

Climate-based feasibility study for the project location

Final Report

Lorem Ipsum

Project Engineer

Lorem Ipsum

Project Manager

SAMPLE

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Disclaimer

This report has been prepared according to the information given to Alkazar Engineering. Alkazar Engineering is not responsible for any errors that may occur in the wrong/incomplete information given or computer software. The results were obtained to be closest to the actual conditions using theoretical calculations. Based on this report, it is recommended to perform mock-up before changes are made to the project design.

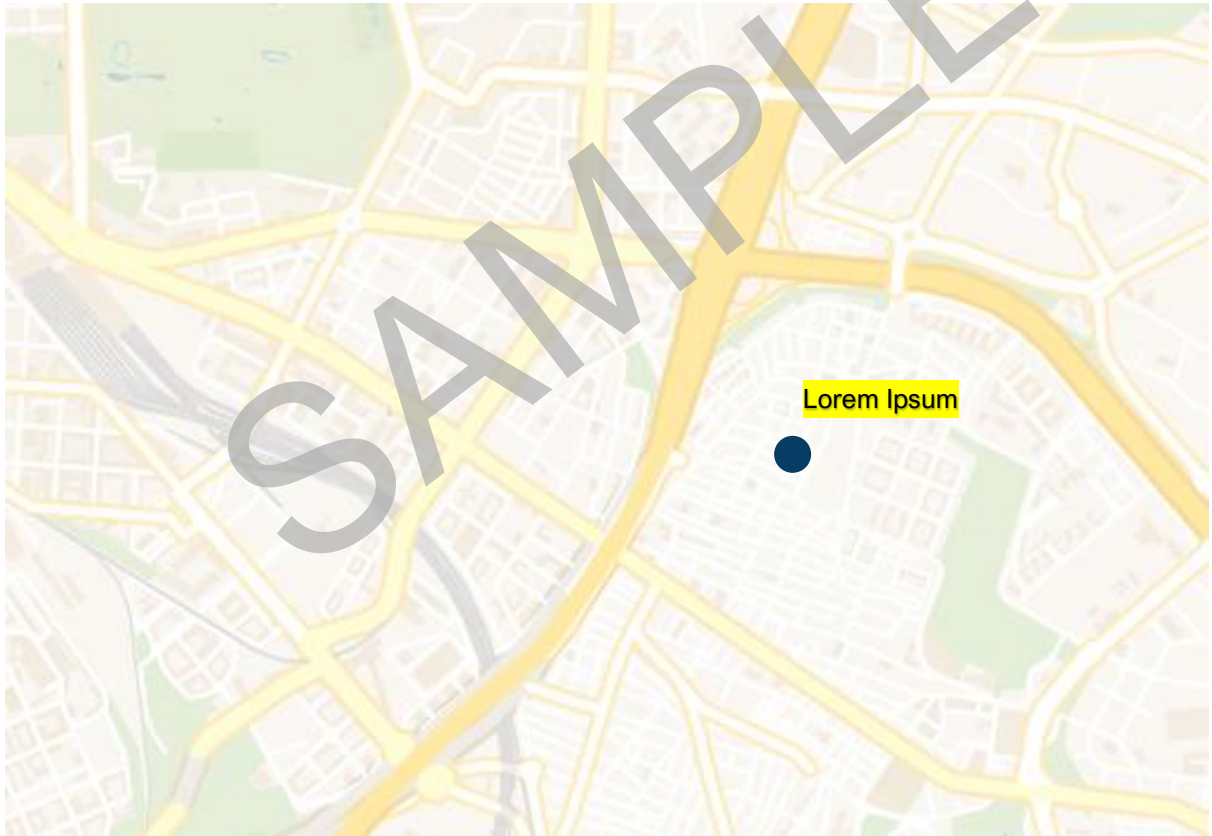
Introduction

Weather conditions can have an adverse effect on worksite and lifting operations. In this report, a climate-based feasibility study was conducted for a project location in **Lorem Ipsum** given by the employer. Monthly and daily availabilities were calculated by using historical climate data between 1999-2018. The coordinates and the map image of the project location are given in Table 1 and Figure 1, respectively.

Table 1 Project location coordinates

Point	Latitude	Longitude
Lorem Ipsum	0.000000	0.000000

Figure 1 Project location on map



Assumpitons






Assumptions used are given below.

- The critical height value is **60 m** based on datasheet for the cranes supplied by the employer.
- A great deal of judgment is required when assessing when it is too windy to continue lifting operations. The critical wind speed value is **14 m/s** based on datasheet for the cranes supplied by the employer.
- Extremely cold weather can negatively affect crane and lifting operations. The critical temperature value is **-12 °C** (approximately 12 °F).
- Operation can be dangerous in foggy because of low visibility. Commonly, radiative fog occurs in **Lorem Ipsum** due to studies. So, fog variable represents radiative fog. If the relative humidity is greater than **99%**, dew point temperature at 2 m is smaller than **1.5 °C** and just enough slightly wind to mix the air humidity, there is a high-level risk of fog.
- CAPE stands for Convective Available Potential Energy and is the amount of fuel available to a developing thunderstorm. When the CAPE index is zero, the air will be stable and convection is not possible. For CAPE index value greater than **1000 J/kg**, the probability of heavy showers and lightning increase.
- Rain, snow, hail and other liquid and frozen precipitation types are investigated together. **1 mm** of water equivalent is the threshold value for moderate precipitation for all type.
- Working hours are determined between **7:00 AM** and **7:00 PM**.
- It is investigated that if is it possible to exceed **3 working hours** in a day. If it is true, that became available day to work.
- The time zone is **UTC+00:00**.

Results

The availabilites in the working hours are less in December, January and Februrary than other months. During these periods; fog formation, high speed winds at 60 m, precipitation, storms and low temperatures for ground level can observed. Because of this, it does not be able to possible to work along 71 days due to our study. The least work efficiency can observed due to the inability to work with 23 days in January and December. Detailed result tables are given in *Appendix-1*. Also, daily results for unavailible days with variables, are shown in the *Appendix-2*. In the tables, available days/hours and unavailable days/hours are shown in **green** and **red**, respectively. The meanings of symbols used are given in Table 2.

Table 2 The meanings of symbols in *Appendix-2*

Symbol	Meaning
	Extreme Cold
	Precipitation
	Fog
	Storm
	Extreme Wind

SAMPLE

Appendix-1 Detailed result tables

January						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Unavailable days: 23

February						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

Unavailable days: 14

March						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Unavailable days: 1

April						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

June						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Unavailable days: 3

November						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Unavailable days: 7

December						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Unavailable days: 23

Appendix-2 Detailed result tables for unavailable days

January													
Day	Hours												
1	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒

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3	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
4	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
5	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
6	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
7	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
8	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
9	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
10	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒

January													
Day	Hours												
11	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	☞	☞	☞	☞	☞	☞	☞	=	=	=
12	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	=	=	=	=	=	=
13	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	☞	☞	=	=	=	☞							

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15	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	=	=	☞	=	☞	☞

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17	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	=	=	=	☞	☞	☞
18	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	☞	☞	☞	☞	☞	=	=	☞	☞	=	=	=	=
19	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	☞	=	=	=	=	=
20	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	=	=	=	☞	=	=
21	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
	=	=	=	=	=	=	=	=	=	☞	=	☞	☞

January													
Day	Hours												
23	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	≡	≡	≡	≡	≡	≡							
⋮													
26	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	≡	≡	≡	≡						⇒	⇒	⇒	⇒
⋮													
28	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	≡	≡	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒
29	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒			
31	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒	⇒

February

Day	Hours												
1	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
2	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐

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4	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
5	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐

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7	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
8	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
9	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
10	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐
11	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐	⇐

February													
Day	Hours												
12	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

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22	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

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26	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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28	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

29	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

March													
Day	Hours												
1	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

October													
Day	Hours												
25	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹	☹ ☹

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October													
Day	Hours												
27	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒			⇒		⇒				⇒
28	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒		⇒	⇒	⇒						

November													
Day	Hours												
11	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒					⇒	⇒	⇒	⇒	⇒
12	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒							

15	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒							
16	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒							

20	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒			⇒	⇒	⇒	⇒	⇒	⇒		

27	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	⇒	⇒	⇒	⇒	⇒	⇒							

November													
Day	Hours												
	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
29	≡	≡	≡	≡	≡	≡						≡	≡

December													
Day	Hours												
	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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3	≡	≡	☞	☞	☞	≡	≡	≡	☞	≡	≡		

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5	≡	≡	≡	≡							☞	☞	
6	≡	≡	≡	≡	≡	≡	≡	≡	≡	☞	☞		
7	≡	≡	☞	☞	☞	☞	☞	☞		☞	☞	☞	
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11	≡	≡	☞	≡						☞	☞	☞	☞
12	≡	☞	☞	≡	≡	≡							☞

December													
Day	Hours												
	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
16	=	=	=	=	=	=							
	=	=	=	=	=	☞		☞	☞				
17	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=	=	=	=	=	=	=	=
18	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
	=	=	=	=	=	=							
19	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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20	☞	☞	☞										
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21	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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22	☞	☞	☞	☞	☞	☞	☞	☞	☞	☞			
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23	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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24	☞												
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December													
Day	Hours												
26	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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27	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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28	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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30	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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31	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
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