# AIRTIGHT & NOISECHECK LIMITED

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## NOISE IMPACT ASSESSMENT FOR

A T ARCHITECTS LTD
KINGSLEY HOUSE
63 HOLLY WALK
LEAMINGTON SPA
WARWICKSHIRE
CV32 4JG

## SITE ADDRESS

15-17 CLEMENS STREET
LEAMINGTON SPA
WARWICKSHIRE
CV31 2DW

Acoustic Engineer: Date: 13-15th March 2020

Michael Vine

# AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

Contents

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Customer Name: Date: 13-15th March 2020

A T Architects Ltd
Kingsley House
63 Holly Walk
Leamington Spa
Warwickshire
CV32 4JG

Site Address:

Proposed Mixed-use Development
15-17 Clemens Street
Leamington Spa
Warwickshire
CV31 2DW

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – Serial No 31375 Calibration due end of March 2020
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 Microphones: (GRAS 40AF) - Serial No 62522, and (GRAS 40AF) - Serial No 62378. Calibration due end of March 2020.

Acoustic Calibrator - (Type 1251) – Serial No 29212, Calibration due end of March 2020

Measurement Procedure:

The external ambient noise levels were recorded for a 48hour period in two locations between Friday 13th to Sunday 15th March 2020 to measure the existing noise levels at the proposed façade of the residential development.

The noise sources in operation were the road traffic noise to the front (West) of the building, noise from the railway line (North), vehicles using the car park (East) & associated plant with the neighbouring commercial unit (South). The results will be compared to the criteria set out in BS8233: 2014 & WHO Guidelines at the request of the local authority environmental health department.

## AIRTIGHT & NOISECHECK ACOUSTIC TESTING

**Executive Summary:**

Airtight & Noisecheck Ltd were instructed by A T Architects Ltd to undertake a detailed Noise Impact Assessment (NIA) at 15-17 Clemens Street, Leamington Spa. A planning application has been made to convert the 1st floor of the commercial building into 2 x residential dwellings & to create a 2nd floor level with 1 x residential dwelling being built. The ground floor will remain commercial but split to form 3 x retail units.

The local authority has requested that the internal criteria of the site meet the requirements of BS8233: 2014 and WHO: Guidelines for community noise. These requirements are listed later in the report. It must be noted that there will be windows on the Western & Eastern facades predominantly with a smaller number on the Northern elevation and only 1 on the Southern elevation.

The noise sources have been measured at the Western & Eastern façades (with the Eastern façade also positioned to monitor the noise associated with the extraction system of the neighbouring unit).

If the mitigation measures are implemented then there is no reason to suggest that the future residents of the proposed residential scheme will be adversely affected by the noise emissions created by the various external sources. The mitigation measures have been implemented using simple calculations and they show that the criteria for internal noise can be met, the calculation has taken the $L_{Amax}$ value that is not exceeded more than 10 times in the night time period (2300-0700) as per the guidance in ProPG: Planning & Noise, Professional Practice Guidance on Planning & Noise – New Residential Development, May 2017.

The noise was measured at both of the noise sensitive façades, however it is recommended that the required glazing for the Western elevation is also used on the Northern elevation (and single glazing panel on Southern elevation), and furthermore some recommendations will also be made for the Southern elevation facing the extraction system.

There is no reason to suggest that the future residents of the proposed residential development will be adversely affected by the noise emissions providing the mitigation measures are implemented to the noise sensitive rooms, which are situated on all facades. The detailed mitigation measures are listed within this report.

The separating floor/ceiling between Ground floor commercial unit and the 1st floor residential unit & the party walls between the proposed & existing dwellings to the South will have to be upgraded. A suitable specification has been included within this report.

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**Objective/Client Brief:**

1.1 To determine the existing external noise levels associated with the site address. The site currently comprises of a vacant commercial building built over two floors, the immediate area is a mixed use are with large volumes of commercial and residential dwellings near the road network. A planning application has been made to convert the 1st & 2nd floor from use as part of the commercial unit to form 3 x dwellings. The commercial unit will remain at ground floor level, suitable mitigation measures for the separating floors, walls and perimeter will be listed in a separate document.

The external noise emissions were recorded at the Western & Eastern facades of the site in order to determine the worst-case scenario for the site. The purpose of the assessment was to determine the potential impact the road noise, extraction noise, rail noise, car park noise and people passing the site would have on the dwellings.

**2 Assessment Criteria/Conceptual Model:**

2.1 The NPPF came into effect in March 2012 and was updated in February 2019. It replaced other documents such as PPG24. The NPPF provides a number of 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 (Noise Policy Statement for England) 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.

The noise sources apparent at the site is the activity associated with the road traffic & pedestrians using Clemens Street to the West, rail noise to the North, Vehicle movements to the East & extraction noise to the South.

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.

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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 taking into account the recommended internal values by measuring the external noise levels.

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.

The above figures are based on frequency of events, time of events, duration & exposer to the noise events. It is the effect these noise events have rather than the actual level that will indicate the adverse effect level.

**3 Liaison with the Local Authority:**

3.1 There has been no direct liaison with the local authority other than via the client, with an instruction to undertake a noise impact assessment to assess the external noise levels, and in particular the noise sources listed within this report. In addition, a further desktop assessment will be undertaken to show proposed upgrades to the separating elements and building perimeter to improve sound attenuation between uses.

3.2 The purpose of this report is to support a planning application for residential development in an already mixed use/residential location. There are existing and newly constructed dwellings located in close of the proposed site. The report will be compared to the acoustic criteria as listed in BS8233: 2014 and reference made to other legislation such as WHO guidelines and the ProPG document.

**4 Current & Future Acoustic Environment:**

4.1 There have been a considerable number of converted residential schemes in the immediate area and within Leamington Spa Centre over the last few years and months. There is a considerable amount of construction taking place in the immediate vicinity of the site, with small & large developments being built in close proximity to the site.

4.2 The commercial buildings located in the immediate area were in operation during the measurement procedure.

**5 Site History:**

5.1 The site is situated in a mixed-use/residential area and surrounded by such buildings. Clemens Street is located to the West of the proposed site. The proposed dwellings will be located at 1$^{st}$ & 2$^{nd}$ floor level only.

5.2 The proposed scheme appears a fair application for the size of the floor area.

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**6 Acoustic Design Statement:**

6.1 The proposed site is situated within a mixed-use/residential area within Leamington Spa centre. It is located in Clemens Street, which is a busy road of which the front façade of the scheme will face. Two dwellings will face the Western elevation and One located to the rear, this one will be screened form the road noise further. This report recommends mitigation measures to ensure that the impact of the external noise associated with nearby noise sources is minimised for the proposed residential dwellings. These steps include:

1. Shading offered by existing buildings – reducing overheating
2. Increase the thermal mass of the building – reducing overheating & improving acoustic performance
3. Purge ventilation offered by the opening of windows to dwellings to rear – reducing overheating
4. Enhanced glazing and façade elements to improve acoustic performance
5. MVHR with summer bypass/cooling option recommended for all dwellings – to ensure ventilation during periods when windows are not opened

6.2 The above measures are a clear indication of the steps taken by the client to reduce the potential impact of the noise sources in operation in the vicinity of the site. The thermal comfort of the rear properties can be controlled by the opening of the windows on other aspects of the dwellings. Although it is recommended that all dwellings may need an alternative ventilation strategy due to the higher noise levels and thus the need to close the windows for some periods of the day time and night time (although the night time levels, and part of the day time levels should mean residents can open windows at their own discretion).

6.3 The initial site noise risk assessment (ProPG) has indicated that the day time levels fall into the medium category and the night time noise levels fall into the medium risk category which indicates that a good acoustic design process should be implemented to ensure that the internal criteria can successfully be achieved.

6.4 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. The mitigation measures apparent for this site are listed in the points above and later in the report, it is expected that providing these measures are implemented then the risk of an adverse noise impact will be avoided.

6.5 Based on the measured levels, combined with the mitigation measures, screening, lower noise levels to the rear and shading offered by the building & an increase in thermal mass should be acceptable to a residential development providing the measures to be implemented to the dwellings are sufficient in reducing the noise impact form the road traffic noise. All windows will be openable at the owners discretion, however windows on the Eastern facade of the dwellings will be able to be opened in order to ensure good thermal comfort for periods of the day time and night time (when extraction not in operation). The windows serving the Western façade may/can remain closed (as deemed appropriate, and openable during certain times of the day) and the thermal comfort enjoyed by way of alternative methods such as MVHR units and other windows being opened to offer purge ventilation (non-habitable rooms).

6.6 Due to the levels at the rear of the building also being relatively high when the extraction unit is in operation it is recommended that all dwellings are ventilated with the MVHR units, but it must also be stated that the noise levels to the rear do decrease considerably when the unit is not in operation and thus during these periods to the windows can be opened to offer purge ventilation. The key is to strike a balance between a good thermal comfort and internal noise levels. It is apparent that the provisions and mitigation measures within his report will offer the residents a chance to achieve that balance.

6.7 The $L_{Amax}$ values have also been considered and the mitigation measured will ensure these noise sources will also be mitigated against.

6.8 A detailed list of the proposed building specifications and mitigation measures are listed later in the report.

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**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 15-17 Clemens Street located immediately to the East of Clemens Street. Clemens Street is a busy Street situated in the centre of Leamington Spa. Clemens Street is predominantly mixed use with a large number of commercial units at Ground Floor with residential units located on the upper floors.

3.2 The proposed site is located at the end of a terrace of buildings on Clemens Street, it has elevations with windows on the Western (facing Clemens St), Eastern (Car Park) & Northern (footpath) facades. The Southern façade shares a party wall with the neighbouring building to the front and has one window located near the rear. The main railway line into Leamington Spa is located circa 35m to the North in an elevated location. Court Street car park is located to the East.

3.3 There are commercial lockups located to the North with some offices located in the railway arches beyond that. The proposed dwellings will be located at 1st & 2nd floor level and the windows will be situated on the Northern, Eastern & Western façades.

3.4 A proposed site layout has been attached to this report and it clearly shows that there will be noise sensitive bedrooms apparent on the front & rear facades. The microphone was located:

1- Eastern façade of the site, microphone approximately 4metres from ground floor level and 1metre from the building facade, so a 3dB correction shall be applied to these noise levels.

2- Western façade - microphone approximately 4metres from ground floor level (slightly above flat roof so in direct line of sight of the extraction unit) and 1metre from the building facade, so a 3dB correction shall be applied to these noise levels.

**4 Weather Conditions:**

4.1 The weather was predominantly during the measurement procedures, with some rain showers. The temperatures ranged between 4-12degrees.

**5 Results:**

5.1 The purpose of this measurement procedure was to calculate the required level of sound reduction required for each facade in order that the internal criteria set out in BS8233: 2014 can be achieved. Special attention is made to the $L_{AFmax}$ levels as these will require the greatest reduction and all of the calculations have been peeformed with the $L_{AFmax}$ figures in order to meet the requirements of the WHO –Guidelines for community noise & Pro PG.

**$L_{Aeq\ 16hour\ \&\ 8hour}$ Values & $L_{Amax\ 1\ hour}$ values for the 48hour period:**

| Mic Location | $L_{Aeq\ 16hour}$ Value | Reduction needed for BS8233 compliance | $L_{Aeq\ 8hour}$ Value | Reduction for BS8233 compliance | $L_{Amax\ 1hour}$ – Night time period | Reduction for WHO Guidelines |
|---|---|---|---|---|---|---|
| **ML 1 – Western Facade** | 64dBA | 29dB | 60dBA | 30dB | 82dBA | 37dB |
| **ML 1 – Western Façade** | 63dBA | 28dB | 58dBA | 28dB | 77dBA | 32dB |
| **ML 2 – Eastern Facade** | 57dBA | 22dB | 56dBA | 26dB | 73dBA | 28dB |
| **ML 2 – Eastern Facade** | 57dBA | 22dB | 54dBA | 24dB | 68dBA | 23dB |

Please note that the above figures include the -3dB(A) reduction based on close proximity to the facade during the measurement procedures.
The red figures apply to the Friday-Saturday 24hour period & the black apply to the Saturday-Sunday 24hour period.

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5.2 The above results table clearly show the required levels of reduction required. Please note – The level of 82dBA $L_{Amax\ 5min}$ was exceeded 10 times during the night time period. It is clear to see that the noise on a Saturday is much less than the Friday indicating a fluctuating climate. It is anticipated that the levels during the week will be less and thus the impact even less and purge ventilation an option via openable windows.

**6 Results Conclusion:**

6.1 The WHO guidelines for community noise - 2000 state that the internal $L_{Amax}$ level (night time) should not exceed 45dB(A). If it exceeds this level on a regular basis then sleep disturbance may be caused. This is the internal level that should be achieved. Due to the noise source being associated with a variety of noises the 5min value has been used. The Pro PG document states that the internal level of 45dB should not be exceeded more than 10 times a night, therefore the necessary levels have been calculated on this basis and not just measuring the highest level apparent throughout the night time period. Therefore, the sound reduction apparent for the Western façade is 37dBA as measured during the night time period. The level of reduction to the rear for LAmax levels is 28dBA.

6.2 The noise levels measured within this report offer a fair reflection of the noise levels apparent at the site, all noise sources were in operation during the measurement period. The noise sources apparent were:

- High levels of vehicular road traffic using Clemens Street
- Associated noise sources in operation at the front of the building
- Vehicle movements using Court Street car park
- Numerous trains using the railway line to the North
- Extraction Plant in operation to the South

6.3 The single figure sound reductions listed above offer a clear indication of the sound reduction levels required at the front & rear of the building. The following building specifications for the various elements should ensure that the necessary sound reduction levels can be achieved.

6.4 It can be seen that the highest levels of sound reduction required are for the $L_{Amax}$ values, the $L_{Aeq}$ sound reductions are less and therefore will be achieved with the proposed mitigation measures. It is also clear to see that the noise levels vary from day to day and the worst case scenario levels have been used as part of this report.

6.5 Based on the measured noise levels to the rear, there is a clear rise between 1400-0200hrs and this is in line with the kebab house opening. It is clear that once the kebab shop closes the noise levels decrease. However, the mitigation measures are designed to protect against the higher noise levels rather than the quieter ones. In addition, it is recommended that the party wall (and perimeter wall) is acoustically upgraded which will also improve the thermal amass. This upgrade will also improve the sound attenuation of the party wall too. It is recommended that the window facing the Southern elevation (non habitable room) is glazed with the same level of glazing as those rooms facing Clemens Street.

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7 **Ventilation:**

7.1 The dwellings could be ventilated using an MVHR whole house system, such a system could ventilate the rooms accordingly. The unit can be stored in the loft or cupboard and vented through the roof at the rear as this is not a noise sensitive facade, then a duct is run into each room to ensure that the rooms can be adequately ventilated without having to open a window.

| Make | Model | Type |
|---|---|---|
| Vent-Axia | Sentinel Kinetic Plus | Whole House Ventilation |

7.2 It is likely that the dwelling to the rear could be ventilated by way of an acoustic trickle vent. A suitable acoustic trickle vent is listed in the table below.

| Product | Sound Reduction - Open | Sound Reduction - Closed |
|---|---|---|
| Simon Acoustic EHAS | 38dB | 41dB |

8 **Façade Detail** – The proposed façade detail is understood to be something similar to traditional brick, with the specification believed to comprise of something similar to a high dense concrete cavity wall. A cavity wall system comprising of - Dense aggregate concrete block cavity wall with 50mm cavity and wall ties of the butterfly wire type. Plaster finish on both sides. Joints in blockwork well filled. Overall mass per unit area not less than 415 Kg/m2 should offer a sound reduction of between 54-60dBA 'Code of Practice BS8233: 1999, Page 46 – Table E.2 – Airborne sound insulation of walls and partitions'. Also a cavity wall system comprising of 7N concrete blocks (two separate frames), have a sound reduction of approximately 53dB (predicted weighted sound reduction index values of Celcon Blockwork – from H&H Celcon).

8.1 The proposed façade for the 2nd floor is understood to be a timber construction so the façade detail will be similar to 10mm rainscreen cladding, 30mm cavity, 50mm rigid insulation, 9mm sheathing board, 100mm timber frame with rock wool fill, 25mm cavity, 37.5mm insulated plasterboard and plaster finish. This type of façade should achieve a sound reduction ranging 45dB $R_w$ (taken from manufacturers literature).

9 **Roof Detail** – The proposed roof detail is believed to be similar to: or Cold applied glass fibre reinforced polyester resin waterproofing system, 150mm flat roof insulation, VCL, 18mm plywood deck, Metsec/timber roof structure, fire rated ceiling. Due to the orientation of the roof and the extra distance between the roof and the noise source this system should satisfy the requirements. It is anticipated that this system should achieve a sound reduction in excess of 40dB.

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10 **Windows** - The exact windows to be used is unknown but standard double glazed systems offer a sound reduction of between 30-35dB, a level of 37dB(A) is required for the majority of the development & 28dB to the rear. The systems below offers the necessary level of reduction but the exact proposed specification is unknown and it is recommended that the window manufacturer provide the necessary documentation upon installation to ensure the correct materials have been used.

| Possible Units | Thickness | 125Hz | 250Hz | 500Hz | 1KHz | 2KHz | 4KHz | Overall reduction |
|---|---|---|---|---|---|---|---|---|
| SG Solaglass 8-20-11.8 | 39.8mm | 26 | 32 | 41 | 45 | 43 | 54 | 42-5=37dB |
| SG Solaglass 10.8-12-8.4 | 31.2mm | 28 | 29 | 39 | 44 | 50 | 61 | 42-5=37dB |
| SG 8-12-10 | 30mm | 29 | 27 | 35 | 37 | 36 | 45 | 36-3=33dB |
| SG 6-12-10 | 28mm | 27 | 26 | 33 | 39 | 39 | 47 | 36-3=33dB |

There are many other suitable products and the client will have to show compliance for the windows before installation, the manufacturer will have the acoustic data for the windows.

**11 Results Summary:**

11.1 This report clearly states the measured levels at the variety of facades for the development. It offers suitable mitigation measures to ensure that the internal acoustic criteria can be achieved at each facade.

11.2 If the sound reduction values listed within this report are achieved then there is no reason to suggest that the future occupants will be adversely affected by the external noise sources located in close proximity to the site.

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**12 Separating Floor Upgrade:**

12.1 The separating floor between the ground floor commercial unit and the 1st floor dwelling will need to be upgraded to ensure the noise at Ground floor will not have an adverse impact on the residential bedrooms above. A system similar to the following can be implemented:

1. Finished floor
2. Floor boards
3. Timber Joists with 60kg/$m^3$ mineral wool placed in between
4. 1 x 15mm fire/acoustic plasterboard fixed to the underside of the joists (or existing ceiling)
5. MF suspended ceiling with 60kg/$m^3$ mineral wool placed above
6. 1 x 19mm acoustic plank fixed to ceiling
7. Tecsound SY50 acoustic membrane bonded between plasterboards
8. 1 x 15mm acoustic/fire plasterboards
9. Plaster Finish

12.2 The above separating ceiling detail should offer high levels of mass and isolation and should achieve a $D_{nT,w}$ in excess of 60dB.

12.3 Please note the site will be subject to Sound Insulation Testing upon completion of the works. This testing will offer a clear indication into the sound reduction apparent between the dwellings and also between the dwellings & the commercial unit.

12.4 The same separating ceiling system can be implemented between the residential dwellings too.

13 **Separating Walls:**

13.1 The separating wall between the two dwellings at 1st floor will need to meet the requirements of ADE, 2003. This system could comprise of something similar to:

1. 2 x 15mm acoust5ic/fire plasterboard
2. 70mm studs with 60kg/$m^3$ mineral wool between studs
3. OSB board fixed to back of stud
4. Clear cavity
5. 70mm stud with 60kg/$m^3$ mineral wool between studs
6. 2 x 15mm acoustic/fire plasterboards

13.2If the existing masonry walls are to be used as part of the party wall system then the following system can be installed:

1. 2 x 15mm acoust5ic/fire plasterboard
2. 70mm studs with 60kg/$m^3$ mineral wool between studs
3. OSB board fixed to back of stud
4. Clear cavity
5. Existing masonry wall
6. Plaster Finish

Dot & dabbed plasterboard should be avoided on the development.

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The following system could be implemented to the perimeter walls of the building to improve the thermal mass (and therefore thermal comfort) and acoustic performance of the building by way of reducing the flanking transmission and improve the attenuation of the masonry elements.

1. Existing masonry wall
2. Maintain Cavity
3. Erect a wall lining system using 50mm metal studs
4. Place 60kg/$m^3$ mineral wool between the studs
5. Fix 2 x acoustic plasterboards to the studs

**14 Conclusion**

14.1 Included within this report are mitigation measures that take into account all of the apparent noise sources on site and cover the concerns of the local authority. The $L_{Aeq}$ values have been listed and the necessary mitigation measures required to ensure these are met, this includes the requirements of World Health Organisation – Guidelines for community Noise, in relation to $L_{Amax}$ values caused from instantaneous events from the vehicular & rail traffic apparent.

14.2 If these mitigation measures are implemented then there is no reason to suggest that the future occupiers will be adversely affected by the external noise emissions apparent at the site.

14.3 Planning Pro PG states that a good acoustic design process is a vital part of new developments. The client has taken great steps to ensure that the future occupants are protected from the dominant noise source, these steps include:

1. Shading offered by existing buildings – reducing overheating
2. Increase the thermal mass of the building – reducing overheating & improving acoustic performance
3. Purge ventilation offered by the opening of windows to dwellings to rear – reducing overheating
4. Enhanced glazing and façade elements to improve acoustic performance
5. MVHR with summer bypass/cooling option recommended for all dwellings – to ensure ventilation during periods when windows are not opened

14.4 The above named document also states that the internal $L_{Amax}$ value of 45dB should not be exceeded more than 10 times per night. Therefore, the highest $L_{Amax}$ value has not been used but rather the necessary value that does not get exceeded by more than 10 times. If this criterion is met then sleep disturbance should not be caused.

14.5 Careful implementation of this scheme and control of the site should ensure that the future residents of the proposed scheme will be adequately protected from the external noise sources in operation at the front and rear of the site.

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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

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:

World Health Organization (WHO) - Guidelines for Community Noise.

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

Pro PG: Planning & Noise 2017 (Professional Practice Guidance on Planning & Noise) issued by ANC/IOA/CIEH

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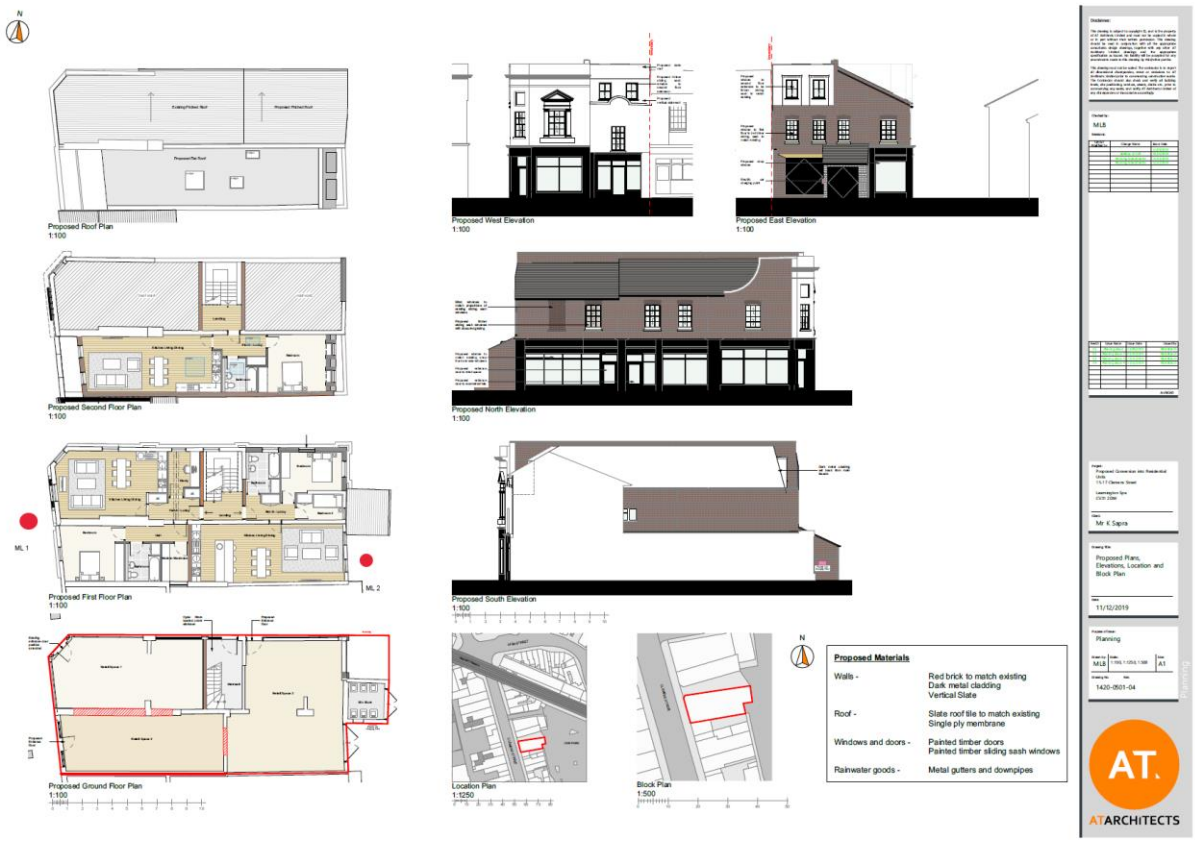
**15 Site Plans:**



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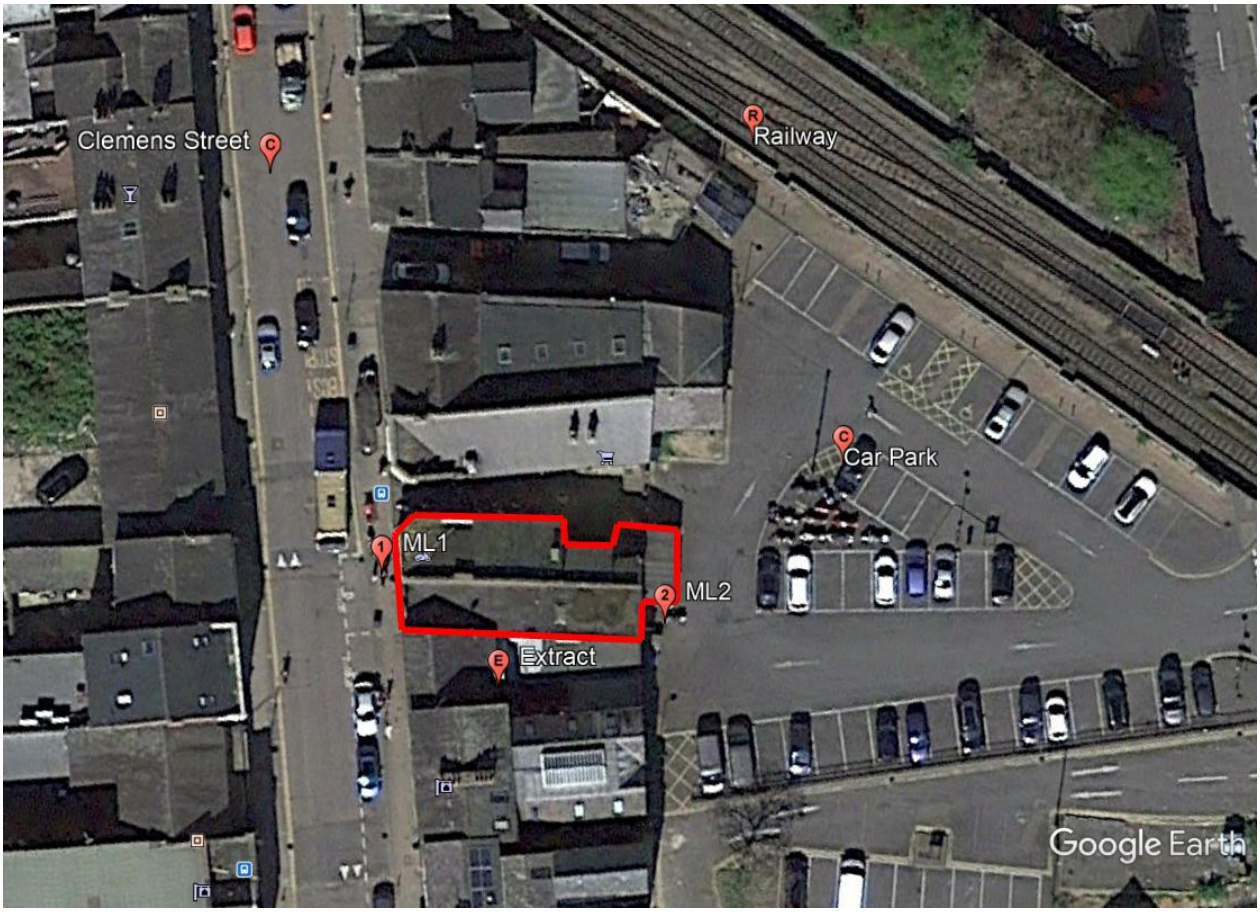
**16 Google Earth:**



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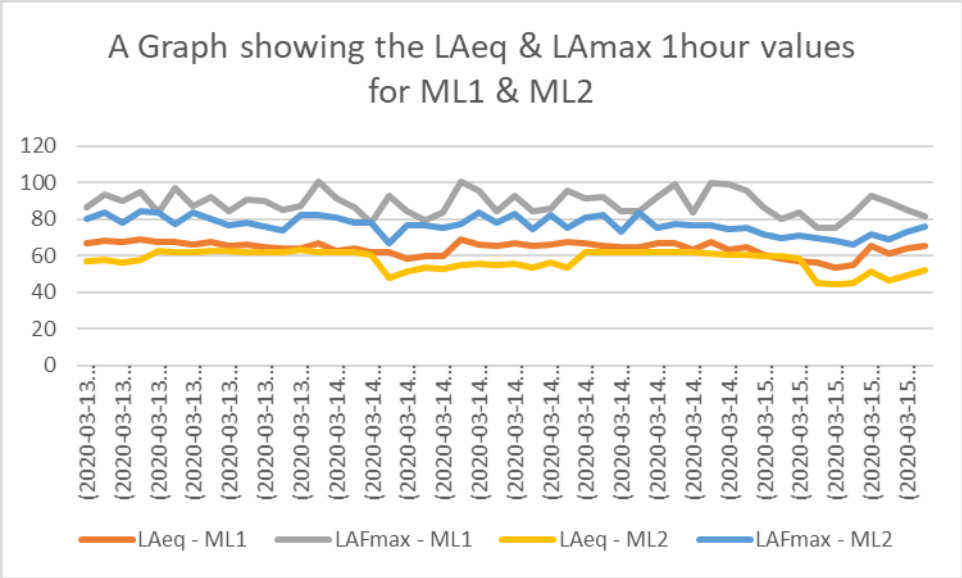


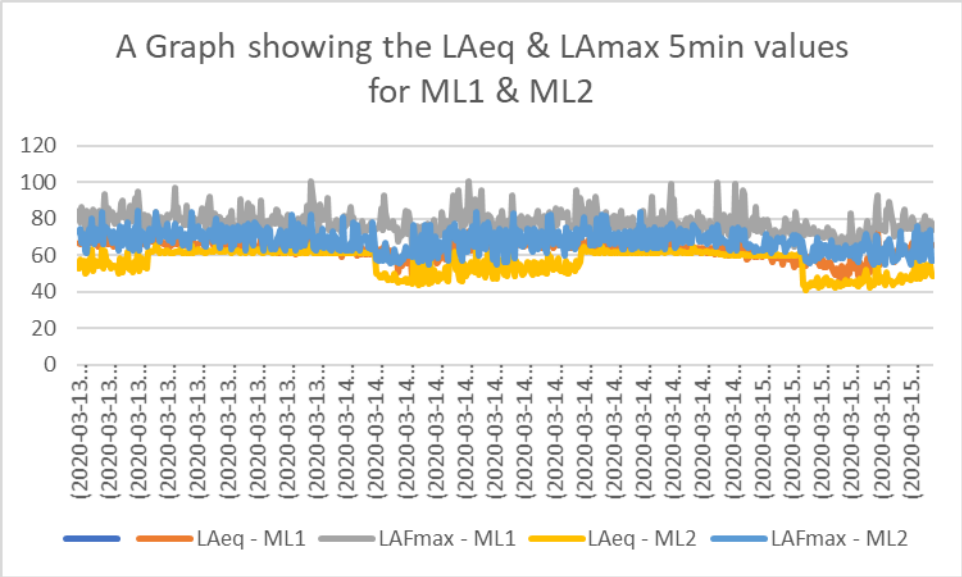

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| Time: | LAeq - ML1 | LAFmax - ML1 | LAeq - ML2 | LAFmax - ML2 |
|---|---|---|---|---|
| (2020-03-13 10:00:00.610) | 66.7 | 86.5 | 56.8 | 80 |
| (2020-03-13 11:00:00.610) | 68.1 | 93.6 | 57.8 | 83.5 |
| (2020-03-13 12:00:00.610) | 67.5 | 89.8 | 56 | 78.3 |
| (2020-03-13 13:00:00.610) | 69 | 95.1 | 58 | 84.4 |
| (2020-03-13 14:00:00.610) | 67.6 | 83.8 | 62.9 | 83.6 |
| (2020-03-13 15:00:00.610) | 67.8 | 97.4 | 61.9 | 77.4 |
| (2020-03-13 16:00:00.610) | 66.5 | 87.5 | 62.3 | 83.8 |
| (2020-03-13 17:00:00.610) | 67.3 | 92.2 | 62.6 | 80.3 |
| (2020-03-13 18:00:00.610) | 65.7 | 84.3 | 62.5 | 76.4 |
| (2020-03-13 19:00:00.610) | 66.5 | 90.9 | 62.2 | 77.8 |
| (2020-03-13 20:00:00.610) | 65.1 | 89.9 | 62.3 | 75.9 |
| (2020-03-13 21:00:00.610) | 64 | 85.2 | 61.8 | 74 |
| (2020-03-13 22:00:00.610) | 64.3 | 87.5 | 63.3 | 82.1 |
| (2020-03-13 23:00:00.610) | 66.6 | 100.4 | 62.3 | 82.5 |
| (2020-03-14 00:00:00.610) | 62.9 | 91.7 | 61.7 | 80.8 |
| (2020-03-14 01:00:00.610) | 63.9 | 86.5 | 62.3 | 77.8 |
| (2020-03-14 02:00:00.610) | 61.9 | 77.9 | 60.8 | 78 |
| (2020-03-14 03:00:00.610) | 62 | 92.7 | 47.8 | 66.8 |
| (2020-03-14 04:00:00.610) | 58.7 | 84.1 | 51.3 | 76.5 |
| (2020-03-14 05:00:00.610) | 60.2 | 79.7 | 53.4 | 76.8 |
| (2020-03-14 06:00:00.610) | 60.1 | 83.9 | 53 | 75.5 |
| (2020-03-14 07:00:00.610) | 68.9 | 100.3 | 55.2 | 77.2 |
| (2020-03-14 08:00:00.610) | 66.5 | 95.6 | 55.8 | 84 |
| (2020-03-14 09:00:00.610) | 65.2 | 84.2 | 55 | 78.4 |
| (2020-03-14 10:00:00.610) | 66.7 | 93 | 55.8 | 83.2 |
| (2020-03-14 11:00:00.610) | 65.7 | 84.7 | 53.6 | 74.7 |
| (2020-03-14 12:00:00.610) | 65.9 | 85.9 | 56.6 | 82.3 |
| (2020-03-14 13:00:00.610) | 67.5 | 95.6 | 53.6 | 75.3 |
| (2020-03-14 14:00:00.610) | 66.7 | 91.7 | 61.7 | 81.2 |
| (2020-03-14 15:00:00.610) | 65.6 | 91.9 | 62.3 | 82.6 |
| (2020-03-14 16:00:00.610) | 65.1 | 84.5 | 61.7 | 73.3 |
| (2020-03-14 17:00:00.610) | 64.9 | 84.5 | 61.8 | 83.7 |
| (2020-03-14 18:00:00.610) | 66.8 | 92 | 62 | 75.3 |
| (2020-03-14 19:00:00.610) | 66.7 | 99.3 | 62.2 | 77.7 |
| (2020-03-14 20:00:00.610) | 63.7 | 83.8 | 62.1 | 76.4 |
| (2020-03-14 21:00:00.610) | 67.6 | 99.9 | 61.6 | 76.4 |
| (2020-03-14 22:00:00.610) | 63.7 | 99.1 | 60.4 | 74.5 |
| (2020-03-14 23:00:00.610) | 64.9 | 95.4 | 60.3 | 75 |
| (2020-03-15 00:00:00.610) | 60.9 | 86.4 | 60.1 | 71.5 |
| (2020-03-15 01:00:00.610) | 58.8 | 80.1 | 60 | 69.7 |
| (2020-03-15 02:00:00.610) | 57.1 | 83.4 | 58.3 | 71.2 |
| (2020-03-15 03:00:00.610) | 56.5 | 75 | 45.1 | 69.5 |
| (2020-03-15 04:00:00.610) | 53.2 | 75.2 | 44.6 | 68.1 |

| | | | | |
|---|---|---|---|---|
| (2020-03-15 05:00:00.610) | 55 | 83.2 | 45 | 66.3 |
| (2020-03-15 06:00:00.610) | 65.4 | 92.6 | 51.7 | 71.9 |
| (2020-03-15 07:00:00.610) | 61.4 | 89.4 | 46.5 | 69 |
| (2020-03-15 08:00:00.610) | 64 | 85.4 | 49.5 | 73.4 |
| (2020-03-15 09:00:00.610) | 65.2 | 81.5 | 51.9 | 76.3 |

The table below is the LAeq & LAmax 5min values for ML1 & ML2 over the 48hour period

| Time: | LAeq - ML1 | LAFmax - ML1 | LAeq - ML2 | LAFmax - ML2 |
|---|---|---|---|---|
| (2020-03-13 10:00:00.610) | 67.1 | 84.1 | 53 | 72.3 |
| (2020-03-13 10:05:00.610) | 66.1 | 78.2 | 57.7 | 74.3 |
| (2020-03-13 10:10:00.610) | 66.7 | 86.5 | 53.9 | 67.2 |
| (2020-03-13 10:15:00.610) | 67.3 | 80.8 | 54.6 | 69.5 |
| (2020-03-13 10:20:00.610) | 66.5 | 83.5 | 56.8 | 71.7 |
| (2020-03-13 10:25:00.610) | 64.9 | 73.6 | 50.3 | 62.1 |
| (2020-03-13 10:30:00.610) | 66.6 | 84.2 | 50.6 | 61.5 |
| (2020-03-13 10:35:00.610) | 67.2 | 81.3 | 57.9 | 74.7 |
| (2020-03-13 10:40:00.610) | 66.6 | 83.2 | 55.1 | 71.6 |
| (2020-03-13 10:45:00.610) | 67.2 | 79.1 | 63.7 | 80 |
| (2020-03-13 10:50:00.610) | 67.1 | 85.2 | 51.5 | 69.4 |
| (2020-03-13 10:55:00.610) | 66.7 | 81.8 | 54.6 | 66 |
| (2020-03-13 11:00:00.610) | 67.6 | 83.4 | 57.2 | 74.8 |
| (2020-03-13 11:05:00.610) | 64.7 | 73.2 | 54 | 68.2 |
| (2020-03-13 11:10:00.610) | 70.6 | 84.1 | 56.6 | 70.1 |
| (2020-03-13 11:15:00.610) | 66.3 | 79.5 | 55.3 | 69.3 |
| (2020-03-13 11:20:00.610) | 67 | 80.6 | 63.3 | 83.5 |
| (2020-03-13 11:25:00.610) | 65.9 | 79.9 | 53.1 | 66.3 |
| (2020-03-13 11:30:00.610) | 73.2 | 93.6 | 62.4 | 76.1 |
| (2020-03-13 11:35:00.610) | 66 | 75.8 | 55.2 | 74.3 |
| (2020-03-13 11:40:00.610) | 66.3 | 85.9 | 56.1 | 72.6 |
| (2020-03-13 11:45:00.610) | 66.7 | 79.2 | 55.8 | 73.5 |
| (2020-03-13 11:50:00.610) | 66.1 | 82.1 | 53.1 | 69.7 |
| (2020-03-13 11:55:00.610) | 67.3 | 83.7 | 54.3 | 66.6 |
| (2020-03-13 12:00:00.610) | 64.6 | 80.6 | 54.5 | 73 |
| (2020-03-13 12:05:00.610) | 66.6 | 77.4 | 54.5 | 71 |
| (2020-03-13 12:10:00.610) | 66.6 | 77.9 | 52.8 | 67.1 |
| (2020-03-13 12:15:00.610) | 67.6 | 82 | 50.3 | 62.6 |
| (2020-03-13 12:20:00.610) | 67.1 | 80.9 | 58.4 | 76.2 |
| (2020-03-13 12:25:00.610) | 69.3 | 88.9 | 51.9 | 67.9 |
| (2020-03-13 12:30:00.610) | 68.2 | 89.8 | 50.7 | 65.6 |
| (2020-03-13 12:35:00.610) | 67.1 | 81 | 57.8 | 75.3 |
| (2020-03-13 12:40:00.610) | 68.3 | 82.5 | 53.7 | 67.1 |
| (2020-03-13 12:45:00.610) | 67 | 76.3 | 62.3 | 78.3 |
| (2020-03-13 12:50:00.610) | 66.7 | 79.5 | 53 | 64.2 |
| (2020-03-13 12:55:00.610) | 68.7 | 87.4 | 52.4 | 73.2 |
| (2020-03-13 13:00:00.610) | 68.4 | 84.4 | 55.9 | 73 |

| | | | | |
|---|---|---|---|---|
| (2020-03-13 13:05:00.610) | 67.9 | 78.5 | 50.5 | 62.5 |
| (2020-03-13 13:10:00.610) | 68.9 | 91.4 | 57.4 | 75.7 |
| (2020-03-13 13:15:00.610) | 68 | 81.1 | 55.9 | 71.3 |
| (2020-03-13 13:20:00.610) | 75.2 | 95.1 | 64 | 84.4 |
| (2020-03-13 13:25:00.610) | 67.5 | 86.7 | 51.5 | 62.7 |
| (2020-03-13 13:30:00.610) | 66.6 | 76.9 | 58 | 71 |
| (2020-03-13 13:35:00.610) | 65.9 | 75.9 | 58.7 | 73.4 |
| (2020-03-13 13:40:00.610) | 68.2 | 82.6 | 53.5 | 68.5 |
| (2020-03-13 13:45:00.610) | 65.9 | 78.8 | 54.3 | 72.1 |
| (2020-03-13 13:50:00.610) | 65.2 | 74.7 | 53.1 | 64.5 |
| (2020-03-13 13:55:00.610) | 68.9 | 81.8 | 61.7 | 70.3 |
| (2020-03-13 14:00:00.610) | 68.8 | 79.5 | 62.7 | 74.6 |
| (2020-03-13 14:05:00.610) | 68.4 | 79.5 | 61.9 | 68.5 |
| (2020-03-13 14:10:00.610) | 67.5 | 77 | 62.2 | 68.3 |
| (2020-03-13 14:15:00.610) | 67.4 | 76.9 | 62.4 | 75.6 |
| (2020-03-13 14:20:00.610) | 69.9 | 83.8 | 65.5 | 83.6 |
| (2020-03-13 14:25:00.610) | 67.3 | 78.7 | 64.8 | 77.8 |
| (2020-03-13 14:30:00.610) | 67.1 | 79.6 | 63.3 | 75.2 |
| (2020-03-13 14:35:00.610) | 66.6 | 74 | 61.6 | 67.7 |
| (2020-03-13 14:40:00.610) | 67.5 | 80.6 | 62.1 | 74.1 |
| (2020-03-13 14:45:00.610) | 66.2 | 80.1 | 62.1 | 72.7 |
| (2020-03-13 14:50:00.610) | 66.9 | 77.9 | 61.5 | 70.1 |
| (2020-03-13 14:55:00.610) | 65.7 | 75.5 | 62.4 | 73.6 |
| (2020-03-13 15:00:00.610) | 67.7 | 82 | 62.8 | 77.4 |
| (2020-03-13 15:05:00.610) | 65.9 | 80 | 61.7 | 68.2 |
| (2020-03-13 15:10:00.610) | 64.9 | 81.4 | 61.5 | 71.8 |
| (2020-03-13 15:15:00.610) | 66.3 | 83.2 | 61.4 | 66.6 |
| (2020-03-13 15:20:00.610) | 66.4 | 84.8 | 61.4 | 72.1 |
| (2020-03-13 15:25:00.610) | 73.7 | 97.4 | 61.9 | 77.2 |
| (2020-03-13 15:30:00.610) | 66.4 | 77.9 | 61.9 | 70.2 |
| (2020-03-13 15:35:00.610) | 65.9 | 86.2 | 62.1 | 74.1 |
| (2020-03-13 15:40:00.610) | 67.6 | 79.4 | 61.8 | 72.2 |
| (2020-03-13 15:45:00.610) | 67.3 | 81.2 | 63.1 | 74.5 |
| (2020-03-13 15:50:00.610) | 66.3 | 80 | 61.1 | 65.7 |
| (2020-03-13 15:55:00.610) | 65.4 | 76.7 | 61.3 | 69.1 |
| (2020-03-13 16:00:00.610) | 66.7 | 76.6 | 61.9 | 72.1 |
| (2020-03-13 16:05:00.610) | 67.5 | 87.5 | 61.5 | 68.6 |
| (2020-03-13 16:10:00.610) | 66.1 | 76.4 | 61.9 | 69.1 |
| (2020-03-13 16:15:00.610) | 65.4 | 77.9 | 61.2 | 64.1 |
| (2020-03-13 16:20:00.610) | 66.4 | 78 | 65.5 | 83.8 |
| (2020-03-13 16:25:00.610) | 65.7 | 80.9 | 61.5 | 72 |
| (2020-03-13 16:30:00.610) | 66.6 | 79.9 | 61.7 | 69.4 |
| (2020-03-13 16:35:00.610) | 65.2 | 78.1 | 61.7 | 70.4 |
| (2020-03-13 16:40:00.610) | 65.7 | 79.5 | 61.9 | 71.2 |
| (2020-03-13 16:45:00.610) | 66 | 77.6 | 63.2 | 75.8 |
| (2020-03-13 16:50:00.610) | 67 | 81 | 61.7 | 68.8 |

| | | | | |
|---|---|---|---|---|
| (2020-03-13 16:55:00.610) | 68.1 | 86.1 | 62.1 | 73.3 |
| (2020-03-13 17:00:00.610) | 67.3 | 84 | 61.8 | 69.8 |
| (2020-03-13 17:05:00.610) | 64.9 | 78 | 61.6 | 65.5 |
| (2020-03-13 17:10:00.610) | 66.6 | 75.5 | 61.3 | 64.8 |
| (2020-03-13 17:15:00.610) | 67.7 | 85.2 | 61.7 | 71.5 |
| (2020-03-13 17:20:00.610) | 70.4 | 92.2 | 62.4 | 73.9 |
| (2020-03-13 17:25:00.610) | 67.5 | 82.3 | 62.3 | 72.1 |
| (2020-03-13 17:30:00.610) | 66.9 | 77 | 63 | 71.1 |
| (2020-03-13 17:35:00.610) | 65.2 | 73.8 | 61.9 | 67.6 |
| (2020-03-13 17:40:00.610) | 66.4 | 82.7 | 63.1 | 75.4 |
| (2020-03-13 17:45:00.610) | 68 | 80.8 | 65.7 | 80.3 |
| (2020-03-13 17:50:00.610) | 65.6 | 81 | 62.4 | 71.1 |
| (2020-03-13 17:55:00.610) | 68.1 | 81 | 61.9 | 64 |
| (2020-03-13 18:00:00.610) | 66.5 | 77.2 | 63.1 | 76.4 |
| (2020-03-13 18:05:00.610) | 65.9 | 77 | 62.2 | 69.6 |
| (2020-03-13 18:10:00.610) | 66.7 | 78.5 | 62.5 | 74.9 |
| (2020-03-13 18:15:00.610) | 65.3 | 78.8 | 61.9 | 67.4 |
| (2020-03-13 18:20:00.610) | 66.1 | 77.9 | 62.7 | 75.4 |
| (2020-03-13 18:25:00.610) | 66.1 | 81.1 | 62.8 | 73.8 |
| (2020-03-13 18:30:00.610) | 65 | 77.1 | 62.2 | 73.7 |
| (2020-03-13 18:35:00.610) | 66 | 84.3 | 61.6 | 63.5 |
| (2020-03-13 18:40:00.610) | 65.4 | 75.5 | 62.9 | 75.6 |
| (2020-03-13 18:45:00.610) | 64.7 | 76.5 | 61.8 | 65.6 |
| (2020-03-13 18:50:00.610) | 65.5 | 76.3 | 62.8 | 71.7 |
| (2020-03-13 18:55:00.610) | 64.3 | 73.7 | 62.9 | 76.3 |
| (2020-03-13 19:00:00.610) | 64.5 | 73.5 | 61.9 | 68.5 |
| (2020-03-13 19:05:00.610) | 70.8 | 90.9 | 61.5 | 69 |
| (2020-03-13 19:10:00.610) | 64.1 | 75.8 | 61.9 | 68.7 |
| (2020-03-13 19:15:00.610) | 64.4 | 82 | 62.1 | 73.3 |
| (2020-03-13 19:20:00.610) | 64.6 | 77.4 | 62.3 | 75.8 |
| (2020-03-13 19:25:00.610) | 63.2 | 72.5 | 61.2 | 62.5 |
| (2020-03-13 19:30:00.610) | 68.3 | 88.8 | 64.6 | 77.4 |
| (2020-03-13 19:35:00.610) | 68.7 | 85.3 | 62.3 | 71.3 |
| (2020-03-13 19:40:00.610) | 65.1 | 80.9 | 61.7 | 69.7 |
| (2020-03-13 19:45:00.610) | 67.1 | 86.7 | 61.5 | 69.4 |
| (2020-03-13 19:50:00.610) | 64.1 | 76.8 | 61.6 | 65.6 |
| (2020-03-13 19:55:00.610) | 65.7 | 81 | 63.1 | 77.8 |
| (2020-03-13 20:00:00.610) | 64.9 | 80 | 62.5 | 75.9 |
| (2020-03-13 20:05:00.610) | 63.6 | 72.5 | 63.3 | 75 |
| (2020-03-13 20:10:00.610) | 64.6 | 74.3 | 62.1 | 70.1 |
| (2020-03-13 20:15:00.610) | 69.9 | 89.9 | 61.9 | 73.7 |
| (2020-03-13 20:20:00.610) | 63.6 | 75.5 | 61.6 | 67.1 |
| (2020-03-13 20:25:00.610) | 63.8 | 76.1 | 61.6 | 63 |
| (2020-03-13 20:30:00.610) | 64.6 | 76.3 | 62.7 | 72.7 |
| (2020-03-13 20:35:00.610) | 64 | 78.9 | 63.4 | 75.4 |
| (2020-03-13 20:40:00.610) | 63.8 | 73.2 | 61.9 | 68.3 |

| | | | | |
|---|---|---|---|---|
| (2020-03-13 20:45:00.610) | 64.4 | 77.1 | 62.9 | 74 |
| (2020-03-13 20:50:00.610) | 64.8 | 79.3 | 61.7 | 63.6 |
| (2020-03-13 20:55:00.610) | 64.4 | 81.3 | 61.4 | 65.2 |
| (2020-03-13 21:00:00.610) | 63.3 | 77.6 | 61.7 | 63.3 |
| (2020-03-13 21:05:00.610) | 64.7 | 85.2 | 61.5 | 66.1 |
| (2020-03-13 21:10:00.610) | 64.1 | 84.7 | 62 | 69.7 |
| (2020-03-13 21:15:00.610) | 61.5 | 77.5 | 61.8 | 71.1 |
| (2020-03-13 21:20:00.610) | 64.3 | 80.8 | 62.4 | 74 |
| (2020-03-13 21:25:00.610) | 64.4 | 74.7 | 61.8 | 68.7 |
| (2020-03-13 21:30:00.610) | 62.8 | 72.3 | 61.5 | 65.5 |
| (2020-03-13 21:35:00.610) | 61.6 | 75.5 | 61.4 | 63 |
| (2020-03-13 21:40:00.610) | 64.1 | 80 | 62.3 | 73.1 |
| (2020-03-13 21:45:00.610) | 67.2 | 82.2 | 61.9 | 68.1 |
| (2020-03-13 21:50:00.610) | 62 | 73.9 | 62 | 72.4 |
| (2020-03-13 21:55:00.610) | 64.4 | 76.5 | 61.6 | 65.5 |
| (2020-03-13 22:00:00.610) | 66.7 | 77.5 | 68 | 82.1 |
| (2020-03-13 22:05:00.610) | 63.9 | 72.2 | 63 | 74.8 |
| (2020-03-13 22:10:00.610) | 60.8 | 74.3 | 61.4 | 63 |
| (2020-03-13 22:15:00.610) | 64.2 | 76.4 | 61.5 | 66.6 |
| (2020-03-13 22:20:00.610) | 64.9 | 80.1 | 65.3 | 77.5 |
| (2020-03-13 22:25:00.610) | 61.9 | 74.6 | 61.4 | 72.5 |
| (2020-03-13 22:30:00.610) | 62.3 | 73.2 | 61.3 | 64.8 |
| (2020-03-13 22:35:00.610) | 64.2 | 81.7 | 62.5 | 75.1 |
| (2020-03-13 22:40:00.610) | 62.6 | 72.4 | 61.4 | 65.8 |
| (2020-03-13 22:45:00.610) | 63.6 | 75.5 | 62.3 | 70 |
| (2020-03-13 22:50:00.610) | 67.2 | 87.5 | 61.6 | 70.6 |
| (2020-03-13 22:55:00.610) | 64.5 | 75.7 | 62.8 | 70.1 |
| (2020-03-13 23:00:00.610) | 62.5 | 72.4 | 63 | 74.6 |
| (2020-03-13 23:05:00.610) | 73.4 | 100.4 | 66 | 82.5 |
| (2020-03-13 23:10:00.610) | 64.5 | 88.6 | 61.6 | 64.4 |
| (2020-03-13 23:15:00.610) | 62.8 | 80.5 | 61.3 | 63.5 |
| (2020-03-13 23:20:00.610) | 62.8 | 81.6 | 61.4 | 62.9 |
| (2020-03-13 23:25:00.610) | 67.1 | 82.5 | 61.7 | 70.4 |
| (2020-03-13 23:30:00.610) | 61.1 | 71.9 | 61.3 | 70.6 |
| (2020-03-13 23:35:00.610) | 66.3 | 88.3 | 61.4 | 65.1 |
| (2020-03-13 23:40:00.610) | 61 | 79.7 | 62.6 | 74.9 |
| (2020-03-13 23:45:00.610) | 65.3 | 81.7 | 61.5 | 64.4 |
| (2020-03-13 23:50:00.610) | 68 | 84.7 | 61.7 | 67 |
| (2020-03-13 23:55:00.610) | 64.4 | 79.3 | 61.4 | 69 |
| (2020-03-14 00:00:00.610) | 67.3 | 91.7 | 61.9 | 70.5 |
| (2020-03-14 00:05:00.610) | 62.2 | 73.7 | 61.1 | 63.8 |
| (2020-03-14 00:10:00.610) | 62.5 | 77.7 | 61.2 | 62.6 |
| (2020-03-14 00:15:00.610) | 61 | 77 | 61.9 | 73.4 |
| (2020-03-14 00:20:00.610) | 61.8 | 74.8 | 61.3 | 70.2 |
| (2020-03-14 00:25:00.610) | 62.2 | 77.1 | 61.2 | 70.1 |
| (2020-03-14 00:30:00.610) | 62.1 | 79.7 | 61.1 | 68.5 |

| | | | | |
|---|---|---|---|---|
| (2020-03-14 00:35:00.610) | 62.7 | 74.7 | 61.4 | 63.6 |
| (2020-03-14 00:40:00.610) | 61.6 | 73.8 | 61.1 | 63 |
| (2020-03-14 00:45:00.610) | 59.3 | 72.7 | 61.2 | 63.7 |
| (2020-03-14 00:50:00.610) | 62.8 | 75.8 | 64.7 | 80.8 |
| (2020-03-14 00:55:00.610) | 63.5 | 81.8 | 61.1 | 64.5 |
| (2020-03-14 01:00:00.610) | 62.4 | 75.8 | 61.1 | 62.7 |
| (2020-03-14 01:05:00.610) | 63 | 80.2 | 61.3 | 64.8 |
| (2020-03-14 01:10:00.610) | 62 | 77.6 | 61.3 | 62.9 |
| (2020-03-14 01:15:00.610) | 66 | 86.5 | 61.3 | 67.1 |
| (2020-03-14 01:20:00.610) | 66.8 | 79 | 61.3 | 63 |
| (2020-03-14 01:25:00.610) | 67.5 | 80.9 | 64.2 | 77.8 |
| (2020-03-14 01:30:00.610) | 62.8 | 75.2 | 61.5 | 63.8 |
| (2020-03-14 01:35:00.610) | 62.6 | 73.2 | 63.7 | 74.6 |
| (2020-03-14 01:40:00.610) | 60 | 73.5 | 64.8 | 76.5 |
| (2020-03-14 01:45:00.610) | 62 | 75.6 | 61.2 | 62.8 |
| (2020-03-14 01:50:00.610) | 60.9 | 73.4 | 61.6 | 67.7 |
| (2020-03-14 01:55:00.610) | 63.8 | 78.7 | 61.7 | 69 |
| (2020-03-14 02:00:00.610) | 61 | 73.4 | 61.2 | 69.7 |
| (2020-03-14 02:05:00.610) | 60.5 | 72.2 | 61.3 | 70.6 |
| (2020-03-14 02:10:00.610) | 60.5 | 73.9 | 61.4 | 70.1 |
| (2020-03-14 02:15:00.610) | 62.9 | 75.7 | 61.5 | 63.8 |
| (2020-03-14 02:20:00.610) | 60.5 | 74 | 61.6 | 67 |
| (2020-03-14 02:25:00.610) | 63.8 | 77.9 | 61.7 | 63.4 |
| (2020-03-14 02:30:00.610) | 62.5 | 75.5 | 65 | 78 |
| (2020-03-14 02:35:00.610) | 61.1 | 74.2 | 61.7 | 71.6 |
| (2020-03-14 02:40:00.610) | 60.9 | 74.1 | 60.1 | 64.1 |
| (2020-03-14 02:45:00.610) | 61.9 | 74.9 | 50 | 57.6 |
| (2020-03-14 02:50:00.610) | 61.6 | 75 | 49.4 | 56.9 |
| (2020-03-14 02:55:00.610) | 63.3 | 77.8 | 48.2 | 61.8 |
| (2020-03-14 03:00:00.610) | 61.9 | 85.8 | 47.7 | 58.8 |
| (2020-03-14 03:05:00.610) | 59.8 | 73.8 | 47.7 | 57.2 |
| (2020-03-14 03:10:00.610) | 65 | 92.7 | 49.7 | 62.6 |
| (2020-03-14 03:15:00.610) | 66.4 | 83.5 | 49.8 | 66.8 |
| (2020-03-14 03:20:00.610) | 62.1 | 76.6 | 46.6 | 56.9 |
| (2020-03-14 03:25:00.610) | 60.5 | 75.5 | 47 | 59.4 |
| (2020-03-14 03:30:00.610) | 63 | 75.4 | 47.5 | 55.3 |
| (2020-03-14 03:35:00.610) | 59.7 | 76 | 46.2 | 56 |
| (2020-03-14 03:40:00.610) | 61.3 | 78.6 | 46.6 | 56 |
| (2020-03-14 03:45:00.610) | 60.7 | 74.1 | 49.8 | 63.5 |
| (2020-03-14 03:50:00.610) | 59.2 | 75.2 | 46.2 | 56 |
| (2020-03-14 03:55:00.610) | 50.6 | 67.6 | 45.1 | 57.8 |
| (2020-03-14 04:00:00.610) | 55 | 70.4 | 45.6 | 55.7 |
| (2020-03-14 04:05:00.610) | 56.1 | 70.5 | 45.5 | 56.4 |
| (2020-03-14 04:10:00.610) | 54.5 | 70.9 | 45.8 | 60 |
| (2020-03-14 04:15:00.610) | 57.6 | 73.3 | 45.6 | 57.9 |
| (2020-03-14 04:20:00.610) | 63.6 | 84.1 | 47.1 | 64.6 |

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| (2020-03-14 04:25:00.610) | 55.8 | 71.9 | 45.2 | 60.9 |
| (2020-03-14 04:30:00.610) | 60.7 | 83.6 | 44.9 | 60.1 |
| (2020-03-14 04:35:00.610) | 62.3 | 79.3 | 47 | 61.1 |
| (2020-03-14 04:40:00.610) | 57.7 | 73.8 | 47 | 60.3 |
| (2020-03-14 04:45:00.610) | 46.4 | 64 | 44.5 | 59.3 |
| (2020-03-14 04:50:00.610) | 59.7 | 71.6 | 60.8 | 76.5 |
| (2020-03-14 04:55:00.610) | 55.1 | 70.2 | 46 | 61.4 |
| (2020-03-14 05:00:00.610) | 60.3 | 75.7 | 45.6 | 58.2 |
| (2020-03-14 05:05:00.610) | 44.8 | 61 | 43.6 | 56.1 |
| (2020-03-14 05:10:00.610) | 58.4 | 75 | 44.3 | 59.4 |
| (2020-03-14 05:15:00.610) | 59.7 | 72.4 | 58.6 | 70.9 |
| (2020-03-14 05:20:00.610) | 58.1 | 75.8 | 44.7 | 57 |
| (2020-03-14 05:25:00.610) | 55.2 | 70.6 | 54.7 | 76.8 |
| (2020-03-14 05:30:00.610) | 59 | 71.6 | 49 | 66.5 |
| (2020-03-14 05:35:00.610) | 63.2 | 77.1 | 47 | 65.6 |
| (2020-03-14 05:40:00.610) | 60.7 | 73.4 | 44.3 | 54.8 |
| (2020-03-14 05:45:00.610) | 61.9 | 74.4 | 60.6 | 76.7 |
| (2020-03-14 05:50:00.610) | 61.2 | 73.9 | 45.4 | 58.3 |
| (2020-03-14 05:55:00.610) | 62.8 | 79.7 | 52.4 | 63.5 |
| (2020-03-14 06:00:00.610) | 58.2 | 72.7 | 49.2 | 70.5 |
| (2020-03-14 06:05:00.610) | 55.3 | 73.2 | 47.3 | 65.2 |
| (2020-03-14 06:10:00.610) | 56.5 | 72.4 | 45.5 | 58.6 |
| (2020-03-14 06:15:00.610) | 57.6 | 75.5 | 50.1 | 67.6 |
| (2020-03-14 06:20:00.610) | 58.5 | 71.4 | 47.3 | 62.1 |
| (2020-03-14 06:25:00.610) | 64.2 | 83.9 | 47.6 | 65.3 |
| (2020-03-14 06:30:00.610) | 60 | 74.9 | 48.4 | 64.1 |
| (2020-03-14 06:35:00.610) | 57.6 | 69.9 | 53.8 | 72.5 |
| (2020-03-14 06:40:00.610) | 62.3 | 78.6 | 46.4 | 62.2 |
| (2020-03-14 06:45:00.610) | 58.8 | 73.4 | 45.8 | 57 |
| (2020-03-14 06:50:00.610) | 62.1 | 76.4 | 56.2 | 74.4 |
| (2020-03-14 06:55:00.610) | 61.2 | 73 | 60.9 | 75.5 |
| (2020-03-14 07:00:00.610) | 75.3 | 92.9 | 56.6 | 69.6 |
| (2020-03-14 07:05:00.610) | 66 | 80.3 | 62.3 | 77.2 |
| (2020-03-14 07:10:00.610) | 67.9 | 89.8 | 52.2 | 68.4 |
| (2020-03-14 07:15:00.610) | 63.5 | 80.3 | 57.3 | 73.3 |
| (2020-03-14 07:20:00.610) | 68.9 | 95.9 | 49.7 | 71.5 |
| (2020-03-14 07:25:00.610) | 63.2 | 85.2 | 46.7 | 62.2 |
| (2020-03-14 07:30:00.610) | 61.2 | 71.4 | 45.7 | 57.3 |
| (2020-03-14 07:35:00.610) | 64.7 | 78.4 | 55.5 | 73.1 |
| (2020-03-14 07:40:00.610) | 62.6 | 77 | 54.7 | 71 |
| (2020-03-14 07:45:00.610) | 66.6 | 85.1 | 48.5 | 62 |
| (2020-03-14 07:50:00.610) | 66.8 | 81.7 | 51.1 | 61.8 |
| (2020-03-14 07:55:00.610) | 73.5 | 100.3 | 50.9 | 71.5 |
| (2020-03-14 08:00:00.610) | 62.4 | 78.5 | 56.2 | 73.8 |
| (2020-03-14 08:05:00.610) | 63.8 | 74.2 | 54.4 | 76.2 |
| (2020-03-14 08:10:00.610) | 65.4 | 81 | 51.5 | 65 |

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| (2020-03-14 08:15:00.610) | 68.4 | 90.8 | 50.9 | 65.1 |
| (2020-03-14 08:20:00.610) | 65.8 | 84.6 | 62.5 | 84 |
| (2020-03-14 08:25:00.610) | 63.9 | 77 | 54.8 | 72.4 |
| (2020-03-14 08:30:00.610) | 64.4 | 79.6 | 49 | 60.1 |
| (2020-03-14 08:35:00.610) | 72.1 | 95.6 | 52 | 72.2 |
| (2020-03-14 08:40:00.610) | 65.3 | 75.4 | 55.6 | 72.3 |
| (2020-03-14 08:45:00.610) | 64.2 | 75.5 | 57.2 | 76.5 |
| (2020-03-14 08:50:00.610) | 65.4 | 81.2 | 47.8 | 63.5 |
| (2020-03-14 08:55:00.610) | 66.1 | 81.3 | 54.7 | 72.8 |
| (2020-03-14 09:00:00.610) | 66.2 | 82 | 61.4 | 78.4 |
| (2020-03-14 09:05:00.610) | 64.7 | 80.9 | 50.5 | 71 |
| (2020-03-14 09:10:00.610) | 63.5 | 76.6 | 52.3 | 67.7 |
| (2020-03-14 09:15:00.610) | 64.1 | 75.5 | 47.2 | 57.8 |
| (2020-03-14 09:20:00.610) | 65.9 | 77.2 | 57.8 | 72.7 |
| (2020-03-14 09:25:00.610) | 64.7 | 76.2 | 48.4 | 56.9 |
| (2020-03-14 09:30:00.610) | 63.4 | 73.6 | 47.2 | 54.9 |
| (2020-03-14 09:35:00.610) | 66.7 | 80.7 | 57.7 | 74.8 |
| (2020-03-14 09:40:00.610) | 64.6 | 74.4 | 53.5 | 67.7 |
| (2020-03-14 09:45:00.610) | 66.8 | 84.2 | 54.7 | 72.2 |
| (2020-03-14 09:50:00.610) | 65.7 | 78.3 | 52.2 | 72.2 |
| (2020-03-14 09:55:00.610) | 65 | 74.8 | 49 | 56.1 |
| (2020-03-14 10:00:00.610) | 65.7 | 76.5 | 56 | 73.7 |
| (2020-03-14 10:05:00.610) | 66.5 | 78 | 48.9 | 56.3 |
| (2020-03-14 10:10:00.610) | 65.9 | 79.8 | 54.5 | 69 |
| (2020-03-14 10:15:00.610) | 65.9 | 75.2 | 52.8 | 68.1 |
| (2020-03-14 10:20:00.610) | 71.5 | 93 | 54.8 | 74.8 |
| (2020-03-14 10:25:00.610) | 66.2 | 80.5 | 63 | 83.2 |
| (2020-03-14 10:30:00.610) | 65.2 | 78.5 | 48.8 | 58.7 |
| (2020-03-14 10:35:00.610) | 65.3 | 74.6 | 57.1 | 74.9 |
| (2020-03-14 10:40:00.610) | 66.1 | 80 | 53.3 | 68 |
| (2020-03-14 10:45:00.610) | 65.2 | 76.2 | 55.1 | 73.5 |
| (2020-03-14 10:50:00.610) | 66.1 | 81.5 | 51.3 | 65.7 |
| (2020-03-14 10:55:00.610) | 65.2 | 74.3 | 49 | 64.7 |
| (2020-03-14 11:00:00.610) | 64.8 | 79.7 | 49.8 | 65.6 |
| (2020-03-14 11:05:00.610) | 66.9 | 75.4 | 51.2 | 66.8 |
| (2020-03-14 11:10:00.610) | 65.9 | 81 | 56.1 | 74.7 |
| (2020-03-14 11:15:00.610) | 65.7 | 75.3 | 55.8 | 73.6 |
| (2020-03-14 11:20:00.610) | 65.5 | 75.4 | 55.4 | 72.4 |
| (2020-03-14 11:25:00.610) | 66.2 | 79.5 | 50.9 | 63.4 |
| (2020-03-14 11:30:00.610) | 63.7 | 73.8 | 49.4 | 62.1 |
| (2020-03-14 11:35:00.610) | 65.7 | 79 | 56.4 | 74.3 |
| (2020-03-14 11:40:00.610) | 65.8 | 80.6 | 55.8 | 72.5 |
| (2020-03-14 11:45:00.610) | 65.5 | 84.7 | 49.8 | 63.6 |
| (2020-03-14 11:50:00.610) | 66.8 | 78.5 | 51.4 | 67.8 |
| (2020-03-14 11:55:00.610) | 65.3 | 76.4 | 51 | 67.3 |
| (2020-03-14 12:00:00.610) | 63.9 | 72.9 | 56.2 | 73.4 |

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| (2020-03-14 12:05:00.610) | 65 | 79.1 | 53 | 67.8 |
| (2020-03-14 12:10:00.610) | 67.3 | 81.5 | 50.8 | 64.8 |
| (2020-03-14 12:15:00.610) | 64.9 | 75.3 | 49.9 | 61.3 |
| (2020-03-14 12:20:00.610) | 67.2 | 79.4 | 61 | 81.9 |
| (2020-03-14 12:25:00.610) | 66.3 | 83.8 | 58.8 | 72.3 |
| (2020-03-14 12:30:00.610) | 65.6 | 75.8 | 59.3 | 82.3 |
| (2020-03-14 12:35:00.610) | 66.5 | 77.9 | 56.4 | 73.9 |
| (2020-03-14 12:40:00.610) | 64.4 | 73.8 | 52.2 | 65.9 |
| (2020-03-14 12:45:00.610) | 66.6 | 85.9 | 54 | 71.7 |
| (2020-03-14 12:50:00.610) | 65.9 | 76.7 | 52.5 | 72.4 |
| (2020-03-14 12:55:00.610) | 65.5 | 83.4 | 58.7 | 73.4 |
| (2020-03-14 13:00:00.610) | 65.9 | 80.8 | 52 | 65.3 |
| (2020-03-14 13:05:00.610) | 65.6 | 85.4 | 51.3 | 70.6 |
| (2020-03-14 13:10:00.610) | 65.2 | 80.8 | 52.6 | 68.6 |
| (2020-03-14 13:15:00.610) | 66.5 | 80.8 | 50.7 | 59.9 |
| (2020-03-14 13:20:00.610) | 65.4 | 81.7 | 57.3 | 75.3 |
| (2020-03-14 13:25:00.610) | 67.2 | 83.5 | 50.2 | 65.9 |
| (2020-03-14 13:30:00.610) | 64.4 | 75.7 | 50.2 | 64.4 |
| (2020-03-14 13:35:00.610) | 65.9 | 76.8 | 55.2 | 72.6 |
| (2020-03-14 13:40:00.610) | 64.4 | 75.3 | 51.8 | 66.5 |
| (2020-03-14 13:45:00.610) | 65.1 | 75.5 | 54.2 | 71.2 |
| (2020-03-14 13:50:00.610) | 64 | 76.3 | 51.2 | 63.4 |
| (2020-03-14 13:55:00.610) | 74.4 | 95.6 | 57.3 | 74.4 |
| (2020-03-14 14:00:00.610) | 68.1 | 82 | 53.6 | 66.5 |
| (2020-03-14 14:05:00.610) | 64.7 | 74.2 | 55.2 | 74.1 |
| (2020-03-14 14:10:00.610) | 68.5 | 91.7 | 56.2 | 73.2 |
| (2020-03-14 14:15:00.610) | 69.3 | 87.5 | 62.8 | 69.5 |
| (2020-03-14 14:20:00.610) | 66.4 | 81.4 | 65 | 81.2 |
| (2020-03-14 14:25:00.610) | 67.2 | 84.8 | 62.6 | 71.9 |
| (2020-03-14 14:30:00.610) | 64.3 | 78.3 | 62.3 | 72.2 |
| (2020-03-14 14:35:00.610) | 65 | 75.1 | 62.5 | 73.3 |
| (2020-03-14 14:40:00.610) | 68.8 | 89.4 | 62.6 | 75.3 |
| (2020-03-14 14:45:00.610) | 65.4 | 77 | 61.8 | 65.2 |
| (2020-03-14 14:50:00.610) | 64.9 | 83.9 | 62 | 68 |
| (2020-03-14 14:55:00.610) | 62.6 | 73.2 | 61.4 | 65.6 |
| (2020-03-14 15:00:00.610) | 68.1 | 91.9 | 61.5 | 70 |
| (2020-03-14 15:05:00.610) | 66 | 86.1 | 61.7 | 80.4 |
| (2020-03-14 15:10:00.610) | 65.7 | 79.6 | 62.1 | 73.9 |
| (2020-03-14 15:15:00.610) | 65.5 | 82 | 61.5 | 66.3 |
| (2020-03-14 15:20:00.610) | 66 | 78.5 | 65 | 82.6 |
| (2020-03-14 15:25:00.610) | 65 | 80.4 | 61.7 | 68.9 |
| (2020-03-14 15:30:00.610) | 65 | 75.5 | 61.5 | 68.1 |
| (2020-03-14 15:35:00.610) | 65.3 | 83.4 | 62.5 | 81.5 |
| (2020-03-14 15:40:00.610) | 64.9 | 75.6 | 63 | 75.4 |
| (2020-03-14 15:45:00.610) | 63.8 | 73.1 | 62.3 | 74.6 |
| (2020-03-14 15:50:00.610) | 65.3 | 80.2 | 61.6 | 66.1 |

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| (2020-03-14 15:55:00.610) | 65 | 75.5 | 61.6 | 71 |
| (2020-03-14 16:00:00.610) | 64.9 | 81.3 | 62.1 | 71.7 |
| (2020-03-14 16:05:00.610) | 65.9 | 81.6 | 61.4 | 65.9 |
| (2020-03-14 16:10:00.610) | 65 | 73.5 | 61.7 | 70.5 |
| (2020-03-14 16:15:00.610) | 64.8 | 74.8 | 61.4 | 68.8 |
| (2020-03-14 16:20:00.610) | 64.5 | 76.4 | 62 | 72.5 |
| (2020-03-14 16:25:00.610) | 66.3 | 84.5 | 61.5 | 66.4 |
| (2020-03-14 16:30:00.610) | 64.3 | 75.3 | 61.3 | 63.6 |
| (2020-03-14 16:35:00.610) | 63.9 | 74.6 | 61.3 | 63.7 |
| (2020-03-14 16:40:00.610) | 64.7 | 78.7 | 62.6 | 73.3 |
| (2020-03-14 16:45:00.610) | 64.8 | 76.7 | 61.6 | 72.6 |
| (2020-03-14 16:50:00.610) | 65.9 | 80.1 | 61.6 | 65.9 |
| (2020-03-14 16:55:00.610) | 65.6 | 76 | 62.1 | 73.3 |
| (2020-03-14 17:00:00.610) | 64.3 | 72.4 | 61.2 | 63.1 |
| (2020-03-14 17:05:00.610) | 65.3 | 80.9 | 61.3 | 63.6 |
| (2020-03-14 17:10:00.610) | 64.6 | 72.9 | 61.8 | 72.8 |
| (2020-03-14 17:15:00.610) | 64.2 | 74.2 | 61.3 | 63.9 |
| (2020-03-14 17:20:00.610) | 65.1 | 75.8 | 61.9 | 73.9 |
| (2020-03-14 17:25:00.610) | 65.6 | 75.9 | 61.5 | 65.6 |
| (2020-03-14 17:30:00.610) | 64.8 | 75.8 | 63.3 | 83.7 |
| (2020-03-14 17:35:00.610) | 64.2 | 82 | 61.3 | 64.3 |
| (2020-03-14 17:40:00.610) | 66.1 | 84.5 | 62.6 | 76 |
| (2020-03-14 17:45:00.610) | 65.9 | 79.7 | 62.1 | 72.5 |
| (2020-03-14 17:50:00.610) | 64.1 | 76.9 | 61.5 | 65.7 |
| (2020-03-14 17:55:00.610) | 64.2 | 76.2 | 61.6 | 63.6 |
| (2020-03-14 18:00:00.610) | 64.9 | 75.8 | 62.2 | 73.6 |
| (2020-03-14 18:05:00.610) | 64.8 | 80.6 | 61.4 | 64.9 |
| (2020-03-14 18:10:00.610) | 74.2 | 92 | 62.2 | 69.1 |
| (2020-03-14 18:15:00.610) | 65.3 | 75.6 | 61.6 | 64.1 |
| (2020-03-14 18:20:00.610) | 63.4 | 73.6 | 62.9 | 75.3 |
| (2020-03-14 18:25:00.610) | 63.9 | 77.9 | 61.6 | 63.8 |
| (2020-03-14 18:30:00.610) | 65 | 80.3 | 61.6 | 64 |
| (2020-03-14 18:35:00.610) | 63.8 | 75.6 | 62.6 | 73.8 |
| (2020-03-14 18:40:00.610) | 63.6 | 72.6 | 62.3 | 69.8 |
| (2020-03-14 18:45:00.610) | 66.2 | 84.3 | 62.3 | 73.8 |
| (2020-03-14 18:50:00.610) | 63.9 | 76.7 | 61.8 | 68.4 |
| (2020-03-14 18:55:00.610) | 63.6 | 72.7 | 61.6 | 63.2 |
| (2020-03-14 19:00:00.610) | 64 | 78.4 | 62.7 | 75 |
| (2020-03-14 19:05:00.610) | 63.3 | 77.1 | 62 | 69 |
| (2020-03-14 19:10:00.610) | 67.2 | 87.7 | 62.5 | 75.2 |
| (2020-03-14 19:15:00.610) | 73.7 | 99.3 | 62.5 | 77.7 |
| (2020-03-14 19:20:00.610) | 64.8 | 73.8 | 62.3 | 75.8 |
| (2020-03-14 19:25:00.610) | 68 | 90.6 | 62.2 | 72.5 |
| (2020-03-14 19:30:00.610) | 62.8 | 72.9 | 61.6 | 63.8 |
| (2020-03-14 19:35:00.610) | 64.9 | 78.3 | 61.6 | 67.1 |
| (2020-03-14 19:40:00.610) | 63.5 | 77.3 | 62.3 | 72.8 |

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| (2020-03-14 19:45:00.610) | 62.9 | 75.5 | 62.7 | 74.9 |
| (2020-03-14 19:50:00.610) | 64.4 | 74.5 | 62.1 | 72.4 |
| (2020-03-14 19:55:00.610) | 62.7 | 75.7 | 61.4 | 66.8 |
| (2020-03-14 20:00:00.610) | 62.6 | 76.4 | 62.1 | 73.2 |
| (2020-03-14 20:05:00.610) | 64.7 | 80.4 | 61.4 | 73.3 |
| (2020-03-14 20:10:00.610) | 62.8 | 75.5 | 61.6 | 68.2 |
| (2020-03-14 20:15:00.610) | 62 | 72.5 | 61.2 | 66.6 |
| (2020-03-14 20:20:00.610) | 65.8 | 81.1 | 62 | 71.9 |
| (2020-03-14 20:25:00.610) | 63.9 | 76.9 | 61.4 | 67 |
| (2020-03-14 20:30:00.610) | 64.8 | 77.6 | 64.5 | 76.4 |
| (2020-03-14 20:35:00.610) | 64.3 | 79.1 | 62.6 | 74.8 |
| (2020-03-14 20:40:00.610) | 61.8 | 74.1 | 62.2 | 72.9 |
| (2020-03-14 20:45:00.610) | 64.4 | 83.8 | 61.7 | 73.1 |
| (2020-03-14 20:50:00.610) | 63.3 | 74.7 | 61.7 | 67.5 |
| (2020-03-14 20:55:00.610) | 61.2 | 73 | 62 | 70.5 |
| (2020-03-14 21:00:00.610) | 64.3 | 80.7 | 61.3 | 67.5 |
| (2020-03-14 21:05:00.610) | 63.3 | 75.8 | 61.7 | 71.1 |
| (2020-03-14 21:10:00.610) | 62.9 | 76.8 | 61.9 | 68.9 |
| (2020-03-14 21:15:00.610) | 61.1 | 74.4 | 61.7 | 66.5 |
| (2020-03-14 21:20:00.610) | 61.3 | 72 | 62 | 72.3 |
| (2020-03-14 21:25:00.610) | 62.8 | 78.5 | 61.3 | 67.3 |
| (2020-03-14 21:30:00.610) | 63.8 | 76.3 | 61.2 | 68.7 |
| (2020-03-14 21:35:00.610) | 63.5 | 74.5 | 62.2 | 75.6 |
| (2020-03-14 21:40:00.610) | 60.9 | 71.3 | 61.6 | 68.3 |
| (2020-03-14 21:45:00.610) | 63.5 | 73.9 | 61.5 | 64.9 |
| (2020-03-14 21:50:00.610) | 76.5 | 99.9 | 61.6 | 76.4 |
| (2020-03-14 21:55:00.610) | 66.1 | 84.6 | 61 | 71.8 |
| (2020-03-14 22:00:00.610) | 60.9 | 78.3 | 60.4 | 66.6 |
| (2020-03-14 22:05:00.610) | 60.6 | 70.9 | 60.6 | 69.5 |
| (2020-03-14 22:10:00.610) | 64.8 | 82.1 | 60.3 | 68 |
| (2020-03-14 22:15:00.610) | 62.1 | 73.6 | 60.2 | 67.1 |
| (2020-03-14 22:20:00.610) | 60.6 | 74.8 | 60.4 | 67.5 |
| (2020-03-14 22:25:00.610) | 61.3 | 74 | 60.4 | 66.4 |
| (2020-03-14 22:30:00.610) | 60 | 71 | 60.3 | 63.7 |
| (2020-03-14 22:35:00.610) | 63.5 | 81.5 | 60.1 | 62.9 |
| (2020-03-14 22:40:00.610) | 63.1 | 73.3 | 61.2 | 74.5 |
| (2020-03-14 22:45:00.610) | 61.8 | 73.3 | 60 | 67.4 |
| (2020-03-14 22:50:00.610) | 70.1 | 99.1 | 60.1 | 70.3 |
| (2020-03-14 22:55:00.610) | 62.2 | 75.2 | 60.1 | 62.7 |
| (2020-03-14 23:00:00.610) | 62.2 | 78.9 | 61.2 | 75 |
| (2020-03-14 23:05:00.610) | 61 | 72.5 | 60.2 | 68.7 |
| (2020-03-14 23:10:00.610) | 62.6 | 77 | 60.3 | 73.8 |
| (2020-03-14 23:15:00.610) | 73.2 | 95.4 | 60.6 | 68.5 |
| (2020-03-14 23:20:00.610) | 66 | 93.8 | 60.7 | 74 |
| (2020-03-14 23:25:00.610) | 61.2 | 76.4 | 60.2 | 65.8 |
| (2020-03-14 23:30:00.610) | 57.5 | 70.2 | 60.4 | 65.8 |

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|---|---|---|---|---|
| (2020-03-14 23:35:00.610) | 58.3 | 71.4 | 60 | 63.8 |
| (2020-03-14 23:40:00.610) | 59.5 | 75.5 | 60.1 | 65.9 |
| (2020-03-14 23:45:00.610) | 62.8 | 79.8 | 60.1 | 65 |
| (2020-03-14 23:50:00.610) | 61.5 | 80.6 | 60.1 | 64.7 |
| (2020-03-14 23:55:00.610) | 59.4 | 74.2 | 60.1 | 61.8 |
| (2020-03-15 00:00:00.610) | 63.7 | 86.4 | 60.2 | 64.6 |
| (2020-03-15 00:05:00.610) | 59.5 | 73.1 | 60.2 | 62.4 |
| (2020-03-15 00:10:00.610) | 61.8 | 79.7 | 60.2 | 63 |
| (2020-03-15 00:15:00.610) | 60.2 | 74.1 | 60.2 | 63.4 |
| (2020-03-15 00:20:00.610) | 59.2 | 72.8 | 60.1 | 62.7 |
| (2020-03-15 00:25:00.610) | 63.5 | 79.7 | 60.2 | 62.6 |
| (2020-03-15 00:30:00.610) | 61 | 75.7 | 60.1 | 68.5 |
| (2020-03-15 00:35:00.610) | 60.7 | 77.3 | 60.2 | 71.5 |
| (2020-03-15 00:40:00.610) | 60 | 79.7 | 60 | 63.6 |
| (2020-03-15 00:45:00.610) | 61.2 | 72.9 | 59.9 | 68.7 |
| (2020-03-15 00:50:00.610) | 58.5 | 73.4 | 59.8 | 61.5 |
| (2020-03-15 00:55:00.610) | 56.6 | 69.7 | 60.1 | 62.7 |
| (2020-03-15 01:00:00.610) | 58.2 | 72.4 | 60.1 | 63.9 |
| (2020-03-15 01:05:00.610) | 59.5 | 74 | 60 | 63.7 |
| (2020-03-15 01:10:00.610) | 59.7 | 72.5 | 60.2 | 68.6 |
| (2020-03-15 01:15:00.610) | 58.3 | 71.7 | 60.4 | 69.7 |
| (2020-03-15 01:20:00.610) | 58.3 | 68.2 | 59.9 | 67.6 |
| (2020-03-15 01:25:00.610) | 58.2 | 73.1 | 60.2 | 67.7 |
| (2020-03-15 01:30:00.610) | 54.9 | 67.1 | 59.9 | 69.4 |
| (2020-03-15 01:35:00.610) | 58.1 | 73.3 | 60 | 66.5 |
| (2020-03-15 01:40:00.610) | 61.4 | 80.1 | 59.9 | 61.8 |
| (2020-03-15 01:45:00.610) | 59.6 | 78.2 | 60 | 64.1 |
| (2020-03-15 01:50:00.610) | 58.1 | 73.7 | 60 | 65.9 |
| (2020-03-15 01:55:00.610) | 58.2 | 71.9 | 59.9 | 68 |
| (2020-03-15 02:00:00.610) | 57.8 | 77.2 | 60.3 | 67.7 |
| (2020-03-15 02:05:00.610) | 56.6 | 73.1 | 60.2 | 71.2 |
| (2020-03-15 02:10:00.610) | 53.8 | 65 | 60 | 66.1 |
| (2020-03-15 02:15:00.610) | 59.6 | 83.4 | 60.2 | 70.8 |
| (2020-03-15 02:20:00.610) | 55.2 | 71.8 | 60.3 | 70.5 |
| (2020-03-15 02:25:00.610) | 55.3 | 69.6 | 60.4 | 69.4 |
| (2020-03-15 02:30:00.610) | 58.9 | 75.7 | 60.2 | 61.9 |
| (2020-03-15 02:35:00.610) | 57.3 | 71.6 | 57.5 | 68.1 |
| (2020-03-15 02:40:00.610) | 56.3 | 70.8 | 43.7 | 64.3 |
| (2020-03-15 02:45:00.610) | 55.9 | 70.9 | 44.1 | 61.6 |
| (2020-03-15 02:50:00.610) | 53.9 | 78.9 | 41 | 57 |
| (2020-03-15 02:55:00.610) | 59.3 | 73.2 | 43.9 | 56.1 |
| (2020-03-15 03:00:00.610) | 56.2 | 71.9 | 42.9 | 55.3 |
| (2020-03-15 03:05:00.610) | 57.4 | 71.7 | 44.8 | 58.5 |
| (2020-03-15 03:10:00.610) | 58.5 | 72.4 | 43.5 | 60.3 |
| (2020-03-15 03:15:00.610) | 57.5 | 75 | 45.1 | 65.1 |
| (2020-03-15 03:20:00.610) | 58.1 | 71.7 | 43.8 | 57 |

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|---|---|---|---|---|
| (2020-03-15 03:25:00.610) | 56.5 | 72 | 48.1 | 69.5 |
| (2020-03-15 03:30:00.610) | 56.5 | 73.3 | 42.5 | 58.2 |
| (2020-03-15 03:35:00.610) | 54.1 | 70.4 | 44.6 | 66.9 |
| (2020-03-15 03:40:00.610) | 55 | 71.3 | 42.9 | 59.8 |
| (2020-03-15 03:45:00.610) | 57.6 | 72.4 | 43.9 | 60.6 |
| (2020-03-15 03:50:00.610) | 53.4 | 69.7 | 46.6 | 65.3 |
| (2020-03-15 03:55:00.610) | 53.5 | 71.5 | 47.7 | 65.8 |
| (2020-03-15 04:00:00.610) | 56.4 | 75.2 | 45.5 | 60.6 |
| (2020-03-15 04:05:00.610) | 55.3 | 74.2 | 43.9 | 59.4 |
| (2020-03-15 04:10:00.610) | 56.3 | 69.2 | 45.7 | 61.3 |
| (2020-03-15 04:15:00.610) | 54.4 | 70.2 | 46.1 | 68.1 |
| (2020-03-15 04:20:00.610) | 52 | 73 | 44.5 | 62.4 |
| (2020-03-15 04:25:00.610) | 49 | 69.7 | 42.1 | 57.6 |
| (2020-03-15 04:30:00.610) | 52.6 | 65.9 | 44.8 | 63.9 |
| (2020-03-15 04:35:00.610) | 51.9 | 67.3 | 45.1 | 63.1 |
| (2020-03-15 04:40:00.610) | 48.7 | 64.6 | 44.6 | 64.1 |
| (2020-03-15 04:45:00.610) | 45 | 60 | 43.3 | 58.8 |
| (2020-03-15 04:50:00.610) | 54.4 | 70.1 | 44.5 | 60.6 |
| (2020-03-15 04:55:00.610) | 49.1 | 66.6 | 44 | 58.6 |
| (2020-03-15 05:00:00.610) | 48.8 | 67.5 | 46.2 | 65.4 |
| (2020-03-15 05:05:00.610) | 47 | 63.4 | 44.1 | 61.7 |
| (2020-03-15 05:10:00.610) | 54.2 | 70.1 | 44.7 | 60.5 |
| (2020-03-15 05:15:00.610) | 50.2 | 66.9 | 44.6 | 60 |
| (2020-03-15 05:20:00.610) | 60.8 | 83.2 | 45.6 | 63.1 |
| (2020-03-15 05:25:00.610) | 57.6 | 74.8 | 45.3 | 64 |
| (2020-03-15 05:30:00.610) | 52.5 | 65.8 | 44.2 | 58.4 |
| (2020-03-15 05:35:00.610) | 54.8 | 70 | 46.1 | 65.5 |
| (2020-03-15 05:40:00.610) | 54 | 66.3 | 43.5 | 57.8 |
| (2020-03-15 05:45:00.610) | 48.9 | 64.3 | 42.7 | 56.7 |
| (2020-03-15 05:50:00.610) | 56 | 74.1 | 46.9 | 60.7 |
| (2020-03-15 05:55:00.610) | 55 | 70.4 | 44.5 | 66.3 |
| (2020-03-15 06:00:00.610) | 52 | 70.9 | 45.8 | 62.5 |
| (2020-03-15 06:05:00.610) | 50.3 | 64 | 49.1 | 68.9 |
| (2020-03-15 06:10:00.610) | 52.8 | 73.6 | 52.2 | 71.9 |
| (2020-03-15 06:15:00.610) | 58.6 | 78.5 | 48.8 | 68.8 |
| (2020-03-15 06:20:00.610) | 56.6 | 74 | 47.2 | 67 |
| (2020-03-15 06:25:00.610) | 50.9 | 67.5 | 42.4 | 61.2 |
| (2020-03-15 06:30:00.610) | 57 | 71.5 | 43.5 | 57.7 |
| (2020-03-15 06:35:00.610) | 57.4 | 75 | 43.7 | 55.1 |
| (2020-03-15 06:40:00.610) | 57.4 | 75.5 | 45.1 | 65.2 |
| (2020-03-15 06:45:00.610) | 67.4 | 87.4 | 59 | 70.8 |
| (2020-03-15 06:50:00.610) | 75 | 92.6 | 56.6 | 70 |
| (2020-03-15 06:55:00.610) | 60.2 | 74.3 | 45.3 | 56.6 |
| (2020-03-15 07:00:00.610) | 54.7 | 75.4 | 48.5 | 63.1 |
| (2020-03-15 07:05:00.610) | 58.7 | 74 | 46.3 | 62.5 |
| (2020-03-15 07:10:00.610) | 61.4 | 76.4 | 46.8 | 64.1 |

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|---|---|---|---|---|
| (2020-03-15 07:15:00.610) | 57.8 | 73.3 | 43.5 | 55 |
| (2020-03-15 07:20:00.610) | 66.6 | 85.1 | 50.6 | 67.2 |
| (2020-03-15 07:25:00.610) | 61.6 | 81.6 | 45.6 | 62 |
| (2020-03-15 07:30:00.610) | 63.9 | 89.4 | 46.4 | 69 |
| (2020-03-15 07:35:00.610) | 61.1 | 81.1 | 45.8 | 62.6 |
| (2020-03-15 07:40:00.610) | 59.8 | 78.1 | 43.4 | 56.2 |
| (2020-03-15 07:45:00.610) | 56.2 | 70.4 | 45.4 | 59 |
| (2020-03-15 07:50:00.610) | 59.4 | 75.7 | 45.2 | 57.3 |
| (2020-03-15 07:55:00.610) | 62 | 74.5 | 45.7 | 57.8 |
| (2020-03-15 08:00:00.610) | 63.1 | 75.7 | 46.6 | 58.6 |
| (2020-03-15 08:05:00.610) | 64.8 | 76 | 49 | 73.4 |
| (2020-03-15 08:10:00.610) | 60.7 | 74 | 45 | 60.3 |
| (2020-03-15 08:15:00.610) | 64.3 | 82.3 | 46.8 | 61.9 |
| (2020-03-15 08:20:00.610) | 63.2 | 85.4 | 47.3 | 65.6 |
| (2020-03-15 08:25:00.610) | 64.9 | 77.1 | 48.5 | 61.6 |
| (2020-03-15 08:30:00.610) | 63.3 | 74.5 | 47.1 | 60.6 |
| (2020-03-15 08:35:00.610) | 61.1 | 76.4 | 47.3 | 59.5 |
| (2020-03-15 08:40:00.610) | 62.7 | 74.5 | 46.6 | 55.1 |
| (2020-03-15 08:45:00.610) | 66.8 | 80.6 | 50.1 | 62.7 |
| (2020-03-15 08:50:00.610) | 64.9 | 78.9 | 48.1 | 61.6 |
| (2020-03-15 08:55:00.610) | 64.7 | 76.8 | 56.2 | 72.6 |
| (2020-03-15 09:00:00.610) | 65.1 | 76.2 | 47.4 | 58.9 |
| (2020-03-15 09:05:00.610) | 65.6 | 75.1 | 55.9 | 76.3 |
| (2020-03-15 09:10:00.610) | 62 | 74.2 | 46.9 | 57.2 |
| (2020-03-15 09:15:00.610) | 65.9 | 77.6 | 48.5 | 60.8 |
| (2020-03-15 09:20:00.610) | 64.3 | 73 | 53.9 | 71.4 |
| (2020-03-15 09:25:00.610) | 64.7 | 77.4 | 49.1 | 57.9 |
| (2020-03-15 09:30:00.610) | 65.6 | 81.5 | 48.6 | 59.7 |
| (2020-03-15 09:35:00.610) | 64.7 | 74.5 | 54.6 | 72.1 |
| (2020-03-15 09:40:00.610) | 65.6 | 78.5 | 50.8 | 64.1 |
| (2020-03-15 09:45:00.610) | 64.8 | 77.6 | 54.7 | 73.7 |
| (2020-03-15 09:50:00.610) | 66.5 | 77.9 | 50 | 56.9 |
| (2020-03-15 09:55:00.610) | 65.6 | 74 | 48.5 | 57.2 |