.10.2013	46,1	40,9	40
14.10.2013	45,2	-	40,4
15.10.2013	45,6	43,2	56,6
16.10.2013	52	45,7	56,9
17.10.2013	50,3	47,5	46,5
18.10.2013	49,3	45,2	41,6
19.10.2013	-	-	-
20.10.2013	49,2	47,8	43,9
21.10.2013	48,6	38,9	45
22.10.2013	49,4	38,4	41
23.10.2013	50,3	46,2	43,9
24.10.2013	47,7	41,7	43,7
25.10.2013	47,5	41,4	40,8
26.10.2013	54	41,9	38,7
27.10.2013	51,6	37,9	43,6
28.10.2013	47,3	39,5	38,6
29.10.2013	51,8	39,3	44,5
30.10.2013	47,4	42	39,9
31.10.2013	45,9	42,3	37,5

Table 11 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-11

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.11.2013	47,2	38,7	40,6
2.11.2013	48,1	42,6	39,3
3.11.2013	55,4	47,1	49,2
4.11.2013	48,8	47,5	44,5
5.11.2013	55,1	40,2	53
6.11.2013	60,7	41,6	41,5
7.11.2013	50,1	47,6	42,1
8.11.2013	47,9	46,9	46,8
9.11.2013	52,2	46,8	50
10.11.2013	47,7	54,3	46,9
11.11.2013	62,4	64,9	60,3
12.11.2013	56,4	48,4	61,4
13.11.2013	47,6	48,4	44
14.11.2013	52,4	40,8	48,4
15.11.2013	50,2	40,6	44,1
16.11.2013	54,2	39,7	48,4
17.11.2013	47,7	38,1	43,5
18.11.2013	49,3	55	51,7
19.11.2013	64	58,3	60,4
20.11.2013	60,5	48,6	58,1
21.11.2013	51	44,5	50,6
22.11.2013	57,8	55,8	55,6
23.11.2013	57,4	51,8	54,5
24.11.2013	56,2	43,5	54,8
25.11.2013	51,7	50,5	43,7
26.11.2013	62,5	50,2	56,2
27.11.2013	52,7	47,8	47,3
28.11.2013	53,9	43,5	41
29.11.2013	49,5	50,6	41,5
30.11.2013	48,7	48,4	47,3

Table 12 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-12

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.12.2013	61	54,2	56
02.12.2013	58,9	56,2	58,4
03.12.2013	50,1	50,9	55,3
04.12.2013	48,4	42	48,1
05.12.2013	54,5	45,9	39,1
06.12.2013	50,4	43,1	40,5
07.12.2013	47,6	52	43,3
08.12.2013	53,2	39,8	40,4
09.12.2013	46,2	39,1	38,4
10.12.2013	49,6	44,2	45,1
11.12.2013	55,8	49,3	40,1
12.12.2013	55,3	42,8	39,7
13.12.2013	55,1	51,2	43,8
14.12.2013	55,4	39,6	41,6
15.12.2013	60,5	38,1	38,5
16.12.2013	55	41,9	40,2
17.12.2013	58,4	61,5	39
18.12.2013	61,9	43,4	39,4
19.12.2013	60,4	48,1	44,9
20.12.2013	57,3	46	50,5
21.12.2013	50,3	44,2	38,6
22.12.2013	57	36,6	43,7
23.12.2013	53,5	47	36

Table 13 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-01

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.01.2014	48,7	42,2	69,8
02.01.2014	50,2	43,5	39,6
03.01.2014	61,1	51	49,6
04.01.2014	57,4	63,7	54,8
05.01.2014	61,8	49,1	54,3
06.01.2014	48,1	42,5	39,7
07.01.2014	48,2	38,4	37,5
08.01.2014	49,2	44,3	37,4
09.01.2014	57	38,4	42,8
10.01.2014	50,5	45,1	42,1
11.01.2014	49,4	44,6	38,8
12.01.2014	46,6	36,3	40,2
13.01.2014	52,2	42,4	39,1
14.01.2014	57,7	55,7	50,7
15.01.2014	49,9	36,6	51,8
16.01.2014	53,3	39	44,2
17.01.2014	61	52,9	57
18.01.2014	53,4	59,9	55,6
19.01.2014	60,9	55,3	63,5
20.01.2014	52,7	55,2	52,5
21.01.2014	52,3	38	50
22.01.2014	57,3	42,3	40,4
23.01.2014	52,8	44,1	42,1
24.01.2014	56,5	52,7	56,8
25.01.2014	59,7	42,9	52,2
26.01.2014	52,8	48,2	43,5
27.01.2014	55	41,3	40,9
28.01.2014	54	42,5	46,3
29.01.2014	52,5	49	45,8
30.01.2014	64,4	66,3	61,6
31.01.2014	64,7	60,6	65,4

Table 14 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-02

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.02.2014	66	63,4	65,9
02.02.2014	57	54,8	56,7
03.02.2014	51,1	42,7	52,1
04.02.2014	59,1	52,3	51,1
05.02.2014	56,9	55	53
06.02.2014	55,7	44	50,2
07.02.2014	56	66	59,4
08.02.2014	57,5	43,6	63,7
09.02.2014	57,8	48,9	45,1
10.02.2014	63,4	69	58
11.02.2014	62,5	62,6	63,3
12.02.2014	48,7	46,7	64,7
13.02.2014	49,7	45,4	47,2
14.02.2014	51,1	42,4	59,5
15.02.2014	50,9	58	42,2
16.02.2014	59,7	62,5	59,6
17.02.2014	62,9	59,6	64,3
18.02.2014	61,2	63,6	60
19.02.2014	67,7	54	67,6
20.02.2014	55,9	52,7	56
21.02.2014	54,6	37,3	45,7
22.02.2014	49,9	55,3	37,3
23.02.2014	55,8	46,7	43,9
24.02.2014	56,7	54,7	46
25.02.2014	49,6	38,6	39,9
26.02.2014	51,1	47,9	42,5
27.02.2014	54,1	52,1	48,8
28.02.2014	54,9	52,2	55,1

Table 15 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-03

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.03.2014	65,2	-	59,5
02.03.2014	-	-	-
03.03.2014	-	-	-
04.03.2014	61	46	49,8
05.03.2014	55,6	40,9	43
06.03.2014	56,4	48,6	42,7
07.03.2014	54,3	46,1	46
08.03.2014	57,6	51,5	48,5
09.03.2014	58,3	63,5	58,7
10.03.2014	59,9	54	61,8
11.03.2014	56,1	50,8	59,9
12.03.2014	55,8	59,2	45
13.03.2014	59	48,3	45
14.03.2014	56,9	47,7	62,2
15.03.2014	55	64,3	42,2
16.03.2014	56,5	48,7	52,6
17.03.2014	50,5	45	43,1
18.03.2014	52,6	55,8	47,5
19.03.2014	52	57,1	52
20.03.2014	53,3	54	42,7
21.03.2014	54,8	61,9	41,7
22.03.2014	56,1	52,6	45,5
23.03.2014	63,2	66	53,4
24.03.2014	60,2	56,6	43
25.03.2014	55	55,2	45,1
26.03.2014	56,3	47,1	58,7
27.03.2014	60,2	47,9	45,2
28.03.2014	56,7	55,7	40,9
29.03.2014	52,8	62	51,4
30.03.2014	61,9	64,3	40,7
31.03.2014	51,6	58,9	45,7

Table 16 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-04

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.04.2014	56,2	49,8	45
02.04.2014	57,4	46,4	50,7
03.04.2014	55,4	61,7	52,4
04.04.2014	68,3	63,9	66,9
05.04.2014	57,5	52,2	50,6
06.04.2014	56,4	54,8	43,9
07.04.2014	58,4	57,7	48,9
08.04.2014	63,6	50,6	52,5
09.04.2014	62,2	61,4	43,7
10.04.2014	56,3	53,1	47,3
11.04.2014	57,6	48,6	46,8
12.04.2014	55,7	55,5	47
13.04.2014	50,6	53,4	40,6
14.04.2014	61,2	60,8	50
15.04.2014	60,3	65,5	60,3
16.04.2014	58,3	54,2	46,1
17.04.2014	62,2	56,7	50,1
18.04.2014	60,5	54,7	44,4
19.04.2014	-	-	-
20.04.2014	63	55,1	53,5
21.04.2014	61,7	56,4	57,8
22.04.2014	49,2	56,6	43,2
23.04.2014	58,9	62,7	43
24.04.2014	59,1	44,6	42,3
25.04.2014	55,7	49,3	43
26.04.2014	53,1	44,4	48,1
27.04.2014	60,4	60,4	46,4
28.04.2014	56,7	59,8	52,6
29.04.2014	60,8	44	47,2
30.04.2014	57,9	54	44,4

Table 17 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-05

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.05.2014	58,9	59,3	46,8
02.05.2014	57,7	56,5	55,1
03.05.2014	60,9	46,2	47,7
04.05.2014	55,6	59,4	45,5
05.05.2014	53,8	63	57,6
06.05.2014	58,8	55,8	49,3
07.05.2014	54,8	53,6	44,8
08.05.2014	55,5	61,6	50,3
09.05.2014	56,7	64,8	48,4
10.05.2014	58,4	60	49,2
11.05.2014	55,4	63,1	53,2
12.05.2014	53,5	56,9	52,2
13.05.2014	54,2	58,2	61
14.05.2014	57,4	61,6	55,8
15.05.2014	60,8	63,4	58,1
16.05.2014	57,4	45,2	52,9
17.05.2014	60,6	43,5	48
18.05.2014	55	63,1	43,4
19.05.2014	57,6	63,2	55
20.05.2014	53,6	60,8	59,5
21.05.2014	50,7	62,2	61
22.05.2014	56,5	59,5	54,2
23.05.2014	63,1	57,5	56,8
24.05.2014	49,8	53,1	56
25.05.2014	50,9	56,9	55,2
26.05.2014	56,4	52,1	48,4
27.05.2014	59,6	61,1	53
28.05.2014	56,8	56,7	59,8
29.05.2014	55,2	57,7	53,8
30.05.2014	56,2	58,4	54,5
31.05.2014	54,5	56	57,3

Table 18 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-06

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.06.2014	63,2	56,6	45,3
02.06.2014	56	48,2	48
03.06.2014	53,8	52,6	55,1
04.06.2014	56,4	57,5	53,8
05.06.2014	55	63,9	50,1
06.06.2014	50,1	59,9	56,4
07.06.2014	51,3	54	55,1
08.06.2014	50,2	55	58
09.06.2014	52,9	58,6	55,6
10.06.2014	52,5	59,3	51,7
11.06.2014	52,3	54,3	54,4
12.06.2014	52,9	55,4	52,3
13.06.2014	50,9	54	45,8
14.06.2014	58,4	48,8	49,1
15.06.2014	56,4	55,8	47,9
16.06.2014	55,6	53,2	56,8
17.06.2014	55,3	47,5	48,6
18.06.2014	53,8	54,1	50,7
19.06.2014	59,2	58,1	44,5
20.06.2014	52,3	57,4	43,8
21.06.2014	51,3	52,7	49,4
22.06.2014	50,8	56,8	50,4
23.06.2014	52,4	57	49,3
24.06.2014	54,7	50,1	44,5
25.06.2014	54,1	54,5	48,6
26.06.2014	54	58,9	42
27.06.2014	56,2	58,1	52
28.06.2014	55,1	59,9	49
29.06.2014	57,5	60,5	51
30.06.2014	58,3	54,8	55,6

5.2. Results of monitoring of environmental noise levels at NMT 2

Summarized results of monthly monitoring noise levels measured at NMT 1 is shown chronologically from Table 19 to Table 30.

Table 19 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-07

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.7.2013	78,6	50,2	38,1
2.7.2013	-	-	-
3.7.2013	50,3	45,2	47,3
4.7.2013	53,8	41,7	50,1
5.7.2013	52,3	48	47,1
6.7.2013	53,9	53,4	48,6
7.7.2013	54	51,1	48,3
8.7.2013	55,3	52,4	49,8
9.7.2013	55,5	50,2	47,3
10.7.2013	55,1	49,4	47,3
11.7.2013	60,7	-	50,9
12.7.2013	59,9	-	-
13.7.2013	-	-	-
14.7.2013	-	-	-
15.7.2013	-	-	-
16.7.2013	-	-	-
17.7.2013	-	-	-
18.7.2013	-	-	-
19.7.2013	-	-	-
20.7.2013	-	-	-
21.7.2013	-	-	-
22.7.2013	-	-	-
23.7.2013	-	-	-
24.7.2013	-	-	-
25.7.2013	-	-	-
26.7.2013	-	-	-
27.7.2013	-	-	-
28.7.2013	-	-	-
29.7.2013	61,7	52,5	55,2
30.7.2013	60,2	47,7	48,6
31.7.2013	59,9	52,7	51,9

Table 20 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-08

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.8.2013	60,3	51,6	48,2
2.8.2013	60,9	48,5	47,9
3.8.2013	61,6	51,4	44,8
4.8.2013	62,1	53,6	52,2
5.8.2013	62,6	52,6	50
6.8.2013	61,2	53,7	46,8
7.8.2013	61,5	52	47
8.8.2013	59,8	50,7	46,2
9.8.2013	60,2	49,1	45,8
10.8.2013	56,5	-	45,5
11.8.2013	-	-	-
12.8.2013	58	47,1	43,2
13.8.2013	57,3	47,6	45,5
14.8.2013	57,3	52,2	47,5
15.8.2013	56,6	50,9	47,2
16.8.2013	56,1	50,9	46,8
17.8.2013	55,4	50	44
18.8.2013	53,7	50,9	45,5
19.8.2013	54,9	50,3	46,3
20.8.2013	54,9	49,6	46,3
21.8.2013	52,3	48,8	48,3
22.8.2013	53,5	46,6	46,8
23.8.2013	51,6	48,8	42,4
24.8.2013	51,3	50,1	42,4
25.8.2013	50,8	50,5	43,2
26.8.2013	51,8	44,8	45,2
27.8.2013	51,3	52,6	47,1
28.8.2013	50,9	43,5	41
29.8.2013	50,7	46	42,9
30.8.2013	51,1	45,9	43,1
31.8.2013	51,1	46,7	47

Table 21 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-09

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.9.2013	50,1	47	43,6
2.9.2013	50,8	44,4	43,3
3.9.2013	51	46,5	42,4
4.9.2013	52,7	47,9	43,6
5.9.2013	51,9	51,8	50,2
6.9.2013	52	47,4	44,5
7.9.2013	51,1	45,8	46,4
8.9.2013	51,3	45,6	49,3
9.9.2013	50,6	44,4	41,7
10.9.2013	49,9	45,4	49,1
11.9.2013	49,3	53,3	46,9
12.9.2013	-	-	-
13.9.2013	49,3	43	38,5
14.9.2013	50,3	40,1	38,5
15.9.2013	51,9	46,3	40,4
16.9.2013	53,5	42,5	56,7
17.9.2013	57	41,6	41
18.9.2013	51,1	43,4	42,6
19.9.2013	52,5	41,8	41,1
20.9.2013	54	43,6	40,3
21.9.2013	50,6	43,5	38,5
22.9.2013	50	41,4	43,2
23.9.2013	49,9	47,4	44,8
24.9.2013	50,9	45,4	35,9
25.9.2013	52	40,4	37,3
26.9.2013	52,7	44	37,4
27.9.2013	51,6	50	43,2
28.9.2013	51,7	-	45,9
29.9.2013	-	-	-
30.9.2013	44,1	40,5	34,3

Table 22 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-10

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.10.2013	49	42,6	39,4
02.10.2013	49,1	45,2	38
03.10.2013	48,6	47,9	40,2
04.10.2013	50,6	39	33,8
05.10.2013	50,2	45,7	36,4
06.10.2013	50,7	39,4	41,4
07.10.2013	54	53	47,3
08.10.2013	57	42,3	50
09.10.2013	51,2	33,1	48,7
10.10.2013	51,2	50,5	42,6
11.10.2013	50,3	41,4	47,5
12.10.2013	51,4	41,1	38
13.10.2013	50,1	33,4	38,7
14.10.2013	51,9	36,5	33,9
15.10.2013	51,7	44,7	49,1
16.10.2013	52,4	44,7	67,5
17.10.2013	51,3	38,5	47,1
18.10.2013	52,9	42,4	41,5
19.10.2013	51,7	47,4	38,2
20.10.2013	51,7	43,5	41,2
21.10.2013	49,7	54,5	44,4
22.10.2013	51,1	35,9	37,9
23.10.2013	50,1	44,5	38,6
24.10.2013	50,3	39,9	42,7
25.10.2013	50,1	35,9	37,9
26.10.2013	49,8	39,3	36,6
27.10.2013	49,4	29,3	38,6
28.10.2013	52,3	37,6	39,1
29.10.2013	52,1	43,1	41,6
30.10.2013	50,8	31,6	44,8
31.10.2013	53,2	36,3	38,6

Table 23 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-11

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
1.11.2013	52,1	40,5	37,6
2.11.2013	48,2	42,4	40
3.11.2013	54,5	43,7	41,7
4.11.2013	50,5	48,5	43,5
5.11.2013	50,8	40,9	48,7
6.11.2013	53,1	41,1	38,9
7.11.2013	52,3	35,5	38,2
8.11.2013	49,3	43,7	41,7
9.11.2013	53,3	43,8	46,4
10.11.2013	50,4	51,7	40,1
11.11.2013	65,3	67,2	59,9
12.11.2013	52,5	48,7	60,1
13.11.2013	49,4	46,6	42,6
14.11.2013	50,7	41,1	44,9
15.11.2013	49,7	43,2	45,9
16.11.2013	52	40,9	46,6
17.11.2013	50,5	45	46
18.11.2013	51	54,3	49
19.11.2013	63,3	51,4	60,4
20.11.2013	58,3	38,2	57,9
21.11.2013	48,8	41,1	44,7
22.11.2013	51,7	56,8	52,1
23.11.2013	63,2	20	55
24.11.2013	20	20	37,8
25.11.2013	52	47,6	41,2
26.11.2013	63,2	52,3	57,4
27.11.2013	53	47,2	48,7
28.11.2013	52,3	50	42,7
29.11.2013	51,1	39,6	42,9
30.11.2013	50	36,5	44,8

Table 24 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2013-12

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.12.201	54,6	46,5	56,4
02.12.201	57,6	56,4	56,1
03.12.201	51,7	54,8	51,7
04.12.201	51,6	50,9	43,1
05.12.201	50,2	47,2	33,8
06.12.201	49,8	47,6	38,5
07.12.201	52,6	42,7	38
08.12.201	55,2	34,3	43,7
09.12.201	50,3	35,8	36,1
10.12.201	55	45,4	38
11.12.201	52,4	29,4	35,1
12.12.201	50,8	33,6	34
13.12.201	51,4	30,8	34,6
14.12.201	55	52,9	33,6
15.12.201	50,1	35,9	33,1
16.12.201	51,9	49,4	42,2
17.12.201	52,8	32,6	41,2
18.12.201	49,4	51,9	38,8
19.12.201	48	47,5	40,8
20.12.201	52,5	48,9	46,3
21.12.201	52,6	48,4	49
22.12.201	50,3	32,5	32,6
23.12.201	50,7	50,7	34
24.12.201	53,2	48,3	42,6
25.12.201	56	56,4	52,5
26.12.201	64,4	57,1	56,3
27.12.201	62,3	38,3	60,9
28.12.201	48,1	49	34,5
29.12.201	51	38	34,8
30.12.201	47,9	32,4	34,4
31.12.201	47,8	48,7	41,9

Table 25 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-01

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.01.2014	49,3	-	49,3
02.01.2014	-	-	-
03.01.2014	-	-	-
04.01.2014	-	-	-
05.01.2014	-	-	-
06.01.2014	-	-	-
07.01.2014	-	-	-
08.01.2014	-	-	-
09.01.2014	49,4	52,7	54,5
10.01.2014	47	42,8	46,3
11.01.2014	47,9	33,7	34,6
12.01.2014	47,5	28,3	36
13.01.2014	47,7	32	33,3
14.01.2014	55,9	49,7	50,1
15.01.2014	48	31,6	49,4
16.01.2014	48,3	50,1	45,2
17.01.2014	56,3	51,6	54,7
18.01.2014	52,8	57,8	55,4
19.01.2014	60,6	52,6	63,2
20.01.2014	49,6	52,5	47,5
21.01.2014	48,1	32,5	48,2
22.01.2014	48,6	42,5	34,5
23.01.2014	48	37,1	37,1
24.01.2014	54,4	51	54,8
25.01.2014	51,7	45,2	51,5
26.01.2014	51,6	51,3	48,3
27.01.2014	52,8	36,6	41,9
28.01.2014	54	38,4	45,4
29.01.2014	47,5	50,9	43,9
30.01.2014	63,6	65,3	60,3
31.01.2014	64,5	60,4	65,6

Table 26 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-02

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.02.2014	65,1	65,1	65,2
02.02.2014	57,8	50,3	56,8
03.02.2014	49,2	36,5	48,3
04.02.2014	53,2	49,5	46,4
05.02.2014	53,8	49,1	49,4
06.02.2014	47,5	28,9	48,4
07.02.2014	52,4	63,4	57
08.02.2014	51,8	34,6	61,7
09.02.2014	55,3	37,1	41,9
10.02.2014	63,1	67,8	58,2
11.02.2014	61,7	66,2	62,9
12.02.2014	48,3	38,3	65,3
13.02.2014	50,9	41,9	44
14.02.2014	49,3	35,5	58
15.02.2014	51,2	41,2	40,6
16.02.2014	57,5	60,7	54
17.02.2014	61,2	59,6	62,4
18.02.2014	60,4	62,5	58,1
19.02.2014	66,5	49,7	65,4
20.02.2014	50,9	50,5	47,5
21.02.2014	49,6	34,1	41,6
22.02.2014	48,7	36,5	37,5
23.02.2014	52,6	49,3	43,1
24.02.2014	54,1	49,5	42,5
25.02.2014	52,4	42,5	40,3
26.02.2014	54,9	38,1	41
27.02.2014	55,3	52,6	51,4
28.02.2014	51,7	47,5	53

Table 27 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-03

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.03.2014	64,6	63,8	58,4
02.03.2014	52,6	39,7	55,4
03.03.2014	52,5	33,8	41,5
04.03.2014	62,6	42,1	52,7
05.03.2014	50,6	35,4	41
06.03.2014	55,8	39,3	43,2
07.03.2014	54,4	52,2	47,5
08.03.2014	59,3	54,6	50,8
09.03.2014	59	62,6	57
10.03.2014	57,4	50,1	54
11.03.2014	53,2	52,6	56,8
12.03.2014	52,6	50,6	48,5
13.03.2014	55,1	49,7	52,1
14.03.2014	55,4	47,3	52
15.03.2014	51,6	34,1	49,4
16.03.2014	53,4	44	50
17.03.2014	54,6	50,7	42,7
18.03.2014	55,2	50,7	47,8
19.03.2014	55	53,9	46
20.03.2014	53,1	49,6	45,2
21.03.2014	53,1	47,7	47
22.03.2014	55,8	50,6	46,4
23.03.2014	58,2	50,3	50,3
24.03.2014	55,6	36,8	40,8
25.03.2014	52,5	50,1	39,8
26.03.2014	51,8	40,1	46,7
27.03.2014	62,1	51	48
28.03.2014	54,5	50,7	48,1
29.03.2014	53,7	35,9	47,9
30.03.2014	55,7	38,8	43,7
31.03.2014	54	40,9	41

Table 28 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-04

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.04.2014	54,2	47,2	47,8
02.04.2014	55,1	49,8	40,3
03.04.2014	55,1	52,6	45,9
04.04.2014	68	63,6	62,7
05.04.2014	54,3	51,7	47,4
06.04.2014	52,3	51,6	46,8
07.04.2014	53,9	47,7	44,6
08.04.2014	52,8	49,4	41,7
09.04.2014	53,5	49,9	40,5
10.04.2014	54,7	51,9	41,7
11.04.2014	55,6	55,4	47,6
12.04.2014	54,4	38,5	41,1
13.04.2014	53,7	37,6	44,6
14.04.2014	54,3	43,6	39,7
15.04.2014	55,9	49,4	59,1
16.04.2014	54,4	48,8	50,3
17.04.2014	54,9	53,3	48,7
18.04.2014	52,9	55,4	48,3
19.04.2014	53,4	55	50,9
20.04.2014	52,7	48,6	44,6
21.04.2014	59,9	51	52,5
22.04.2014	53	44,9	42,2
23.04.2014	54	40,3	40,4
24.04.2014	52,8	46,2	40
25.04.2014	51,6	43,4	44
26.04.2014	54,6	41,7	42,5
27.04.2014	51,7	44	43,5
28.04.2014	52,3	44,4	50,2
29.04.2014	54,2	46,4	45,2
30.04.2014	56,2	44,9	43,7

Table 29 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-05

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.05.2014	54,7	45,9	47,8
02.05.2014	54,5	46,9	44,3
03.05.2014	52,3	43,2	47,7
04.05.2014	54,2	48,4	44,8
05.05.2014	55,2	45,7	52,2
06.05.2014	53,6	46,9	45,2
07.05.2014	53,8	52,3	46,3
08.05.2014	54,2	46,6	49,2
09.05.2014	53,7	50,9	42,4
10.05.2014	53,8	49,5	43,9
11.05.2014	53	51,2	46,2
12.05.2014	53,5	47,6	47,6
13.05.2014	52,4	61,3	44
14.05.2014	54,1	49,8	49,5
15.05.2014	54,8	47,2	52,7
16.05.2014	52,9	49,4	48,6
17.05.2014	54	44,9	43,3
18.05.2014	53,3	47,9	45,3
19.05.2014	53,8	48,6	46,3
20.05.2014	51,8	48,3	47
21.05.2014	53,4	53,5	44,7
22.05.2014	53,7	53,7	46,7
23.05.2014	52,4	52,6	49,3
24.05.2014	54	49,4	45,3
25.05.2014	52,7	49,2	44,5
26.05.2014	52,9	49,8	44,6
27.05.2014	53,7	53	42
28.05.2014	53,6	57,5	51,8
29.05.2014	53,6	47,4	42,5
30.05.2014	54,4	44,4	48,1
31.05.2014	53,7	43,8	43,6

Table 30 Calculated values for the noise levels indicators L_{day}, $L_{evening}$ and L_{night} during 2014-06

Date	L_{day} / dB(A)	$L_{evening}$ / dB(A)	L_{night} / dB(A)
01.06.201	55,8	48,7	47,7
02.06.201	52,8	48,8	44,1
03.06.201	53,2	49,5	42,4
04.06.201	52,7	51,9	47,6
05.06.201	54,4	50	49,5
06.06.201	53,7	52,7	43,7
07.06.201	53,8	47,8	43,1
08.06.201	52	50,8	49,6
09.06.201	53,5	48,6	44
10.06.201	54,1	50,4	48,7
11.06.201	51,3	45,9	49,2
12.06.201	56,8	49,6	44,6
13.06.201	51,6	46,6	44,8
14.06.201	54,2	44,2	43,3
15.06.201	53,6	40,7	44
16.06.201	53,6	51,6	54,6
17.06.201	50,5	44,9	46,8
18.06.201	53,7	43,7	50,7
19.06.201	54,2	46,7	45,1
20.06.201	52	44,6	43,9
21.06.201	55	49	44,7
22.06.201	53,6	52,3	42,9
23.06.201	52,7	45,8	46,9
24.06.201	53,8	45,3	46,7
25.06.201	55,4	52,8	52,1
26.06.201	52,3	42	42,6
27.06.201	53,9	46,5	45,4
28.06.201	52,8	46,9	46,3
29.06.201	52,7	53,3	47,5
30.06.201	55,4	52,2	55,4

5.3. Meteorological data analysis

5.3.1. Wind direction frequency data analysis

For every month have been carried out data analysis of wind direction frequency and have been created a summary monthly overview of wind direction resulting vector (overview fit direction from which wind is blowing, along with note that 0° fit direction of north, and positive increase of angel follows pointer direction on watch)

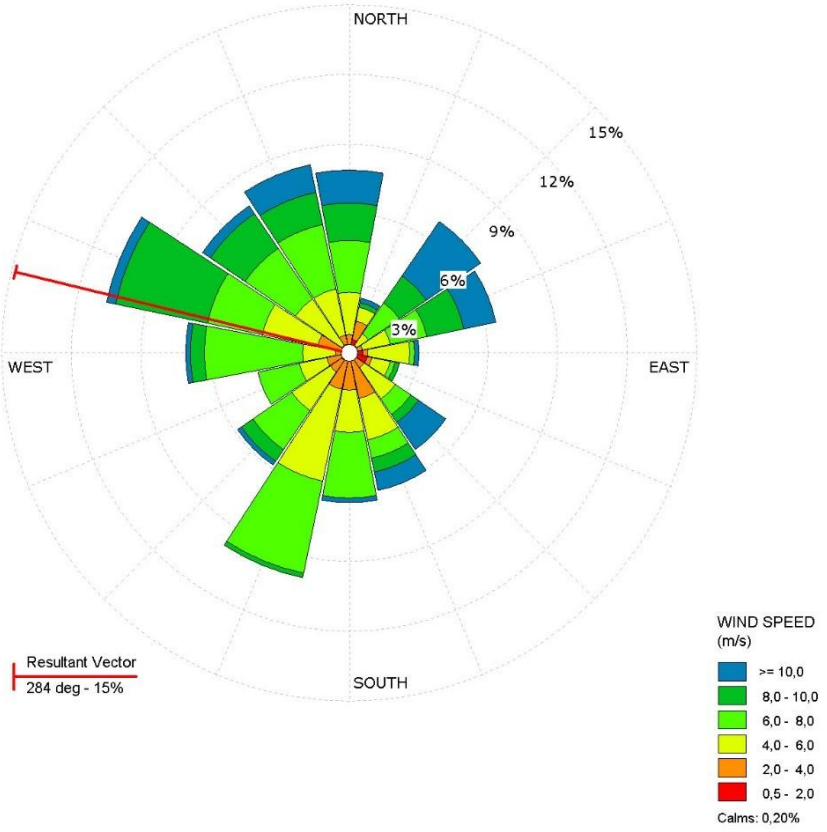
Characteristic overview of wind direction frequency for rating period of day, night and all day during period of August 2013 is shown in Table 31.

Table 31 Overview of resultant vector direction

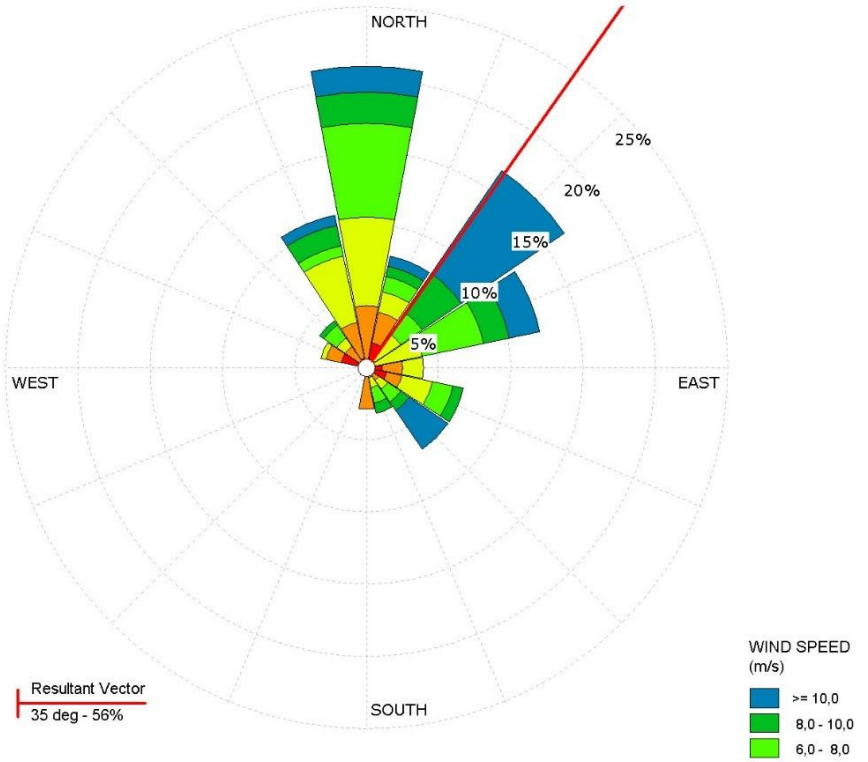
Assessment period	resultant vector direction / °
Day	284
Night	35
24h	0

Frequency of wind directions appearance during testing for every assessment period with related resultant vector directions wind displays during August 2013 is shown in Figure 6

Assessment period "Day"



Assessment period "Night"



All day period

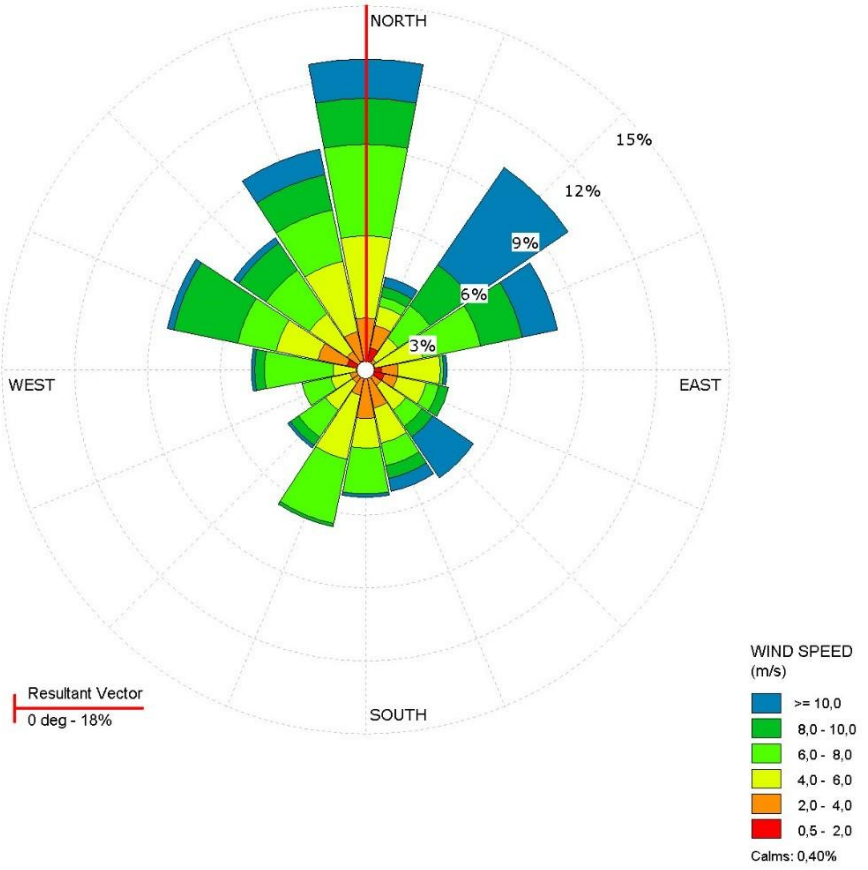
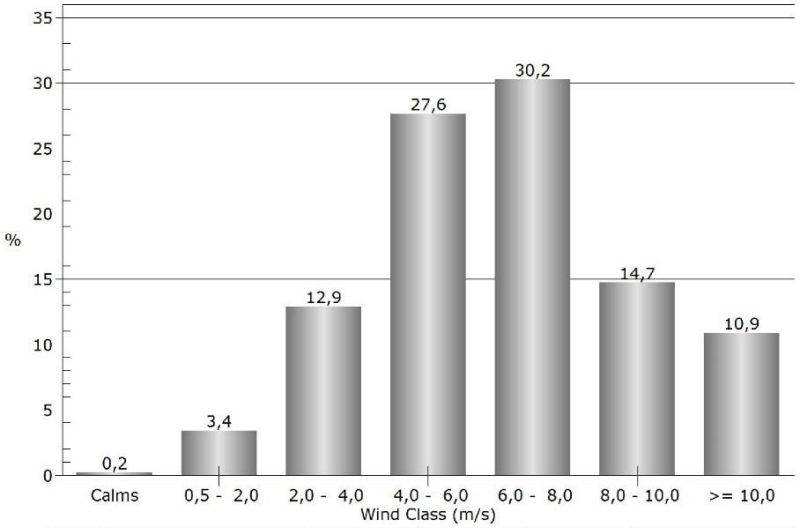


Figure 6 Frequency of wind directions appearance during Assessment period

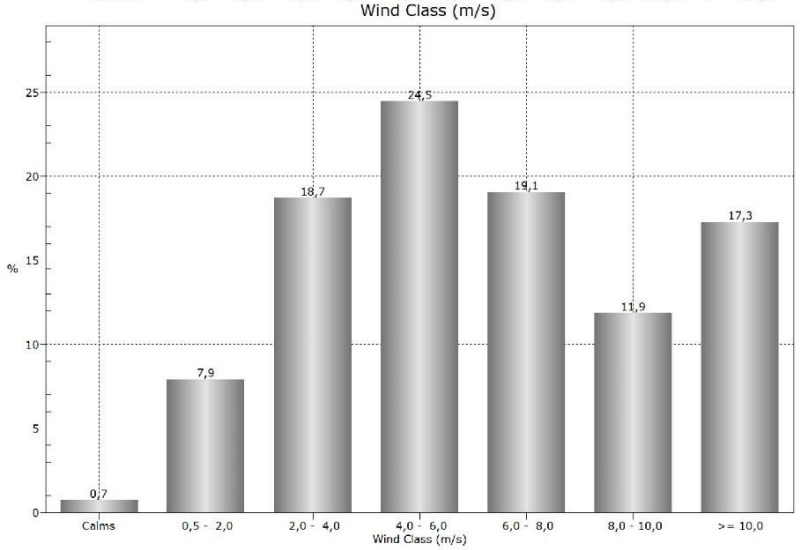
5.4.1.2. Wind speed data analysis

View of summary overview of measured wind speeds for assessment period of August 2013 is given in Figure 7.

Assessment period "Day"



Assessment period "Night"



All day period

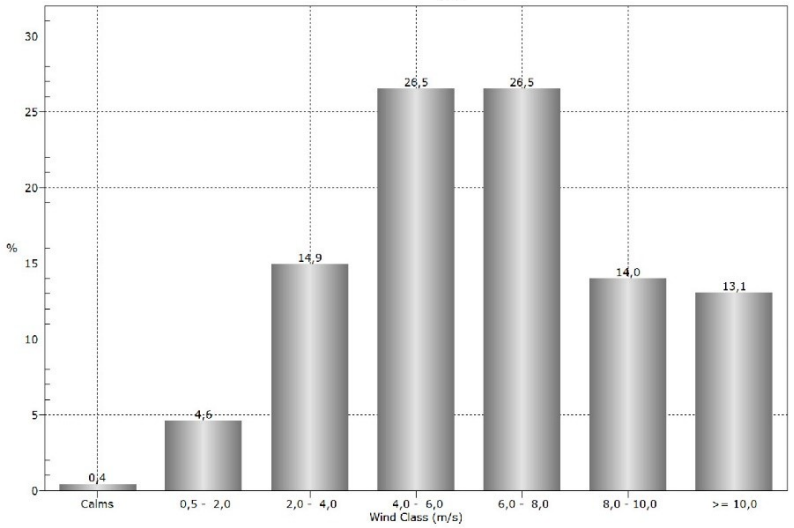


Figure 7 Distribution of wind speed during assessment periods

With dot line black color is marked shortest path of sound propagation from noise source to the measurement station. With blue and red arrows symbolize wind blowing direction, therewith that length of arrow don't presenting relative ratio of summary wind velocity among assessment periods (day that is night). Preferable segment directions of wind speed for period day that is night are given in circular segment form green that is purple color.

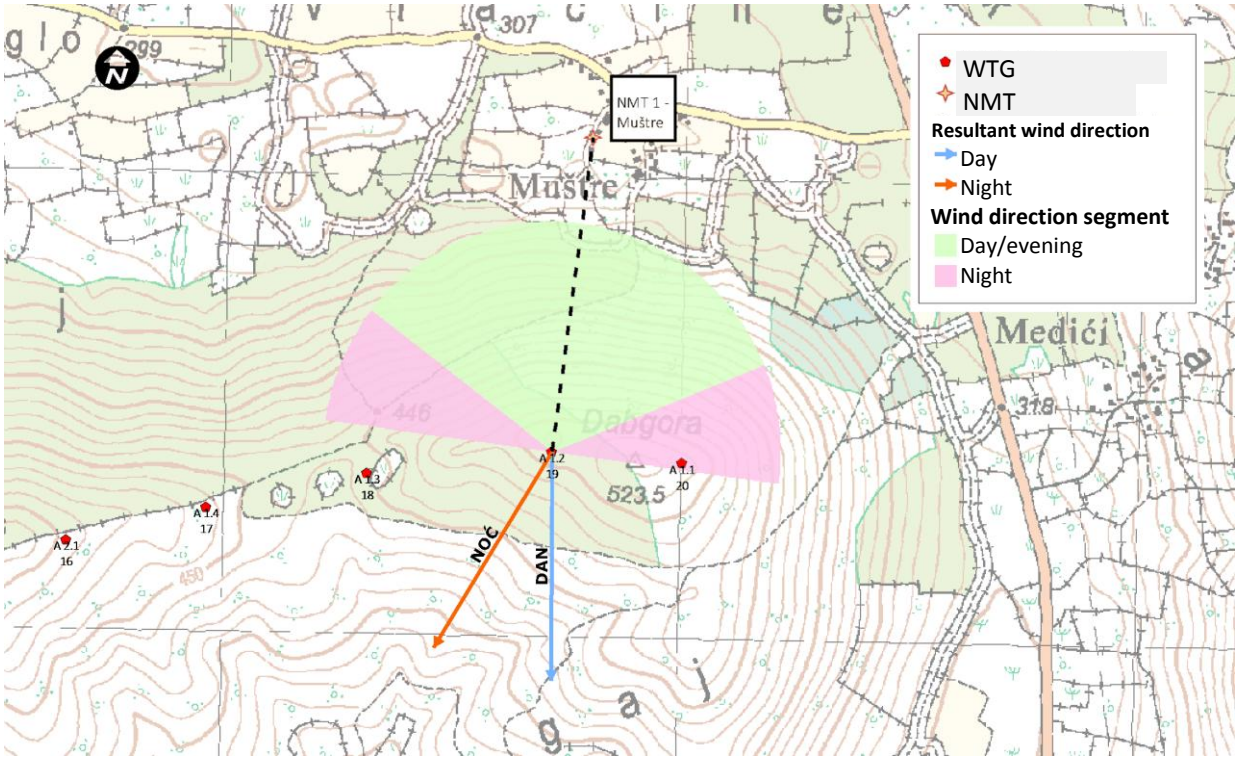


Figure 8 Overview of wind direction resultant during August 2013

6. ANALYSIS OF MONTHLY ASSESSMENT OF NOISE LEVELS

During period from July 2013 to the end of June 2014, every month have been carried out detailed analysis of measured data during which we have used data from the manager of noise source, which are compared with the measured acoustic sizes especially values of of N-percent exceedance level, meteorological sizes with needed lisening of audio records. During each month were selected characteristic time intervals where have been recorded exceeding of total noise level on measurement locations with favorable conditions for noise spreading.

Within the characteristic time intervals have been analyzed absolute difference between percentile noise and A-weighted equivalent noise level as indicated on the character of the noise source, as well as information on the "C" evaluated peak noise levels that are characteristic of noise sources with a strong low frequency component of the noise (in this case "wind induced noise"). Based on these procedures each month is presented separately review of noise levels estimation which are summarized in table 32.

Table 32 Overview monthly reviews of rating noise level

Month	Test report	Fulfilled conditions for maximum permitted noise
2013-07	2013-AI-054	YES
2013-08	2013-AI-055	YES
2013-09	2013-AI-056	YES
2013-10	2013-AI-063	YES
2013-11	2013-AI-064	YES
2013-12	2014-AI-005	YES
2014-01	2014-AI-012	YES
2014-02	2014-AI-013	YES
2014-03	2014-AI-017	YES
2014-04	2014-AI-028	YES
2014-05	2014-AI-029	YES
2014-06	2014-AI-030	YES

Based on this analysis it was determined that in at least 99% measurement interval are measured noise levels from other noise sources , not from object of noise test , Jelinak WF.

Because of abovementioned, it can be concluded that are satisfied requirements for permissible noise levels caused from test noise source, Jelinak WF.

7. ANNEX

7.1. Technical specifications of wind turbine AW82/1500 class IIa T80m

WT 5489/06 (extract from WT 5483/06) Page 1 of 2

Summary of results of the noise emission measurement, in accordance with IEC 61400-11 and MEASNET, of a WTGS type

WINDTEST Kaiser-Wilhelm-Koog GmbH

Acciona AW 82/1500 IEC IIIb T80A LM40.3P

Site:	Moncayuelo Wind Farm A-3.3		
Customer:	Acciona Windpower, S.A. Pol. Ind. Barasoain, Parcela 2 31395 – Barasoain, Navarra Spain	**Contractor:**	WINDTEST Kaiser-Wilhelm-Koog GmbH Sommerdeich 14 b 25709 Kaiser-Wilhelm-Koog Germany
Date of Order:	2006-10-31	**Order No.:**	4250 06 03531 64

Wind Turbine Technical Data:

Type: ..... Acciona AW 82/1500 IEC IIIb T80A LM40.3P
Manufacturer: ..... Acciona Windpower, S.A.
Turbine serial number: 002
Rated power: ..... 1500 kW
Power control: ..... pitch
Tower type: ..... tubular/conical

Rotor manufacturer: ..... LM
Rotor blade type: 40.3P
Rotor blade serial number: 0100, 0101, 0102
Rotor diameter: ..... 82,026 m
Rotor blade pitch angle (degrees): ..... variable (0-90°)
Number of rotor blades: 3
Rotor rated speed: ..... 18,25 min^{-1}

Gearbox manufacturer: ..... Fellar
Gearbox type: TPH3-1600N
Gearbox serial number: 480257700201

Generator manufacturer: ..... INDAR
Generator type: TAR-500-X6/R
Generator serial number: 5170
Generator speed range: ..... 700 - 1350 min^{-1}
Generator rated power: ..... 1500 kW

These data do not replace the corresponding manufacturer's certificate.

Measurement geometry:

Hub height above ground: ..... 80 m
Measurement distance R_0: ..... 113 m
Height of microphone h_A: ..... -21 m
Distance rotor centre to tower axis d: ..... 3,6 m

Measurement conditions:

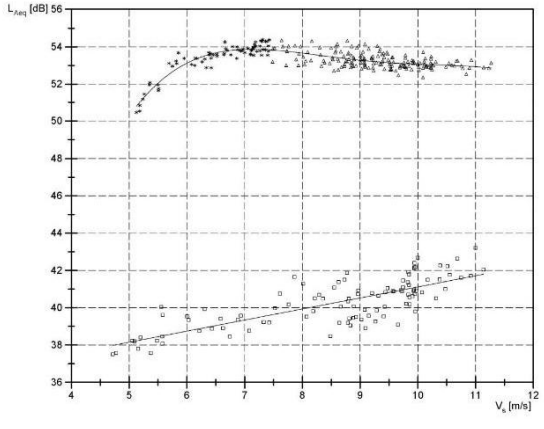
Measurement date: 2006-12-06
Range of wind speed at 10m height, 1-min average WS_{10m}: ..... 4,7 - 11,1 m/s
Wind direction: ..... WNW
Range of power, 1-min-average $P_{w\,el}$: ..... 556 - 1523 kW
Air pressure p_{Luft}: ..... 959 - 963 hPa
Air temperature T_{Luft}: ..... 7 - 10 °C
Turbulence intensity: ..... 10,4 %

Power curve:

From report: DEWI W-PV 06-012
Testing Auth.: DEWI
Measurement Period: 2006-08-04 - 2006-10-11

WS (m/s)	Power (kW)	WS (m/s)	Power (kW)	WS (m/s)	Power (kW)
1,61	-6,93	6,97	525,87	12,50	1513,74
2,03	-6,93	7,51	672,78	13,01	1513,51
2,53	-7,86	8,02	787,60	13,52	1515,39
3,00	-3,62	8,50	901,11	13,97	1516,41
3,51	9,55	9,00	1074,49	14,51	1516,39
4,02	68,27	9,50	1196,62	15,04	1516,98
4,52	107,41	10,01	1348,74	15,51	1518,00
5,02	176,77	10,49	1442,92	15,96	1517,43
5,52	241,98	10,99	1480,84	16,47	1515,96
5,99	321,57	11,50	1499,06	16,98	1516,38
6,51	423,68	12,03	1505,76	17,42	1516,85

Determination of the sound power level:



WS_{10m} [m/s]	6	7	8	9	10
$P_{W\,el}$ [kW]	867	1270	1486	1514	1516
L_{WA} [dB]	101,7	102,5	102,2	101,8	101,5
U_C [dB]	0,8	0,7	0,8	0,8	0,7

WINDTEST
Kaiser-Wilhelm-Koog GmbH

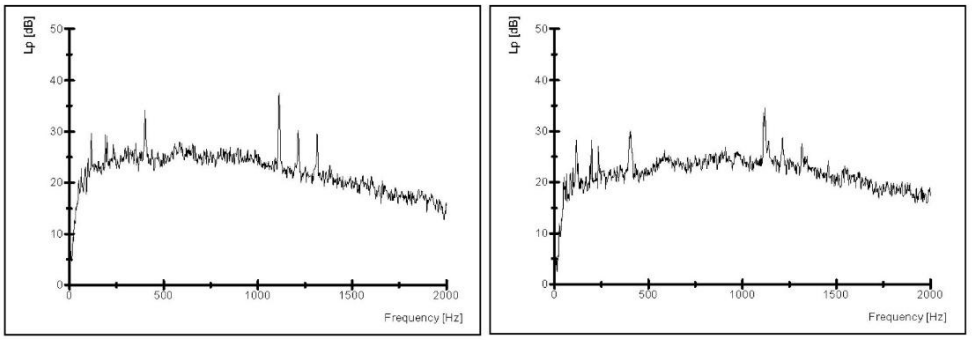
Summary of results of the noise emission measurement, in accordance with IEC 61400-11 and MEASNET, of a WTGS type Acciona AW 82/1500 IEC IIIb T80A LM40.3P

Third octave sound power spectrum in dB(A) for the wind speed in 10 m height corresponding to the maximum sound power level given on page 1:

1/3 octave freq. [Hz]	50	63	80	100	125	160	200	250	315	400	500	630
L_{WA} (7 m/s)	72,1	72,8	76,0	80,8	84,7	85,0	88,2	90,4	91,9	92,8	92,9	93,5
1/3 octave freq. [Hz]	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3150**	**4000**	**5000**	**6300**	**8000**	**10000**
L_{WA} (7 m/s)	92,6	93,2	92,3	88,9	86,7	86,1	82,0	79,5	76,0	71,3	65,8	63,4

Tonality according to IEC 61400-11/Ed.2:

Representative FFT - Spectra (left 8 m/s and right 10 m/s at a height of 10 m):



WS in 10 m height [m/s]	6,0	7,0	8,0	9,0	10,0
Freq. of most prevalent tone, f [Hz]	1086-1122	1114-1122	1088-1124	1112-1126	1084-1150
Tonality, ΔL_k [dB]	-0,87	-2,42	-0,51	-1,09	-1,71
Audibility, $\Delta L_{a,k}$ [dB]	2,05	0,51	2,41	1,84	1,21

Engineer:

Dipl.-Ing. A. Jensen.

Checked:

Dipl.-Ing. J. Neubert
Head of Acoustics Group

Laboratory accredited by DAP Deutsches Akkreditierungssystem Prüfwesen according to DIN EN ISO/IEC 17025. This accreditation is valid for the test and measurement procedures given in the certificate.
DAP-PL-1556.00

Kaiser-Wilhelm-Koog, 2006-12-15

7.2. Photo of measuring stations

Figure 9 Measuring station at NMT 1

Figure 10 Measuring station at NMT 2

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Invsetor:	**Vjetroelektrana Jelinak Ltd.** Zrinsko-Frankopanska 64 21 000 Split
Contractor:	**Oikon Ltd. Institute for applied ecology** Trg senjskih uskoka 1-2 10 000 Zagreb for **Eurus Ltd.** Smiljanićeva 2 21 000 Split
Subject matter:	**Jelinak WF**
Test program:	**Unsupervised noise levels monitoring in environment of wind farm „Jelinak"**
Order number and date:	**Contract number 2012-A-022 from 2013-03-28**
Test date:	**2013-07-01 do 2014-06-30**
Number of pages:	**3**

EXPERT EXPLANATION AND OPINION

STIM-2014-AI-031

ENGLISH TRANSLATION OF CROATIAN LANGUAGE DOCUMENT

Produced:

dr.sc. Alan Štimac, dipl.ing.el.

Samobor, 13th August 2014

1. ACOUSTIC REQUIREMENTS

1.1. Outdoor space noise

Under regulation of Ordinance on the maximum permitted noise levels in an environment in which people work and live (Official Gazette ″Narodne Novine″ no. 145/04), Article 5, maximum permitted rating levels of noise imission in the outdoor space are given in Table 1 from above - mentioned Ordinance.

Table 1 Maximum permitted rating noise levels imission in open space

Noise zone	Allocation of area	Maximum permitted rating level of noise imission L_{RAeq} in dB (A)	
		For day (*L*day)	For night (*L*night)
1.	Zone intended for rest, recovery and treatment	50	40
2.	Zone intended only for Housing and Residence	55	40
3.	Zone of mixed, mainly residential purposes	55	45
4.	Zone of mixed, mainly business purposes and housing	65	50
5.	Zone for commercial purposes (production, industry, warehouses, repair shops)	On border of building plot within zone should not exceed noise of 80 dB (A). On border of this zone noise must not exceed permissible nose level of zone with which it have border.	

Values listed in Table 1 above mentioned Ordinance is applying to overall immision level from all existing and planned noise sources together.

Zones for Table 1 above mentioned regulations determine based on document physical planning. At the time of implementation measurement of noise level is effective Municipality Seget Spatial Plan in article. 19 is determination for carrying out Municipality Seget Spatial Plan is mentioned following:

> *"Construction zone is mixed-use area with predominantly low-density residential development (primary purpose), and all the amenities of the village are following housing (secondary purpose): public and social services (administrative, social, health, educational and religious), economic activities (business, service, retail, hospitality and tourism), sports and recreational facilities, as well as traffic, public safety and green areas and communal facilities and equipment ..... "*

Using these regulations, above mentioned area where is carried out measuring is mostly classify construction zone area of settlements, mixed manly residential purposes.

According to mentioned during grade process of measured noise levels will be use permitted values for 3rd noise zone from regulations Ordinance on the maximum permitted noise levels in an environment in which people work and live (Official Gazette ″Narodne Novine″ no. 145/04), Article 5, table 1.

EXPERT EXPLANATION AND OPINION

Based on carried out monitoring noise levels during 12 months, duration from 01.07.2013 till 30.06.2014 it is concluded that the equivalent noise level in outdoor space at monitoring stations location; caused by activity of Vjetroelektrana Jelinak Ltd., Jelinak

DOES NOT EXCEED

permissible noise levels for day, evening and night conditions.

Therefore is concluded that for wind farm Vjetroelektrana Jelinak Ltd., Jelinak completely are implemented noise protection measures.

For DARH 2 d.o.o. (M.P.)

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