

**ANNEX DD TO
MARS CORRECT: CRITIQUE OFF ALL NASA MARS WEATHER DATA
MSL Year 5 Summer Weather Data (LS 270 to LS 360/0, Sols 2871 to 3025)**

This Annex reveals all Mars Science Laboratory (MSL) weather data for MSL's Mars Year 5 summer. It shows what was published by the Rover Environmental Monitoring Station (REMS) Team and JPL. It also reveals what the Roffman Team sees as weather anomalies, and how the REMS Team and JPL altered their data after we color-highlighted what was off the expected temperature and pressure curves. Note: Some sources refer to the first year that MSL was on Mars as Year 0. For those using that system sols 2,871 to 3,025 is Year 5.

Column A (Sol). The Martian day is about 39 minutes longer than the terrestrial day.

Column B is solar longitude (Ls). MSL is in the Southern Hemisphere on Mars. The landing was at Ls 150 (winter). Ls 180 begins the spring. Ls 270 starts summer, Ls 0 starts the fall. Ls 90 starts the winter.

Column C shows the pressure reported by the REMS Team.

Column D shows the date on Earth.

Column E shows the maximum air temperature. With respect to the freezing point, from 0° C at 1 atm pressure it will increase up to 0.01° C at 0.006 atm (which is about the average pressure on Mars as given by NASA). This is the triple point of water. At pressures below this, water will never be liquid. It will change directly between solid and gas phase (sublimation). The temperature for this phase change, the sublimation point, will decrease as the pressure is further decreased

Column F shows minimum air temperature.

Column G shows the air temperature range for each sol. On Earth temperatures can vary by 40 °C in deserts. In column G where the range is 59 °C or less yellow background coloring points that out. The National Park Service claims **the world record in a diurnal temperature variation is 102 °F (57 °C)** (from 46 °F (8 °C) to -56 °F (-49 °C)) in [Browning, Montana](#) (elevation 4,377 feet/1,334 meters) on January 23 to 24, 1916. **There were 2 days in Montana where the temperature changed by 57 °C.**

Column H shows temperature range divided by 40.

This allows us to compare terrestrial deserts with Gale Crater, Mars. How much cooling occurs at night is related to the density of the atmosphere. Here we see the ratio of cooling on a Mars sol to the typical 40 °C cooling figure for Earth's deserts shown with a green background when that ratio is under 1.5. For MSL Year 1 when we altered the divisor from 40 °C to 57 °C then 88 of the ratios were altered to 1 or less than 1, meaning that Martian air pressure is indeed likely much higher than NASA claims.

Column I shows maximum ground temp. As with terrestrial deserts, the ground on Mars heats more during the day than the air does, and it cools more at night than the air does. In Column K when the maximum ground temperature is given by REMS is above 0°C it is shown with a red background.

Column J shows the minimum ground temperature.

When it is -90 °C or colder the background is in purple.

The ground temperatures are not very precise. The requirement was to measure ground brightness temperature over the range from 150 to 300 K with [a resolution of 2 K and an accuracy of 10 K.](#)

Column K. Drop in ground temperature from day to night.

Column L shows the increase in temperature from the mast 1.5 meters above the ground down to the ground during the daylight hours. In column N anytime there is an increase in temperature of 11 °C or more this is indicated with a dark blue background.

Column M shows the decrease in temperature from the ground to the air at nights.

If the data were valid we would expect similar heating or cooling to occur over the set distance from ground to boom. A quick survey of the data immediately shows that this was not found. In column L we see a variation in heating between 0 °C and at least 15 °C with a 54 °C anomaly on Sol 1,070. For nighttime cooling any variation from 11°C to 19°C is shown with a medium blue background. More than that is shown with a dark blue background.

Column N shows the pressure for the same Ls in MSL Year 1.

Column O shows the absolute value of the change in pressure in Pascals from the same Ls in the previous year (Column [M] - [C]).

Column P shows the original pressure for the same Ls in MSL Year 1 before JPL revised their data.

Column Q shows the Ls during Year 1.

Column R shows the UV for the sol in Year 2.

Column S shows the UV for the sol in Year 1. All sols in MSL Year 1 and Year 2 have opacity listed as "sunny" which seems dubious.

Column T shows comments, if any

On Table 1 column subjects and color codings are as follows (Note: JPL calls the first year of MSL on Mars "Year 0," the second year Year 1, and the third year "Year , 2"etc.):

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure Δ AT SAME LS IN MSL YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS
						YELLOW IF <60 °C	GREEN IF<1.5	RED IF > 0 °C	PURPLE = >-90°C OR COLDER	YELLOW NUMBERS = -80 to - 89 °C, red background =-90°C or colder drop	BLUE = >10°C	PURPLE = >10°C		YELLOW = > 7 Pa)					6
2871 1st day of summer	270	885	9/3/2020	0	-69	-69	1.75	+13	-74	-87	+13	-5	N/A	N/A	N/A	N/A	H	N/A	(2202)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure AT SAME LS IN MSL YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS

2872	270	884	9/4/2020	-1	-70	-69	1.725	+13	-79	-92	+14	-9	N/A	N/A	270	N/A	H	M	(2203)
2873	271	884	9/5/2020	-2	-70	-68	1.7	+12	-72	-84	+14	-2	854 (may not be a full sol)	+30	271		H	M	(2204)
2874	272	882	9/6/2020	0	-70	-70	1.75	+14	-75	-89	+14	-5	880	+2	271	N/A	H	M	(2205)
2875	272	881	9/7/2020	-2	-69	-67	1.675	+13	-74	-87	+15	-5	881	0	272	N/A	H	M	(2206)
2876	273	881	9/8/2020	-1	-69	-68	1.7	+14	-78	-92	+15	-9	881	0	273	N/A	H	M	(2207)
2877	274	881	9/9/2020	-1	-69	-68	1.7	+15	-81	-96	+16	-12	880	+1	273	N/A	H	M	(2208)
2878	274	879	9/10/2020	-2	-69	-67	1.675	+14	-79	-93	+16	-10	879	0	274	N/A	H	M	(2209)
2879	275	877	9/11/2020	+2	-69	-71	1.775	+15	-74	-89	+13	-5	877	0	275	N/A	H	M	(2210)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure AT SAME LS IN MSL YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS

2880	275	876	9/12/2020	-2	-71	-69	1.725	+13	-74	-87	+15	-3	876	0	275	N/A	H	M	(2211)
2881	276	874	9/13/2020	+3	-68	-71	1.775	+13	-77	-90	+10	-9	877	-3	276	N/A	M	M	(2212)
2882	277	873	9/14/2020	+2	-69	-71	1.775	+14 ++++++	-74	-88	+12	-5	874	-1	276	N/A	H	M	(2213)
2883	277	872	9/15/2020	-1	-68	-67	1.675	+14	-71	-91	+15	-3	872	0	277	N/A	H	M	(2214)
2884	278	873	9/16/2020	-6	-69	-63	1.575	+14	-78	-92	+20	-9	NO DATA	NO DATA	278	NO DATA	H	NO DATA	(2215)
2885	279	873	9/17/2020	-3	-69	-66	1.65	+14	-73	-87	+17	-4	868	+5	278	N/A	H	M	(2216)
2886	279	870	9/18/2020	-1	-71	-70	1.75	+15	-76	-91	+16	-5	868	+2	279	N/A	H	M	(2217)
2887	280	872	9/19/2020	0	-70	-70	1.75	+14	-78	-92	+14	-8	866	+6	280	N/A	H	M	(2218)
2888	281	870	9/20/2020	+4	-70	-74	1.85	+14	-88	-102	+10	-18	868	+2	280	N/A	M	H	(2219)
2889	281	870	9/21/2020	+3	-70	-73	1.825	+14	-87	-101	+11	-17	866	+4	281	N/A	H	H	(2220)
2890	282	871	9/22/2020	0	-71	-71	1.775	+14	-85	-99	+14	-14	866	+5	282	N/A	H	H	(2221)

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SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure Δ AT SAME LS IN YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS

2891	282	872	9/23/2020	-3	-70	-67	1.675	+13	-78	-91	+16	-18	865	+7	282	N/A	H	H	(2222)
2892	283	871	9/24/2020	-1	-70	-69	1.725	+14	-73	-87	+13	-3	863	+8	283	850	H	M	(2223)
2893	284	869	9/25/2020	0	-72	-72	1.8	+14	-86	-100	+14	-14	865	+4	283	N/A	H	M	(2224)
2894	285	865	9/26/2020	-1	-70	-69	1.725	+14	-70	-84	+15	0	864	+1	284	N/A	H	M	(2225)
2895	286	866	9/27/2020	-2	-69	-67	1.675	+15	-81	-91	+17	-12	863	+3	285	N/A	H	M	(2226)
2896	286	867	9/28/2020	-1	-68	-67	1.675	+14	-77	-91	+15	-9	863	+4	285	863	M	M	(2227)
2897	286	867	9/29/2020	-1	-68	-67	1.675	+13	-79	-92	+14	-11	860	+7	286	884	M	M	(2228)
2898	287	869	9/30/2020	-3	-70	-67	1.675	+14	-72	-86	+17	-9	862	+7	287	N/A	H	M	(2229)
2899	288	866	10/1/2020	-3	-71	-68	1.7	+13	-75	-88	+16	-4	859	+7	287	N/A	H	M	(2230)
2900	288	861	10/2/2020	0	-69	-69	1.725	+15	-75	-90	+15	-6	860	+1	288	N/A	H	M	(2231)
2901	289	860	10/3/2020	+2	-70	-72	1.8	+14	-76	-90	+12	-6	858	+2	289	N/A	H	M	(2232)

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2902	289	856	10/4/2020	-7	-69	-62	1.55	+15	-75	-90	+22	-6	861	-5	289	N/A	H	M	(2233)
2903	290	859	10/5/2020	0	-70	-70	1.75	+14	-77	-91	+14	-7	857	+2	290	N/A	H	M	(2234)
2904	291	860	10/6/2020	-2	-70	-68	1.7	+14	-83	-97	+16	-13	853	+7	290	N/A	H	M	(2235) Altitude - 4,128m
2905	291	859	10/7/2020	+1	-70	-71	1.775	+13	-74	-87	+12	-4	857	+2	291	N/A	H	M	(2236)
2906	292	855	10/8/2020	+2	-71	-73	1.825	+16	-83	-99	+14	-12	854	+1	292	N/A	H	M	(2237)
2907	293	854	10/10/2020	-2	-70	-68	1.7	+14	-79	-93	+16	-9	853	+1	292	N/A	H	M	(2238)
2908	293	854	10/11/2020	-1	-70	-69	1.725	+15	-79	-94	+16	-9	852	+2	293	N/A	H	M	(2239)
2909	294	853	10/12/2020	-1	-70	-69	1.725	+14	-81	-95	+15	-11	N/A	N/A	N/A	N/A	M	M	(2240) N/A until 2247
2910	294	854	10/13/2020	-1	-70	-69	1.725	+15	-79	-94	+16	-9	850	+4	294	N/A	H	M	(2241)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
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2911	295	854	10/14/2020	-1	-70	-69	1.725	+14	-75	-89	+15	-5	848	+6	295	N/A	H	M	(2242)
2912	296	853	10/15/2020	+1	-69	-70	1.75	+14	-78	-92	+13	-9	848	+5	295	N/A	H	M	(2243)
2913	296	849	10/16/2020	-2	-70	-68	1.7	+14	-76	-90	+16	-6	849	0	296	N/A	H	M	(2244)
2914	297	850	10/17/2020	-1	-71	-70	1.75	+15	-72	-87	+16	-1	845	+5	297	N/A	H	M	(2245)
2915	298	849	10/18/2020	-1	-70	-69	1.725	+14	-75	-89	+15	-5	848	+1	297	N/A	H	H	(2246)
2916	298	848	10/19/2020	-2	-69	-67	1.675	+13	-74	-87	+15	-5	844	+4	298	N/A	H	M	(2247)
2917	299	851	10/20/2020	-1	-71	-70	1.75	+14	-71	-85	+15	0	846	+5	298	N/A	H	M	(2248)
2918	299	852	10/21/2020	-2	-70	-68	1.7	+14	-78	-92	+16	-8	846	+6	299	N/A	H	H	(2249)
2919	300	851	10/22/2020	0	-70	-70	1.75	+14	-77	-91	+14	-7	842	+9	300	N/A	H	M	(2250)
2920	301	845	10/23/2020	-2	-70	-68	1.7	+14	-82	-96	+16	-12	847	-2	300	N/A	H	M	(2251) Altitude - 4,118m

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure AT SAME LS IN MSL YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS

2921	301	845	10/24/2020	-1	-70	-69	1.725	+15	-80	-95	+16	-10	840	+5	301	N/A	H	H	(2252)
2922	302	844	10/25/2020	+3	-70	-73	1.825	+15	-77	-92	+12	-7	845	-1	302	N/A	H	H	(2253) Altitude - 4,118m
2923	302	843	10/26/2020	+2	-70	-72	1.8	+16	-77	-93	+14	-7	845	-2	302	N/A	H	H	(2254)
2924	303	847	10/27/2020	-4	-69	-65	1.625	+13	-80	-93	+17	-11	841	+6	303	N/A	M	H	(2255)
2925	304	844	10/28/2020	-2	-69	-67	1.675	+12	-82	-94	+14	-13	843	+1	303	N/A	M	H	(2256)
2926	304	846	10/29/2020	-4	-70	-66	1.65	+12	-73	-85	+16	-3	836	+10	304	N/A	M	H	(2257) Altitude - 4,119m
2927	305	841	10/30/2020	-3	-71	-68	1.7	+16	-74	-90	+19	-3	841	0	305	N/A	M	H	(2258)
2928	305	840	10/31/2020	-3	-71	-68	1.7	+17	-85	-102	+20	-14	N/A	N/A	305	N/A	M	N/A	(2259)
2929	306	838	11/1/2020	-3	-70	-67	1.675	+16	-80	-96	+19	-10	N/A	N/A	306	N/A	H	N/A	(2260)

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																			Altitude - 4,118m
2930	307	839	11/2/2020	0	-70	-70	1.75	+9	-73	-82	+9	-3	N/A	N/A	306	N/A	M	H	(2261)
2931	307	845	11/3/2020	-3	-69	-66	1.65	+9	-83	-91	+12	-14	N/A	N/A	307	N/A	M	H	(2262)
																			Altitude - 4,116m
2932	308	839	11/4/2020	-3	-69	-66	1.65	+13	-82	-95	+16	-13	N/A	N/A	308	N/A	H	H	(2263)
2933	308	840	11/5/2020	-6	-69	-63	1.575	+13	-74	-87	+19	-5	833	+7	308	N/A	H	H	(2264)
																			Altitude - 4,113m
2934	309	834	11/6/2020	+1	-70	-71	1.775	+12	-70	-82	+11	0	836	-2	309	N/A	H	H	(2265)
2935	310	837	11/7/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	836	+1	309	N/A	H	H	(2266)
2936	310	835	11/8/2020	-13	-70	-57	1.425	+12	-78	-90	+25	-8	830	+5	310	N/A	H	H	(2267)
																			Altitude - 4,114m

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2937	311	837	11/9/2020	-14	-69	-55	1.375	+12	-76	-88	+26	-7	836	+1	311	N/A	H	H	(2268)
2938	311	836	11/10/2020	-14	-70	-56	1.4	+12	-82	-94	+26	-12	828	+8	311	N/A	H	H	(2269)
2939	312	835	11/11/2020	-9	-71	-62	1.55	+15	-77	-92	+24	-6	835	0	312	N/A	M	H	(2270)
2940	313	834	11/12/2020	-4	-70	-66	1.65	+15	-85	-100	+19	-15	831	+3	312	N/A	M	H	(2271)
2941	313	828	11/13/2020	-10	-71	-61	1.525	+15	-77	-92	+25	-6	831	-3	313	N/A	M	H	(2272)
2942	314	832	11/14/2020	-6	-69	-63	1.575	+16	-74	-90	+22	-5	834	-2	314	N/A	M	H	(2273)
2943	314	829	11/15/2020	-6	-70	-64	1.6	+15	-76	-91	+21	-6	828	+1	314	N/A	H	H	(2274)
2944	315	832	11/17/2020	-3	-70	-67	1.675	+8	-75	-83	+11	-5	834	-2	315	N/A	H	H	(2275)
2945	316	834	11/18/2020	-2	-69	-67	1.675	+7	-78	-85	+9	-9	830	+4	315	N/A	H	H	(2276)
2946	316	830	11/19/2020	-3	-71	-68	1.7	+7	-76	-83	+10	-5	831	-1	316	N/A	H	H	(2277)
2947	317	826	11/20/2020	-3	-70	-67	1.675	+10	-77	-87	+13	-7	828	-2	317	N/A	H	H	(2278)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
SOL	~LS	PRESSURE Pa	DATE	MAX AIR TEMP °C	MIN AIR TEMP °C	AIR TEMP RANGE °C	AIR TEMP RANGE °C/40	MAX GROUND TEMP °C	MIN GROUND TEMP °C	Δ GROUND TEMP DAY TO NIGHT	DAYTIME CHANGE IN TEMP °C AIR TO GROUND	NIGHTTIME CHANGE IN TEMP °C AIR TO GROUND PRESSURE	Pressure AT SAME LS IN MSL YEAR 4	Δ PRESSURE YEAR 5 TO YEAR 4 SAME LS	~LS year 4	PRESSURE YEAR 4 BEFORE REVISION	UV YR 5	UV YR 4	MSL PREVIOUS YEAR SOL FOR THIS LS/ COMMENTS AND CURRENT ALTITUDE IN METERS

2948	317	826	11/21/2020	-2	-69	-67	1.675	+9	-76	-85	+11	-7	830	-4	317	N/A	H	H	(2279)
2949	318	827	11/22/2020	-3	-69	-66	1.65	+9	-76	-85	+12	-7	834	-7	318	N/A	H	H	(2280)
2950	319	828	11/23/2020	-7	-69	-62	1.55	+11	-74	-85	+18	-5	826	+2	318	N/A	H	H	(2281)
2951	319	827	11/24/2020	-8	-68	-60	1.5	+8	-67	-75	+16	+1	830	-3	319	N/A	M	H	(2282)
2952	320	824	11/25/2020	-4	-68	-64	1.6	+6	-76	-82	+10	-8	825	-1	319	N/A	M	H	(2283)
2953	320	823	11/26/2020	-8	-69	-61	1.525	+5	-88	+93	+13	-19	829	-6	320	N/A	M	H	(2284)
2954	321	821	11/27/2020	-5	-69	-64	1.6	+6	-76	-82	+11	-7	823	-2	321	N/A	M	H	(2285)
2955	321	821	11/28/2020	-3	-69	-66	1.65	+5	-84	-89	+8	-15	822	-1	321	N/A	M	VH	(2286)
2956	322	819	11/29/2020	-5	-70	-65	1.625	+10	-70	-80	+15	0	821	-2	322	N/A	M	VH	(2287)
2957	323	819	11/30/2020	-12	-70	-58	1.45	+9	-78	-87	+21	-8	823	-4	322	N/A	M	VH	(2288)
2958	323	819	12/1/2020	-2	-74	-72	1.8	+8	-76	-84	+10	-2	822	-3	323	N/A	M	VH	(2289)
2959	324	818	12/2/2020	-6	-69	-63	1.575	+7	-80	-87	+13	-11	821	-3	324	N/A	M	H	(2290)

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2960	324	819	12/3/2020	-10	-69	-59	1.475	+7	-80	-87	+17	-11	823	-4	324	N/A	M	H	(2291)
2961	325	817	12/4/2020	-9	-69	-60	1.5	+7	-77	-84	+16	-8	824	-7	325	N/A	M	H	(2292)
2962	326	818	12/5/2020	-11	-69	-58	1.45	+6	-77	-83	+17	-8	821	-3	325	N/A	M	H	(2293)
2963	326	813	12/6/2020	-9	-70	-61	1.525	+7	-73	-80	+16	-3	820	-7	326	N/A	M	H	(2294)
2964	327	818	12/7/2020	-6	-69	-63	1.575	+5	-74	-79	+11	-5	820	-2	326	N/A	M	H	(2295)
2965	327	843	12/8/2020	-54	-56	-2	0.05	-46	-69	-23	+8	-13	817	+26	327	N/A	L	H	(2296)
2966	328	N/A	12/10/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	818	N/A	328	N/A	N/A		(2297)
2967	329	793	12/11/2020	-7	-56	-47	1.175	+6	-65	-71	+13	-9	817	-24	328	N/A	M	H	(2298)
2968	329	815	12/12/2020	-10	-71	-61	1.525	+10	-74	-84	+20	-3	818	-3	329	N/A	M	H	(2299)
2969	329	817	12/13/2020	-10	-71	-61	1.525	+11	-80	-91	+21	-9	818	-1	329	N/A	M	H	(2300)
2970	330	815	12/14/2020	-10	-72	-62	1.55	+8	-84	-92	+18	-12	817	-2	330	N/A	M	H	(2301)
2971	331	815	12/15/2020	-7	-70	-63	1.575	+7	-71	-78	+14	-1	815	0	330	N/A	M	H	(2302)

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2972	331	818	12/16/2020	-5	-69	-64	1.6	+8	-76	-84	+13	-7	815	+3	331	N/A	M	H	(2303)
2973	332	817	12/17/2020	-6	-72	-66	1.65	+9	-88	-97	+15	-16	814	+3	332	N/A	M	H	(2304)
2974	332	818	12/18/2020	-15	-72	-57	1.425	+9	-77	-86	+24	-5	814	+6	332	N/A	M	H	(2305)
2975	333	815	12/19/2020	-7	-72	-65	1.625	+9	-80	-89	+16	-8	813	+2	333	N/A	M	H	(2306)
2976	333	816	12/20/2020	-10	-72	-62	1.55	+9	-80	-89	+19	-8	814	+2	333	N/A	M	H	(2307)
2977	334	816	12/21/2020	-4	-72	-68	1.7	+8	-85	-93	+12	-13	814	+2	334	N/A	M	H	(2308)
2978	335	815	12/22/2020	-1	-72	-71	1.775	+9	-91	-100	10	-19	814	+1	334	N/A	M	H	(2309)
2979	335	818	12/23/2020	-6	-71	-65	1.625	+15	-85	-100	+21	-14	815	+3	335	N/A	M	H	(2310)
2980	336	818	12/24/2020	-10	-74	-64	1.6	+15	-82	-97	+25	-8	812	+6	335	N/A	M	H	(2311)
2981	336	817	12/25/2020	-5	-72	-67	1.675	+15	-85	-100	+20	-13	813	+4	336	N/A	M	H	(2312)
2982	337	814	12/26/2020	-6	-73	-67	1.675	+14	-86	-100	+20	-13	814	0	336	N/A	M	H	(2313)
2983	337	818	12/27/2020	-15	-73	-58	1.45	-6	-79	-85	+9	-6	814	+4	337	N/A	L	H	(2314)

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2984	338	814	12/28/2020	-8	-73	-65	1.625	+15	-92	-107	+23	-19	813	+1	338	N/A	M	H	(2315)
2985	338	814	12/29/2020	-7	-72	-65	1.625	+16	-90	-106	+23	-18	814	0	338	N/A	M	H	(2316)
2986	339	813	12/30/2020	-11	-73	-62	1.55	+16	-90	-106	+27	-17	812	+1	339	N/A	M	H	(2317)
2987	340	812	12/31/2020	-13	-74	-61	1.525	+14	-86	-100	+27	-12	811	+1	339	N/A		M	(2318)
2988	340	813	1/1/2021	-10	-72	-62	1.55	+14	-87	-101	+24	-15	812	+1	340	N/A	M	M	(2319)
2989	341	814	1/2/2021	-3	-73	-70	1.75	+14	-81	-95	+17	-8	N/A	N/A	341	N/A	M	N/A	(2320)
2990	341	811	1/3/2021	-5	-73	-68	1.7	+15	-82	-97	+20	-9	N/A	N/A	341	N/A	M	N/A	(2321)
2991	342	813	1/4/2021	-5	-100	-95	2.375	+15	-79	-94	+20	+21	N/A	N/A	342	N/A	M	N/A	(2322)
2992	342	815	1/5/2021	-10	-72	-62	1.55	+15	-82	-97	+25	-10	N/A	N/A	342	N/A	M	N/A	(2323)
2993	343	813	1/6/2021	-11	-74	-63	1.575	+15	-90	-105	+26	-16	N/A	N/A	343	N/A	M	N/A	(2324)
2994	343	814	1/7/2021	-6	-75	-69	1.75	+15	-91	-106	+21	-16	N/A	N/A	343	N/A	H	N/A	(2325)

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2995	344	839	1/8/2021	-5	-74	-69	1.75	+15	-91	-106	+20	-17	N/A	N/A	344	N/A	H	N/A	(2326)
2996	344	812	1/9/2021	-18	-72	-54	1.35	+9	-89	-97	+27	-17	N/A	N/A	344	N/A	H	N/A	(2327)
2997	345	811	1/10/2021	-18	-72	-54	1.35	+10	-81	-91	+28	-9	N/A	N/A	345	N/A	H	N/A	(2328)
2998	345	812	1/11/2021	-17	-82	-65	1.625	+8	-82	-90	+25	0	N/A	N/A	345	N/A	M	N/A	(2329)
2999	346	813	1/12/2021	-18	-73	-55	1.375	+9	-79	-88	+27	N/A	N/A	N/A	346	N/A	M	N/A	(2330)
3000	347	812	1/13/2021	-16	-73	-57	1.425	+8	-78	-86	+24	N/A	N/A	N/A	347	N/A	H	N/A	(2331)
3001	347	813	1/14/2021	-13	-74	-61	1.525	+8	-80	-88	+21	N/A	N/A	N/A	347	N/A	M	N/A	(2332)
3002	348	813	1/15/2021	-14	-73	-59	1.475	+8	-78	-86	+22	-5	789	+24	347	N/A	M	M	(2333)
3003	348	815	1/16/2021	-16	-73	-57	1.425	+8	-76	-84	+24	-3	814	+1	348	N/A	M	M	(2334)
3004	349	813	1/17/2021	-17	-73	-56	1.4	+8	-77	-85	+25	-4	815	-2	348	N/A	M	M	(2335)
3005	349	813	1/18/2021	-10	-73	-63	1.575	+7	-90	-97	+17	-17	814	-1	349	N/A	M	M	(2336)

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3006	350	814	1/19/2021	-14	-73	-59	1.475	+7	-75	-82	+21	-2	817	-3	350	N/A	M	M	(2337)
3007	350	814	1/20/2021	-3	-73	-70	1.75	+6	-78	-84	+9	-5	817	-3	350	N/A	M	M	(2338)
3008	351	814	1/21/2021	-3	-73	-70	1.75	+14	-81	-95	+17	-8	N/A	N/A	N/A	N/A	M	N/A	(2339)
3009	351	815	1/22/2021	-15	-77	-62	1.55	+22	-81	-103	+37	-4	N/A	N/A	N/A	N/A	M	N/A	(2340)
3010	352	817	1/23/2021	-16	-73	-57	1.425	+11	-77	-88	+27	-4	N/A	N/A	N/A	N/A	M	N/A	(2341)
3011	352	817	1/24/2021	-18	-73	-58	1.45	+11	-87	-98	+29	-14	N/A	N/A	N/A	N/A	M	N/A	(2342)
3012	353	812	1/25/2021	-12	-74	-62	1.55	+12	-82	-94	+24	-8	N/A	N/A	N/A	N/A	H	N/A	(2343)
3013	353	813	1/26/2021	-10	-73	-63	1.575	+9	-88	-97	+19	-15	N/A	N/A	N/A	N/A	H	N/A	(2344)
3014	353	814	1/27/2021	-9	-73	-64	1.6	+8	-78	-86	+17	-5	N/A	N/A	N/A	N/A	M	N/A	(2345)
3015	354	816	1/28/2021	-14	-73	-59	1.475	+7	-85	-92	+21	-12	N/A	N/A	N/A	N/A	M	N/A	(2346)
3016	355	815	1/30/2021	-9	-73	-64	1.6	+5	-87	-92	+14	-14	798	N/A	355	N/A	M	H	(2347)
3017	356	817	1/31/2021	-17	-73	-56	1.4	+5	-79	-84	+22	-6	818	N/A	355	N/A	M	H	(2348)

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3018	356	817	2/1/2021	-19	-72	-53	1.375	+10	-84	-94	+29	-12	818	-1	356	N/A	M	H	(2349)
3019	357	816	2/2/2021	-6	-73	-67	1.675	+8	-78	-84	+14	-5	819	-3	356	N/A	M	M	(2350)
3020	357	817	2/3/2021	-7	-74	-67	1.675	+7	-76	-83	+14	-2	819	-2	357	N/A	M	M	(2351)
3021	358	819	2/4/2021	-6	-74	-68	1.7	+7	-89	-88	+13	-15	818	+1	357	N/A	M	M	(2352)
3022	358	818	2/5/2021	-2	-73	-71	1.775	+6	-78	-84	+8	-5	819	-1	358	N/A	M	M	(2353)
3023	359	818	2/6/2021	-15	-74	-59	1.475	+7	-79	-86	+22	-5	819	-1	358	N/A	M	M	(2354)
3024	359	N/A	2/7/2021	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	820	N/A	359	N/A	N/A	M	(2355)

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3025	0	820	2/8/2021	-6	-74	-68	1.7	+6	-85	-91	+12	-11	821	-1	359	N/A	M	M	(2356)

