AIRTIGHT & NOISECHECK LIMITED

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ACOUSTIC TESTING REPORT FOR

MR & MRS MARSH
1 WESTLAND DRIVE
WATERLOOVILLE
HAMPSHIRE
PO7 5UG

SITE ADDRESS

LAND ADJACENT
1 WESTLANDS DRIVE
WATERLOOVILLE
HAMPSHIRE
PO7 5UG

REPORT DATE: 21ST JUNE 2021

[redacted]

Acoustic Engineer: Date: 15th – 16th June 2021

Michael Vine

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Customer Name: Date: 15th – 16th June 2021

Mr & Mrs Marsh
1 Westland Drive
Waterlooville
Hampshire
PO7 5UG

Site Address:

Land Adjacent
1 Westland Drive
Waterlooville
Hampshire
PO7 5UG

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – serial No 31375, Cal due March 2022

Analyser complies with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 1
IEC 225
ANSI S1.4-1985 type 1
ANSI1.43 -1997 type 1
ANSI S1.11-1986 order 3type1D
DIN 45 657
Norsonic Production Standard set for the Nor121.

Measurement Microphone – Gras 40AF, serial No 62522 – calibration due March 2022

Acoustic Calibrator - (Type 1251) – Serial No 31652, Calibration due August 2021

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period in one location between Tuesday 15th & Wednesday 16th June 2021 to measure the apparent noise levels associated with the electrical substation located to the West of the proposed dwelling.

In addition to the average noise levels measured for the 24hour period, the night time LA90 values will be used to determine the noise associated with the substation. This is due to the road traffic noise being the dominant noise source and thus the electrical sub station is not audible above the road traffic noise. The sub station is only audible when you are in close proximity of the station and there is a reduction in road traffic.

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Executive Summary:

1.1 Airtight & Noisecheck Ltd were instructed by Chris Flint associated on behalf of Mr & Mrs Marsh to undertake a Noise Impact Assessment (NIA) at Land adjacent to 1 Westland Drive, Waterlooville. A planning application has been made to erect a single dwelling to the East of 1 Westland Drive. The local authority were concerned with the noise associated with the electrical substation located to the East of the existing dwelling and to the West of the proposed dwelling (at a distance of circa 5m).

This noise assessment is only concerned with the noise associated with the substation rather than any other noise source.

The noise assessment was measuring noise associated with:

1. Noise associated with the electrical substation. Although there were other, dominant noise sources

The external noise levels were measured at source, at a distance of approximately 2m with the microphone in direct line of sight of the substation.

The substation was in operation during the entire measurement period and is constantly in operation. The noise was not tonal or audible at the proposed residential façade, and it was only audible at source and during a reduction in road traffic.

Acoustic Design Statement (ADS):

The site is situated in a quiet residential area with existing dwellings in all directions. The proposed dwelling will be located to the East of 1 Westland Drive, South of Westland Drive and to the West of Stakes Hill Road. The electrical substation is located to the West of the proposed dwelling, East of the existing dwelling and immediately to the South of Westland Drive. The substation is in use 24hours a day and was only audible when directly at source, it was not audible above the road traffic noise or at the proposed façade.

The initial risk assessment has indicated that the day time noise levels to the front fall into the negligible category & the night time falls into the negligible to low category, indicating that noise will not be a reason for refusal and that the site should be acceptable from a noise perspective. The dwelling is located circa 5m from the electrical substation and the source noise was measured at 2m so a further reduction of 9dB can be applied due to point source propagation ensuring that noise will not be an adverse impact on the proposed dwelling and that the internal noise levels can be achieved with windows open.

If the mitigation measures are implemented, then there is no reason to suggest that the future occupants of the scheme cannot be adequately protected from the external noise emissions. In addition, there is only a small bedroom located on the front façade.

Negligible Sites:

These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.

Low Noise Level Sites:

At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an Acoustic Design Statement (ADS) which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.

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Assessment Criteria:

The NPPF came into effect in March 2012 & updated in February 2019. It replaced other documents such as PPG24. The NPPF provides several objectives and aims that are directed towards avoiding significant adverse impacts and reducing others on quality of life and health. This document states that:

The planning system should contribute to and enhance the natural and local environment by: preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

The NPSE states the following aims with respect to noise policy:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of the Government policy on sustainable development:

avoid significant adverse impacts on health and quality of life;
mitigate and minimise adverse impacts on health and quality of life; and
where possible, contribute to the improvement of health and quality of life.

BS8233: 2014 'Guidance of Sound Insulation and Noise Reduction for Buildings' defines a range of ambient noise levels for design purposes, in order that appropriate conditions are achieved in certain internal environments. These internal requirements are listed in the table below.

BS8233: Table 5 – Indoor Ambient noise levels in spaces when they are unoccupied.

Activity	Location	0700-2300	2300-0700
Resting	Living Rooms	35dB LAeq,16hour	-
Dining	Dining Room/Area	40dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35dB LAeq,16hour	30dB LAeq,8hour

Night time noise events can have a significant impact on sleep disturbance. There is no specific guidance presented in BS8233 regarding a noise limit to maximum night time noise ($L_{Amax, F}$). As part of this assessment the number of night time noise events will be considered in a qualitative manner with an internal $L_{Amax, F}$ of 45dB used as an initial screening tool to identify night-time noise events that may be of significance to sleeping conditions in bedrooms.

Paragraph 7.7.3.2 of BS 8233:2014 "Indoor ambient noise levels for dwellings". Also states that the desirable level for amenity spaces is an upper limit of 55dB LAeq, T and a lower limit of 50dB LAeq, T.

Pro PG: Planning & Noise 2017 (Professional Practice Guidance on Planning & Noise) issued by ANC/IOA/CIEH has also been referenced. This document came into effect in May 2017. This document is a guidance document and not a Code of Practice or British Standard.

This document states that there is a staged approach to such schemes, with the first phase being a risk assessment undertaken at the site, followed by a detailed assessment considering the recommended internal values by measuring the external noise levels & listing suitable mitigation measures that are to be implemented to the building.

Please note that for this assessment the noise associated with the substation was the only concern so some of the above criteria will not be applicable.

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NOEL – No Observed Effect Level This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observed Adverse Effect Level This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level This is the level above which significant adverse effects on health and quality of life occur.

1 Objective:

1.2 To determine the noise levels associated with the electrical substation. The noise was monitored for a 24hour period to establish the average noise levels over this duration but also the night time L_{A90} values were monitored as this will give an accurate indication if the noise associated with the substation rather than a culmination of all noise sources.

1.2 The objective of the testing is to ensure that the future residents of the proposed dwelling will be protected from the external noise emissions produced at the site, the dominant noise source apparent on site is the road traffic but even these levels will not lead to an adverse impact due to the quiet residential location surrounding the site. The testing was undertaken to determine the noise associated with the electrical substation.

2 Calibration:

2.1 The measurement microphones were calibrated before and after testing in each measurement location and there were no drifts recorded during the assessments.

3 Site Layout & Microphone Position:

3.1 The proposed dwelling will be located to the East of No 1 Westland Drive and to the South of Westland Drive itself. The area is a residential area with Westland Drive being a cul-de-sac with a small number of houses. Stakes Hill Road is located to the East which is a busier road. The audible noise was the vehicular movements using the local road network.

3.2 The electrical substation fronts onto Westland Drive and is situated to the East of No 1 Westland Drive and will be located to the West of the proposed dwelling. It is surrounded by a 1.8m wire fence and will be circa 5m from the proposed residential façade. The Western elevation of the dwelling will face the substation with no noise sensitive windows on this elevation. The microphone was located:

1- Facing the electrical substation at a distance of 2m. It was in excess of 1.5m from ground level.

3.3 There are residential dwellings located on all sides of the proposed scheme. Stakes Hill Road is a busy road linking the immediate area, but the area is predominantly residential with existing dwellings located on all sides.

4 Weather Conditions:

4.1 The weather was dry during the measurement procedures, the temperatures ranged between 4-22degrees. There was no wind or rain during the measurement procedures.

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5 Results:

5.1 The purpose of this measurement procedure was to calculate the noise levels apparent at the noise sensitive facades and ensure suitable mitigation measures are implemented so that the requirements of BS8233 & WHO can be met. The night time LA_{max} values have also been derives so that they can be mitigated against also.

LAeq 16hour & 8hour Values:

Mic Location	$L_{Aeq\ 16hour}$ Value	Reduction needed for BS8233 compliance	$L_{Aeq\ 8hour}$ Value	Reduction for BS8233 compliance
ML 1 – 2m form source	50dBA	15dB	47dBA	17dB

6 Results Conclusion:

6.1 The noise levels at 2m from the source are clearly shown above. These levels would have included the noise associated with the road traffic and therefore not only apply to the electrical substation. The measured average levels are very low and as such the noise associated with the proposed site will not have an adverse impact on the future residents of the proposed dwelling. The dwelling will be ventilated naturally with open windows. There are no windows on the elevation facing the sub station so this combined with the extra distance of the dwelling form the substation will ensure a very low noise level at the façade.

6.2 In an attempt to establish the noise associated with the electrical substation the night time L_{A90} values were observed and attributed to the substation. The LA90 1hour values during the night time are shown in the table below:

Time Period	$L_{A90\ 1hour}$ value
2300-0000	45.2
0000-0100	45.5
0100-0200	46
0200-0300	46.2
0300-0400	45.3
0400-0500	45.6
0500-0600	46.2
0600-0700	44.8

6.3 It can be seen that the noise levels attributed to the substation were 45-46dB LA90 at a distance of 2m. Therefore, if a point source propagation equation is applied to those values then the rating level at the proposed façade is 37-38dBA. This level of noise will not have an adverse impact on the proposed dwellings and nor will it lead to sleep disturbance. The noise ws not tonal, impulsive, intermittent of noticeable and therefore it will not have an adverse impact in the future residents of the proposed dwelling.

6.4 The calculated internal levels based on the noise form the substation are shown on the next page. The measured levels of 45-46dB are close to the $L_{Aeq\ 8hour}$ value of 47dBA. The local authority is only concerned with the noise from the substation and thus the LA90 values will be used. The above levels are also representative of the lowest $L_{Aeq\ 15minute}$ values during the night time period, this was 45dB, again indicating a level of 45-46dB is accurate for the noise form the substation in isolation.

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Residential Dwelling:

Residential façade	External Level	Sound Reduction of open windows	Internal Level
Noise Level -	37-28dBA	-13dB	24-25dB

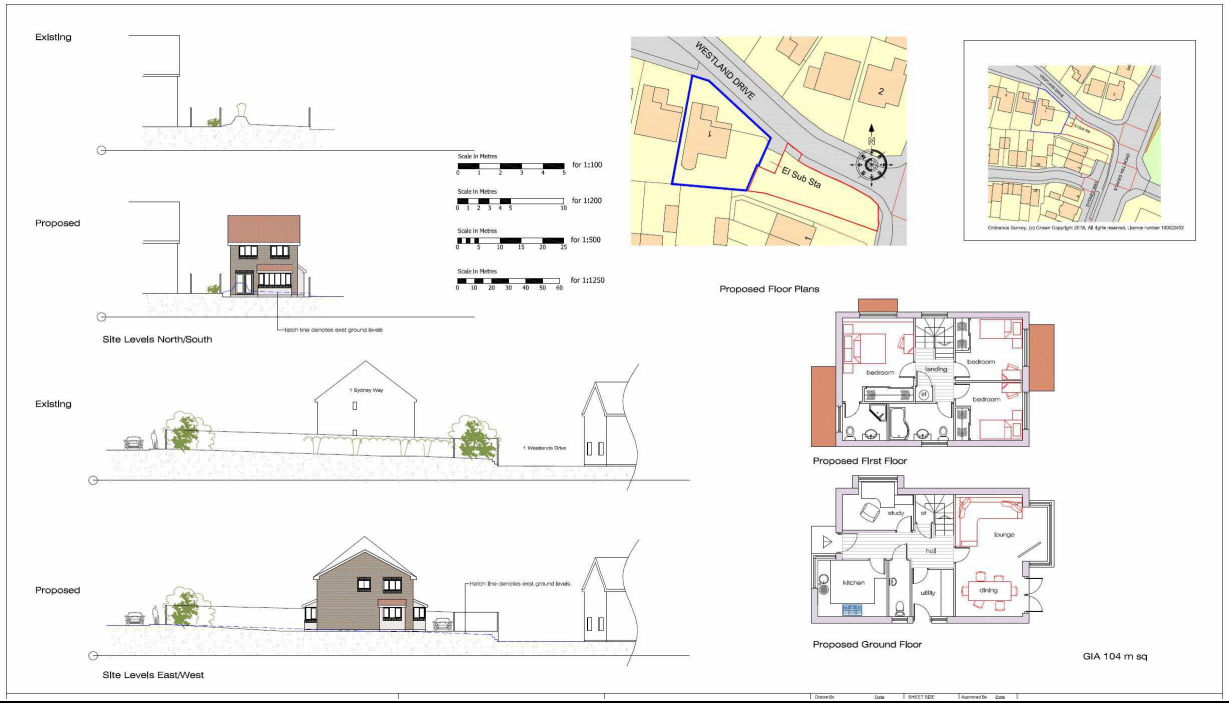
7 Results Summary:

7.1 The results indicate that the noise associated with the electrical substation will not be audible within the dwelling and it will not have an adverse impact on the future residents of the proposed dwelling.

7.2 The noise associated with the electrical substation is not audible at the proposed façade. The noise from the station even at source is inaudible if vehicles go past the site. The calculations indicate that both external & internal levels will ensure a suitable standard of living for the residents of the scheme.

7.3 The measured levels, calculations and building elements will ensure the noise associated with the electrical substation will not have an adverse impact on the proposed residential scheme. The area is a residential street with a high number of existing houses in close proximity to other noise sources including the electrical substation.

8 Site Plans:



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APPENDIX

Continuous equivalent noise level, LAeq — The steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

LAmax - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room – A room used for sleeping or recreation/relaxation

Dne,w Weighted element normalised level difference – A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU – Environmental Protection Unit

Rw Weighted sound reduction index – A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA10 – The A-weighted noise level exceeded for 10% of the measurement duration.

LA90 - The A-weighted noise level exceeded for 90% of the measurement duration.

British Standards & associated documents:

Code of Practice: BS8233: 2014 - Sound Insulation and noise reduction for buildings.

ProPG: Planning & Noise - Professional Practice Guidance on Planning & Noise - May 2017

ACOUSTICS VENTILATION AND OVERHEATING - Residential Design Guide – Jan 2020

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9 Google Earth:

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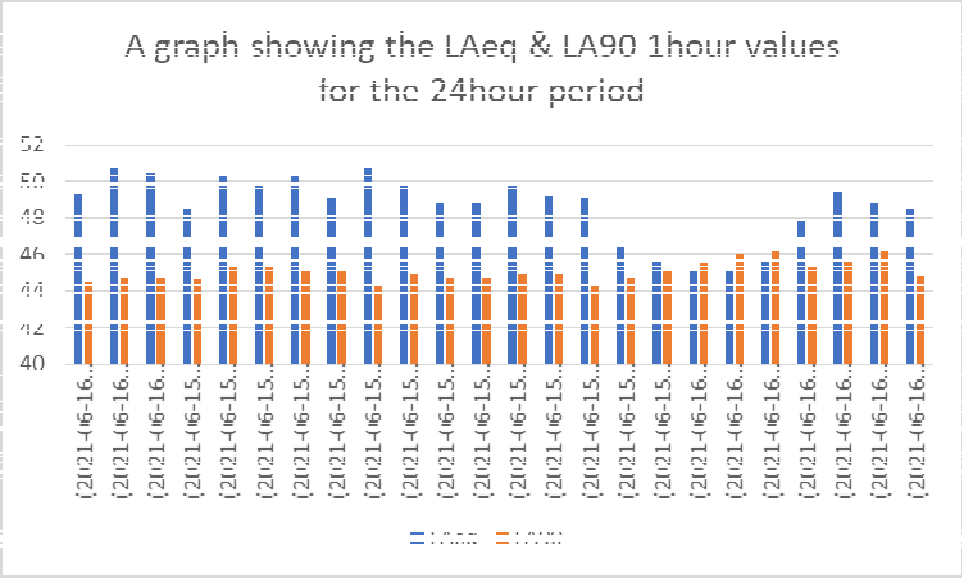
1-hour values

Time Period	LAeq	LA90
(2021-06-16 07:00:00.240)	49.3	44.5
(2021-06-16 08:00:00.240)	50.8	44.7
(2021-06-16 09:00:00.240)	50.5	44.7
(2021-06-15 10:00:00.240)	48.5	44.6
(2021-06-15 11:00:00.240)	50.3	45.3
(2021-06-15 12:00:00.240)	49.9	45.4
(2021-06-15 13:00:00.240)	50.3	45.1
(2021-06-15 14:00:00.240)	49.1	45.1
(2021-06-15 15:00:00.240)	50.7	44.3
(2021-06-15 16:00:00.240)	49.9	44.9
(2021-06-15 17:00:00.240)	48.8	44.7
(2021-06-15 18:00:00.240)	48.8	44.7
(2021-06-15 19:00:00.240)	49.9	45
(2021-06-15 20:00:00.240)	49.2	44.9
(2021-06-15 21:00:00.240)	49.1	44.4
(2021-06-15 22:00:00.240)	47	44.7
(2021-06-15 23:00:00.240)	45.7	45.2
(2021-06-16 00:00:00.240)	45.1	45.5
(2021-06-16 01:00:00.240)	45.1	46
(2021-06-16 02:00:00.240)	45.6	46.2
(2021-06-16 03:00:00.240)	47.9	45.3
(2021-06-16 04:00:00.240)	49.4	45.6
(2021-06-16 05:00:00.240)	48.8	46.2
(2021-06-16 06:00:00.240)	48.5	44.8



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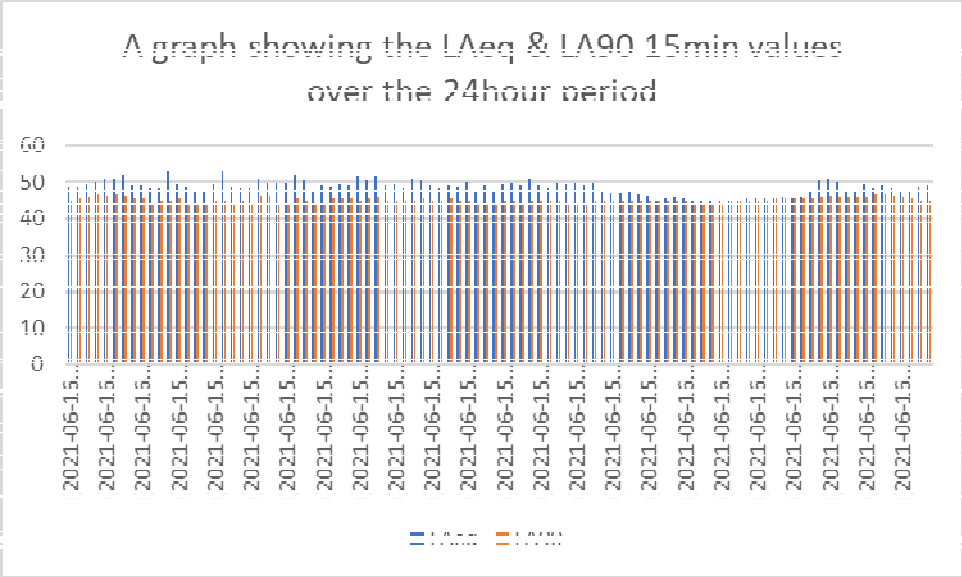
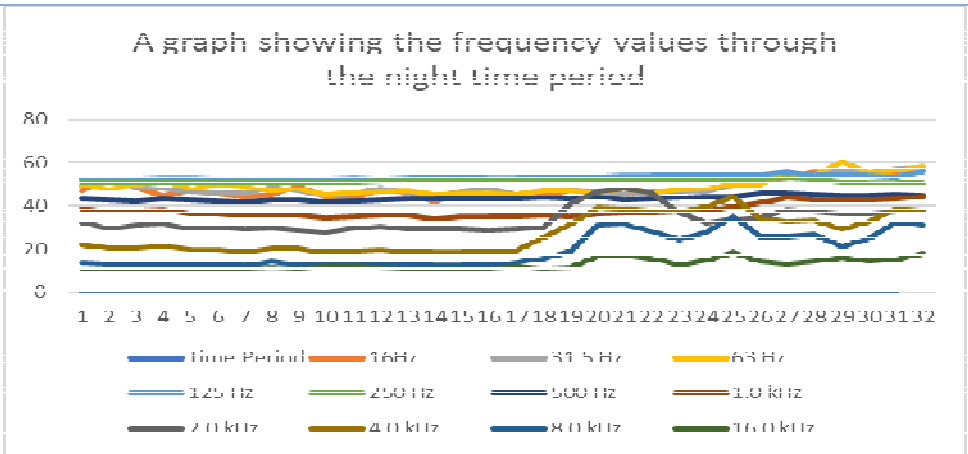
15min values

Time Period	LAeq	LA90
(2021-06-16 07:00:00.240)	48.7	45.3
(2021-06-16 07:15:00.240)	48.6	45.4
(2021-06-16 07:30:00.240)	49.4	45.8
(2021-06-16 07:45:00.240)	50.2	46.6
(2021-06-16 08:00:00.240)	51.1	46.4
(2021-06-16 08:15:00.240)	50.9	46.7
(2021-06-16 08:30:00.240)	51.8	46.3
(2021-06-16 08:45:00.240)	48.9	45.5
(2021-06-16 09:00:00.240)	49.2	45.4
(2021-06-16 09:15:00.240)	48.5	44.4
(2021-06-16 09:30:00.240)	48.5	44.7
(2021-06-16 09:45:00.240)	53.5	44.9
(2021-06-15 10:00:00.240)	49.3	45.4
(2021-06-15 10:15:00.240)	48.8	44.6
(2021-06-15 10:30:00.240)	47.5	44.3
(2021-06-15 10:45:00.240)	48	44
(2021-06-15 11:00:00.240)	49.5	44.8
(2021-06-15 11:15:00.240)	53	44.7
(2021-06-15 11:30:00.240)	48.6	44.4
(2021-06-15 11:45:00.240)	48.4	44.9
(2021-06-15 12:00:00.240)	48.5	44.1
(2021-06-15 12:15:00.240)	51.2	46.1
(2021-06-15 12:30:00.240)	49.9	46.1
(2021-06-15 12:45:00.240)	49.6	44.5
(2021-06-15 13:00:00.240)	49.7	44.3
(2021-06-15 13:15:00.240)	52.2	45.5
(2021-06-15 13:30:00.240)	50.4	44.8
(2021-06-15 13:45:00.240)	47.6	44.3
(2021-06-15 14:00:00.240)	49	44.6
(2021-06-15 14:15:00.240)	48.8	45.6
(2021-06-15 14:30:00.240)	49.4	45.6
(2021-06-15 14:45:00.240)	49	45.5
(2021-06-15 15:00:00.240)	51.4	45
(2021-06-15 15:15:00.240)	50.5	45.6
(2021-06-15 15:30:00.240)	51.6	45.8
(2021-06-15 15:45:00.240)	48.9	45.1
(2021-06-15 16:00:00.240)	49.3	44.9
(2021-06-15 16:15:00.240)	48.4	45.2
(2021-06-15 16:30:00.240)	51.2	44.9
(2021-06-15 16:45:00.240)	50.3	45.4

(2021-06-15 17:00:00.240)	49.1	45.3
(2021-06-15 17:15:00.240)	48.2	44.9
(2021-06-15 17:30:00.240)	49.1	45.5
(2021-06-15 17:45:00.240)	48.6	45
(2021-06-15 18:00:00.240)	50.1	45.3
(2021-06-15 18:15:00.240)	48	44.2
(2021-06-15 18:30:00.240)	48.9	43.8
(2021-06-15 18:45:00.240)	47.9	44.3
(2021-06-15 19:00:00.240)	49.3	45.1
(2021-06-15 19:15:00.240)	49.8	45
(2021-06-15 19:30:00.240)	49	44.6
(2021-06-15 19:45:00.240)	51.1	45
(2021-06-15 20:00:00.240)	49.1	44.8
(2021-06-15 20:15:00.240)	48.4	44.7
(2021-06-15 20:30:00.240)	49.8	44.8
(2021-06-15 20:45:00.240)	49.3	44.5
(2021-06-15 21:00:00.240)	49.7	44.5
(2021-06-15 21:15:00.240)	49	44.6
(2021-06-15 21:30:00.240)	49.6	44.9
(2021-06-15 21:45:00.240)	47.6	44.8
(2021-06-15 22:00:00.240)	47	45
(2021-06-15 22:15:00.240)	46.9	45
(2021-06-15 22:30:00.240)	47.6	44.9
(2021-06-15 22:45:00.240)	46.6	45.2
(2021-06-15 23:00:00.240)	46.1	45.1
(2021-06-15 23:15:00.240)	45.3	44.7
(2021-06-15 23:30:00.240)	45.6	44.9
(2021-06-15 23:45:00.240)	45.8	45
(2021-06-16 00:00:00.240)	45.6	45.1
(2021-06-16 00:15:00.240)	45.1	44.3
(2021-06-16 00:30:00.240)	44.8	44.4
(2021-06-16 00:45:00.240)	45	44.4
(2021-06-16 01:00:00.240)	45	44.6
(2021-06-16 01:15:00.240)	45.1	44.8
(2021-06-16 01:30:00.240)	45.1	44.7
(2021-06-16 01:45:00.240)	45.4	44.9
(2021-06-16 02:00:00.240)	45.5	45.1
(2021-06-16 02:15:00.240)	45.5	45.2
(2021-06-16 02:30:00.240)	45.7	45.5
(2021-06-16 02:45:00.240)	45.8	45.5
(2021-06-16 03:00:00.240)	45.7	45.4
(2021-06-16 03:15:00.240)	45.9	45.5
(2021-06-16 03:30:00.240)	47.5	45.5
(2021-06-16 03:45:00.240)	50.5	46
(2021-06-16 04:00:00.240)	51.3	46.2

(2021-06-16 04:15:00.240)	50.2	45.9
(2021-06-16 04:30:00.240)	47.4	45.9
(2021-06-16 04:45:00.240)	47.6	45.9
(2021-06-16 05:00:00.240)	49.3	46
(2021-06-16 05:15:00.240)	48.2	46.5
(2021-06-16 05:30:00.240)	49.2	46.7
(2021-06-16 05:45:00.240)	48.4	46.4
(2021-06-16 06:00:00.240)	48.1	45.9
(2021-06-16 06:15:00.240)	48	45.7
(2021-06-16 06:30:00.240)	48.7	45.2
(2021-06-16 06:45:00.240)	49	44.7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(2021-06-15 23:15:00.240)	52.7	51.4	48.2	52.6	50.8	42.7	37.2	29.8	20.4	13.3	11.3
(2021-06-15 23:30:00.240)	48.5	48.9	49.6	52.7	51.1	42.6	37.8	30.8	20.4	13.3	11.3
(2021-06-15 23:45:00.240)	44.8	48	52	52.9	51.3	43.6	38.2	31.4	21.1	13.5	11.4
(2021-06-16 00:00:00.240)	47	46.6	48	53.1	51.4	42.7	36.3	29.5	19.8	13	11.3
(2021-06-16 00:15:00.240)	45.7	46.2	49.9	52.4	50.9	42.6	36.4	30	19.9	12.8	11.2
(2021-06-16 00:30:00.240)	44.5	45.6	49.1	52.5	51	42.1	35.5	29.1	19.1	12.6	11.3
(2021-06-16 00:45:00.240)	45.4	48.9	47.2	52.2	51.1	42.9	36.1	29.8	20.3	14.4	11.8
(2021-06-16 01:00:00.240)	49.2	47	48	52.6	51.3	42.8	35.4	28.8	20.2	12.9	11.3
(2021-06-16 01:15:00.240)	44.2	44.7	45.4	52.8	51.4	42.1	34.6	27.8	18.4	12.8	12
(2021-06-16 01:30:00.240)	43.9	45.8	46.2	52.9	51.3	42.4	35.2	29.4	19.4	12.9	11.9
(2021-06-16 01:45:00.240)	47.3	48.3	46.8	52.7	51.7	43.1	35.4	30.6	20	12.9	11.8
(2021-06-16 02:00:00.240)	46	46.3	47.1	53.2	51.8	43.2	35.5	29.2	19	12.8	11.3
(2021-06-16 02:15:00.240)	41.9	44.1	45.2	53.4	52	43.2	34.4	28.9	18.6	12.5	11.3
(2021-06-16 02:30:00.240)	46.5	46.5	45.8	53.5	52.3	43.6	35	29	18.6	12.6	11.3
(2021-06-16 02:45:00.240)	44	48.1	45.8	53.1	52.3	43.4	34.9	28.7	18.6	12.7	11.3
(2021-06-16 03:00:00.240)	43.5	45.3	45.4	53.1	52.1	43.2	35	28.9	19.3	13.9	12.2
(2021-06-16 03:15:00.240)	44.8	47.2	47.1	53.2	52.3	43.7	35.6	29.9	25.6	15.7	11.4
(2021-06-16 03:30:00.240)	47.1	47.5	46.9	52.9	52.3	43.6	35.3	41.3	31.2	19.2	11.6
(2021-06-16 03:45:00.240)	46.5	45.1	46	53.3	52.7	44.3	36.3	46.7	39.3	30.8	16.5
(2021-06-16 04:00:00.240)	45.3	45.4	48.1	54	52.6	43	36.8	47.9	39	31.3	17.1
(2021-06-16 04:15:00.240)	46.7	46.2	46.2	53.9	52.5	43.5	36.9	46.3	37.8	28.4	15.8
(2021-06-16 04:30:00.240)	46.4	46.9	47.7	53.8	52.3	43.7	37.3	37	37.4	24.4	13.2
(2021-06-16 04:45:00.240)	47.3	46.6	48	53.9	52.3	44.5	37.7	32.5	39.5	27.9	14.7
(2021-06-16 05:00:00.240)	49.2	49.8	50.4	53.8	52.5	44.1	39.8	33.8	44.4	35.1	18.4
(2021-06-16 05:15:00.240)	51.8	50.9	50.4	54.5	52.7	45.5	41.7	34.8	34.3	25.7	14.2
(2021-06-16 05:30:00.240)	53	54.1	55.3	56	53.1	45.9	43.8	38.3	32.9	25.9	13.7
(2021-06-16 05:45:00.240)	55.7	54	54	54	52.5	45.4	43.1	37.3	33.1	26.7	14.3
(2021-06-16 06:00:00.240)	54.7	56.7	60.2	54.3	51.4	44.6	43.1	36.5	28.9	21.2	16.2
(2021-06-16 06:15:00.240)	55.5	55.4	55.2	54.1	50.9	44.9	43.1	36.6	32.6	25	14.3
(2021-06-16 06:30:00.240)	56	57	56.1	53.5	50.6	45.1	43.5	37.5	38.8	32.3	15.4
	57.4	57.7	58.3	55.7	50.8	44.9	44.2	37.9	37.9	31.1	18.2